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Posselt's Textile Journal

A Monthly Journal of the Textile Industries

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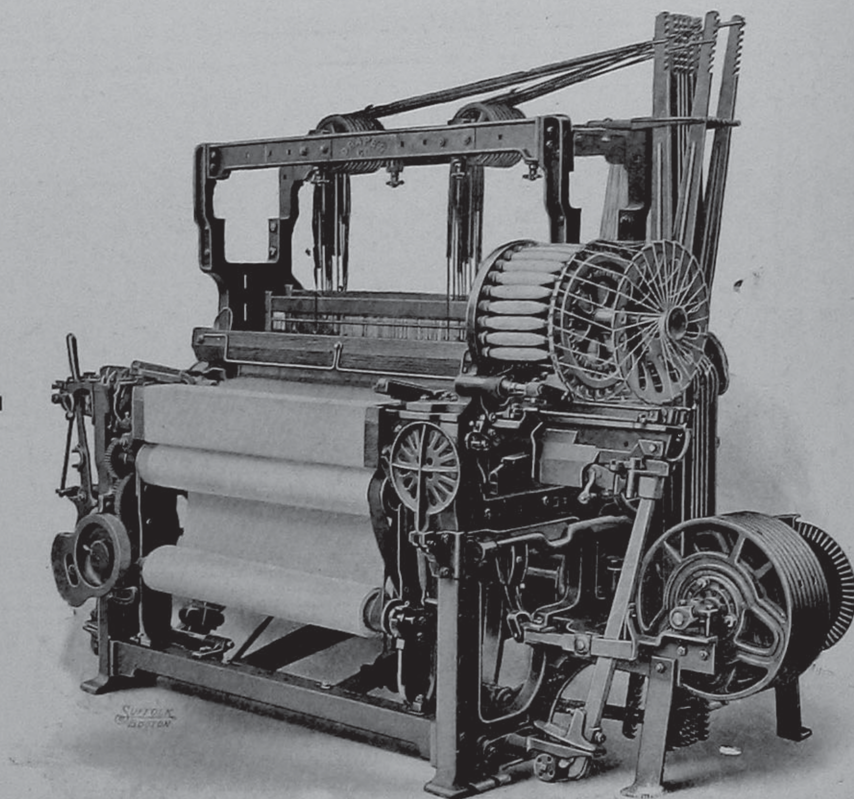


NORTHROP SIDE CAM CORDUROY LOOM.

THE PRESENT SEASON DURING THE STOPPAGE OF MACHINERY INCIDENT TO HIGH PRICED COTTON IS AN IDEAL TIME TO REPLACE COMMON LOOMS WITH NEW NORTHROP LOOMS AND THUS AVOID THE USUAL DISTURBANCE AND REDUCTION OF PRODUCT INCIDENT TO SUCH REPLACEMENT.

DRAPER COMPANY,

HOPEDALE, MASS.

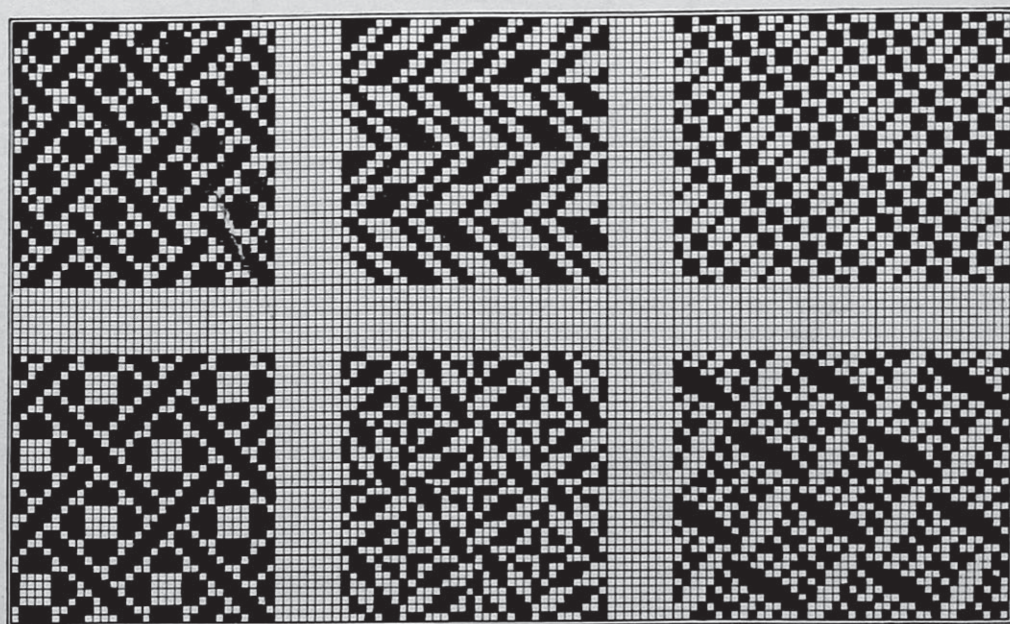
J. D. CLOUDMAN, Southern Agent.

40 SOUTH FORSYTH STREET, ATLANTA, GEORGIA.

DICTIONARY OF WEAVES

(The Most Important Addition to Textile Literature Published.)

