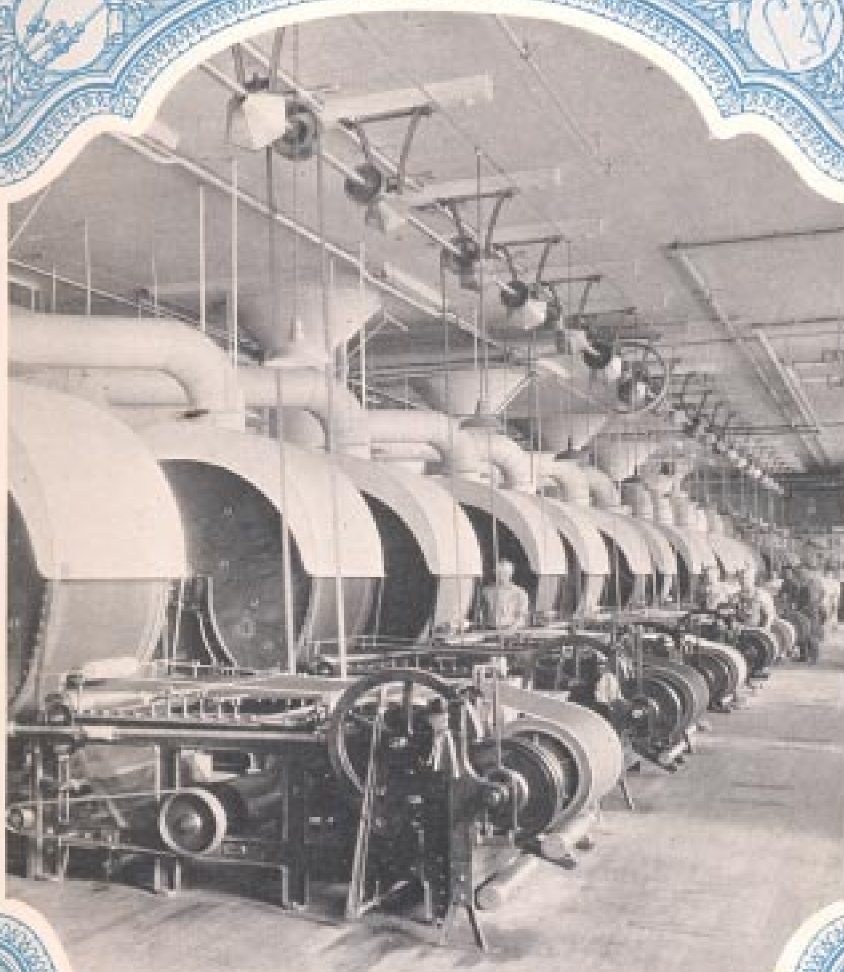
# THE SACO-LOWELL BULLETIN

AUGUST 1928



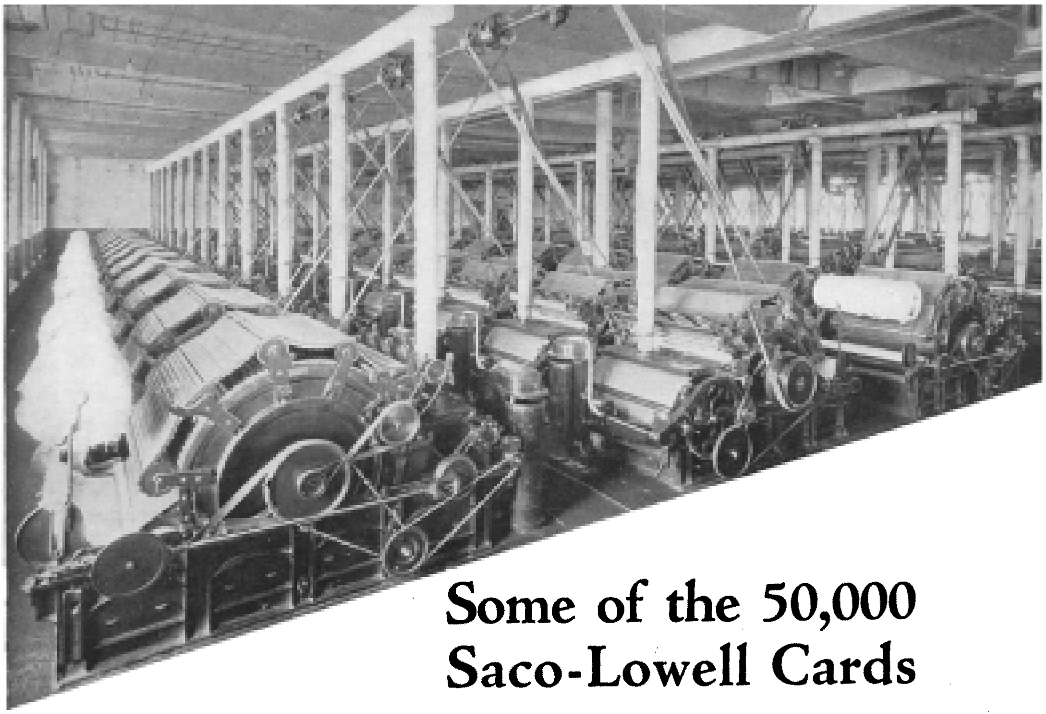
A Battery of Saco-Lowell Slashers

*In This Issue*

SYPHON SYSTEM FOR SLASHERS

MR. MARTIN A. ROTH, *Inventor*

NEW CHAIN DRIVE FOR ROVING FRAMES



# Some of the 50,000 Saco-Lowell Cards

YOU will find card rooms such as this, filled with Saco-Lowell Cards, all over the world. Since 1888, when the first revolving flat card built in America was manufactured in our Newton Upper Falls shop, Saco-Lowell has put out over 50,000 of these machines.

As we pioneered in the beginning, so have we pioneered all along. We have made a specialty of these machines, developing special tools to be used in their manufacture. On their accuracy, workmanship, and design, Saco-Lowell Cards have built up a world-wide reputation for quality.


In the May issue of our monthly "Bulletin" we published the result of interesting tests on the efficiency and economy of light carding. If you have not seen a copy, we shall be glad to send one. Write to:

**SACO-LOWELL**

MANUFACTURERS OF TEXTILE MACHINERY

147 Milk Street, BOSTON, MASS.

CHARLOTTE, N. C. GREENVILLE, S. C. ATLANTA, GA.

