

ESTABLISHED 1872.

BOSTON JOURNAL OF COMMERCE

AND TEXTILE INDUSTRIES

THE OLDEST AND BEST WEEKLY PAPER IN AMERICA DEVOTED TO
TEXTILE MANUFACTURING, COTTON, WOOL, IRON, STEAM,
MECHANICS, SCIENCE.

VOL. LVII. NO. 11.

Saturday, December 8, 1900.

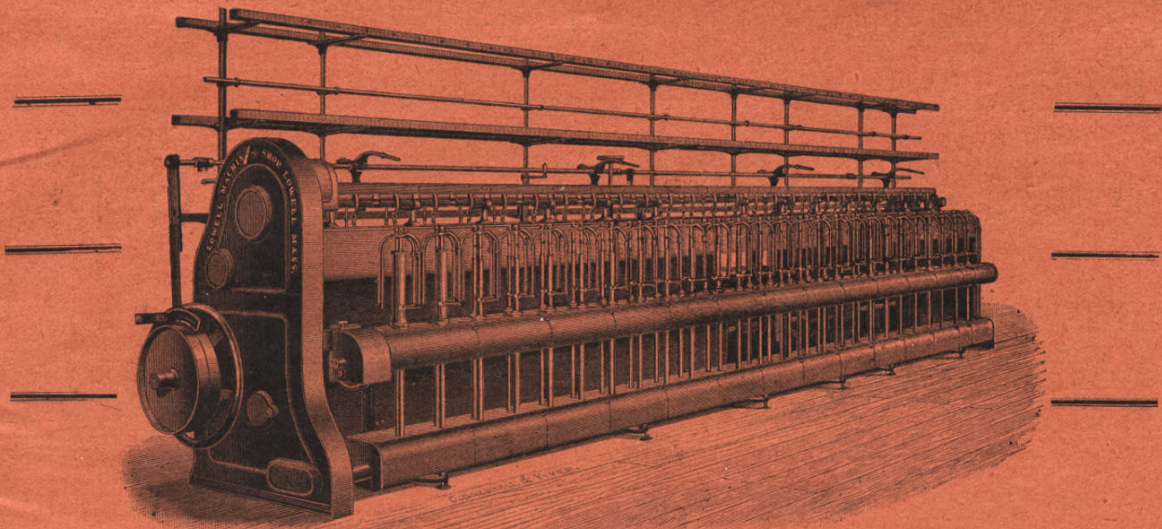
PRICE, SIX CENTS.

SPECIAL ENLARGED EDITION.

LOWELL MACHINE SHOP,

Lowell, Mass.

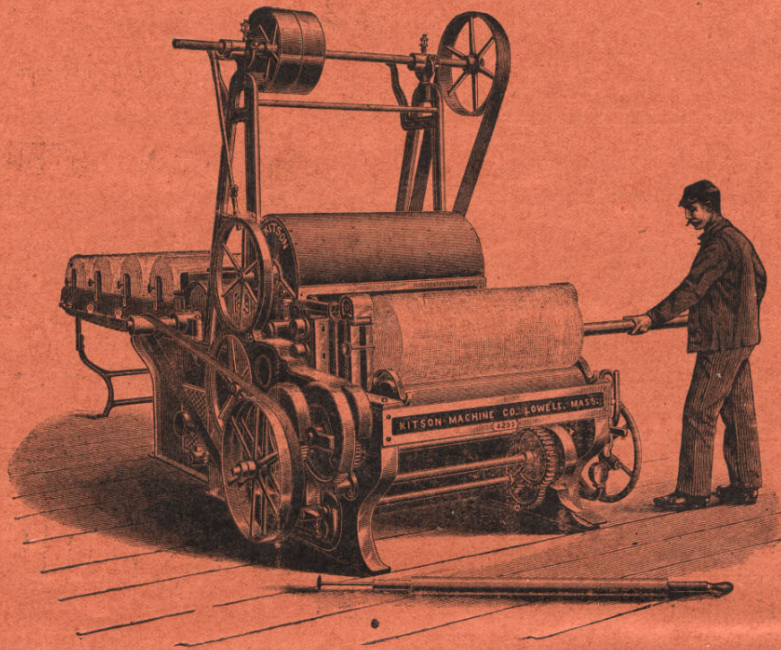
COTTON MACHINERY.



Revolving Flat Cards,
Ring Spinning Frames,
Drawing Frames,
Warpers, Slashers,

Railway Heads,
Twisters, Spoolers,
Roving Frames,
Looms.

WORSTED MACHINERY.



This cut shows Finisher Lapper number four thousand two hundred and ninety three. Today we are building machine number seven thousand four hundred and eighty four.

Nothing more need be said.

KITSON MACHINE COMPANY.

LOWELL, MASS.

STUART W. CRAMER CHARLOTTE, N. C.. SOUTHERN AGENT.

BOSTON JOURNAL OF COMMERCE AND TEXTILE INDUSTRIES

TEXTILE MANUFACTURING, COTTON, WOOL, IRON, STEAM,
MECHANICS, SCIENCE.

VOL. LVII. NO. 11.

Saturday, December 8, 1900.

PRICE, SIX CENTS.

L. SPRAGUE CO.
LAWRENCE, MASS.
MANUFACTURERS OF
BOBBINS SPOOLS & SHUTTLES.
ALSO ENAMELED BOBBINS.

UNION SHUTTLE COMPANY.
—Manufacturers of—
Power Loom Shuttles
of every description
Corrugated Cop Shuttles A Specialty.
Lawrence, Mass.

ESTABLISHED 1878.



SKYLIGHTS
And VENTILATORS.
MADE OF SHEET METAL.
Proof against leaks from weather and condensation.
E. VAN NOORDEN COMPANY,
944-952 Massachusetts Avenue,
Cor. Burnham, Boston, Mass.

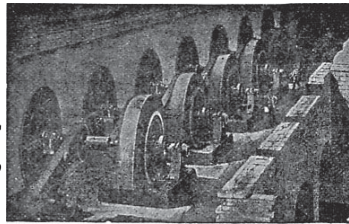
U. S. BOBBIN & SHUTTLE CO.,
236 BUTLER EXCHANGE,
PROVIDENCE, R. I.
H. Martin Brown, Treas.

LITCHFIELD SHUTTLE COMPANY
—Manufacturers of—
Shuttles and Shuttle Irons.
Send orders direct to our factory
SOUTHBRIDGE MASS.
Send for our catalogue.

For Boiler Use
"OTTO"
COKE
is an economical and smokeless
FUEL
Manufactured and sold by the
NEW ENGLAND GAS & COKE COMPANY,
General Offices, 75 MILK ST., BOSTON.
This coke has been adopted as a regular steam
fuel in many of the most extensive manufacturing
plants of Boston and New England.
Write for testimonials.

HUNT-McCORMICK TURBINES.

This unit shows a plant for eleven thousand horse power we have recently installed at Columbia, S. C., for electric power for Mills, Street Cars and Lighting.



Also recently installed a pair of turbines for Merrimack Mfg. Co., Lowell, Mass., 1360 H. P. Efficiency 86.47 per cent. proportionally at all stages of Gate

Write for New Catalogue and state requirements. Plans and estimates furnished.

RODNEY HUNT MACHINE CO., ORANGE, MASS. BOSTON OFFICE No. 70 KILBY STREET

RHOADS LEATHER BELT PRESERVER

without the aid of rosin or other injurious substances, gives a fine adhesive quality to the belt. It **INCREASES THE POWER** and **PROLONGS THE LIFE** of the leather.

J.E. RHOADS & SONS 239 Market Street
PHILADELPHIA, PA.

Every **ENGINEER** should have a copy of
Twenty Years With The Indicator.
The **ONLY** practical work of its kind ever issued.
Forwarded by mail prepaid on receipt of price.
Published by the
Boston Journal of Commerce Publishing Company, Boston, Mass.

THE BABCOCK & WILCOX Co.

29 CORTLAND ST.
NEW YORK
CABLE ADDRESS
NEW YORK
"GLOBEBOXES"
ALL FOREIGN OFFICES
"BABCOCK"

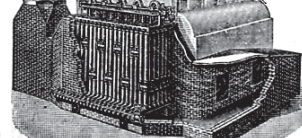


WATER TUBE BOILERS

SEND FOR OUR BOOK "STEAM"

BOSTON 8 OLIVER ST. PHILADELPHIA 142 BIRNIE BLDG. SAN FRANCISCO 32 FIRST ST. CHICAGO 1215 MARQUETTE BLDG. NEW ORLEANS 319 CARONDELLE ST. HAVANA, CUBA 1200 CALLE DE LA HABANA

3000 Textile Mills using GREEN'S ECONOMIZERS



Specifically designed for TEXTILE MILLS, BLEACHERIES and DYE WORKS. Applied without stoppage of works; 10 to 20 per cent saving in fuel. See free booklet "Green's Economizer".

THE GREEN FUEL ECONOMIZER CO.
Sole Manufacturers in the U. S. A. MATTEAWAN, N. Y.
New England Address: 1068 Exchange Building, Boston, Mass.

THE BULKLEY INJECTOR CONDENSER.

In general use on all classes of Engines. Guaranteed to form the best vacuum by head of water or by supply pump. Address
HENRY W. BULKLEY, Engineer,
BRANCH OFFICE 141 BROADWAY, NEW YORK, N. Y. ORANGE N. J.

World's Fair Award



Send for Catalogue No. 13 Hydro-Extractors

Self-Balancing, Non-Vibrating, Engine-Driven or Belt-Driven, and Perfectly Self-Contained.

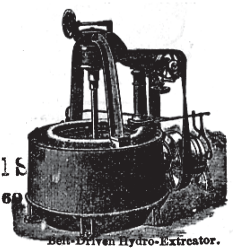
Our Patent Cleaning Door saves time. Our Jacketed Shaft protects life and limb.

Schaum & Uhlinger
Philadelphia, U. S. A.

Self-Balancing, Engine-Driven Machine B, with Patent Cleaning Door. Five Sizes: No. 10, 20, 30 and 50-inch Diameter.

TOLHURST'S

Self-Balancing Engine Driven and Belt Driven



Send for new catalogue C. Hydro-Extractors

In Seven Sizes, 26, 32, 40, 44, 48, 54 and 60 Inch Baskets. Send for Prices.

W.H. TOLHURST & SON, Troy, N. Y.



Issues Policies of Insurance after a careful inspection of the Boilers
COVERING LOSS OR DAMAGE TO
PROPERTY AND LOSS OF LIFE AND PERSONAL INJURY
ARISING FROM
STEAM BOILER EXPLOSIONS.

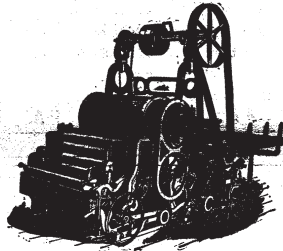
Full information concerning the plan of the Company's operation can be obtained at the
COMPANY'S OFFICE, HARTFORD, CONN.

J. M. ALLEN, President. J. B. PIERCE, Secretary.
W. B. FRANKLIN, Vice-Prest. L. B. BRAINERD, Treasurer.
FRANCIS B. ALLEN, 2d Vice-Prest. L. F. MIDDLEBROOK, Asst. Sec.

BOARD OF DIRECTORS.

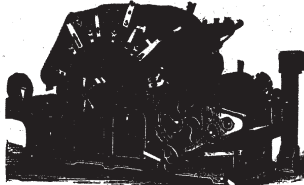
J. M. ALLEN, President.
FRANK W. O'GHEENY, Treas. Cheney Brothers Silk Manufacturing Co.
CHARLES M. BEACH, of Beach & Co.
DANIEL PHILLIPS, of Adams Express Co.
MICHAEL W. H. JARVIS, Pres. Colpe Fire Arms Manufacturing Co.
LEVERETT BRAINARD, of The Case, Lockwood & Brainard Co.
GEN. WM. B. FRANKLIN, late U. S. Commissioner to the Paris Exposition.
HON. FRANCIS B. COOLEY, of the National Exchange Bank, Hartford, Conn.
GEORGE BURNHAM, Baldwin Locomotive Works, Philadelphia.
HON. NATHANIEL SHIPMAN, Judge United States Circuit Court.
C. C. KIMBALL, Pres. Smyth Manufacturing Co., Hartford, Conn.
PHILIP CORBIN, of P. & F. Corbin, New Britain, Conn.
GEORGE A. FAIRFIELD, Pres. Hartford Machine Screw Co.
J. B. PIERCE, Secretary Hartford Steam Boiler Inspection and Insurance Co.
ATWOOD COLLINS, Pres. Security Co. Hartford, Conn.
LUCIUS F. ROBINSON, Hartford, Conn.

HOWARD & BULLOUGH
AMERICAN MACHINE CO., Ltd.
PAWTUCKET, R. I.
Boston Office: 281 Congress Street.

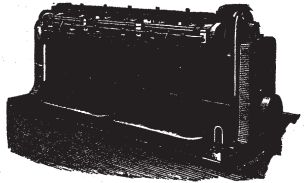


COTTON MACHINERY.

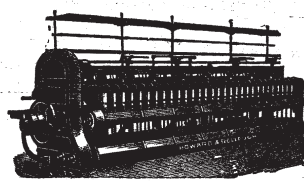
BALE BREAKERS.
FEEDING and MIXING LATTICES.
FEEDERS.
SELF-FEEDING OPENERS
AUTOMATIC CLEANING TRUNK.
BREAKER LAPPERS.
INTERMEDIATE and FINISHER.



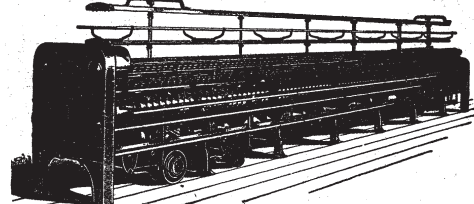
LAPPERS.
REVOLVING FLAT CARDS.
OVER **22,000** WORKING.



DRAWING FRAMES
With Electric Stop-Motion.
OVER **56,000** DELIVERIES WORKING



SLUBBING FRAMES.
INTERMEDIATE FRAMES.
OVING FRAMES.



IMPROVED NEW PATTERN
SPINNING FRAMES
CONE WINDERS.
WARPERS and SLASHERS

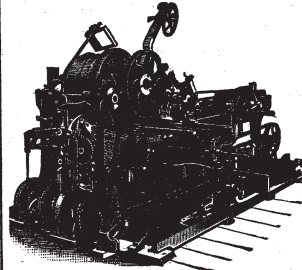
WE INVITE
INVESTIGATION
AND
COMPARISON
SEND FOR
CIRCULARS.

C. E. RILEY & CO.

281-285 CONGRESS STREET,
BOSTON, MASS.
BUILDERS AND IMPORTERS OF
COTTON,

WOOLEN,
and **WORSTED**
MACHINERY.

CARD CLOTHING,
EGYPTIAN COTTON,
Etc., Etc.
Sole Importers of Asa Lees & Co.'s
PATENT SELF-ACTING
MULES, for Cotton, Wool and
Worsted.



OVER **750,000** SPINDLES
WORKING IN THE UNITED
STATES ALONE.

THE
LEADING WIDE GAUGE HOSEY MULE
Which is proving equally successful
in spinning 100s to 200s and
upwards.

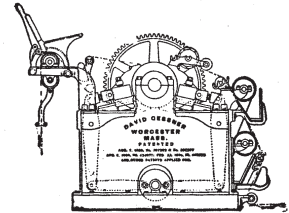
Send for Descriptive Circulars and
List of Users.

DIXON LUBRICATING SADDLE CO., BRISTOL, R. I.
SOLE MANUFACTURER OF
Dixon Patent Locking Saddles and Stirrups.
LEVERS of Every Description.



Spinners' Supplies.
The weight can be taken off or put on to the middle
rolls, without stopping your frames, when long staple
cotton is used. Send for samples and prices.

THE DAVID GESSNER
Improved Rotary Press.



CAUTION—My test suits against what has been
advertised as the "Voelker Rotary Press" have been
decided, the United States Courts having adjudged
the Voelker Presses to infringe my patents and hold-
ing the mills liable for injunction and damages.

Don't Buy or Use Infringing Machines!
For particulars, address
DAVID GESSNER, Worcester, Mass

KILBURN, LINCOLN & CO.,
FALL RIVER, MASS.

LOOMS
FOR COTTON AND SILK WEAVING.
Also Shafting, Pulleys and Hangers.

Globe Machine Works,
FRANKFORD, PA.

THE DENN WARPERS

With Linker or Baller, or both.
Warpers for all kinds of work,
with Electric Stop Motions, 100 to
3200 Ends.

Any Old Loom

May be **Equipped** with the

HARRIMAN AUTOMATIC MECHANISMS.

Write For The
"ILLUSTRATED RED BOOK."

THE AMERICAN LOOM COMPANY

READVILLE, MASS.

SAVE MONEY

By cleaning your Vertical Boiler with a
Vertical Boiler Tube Cleaner

Over 9,000 in use.

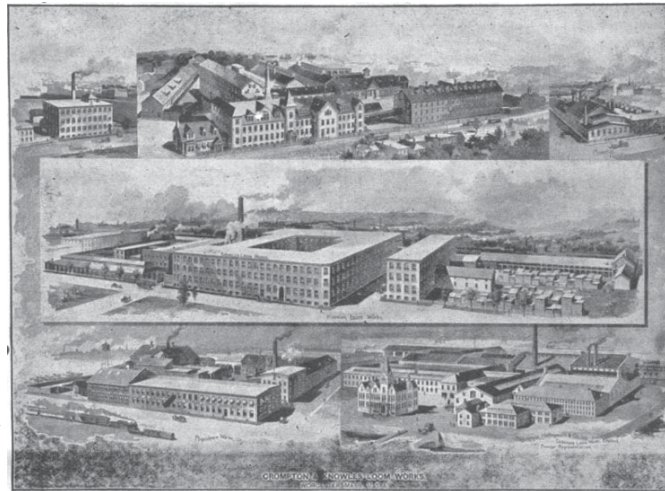
Manufactured by the
Mechanical Specialties Company.

Boston, Mass.

Crompton & Knowles Loom Works.
 WORCESTER, MASS,
Manufacturers of Weaving Machinery,

For every variety and grade of Textile Fabric.

**WOOLEN,
 WORSTED,
 CASSIMERE,
 CARPET,
 UPHOLSTERY,
 LOOMS**



**PLAIN COTTON,
 GINGHAM,
 NARROW WEAR
 SILK,
 -LOOMS-**

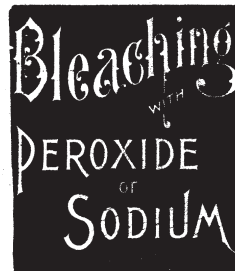
Also **WOOL COMBING MACHINES.**

BLEACHERS! (We mean the "man behind the gun")

Send us your names and we will prove to you, by bleached samples and cost calculations, that Peroxide sodium is far superior to Hydrogen Peroxide, Sulphur, Sulphurous Acid, or Bi-Sulphite.



Our Pamphlet on:
 tells how it is done.



... FOR ...
BLEACHING

Woolens, Silks,
 Mixed Goods
 and also all goods whose
 strength is affected by
 Chloride of Lime.

THE ROESSLER & HASSLACHER CHEMICAL CO.,

Peroxide Works: Niagara Falls.

Office: 104 William St., New York.

THE METALLIC DRAWING ROLL COMPANY

MANUFACTURERS OF

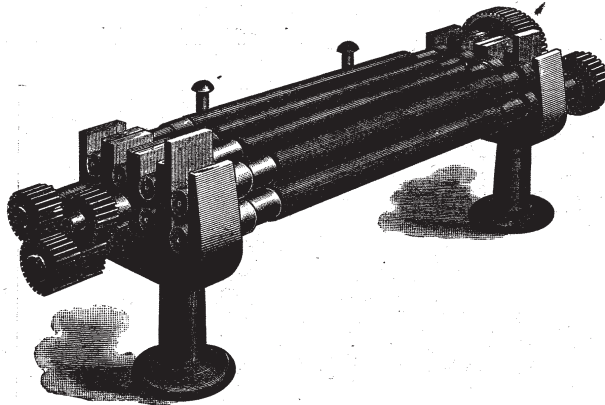
PATENT METALLIC ROLLS

Applied To The Following Machines.

Coiler Railways.

Comber Drawer Box.

Sliver Lap Machines.



Drawing Frames.

Slubbers.

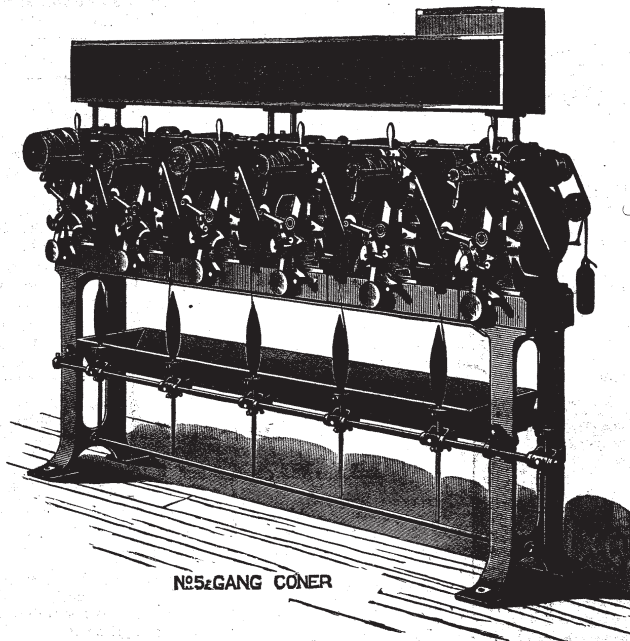
Intermediate Frames

Write For Prices And Particulars To

THE METALLIC DRAWING ROLL CO.,

INDIAN ORCHARD. MASS.

UNIVERSAL WINDING MACHINES



№5:GANG CONER

Save Labor.

Save Power.

Save Waste.

Save Freights.

Save Re-winding.

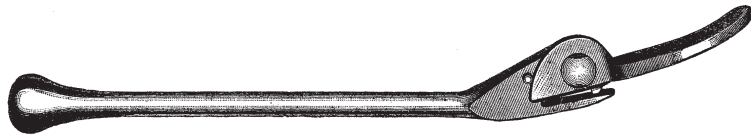
Save Floor Space.

Save Packing Cases.

Save Cost of Bobbins.

Save Repairs of Bobbins.

UNIVERSAL WINDING COMPANY.



It opens Cotton Bales so quickly that we call it "The Lightning Tie Cutter." Two tempered-steel forgings and a bolt complete its make-up. To work it, push the tongue of long lever under tie, then pull up on handle. It's a good thing.