SIXTEEN HARNESS



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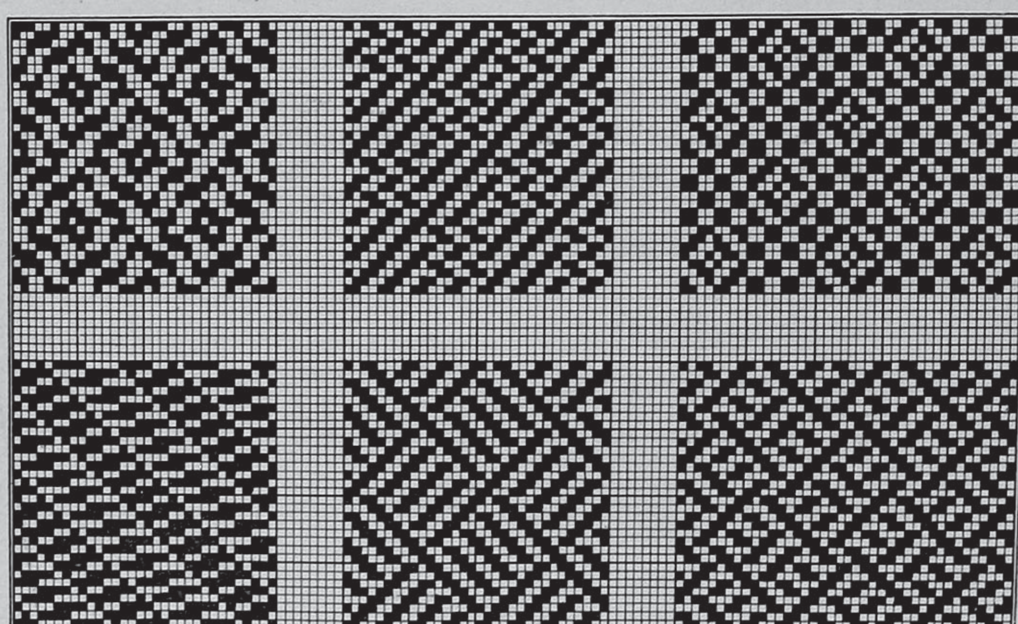
SIXTEEN HARNESS



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Complete, this Dictionary will contain over TWENTY THOUSAND PRACTICAL WEAVES.

About four thousand of them, every one a different weave, taken from fabrics met with in the market, have thus far appeared, and can only be obtained by new subscribers, by ordering back numbers of the Journal.

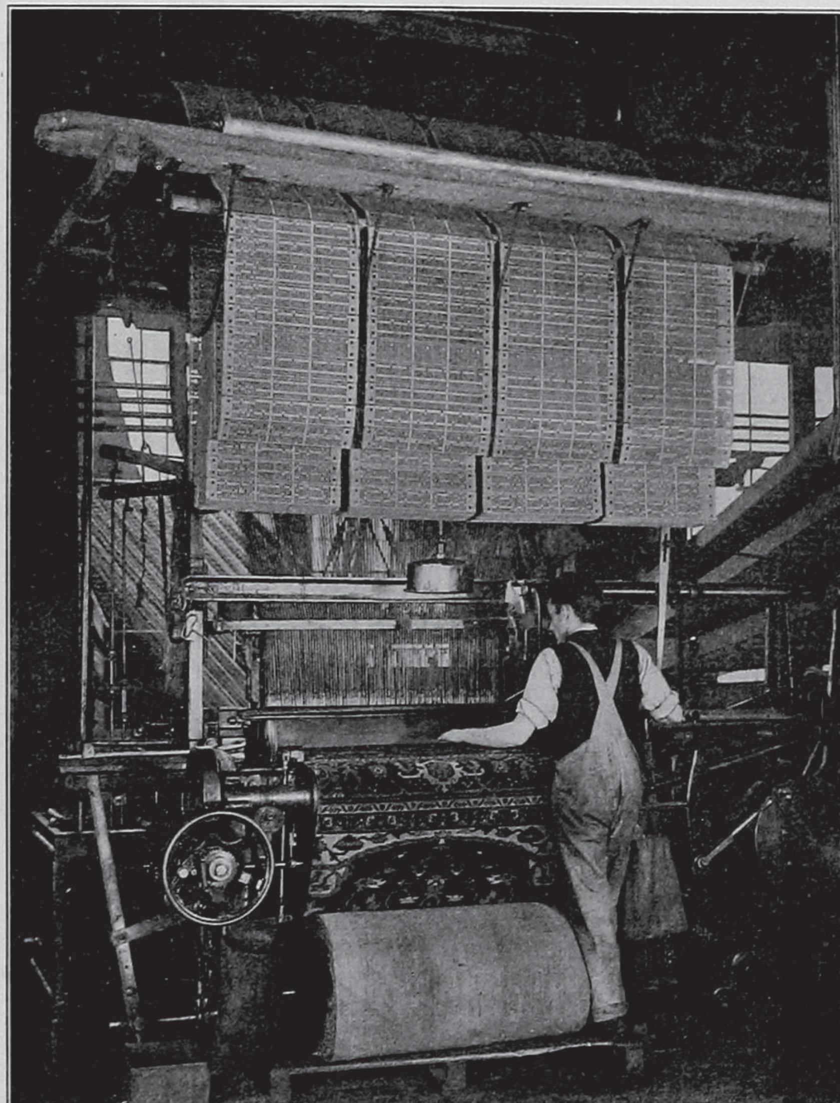
Posselt's Textile Journal

Vol. VII. July, 1910. No. 1.

PHILADELPHIA—THE TEXTILE CITY OF THE WORLD.

ITS CARPET INDUSTRY.

Little has been recorded as to the early history of carpets in general, but from what can be learned, it appears that the introduction of carpets in this country occurred about 1750. These early carpets were very expensive and their use was limited, especially among the English households.