THE SACO-LOWELL

BULLETIN

*Issued monthly in the interests of efficient mill operation by the*

SACO-LOWELL SHOPS

147 MILK STREET

BOSTON

CHARLOTTE GREENVILLE ATLANTA

VOLUME I AUGUST 1928 NUMBER 6

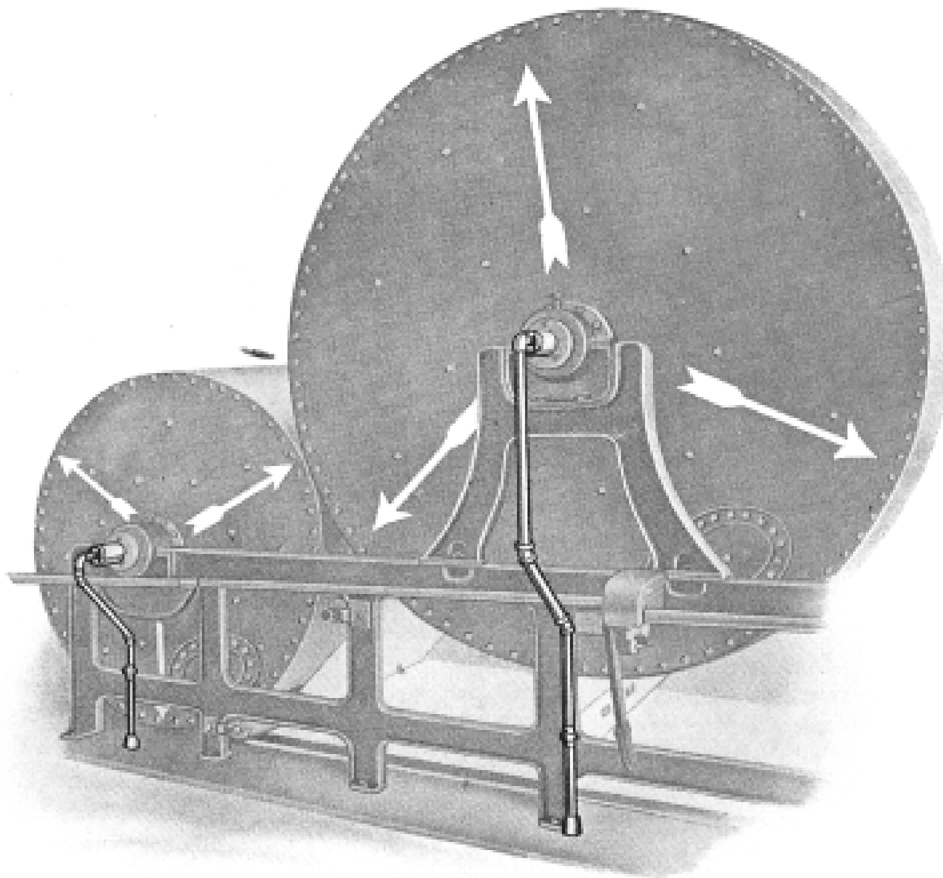
# The Atkins Rotary Syphon System For Draining Slashers

THE old method of draining slasher cylinders by means of buckets has always been an inconvenient method. While it was possible to drain the water in this way, it was impossible to remove the air which retarded to a high degree the process of heating the cylinders. To improve upon the old method we have adopted, as standard equipment on all our cotton Slashers, the Atkins Rotary Syphon System which continuously forces all water *and air* from the cylinders by internal steam pressure, and so eliminates all drainage by the old bucket method.

This system consists of three pipes of standard size which lead from the inner circumference of the Slasher cylinder through the central shaft to a flat steam slide valve located on outside end of Slasher shaft.

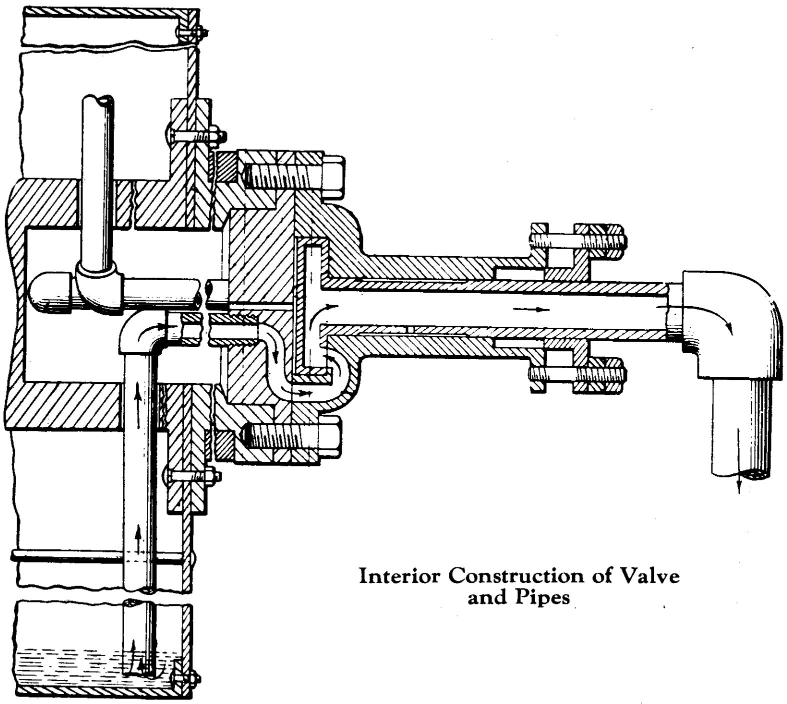
These pipes terminate close to the inner surface of the cylinder about 120 degrees apart and turn with the cylinder.