KITSON MACHINE CO., Picker Builders, LOWELL, MASS

NORTHERN INDUSTRIAL NEWS.

MAINE.

The Sanford mills, Sanford, are installing new machinery.

The Penobscot Woolen Company, Dexter, is increasing the capacity of its mill by installing new machinery.

The new storehouse of the Wassookeag woolen mill, Dexter, is rapidly nearing completion and will soon be ready for occupancy.

The weavers at the Coburn woolen mill, Skowhegan, are at work retting out samples of light-weight goods, and the work will soon be changed from heavy to light-weight work.

NEW HAMPSHIRE.

A new steam generating plant is being put in the Sugar River mill, at Newport.

Owing to the heavy demand for linen yarns and towels, the American Flax Company, Meredith, will enlarge its plant.

The Cheshire mills, Harrisville, are having a new waterwheel and panstock put in at the ruins of the Harris mill, and will run a cable to the lower mill wheel to increase the power.

The woolen mill at Claremont, recently purchased by A. Roberts & Co., of Haverhill, Mass., is rapidly being put into good running condition, and will soon start making staples.

VERMONT.

J. C. Parker Company, Quechee, is installing new machinery in the mill.

F. S. Mackenzie's mill at Woodstock, started recently after a shut-down of about one month and a half, during which time much needed repairs were made. The mill has been built one story higher, and a new dam and stone abutments have been erected.

MASSACHUSETTS.

The Byfield woolen mill, Byfield, is being operated until 9 o'clock evenings and reports a good demand for its product.

The Peabody cotton mill No. 1, Newburyport, has shut down for an indefinite period, due to the high price of raw material.

The four departments of the Beaver Brook mills, Dracont, which were idle last week, started up Monday, and are now running in full.

Charles L. Lovering has been appointed treasurer of the Merrimack Manufacturing Company, Lowell, and Huntsville, Ala., in place of Mr. Stockton, resigned.

The Hargraves mills corporation, Fall River, was fined \$25 by the Watuppa Water Board, Monday, for using water from a hydrant for other than fire purposes.

The Clinton Worsted Company, Clinton, has installed three new combers and other machinery in its mill. The company reports a good demand for its product.

The Meyer Thread Company, Springfield, may seek a location elsewhere. The company finds its present quarters inadequate, and has several quotations under consideration.

The auction sale of the Reynolds new mill at Monson took place last week. The bids started at \$12,000 and was run up to \$14,250, and was purchased by A. D. Ellis, of Monson.

Last week water was pumped to the new reservoir of the Fiskdale mills, Fiskdale, for the first time and the new hydrants and hose were tested to a pressure of 100 pounds per square inch.

A large force of men from the Mason Machine Works, Taunton, are engaged in setting up the 400 looms in the new weave

shed of the Stafford mills, Fall River. The plant will probably be started in part by the first of the year.

The Metallic Drawing Roll Company, Indian Orchard, is supplying the rolls for the machinery to be installed in the new mill of the Indian Orchard Company, Springfield. The company is also very busy on other large orders for mills in New England and the south.

The shares of the American Woolen Company have been admitted to the unlisted department of the Boston Stock Exchange. The company was incorporated in March, 1899, under the laws of New Jersey. The authorized capital stock is \$40,000,000 common and \$25,000,000 preferred stock. The amount issued is \$29,501,100 common and \$20,000,000 preferred.

The woolen mills of Sales & Jenks' Manufacturing Company, Warren, which were closed a week ago, have again shut down temporarily. The dullness of the wool market is the cause of the shut-down. William A. Jenks treasurer of the company, received several orders from commission houses in New York last week, but they are for late delivery.

The Stafford Mills, Fall River, filed the following certificate October 23, 1900: Pres., R. T. Davis; Treas., F. W. Brightman. Assets—Real estate, \$384,590; Machinery, \$560,000; debts receivable, \$35,002; stock in process, \$340,142; miscellaneous, \$130,933; total, \$1,450,668. Liabilities—Capital stock, \$1,000,000; debts, \$326,308; balance profit and loss, \$124,360; total, \$1,450,668.

The Union Cotton Manufacturing Company, Fall River, filed the following certificate of condition Oct. 24, 1900: Pres., F. L. Hathaway; Treas., Thomas E. Brayton. Assets—Real estate, \$300,000; machinery, \$900,000; debts receivable, \$98,787; stock in process, \$128,302; total, \$1,327,088. Liabilities—Capital stock, \$1,200,000; reserve for depreciation, \$127,088; total, \$1,327,088.

The convention of the National Federation of Textile Operatives of America will be held at Washington, D. C., on Dec. 17. Most of the unions in the North, and the different local and national unions, have selected their delegates. It is expected that the outcome of the meeting will be the complete consolidation of all the textile workers in the country, and the question of union labor in Southern mills will probably be discussed.

Richard Borden Manufacturing Company, Fall River, Thomas J. Borden president, R. B. Borden treasurer, fixed capital \$800,000, capital paid in \$800,000, has filed the following statement of conditions: Assets—Real estate and machinery, 1900, \$955,697.50; 1899, \$911,220.34. Cash and debts receivable, 1900, \$167,283.99; 1899, \$50,184.22. Merchandise, stock in process, etc., 1900, \$145,905.02; 1899, \$187,557.65. Total for 1900, \$1,268,886.51; for 1899, \$1,148,962.21. Liabilities—Capital stock, 1900, \$800,000; 1899, \$800,000. Balance, profit and loss, 1900, \$468,886.51; 1899, \$348,962.21. Total for 1900, \$1,268,886.51; for 1899, \$1,148,962.11.

The loomfixers' strike of the Hathaway and Acushnet mills, New Bedford, is no nearer a settlement than a week ago, and the effect on the weavers is daily growing more and more apparent. At last Saturday's meeting of the strikers there was a full attendance, as it was pay day. Incidental to the meeting a committee was appointed to wait upon the weavers who are engaged in fixing and prevail upon them to quit the work. The delegation from the National Loomfixers' Union, which went to Treasurer Knowles, Tuesday, to talk over the strike situation, failed to see him, as he declined to talk with the delegates. As a result of his action the delegation approved the action of the loomfixers going out, a departure from the usual custom, which requires the sanction of the national board.

The Cornell mills, Fall River have filed

the following certificate in the secretary's office, Nov. 21, 1900: Annual meeting held Nov. 13, 1900. President, John D. Flint; treasurer, Fred E. Waterman. Directors—Edw. S. Adams, Stephen A. Jenks and James F. Jackson. Fixed capital, \$400,000; capital paid in, \$400,000. Ass'ts—Real estate: Buildings, \$200,000; machinery, \$300,000. Other assets, viz.: Cash and debts receivable, \$36,077.61; manufactures, merchandise, material and stock in process, \$128,681.84; total, \$664,759.45. Liabilities: Capital stock, \$400,000; debts, \$40,000; balance profit and loss, \$224,759.45; total, \$664,759.45. Among the shareholders are: Melvina J. Bodse, 90; D. H. Cornell, 60; Samuel W. Flint, 110; John D. Flint, 370; LeRoy Fales, 162; George B. Haines, 74; Stephen A. Jenks, 161; Albert A. Jenks, 126; Edward Kendall, 114; George L. Littlefield, 120; William H. Parker, 100; Charles E. Riley, 157; Fred E. Waterman, 80.

The Hathaway Manufacturing Company, of New Bedford, has filed the following certificate in the secretary's office Nov. 20, 1900. Annual meeting held Nov. 8, 1900. President, Thomas S. Hathaway; treasurer, Joseph F. Knowles. Directors, Edw. L. Anthony, Thomas E. Brayton, W. W. Crapo and Thomas L. Knowles. Fixed capital, \$800,000; capital paid in, \$800,000. Assets—Real estate: Land and water power, \$16,863.48; buildings, \$200,000; machinery, \$500,000. Other assets, viz.: Cash and debts receivable, \$259,372.37; manufactures, merchandise, material and stock in process, \$60,460.46; total, \$1,036,636.29. Liabilities—Capital stock, \$800,000. Reserves: Balance profit and loss, \$150,000; reserve for depreciation, \$8,696.29; total, \$1,036,636.29. Among the shareholders are: Thomas F. Knowles, 1000; Charles D. Prescott, 160; William W. Crapo, 320; Horatio Hathaway, 1940; Savel H. Cook, 200; Edward D. Mandell, 500; Emily H. Bourne, 250; Hannah H. Abbe, 250; Hetty H. R. Greene, 450.

The following certificate of condition has been filed with the Commissioner of Corporations: Hargrave mills, Fall River, certificate filed in the Secretary's office Nov. 20, 1900. Annual meeting held Oct. 25, 1900. President, Leontine Lincoln; treasurer, Seth A. Borden; directors, John D. Flint, George C. Silsbury, S. A. Jenks, Fred W. Easton and W. L. Parker. Fixed capital, \$800,000; capital paid in, \$800,000. Assets—Real estate, land, water power, buildings and machinery, \$960,000; other assets, viz., cash and debts receivable, \$104,990.57; manufactures, merchandise, material and stock in process, \$399,147.90; total, \$1,464,138.56. Liabilities—Capital stock, \$800,000; debts, \$590,586.56; balance, profit and loss, \$73,559.90; total, \$1,464,138.56. Among the shareholders are: Adolph Bernheimer, 100; Seth A. Borden, 361; Susan B. Borden, 472; W. B. M. Chace & Co., 153; Benjamin F. Covel, 74; T. D. Covel, 85; W. P. Dempsey, 150; Thomas L. Doyle, 100; Charles H. Dring, 142; Leroy Fales, 169; Warren R. Fales, 176; John D. Flint, 105; Robert S. Goff, 75; Harriet F. Hathaway, 106; Amos M. Jackson, 68; Stephen A. Jenks, 50; Henry Lincoln estate, 114; George L. Littlefield, 201; Emeline F. R. Mason, 110; P. P. Morris, 120; William H. Parker, 350; Charles E. Riley, 60.

RHODE ISLAND.

The Lippitt woolen mill, Woonsocket, was shut down all of last week.

The Rodman Manufacturing Company's mills at Allentown and Lafayette were closed down last week to give the help a vacation.

William Gregory's two mills at Wickford were shut down last week, during which time needed repairs were made to the mills.

A new boiler is being put in the Stone worsted mills, Burrillville. This plant has been running in full for some time and has plenty of work on hand.

The committee of the Allen Print Works, Providence, has decided to run out the stock of print cloths on hand and shut down the plant indefinitely.

Many of the mills in Olneyville, which shut down Wednesday for over Thanksgiving, did not resume operations until Monday, when all started in full.

The United States Rubber Company's knit boot mill at Woonsocket, which has been shut down for several months started up Monday morning, and present indications are that it will run steadily for nearly a year. The knitting department will also be run in full, as well as the felting department.

The Lawton Spinning Company, Woonsocket t., has been sued for \$5000 damages by Joseph Theroux, who claims that on October 11, as he was on an elevator in the defendant's mill, the cable parted, precipitating him downward 40 feet, with the result that his chest and leg were injured permanently. He alleges that the cable was defective and was not located in the centre of the elevator.

The Gurin Spinning Company's mill, Woonsocket, is being operated night and day, and business is so brisk that the company has decided to have a large addition built. The new structure will be 150x75 feet, and will be three stories high. The foundation will be of stone and the remainder of the building will be wood. The proposed addition will be situated to the rear of the present mill. The work will commence at once and will be rushed to a speedy completion.

CONNECTICUT.

The Windham Company and the Willimantic cotton mills, Willimantic, report business very good at present, and both companies are compelled to operate their plants evenings.

NEW YORK.

The Eureka Mill, Waterford, resumed operations Monday after a few days' suspension.

Van Brocklin & Stover's knitting mill, Amsterdam, has resumed operations after a week's shut-down.

The product of the Seneca Woolen Mills, Seneca Falls, will hereafter be sold through A. D. Juillard & Co., of New York.

The Waterford Knitting Company, Waterford, closed its plant last Saturday for one week, in order to take the annual inventory.

The carpet mills of S. Sanford & Sons, at Amsterdam, were closed recently, owing to a mishap to the power plant. The plant resumed work in full last week.

A. F. Montague, J. P. Burns, of New York, and W. J. Montague, of Cortland, have incorporated under the name of A. F. Montague & Co., and will deal in silks, velvets, etc., in New York city. The company has a capital of \$60,000.

The Ring Frame Thread Protector Company, Amsterdam, was incorporated recently by J. H. Giles, W. B. Charles, H. B. Crane, C. S. Nisbet, J. H. Hanson and M. E. Schellbauer, Jr., all of Amsterdam. The company is capitalized at \$10,000 and will engage in the manufacture of textile machinery appliances.

NEW JERSEY.

The Pioneer Silk Company, with large mills in Paterson and Allentown, Pa., which failed recently, resumed operations in full Monday. The mills at Paterson employ 600 hands and as many more in Allentown. Members of the firm will give out no statement, but it is generally believed that they have secured an extension from their creditors.

STEAM & ELECTRICAL ENGINEERING

We are always glad to receive correspondence from our readers on steam engineering, and to publish the same on this page; but do not hold ourselves responsible for any views which may be expressed. If any of our readers have any questions which they may desire answered we shall be pleased to publish the question with the answer. Each correspondent must send his name and address, which, unless otherwise expressed will be held confidentially by us. We wish engineers in sending us indicator cards to analyze, which we are always glad to do for them, would send us at least four, and taken, if possible, under different loads and springs, and not to trace the lines over. All the data should be marked on the back of the card. We can then give them more satisfactory attention.

GAS ENGINES.

A New Principle in Their Design.

[Paper read by C. E. SARGENT before the A. S. M. E.]

While the gas engine has become such an important prime mover that it is looked upon and is, today, a most formidable rival of the steam engine, it has certain disadvantages as a power generator which are not only recognized by its devotees and manufacturers, but are considered inherent and beyond elimination by many of those who have given the internal combustion engine a great amount of study. To overcome these disadvantages, eradicate the defects, improve the efficiency, and design an engine which would meet the requirements of prime movers, and one that would not only be simple and cheap to construct, but one which could be easily manipulated and controlled by the average engineer, has been the object of the author, and the result the subject of this paper.

In order thoroughly to understand the disadvantages of modern gas engines, it is necessary to consider the cycle and operation of the working parts. As it is not in our province to criticize what is recognized as being the best warranted by the state of the art, we will refer only in general to the shortcomings of the modern gas engine of the four-cycle type, by which is meant any engine with one or more cylinders fitted with trunk pistons, working on the Beau de Rochas or Otto cycle, in which the piston acts during the first, or forward, stroke (towards the crank) as a pump, drawing in the charge of air or of a combustible mixture; compressing same on the second, or back, stroke completing the first revolution of the crank shaft; performing work during inflammation, the forward stroke of the second revolution; and exhausting the burnt products during the back stroke of the second revolution. Such is the operation of the modern gas engine, with a few possible exceptions which will not be considered herein. Engines working in this way have been in successful operation twenty years; yet that there is large room for improvement no one denies. But, on the contrary, authorities on the subject say that the mechanical and thermal results are very inefficient, and anticipate improvements which will improve the mechanical as well as the thermal efficiency.

In specifying the disadvantages of a single cylinder gas engine, we find that, on account of but one impulse being obtained for every two revolutions of the crank shaft, the working parts must be sufficiently heavy and strong for the three idle strokes as for the impulse stroke; therefore, the engine is practically four times as heavy per horse power as it would be if the impulse were received every stroke of the piston. No compression is possible on the forward stroke, and, as compression takes place every other revolution only on the back stroke, a heavy frame and foundation are necessary to prevent injurious vibration. In order to absorb the inertia of the reciprocating parts and to improve the regulation, some manufacturers put two, three, or even four cylinders side by side, thus getting as many impulses in the cycle of two revolutions as there are cylinders, and, by transmitting the strains through the crank shaft, as many compressions as there are impulses. An engine working under these conditions may run very smoothly, be in running balance, and give excellent results from a mechanical standpoint. With a single-cylinder, single-acting engine, to get regulation equal to an engine getting an impulse every stroke, it is necessary to have a flywheel of four times the capacity.

GOVERNING.

When a single-cylinder engine is governed by missing an explosion, an impulse may be obtained in every fourth or sixth revolution, and, on account of the burnt

products having been cleared out, when the engine does take an explosive charge, the first impulse, after skipping a charge, is very severe, giving a much higher initial pressure than the ordinary impulse, which, though it may be conducive to economy of gas, is not conducive to the longevity of the engine. With a "hit and miss" governor, there is greater economy, because the compression is practically uniform; but with this kind of governing the engine is constantly racing, and, though it may be adjusted to vary not over 2 per cent. in revolutions between full and no load, its angular velocity is always increasing or decreasing, as a look through a vibrating tachometer at the flywheel of this kind of an engine will impress you. A better method of governing is by varying the mean effective pressure by throttling the fresh charge. A regulation sufficiently close for electric lighting, even with a single-cylinder engine having sufficient flywheel capacity, may be obtained in this way, but at the expense of thermal efficiency.

STARTING.

As all gas engines which are sufficiently economical for practical purposes must compress the combustible charge before ignition, and, consequently, before any work is given out or stored in the flywheels, the starting of the internal combustion engine has been one of the greatest troubles to overcome. It is accomplished in small sizes by man-power storing up energy in the flywheels, or by compressing the entire charge with a windlass; while in larger sizes, compressed air, with its necessary reservoirs, pipes and pumps are used. Many start the engine with a charge of gunpowder or combustible mixture of gas and air, giving from a standing position, such a shot that the inertia stored up will compress the next charge and keep the engine going. Nearly every manufacturer has a perfect starter, yet, where compression must take place before ignition, the difficulties encountered in always getting an engine to go are evident. Such are some of the thermal and mechanical disadvantages of the modern gas engine.

IDEAL METHOD.

In accounting for the heat in the internal combustion engine, we have:

First, Heat converted into work.

Second, Heat imparted to water jacket.

Third, Heat released in exhaust.

As the sum of the three is constant in order to make the first as large as possible, it is necessary to reduce the second and third. As the cylinder walls must be sufficiently cool for proper lubrication, we cannot expect to reduce this loss materially, yet by improving the conditions the best possible efficiency may be obtained. The transmission of heat from the burning charge of the cylinder walls depends, for one thing, on the ratio of surface exposed to the unit of volume. The reason that compression is necessary for high efficiency, and that the efficiency increases with compression is, that while the volume remains constant the cooling surface for radiation diminishes. It is impossible to get any more heat out of the gas than there is in it, and with complete combustion there is just as much heat released in a non-compression engine of the Lenoir type as in the Diesel motor, and the only reason why the latter shows such excellent efficiency is because the compression is so high that the surface of radiation during inflammation is comparatively small. Time is another factor in the transmission of heat from the burning charge. If the engine is put on centre, so that it cannot be moved, and no heat can be turned into work, and the charge exploded in the compression chamber, the pressure should fall to the same pressure it had before ignition took place, in about one and one-half seconds, which shows that high-piston speed is essential in a gas engine, as well as in the steam engine, for economy. The quicker we can expand the burning gas the less heat will go into the jacket and more into work.

The transmission of heat from the burning charge to the water jacket depends also upon the difference between the mean temperature of the gases during the working stroke and that of the cylinder walls, so that the lower the terminal temperature, other things being equal, the lower the mean temperature and less heat will be lost. We see, then, that the loss of heat to the water jacket depends on the ratio of the

volume of explosive mixture to the surface which confines it, to the piston speed, and to the average temperature of the burning gases, none of which have been neglected in the designs presented. The prime object in bringing out a new design of gas engines was to get a more complete expansion of the gases during the working stroke. It is evident that if a cylinder full of combustible mixture is compressed, ignited, and allowed to expand to its original volume (a cylinder full) and then released, the terminal pressure and temperature will be considerably higher than when compression began, while if this expansion could continue until the pressure and temperature were the same as before compression, the only loss would be the amount of heat absorbed by the water jacket.

GENERAL CONCLUSIONS.

As the mean effective pressure of an engine utilizing only about one-half a cylinder full of combustible mixture is about 60 per cent. of that of the ordinary gas engine, the cylinder capacity of an engine maintaining a higher efficiency by greater expansion must be nearly twice the capacity of the ordinary gas-engine cylinder for the same power developed; yet the same could be said of a steam engine utilizing the expansion of the steam compared to one without cut-off. However, as but one crank and lighter flywheels and double-acting cylinders can be used, it is probable that an engine of this type would not weigh more or the same output than the ordinary single-acting engines now on the market.

One of the disadvantages of the modern internal combustion engine advanced when comparing this type of motor with the steam engine is that it cannot be overloaded, and that its range of economy is greatly restricted. If a motor is giving out its full power and more is added, the motor will stop, as there can be no reserve when each induction stroke takes a cylinder full of explosive mixture. On the other hand, the engine must not run below its rated capacity, or the efficiency will be greatly impaired.

In other words, the economical range of the modern gas engine is at full load, for reasons heretofore pointed out. But if, instead of taking a cylinder full of combustible mixture as our unit of fresh charge, we design the engine so that two-fifths or three-fourths of a cylinder full of combustible mixture is sufficient for the average load, with the principle utilizing the charge and governing pointed out, we will have a much greater range in which the engine may be worked without an appreciable loss in efficiency.

As the compression changes only one-half as fast as the cut-off with a change of load, we can have a reserve of power even if we do release considerably above atmospheric pressure, so long as compression does not go sufficiently high to cause premature ignition. Of course, leading such an engine beyond its normal capacity may even lower the efficiency, as in a steam engine, but sometimes the ability to carry an overload for a short time far outweighs the necessary loss.

The method of retaining the products of combustion to reduce the clearance and thereby raise the compression during light loads may be considered inadvisable by some authorities, yet others show by experiments that the inert gas has no injurious effect on the incoming charge, except possibly to make it a slower burning mixture, which, on account of our method of ignition, has no deleterious effect. With a fixed point of ignition and a slower inflammation as the load decreases, a limit to the piston speed is reached, and is given by some authors as 600 feet per minute. Yet it is evident that the quicker we can expand the gases the more heat will be turned into work, and the less will be transmitted to cylinder walls; therefore, if we can advance the time of ignition, so that the maximum pressure takes effect at the beginning of the stroke, the piston speed may be materially increased and the jacket losses minimized.

While no exhaustive tests have been made to determine the actual thermal efficiency of the engine under different conditions and loads, a comparison of the amount of gas used per brake horse power with that of the ordinary gas engine shows a considerably higher efficiency, and the writer hopes the results of an actual test may be presented to the Society at its next meeting.