Weaving Bundhar Wiltons.

It appears that their use gradually gained favor and in 1788, it seems that they had gained almost universal favor, except in the homes of the Quakers.

The early lines of carpets were imported from the other side, as can be seen from the fact that in 1768, Scotch carpets were for sale in Philadelphia by Joseph Wood, on Market Street and John Smith, on Second Street; while Daniel Gibbs, on Front Street, is recorded as having sold Wilton carpets.

The custom of those days was to cover only the centre of the room, the furniture being arranged around the sides of the spacious rooms.

The earliest mill appears to have been started about the year 1775 by William Calverly, who is recorded as having manufactured a superior line of carpetings in Loxley's Court.

His line was at that time claimed to be superior to those made abroad.

About the year 1791, the manufacture of Turkish and Axminster carpets was started in Philadelphia, at Northern Liberties, by William Peter Sprague.

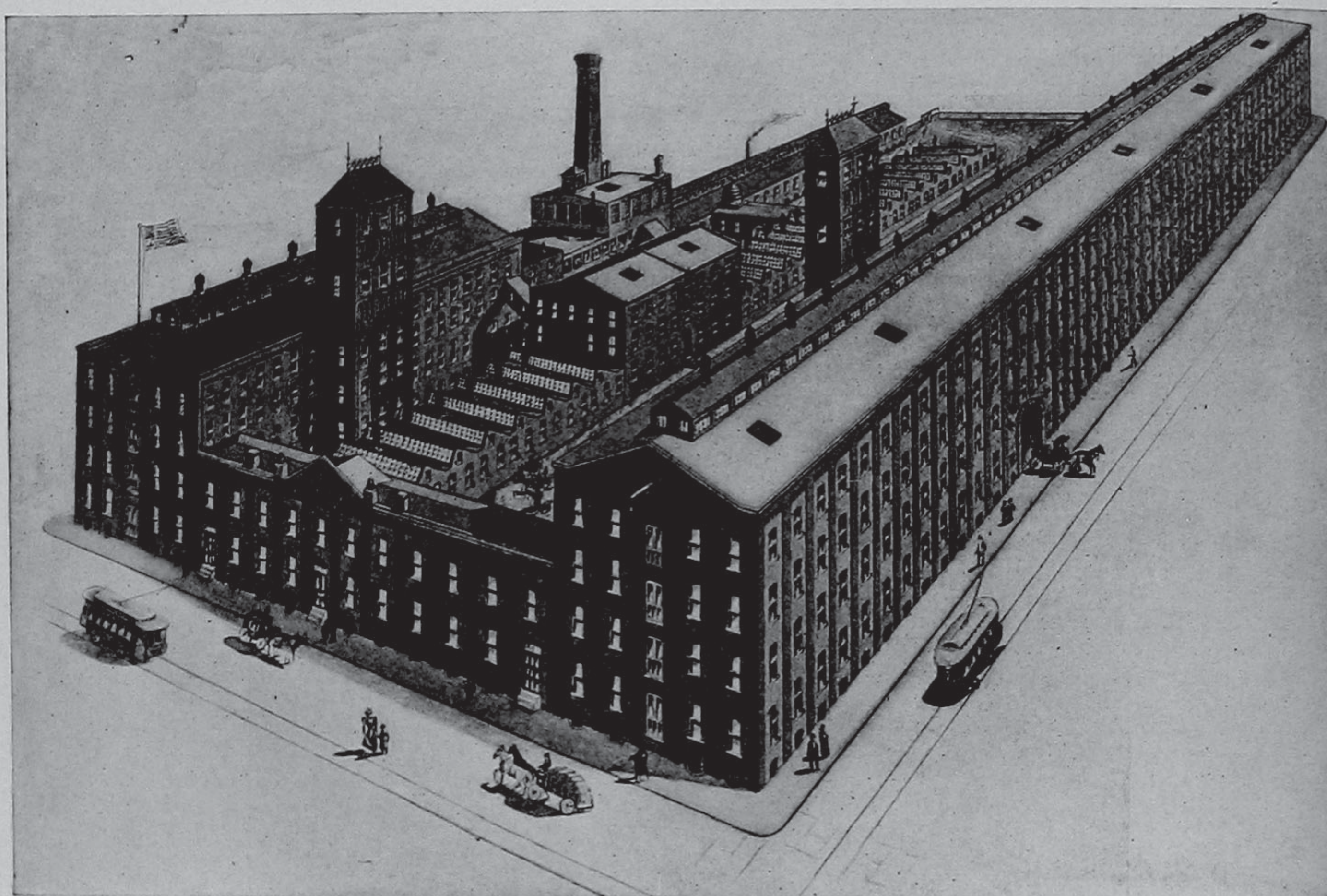
Numerous changes occurred in the industry, and it is recorded that in 1807, The Philadelphia Society for the Encouragement of Domestic Manufacturers became interested in the development of the carpet industry, and in this direction, John Dorsey, a merchant of that day, installed two looms for producing a floor cloth in a building on the north side of Chestnut, between Eleventh and Twelfth Streets. It is said that these looms were capable of producing an extremely wide fabric and that one man wove about 35 yards a day.

During the year 1808, Isaac Macaulay established a factory for the maufacture of similar fabrics at Market Street and the Schuylkill Bridge. In 1810, he removed to Broad and Filbert Street, purchasing and combining Dorsey's plant with his. He continued there until 1815 when he removed to the Hamilton mansion, at Bush Hill, near Eighteenth and Spring Garden Streets.