As the cylinder revolves and one end of each pipe nears the bottom, the opposite end passes a port in the steam slide valve which opens communication directly with the atmosphere. Further revolution of the Slasher cylinder closes this port and opens the next one, thus making the cylinder drainage complete and continuous. No traps are required, the steam slide valve functioning as a perfect substitute and being the only separate piece. When cylinders are cold and the machine stopped with the arrows pointing down, the cylinders are fully heated *three* minutes after the steam is turned on, where it previously took about fifteen minutes. Complete and continuous drainage of air as well as water from cylinders makes them so much hotter that a speed one quarter greater than with buckets is frequently maintained, and assures a 20% increase in production. The apparatus is



# The Atkins Rotary Syphon System

*Exterior view of Slasher Cylinders, showing application of Atkins Rotary Syphon System. The arrows indicate the position of the pipes within the cylinder. The entire system is made up of a few parts, and once installed is practically trouble-proof. The valve action shown on the opposite page is concealed within the cylinder hub. In that drawing small arrows indicate the syphon action and flow of water and air as each pipe comes into its working position at the bottom of the cylinder.*



Interior Construction of Valve and Pipes

of few pieces and once installed will run for months without the slightest attention.

The interior construction of our Rotary Syphon System for draining Slasher Cylinders is here shown as fully installed.

The downward pipe is open to the hot well during 22½ degrees each side of the vertical line of the cylinder during one revolution. Since there are three syphon pipes, the drainage of the cylinder is thoroughly accomplished by opening the discharging Syphon pipes through a combined maximum for 135 degrees and closing them through the remaining 225 degrees for each revolution of the Slasher Cylinder. By experience we find this forms a superior substitute for a trap—nothing but hot water, air, and non-condensable gases ever appearing at the outlet.

A number of mills (the names of which we will gladly furnish upon request) have already made extensive installations of this system and are consistently obtaining 20% or more increased production. We shall be glad to receive inquiries or furnish further information to anyone interested.

# The Inventor of the Saco-Lowell Long Draft System

WE believe our readers will be interested in hearing something about the actual inventor of the Le Blan-Roth long drafting system and his experience in developing the original crude idea into a very definite commercial success.

Mr. Martin A. Roth

Mr. Martin A. Roth, whose picture appears in this issue, was born in 1862 in Alsace. His people were actively identified with the cotton manufacturing industry, and he followed in their footsteps, starting in as an apprentice and working through the Mill in the capacity of Overseer, Superintendent, Assistant Manager and, finally, as Manager, having been in charge of several of the most important French Mills. He showed marked ability in handling his operatives and in securing from his subordinates a maximum of loyalty and enthusiasm. He was at all times particularly interested in research work.

In 1897 he went to Lille as Manager of the firm of J. Le Blan Pere et Fils. This was one of the most important mills in France, being particularly noted as spinners of fine counts and of yarns of the highest quality. Up to the present time Mr. Roth has continued his association with this Company and its successors, Le Blan et Cie.

He was one of the early inventors of a pneumatic card stripping system and is well known for his patented stop-motion for mules, but was perhaps best known, up to the time he brought out his long draft system, as the inventor of the Roth Aspirator for comber waste, which has been universally adopted by all manufacturers of combing machines. He has received many honors from the leading Technical Institutes and is considered to have few peers as a Technical Engineer.