From a mechanical standpoint, very little

improvement could be desired. The 10½x19" engine which developed 50-horse power with illuminating gas, running at a piston speed of 200 feet per minute, either light or loaded, produced no perceptible vibration, though it was not anchored to the foundation, but merely rested on the wooden wedges used for levelling up the engine.

As the cams and rollers are always in contact, no noise arises from the cams striking the rollers, and though the poppet valves are inclined to rattle when seating, a proper adjustment of the air pressure by the pet cock in dash-pot guide will almost entirely overcome the noise.

The worm gears necessary for driving the cam shaft must run in oil to be efficient, and in doing so are noiseless, and make an ideal pump for circulating the oil to the engine bearings.

While the length of the engine is considerable, it is no more than that of tandem compound steam engines of the same stroke, and the height is such that no ladders or galleries are necessary for indicating or making accessible the working parts. The engine from which the half-tone illustrations were taken is fitted with a permanent reducing motion of such a design that pressing a spring starts the indicator drum and pulling a string stops it.

No oil is thrown from the moving parts and the working parts are not exposed to the evil effects of dust and dirt.

While the author may have dwelt too long on some points and neglected others, it is hoped that the ideas presented, the advantages gained by their fulfillment, and the means adopted for carrying them out, may be of interest to the Society.

THE GAS ENGINE.

Its Heat Efficiency as Modified by Point of Ignition.

Paper Read by C. V. KERR, Before the A. S. M. E.]

In the gas engine laboratory of the Armour Institute of Technology there is installed for experimental purposes a four-cycle single-cylinder gas engine, built by the Fairbanks-Morse Company, and rated at 7-brake horse power. The cylinder is 6½ inches in diameter, the piston stroke 12 inches, the clearance about 35 per cent., and the normal speed 240 revolutions per minute. The engine is controlled by a centrifugal governor acting on the hit-and-miss principle. The ordinary poppet valve is used, and both the hot tube and the electric igniter are available.

The brake horse power developed is measured by a form of rope brake consisting of narrow wooden cleats stapled to a thin wire tiller rope, supported by a stand resting on platform scales. The brake pulley is water cooled. The power developed in the cylinder is measured by a special gas engine indicator, actuated by a pantograph reducing motion. The number of explosions is recorded by a box counter, operated by the gas inlet valve rod, which secures a count of the admissions of gas. The engine speed is obtained either by speed counter or tachometer.

The quantity of gas used is measured by a wet-test gas meter, readable to 0.002 cubic foot. The heating power is determined by combustion in the Junker calorimeter. When the hot tube igniter is in service, the meter for the calorimeter is used on the hot tube connection, so that the amount of gas going to the cylinder may be known. A larger meter of the ordinary type serves to determine the proportions of air and gas actually used. The air was at first drawn through this meter; but later a blower was installed to force it through and deliver it to the engine at more nearly ordinary pressure.

During the spring of 1897, N. M. Loney and J. J. Wheeler made a series of tests with this plant to determine the heat efficiency of the engine from no load to full load. The mixture used was 6.6 cubic feet of air with 1 cubic foot of natural gas. The heating power of the gas, as determined on different days during the tests, varied from 811 to 867 British thermal units. The jacket water was kept at 160° F. The tube igniter was used, as the earlier form of electric igniter run by a battery was found unreliable. The indicated horse power ranged from 3.8 to 11. The compression pressure was about 60 pounds, and the explosion pressure about 240 pounds. The heat effi-

ciency, as fixed by the ratio of the heat equivalent of work done in the cylinder to the heating power of the gas, was nearly constant throughout the range of load at 22 per cent.

The difficulty of securing and maintaining a temperature of hot tube giving a desired card led to fitting the engine, in the early part of the present year, with a mechanically operated electric igniter. This igniter is operated from an inclined cam on the large gear, from which motion is conveyed to a spring catch attached to an oscillating electrode. Platinum points are provided on the movable, as well as on the insulated electrode, so that corrosion does not quickly affect the sparking points. As the igniter is mechanically operated, the time of separating the points is fixed for a given set of conditions, and the charge in the cylinder is always ignited at a desired piston position.

This device was so made that it can be adjusted to produce a spark in the cylinder at every second revolution for any piston position between $\frac{1}{4}$ inches before the end of the stroke and an equal distance after it. The adjustment can be made while the engine is running within limits set by the load carried. This enables the use of very early ignition after the engine reaches its normal speed.

A series of tests were therefore arranged to ascertain this point of ignition, which would give the maximum heat efficiency for a given load with all variables except point of ignition, constant. The programme of tests was carried out by L. C. Bradley, C. A. Garcelon and C. S. Longnecker during the spring term of the present year.

A few preliminary runs settled the position of the gas valve for best air mixture; the temperature of jacket water at 170° F.; and the loads to be carried, 0.25, 5.0 brake horse power. For each load the point of ignition was made as early and as late as the engine would maintain speed. The igniter was set to pass a spark at a certain piston position, and an hour's run was made with indicator cards, readings of gas meter and explosion counter taken at frequent intervals. The sparking current for the igniter was taken from a 110 volt main. Six lamps were used in parallel to give sufficient current, and a spark coil to increase the spark. This arrangement proved entirely reliable, and the lamps gave visible evidence of the working of the igniter.

The load to be carried by the Prony brake was estimated for the standard speed, and the scale beam was maintained in even balance throughout the runs. The water used to absorb the heat developed at the brake was allowed to boil away from the inner surface of the pulley at atmospheric pressure.

About noon of each day, while running the engine, the Junker calorimeter was used to ascertain the heating power of the gas. Usually five tests were made, and the average taken as the calorific power of the gas for that day. The range of values obtained at each series of tests was always small, but there was considerable variation in average values from day to day.

For a brake load of 2.5 horse power the greatest efficiency is found again with ignition at $(+\frac{1}{4})$, while the maximum explosion pressure is found still earlier at $(+\frac{1}{4})$. With a brake load of 5.0 horse power, the maximum efficiency is found with ignition at the dead point; but the highest explosion pressure is for ignition at $(+\frac{1}{4})$, and the maximum pressure is not located. A wider range of ignition could not be secured with this brake load, and a series of runs with higher brake load was not attempted.

One curious result is brought out by the curves of indicated horse power. The mechanical efficiency of the engine tends to increase slightly, as the ignition occurs later. Probably not so much energy is spent in friction at the main bearings. So far as the heat efficiencies at brake and in cylinder are concerned, it is evident that ignition should never be later than at the dead point.

The time of the explosion, as measured by the interval between ignition and maximum pressure, is unexpectedly constant at 0.03 seconds for ignition before the dead point. For later ignition there is a decided tendency to increase the time of combustion. This fact may explain why the heat efficiency drops off with the earlier ignition, even though the explosion pressure is higher. The time of combustion being constant, the higher the pressure and temperature reached the larger the proportion of heat transmitted to the jacket water. Such conclusions apply strictly only to

the gas engine of the size and make under test, with certain conditions constant. With different proportions of gas and air, with another kind of gas, or with a less positive sparking device, quite different results might possibly be reached. But in this case the conditions were so chosen that the results were expected to show the best performance of the engine.

AN AMERICAN CENTRAL VALVE ENGINE.

(Paper read by E. T. ADAMS before the A. S. M. E.)

A hollow piston rod with a valve therein is the essential feature of all central valve engines. The idea of this combination is very old. It was old in this country when Peter Willans took it up in England and made it, literally and figuratively, the central feature of the Willans engine. However, no matter to whom may be due the barren honor of having originated the idea, the brilliant success of Peter Willans made the "central valve" his own, and to him should be accorded the honor pertaining thereto.

Commercially, Willans' success is represented by sales aggregating 320,000-horse power, chiefly in units of 100 to 300-horse power; but from an engineering standpoint the measure of his success and the convincing proof of Peter Willans' genius is that he could take this engine, so complex in detail, with its multiplicity of cylinders and its extremely high rotative speed, and actually make it the standard of excellence in the home of the ponderous, slow-going Cornish engine, and among a people so conservative, so opposed to innovation, as our steady-going brethren in Great Britain.

In America, the Willans engine, in spite of its admittedly high record for economy, has been received somewhat coldly. It is manufactured, under license from the English builders, by the Bullock Manufacturing Company, of Chicago, and those who knew the late M. C. Bullock, member of this Society, can testify that its failure could not be due either to lack of proper enterprise on his part, or to lack of that superlative workmanship which the Willans design makes the *sine qua non* of the practical operation of the Willans engine.

The engine whose valve gear is here described represents an effort to work up the old central valve idea in a form which shall retain the high economy of the English design, but which shall also meet existing American conditions and conform to safe American practice. This has led to so much that is broadly new, and to combinations so widely different from those adopted by Willans, that the title, "An American Central Valve Engine," is entirely justified.

It seems desirable to divide the description of this engine into two parts:

1. A general statement of the conditions controlling design, with an outline of the essential features of the type of engine which is thereby indicated.

2. A brief description of the valve gear of an American central valve engine.

The conditions to be met are assumed to be the usual conditions existing in small isolated lighting and power installations, as typified, for example, by the power plant of a modern office building, and accompanying design has been worked out on the theory that the essential features of the engine best adapted to this class of service should be as follows:

MODERATE SPEED,

Both relative and absolute; that is, any engine should be capable of being operated with safety at a speed 40 to 50 per cent. in excess of its rated speed; and for the service here specified the absolute or rated speed should not exceed 200 to 300 revolutions per minute, depending on the size of the unit. The latter condition tends to reduce danger of vibration, while the former tends to lower cost for attendance, depreciation and repairs, and in a way may be regarded as insurance against careless design, bad workmanship, or too high rating.

A VERTICAL ENGINE,

Because it requires less floor space, and avoids the tendency of piston and valve to wear down and cause leakage, which is so frequently a source of trouble in horizontal engines. This also involves the proposition that a vertical piston valve, of fixed travel, properly fitted with rings, and working on a seat so designed that "shoulders" cannot be formed, can be made tight initially, and will remain tight, and is by far the most satisfactory and

Over 20,000 of our HUMIDIFIERS IN operation.

Highest award on the Recommendation of The FRANKLIN INSTITUTE for

"SIMPLICITY and ORIGINALITY of DESIGN"

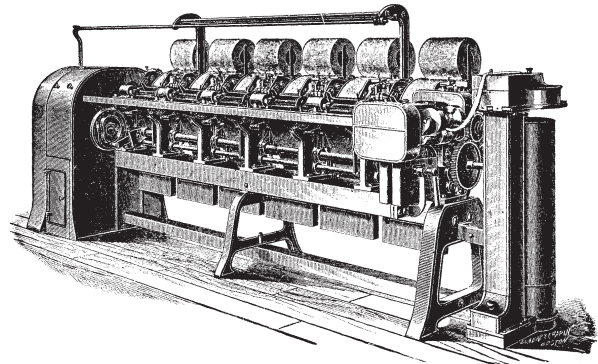
Legal proceedings will at once be taken against infringers and users of Infringements.

AMERICAN MOISTENING COMPANY.

William. Firth Pres.
150 Devonshire St.,

Frank. B. Comins Treas.
Boston, Mass.,

**MASON MACHINE WORKS,
TAUNTON MASS.**



Cards. Drawing Frames. Combers
Spinning Frames. Mules & Looms.

STEAM BOILERS

AND ALL KINDS OF

Steel and Iron Plate Work.

SCANNELL & WHOLEY, . . . LOWELL, MASS.

**FALL RIVER MACHINE CO.,
FALL RIVER, MASS.**

Builders of

RING SPINNING FRAMES

of the most improved patterns for

Cotton, Silk and Flax.

efficient valve, aside from a poppet or a Corliss valve, now in use.

A SINGLE-ACTING ENGINE.

This, if the engine is to be vertical, is enforced by the limited head room usually available. In some designs it is desirable, in that it makes all parts of the engine so easily accessible; but it is perhaps chiefly desirable since it makes it possible to prevent any reversal of stress on the pins and bearings, thus insuring an engine that will be noiseless, no matter how severe the service demanded, or how limited the opportunity for adjustment.

A CENTRAL VALVE ENGINE,

because it allows ample port opening with very low clearance; because it affords practically perfect drainage of the cylinder at all times, is simple, compact, accessible, and allows the lowest possible number of high-speed moving parts.

A COMPOUND ENGINE,

provided that the gain in economy shall justify the expense. Now, the assumed conditions indicate that the engine must be non-condensing, that the load will be variable, that the steam pressure will be low, and that for many months in the year the exhaust can be utilized in the heating system. All these factors are usually urged a

indicating the use of a simple engine. It should be noted, however, that the poor showing of non-condensing compound engines under variable load is due very largely to faulty steam distribution. This trouble is not inherent in the type, and can be avoided. At the usual pressures, 80 to 125, now classed as "low," the range in temperature is still very great, and should certainly be divided when possible. How far down the scales of pressures this may profitably be carried is indicated by the gain in economy secured in the so-called "Cornish cycle" by guarding the cylinder from the small drop in temperature corresponding to the difference between the terminal pressure and the back pressure. During the months when the exhaust can be used for heating, there will be long periods in spring and fall when the supply from a simple engine will exceed the demand, and it is an unfortunate fact that the periods of maximum demand for heat and maximum demand for power are usually at opposite ends of the day. In another design the cost of a compound engine will be only slightly greater than the cost of a simple engine, and, as compared with the usual design of simple automatic engine, should require from 30 to 50 per cent. less steam, with proportionate decrease in fuel required.

HALF WOOL RAGS.

Dyeing Them for Shoddy Manufacture.

As an introduction to the main part of my subject it may be as well to say something about shoddy yarn itself, as many people have erroneous ideas about it. Shoddy must not be confounded with mungo, which has not been previously worked up into garments. Shoddy is made from old garments and coverings of every kind, stockings, jackets, and what not, and the wool is mixed with from 30 to 40 per cent. of cotton. The finer kinds of shoddy are chiefly used for clothing with a cotton warp. The inferior kinds are employed for portieres, curtains, and similar articles.

The first thing to be done is to sort the rags into colors which can remain, such as blues, greens, browns, reds and blacks, and those which are parti-colored, faded, or for other reasons must be dyed again. The light-colored ones can, however, be dyed with dark shades if rags already of those colors are not at hand in the quantities required. All that can be used in the original colors should be carefully set aside, to save the expense of re-dyeing and the lessening of suitability for spinning. It goes without saying that the sorting of old rags, stockings, etc., although of the greatest importance to the shoddy manufacturer, is very often a most unpleasant and even dangerous task.

The sorted rags and old articles are now washed if necessary. The washing consists in soaking in a bath of ammonia or soda for about three-quarters of an hour at 145° F., and then wringing and rinsing. If soda is used, care must be taken to wring and rinse quickly and immediately the soaking is over, or the rags will be decidedly weakened. The water should contain 2 per cent. of ammonia. If it becomes necessary to re-dye dark stuff they must be discharged, and this can be done at the same time as the washing by doing the soaking at 190° F., and using 6 to 7 per cent. of ammonia instead of 2; 2 to 3 per cent. of soda can also be used.

The washed stuff is now sorted into loose and close pieces. The former can be dyed straight away, but the latter must be torn up to enable the dye to penetrate them.

Three distinct dyeing processes are employed—dyeing with substantive dyes in a single bath, dyeing with basic dyes in three baths (tannin, antimony, and dye), and dyeing with acid and basic colors in four baths, first in an acid bath for the wool then, after rinsing, three baths for the cotton, consisting of a tannin bath, followed by a malleic or tartaric, and the dyebath last of all. The second and third methods, although laborious, give the brightest colors, and also those least fast to washing. Hence they are only used for curtains, tablecloths, and similar articles, which do not have to undergo much washing. For clothing, the first and simplest method is generally adopted. Even those rags which have been passed by the sorters as of one color are not good for clothing, as the dyes are mostly very unfast to washing. Light colors are difficult to dye well on rags, as they are never quite white, and it is usually too expensive to bleach them.

The dyebath is made up of dye, 2 per cent. of borax and 50 per cent. of crystallized or 25 per cent. of calcined Glauber's salt. The borax is necessary to prevent the wool from taking up the dye too fast, and so producing want of uniformity. For the same reason too high a temperature should be avoided. It is best to enter at about 145° F., raise slowly to a few degrees below the boiling point, and keep there for 40 or 45 minutes until the cotton is dark enough and then to boil up gently to dye the wool. The principle of this method, which is very successful, is to allow the cotton plenty of time to get dyed before the bath is boiled up. Then the affinity of the wool insures its getting enough coloring matter. If in spite of all precautions the cotton is too light at the finish it can be shaded with many substantive dyes which have greater affinity for cotton than for wool, such as Diamine Fast Yellow A, Diamine Orange G and D, Diamine Brown V, Diamine Pure Blue, Diamine Violet, Oxydiamine Black S000 (Cassella), Mikado dyes, Direct Blue, Eboil Green, Toledo Blue V (Muhlheim), Columbia Blue G and R, Congo Fast Blue B and R, Zambesi Blue BX, Curcumine S, Columbia Brown and Green, Zambesi Blue G and Zambesi Black B (Berlin A. G.), Direct Yellow R, Chloramine Orange, Chloramine Yellow, Benzo Pure Blue, Diazo Black



PAN-AMERICAN EXPOSITION.
VIEW FROM SOUTH, SHOWING WATER GARDENS IN FOREGROUND, GRAPHIC ARTS BUILDING AT THE LEFT, TEMPLE OF MUSIC IN CENTER AND MACHINERY BUILDING BEYOND.

BHN, Benzo Chrome Brown B, Heliotrope, Pluto Black G, Direct Black V F (Bayer).

Heating must be suspended while the cotton is being shaded, to prevent the wool from snatching the color. If the wool has already got enough, borax or soda must always be added before shading the cotton. For shading the wool itself, if necessary, there are many dyes available, such as Indian Yellow G, Crocine Orange and Scarlet, Rhodamine B, Acid Green 3R, Sulpho-rzarine D, Sulphocyanine GR and 5R, Sulphon Brown R, Sulpho Black, Wool B or N, Alkali Violet LR, N. w. Victoria Blue B (Bayer), Tropaeoline, Indian Yellow, Orange ENZ, Crocine AZ, Alkali Blue, Alkali Violet, Lanacyl Blue, Naphthol Black (Cassella), Acid Blue SC, Orange A, Domingo Green and Black, Azo Red B (Muhlheim), Ponceau 3RB, Wool Blue 2B, Azo Acid Yellow, Mandarin, Guinea Violet and Green, and Wool Black (Berliner A. G.). Crocine Orange, Acid Green 3B, Orange ENZ Orange A, Azo Red, Mandarin and Guinea Green are the worst of this list, because they are not very fast to washing. They can, of course, be used for articles which will not have to be washed. The following is an account of the best dyes for producing the shades mentioned:

Canary Yellow on white or pale drab rags: Thi-zol Yellow (Bayer), Rhadinolin (Cassella), Alkali Yellow G (Dahl and Co.). Golden yellow on white or pale drab rags: Chrysophenine (Bayer, Muhlheim, Berlin), Diamine Gold Yellow mixed with Diamine Fast Yellow A (Cassella), Alkali Yellow R (Dahl).

Orange on white or pale drab rags: Diamine Orange B (Cassella), Toluylene Orange G, Pluto Orange G, Congo Orange R (Bayer), Chrysophenine and Benzopurpurine 4B (Bayer, Muhlheim, Berlin), Orange TA (Bayer), Alkali Yellow and Alkali Purpurine 4B (Dahl).

Scarlet on white, pale drab, or pale red rags: Benzopurpurine 4B and Chrysophenine (Cassella, Bayer), Alkali Purple Red 4B, and Alkali Yellow (Dahl).

Red on white, pale drab, or pale red rags: Diamine Scarlet (Cassella), Benzopurpurine 4B (Bayer, Muhlheim, Berlin), Alkali Purple Red 4B (Dahl).

Dark Red on pale drab, pale red, or faded dark drab rags: Hessian Purple N (Muhlheim, Bayer), Diamine Fast Red F (Cassella), Alkali Purple Red 4B, and Half Wool Bordeaux 271 (Dahl).

Bordeaux on pale red, pale drab, or faded dark drab rags: Congo Corinth G and B (Bayer, Muhlheim, Berlin), Diamine Bordeaux B and S (Cassella), Half Wool Bordeaux 271.

Dark Brown on dark drab or parti-colored rags: Benzo Chrome Brown and Pluto Black BS (Bayer), Diamine Brown M and Oxydiamine Black S000 (Cassella) Congo Orange, Pegu Brown, and Direct Black C (Muhlheim), Columbia Brown and Zam-

besi Black B (Berlin A. G.), Alkali Yellow Half Wool Bordeaux and Half Wool Black 279 (Dahl).

Gendarme Blue on pale blue, pale drab, or pale sate rags: Chicago Blue 6H, and Alkali Blue (Berlin), Direct Blue B, and Alkali Blue (Muhlheim), Brilliant Benzo Blue, Pure Blue, and Alkali Blue (Bayer), Diamine Pure Blue FF, and Alkali Blue (Cassella), Half Wool Blue B274, and Alkali Blue (Dahl), New Victoria Blue B (Bayer).

Violet on pale drab, pale blue or pale slate rags: Diamine Blue 3R, Diamine Pure Blue FF and Alkali on Formyl Violet (Cassella), Azo Blue, Diazo Black B and Alkali Violet LR (Bayer), Toledo Blue, Congo Corinth B and Alkaline Blue R (Muhlheim), Chicago Blue 4R and Guinea Violet 4B (Berlin A. G.), Half Wool Violet B and R273 (Dahl).

Dark blue on pale blue, dark blue, pale drab, pale red, pale or dark slate, or faded dark drab rags: Diamine Blue BX, Oxydiamine Black and Laneyl (Cassella), Diazo Black B, Pluto Black BS and Sulphocyanine (Bayer), Eboil Blue B, Toledo Blue V, Direct Black C and Acid Blue SC (Muhlheim), Columbia Blue, Zambesi Black B and Alkali Blue (Berlin), Half Wool Blue 273 and Half Wool Black 279.

Green on pale green, pale drab, faded dark drab, pale blue, or pale slate rags: Eboil Green and Direct Black C (Muhlheim), Diamine Green G (Cassella), Benzo Green, Benzo Dark Green (Cayer), Columbia Green (Berlin A. G.), Half Wool Green, 289 277 (Dahl).

Black on dark parti-colored rags: Pluto Black BS and Half Wool Black (Bayer), Half Wool Black G 279 (Dahl), Direct Black Eboil Blue and Green (Muhlheim) Zambesi Black, Columbia Black (Berlin A. G.), Oxydiamine Black S000. Every black needs a tinting with Alkali Blue or New Victoria Blue.

For deep blue, dark parti-colored rags can be dyed with a neutral blue or violet wool dye for the wool with the usual precautions above mentioned.