His success with the floor coverings at this place gave him the idea of manufacturing carpets, such as were produced in the old country. To do this, he induced a number of skilled workmen from Kidderminster, England, to emigrate to this country, to operate the looms which he had installed in the new plant.

The carpets which were made by Macaulay were known both here and in the old country by the name of Kidderminster or Scotch Carpets, a name they still carry there, but in this country they are known as Ingrain Carpets.

From all accounts, the introduction of the manufacture of Ingrain Carpets in this country was started by Macaulay, and in 1821 he furnished the Ingrain Carpets for the State Capitol buildings at Harrisburg.



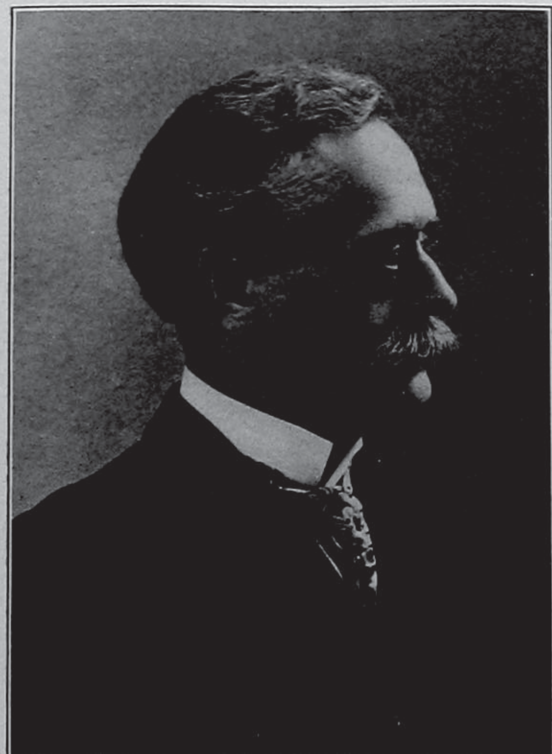
The Bundhar Mills—Hardwick & Magee Co.

Ingrain Carpets have made Philadelphia noted on account of nearly all of them being made in this city.

From this beginning, the gigantic carpet industry of Philadelphia, which leads the world in this line, grew. Statistics show that nearly one half of the carpets made in the United States are produced here and that three fifths of the capital invested in mills of this class in the United States is represented in Philadelphia.

Among the mills which started after this time, probably the earliest was that of the McCallum brothers, Andrew and William, who had emigrated from Scotland. They began operation in 1830 and in 1831 purchased the property owned by Jacob Clemens, a three story stone building erected in 1813. It was located in a valley and on account of its situation and the echo which was prevalent, it was called the *Glen Echo Mills*. Some years later, the firm name became *McCallum, Crease and Sloan*.

Following this mill, the *Oxford Mills* entered the



HARRY HARDWICK.

field. They were founded in 1832 by William Hogg, who continued to manage the business until about 1846 when he retired, and the business was turned over to his son William, who, in connection with a younger brother, continued the manufacturing until 1850, when the partnership was dissolved and William became the sole proprietor, continuing the business.

Along about the year 1845, the foundation of the carpet mills of *John Bromley and Sons* was laid. John Bromley, the father, started in the business with a single hand loom in a room at Fifth and Germantown Road. In 1860, his business prospered to such an extent that he had thirty seven looms in operation, and, as the business developed, he naturally was forced to locate his plant in a suitable building to allow for expansion. On this account, he erected the Bromley Mill at Jasper and York Streets. In 1868, his elder sons withdrew from the firm and entered the manufacturing field for themselves, in a mill across the street from the father.

This, as mentioned before, was the foundation of the Bromleys in the textile field, and to-day, as a contrast, to show their growth, we present a view of their large and imposing mill structure, located on Lehigh Ave., covering the entire block from *A* to *B* Streets and extending back to Somerset Street.

The line of goods which they now manufacture consists of Smyrna Rugs and Carpets, Tapestries, Chenille Curtains, Table Covers and Lace Curtains, a typical example of the growth of the industry during the decade.

The Falls of Schuylkill Mills were also numbered among the early carpet mills. The business was started in 1855 by John Dobson, who, in 1861, associated himself with his brother James, and it is said that in the year 1874, it was the largest individual enterprise in the United States, at that time employing 1500 hands. This large plant, still in operation, is classed among the largest in the city. They manufacture Brussels, Wiltons and Velvet Carpets, Plushes, etc.

Another firm who entered the early carpet trade was *William Hunter & Sons* who started in 1857 on Hanover Street. Their business prospered, in 1863 the plant was enlarged; in 1866 they purchased a property on Cumberland Street, their name becoming the Cumberland Mills.

In conclusion, it is interesting to know that John Dornan in 1863 established the *Monitor Carpet Mills*. At that time his equipment consisted of three looms and his operating force of four persons. His success in the business soon necessitated larger quarters and in 1866 he erected the mills at Oxford, Howard and Mascher Streets and the number of looms were increased to 50. Now they manufacture Axminster and Ingrain Carpets, operating 36 broad and 190 regular width looms, under the name of *Dornan Bros.;* his brother Robert Dornan having become a member of the firm in 1866.

While the foundation of the early mills have thus far been shown, it is with interest that those associated with this branch of the textile industry look upon, probably, one of the largest carpet mills in the country, one of the most successful and progressive mills in this City of Mills.

ARCHIBALD CAMPBELL.