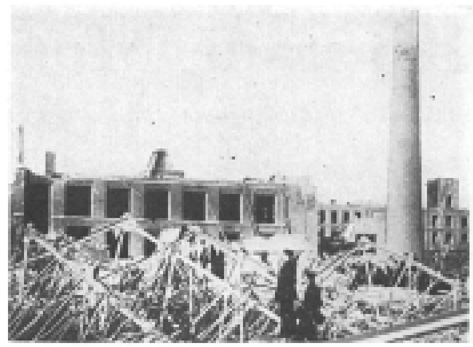
Shortly before the Great War broke out, the earlier patents of Mr. Casablancas appeared, and these developed the keenest interest among the Continental spinners. Mr. Roth began at that time his first experiments with long draft, but the outbreak of the Great War and the early occupation of Lille by the German forces brought everything in this direction to a standstill. In the early days of the War, the Mills of

Messrs. Le Blan et Cie. were completely demolished, as can be seen from the illustrations, so, for the period immediately following the Armistice, the efforts of Mr. Roth were largely directed to the reconstruction of the Mills.

However, during the War period, the investigation of long draft was not entirely dropped by the Firm, as Mr. Emile Le Blan of this Company had been assigned by the French Government to the installation and operation of a spinning mill making materials for the French forces, and during that period he came in contact and was able to experiment industrially with the Janninck Process. This was one of the pioneers of the long draft systems—using a very small middle bottom roll and a small light middle top roll; all with the idea of providing the closest possible setting and the shortest possible distance for the delivery of the cotton from the second line of rolls to the bite of the front rolls.

With the reconstruction plans under way, Mr. Roth continued his research work and was soon converted from the sceptic he had been to a firm believer in the merit of a slip draft. Several mills of the Company had to be completely rebuilt and re-equipped, and in one of them, the Rue de Trevise Mill, a very complete laboratory was set up for Mr. Roth's experiments. This Rue de Trevise Mill, by the way, was largely equipped by the Saco-Lowell Shops.

Three years ago this summer, Mr. Roth had proceeded so far with his experiments as to be satisfied that his system was a commercial success, and the Saco-Lowell Shops were offered the order for the first new spinning frames to



Wartime Destruction of Le Blan et Cie. Mills

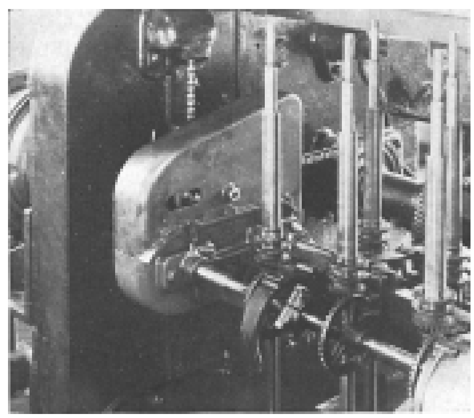
be built with this system. These were installed in the Cotonniere Lilloise in Lille, one of the large units of Le Blan et Cie.

We sent to France at that time Mr. Banfield, the Agent of our Biddeford Shops, to become entirely familiar with the work that Mr. Roth had done, and to discuss with him the future possibilities of this long draft system. After long research, Mr. Banfield returned to Biddeford, and shortly afterwards we secured the sole rights of manufacture in America under the Le Blan-Roth Patents. Long and careful study under the direction of our Chief Engineer, Mr. Blake, was felt to be wise, in order to adapt this device to the requirements of the mills in this country. No attempt was made to put out any great number of machines with this system until we had satisfied ourselves that the actual results under mill conditions justified our expectations. It was not long, however, before repeat orders began to come in from our first trial installations. Orders have increased in volume until now we have just closed a contract for a complete 50,000 spindle installation for the New Ariel Mills which are now being constructed near Easley, South Carolina.