Black rags with white stitches in them are treated in a short lukewarm bath, to which are added 50 to 70 per cent. Glauber's salt, and a cotton-dye, such as Direct Black 21370 (Bayer). The bath can be used again, adding, however, each time, 1 per cent. of soda, as well as the necessary dye and Glauber's salt. The soda is to neutralize acid left in the bath by the preceding batches of rags.

SHEEP AND GOAT SKINS.

The Different Kinds Bred in Spain.

By CONSUL-GENERAL J. G. LAY.

There are several kinds of sheep bred in Spain, but the most valuable, on account of the excellent quality of the skins, are those found in the provinces of Murcia and Catalonia and in the district known as La

Mancha, in New Castille; also those in the province of Extremadura, which, however, are esteemed more for their fine wool than for the pelt. It is a notable fact that the finer the wool the poorer the skin for tanning purposes.

It is in Extremadura that the celebrated Merino sheep are bred. Merino wool was at one time considered the finest obtainable in Europe, but, like many other natural sources of wealth in Spain, sheep farming has suffered from lack of enterprise and energy. Spanish sheep are white, excepting those of La Mancha, which are black.

Sheep are there classified under the heads of lambs and sheep or ewes. Until the animal is one year old, it is sold as a lamb. The skin of the lamb is used for making gloves and is classified as "firsts" and "seconds," according to the fineness of the grain and the number of defects in the skin. The skin of the Extremadura sheep is unsuitable for gloves and can only be used for inferior articles.

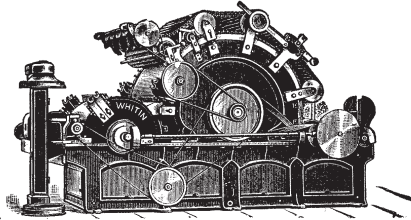
In Millau and St. Julien, in France, in England, and also in parts of Germany, there are large tanneries devoted to the preparation of the skins imported from Murcia, Catalonia and La Mancha. These tanneries, either directly or through commission firms, send a large proportion of their output to the United States, which is an important market for glove skins.

When the animal is more fully grown, its skin can no longer be used for making gloves, and it is then applied to the manufacture of fancy goods, bookbinding, etc. Sheepskins are prepared in two ways: when tanned with sumac they are used for making cigar cases, pocketbooks, purses, etc.; but when required for leggings, aprons used by agricultural laborers, harness, or anything that must be subjected to wear and tear, the skins are oak-tanned. The former—i. e., those prepared with sumac—are extensively exported from Spain to Germany, whereas the latter find, or used to find, a good market in Cuba, Porto Rico and the Philippines.

The manner in which the skin is removed from the carcass is as follows: A small hole is made in one of the hind legs of the animal: a strong pair of bellows is then inserted into this little aperture and the air is blown in until the carcass is well swollen. The belly is then slit open from end to end and the skin carefully removed, if necessary with the help of a knife. The skins are collected by men who devote themselves exclusively to this work. After being exposed to the sun until a slight crust is formed on the flesh side, they are stretched on ropes in the shade until completely dried, and are then ready for export.

These are produced in large quantities in the vicinity of Badajoz and generally in all the south of Spain. The skin of the very young kid is used only for ladies' fine gloves and is prepared principally at Anno-

THE WHITIN MACHINE WORKS,
 WHITINSVILLE MASS.
 BUILDERS OF
COTTON MACHINERY

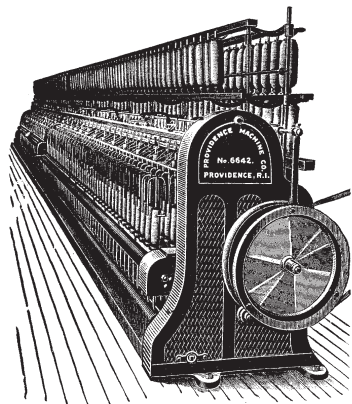


**Cards, Railway Heads, Drawing Frames,
 Spinning Frames, Spoolers, Wet and
 Dry Twisters, Reels, Long Chain
 Quilling Machines, and Looms.**

Southern Office, 38 South Tryon St., Charlotte, N. C., S. W. Cramer, Agent.

Providence Machine Co.,

MANUFACTURERS OF



**Improved Cotton
 Roving Frames**
 For Long or Short Staple.

**Improved Worsted
 Roving Frames**
 For Fine Yarns; also for Carpet Yarns
 564 Eddy Street,
 PROVIDENCE, R. I.

There are lots of good things

— manufactured in —

WOONSOCKET

— Come and examine. —

WOONSOCKET MACHINE & PRESS CO

Woonsocket, R. I.

Stuart W. Cramer, Charlotte, N. C., Southern Agent.

may and Grenoble, in France. These skins also find a market in the United States in a prepared state; but with this sole exception the entire supply of Spanish kid and goat skins is exported in the raw state to the United States for tanning into fine shoe leather, etc. This trade appears to be in the hands of French commission merchants, and I see no reason why our importers should not have their own buying agents in this country and secure their supplies at a much lower price. I shall be glad to give any firm the names of reliable agents who

would execute their buying orders in the same way as is now done for the French middlemen.

The business is done here by direct contracts with the butchers, and also with sundry "collectors." These go around regularly to all the villages and bring the skins to the dealers in the towns. In order to preserve the skins from damage by moths in summer dealers use naphthalene, which they sprinkle over them while they are being stacked. For export the skins are baled in small presses.

GARLAND'S MOISTENER.

The natural condition of the water which supplies this System is of no consequence whatever, for all water which is used is filtered through a Loomis-Manning filter, so that the System in all cases is supplied with water which is absolutely pure. There is no waste water, as only the water which is absorbed by the air of the rooms is used.

For cost, references, etc., address

GARLAND AIR MOISTENER CO.,

BIDDEFORD, MAINE.

ESTABLISHED 41 YEARS.

O. S. ARNOLD

MANUFACTURES EVERY VARIETY OF

BOBBINS, SPOOLS AND SKEWERS,

USED IN COTTON WOOLEN AND LINEN MILLS.

PROMPT AND SATISFACTORY SERVICE GUARANTEED.

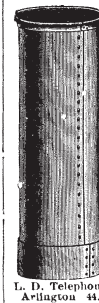
KILLINGLY, CONN.

**Victor Turbine
 Water Wheel.**

GUARANTEED to give highest efficiency at full and **PARTIAL GATE.** Being the largest manufacturers of Water Wheels in the world, we are enabled to employ the **Best Engineering Talent**, and manufacturers dealing with us are sure of getting only high grade, satisfactory work, and at **Moderate Prices.** New Water Wheel Catalogue, new and complete Gear List furnished on application.

STILWELL-BIERCE & SMITH-VALE CO.

280 Lehman Street,
 DAYTON, OHIO.



Laminar Fibre Co.,

MANUFACTURER OF

ROVING CANS,

BOXES, TRUCKS,

Insulating Material, Sheets

Tubes and Manufactured Articles.

Sole Manufacturers of

THE SULLIVAN SEAMLESS

MANILA FIBRE ROVING CAN

Office and Factory, Tannery St.

North Cambridge, Mass.

L. D. Telephone
 Arlington 44.

AMERICAN SUPPLY COMPANY

MANUFACTURERS OF

Loom Harness and Reeds,

OAK TANNED LEATHER BELTING,

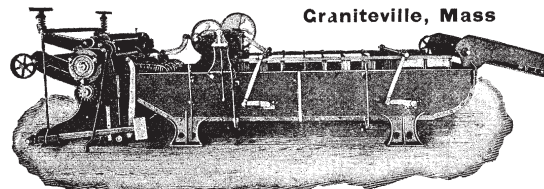
AND DEALERS IN ALL KINDS OF

Cotton and Woolen Mill Supplies.

Office and Salesroom, 11 and 13 EDDY STREET, PROVIDENCE, R. I.

C. G. Sargent's Sons.

Graniteville, Mass.



WOOL WASHERS, DRYERS & CARBONIZERS.

The

PERFECTION EYE-TESTER.

AN INSTRUMENT FOR TESTING EYES FOR GLASSES.

Have YOUR Eyes Tested On t.

MANUFACTURED BY THE

MECHANICAL SPECIALTIES MANUFACTURING Co..

128 PURCHASE STREET, BOSTON.

BOSTON JOURNAL OF COMMERCE AND TEXTILE INDUSTRIES.

SATURDAY, DEC. 8, 1900.

Published every Saturday by The BOSTON JOURNAL OF COMMERCE PUBLISHING COMPANY, BOSTON, MASS.

Terms—Three dollars a year in advance in the United States and Canada; postage prepaid. Four dollars a year in countries governed by the International postal laws.

Subscriptions to the United States and Canada can be sent for any number of months at 25 cents a month.

Advertising rates sent on application.

All communications should be sent to The BOSTON JOURNAL OF COMMERCE, AND TEXTILE INDUSTRIES, BOSTON MASS.

W. I. HOLMES, Treasurer.

[ENTERED AS SECOND-CLASS MATTER.]

Subscribers who fail to receive their copies of the BOSTON JOURNAL OF COMMERCE and TEXTILE INDUSTRIES are requested to notify us, and duplicate copies will be promptly forwarded.

CONTENTS.

	Pages
Northern Industrial News.....	207
Steam and Electrical Engineering.....	208
Gas Engines.	
The Gas Engine.	
An American Central Valve Engine.	
Wool Markets.....	210
Boston Philadelphia New York.	
Personals.....	211
If It Wool Rags.....	212
Sheep and Goat Skins.....	212
Editorial.....	214
Better Cotton.	
Mistaken Ideas.	
Textile Designing.	
Mixing Cotton.	
Foreign Yarn and Cloth Markets.....	215
Cotton Seeds.....	215
Financial.....	215
Cotton Obats.....	216
Cotton.	
Weaving Cotton.	
Differential Motion Cones.	
Cotton Manufacturing in China.	
Woolen Obats.....	218
Fishing of Wooleens.	
Weaving Carpets.	
Woolen Piece Goods.	
Woolen Goods.	
Southern Industrial News.....	218
Dyeing and Bleaching.....	220
An Indian Dyer.	
Papers Read at A. M. S. E. Meeting.	
Dyes and Chemicals.....	220
Insurance.....	221
Boiler Insurance.	
New England Exchange Raises Rates.	
Woolen and Worsted Yarn.....	222
Woolen and Worsted Rags.....	222
Cotton Yarns and Warps.....	222
Market Reports. Miscellaneous.....	222
Alcohol Cotton Waste, Hemp and Jute.	
Starch. Tallow. Paper Stock	
Cotton.....	222
Eveners.....	224
United States Textile Patents.....	224

Better Cotton.

With the increased demand for cotton goods of a finer grade and the southern mills paying more and more attention to them, we find the mills looking for finer grades of cotton from which to manufacture the cloth. Today the mill that desires to make the finest lines of cotton goods are forced to buy Sea Island or Egyptian cottons. We have not got a single truly American cotton that can be used to spin good yarns above 80's. Sea Island cotton can be used for yarns as fine as 400's, and Egyptian can easily be spun to 180's; but when we come to the best grade of what is classed as true American cotton, it is hard for the spinner to go over 75's to 80's.

Many efforts have been made to grow a finer grade of cotton. A man in Texas undertook to find some Egyptian cotton in that State. We had the pleasure of examining samples of it, and although it was but the first year's growth, it was a simple matter to detect that its grade was not up to that of the cotton as grown in Egypt. It seems to be impossible for a planter to

keep the standard of a foreign cotton up to that set by it at home. Many efforts have been made in this country to get a cotton with a longer and better staple than that now possessed by our "Upland" cotton; but up to the present time these efforts have not met with much success.

The United States Department is now engaged in a series of experiments with a view to producing a specie of hybrid cotton that will have a staple of a finer quality and greater length. The experiments are being carried on at Charleston, S. C. The object of the tests is to produce a cotton that will have a staple as long and firm as Sea Island and one that can be grown in the cotton belt. Tests are also being made with all varieties of Egyptian cotton. The department is very reticent in regard to the success of its experiments, but it is rumored, with how much truth we cannot say, that the tests are meeting with fair success and should they be as successful as is hoped will be the case, our Southern planters will be able to produce a cotton that will have a staple the equal of any now being grown in Egypt or any foreign country.

From what we have been able to learn, we ascertain that the new variety of hybrid cotton will not only have a longer and finer grade staple than our upland cotton, but that it will also possess several other advantages over our present staple. It is reported that these plants possess much more vigor than do the present ones. That the bolls have much more cotton in them, and that these bolls are much easier to pick. All of these advantages, if correct, should make the cotton the superior of the present Egyptian varieties.

At the present time the majority of our mills have to content themselves with a pretty poor quality of cloth. Some of it is not more than inch staple, and the spinning of it has become quite an art. It has often been claimed that the most successful mill was the one that could use the poorest grade of cotton for a fine grade of cloth. While there is much truth in it, it cannot be said that such is always the case. There are quite a number of mills in this country that use Egyptian cotton almost entirely. If these mills could only buy an American cotton the equal of that they are using, they would be able to make a much more profitable showing than is the case today.

As time goes on the tendency toward finer lines grows more and more pronounced. The south is paying more attention to it, as well as the north. With our high-priced labor, the mills of this country cannot afford to pay so much attention to the manufacture of cheap lines. They must leave them to the countries where the labor is cheap. There is much more profit for them in the manufacture of finer grades, and while we would not have them abandon the manufacture of the lower grades, we would urge upon them the manufacturing of finer grades in larger amounts; and if the experiments now being conducted by the Department of Agriculture are as successful as is now hoped will be the case, they will be able to obtain a high grade of cotton at their very doors for use in the manufacture of such goods.

Mistaken Ideas.

The question of "Trusts" and the evil which accompanies them has long been before the public, and there was but one topic, Free Silver, that received as much attention during the late political campaign as did this one. The followers of Bryan did all in their power to make this one of the leading issues of the day, and while the Republican party regarded it as a minor issue, President McKinley in his letter of acceptance showed that he was very much opposed to all Trusts that affected the best interests of the laboring classes.

In its issue of November 26th the Atlanta Constitution publishes a "special" from Columbus, Ga., which shows a pitiful state of affairs in that city. According to this article the batting and wadding trust has forced the wadding mill, which had been planned for that city and was already partially

built, to sell out to it, and has in this way taken from the city an industry that "would have given employment to a considerable number of operatives, and would have been the means of turning loose several hundred dollars weekly into the channels of trade."

It certainly is to be regretted that the projected wadding mill was not completed and that its operation has been prevented by the so-called "batting and wadding trust;" but we certainly cannot agree with our Southern contemporary in its views either as regards the trust or the result. We do not doubt but that the trust approached the organizers of this mill and that, through coercion and money, persuaded them to give up their projected mill. We know of several instances of a similar character, and we can go still further and say that we know of capitalists who have organized companies and started the building of factories for the very purpose of selling out to a "trust."

In such a case as the one cited here with the trust is not the one to criticize. It is but natural that the trust should take every means in its power to protect its business, and no one can fairly blame it for securing the cessation of this new project. The ones, in our opinion, who are the most to blame are those who, having undertaken the project, abandoned it through coercion and financial inducements. So far as we can ascertain the trust was the one to suffer the loss in this deal. It had to pay the organizers for their labor and in return for this financial outlay received nothing.

It is not our intention to defend the Trusts. There is nothing farther from our thought. We believe that trusts and combinations which have for their object the control of their trade are bad and should be destroyed; but we do not look upon them as does our Southern contemporary. The formation of Trusts is but the natural outgrowth of our financial and economical conditions, and their downfall will be brought about, not by political methods and party opposition, but by natural causes. Although the general public has not paid much attention to them in the past, they have existed for many years. The past two years have witnessed many new ones, and it is the rapidity with which they have multiplied during that time that has attracted the public's attention.

The general public has it in its power to destroy the trusts, and it remains for it to exercise that power. We knew of several cases where the public has used that power, and if more would only use it, it would be a matter of but a short time before the Great Question would be a matter of the past. We know of a manufacturing concern which was on the verge of financial ruin when several of its competitors combined, forming a trust, and ever since that day the company has done a handsome business. Had it not been for the combination this company could not have lasted another year. We also know of a cotton duck mill that has made larger profits since the formation of the cotton duck trust than was the case before. We know of trusts that have lost customers which they had before they combined, these customers now buying of outside houses.

If the buying public should purchase its goods from single concerns, it would soon settle the trust question. So long as they receive the public's patronage it will be impossible to prevent their operations; unless the public encourage "outside" houses. Our Southern friend is taking the wrong view of the matter. The promoters and builders of the wadding mill at Columbus were well paid for their trouble, and that, too, at the expense of the trust. Now let some other capitalists take up the projecting of a mill at that place. If they do we can assure them that they will either get well paid for their trouble by the trust, or that they will be able to operate their mill with profit to themselves as well as the operatives of that locality.

Textile Designing.

The past few years have witnessed a great

advancement in the education of the people of this country in the matter of art in the home and dress, as well as in one's general surroundings. The exhibitions of arts, crafts, etc., that are held annually in our larger cities, the lectures on artistic designs and decorations, the magazines and periodicals, the schools and clubs, have all done much toward advancing the development of artistic beauty.

§ The people have now been educated up to such a state that they are better able to realize the difference between the good and the bad in all kinds of works. There never was a time in the history of the country when the general buying public paid as much attention to the true artistic merit of an article, which they are about to purchase, as is the case today. Heretofore they have been governed by the styles and fads, and while, even now, they are to some extent governed by them, they are paying much more attention to the artistic merit and the time, when they will be wholly governed by it, is not far distant.

What has been the result of this change? Nothing more nor less than the demand for foreign-made goods. This advancement in the purchasing of goods of higher artistic merit has forced purchasers to seek the goods of other countries. It is to be regretted that the artistic advancement on the part of our textile manufacturers has not kept pace with that of the buying public. There has been a good advance in the manufacturing line; but it is far behind that of the buying public, and until it reaches it, our best purchasers will be compelled to purchase foreign-made goods.

We do not mean to say that our textile manufacturers do not produce any goods of true artistic merit. Such is not the case. There are some very handsome textiles manufactured in this country; but, alas, they are much in the minority. Some of the goods turned out in this country have been, from an artistic point of view, almost disgraceful. There is, no doubt, a great call for "fad" goods which are entirely lacking in artistic merit; but there are many thousands of dollars spent for foreign goods a year on account of their artistic qualities which might be spent for American-made goods if our manufacturers would only make such.

Manufacturers would not find it a very difficult task to produce cloths with designs of great artistic merit. What they most need to strive for are harmony and simplicity. They could do no better than study Nature and take her as an example. There they will find all the fundamental and underlying principles of good designs. Textile designers who copy nature truly will never make mistakes in harmony and arrangement of color, as she never does. Nature's natural forms furnish the best material for the basis of units of all designs. A designer who takes the material that nature furnishes, and uses it in goods that it will be appropriate to, cannot fail to produce a design that will have much artistic merit. Natural forms cannot be represented in their natural state in any kind of goods; but must be used simply as a basis of material, and must always be conventionalized.

A thing that the designer too often neglects to consider is the appropriateness of a design to a line of goods. Oftentimes he seems to think that any design can be made to fit any class of goods; but such is not the case. A design that would be appropriate for a dainty silk or muslin dress goods will not be suitable for a heavy woolen dress goods. For the first class, dainty simple conventionalized flower forms are very nice; but they would be entirely out of place on the latter goods. Designs for wall coverings should be very different from those for floor coverings, and yet we have seen designs for portiers that were no more fitted for such goods than for a muslin dress. It is so with every class of goods. The material and purpose of each should be considered first of all, and then the nature of the design, arrangement and coloring.

This matter is one of more importance than one would think was the case at first glance. Manufacturers should give it more

attention than they do today. By so doing they can catch a valuable high-priced trade which is now buying foreign made goods.

Mixing Cotton.

There is probably no part of the operating of a Southern cotton mill that is at one and the same time so conducive of economical results and receives so little attention as does that of the proper preparation of cotton for use.

Before a bale of cotton is used it should be opened several days. It should be spread out on the floor and allowed to become dry and exposed to the air.

Another process that is too often neglected, and one that is as important and almost a part of the former, is the mixing of the staple. Many southern mills entirely discard such a process.

If our cotton mills are successfully to compete with those of the world, they must employ every possible means of minimizing their running expenses and increasing the quality of their production.

than are now being obtained in many of our cotton mills as they are being run today.

FOREIGN YARN AND CLOTH MARKET.

MANCHESTER, Nov. 27.—Market conditions here continue to improve. There is an increase of inquiry and some actual business is noticeable in several sections.

The hardening in cotton brought out orders, but buyers have been holding back while makers are more independent.

Although inquiries were numerous, comparatively few offers were acceptable to the producers. Prices were irregular.

Orders for India were placed wherever manufacturers would accept low prices, but the orders wired were usually too low.

COTTON SEED.

An Effort Being Made to Compel Gulf Road to Adopt New Mileage Rate.

The Attorney General of Mississippi has filed a mandamus in chancery to compel the Gulf and Ship Island road to adopt the new mileage tariff on cotton seed promulgated by the Railroad Commission.

The Attorney General is understood to have arranged a plea that the State court has no jurisdiction, as a Federal question is involved.

A meeting for the examination of the affairs of William Browne & Sons and Phoenix mills will be held at the office of Richard S. Hunter, referee in bankruptcy, 308 Chestnut street, Philadelphia, on Tuesday, December 11, 1900, at 3 o'clock P. M.

A Prosperous Philadelphia Concern. J. E. Rhoads & Sons, manufacturers of leather belting and belt preservers, and extensive dealers in all kinds of rubber goods, report that they are having a handsome business.

FINANCIAL.

The Boston money market is in a very mixed condition. The tone, the last few days, has been much firmer, though the market is very unsettled.

connection. There are outstanding loans at 3 per cent., but new money is mostly quoted at 4@4 1/2 per cent.

In New York money on call ranges from 4 to 5 per cent. Time money is not quite so plentiful as it has been of late, although rates are unchanged.

DIVIDENDS.

The following mill dividends are announced:

Amory Manufacturing Company, Manchester, N. H., 3 per cent., semi-annual. Appleton Company, Lowell, 6 per cent., semi-annual.

Table with columns: Increase, Decrease, and various financial figures.

U. S. GOVERNMENT BONDS.

Table with columns: Bid, Asked, and various bond details.

STOCKS OF NEW ENGLAND ROADS.

Table listing various stocks and their prices.

FALL RIVER MILL STOCKS.

Reported by G.M. Haffaris & Co., Bankers and Brokers 64 Bedford street, Fall River.

Table listing various mill stocks and their prices.

NEW BEDFORD MILL STOCKS.