We refer to the mills of *The Hardwick & Magee Co.,* which has succeeded the well known firm of Ivins, Dietz & Metzger Co.

In this connection a short history of the firm and its policy which led to the formation of the present corporation will be of interest.

The origin of the house dates back to the year 1837, the actual incorporating however being effected in 1892 by which the firm of Ivins, Deitz & Magee, with their Brussels and Ingrain plant combined with the firm of Hogg and Metzger, who were engaged in the same line.

This combination acquired the modern mill at 7th street and Lehigh Ave., which was equipped with the most improved looms and auxiliary machinery, including the dyeing and finishing departments.

The growth of this business is attributed to the fact that the policy of the house has always been to maintain a strict adherence to quality. No deviation from the fixed standards were considered, even when weaving the low priced ingrains. The trade quickly responded to the confidence engendered by this policy and the popularity of the Ivins, Dietz & Metzger goods kept their shuttles busily flying from season to season without intermission.

There is a peculiar satisfaction in producing goods of merit and the growing demand for high grade floor coverings proved a forceful incentive to the Ivins, Dietz & Metzger Company to turn their looms to Wiltons and fine Body Brussels. Through the initiative of Mr. Harry Hardwick whose inventive ability had devised numerous improvements in the weaving of the Wilton fabric, the Bundhar Wilton was put on the market. The particular merits of this weave are—great wear resistance secured by the use of carefully selected yarns, high degree of color fastness, resulting from the scientific use of the best dye stuffs, wide range of artistic pattern possibilities—a most important factor in the successful disposal of goods, and economy in production, enabling them to market the goods at a remarkably low price.

Seamed carpet rugs which have become such an important factor in the rug industry were first successfully produced by this mill. Several experiments had been made in this direction which were discountenanced by the trade. Mr. Hardwick, however, persisted in his belief that the seamed carpet rug could be marketed successfully, and while there were many discouragements to be overcome, the results proved the wisdom of his course. To-day the seamed Wilton Rug is recognized as the only practical domestic rug possible.

JOHN BROMLEY & SONS.

The growing demand for the popular pile goods and the decreasing demand for Ingrains made it necessary for the Mills to discontinue the manufacture of the latter some six or seven years ago. New Wilton looms replaced the old Ingrain looms, and the entire plant was turned over to the making of Wilton and Brussel Carpets and Rugs.

ORINOKO MILLS.

In addition to the Bundhar Wilton fabric the corporation makes two other high grade weaves—French Wilton and Hardwick Wilton. These are both made under patented improvements and are exceedingly popular.

The growing business of the house has necessitated additions from time to time and recently the capacity of the Mill was practically doubled by the erection of a five story building to the south of the old mills so that the plant to-day occupies the entire block bounded by Lehigh Avenue, Huntingdon Street, Seventh and Marshall Streets. This Mill is now the largest Wilton Mill in the World. It is completely furnished with the latest and most improved machinery necessary in carrying out the various details of manufacturing.

Upon the erection of the additional mill buildings the firm was re-incorporated and the name changed to the Hardwick & Magee Co., the officers of which are Henry Hardwick, president, William G. Berlinger, vice-president; John Kendig, sec-treas. The manufacturing end of the concern is managed by Mr Archibald Campbell, while the sales department is under the able management of Mr. Berlinger.

A further idea of the growth of the Carpet and Upholstery Trade may be had from the illustration of the buildings occupied by the *Philadelphia Tapestry Mills*. These mills are situated on the north side of

PHILADELPHIA TAPESTRY MILLS.

Allegheny Ave., west of Front St., and are said to be one of the finest examples of the architects art in mill construction. The equipment of this mill is complete, they doing everything from the designing to finishing of upholstery fabrics and art loom rugs. They have just opened a Chicago office in the Heyworth Building.

Another view of mills of this character shows that of the *Orinoko Mills,* situated at Ruth, Jasper and Somerset Sts. The Orinoko Mills are among the older contingent in the upholstery manufacturing trade and operate 245 looms, doing their own dyeing and finishing.

These are but a few specimens of the extent of the carpet and upholstery trade in this city and a conclusive idea can readily be formed of the growth of the industry, when we take into consideration, the primitive mills with their crude production and the large modern mills of to-day with the automatic machinery and improved processes.

TAPESTRY CARPETS.

Tapestry carpets are warp pile fabrics, in which the loops, as formed by the pile warp threads, are not cut. The demand for them is found in the need of a (cheaper) imitation of what is known as Brussels carpet. In their general appearance, they resemble the latter considerably, in fact the average consumer may never distinguish one from the other, but in their method of construction they differ, as may be seen by anyone that examines the two fabric structures more closely, and when it will be found that, as a whole, the change of colors in the loops, from one color to the joining color is more pronounced in Brussels carpets as compared to Tapestry carpets, and where there is always a possibility of one color running into the joining colors, in turn making the contour of the design not as pronounced.

The expensive, and at the same time the most important process in connection with the manufacture of Tapestry carpets, is the printing of its pile warp threads. It requires considerably more technical knowledge of the business than is the case with most any other carpet structure. The machine used for this purpose is built by the Crompton and Knowles Loom Works, and is shown in the accompanying illustration.

With reference to number of colors at the disposal of the designer, there is, as we might say, no limit to it; it is only for the sake of economy in cost of production that the number of colors used is kept at a minimum.