# Constant Motion Chain Drive for Roving Frames

THE majority of manufacturers of roving frames in this country and abroad have used a swinging link motion to connect the gear on the differential or the sleeve gear of the compound with the gear on the back bobbin shaft. This link motion and the gears is often referred to in shop and mill parlance as the "Horsehead." This motion is not entirely satisfactory, as it affects the tension of the roving, and causes the ends to slacken when the rail is running down and to tighten on the up stroke of the traverse. The longer the traverse of the rail, the greater the change in the tension, and this change becomes very considerable on longer traverses. The amount that the bobbins lose in the down stroke and regain on the up stroke, is indicated by the angle shown on the gain and loss diagrams illustrated on Page 8.

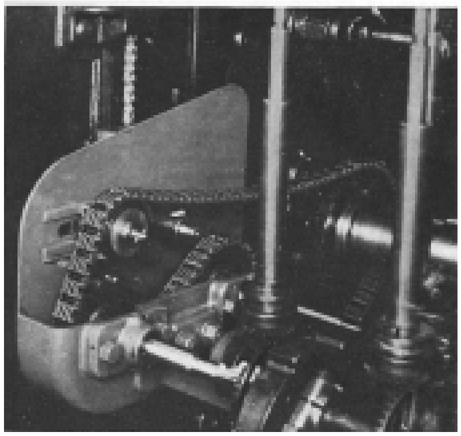
The unevenness of the winding is caused by the driven gear carried by the swing arms rolling over the bobbin drive gear. To illustrate, if a gear is held in a fixed position, and another gear is caused to roll around it with the teeth meshed, this other gear will revolve. If then the fixed gear is caused to revolve, the driven gear receives the number of revolutions imparted by the turning of the driver, and if at the same time it rolls around the driver, the speed of the travel will increase or decrease, according to whether the driving gear rolls with the direction of the turning of the driving gear or against it. In the Horsehead, the bobbin drive gear revolves toward the back of the frame, so that when the rail is running down, the driven or intermediate gear is traveling or rolling down with it, and causes the gear to lose a certain amount, according to this distance of travel. Upon the change at the bottom and the rail begins



Saco-Lowell Chain Drive
Front View—Cover On

to rise, the driven gear in the swing arm travels in the opposite direction to the bobbin drive gear, which will cause it to gain in speed over the bobbin drive gear, the same amount that it lost while on its downward stroke. When the rail is running down, the ends gradually slacken, and when the rail is running up, they gradually tighten.

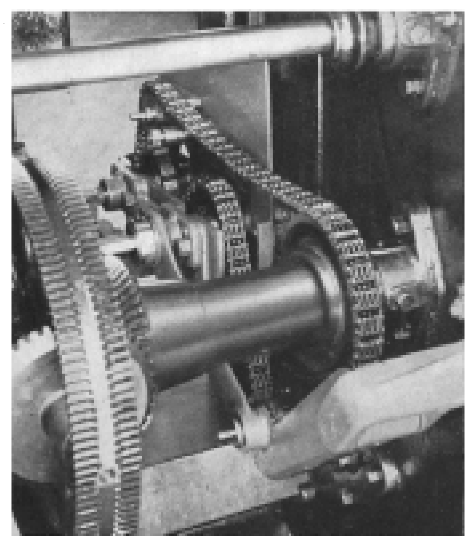
An actual demonstration of this action can easily be made with the frame. While the frame is stopped, the demonstrator



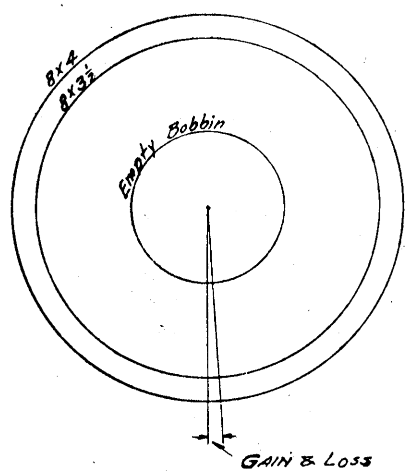
Saco-Lowell Chain Drive
Front View—Cover Removed