Table listing various mill stocks and their prices.

NEW ENGLAND MILL STOCKS.

Table listing various mill stocks and their prices.

SOUTHERN MILL STOCKS.

Table listing various mill stocks and their prices.

CANADIAN MILLS.

Table listing various Canadian mill stocks and their prices.

CORDAGE.

MANILA-SISAL-JUTE.



TRANSMISSION ROPE MAKERS.

Send for "A LITTLE BLUE BOOK ON ROPE TRANSMISSION."

WOOLEN CHATS.

Contributions for this department are solicited from practical men, on wool, its use in manufacturing; on woolen machinery, its use and improvement; on the management of help in and pertaining to mills, or any observation or experience that will benefit the woolen manufacturer or the help employed in the production of woolen goods.

FINISHING OF WOOLENS.

Selection of Stock, Construction of the Fabric, Etc.—Their Influence.

The selection and manipulation of the stock, as well as the construction of the fabric in the loom, has very much to do with the finish of the goods, and the designer who is familiar with the finishing, as well as other departments of the work, and especially who has a correct knowledge of cause and effect as demonstrated between the construction and finish of the fabric, is far better equipped for the work than he otherwise would be.

It is a lamentable fact that a failure to secure a good finish, and a consequent disappointment to the manufacturer, is sometimes the result of ignorance in this particular, and not infrequently the finisher is held responsible for results, the cause of which is in the work done before the cloth comes to his hands.

There is a laudable, though misdirected, ambition among some of the young weavers of today who, having become familiar with and possibly expert in their line of work, become possessed with the idea that a course at the textile school will fully equip them for the position of designer or superintendent.

We would not discourage this ambition, nor underestimate the worth of the instruction given in the school; and it is an encouraging sign, that the schools do not confine themselves wholly to weaving; yet there is much to learn, coming through practical experience on a variety of work in the mill, which it is nearly impossible for the school to impart. We would not, as already stated, undervalue the instruction obtained at the textile school; but we believe that he who has first schooled himself by some experience in the different departments of the mill, and especially in the finishing room, will be by far the best equipped for the business.

The selection and combination of stock adapted for the goods to be made is a matter of much importance. Heavy felted goods for steam finish, cassimeres, chevots, and serges, as well as other kinds of goods, require stock specially adapted for each, and what would be the best for one kind would be entirely out of place for the other.

Then when it comes to the use of shoddy, great care should be exercised, both as to quantity and quality. A little change or variation in the shoddy used is liable to make a decided change in the finish of the goods on account of the variation in the fulling capacity of the stock.

Owing to the oily state of the shoddy, one is more liable to be deceived regarding its quality. In fact, it is a "trick" of some shoddy men to add extra oil to stock that is especially dry and brash, and devoid of fulling quality, in order that it may feel soft and agreeable.

Whatever the wool that is used may be, it, of course, possesses its original quality as to its felting capacity. But there is always a chance for a question as to stock that has been once used.

If the shoddy should be inferior in this respect, there is a danger of its ceasing to full before the goods are ready to come from the fulling mills, and the result will be a constant chafing and loss of stock, and a consequent inferior felt upon the goods.

It would be impossible to begin to give definite instructions upon all these points, but we bring them up as being of great importance and likely to have their effect upon the finished fabric in a degree that calls for special care.

While upon the subject of the use of shoddy, or, in fact, of any low stock used as a matter of economy, we wish to speak of the too common practice of using a better grade of cloth in samples than is subsequently used in the goods. We call to mind one case in particular, where the manufacturer sought to cheapen his goods after the samples had been shown and orders taken.

Of course the buyer, having reference samples, could very readily discover the

trick; and, in fact, had there been no reference samples, the change in the goods was so marked that it would have been discovered. No manufacturer can afford to practice this method. If the goods are to be low grade, show the samples to represent them; keep them up to standard, and, above all, don't expect the finisher to rectify errors or overcome the effects of unwise variations made in the stock used.

Another matter of equal importance, and coming more especially under the supervision of the designer, is the construction of the cloth in the loom. This is, in fact, the designer's business. While the selection and mixing of the stock may fall to another, if a designer is employed it is he who does the preliminary work of laying out and directing in the construction of the fabric. The size of the yarn to be used, the number of ends and the width to be laid in the loom, are largely dependent upon the weave, whether plain, twill, close or open.

The designer is supposed to know the number of ends that will go within a given width and the number of picks, etc., to produce a desired fabric. But the weaving is not all, and it is quite possible for the warp to be laid so that it will weave fairly well, and yet not be adapted for the best results in finishing. If there should be an insufficient number of ends in the warp, then the goods will full too quickly, and come out sleazy and soft. On the other hand, too many ends tends to the necessity of over-fulling, and the goods will be stiff and boardy and likely to mill marks lengthwise of the cloth. And if this defect is very marked, the goods will sometimes cease to full, and chafe, and become tender in the milling, for which the finisher is powerless to apply a remedy.

The writer calls to mind an instance where the layout in the loom was not correct, there being too much warp for the weave, and the result was that the cloth had received all the fulling possible, when it was yet four inches too wide. The stock being of extra fine quality, the continued tendency for the filling to shrink after the warp threads had been brought as closely together as their size and the weave would permit, caused it to full itself tender. This was an extreme case, and showed a great lack of good judgment in the planning of the work. But from this to the opposite extreme there are many chances to err, and cause a corresponding unfavorable effect upon the finishing and the final excellence of the fabric. Another thing that often causes trouble in the finishing room, and in many cases perplexes both the finisher and his employer, is the frequent change made in the oil used upon the stock in the preparatory process of plicking.

It is sometimes the case that the manufacturer does not fully realize the importance of uniformity. This is a matter of which, above all others it may be said, it is best to "let well enough alone," especially if you have a fairly good article at a fair price. There are wool oils and wool oils, and the tendency of some manufacturers to be constantly trying to find something better or cheaper is always met by the persistent "oil man." But the manufacturer never realizes its cost, or knows the hours of anxiety the finisher spends in trying to solve the problem, as he contends with difficulties which he cannot understand, but would be made clear to him if he could be informed that he is contending with the results of half a dozen kinds of oil that is coming through the works.

When the finisher gets his soap and method of scouring on a safe basis, to contend with one kind of oil, and a cheaper kind is introduced without his knowledge, it is not at all surprising if he is puzzled to know why there is trouble, and with probably the two kinds coming along at the same time, it renders it doubly perplexing to understand why some pieces are right and others wrong. A good, reliable oil that works well all around should not be put aside for something "just as good" to save a cent, unless there is some probability that it will be better in the end; and then it will be well for the finisher to know of the change, and if he finds a variation in his results on account of it, he can the more readily and intelligently adapt his work to the new order of things.

The finisher has to meet and contend with the results of all the mistakes made in subsequent work upon the goods, and the designer and superintendent, who has a

fairly familiar knowledge of finishing, may find it helpful to the general interest of the mill in many ways.

"F. O."

WEAVING CARPETS.

Those of the Savonnerie Class.

The weaving of carpets differs entirely from that of tapestry, the tissue produced by the artists of the Savonnerie being a pile, the warp of which is wool and the warp of very strong hempen threads. The looms are the same as for tapestry, although of larger dimensions—one has just been put up that is 12 m. (nearly 40 feet) long—and the artist, placed in front of his loom, works on the right (face) side of the work having the copy (modèle) above him, while the wool employed general consists of five threads, having different tones, but equal value, that harmonizes.

For making the stitch the weaver, having chosen his spool, takes with the fingers of his left hand the weft thread on which he has to commence, and draws it slightly towards him, while passing behind it the spool with wool thread which he holds in the right hand, and he then draws towards him, by means of the lisse or string in the form of a ring, the next weft thread, placed a little behind the first, surrounding the latter with a slip knot, which he draws tight. Between these two passes the warp forms in front of the weft a ring, the amplitude of which depends upon the height of the pile, and a round iron rod, terminating in a blade, inserted in this ring, occupies a horizontal position, and becomes charged in succession with a series of woollen rings formed by repeating the stitch, each knot being pressed down and tightened upon the tissue with the thumb and forefinger.

The act of withdrawing the tranche-à-fl, as it is called, from left to right cuts the wool rings, and when a row of stitches is thus made for a certain length, they are joined together by two very strong hempen threads, passed between the two sheets (appes) of the weft and superposed at the points. This would not suffice, however, to form a strong fabric, but it is necessary to tie together the threads of the weft with another hempen thread forming the warp. For placing it in the tissue the weaver brings the hind threads forward, passes the warp between the two rows of threads, presses it down with the comb, and then allows the hind threads to return to their position, taking care to allow this warp sufficient slack to permit it following all the inflections of the weft threads. In this manner the stitches are fixed, as it were, when the weaver presses down with the comb the stitches and the hempen threads, which latter enter into the fabric, becoming quite hidden therein.

The ends of the wool thread are then picked apart by means of the needle (aiguille) in order that the contours may be well defined, after which the ends of the wool threads, previously cut by the tranche-à-fl, are sheared, and then, by means of scissors, with curved—or rather cranked—handles guided by a small board, the artist again shears the pile with great regularity, when he is able to judge of the effect produced by his work. In the kind of mosaic thus formed, of which the colored particles are the ends of infinitely small wool threads, the material is seen in section, instead of lengthwise, as in tapestry, and as the wool threads are perpendicular to the weft, they are flexible, a disadvantage inseparable from velvet pile, which should be borne in mind when choosing subjects for reproduction, because the least pressure may put the lines out of form.

WOOLEN PIECE GOODS.

Two-Color Effects on Them.

It was formerly only possible to produce parti-colored effects on goods of pure wool by weaving together yarns previously dyed of different colors. Even now this is by far the principal method. So much trouble, however, is involved in it that unceasing attempts have been made to find a simpler way, and they have, at least with some much-used articles, met with success. The various proposals patented during the last ten years all depend on the same principle, viz., to mix mordanted with unmordanted wool, and then to dye the finished fabric in one bath with such dyes as will leave the

raw wool either white or of a different color from the mordanted material. The same principle can be applied to cotton. Instead of mordanting the wool its affinity for dyes can be increased by chlorinating or by mercerization, so that diamine colors or acid dyes can be used as well as adjective colors. It is, however, very difficult to regulate the action on the wool, so that it is very hard to secure uniformity. The time or exposure to the lye or chlorine, and the concentration and temperature of the bath are factors of great importance. Where two lots of wool treated in different chlorine or lye baths meet, there is often a change in color where there should not be, and the goods are hence made unsealable. The chemical action of the soda lye is also to be feared. Very strong lye acting for a certain time strengthens the wool, it is true, but weak lye weakens it greatly or dissolves it altogether. The washing, after the action of the lye, requires great care and must be very rapid and thorough. The use of glycerine diminishes these dangers, but appreciably heightens the cost of production. It is also to be noted that these difficulties do not occur in the use of mordants of chrome, iron, copper, or alumina, which allows uniform dyeing, although they present other difficulties of their own.

A patent has been taken out by Felix Meyer of Aix for preparing the wool beforehand in the loose state, instead of, as heretofore, in the yarn, and the so-called Universal yarns are produced in this way. They are either mixtures of mordanted and unmordanted single fibres, or of mordanted and unmordanted yarns. The latter are used for mixed fabrics, and the former for jaspe and mouline fabrics. The chief advantage attending the use of these Universal yarns is that the weaver is not obliged to keep a stock of colored yarns, so that he loses nothing by his stock lying idle or becoming out of date. The spinner, too, need only keep mordanted and unmordanted wool. The finished fabric can be dyed at any time.

The new yarns will not permit of every effect, but of a large number of the most current patterns, and their introduction is, certainly, an important step in advance.

WOOLEN GOODS.

Sulphuring Them in the Wet Way.

To get a fine white wool, the raw material must be selected already nearly white, and free from specks. The processes which it undergoes need careful supervision, especially the milling. There are three processes in use: 1st, bleaching with sulphurous acid and permanganate; 2nd, bleaching with sulphurous acid alone; 3rd, bleaching with peroxide of hydrogen. Electric bleaching is not used for animal fibres. The writer gets the best results with the first of the above processes.

The vessels used must be entirely of wood, without any metal, and no wood can be used that contains tannin. American pine is very good. For 40 kg. of goods two chests are required, each 4 ft. square and 40 inches deep. One has a well-fitting cover, and is used only for bleaching. For 40 kg. of goods take 400 grammes of permanganate of potash, dissolve in 3 to 5 litres of warm water, and put into the coverless chest through a very fine hair sieve. The goods are then worked in the solution for half an hour, after first soaking them in water. They are then of a light brick red color, and are hung up and well drained. They are then worked with sulphurous acid solution in the other chest, and become white like magic. When this has happened, all air bubbles are pressed out, so that the wool will lie wholly immersed. The cover is put on, and the chest is left for 12 to 18 hours. The goods are then worked again for a few minutes, taken out and drained.

If a bluish or a reddish tint is to be visible the goods are now taken to a washing machine, which is only used for white goods, and treated with 1-4 to 1-2 a gramme of neutral Aniline Blue, or Methyl Violet 6B. When the color is right, wring and dry at the lowest possible temperature, for high temperatures spoil the lustre and clearness of the white very decidedly. If the goods are to be pure white they have a bath of chalk and water after coming from the bleaching chest, and are then toned with blue or violet. The baths in the two chests can be reinforced and used again.

SOUTHERN INDUSTRIAL NEWS.

"Nothing is either great or small except by comparison"

This accounts for the greatness of the

OPENERS and LAPPERS

built by

The A. T. Atherton Machine Company,

PAWTUCKET, R. I.

NORTH CAROLINA.

G. G. Walker of New York, intends to establish a silk mill at Greensboro.

Seven thousand new mule spindles are being installed in the Raleigh hosiery mill, Raleigh.

The Wake Forest cotton mill, Wake Forest, is going up rapidly, and will soon be ready for the machinery.

Work on the new Neuse River cotton mills, Raleigh, is progressing rapidly, and the mills will soon be ready for occupancy.

The Putnam Textile Company, Roanoke Rapids, has been incorporated, and will at once commence the erection of a two-story building 320x106 feet, to be installed with the most improved machinery for manufacturing damask. Gustavus Millhiser, of Richmond, Va., and S. L. Patterson, of Roanoke Rapids, are at the head of the concern. The location has been secured and the contracts for necessary buildings have been awarded. This plant will be operated by water power, and, when in full operation, will employ about 350 hands.

SOUTH CAROLINA.

The DeKalb Cotton Mill, Camden, is going up rapidly and will soon be completed.

At the recent annual meeting of the Spartan cotton mills, Spartanburg, all the officers were re-elected for the ensuing year. A semi-annual dividend of 5 per cent. was declared. The mill has had a very prosperous season, and has been running all the time. The treasurer's report was very satisfactory.

The Tucapau Mills addition, Tucapau, is nearly completed, and the 12,000 spindles equipment will soon be installed. The present mill of the company, containing 12,000 spindles, which has been running night and day for some time past, will discontinue night work when the new mill is completed.

The Inman Cotton Mills, Inman, have made application for a charter. The new company is capitalized at \$200,000, and has the following incorporators: R. H. F. Chapman, A. H. Twitchell, T. C. Duncan, J. R. Gibson and J. A. Chapman. Work on the erection of a large factory, to contain 10,000 spindles and about 300 looms, will be commenced soon.

GEORGIA.

The Tifton knitting mills, Tifton, are rapidly going up and it is expected that the plant will be in operation by Feb. 1.

A 5000-spindle cotton mill is to be erected at Dublin by the Dublin Cotton Mill Company, of which William Pritchett is president.

The new cotton mill of the Pelham Manufacturing Company, Pelham, is completed, and its 3800 spindles and 100 looms have been put in operation.

The machinery is rapidly being placed in position at the Tifton cotton mills, Tifton, and it is expected to have the plant in operation by January 1.

George C. Smith of Milledgeville, contemplates the establishment of a cotton mill at that place and is looking for information regarding the machinery.

The knitting mill for the B. L. Battle Manufacturing Company, Warrenton, has been completed at a cost of \$25,000, and will soon commence operations in full.

A cotton mill company is being organized at Tallapoosa. The interested parties are J. M. McBride, C. B. Hitchcock, W. W. Summerlin and J. C. Tumbin, who intend to invest \$50,000 in the enterprise.

TENNESSEE.

The Wool Extract and Merino Company, Chattanooga, has been incorporated with a capital stock of \$20,000, and will engage in the manufacture of wool shoddy.

Eighteen new knitting machines have been installed in the Knoxville knitting mills, Knoxville, thus increasing the daily capacity of hosiery by about 75 dozen pairs.

LOUISIANA.

At the annual meeting of the members of the New Orleans Cotton Exchange, which was held Monday, these officers and directors were elected to serve for the ensuing year: S. P. Walmsley, president; E. Bornemann, vice president; J. H. Abraham, treasurer. Directors—M. E. Duquesney, C. L. DeFuentes, Edmund J. Glenn, Thomas Holford, H. C. Ludlow, H. R. Labouisse, William Overton, Maurice Stern, Edward Sevilla, Sol. Wexer, Robert T. Hardie, C. P. Ellis. The annual report, the thirtieth in the history of the Exchange, gives the membership at 442, the largest since 1890. The trade in spot cotton amounted to about 1,200,000 bales. The business in contracts for speculation and investment ranks with the largest since the inauguration of the institution, and in the conduct of the future business the New Orleans market stands the peer of any in the world. The treasurer's report shows a gross money movement through his hands of \$162,878. In the superintendent's office the movement both ways on account of margins has exceeded \$12,000,000. Among matters claiming attention is the establishment of a clearing house for future contracts.

VIRGINIA.

Considerable new machinery has been installed in the Norfolk Silk Company's mill at Lambert's Point.

The capital stock of the Danville knitting mills, Danville, will be increased and a new dyehouse will be erected.

W. Cabell Bruce of Baltimore, Md., will develop the water power at Brookneal and will erect a cotton mill there.

The National Twist Company, Washington, D. C., has arranged for the location of a knitting mill in Portsmouth. The plant will employ 300 hands and will make hosiery.

DELAWARE.

The Imperial Underwear Company, Wil-

mington, has been incorporated with a capital stock of \$50,000. The company will engage in the manufacture of underwear, and has the following incorporators: C. P. Wentz E. T. Craven, P. H. Coyne, all of Scranton Pa.

MARYLAND.

The textile mill of Deibert & Wilson, Ellston, started up Monday in full in all departments. The mill will manufacture damasks.

TEXAS.

W. J. Boone, G. E. Bennett, and associates, are interested in a company forming at Fort Worth for the erection of a cotton mill.

Work on the Bonham Cotton Mill, Bonham, is progressing favorably, and the work of installing the machinery will soon commence. T. L. Clark has been appointed superintendent.

The management of the Gonzales Cotton Mills, Gonzales, will commence at once the erection of the necessary buildings for its plant, and intends to have the mill in operation by March 1, 1901.

The plant of the Corsicana Cotton Mill Company, Corsicana, has been completed, and was started the first of this week. The mill has 5,000 spindles and other machinery making coarse goods, but the company contemplates changing to fine goods in the spring. The company is capitalized at \$100,000 and John Taylor is general manager.

ALABAMA.

The machinery is being installed in the Athens cotton mill, Athens, and the plant will probably be started with the new year.

The Lowe Cotton Mill Company, Huntsville, has contracted for thirty operatives' cottages. The contract price is \$17,000.

A \$100,000 knitting mill will soon be established at Huntsville by northern capitalists. The Thompson Land and Investment Company is interested.

The Opelika cotton mill, Opelika, is nearing completion, and the equipment of 5000 spindles and other machinery is being put in position.

The one hundred new cottages for the Dallas Manufacturing Company, Huntsville, are completed, and forty more will be ready for occupancy soon.

NEW JERSEY.

F. E. Low has been appointed receiver for the R. I. Berdan Company, silk dyers, of Paterson. The liabilities are said to be \$8000 and assets \$6000.

PENNSYLVANIA.

The capacity of Thomss Kitson & Sons woolen mill has been increased by the addition of new machinery.

The Pottstown Manufacturing Company, the youngest industry in Pottstown, will build an addition to its plant.

The product of John Dobson's Old Town mill, Falls of Schuylkill, formerly sold direct, will be sold through W. Stursberg, Schell & Co., of New York city.

Frank Wellbacher, a silk ribbon manufacturer of Allentown, has assigned to Isaac A. Hall for the benefit of his creditors. The assets, including the mill property, amount to \$130,000. The liabilities are in the neighborhood of \$130,000, and consist of mortgages for \$50,000 and \$75,000 in notes held by New York parties. The assignment was due to the demands of brokers for the payment of money due and loaned on manufactured goods. Mr. Wellbacher before going to Allentown operated a silk mill in Brooklyn, N. Y., but through inducements offered by the citizens, he removed to Allentown. The lack of demand for ribbons was the principal cause of the failure.

WESTERN.

The Buell Manufacturing Company's large plant at St. Joseph, Mo., is undergoing extensive repairs. A new mill is being put up and will be equipped with machinery which will greatly increase the output of the plant.

The Provo woolen mills, Provo, Utah, are running to the limit of their capacity. Large orders have been booked from eastern dealers. The management of the mills states that they can dispose of all the Utah goods that can be furnished them.

CANADA.

The new mill of the Riverside Manufacturing Company, Ltd., Montmorency, P. Q., is rapidly nearing completion, and it is expected to be in operation by next February.

The Christmas Lippincott.

The Christmas number of the "New Lippincott" Magazine publishes complete Amelia E. Barr's latest and best novel, entitled "Souls of Passage." Miss Agnes Repplier contributes a charming essay called "As Advertised." "As Others See Us," by George Hibbard, is a bright little one-act drama, which may be played by one actor. "The Bluffing of Johnny Crapaud," by Patrick Vaux, is a vigorous and unique sea story. Evelyn Sharp, whose fairy tales are popular with old and young, contributes "The Little Queen and the Gardener," which is delicate, fascinating and unforgettable. Two particularly important papers are by Lieutenant John Morris Elliott, U. S. N., and by Henry Charles Lea, LL.D. Lieutenant Elliott's article is descriptive of the United States Naval War College at Newport, R. I. Mr. Lee investigates a subject vital to all Freemasons under the title, "An Anti-Masonic Mystification." Christmas thoughts and other thoughts are expressed in verse by William Hurd Hillier, Ella Gilbert Ives, Clarence Urmy, Charles W. Stevenson, Arthur Ketchum, and Susie M. Best. The "Walnuts and Wine" Department bristles with merry jest and funny happenings in prose and verse.

Apply arnica to a bruise if the skin is unbroken and vaseline after first washing if broken.

THE METALLIC DRAWING ROLL CO.