In Tapestry carpets three different systems of warp threads are used:

(*a*) the ground or binder warp, known also as the small chain, and which is cotton yarn;

(*b*) the pile or face warp, a double thread of worsted yarn, and which is printed;

(*c*) the stuffer or thickening warp, a heavy jute yarn, resting in the fabric, below the pile warp, actually forming the main part of the back of the structure, imparting in turn weight, strength and stiffness to the fabric.

There is only one kind of filling used in the manufacture of these carpets, either jute, cotton or linen being the material. This filling is first immersed in a glue bath, so as to impart to it its characteristic stiffness, and the same in turn to the fabric. This sizing of the filling at the same time adds considerably to the weight of the carpet, one-sixth being for a fair allowance.

The arrangement for the warp in the loom is:

2 ends ground or binder warp,
1 end stuffer,
1 end pile warp, as forms the face of the fabric.
—
4 ends in repeat of arrangement of warp, the same to be drawn into one dent. Each reed is in turn the equivalent of one row of loops, width ways, in the fabric structure.

The pile or face warp, before being wound upon the warp beam, has the pattern printed, or painted as we might say, on it, wrapping the threads for this procedure around a large drum and coloring them according to the design, due allowance being made when planning for this printing for the subsequent reduction of the pattern at weaving, the length of a certain color for each pile thread, required for each individual loop when woven, being regulated by the size and number of wires per inch.

This printing of the worsted pile warp for Tapestry carpets was invented in 1832 by a Mr. Richard

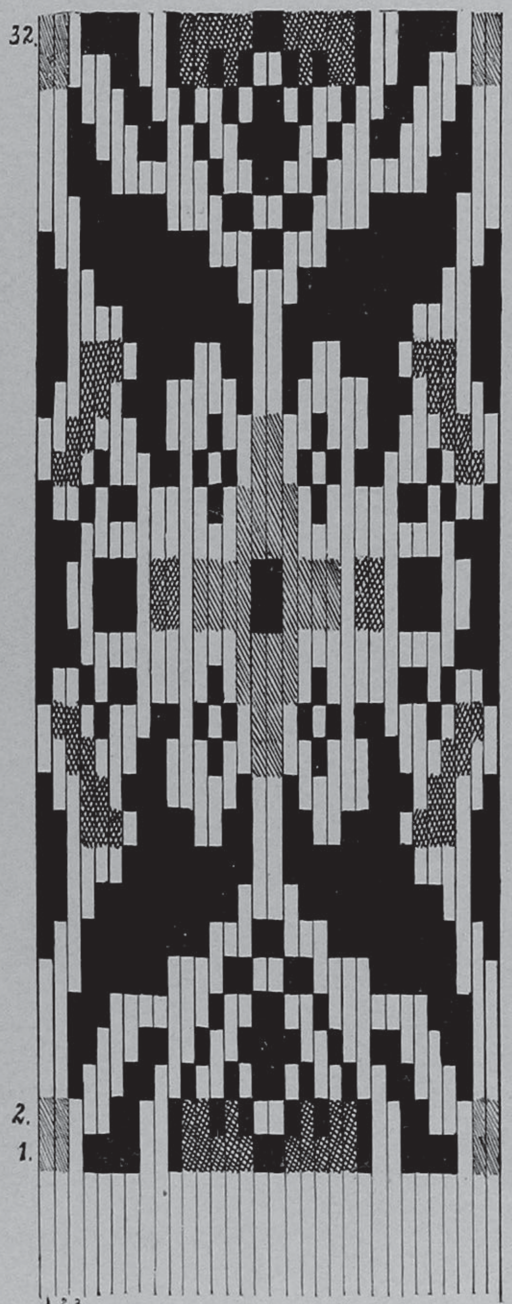


Fig. 1.

Whytoch, a native of Edinboro, Great Britain, and with reference to its fundamental principles they have not changed since then.

To give a clear understanding of the designing and fabric structure of a Tapestry carpet, the three illustrations accompanying this article are given, and of which Fig. 1 illustrates the example of a pile warp printed as required before weaving. The same illustrates four different colors, indicated respectively black, white, heavy shaded and light shaded.

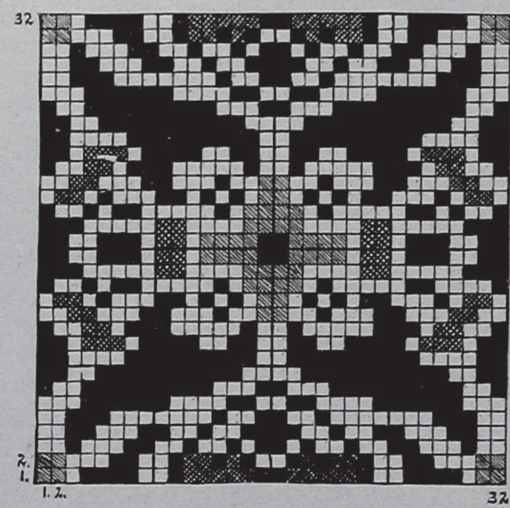


Fig. 2.

Fig. 2 illustrates the same pile warp as it appears when interlaced into the fabric; each effect in the warp is then reduced to its required size, *i. e.*, proportion to its corresponding effect in the design.

Fig. 3 illustrates a section of the woven fabric.

In the latter, *A* and *A'* represent the ground or binder warp, *B* the stuffer warp, *C* the pile warp, *W* the wires. The rounds of picks in one repeat are indicated by numerals of reference 1, 2, 4 and 5, they being the means for interlacing the ground structure as well as fastening the pile to the latter.

Different Qualities of Tapestry Carpets.