puts an empty bobbin on the bolster gear and a flyer on the spindle. Holding the flyer in a manner to eliminate all back lash from the spindle gear, run the bolster rail either up or down and while in the extreme location, either at the top or at the bottom of the stroke, put a pencil in the flyer, while holding the flyer taut again at the empty bobbin, and with the assistance of another person on the back of the frame, run the bolster rail to the opposite end of the stroke. The person on the front of the frame, holding the marker, in the flyer, will make a line on the empty bobbin barrel exactly the same as is made while the frame is under full speed, and is winding the roving. In order to have as nearly uniform tension as possible between the front roll and the roving being wound on the bobbin, it is necessary to use a tension gear. It has been demonstrated now that at a certain point of the travel any tension gear will allow the ends to run too loosely, and at the other extreme the same tension gear would allow the ends to run too taut. It was thus necessary to use a tension gear to provide for one extreme or for the other, or for the average, and to ignore any stretch or change in tension from the traveling of the rail.

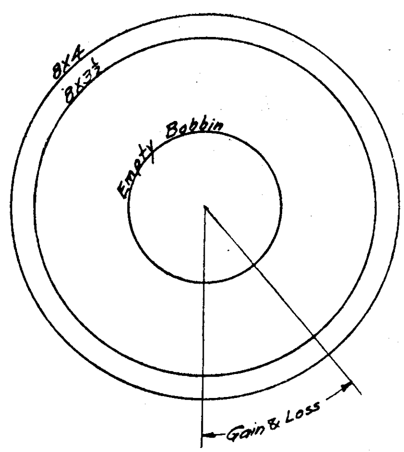
Many devices have been designed to eliminate the uneven winding and to accomplish a uniform tension on the roving frame. The first practical chain drive was patented August 11, 1908, and was put forward as an advancement in roving frame design. Consideration was given the gain and loss of the spur gear drive, but apparently not closely adhered to, as illustrated or written into the patent copy. Therefore of recent years it has become more apparent that a better solution of the problem would be desirable. Other chain drives have been brought forward, which have been exploited because the use of the chain recommended itself, but have disre-



Saco-Lowell Chain Drive
Rear View—Cover Removed




Gain and Loss on Roving Frame with Chain Drive "Horsehead." 8 x 3½ and 8 x 4 Bobbin




Gain and Loss on Roving Frame with Gear Drive "Horsehead." 8 x 3½ and 8 x 4 Bobbin

garded the essential uniform tension of any drive between the main shaft or compound and the bobbin gears. Any change which disregards that uniform tension seems to have little merit. It is not desirable.

Our engineers have been experimenting for years with the idea in mind of perfecting a drive that would overcome the difficulties mentioned above, and as a result of this work we are now in a position to offer to our friends as standard equipment on our Roving Frames a chain drive by means of which a uniform tension can be obtained, with no stretch in the winding of the roving.

In the design of the Saco-Lowell Constant Motion Chain Drive, we have observed the weaknesses in equipment previously designed, and overcome them by driving from the main shaft over a compensating or jockey gear, and connecting the two bobbin shafts, namely the front and back bobbin shafts, with one and the same chain. The equipment is arranged with a device on the lower side of the chain which acts to keep the chain uniformly taut at all positions of the traverse of the bolster rail. The gain and loss or stretching of the roving is wholly eliminated by the compensating jockey gear over the front bobbin shaft, and we lay great stress on this particular point of design. There are no spur gears in the bobbin drive on the main shaft or on the back and front bobbin shafts or between them.

The chain itself is of sturdy design, its durability proven by experience. The sprockets are adequate and they are as large in diameter as the space will permit. The bearings and the method of lubrication are of advanced design. The whole equipment, the sprockets and the chain, is enclosed as a preventive of accidents, but the cover is designed to be extremely easy to remove for inspection or application of parts. The design of this drive is such that it can be applied very readily to existing Saco-Lowell Roving Frames.