SOLE MANUFACTURERS OF

Patent Metallic Rolls

FOR FIBROUS MATERIALS.

25 Per Cent. More Production Guaranteed,
at Less Cost.

Applied to any make of machine, new or old, and successfully on the following Carding Room Machinery:

- Coiler Railways.
- Sliver Lap Machines.
- Comber Draw Box.
- Drawing Frames, with Electric or Mechanical Stop Motion.
- Slubbers.
- Intermediate Frames.

Write for Prices and Particulars to

THE METALLIC DRAWING ROLL CO., Indian Orchard, Mass.

INVESTMENT IN COTTON BY STOREY'S METHOD SECURES Regular, Reliable, Ready. INCOME.

Always successful.

Write for particulars.

F. EWART STOREY, THE BOURSE, Philadelphia, Pa.

COTTON MACHINERY For Sale.

- Two (2) 36" 2 Beater Breaker Lappers, with openers.
 - Two (2) 36" 2 Beater Finisher Lappers.
 - Forty-eight (48) 36" 348" Petzold Combination Cards, with 18" doffers, H. & T. Steel Clothing, coilers for 10" cards.
 - Nine (9) Railway Heads with Metallic Rolls.
 - Twenty-four (24) Deliveries of Drawing with Metallic Rolls.
 - One (1) English Derby Doubler for 22 Ends.
- All the above machinery is in first-class condition and can be seen running. Apply to the STANDARD YARN COMPANY'S MILLS, Oswego, N. Y.

The Religion of a Gentleman.

"The Religion of a Gentleman" is the title of a book on this subject from the pen of Charles F. Dole, the well-known author of "The Coming People," "Luxury and Sacrifice," etc. It is putting it very mildly when we say that this last work is the best that has yet come from the pen of Mr. Dole. In many ways the "Religion of a Gentleman" is one of the most remarkable books of this day. Mr. Dole is a free thinker, and in this book he sets forth his views in a very simple and intensely interesting way. His interpretations of religion and how people should believe are the best that we ever remember reading. The work is certainly deserving of much praise and should be read by every one, young or old. In the preface Mr. Dole says: "Almost since I was a boy it has been the wish of my life that I might be able to make the statement of religion in such a way as to commend the subject and make it attractive to the young," and he certainly has here succeeded in accomplishing his wish. We know of no book that would be so fitting a Christmas gift to young or old as "The Religion of a Gentleman." It is published by Thomas Y. Crowell & Co., New York, N. Y.

Paper Stock,

No. 1.....	85 @ 50	Harlaps.....	@100
No. 2.....	40 @ 45	Mixed.....	65 @ 48
Rags.			
No. 1.....	2 1/2 @ 3	2nds.....	1 @ 1 1/2
No. 2.....	1 1/2 @ 2	Asst.....	3 @ 3/4
Shoe.....	3 1/2 @ 2 1/2		
Papers.			
Books.....	85 @ 90	News, prints.....	30 @ 35
Mantle.....	65 @ 80	Waste.....	30 @ 34

WOOLEN MILL FOR SALE.

Eight Sets of Modern Machinery.
Efficient Water Power,
Desirable Situation,
Railroad Tracks to Door.
Apply to
F. A. Delabarre, Conway, Mass.

TORONTO & CENTRAL ONTARIO ELECTRICAL RAILWAY TO CAPITALISTS AND PROMOTERS.

PUBLIC NOTICE. The Corporation of the City of Toronto desire to have an electric railway system constructed to run to and from the new St. Lawrence Market, Toronto, for a distance of 100 miles, east, west and north therefrom, said railway system to have six or more main lines, with branches and a total mileage for the present of 700 miles.

The said Corporation of the City of Toronto will assist to obtain a special Act of the Legislature to incorporate a company under the Electric Railway Act, the Acts respecting Companies to supply light, power, etc. (R. S. O. chaps. 199, 270 and 269), and with special powers.

All persons or corporations interested in the formation of such a company or in the construction of the said railway system by the said Corporation, will obtain full information from Alderman Daniel Lamb, Chairman of the Committee on Works, Toronto, up to the 31st day of December, 1910.

E. A. MACDONALD, Mayor.
Toronto, Canada, November 22, 1900.

A Good Opportunity for the Right Man.

A northern man owning a 500-spindle cotton mill in the south whose business will not allow him to attend to it would like to correspond with a party who understands the manufacture of yarns for the market who could put \$5,000 in the business and take the entire management of the mill. A fair salary will be paid and house rent included, also part of the profits.

Address "Business", Boston Journal of Commerce, Boston, Mass.

FIELD AND COWLES, Insurance.

85 WATER STREET,
BOSTON.

News, folded.....	33 @ 65	Shavings.....	1M @ 1 1/2
		Straw.....	40 @ 60
Rope, Etc.			
Hemp.....	@ 2 1/2	Shaking light.....	1/2 @ 1/2
Manilla.....	2 1/2 @ 2 1/2	Burlap.....	7 @ 35
Rigging.....	1 1/2 @ 2 1/2	Canvas 1 cot.....	2 1/2 @
Tared hemp 1.....	@ 1 1/4	Canvas 2 cot.....	@ 1 1/2
Boit.....	@ 2 1/2	Canvas 1 linen 1.....	@ 1 1/2
Wool.....	@ 70	Flax.....	1 1/2 @ 1 1/2
Sisal.....	67 1/2 @ 73		

STODDARD, HASERICK, RICHARDS & CO.,

152 Congress Street, Boston. Sole Agents for

- DOBSON & BARLOW'S Simplex Revolving Flat Cards.
- DOBSON & BARLOW'S Self-acting Mules.
- DOBSON & BARLOW'S Improved Combers.
- DOBSON & BARLOW'S Drawing Frames.
- DOBSON & BARLOW'S Roving Machinery.
- DOBSON & BARLOW'S Cone and Parallel Winders.

WOONSOCKET REED AND SHUTTLE WORKS,



Power and Hand Loom Shuttles of every Description.
Sole owners of the Isherwood Patents for U. S. and Canada. Order them of your shuttle maker.
JOHN SHAMBOW, Treasurer. First-Class Work Guaranteed.

TELEPHONES FOR MILLS.

F. O. PLUMMER 620 Atlantic Ave. Boston.

WANTS.

Advertisements of Help Wanted or Situations Wanted are admitted under this head only at one cent each word for every insertion. Names of advertisers held strictly confidential.

SITUATIONS WANTED.

- WANTED**—Overseer of cotton carding frames to make a change. Address "886," Boston Journal of Commerce, Boston, Mass. 55-0
- WANTED**—Position as boss grinder on revolving flat cards; is a good cutter and fixer; at present employed on 120 cards ten years; boss grinder with this company. Address "373," Boston Journal of Commerce, Boston, Mass. 55-16
- WANTED**—A situation as overseer of mule and frame spinning, spooling, warping and twisting; have had a large experience filling frame spinning; both yarn and cloth mills; married; American; age 38 years. Address "925," Boston Journal of Commerce, Boston, Mass. 55-0
- WANTED**—An experienced mule and frame overseer is open for an engagement; age, 45 and married; the best of references can be given. Address "955," Boston Journal of Commerce, Boston, Mass. 55-0

WANTED—Overseer's position of ring spinning; understood by notes; American; age, 41; married; employe; experienced on coarse and fine yarns, drafting, changing, manglement, etc.; six years with firm spinning fine numbers; highest references. Address "599," Boston Journal of Commerce, Boston, Mass. 55-0

WANTED—Superintendent's position in handling yarn of the spinning mill; or as overseer of carding; three years' experience on colored work; understands combing best of references. Address "987," Boston Journal of Commerce, Boston, Mass. 55-0

WANTED—Position as overseer of cotton carding, or superintendent in small yarn mill; fifteen years' experience on color and white; best of references. Address "992," Boston Journal of Commerce, Boston, Mass. 55-0

WANTED—Situation as second hand of ring spinning, spooling and warping; or second hand of twisting, reeling and winding, etc., by person of experience; best of reference. Address "1001," Boston Journal of Commerce, Boston, Mass. 55-12

WANTED.

A second-hand English ribbon lap machine for immediate delivery. Address 996 Boston Journal of Commerce, Boston, Mass.

Construction & Originating of Weaves

By Charles G. Petzold.
A text book for designers, overseers, loom fixers, web drawers, weavers and others who are interested in the construction of cloth. On receipt of twenty-five cents a copy of Part I and II will be mailed to any address in the United States and Canada. The work is richly illustrated and the rules for construction of weaves clearly explained. It will consist of 280 pages, and about twenty-four plates of art weaving, and is to be published monthly in twelve parts.
Charles G. Petzold.
37 Whitman St., Lawrence Mass.

COTTON MILL FOR SALE.

MILLBURY COTTON MILLS, MILLBURY, Mass. About 13,000 spindles; machinery in good condition, much of it of recent purchase. Steam and water power. Fourteen tenements and boarding house. For further particulars address "Trustee," P. O. Box 968; Providence, R. I.

A Good Investment!

studying by mail in the
**AMERICAN CORRESPONDENCE
SCHOOL OF TEXTILES.**
C. P. Brooks, Director.
Send for a 1911 catalogue. Address, Department F., American Correspondence School of Textiles, New Bedford, Mass.

LOWELL TEXTILE SCHOOL.

Thoroughly Practical Instruction given in Every Branch of
**TEXTILE MANUFACTURING.
NEW MACHINERY.**
CORRESPONDENCE SOLICITED.
Send for Catalogue to W. H. W. CROSBY, Principal, Lowell, Mass.

FLYNT Building and Construction Co.

GENERAL OFFICE, PALMER, MASS.
We contract to perform all labor and furnish all material of the different classes required to build complete
CHURCHES, HOTELS, MILLS, PUBLIC BUILDINGS AND RESIDENCES.
Also for the construction of
RAILROADS, DAMS AND BRIDGES.
We solicit correspondence with those wishing to place the construction of any proposed new work under ONE CONTRACT, which shall include all branches connected with the work.
To such parties we will furnish satisfactory references from those for whom we have performed similar work.

Textile Pattern Holder.

A Textile Pattern Holder, with Thread Separator Attachment, which aids analysis and makes difficult work comparatively easy.

Designers and students of the art are invited to look into the merits of this device. It saves labor, insures accuracy and preserves the eyesight.
Testimonials sent upon application. Price, \$1; prepaid.

The Textile Pattern Holder Co.,
97 Pleasant St., Worcester, Mass.

Best Locations

For all TEXTILE and other INDUSTRIES.
Cheap Power, (steam, water, electric); low cost. Efficient and contented labor. Abundant and cheap Raw Material. Best transportation facilities. Local Capital secured. All surroundings pleasant; climate healthy.
We aid Prospectors and Investors.
M. A. Hays, Agent. M. V. Richards, Land & Ind. Agt. Southern R. R. Washington D. C.

DYEING & BLEACHING

AN INDIAN DYER.

An Indian View of Him and His Work.

The Indian dyer offers one of the most instructive "awful examples" of native craftsmanship to be found in this country. He belongs to a period that dates back many centuries, and his methods are so ingrained that he is the despair of the industrial reformer. His methods deal with scraps and handfuls, a single piece of cloth—a bundle of yarn. His pigments are pounded barks, chips of wood, and mineral oxides aided by natural salts; his measure of quantity a handful, and he attaches a solemn significance to the quality of the well water he uses, although he cannot tell anything of its constitution. It is almost needless to say that he cannot dye any two articles, whether they be cloth or parcels of yarn, exactly of the same shade. His work is very poorly paid, and yet he has no notion of economy of materials. The inability of the Indian dyer to produce the same shade twice in succession may be observed in every Indian-made carpet having a colored ground. Each parcel of yarn is clearly recognizable on the surface of the carpet, and it seems never to have occurred to the weaver to mix all the shades so as to have a uniform ground effect. The buyer recognizes the carpet to be genuine by this irregularity of shade, and thus a peculiarity that would, in any other country, cause a serious reduction in price, is actually regarded as a point of merit.

So much for the caprice of fashion. The Indian cotton manufacturer was not long in discovering that his profits might be enhanced by the introduction of dyeing, and forthwith colors became a feature in the product of our mills. The mill owners could not at first see the need of spending money on specially trained dyers, when the country contained so many men of the trade; but it was soon apparent that the pot-dyer was a very expensive servant in a mill where uniformity of work was an absolute necessity. There were endless disputes about goods delivered, or about to be delivered, which could only be ended by a sacrifice of part of their value. The mill owners were now prepared to appreciate the services of the English dyer, who, by simply adhering to the business as he was taught, produced the desired colors with uniformity. Then came the technical schools, which were to save the cost of foreign assistants and open a new field of usefulness to educated Indian youths. We have recently been enquiring into the results of this movement as far as it concerns the dyeing industry, and we learn that although the native youth can take his schooling and pass his examination, he has an almost incorrigible habit of neglecting the exact details of regular duty of any kind. He will delegate his most important duties to a workman, and he often manifests a singular inability to convert the laboratory process into a commercial process, that is to say, to devise apparatus of a suitable kind for a dyeworks. There was not long since a dyeing and bleaching department attached to a Bombay mill, which was, no doubt, arranged by some one who called himself a dyer. There was no building, a shady tree provided the roof, which was supplemented for rainy weather by a tarpaulin. There were some zinc baths by way of vats, and a bucket or two. Water was heated by means of a steam pipe projecting from an adjoining wall. There may have been a thermometer, but we did not hear of it. After each operation the remaining dye liquor was thrown away, just as might be done in the smallest village when the dyer had dyed a single article and had no immediate use for the remaining liquor.

In Europe no proprietor of a factory would allow a dyeworks to be laid out as above described. He knows enough of how it ought to be built; here it is different. A laboratory experiment is made to establish the result of some chemical or mechanical operation, but it does not establish the cost price of work in a factory. Materials are thrown away after use which would be economized in industrial operation. The student dyer has much to learn when he leaves the laboratory for the dyehouse. For example, a lot of yarn may take up two-fifths of the dye from a bath, and if the bath is thrown away the whole of the dyeing material must be charged to the yarn, although only two-fifths are utilized. The bath has lost so

much of water and a certain proportion of chemicals. It will not dye another lot of exactly the same shade as the first, and the water is reduced in temperature. The dyer must be able to restore the bath to its first condition, so as to continue the process and produce exactly the same shade; and finally, when the job is done, the remains of the bath were thrown away in a very small loss, as it may be divided into the whole lot that has been treated.

Accuracy in weighing and measuring is of the greatest importance in the result of dyeing. When the crude materials of the jungle are used, weighing and measuring do not always insure uniformity, for barks and woods do not always contain the same amount of pigment. The same may be said of earths. The chemically prepared dyes now so largely used in India are much more certain in their effects; but, being much more concentrated than the jungle dyes, care in their use is absolutely necessary. Many Indian dyers waste as much of their material as would represent the whole profit of the European dyer. They will even attempt to bleach cloths containing a colored heading. A few of the dyers who have had a chemical training have done well, and are making a useful career; but a great many more seem to answer to the descriptions of "youths with a mouthful of chemical formulas and a head that is empty." What is the reason of this? These young men come apparently from the same classes that produce some of the smartest brokers in the world. Is there some inherent defect in the men, or is the fault due to the method of their education?—[Indian Textile Journal.

Papers Read at A. S. M. E. Meeting.

The following is a list of the papers to be read at this meeting:

"Tests of Centrifugal Pumps," by W. B. Gregory.

"Hardness, or the Workability of Metals," by William J. Keep.

"New Principle of Gas Engine Design," by Charles E. Sargent.

"Heat Efficiency of the Gas Engine as Modified by Point of Ignition," by C. V. Kerr.

"Power and Light for the Machine Shop and Foundry," by Forrest R. Jones.

"Mechanical Integrator used in Connection with a Spring Dynamometer," by Max H. Wickhorst.

"Apparatus for Dynamically Testing Steam Engine Indicators," by Carleton A. Read.

"Tests of the Boilers of the Purdue Locomotive," by W. F. M. Goss.

"A New Recording Air Pyrometer," by W. H. Bristol.

"Comparative Value of Different Arrangements of Suction Air Chambers on Pumps," by Meriam F. Wheeler.

"Note on Centrifugal Fans for Cupolas and Forges," by William Sangster.

"Power Plant of the Massachusetts General Hospital," by F. W. Dean.

"The Construction of Contracts," by Reginald P. Bolton.

"An American Central Valve Engine," by E. T. Adams.

"Comparison of Rules for Calculating the Strength of Steam Boilers," by H. de B. Parsons.

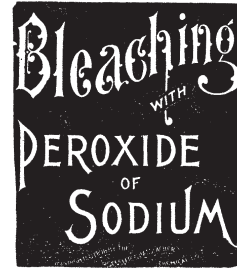
"A Record of the Early Period of High Speed Engineering," by Charles T. Porter.

"Steam Engine of Maximum Simplicity and of Highest Thermal Efficiency," by Robert H. Thurston.

An entirely new departure in the method of furnishing power to mining companies for the purpose of running hoists, pumps, drills and other machinery, says Electricity, will characterize the extensive power plant to be erected at Post Falls, Wash., by the new company which has been organized at Spokane. The power house will contain dynamos capable of generating 12,000, with four units of 3000 horse power each. Thirty thousand volts will be the pressure regularly maintained on the power line. An immense central plant will be installed at Gem, Idaho, which will generate many thousand horse power of compressed air. This compressed air will then be piped to the mines for the purpose of running their machinery, and, beside being a new feature in furnishing power, it will also institute a great reduction in the cost of operating.

IF YOU DON'T KNOW ALL ABOUT IT, WRITE FOR OUR PAMPHLET:

THE ROESSLER & HASSLACHER CHEMICAL CO.



OFFICE
104 William Street.
New York.
PEROXIDE WORKS
NIAGARA FALLS,
N. Y.

KROUT & FITE MFG. COMPANY.
Manufacturers of

SILK and COTTON NARROW FABRICS.
Spool Tapes a Specialty.

Office and Mill, Allegheny Ave., and Emerald Street. PHILADELPHIA, PA.

MERCERIZED YARN.
ABEGG & RUSCH
92 Grand St., New York.

ABERFOYLE MFG. CO.,
Chester Pa.
MERCERIZED cotton yarns
both warps and skeins in all numbers
DYED and BLEACHED.
Write direct to mills at CHESTER, PA.

ORSWELL MILLS, FITCHBURG, MASS.
Fine Cotton Yarns

In Chains, Ball Warps, Skeins, Single or Twisted, on Cones, Cops,
Spools, Carded or Combed.

DYES AND CHEMICALS.

The situation in the market for chemicals remain unchanged. In the alkalis, etc., there continues a fairly active business, but in the balance of the list trade improves slowly and barely exceeds jobbing proportions. The dyestuff market is dull and featureless and little business is being transacted.

We quote as follows:

Dyes.		Acids.	
Acetate..... 100 @ 1.10	Oxalic..... 5 1/2 @ 6	Acetic 1/2 lb..... 1.75 @ 2.25	Sulphuric..... 1.20 @ 1.75
Citric..... 28 @ 40	Tartaric..... 30 @ 30 1/2	Muriatic..... 1.10 @ 1.20	Crystals..... 30 @ 30 1/2
Boric..... 10 1/2 @ 11 1/2	Powdered..... 30 1/2 @ 31	Nitric..... 4 1/2 @ 4 1/2	
Albumen.		Amilae.	
Blood..... 15 @ 20	Egg..... 37 @ 65	Alizarine.	
Salt.		Extract..... 13 @ 45	
Alum.		Mordant..... 6 1/2 @ 14	
Alum.		Lump..... 1.75 @ 1.85	
Alum.		Ground..... 1.85 @ 1.95	
Aloes.		Cape..... 8 @ 9	
Arsenic.		Curacao..... 3 1/2 @ 4 1/2	
Red Saxon..... 7 1/2 @ 8	White..... 4 1/2 @ 4 1/2	Bleaching Powders.	
Red Silician..... 7 1/2 @ 8		American..... @	English..... 1.87 1/2 @ 2.10
Borax.		Continental..... 1.85 @ 1.90	German..... 1.87 1/2 @ 2.00
Crystals..... 7 1/2 @ 8	Powdered..... 7 1/2 @ 7 1/2	Brimstone.	
Bichromate Potash.		Crude 2nds..... 21.00 @ 23.00	
Barwood.		Crude 3ds..... 19.00 @ 21	
Camwood.		American..... 8 1/2 @ 8 1/2	
Cochineal.		Per pound..... 2 @ 2 1/2	
Honduras.....	Teneriffe..... 28 @ 31	Cutch.	
Silver..... 30 @ 33	Black..... 29 @ 31 1/2	Bale..... 5 @ 6	Refined..... 5 @ 10
Cambr.		Fustic.	
Jamaica..... 1 1/2 @ 1 1/2	Cuban..... 1 1/2 @ 1 1/2	Gambier.	
Indigo.		Cuba 1..... 6 1/2 @ 7	
Madras..... 20 @ 25	Bengal:	Low..... 65 @ 70	
	Medium..... 75 @ 90	Go. d..... 100 @ 130	

AYKROYD'S - MERCERIZED - YARNS

Supplied in Any Form. WE GUARANTEE EVENNESS IN MERCERIZING THUS INSURING EVENNESS IN DYING. ABSOLUTELY FAST COLORS. STOCKS ON HAND UP TO 2-140; WM. M. CROWE, AGENT FOR U.S. & CANADA. Telephone 312 Spring 477 BROOME STREET, (Third, Von Bernath & Co.) NEW YORK.

Logwood.		Red Sanders.	
Per pound..... 1 1/2 @ 1 1/2	Per pound..... 2 1/2 @ 3	Sunae.	
Sicily 1/2 ton:		American..... 50.00 @ 42.00	
No. 1..... 55.00 @ 56.00	No. 2..... 52.00 @ 53.00	Tarmeric.	
Whole..... 4 1/2 @ 6		Chemicals.	
Chrome.		Acetate..... 5 @ 7	
Copperas.		Large lots..... 52 1/2 @ 100 lbs..... 70 @ 75	
Cream Tartar.		Crystals..... 21 1/2 @ 22 1/2	
Fuller's Earth.		Powdered..... 22.00 @ 22.80	
Gums.		Arabic, pk'd..... 50 @ 55	
Iron.		Nitrate..... 3 1/2 @ 4	
Isinglass.		American, lb. 55 @ 70	
Lead.		White Sugar..... 7 1/2 @ 8 1/2	
Mercurials.		Blue pill..... 48 @	
Potash.		Chlorate..... 8 1/2 @ 9	
Prussiate:		Bromide..... 46 @ 47	
Soda.		Sal. (Am.)..... 70 @ 80	
Tin.		Muriatic..... 12 @ 17	
Miscellaneous.		Blue Vitriol..... 5 1/2 @ 5 1/2	

INSURANCE.