The fineness, as well as the value of these carpets is regulated by the quality of the material used, the height and density of the pile, the latter indicating the number of picks (technically known as wires) per

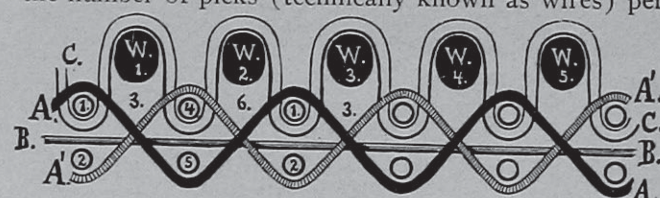


Fig. 3.

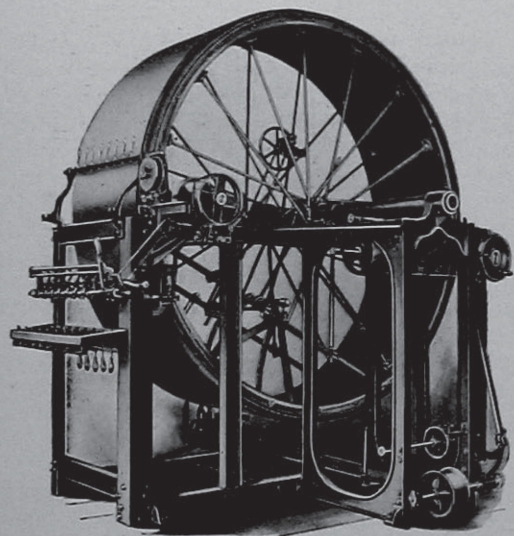
inch. Seven to eight wires per inch are about the average number met with in the market.

Method for Ascertaining Size of Designing Paper Wanted.

The designs for Tapestry carpets are painted on the point paper in about a size equal to the design upon the face of the fabric when woven. Thus, the number of small squares to one inch in a horizontal as well as vertical direction on the designing paper, is regulated by the number of loops in the woven fabric, both in the direction of warp and filling.

In some cases the number of loops, in both directions, correspond, while in others it somewhat differs. Designing papers known as 8 x 8 to one inch, and 8 x 7 to one inch, are those most frequently used.

Tapestry carpets are generally produced 27 inches wide. The arrangement for the design may be either a drop pattern, or one that has one complete repeat in



Crompton & Knowles Tapestry Warp Printing Drum.

its width in the loom; again a design may be produced which repeats twice, or oftener, if small figures are wanted, in one repeat of a 27 inch fabric structure.

THE MANUFACTURE OF LINEN YARNS.

The Fibre:—Descriptive Matter—Chemical Composition—Pulling—Rippling—Retting—Grassing—Dew Retting—Cold Water Retting—Scutching.

Flax Spinning:—Roughing—Sorting—Spreading—Carding—The Breaker—The Finisher—Combination Cards—Combing—Drawing—Roving Frames—A Line System—Wet Spinning—Dry Spinning—Drawing of Line and Tow during Spinning—Reeling.

Tests for Linen, in Yarns and Woven Fabrics—Calculations.

The flax fibre of commerce is obtained from the stem of the flax plant (*Linum usitatissimum*), which is grown here, in Canada, as well as all over central and northern Europe.

The portion of the flax plant as used in the manufacture of linen yarns is the bast tissue, situated between the bark and the hard or woody tissue. The characteristic features of the flax fibres are their length, strength, fineness and color. The fibres of flax vary with the tapering character of the stem, and the natural ends are sharp pointed and generally long drawn out. Good flax should average about 20 inches, and be free from fibres 12 inches long.

In Europe, flax is most extensively cultivated, the time for sowing being between February and April, the harvest season varying between June and September. The flax plant grows to a height of from three to four feet, and its stem branches more or less according to the thickness it is planted, *i. e.,* crowded by the other plants.

When the flax attains its full growth and approaches maturity, its tall and elegant stems of a soft green hue are surmounted by a corona of delicate branches, each branch supporting a bright blue flower.

Fig. 1 illustrates flax as planted for fibre, *i. e.,* thick seeding. Fig. 2 shows the flower, Fig. 3 the seed-boll of flax (*a* un-cut, *b* cut through). Fig. 4 shows the flower cut lengthwise through the centre. There are five outer leaflets of the flower, all ovate and with a slightly hairy covering, and almost as long as the capsule. The stamens are alternate with the petals, and have their filaments united near their base in a circular form. The ovary is divided into five vesicles surmounted by corresponding stigmata, the capsules being egg-shaped and having a slightly pointed apex. Each of the five cells is sub-divided into two (and within these the seeds are secreted) making ten in all. These seeds vary slightly in shape, according to different conditions of growth; but those which are slightly oval, smooth and brown in color, approach nearest to a perfect form. An internal examination of the seed shows them to be white, with the kernel oleaginous and farinaceous, while the external surface has a viscous covering soluble in water. The flax plant also grows wild, closely, but on a reduced scale resembling the cultivated specimen. The wild flax plant never exceeds a height of about eight inches, hence is of no use for textile purposes.

Chemical Composition of Flax.—The flax plant is chemically composed of about:

Fig. 1.

Fig. 2.

a *b*

Fig. 3.

Fig. 4.

42. per cent Organic matter,
56.5 per cent Water,
1.5 per cent Ash.

100.