BOILER INSURANCE.

The Inspecting and Insuring of Steam Boilers Becoming More Important.

There is no denying the fact that there is a necessary financial outlay attending the insuring of a steam boiler. It is but to be expected that that kind of insurance must cost something as well as all other kinds. How many mills or manufacturing concerns are there in this country that do not carry some insurance? Insurance against fire has become a recognized necessity, and there are very few manufacturing plants that do not carry some.

It seems strange to us that more do not insure themselves against losses from boiler explosions. There is no part of a manufacturing plant that offers so many risks and is so dangerous as is the steam boiler. If properly inspected and watched this danger is reduced to a minimum, and the chances of suffering loss from its explosion are almost entirely eliminated. A good engineer may be depended upon to exercise due precaution in his department, but, alas! how few are the truly careful engineers.

When it is possible not only to insure a manufacturer against all losses that may result from the explosion of his boiler, but also to obtain quarterly inspections by experts in steam engineering at the same time, it seems almost incredible that there should be so many who do not avail themselves of the opportunity offered them. The cost attending such insurance and inspection is most trivial, and when compared with the risk which it covers it becomes too insignificant to consider. As to whether such insurance and inspection pays, the records of the insurance companies which show the number of explosions, both of the insured and the uninsured, with a sufficient degree of accuracy, answers that question.

But not only should the manufacturer who employs a steam boiler insure himself against all loss, but one who does not have his boiler inspected and its true condition made known at regular intervals is guilty of neglect, and, should an explosion occur under these circumstances, the indemnity to persons injured through such neglect should in justice be larger, since ordinary precautions were not taken. An owner of a steam boiler has the right to run his boiler in any manner he chooses and as economically as he may see fit; but he has no right to jeopardize the lives and property of people in his employ and others in his vicinity. There is such a thing as carrying economy beyond the safety limit. When one endeavors to economize so far as to endanger the lives and property of those about his premises, whose safety is virtually in his keeping, he is guilty of criminal neglect, which is deserving of the extreme penalty of the law.

Persons who are employing steam boilers can insure themselves in one of the strongest and best insurance companies in this country. The Hartford Steam Boiler Inspection and Insurance Company, of Hartford, Conn., has long held an enviable reputation. It is most courteous and thorough in its quarterly inspections, it pays its claims with the greatest promptness, and it is one of the strongest companies, financially, in the world. Its officers are all men of the highest integrity and business ability, and they do everything in their power to make all matters entirely agreeable to their patrons. Any person who operates a steam boiler in his plant should put himself in communication with the Hartford Steam Boiler Inspection and Insurance Company, Hartford, Conn. C. E. Roberts is manager of the New England office, Milk street, Boston.

THE NEW ENGLAND EXCHANGE RAISES RATES.

An Advance for Rhode Island and Connecticut.

At its meeting last Saturday the New England Exchange adopted the advanced rates for unprotected firm and store property in Rhode Island and Connecticut. A resolution was introduced for the employment of an inspector to lay out and draught sprinkler equipments, relieving the factory improvement committee of that part of its work. No action was taken on the resignation of this committee.

Superintendent Abbott's report of the protective department for October shows 122 alarms for the month, 450 hours duty,

and 153 covers spread. The fire loss of the month was \$63,163.80, of which only \$12,794 was on buildings. Losses by sprinkler breaks were \$129.18. The entire losses of October, 1899, were only \$29,094.38.

COTTON MANUFACTURING IN CHINA.

[CONTINUED FROM PAGE 216.]

tion have steadily improved, and we have today a supply of labor which enables us to run 37,536 spindles.

The next matter to which I have to refer is the financial position of the company, and more particularly in its indebtedness to Messrs. Jardine, Matheson & Co. I made reference to the matter at our meeting a year ago, and in then explaining the reasons why the company has been so much under-capitalized at the time of its flotation, I said: "Up to the present time Messrs. Jardine, Matheson & Co. have met the financial wants of the company, but this was a purely temporary arrangement, and later on some permanent system of finance would have to be introduced. The same problem has again to be met, but in an aggravated form, and unless shareholders come forward and provide capital, I can see no solution of the situation except liquidation. Considering the very large sum of money which the general managers have already provided, it will not be a surprise to the shareholders that they hesitate to make further advances to the company, and I do not think any of you will consider that Messrs. Jardine, Matheson & Co. are over-cautious in declining to allow the debt which the company owes them further to increase.

The question which therefore presents itself, gentlemen, is "What are the shareholders prepared to do?" In conclusion I may add that were the sum due to the general manager a very modest one, instead of the very large amount which it is, they might consider it advisable, under the circumstances, to carry the company on with their own funds for a time, as they have been doing, but you will recognize that such a large debt being already due to them it would only make matters worse further to increase it. I shall be glad to answer any questions before proposing the adoption of the report and accounts, and to receive any suggestions as to meeting the financial difficulties with which the company is confronted. I cannot, of course, expect shareholders to make any well-considered proposals at this meeting as to how the financing of the company is to be carried on, and I intend, therefore, to call a special meeting at an early date to receive an expression of your views, and to come to a decision as to what is to be done. The report was adopted.

Cotton Waste.

There has been out little business reported in this market the past week and dullness still prevails. A little better demand has been noted in some grades, but quotations show no change.

We quote as follows:

Cops.
Mae'ne No 1 8 1/2 @ 8 Colored..... 5 @ 8 1/2
No. 2..... 5 @ 8 1/2

Cards.
No. 1..... 7 1/2 @ 8 No. 1. (olly) .. 8 1/2 @ 4 1/2
No. 2..... 6 1/2 @ 6 1/2 No. 2. (olly) .. 2 1/2 @ 4

Clips.
Bluff..... 3 @ 3 1/2 White..... 4 1/2 @ 4 1/2
Colored..... 1 1/2 @ 2

Egyptian.
Roving..... 9 1/2 @ 9 1/2 Combing..... 9 @ 9 1/2

Linters.
No. 1..... 4 1/2 @ 5 No. 2..... 3 1/2 @ 4 1/2
No. 2..... 4 1/2 @ 5

Thread.
Colored..... 4 @ 4 1/2 Ends soiled. 1 @ 1 1/2
No. 1..... 5 1/2 @ 5 1/2 Cut..... 4 @ 4 1/2
No. 2..... 4 @ 4 1/2 Soft..... 4 @ 4 1/2

The largest cotton cargo ever taken out of a United States port in a single vessel, and probably the largest cargo of cotton ever recorded in the world, was cleared on the new British steamship *Mechanician*, belonging to the Harrison line, on Wednesday of last week, from New Orleans. The cargo consisted of 26,000 square bales of cotton. Eight steamships were cleared at the New Orleans custom house for European ports, having on board 76,757 bales of cotton, as well as 4921 round bales.

Magdalena River Colonization Company,

No. 1123 St., James Building, New York City.

Capital Stock, \$500,000

50,000 Shares-unassessable-\$10 each.

THE CARTAGENA TERMINAL AND IMPROVEMENT COMPANY, LIMITED

HAS A TRACT OF

Three Hundred Thousand Acres In The Republic of Colombia, South America,

on the east bank of the Magdalena River, about Five Hundred miles from the coast. It is about 1000 feet above the level of the sea, and has a frontage on the river of about twenty-five miles.

The property will be divided into 20, 40, 80 and 100-acre farms and sold to the first 500 settlers at \$5 per acre, payable \$1 per acre cash and \$1 per acre in four equal annual payments.

Without Interest.

Shares of stock in our company exchangeable at any time for land in our colony.

The Town

will be laid out in 1000 lots of ONE ACRE EACH. Four lots in each block. The company will try and induce the purchasers of farms to select the town lots for their residences, independent of their farms. That is, those whose farms will be located within three or four miles of the town. If this is acceptable it will be the means of securing good, congenial society, and make our colony attractive. To those who accept of this offer a town lot will be donated.

TIMBER.

In addition to the agricultural products mentioned, we have thousands of acres of all varieties of hard woods, such as Mahogany, Lignum-Vitae, Ebony, Oak, Spanish Cedar, Ash, Laurel, Redwood—suitable for cabinet work. Also Cinchona, Copalva, Sarsaparilla, Ipecacuanu, Cinnamon, Cloves, Arrow Root, Ginger Root and Ginseng Root.

Lumber Mills.

If any lumber mill men will undertake the erection of a first class mill, our company will donate a sufficiently large tract of land to warrant them in doing so. Our settlers must have lumber to build and the railroads must have ties and sleepers.

Our pioneer colony is sure to meet the approval of every intelligent citizen of Colombia, as, if it proves a success, other colonies will be sure to follow.

We also have in

CALIFORNIA

Improved and unimproved fruit and vineyard lands. Southern California; beautiful home; Santa Barbara; Colony Lands near Riverside.

CALIFORNIA—"WATER IS KING;" a great bargain; splendid established orchard, very valuable location; must sell part or whole; \$3500; also old orange orchard; \$1000; unusual opportunity; photos and particulars.

A 40 acre home in Santa Barbara county; located at Los Olivos, northwest of the city of Santa Barbara; the Alamo Pristado Creek runs through the ranch, supplying it plentifully with water; a pretty little romantic cottage; peaches, prunes and other fruits at hand, and wonderfully fertile soil, where everything grows; the prettiest place in the valley; price, \$5000. Full particulars upon application.

We have land in any part of California and particularly fine Orange Groves at Riverside, Ontario, Pomona and also unimproved lands cheap.

Choice California Orange and Lemon Land.

Two hundred acres first-class orange and lemon land in the largest orange growing section in the world; absolutely frostless and very best of water rights; abundance of it. Land all cleared ready to plant. Would make splendid small colony. About six miles from Riverside near the famous Magnolia avenue. Can be bought in 10 or 20-acre tracts for \$250 per acre. It is very choice and desirable; would make lovely houses for few select families. Water piped, under pressure, to the high corner of each 10-acre piece.

Ten acres Orange Grove on Magnolia Ave—5 acres seedlings—16 years old—3 acres Naval Oranges, 2 acres Malta Blood Oranges, 5 years old, all in bearing. Small house and barn. Crop last year sold for \$1200. This year will bring \$1500. Abundance of water—price, \$5000. This property is on the most beautiful avenue in California.

We do not wish to patent our efforts to colonize in Colombia, but will aid any other similar enterprise in every way in our power.

We desire to notify our correspondents that there is a work entitled "THE REPUBLIC OF COLOMBIA," of about 150 pages, beautifully illustrated with views from all parts of Colombia, which is issued by the CONSULATE OF COLOMBIA and can be had for ONE DOLLAR.

If you will forward that amount to this office a copy will be forwarded to you postage paid. It is well written and perfectly reliable, and to any one thinking seriously of making their future home in Colombia, the richest and most prolific of all South American Republics, it will be one of the best investments one could make.

Send for pamphlets, maps and photographs.

Applications for stock or lands can be made at our office, No. 1123 St. James Building, corner Broadway and 26th Street. WALTER C. RICHARDS, Agent.

(Please mention this paper when you write to the Magdalena River Col. Co.)

YARN COTTON AND OTHER MARKETS.

Yarns and Warps.

COTTON.

There is an improvement in the demand for cotton yarns. Eastern spinners seem to be better supplied with orders than are the southern mills. Southern spinners are looking for new business and are making concessions in order to secure it. No changes in quotations are noted.

We quote as follows:

[Reported by the American Cotton Yarn Exchange, A. B. Sanford Manager, Boston Mass.]

Table with columns: Carded Northern-Single Skeins, Warps, Carded Southern-Single Skeins, Warps. Lists various yarn specifications and prices.

Table with columns: Carded 2, 3 and 4-Ply Chains. Northern, Southern. Lists various yarn specifications and prices.

Table with columns: Carded 2, 3 and 4-Ply Chains. Northern, Southern. Lists various yarn specifications and prices.

Table with columns: Carded 2, 3 and 4-Ply Chains. Northern, Southern. Lists various yarn specifications and prices.

Table with columns: Carpet and Upholstery Yarns. Lists various yarn specifications and prices.

Table with columns: Carded Hosiery Yarns. Lists various yarn specifications and prices.

Table with columns: Carded Northern Mule-Spun. American cops, Egyptian cops. Lists various yarn specifications and prices.

Table with columns: Carded Frame Egyptian Yarns in Skeins. Lists various yarn specifications and prices.

Table with columns: Mercerized Yarns. Lists various yarn specifications and prices.

Table with columns: 60-2, 70-2, 80-2, 90-2, 100-2, 110-2, 120-2. Lists various yarn specifications and prices.

WOOLEN AND WORSTED.

The market for woollen yarns is feeling very much better and the outlook is promising. Manufacturers are in a position to place orders just as soon as they receive orders for their production and spinners are feeling quite pleased over the outlook. Worsted yarns have noted a fair business doing and woollen yarns have also reported something doing.

WOOLEN YARNS.

Table with columns: 13 cut, 15 cut, 22 to 27 cut. Lists various yarn specifications and prices.

WORSTED YARNS.

Table with columns: Domestic, Foreign. Lists various yarn specifications and prices.

Table with columns: French Spun and Australian. Lists various yarn specifications and prices.

COTTON.

American.

The New York market for spot cotton has been fairly active and a good demand is reported. Quotations are steady at an advance of 1-16c.

Table with columns: Midding Uplands, Middling Gulf. Lists various cotton specifications and prices.

We quote as follows: In the New York market futures are in light request and values remain about the same.

Table with columns: Spot cotton as quoted at various ports. Lists various cotton specifications and prices.

Spot cotton at Liverpool is steady and prices are steady at an advance.

Table with columns: Futures at Liverpool. Lists various cotton specifications and prices.

Egyptian. Alexandria quotations for November, December and January shipments. Liverpool quotations for prompt shipment.

Table with columns: Types, Alexandria, Liverpool. Lists various Egyptian yarn specifications and prices.

Table with columns: Manila, Abasil. Lists various yarn specifications and prices.

Table with columns: Ashmunt. Lists various yarn specifications and prices.

COAL.

Table with columns: Coastwise Freights. Lists various coal specifications and prices.

The situation in anthracite coal is easier, although prices are about the same.

Table with columns: Quotations on New York basis f.o.b. Lists various coal specifications and prices.

The market for anthracite coal is very dull and quiet. The weather is against a good movement and consumption is light.

There is a little more coal coming forward at wholesale and under present trade conditions there is little danger of a shortage.

Table with columns: Stove, Chestnut, Pea, Shamokin. Lists various coal specifications and prices.

Bituminous coal is in pretty good supply with the market firm. There is a good demand and quotations remain the same.

Table with columns: No. 1, No. 2. Lists various coal specifications and prices.

Steel continues in good demand with prices held steady.

Table with columns: Am. pig, Sheet steel, Fire box. Lists various steel specifications and prices.

Copper—This market is firmer and a fair trade is reported. We quote at wholesale \$17.00 for lake and \$16.60 for casting brands.

Lead continues quiet. There is a light demand and quotations are about the same. Large lots are quoted at 43c per pound, small lots at 44c.

Aluminum—The market remains steady and a good trade is reported at previous prices.

ness is reported at last week's quotations. Charcoal, I. C., \$6.25 @ 6.75 Coke, I. C., \$4.75 @ 5.00

Antimony, Quicksilver and Spelter are in good request and prices are slightly changed.

Pig Tin is firmly held at full quotation although a dull request is mentioned. Quotations are 27.90 @ 28.00 for large lots and 28.00 @ 28.25 for jobbing.

MISCELLANEOUS.

Alcohol continues steady in tone with a good demand. We quote grain \$2.45 @ 2.47 per gallon, according to quantity.

Starch—The market remains firm and a good demand is reported at last week's quotations.

Tallow and Grease are fairly active and a fair business is transacted at former prices.

Hemp—The fiber market remains in a very quiet condition. The position of Manila hemp is unchanged with buyers holding off as long as possible.

Jute and Jute Butts are dull and easy and buyers show no interest in the market. Values remain about steady.

ROPE.

Table with columns: Manila. Lists various rope specifications and prices.

Table with columns: 7-6 inch diam, 7-6 inch diam and larger. Lists various rope specifications and prices.

Table with columns: 7-6 inch diameter and larger. Lists various rope specifications and prices.

WOOLEN RAGS.

The quiet condition of this market is still a noted feature and little or no change is reported. There is a little better demand in some grades but the general condition remains the same.

Table with columns: All wool, Linsey. Lists various wool specifications and prices.

Table with columns: fine blue, ordinary black. Lists various wool specifications and prices.

Table with columns: seamed, dark, seamed, blue. Lists various wool specifications and prices.

Table with columns: gray, white. Lists various wool specifications and prices.

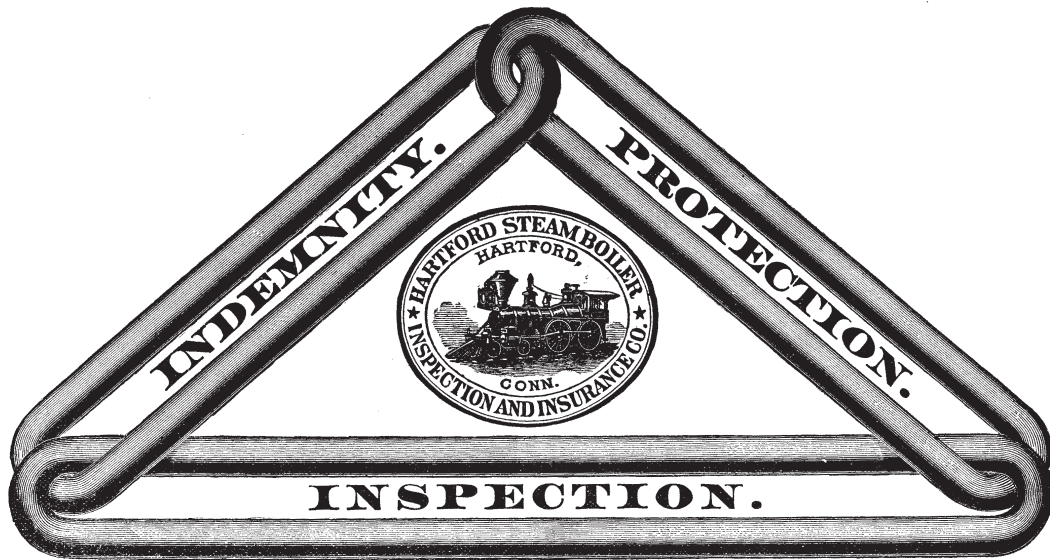
Table with columns: red flannel, blue flannel. Lists various wool specifications and prices.

Hats—Old felt, 1 @ 1 1/2 Satinets, old, 38 @ 48 Mixed woolen rags 1 @ 1 1/2 Reys and bunting 6 @

Jos. J. DeLong. 396 Broadway, N. Y. EGYPTIAN AND SEA ISLAND COTTON YARNS

Telephone 2419 Franklin.

ORGANIZED 1866.



J. M. ALLEN, PRESIDENT,
W. B. FRANKLIN, VICE PRESIDENT. **J. B. PIERCE, SECRETARY.**
F. B. ALLEN, 2D VICE PRESIDENT. **L. F. MIDDLEBROOK, ASST. SECRETARY.**
L. B. BRAINERD, TREASURER.

THOROUGH INSPECTIONS and INSURANCE AGAINST LOSS or DAMAGE FROM

STEAM BOILER EXPLOSIONS TO PROPERTY AND LIFE.

More than **75,000** Boilers now under Inspection and Insurance by This Company.

— x —

Northeastern Department:

Office: 125 Milk Street, Boston, Mass.

C. E. ROBERTS, MANAGER.

W. H. ALLEN, ASSISTANT MANAGER.

INCORPORATED JUNE 4, 1890.

American Card Clothing Co., General Offices:
 Worcester, Mass

FACTORIES: Worcester, Leicester, North Andover, Lowell, Mass. Philadelphia, Pa. Providence, R. I. Charlotte, N. C.

MANUFACTURERS OF EVERY DESCRIPTION OF

CARD CLOTHING for WOOL and COTTON CARDS,

SMOOTH, SIDE, PLOUGH-GROUND AND NEEDLE-POINT.

Exclusive American Licensees for the **PATENT FLEXIFORT CARD CLOTHS.** Special Attention given to Clothing for Revolving Flat Cards. Experts furnished to Clothe and Start the same. Latest and Best Machinery for Re-covering Iron Top Flats for **REVOLVING FLAT CARDS** and **STATIONARY FLAT CARDS** with **OUR SPECIAL IMPROVED STEEL CLIPS.**

"EVENERS."

It is generally conceded that the most important feature of preparatory machinery is the evener.

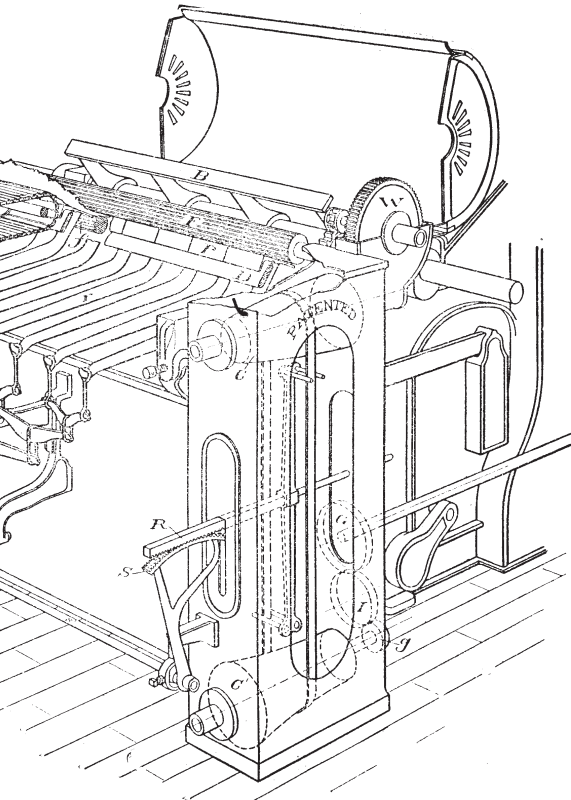
The old type of the English "piano" evener has been improved upon and practi-

plain view of the operator, any slight trouble can be readily perceived and corrected.

Another important consideration is the readiness with which the evener can be adjusted to adapt it to various conditions and different thicknesses of laps, which is ac-

complished on the evener illustrated herewith by simply turning a screw. Parts must not be intricate or delicate, as the least amount of backlash or play is detrimental.

The mechanism should be very sensitive and quick to work, as the communication from the evener plates or rolls to the cone belt must be practically instantaneous to accomplish what is expected of it, and in this connection a convex and concave cone should be used communicating directly with one another, as where a drum or idler is used it is necessary to travel twice the distance to obtain the same result. It can readily be seen that where screws, worms and similar contrivances are used in the make-up of the evener there is apt to be more or less friction, even though the operator takes the greatest of care and spends a great deal of time in oiling the parts, and the least amount of friction retarding the immediate action of any of the connecting parts practically makes the evener unreliable, as it may make an even and smooth lap for a time, and then, for practically no accountable reason, vary beyond a reasonable limit.



cal done away with in this country; furthermore the American makes are, generally speaking, radically different, and as they vary in construction so do they in effectiveness.

Recent inventors have found the field so well covered that they have not only found it hard to introduce anything new that would at the same time be an improvement, but have also been prevented to a large extent from copying, on account of the force and breadth of patents already in existence.

A study of the development of the evener for cotton lappers would be very interesting, but as the modern manufacturer has to deal more with what is up to date, we will waive this interesting study and consider the various types now in most common use.

Talking points are not always practical ones, and a purchaser is for this reason largely forced to use his own judgment in reaching a verdict concerning the soundness of arguments offered. When simplicity is combined with effectiveness it is the thing most to be desired in mechanical motion, as it enables the mechanism to accomplish the required results with the least care to the operator and at a minimum cost for repairs, etc.

Careful tests have always given a preference to the evener having its plates or sectional rolls beneath rather than above the feed roller, working in conjunction with the same. There are several reasons for this, but the main one is so apparent to one having had experience that it cannot be overlooked.

It is a fact that the parts coming above the feed roll have to be encased, and as the cotton beats from the rolls the lint and dust which necessarily fly from the sheet of cotton gradually clog up the working mechanism boxed in the above-mentioned casing or covering. Of course, this can be taken apart and cleaned; but it not only requires an expenditure of about four hours' labor, but it also stands to reason that the evener is becoming less and less effective from the time it is first cleaned until it is cleaned again, owing to the fact that the clogging is a gradual process, and the sensitiveness of the evener becomes less and less as the clogging operation gradually goes on. Furthermore, where all the parts are open and in-

ing are not done from a single pair of rolls or a combination of the plates and a single roll, although this appears to be the case; consequently the argument that two sets of rolls offer a superior construction loses its force, and the second set of rolls also helps undo the work accomplished by the evener.

A great many manufacturers of picking machinery have made a failure of their machines and discontinued their manufacture because of their inability to get a successful evener.

A great many carders seem to have the impression that as long as laps taken from the finisher are reasonably even, the results wanted are being obtained. This, however, is not always the case, as it is necessary that the lap should be even when weighed by the yard, this being the true test of the work done by the evener.

The scale-motion evener, with plates located beneath the rolls, having its working parts all in plain view, as illustrated herewith, is covered by patents, and as it is claimed to be the most successful form yet devised, it, of course, has been imitated in a great many ways with varying success. It is claimed, however, that nothing has yet equaled the original.

The patents are owned and controlled by

The A. T. Atherton Machine Company, of Pawtucket, R. I., who apply this type of evener to all of their lappers.

This concern makes the largest variety of machinery for the picker room, and the number of mills equipped with their machines in the few years since this company was incorporated fully attests the radical improvements made by them in this line; in fact, they claim to be "the leading manufacturers of preparatory machinery."

United States Textile Patents.

No. 661,288. Warping machine. Charles H. Knapp, Paterson, N. J. Filed March 6 1900. Serial No. 7483. (No model.)

No. 661,264. Driving mechanism for looms. Albert A. Gordon, Worcester, Mass., assignor to the Crompton & Knowles Loom Works, same place. Filed June 16, 1900. Serial No. 20,543. (No model.)

No. 661,083. Picker check for loom. David W. Shirreffs, Oswego Falls, N. Y. Filed April 2, 1898. Serial No. 676,200. (No model.)

No. 661,752. Shuttle-changing loom. Horace Wyman, Worcester, Mass., assignor to the Crompton Loom Works, same place. Filed June 9, 1899. Serial No. 719,993. (No model.)

No. 661,665. Shuttle check for looms. John P. Maloney, Woonsocket, R. I. Filed May 18, 1900. Serial No. 17,164. (No model.)

No. 661,656. Harness for cross-weaving. William B. Dixon, Philadelphia, Pa. Filed March 24, 1897. Serial No. 628,936. (No model.)

No. 661,640. Woven fabric. Alfred Heald, Philadelphia, Pa. Filed Feb. 19, 1900. Serial No. 5794. (Specimens.)

No. 662,029. Loom-beam attachment. Charles R. Saatweber, Paterson, N. J., assignor of one-half to George W. Renkel, same place. Filed Oct. 7, 1899. Serial No. 732,912. (No model.)

Lucid Intervals.

"Lucid Intervals" is the title of a book composed of short stories from the pen of E. S. Martin. The sketches are all in a philosophical line, and contain many amusing and instructive maxims. Mr. Martin has won quite a name for himself as one of our most amusing and graceful young authors, and the stories compiled in this book are of his very best. Some of the subjects dealt with in Lucid Intervals are: "Children," "Education," "Some Human Cravings," "Husbands and Wives," etc. These sketches first appeared in Harper's Magazine, where they attracted widespread attention, and it will be welcome news to many to know that they have been issued in book form. Harper & Bros., New York, N. Y., are the publishers. Price, \$1.50.

Old Iron—There is a fair amount of business doing and values remain about steady.

No. 1 scrap	¢wt 60@65	Steel rails	.....12 00@18 00
Balling hoops	... 20@40	Light iron	¢wt 20 @ 25
Forging hoops	... 40@	Sheet iron	..... 15 @ 20
Turings	..... 30 @ 35	Car axles	.....15 00@16 00
Car wheels	¢ ton, 12 00 @	Car springs	..... 40 @
Machinery	¢wt 45 @ 50	Burnt	..... 20 @
Stoveplate	..... 30 @ 35	Malleable	..... 10 @
Iron rails	.....13 00@14 00		

Wax can be removed from cloth by holding a red-hot iron within an inch or two of the marks and afterward rubbing them with a soft clean rag.

L. S. Watson Manufacturing Company,
LEICESTER, MASS.
Manufacturers

WIRE PATENT HEDDLES

of every description used in

COTTON AND WOOLEN MILLS.
ALSO EXTENSIVE MANUFACTURERS OF

Superior Harness Frames—Iron End Frames a Specialty.

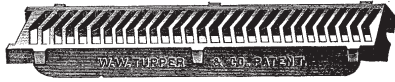
Special attention is called to our Heddles and Harness Frames as being perfectly adapted to weaving the finest fancy cotton goods. We are also AGENTS and IMPORTERS of the German Tinned Cast Steel Wire Heddles.

These Heddles are made with soldered warp eyes; also soldered end eyes, and are the most DESIRABLE FOREIGN HEDDLE MADE.
Correspondence and Orders solicited. Write us for Samples and Prices.



H. W. HAKES MFG. CO.,
MILLBURY, MASS.,
Manufacturers of
HEDDLE FRAMES.

ROCKING GRATES. DUMPING GRATES.



SEND FOR CIRCULAR.

THE BEST AND CHEAPEST
GRATE BAR
FOR ANY KIND OF FUEL.
W. W. Tupper & Co.
39 & 41 Cortland St., New York.
Taylor Bldg., Room 181.

THE FULLER'S
READY TABLES.

SHOWING

THE NUMBER OF INCHES WOOLEN CLOTH SHOULD SHRINK TO FINISH AT DIFFERENT WEIGHTS, AND THE AMOUNT OF FLOCKS TO BE APPLIED ACCORDING TO THE SHRINKAGE OR STRETCH OF THE FABRIC.

WITH OBSERVATIONS ON FULLING

AND THE HANDLING OF GOODS IN THE MILL; SOAPS, HOW THEY SHOULD BE MADE AND APPLIED; FLOCKS AND THEIR APPLICATION; SCOURING, BUR DYES, COCKLES, Etc., Etc.

By **JOHN F. TIMMERMANN,**
PRACTICAL FINISHER.

BOSTON:
BOSTON JOURNAL OF COMMERCE PUBLISHING COMPANY.

PRICE 50 CENTS.

INDIAN ORCHARD CO., INDIAN ORCHARD, MASS.

MANUFACTURERS OF

COTTON WARPS and YARNS, in Gray and all Colors, Single or in any Twist. COLORED COTTON, Machined, Carded, or in the Roving. NOVELTY YARNS, in Cotton, Mercerized Cotton, Silk and Worsted, in various Patterns, Colors and Twists.

We are always pleased to assist our patrons of the Woolen Goods manufacture in special pattern warps for samples.
We use a uniform grade of long staple cotton in all our manufacture.



UNIVERSAL WINDING MACHINES.

Wind all kinds of yarn, thread and twine with absolute perfection, in proper form for delivery to knitting or sewing machines, twisters, braiders and looms.

UNIVERSAL WINDING COMPANY,
95 South Street, BOSTON, MASS.

SACO & PETTEE MACHINE SHOPS
Newton Upper Falls, Mass.

COTTON MACHINERY
Of the Most Improved Patterns.

Southern Office:
Charlotte, N. C.

Works at }
Biddeford, Me. AND Newton Upper Falls

STEEL CASTINGS

From 1 to 40,000 Pounds Weight.
Of Open Hearth or McAffie Steel.
True to Pattern. — Sound. — Solid.
Gearing of All Kinds, Crank Shafts, Knuckles for Car Couplers.
Cross-H ads, Rockers, Piston-Heads, etc., for Locomotives
Steel Castings of Every Description.
Chester Steel Casting Co.
Works, Chester, Pa. Office, 407 Library St., Phila., Pa.

Manila Rope. Sisal Rope. OAKUM.
Manila Transmission Rope.

Bale Hay and Hide Rope

TWINES.		MARLINS.	
A. Italian.	B. Italian	2 & 3 Ply.	B. Russian.
B. American.	Em. Iesa.	B. American.	B. C. American.
B. C. D. Shoe.	Diamond Baling.	Empress.	India.
Imp Baling.	L. M. Baling.	India Tubing	Seaming Co'd.

Chandler Holmes, Commission Merchant.
128 Purchase Street, Boston, Mass.

E. A. SMITH, President. J. P. WILSON, Secretary and Treasurer

THE CHARLOTTE SUPPLY CO.,
CHARLOTTE, N. C.

General Mill Furnishers
AND MANUFACTURERS OF LEATHER BELTING.

INCORPORATED JUNE 4, 1890.
AMERICAN CARD CLOTHING COMPANY.

General Offices, Worcester, Mass.
Send Orders to Factories: Worcester, Leicester, North Andover, Lowell, Mass. Philadelphia, Penn., Providence, R. I., Manchester, N. H.
MANUFACTURERS OF EVERY DESCRIPTION OF **CARD CLOTHING.**

Exclusive American Licensees for the PATENT FLEXIFORT CARD CLOTHS.
Special attention given to Clothing for Revolving Top Cars. Experts furnished to clothe and start the same.

ELLIOT CLOTH FOLDER AND MEASURER

For Cotton and Gingham Mills, Bleacheries, Print Works, Etc.
MANUFACTURED BY
ELLIOT & HALL,
WORCESTER MASS. SEND FOR CIRCULAR.

THE MORSE ELEVATOR

received the
HIGHEST AWARD
at the
NATIONAL EXPORT EXPOSITION
Philadelphia 1899.
MORSE, WILLIAMS & CO.,
PHILADELPHIA, PA.

Boston and Maine Railroad.
LOWEST RATES
FAST TRAIN SERVICE

BETWEEN
Boston and Chicago,
St. Louis, St. Paul, Minneapolis
AND ALL POINTS
West, North and Southwest.

Pullman Parlor or Sleeping Cars on
all Through Trains.

For tickets and information apply at any
principle ticket office of the company.

D. J. FLANDERS,
Gen'l. Pass. & Tkt. Agt.
BOSTON.

SPRINGFIELD LINE

BETWEEN BOSTON AND
NEW YORK

Trains leave either city at

9.00 A. M., except Sunday;
12.00 noon, except Sunday.
4.00 P. M., daily (Dining car);
11.00 P. M., daily.

† Drawing room cars on all day trains and sleeping cars on night trains. The 12.00 noon train requires but 5 HOURS and 40 MINUTES for the trip. No excess fare charged.

A. S. HANSON,
General Passenger Agent.
Boston, Mass.

BUILDERS OF PLAIN AND FANCY LOOMS
CROMPTON & KNOWLES LOOM WORKS
 WORCESTER, MASS. BRANCH WORKS, PROVIDENCE, R. I.
FOR WEAVING EVERY KNOWN TYPE OF TEXTILE FABRIC.

William Firth President. Edwin Barnes Vice-President. John H. Nelson Treasurer.

WILLIAM FIRTH COMPANY.
 67 Equitable Building, 150 Devonshire St., Boston, Mass.

— Sole Importers of —
ASA LEES & COMPANY LIMITED
 Bale Breakers - Revolving Flat Cards - Drawing Frames
 Slubbing - Intermediate and Roving Frames
 Combers - Ribbon and Comber Lap Machines.
 Southern Agents For The
 Fall River Machine Company Spinning Frames.
 Southern Office: 40 South Forsythe St., Atlanta, Ga.
 C. E. W. Dow Representative.

EVAN ARTHUR LEIGH,
 Successor to E. A. LEIGH & CO.,
 35-36 Mason Building . . . BOSTON, MASS., U. S. A.
 — IMPORTER OF —
TEXTILE MACHINERY, Etc.
 Sole Agent for the United States and Canada for
PLATT BROS. & CO. (Ltd.) of Oldham, England,
 By Far the Largest Makers in the World of
COTTON, WOOLEN and WORSTED MACHINERY.

By the use of Platt's Cotton Machinery, for either fine or coarse work, a larger production of better quality can be obtained at less cost.
 Sole Makers of Brown's Patent Carding Engines for Wool—give woolen yarn a worsted appearance.
 New Patent Noble Comb—increased production, better work.
 Special Machinery for making English and French Worsted Yarns.
 Special Machinery for making Cotton Waste into Yarns.
 Sykes' card clothing for cotton, Critchley's card clothing for woolen and worsted.
 Dronfield's Grading Machinery and Emery Filleting. Also supplies for the above machinery kept in stock.
LOOKS FOR ALL CLASSES OF WORK.
 Mather & Platt's Dyeing and Finishing Machinery.
 Archbutt-Deeley System for Purifying and Softening Water.

Works being enlarged to supply the increased demand for latest Improved Looms, Warpings, Reels, Size Kettles, Beamers, Quillers, etc.
LEWISTON MACHINE COMPANY.
 J. P. Battles, Treasurer, & Agent, Lewiston, Ma ne.
 Southern Agents: S. B. Alexander, Jr. Co., Charlotte, N. C.
 Correspondence Solicited.

COTTON MACHINERY

Cards Drawing Frames & Speed Frames Mules and Twiners Spindles and Flyers Card Clothing	} Tweedales & Smalley. Taylor Lang & Co. William Ryder. C. Cain Sons & Greenwood.
---	--

WRITE FOR PRICES
H. G. MCKERROW & COMPANY,
 L. D. TELEPHONE 1729 BOSTON 31 State St., Boston, Mass.

LOOM PICKER COMPANY, BIDDEFORD, ME.,
 MANUFACTURERS OF
Loom Pickers, Loom Harnesses,
 Duck Lug Straps and Picker Leather.
 Every Picker is stamped "Loom Picker Co., Biddeford, Me." Send for Illustrated Catalogue.

Worsted Machinery Made in the United States
Lowell Machine Shop, Lowell, Mass.

SPINNING FRAMES with Caps, Rings or Flyers and any kind of Spindles, for long or short wool and any gauge of Rollers.
DANDY ROVERS and REDUCERS with all latest improvements.
WEICH BOXES and DRAWING BOXES with any kind of Rollers and any number of Spindles.
GILL-BOXES for Drawing fitted with Cans or Spindles.
GILL-BOXES for Preparing before Combing, and finishing afterward.

Modifications will be made of the above to suit different kinds of work.

We melt one hundred tons of iron per day to make the castings for our
Northrop Looms, Draper Spindles,
Twisters, Dutcher Temples,
Warpers, Spoolers, Reels, &c.
 But that is not enough.
 Enlargements still in progress
THE DRAPER COMPANY.
HOPEDALE, MASS.

CONES Patent Applied For **CONES**

We are now ready to fill orders to any amount for our new cones.
 These cones have just been perfected and will be found to be better than anything that has been on the market heretofore.
 These cones have a perfect holding surface making a solid foundation for a solid and symmetrically wound ball of yarn. Besides being stiff and light, they are bright in color and contrast agreeably with white yarn. The stock is much superior to the common newsboard and consequently proportionately stronger.
 These cones can be made in several different colors if desired.

Haworth & Watson.
 Lowell, Mass

COLORED CHALK CRAYONS.
 Soft Crayons, manufactured expressly for Textile Mills, for marking roving, yarn, and cloth. They contain no oil or wax. Nine shades. Send for circular containing samples of colors, prices, etc.
LOWELL CRAYON CO., LOWELL, MASS

If you want the Best, Order our Patent Metallic Burnished Rings.

WHITINSVILLE SPINNING RING CO.
 WHITINSVILLE, MASS.

G. L. BROWNELL,
 BUILDER OF
IMPROVED SPINNING AND TWISTING MACHINERY,
 For Hard or Soft Twines, Lines, Cordage, etc., of Sisal, Manila, Cotton, Linen, Hemp, Jute, Silk, Hair, Paper, or Wire.
 Write for particulars in regard to our new machine for spinning heavy Cotton Yarn direct from Drawing Silver for Cotton Rope, etc.
 49 and 51 Union St., Worcester, Mass.

S. A. DUDLEY, TAUNTON, MASS.,
 Manufacturer of SHUTTLES OF ALL DESCRIPTIONS.

Also sole Manufacturer of **DUDLEY'S PATENT DOUBLE OUTSIDE CATCH SHUTTLES**
 The ONLY Double Outside Catch Shuttle Made.

EASTON AND BURNHAM MACHINE CO.
 ALL KINDS OF **Spindles** Pawlucket, R.I.
 USED IN THE MANUFACTURE OF **COTTON, WOOL & SILK**
IMPROVED UPRIGHT SPOOLERS
 TO SPOOL FROM COP, SKIN, OR BOBBIN.

M

— THE —
M CHANICAL SPECIALTIES
MANUFACTURING COMPANY
 SOLE MANUFACTURERS OF

S

THE VERTICAL BOILER TUBE CLEANER.

The **CHEAPEST** and **MOST PRACTICAL** way of cleaning a vertical boiler that has **EVER** been invented. It is the **ONLY** way by which one of these boilers can be cleaned without removing the bonnet and with the fire on the grate.

There are over **9000** of these cleaners now in operation. Their cost is very small when the results are considered.

If you have a vertical boiler and want to save money, let us make you a cleaner that will do it.



M

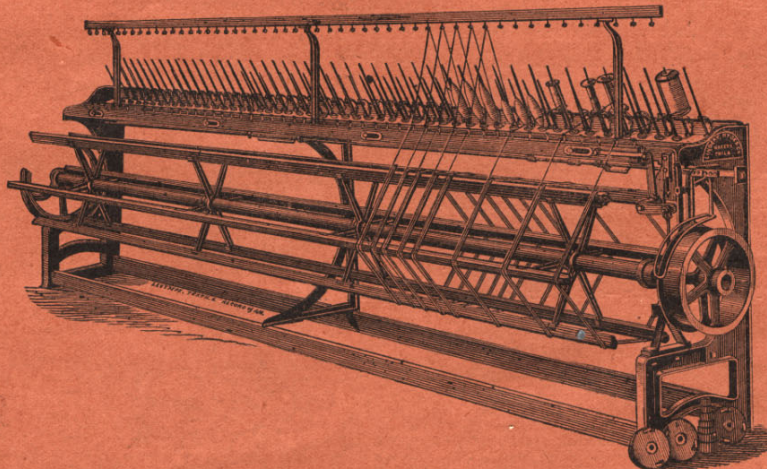
128 PURCHASE STREET,
 BOSTON, MASS

C

LINDSAY, HYDE & CO.,

2130 East York Street, Philadelphia. Pa.

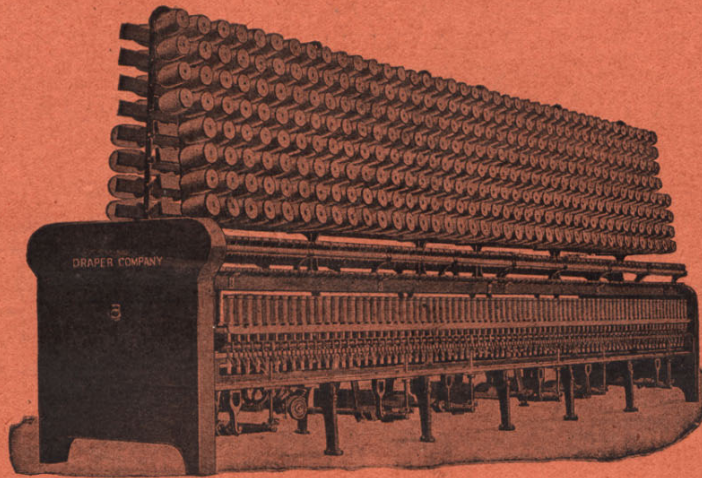
TEXTILE MACHINERY



Over 4,000 of Our Improved Reel in use.

Also Builders of Hosiery and Cop Winders and Spoolers.

Findings for Bridesburg and Plat Bros., S. A. Mule a Specialty.



OUR LATEST TWISTER

We take this opportunity of calling the attention of possible customers to our special line of Twisters for Cotton, Woolen and Worsted Yarns. We believe that we have the most up-to-date construction in the market. Our machine is built primarily for Twisting and is not a made-over spinning frame. It is heavy, solid and substantial. We make its spindles and rings here in our own works and we know its every detail.

As to novelties we own patents on exclusive features that ought to settle any possible question of choice. We control the

Reversible Ring Rail,
Carter Oiling Device for Vertical Rings,
The Hetherington Spindle Brake,
The T. H. Smith Twister Stop Motion,

And other minor features. Why not have the benefit of recent improvements when they are readily accessible? The great increase in our business testifies to appreciation of our efforts. We now have unrivaled facilities for prompt execution of large orders.

As to other lines of manufacture, we are still ready and anxious to convince those ready and anxious to be convinced by truth and logic. We take legitimate pride in our products and will alter not the grade of any one of our products to gain a possible price-clipping customer.

As to Northrop looms—send for complete pamphlet if interested.

THE DRAPER CO.,

HOPEDALE, MASS.