Pulling of Flax.—The farmer who aims at the production of a good fibre, must pull the plant before it has attained its full maturity; namely, when the lower portion of the stalk, to the extent of two-thirds of its height, has become yellow, and while the bolls or seed capsules are just changing from green to brown. At this stage the plants are pulled in handfuls, and these are laid across each other diagonally until a *sheaf* is complete, when the whole is carefully bound. If the plants are left in the ground until fully ripe (*i. e.*, the whole stem yellow) the fibre afterwards obtained will be stiffer and coarser. In finding stems of a different length, each should be pulled separately and kept in separate sheafs, as should also stems prostrated by the wind or saturated with rain.

Rippling.—The next process to which the freshly pulled flax is submitted is rippling, which has for its object the separation of the bolls from the stems. Flax should be rippled as soon as pulled, and the process be carried on in the same field. The ripple is a kind of a large comb, composed of iron teeth about eighteen inches long, made of half-inch square iron teeth, placed $\frac{3}{16}$ of an inch apart at the bottom and tapering slightly toward the apex, screwed down to the centre of a nine-foot plank, resting on two stools. This comparatively great length and smallness of the iron teeth allows them to spring lightly, and so yield to pull off the stalk, instead of presenting a rigid surface, which would act too roughly upon them. The operation of rippling is performed by hand, drawing successive bundles of flax through the upright prongs of the ripple. The bulbs being greater in diameter than the distance apart of the rods, they are therefore stripped off, and fall upon a sheet spread upon the ground under the plank for this purpose. Flax should not be rippled severely, since it is better to leave some of the seeds on than to run the risk of bruising or splitting the delicate fibres about the top of the plant. As each handful is rippled, it is deposited upon the ground on the left hand side of the operator, one being placed diagonally over the other, until a sheaf is completed, when it is bound up and removed for retting.

(To be continued.)

GRANITE WEAVES OBTAINED BY MEANS OF FOUR CHANGES.

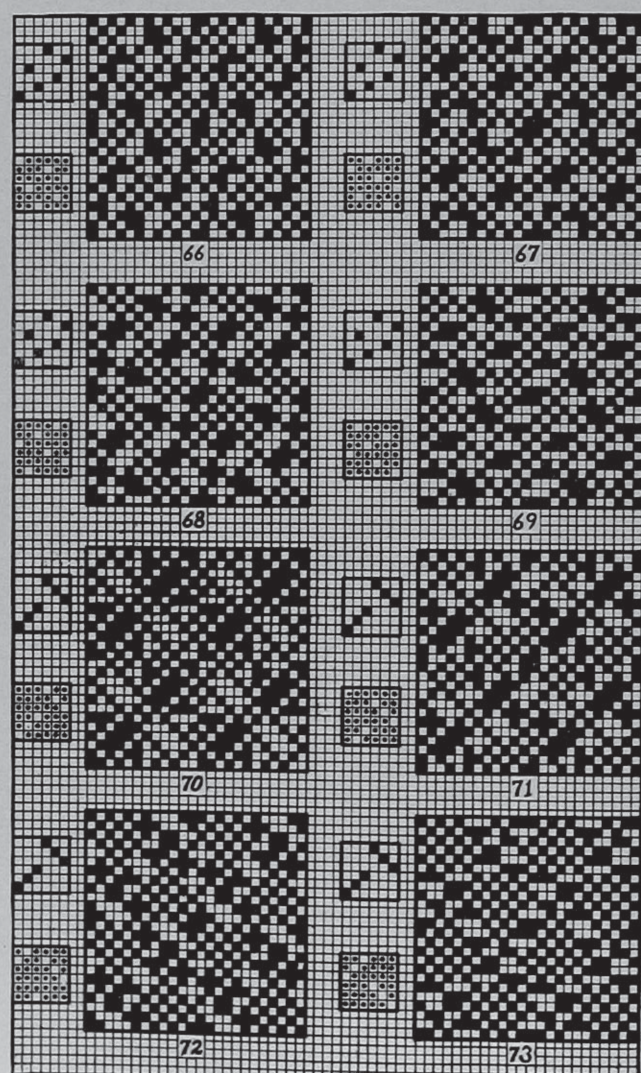
(Continued from page 160.)

Combining two different weaves for obtaining a new granite weave.

In connection with weaves Figs. 66 to an inclusive Fig. 73, a collection of eight new 12 by 12 granite weaves is given, every one of which is a practical weave, representing fancy effects impossible to be obtained otherwise. The first four of these weaves, *i. e.*, weaves Figs. 66, 67, 68 and 69, have for their foundation the 6-harness satin, warp and filling effect combinations. The different new granite weaves are obtained by starting in every instance one of the foundation weaves, in this instance the warp effect satin, with a different pick, leaving the starting of the filling effect satin undisturbed. In connection with the warp effect satin we started in every instance with one pick higher (as compared with the preceding example) for the foundation.

Granite weaves, Figs. 70, 71, 72 and 73, have for their foundation $\frac{=}{5}$ 6-harness broken-twill, running 3 warp threads to the left and 3 warp threads to the right. Warp and filling effects of this weave are used for foundation. For getting up the new granite weaves, the same as before, we have not changed the starting of the filling effect foundation weave; whereas we changed the point of starting in connection with the warp effect weave, starting in every example one pick higher, as compared to the previous example.

As will be readily understood, in the same way as we used 6-harness satins and 6-harness broken-twills for foundation, other 6-harness weaves can be used similarly for producing new granites; at the same time changing the starting of any two foundation weaves used, will always result in new granite weaves, in fact the number of new granite weaves possible to be obtained by *"Four Changes"* is unlimited.



RIBBONS, TRIMMINGS, EDGINGS, ETC.

(*Continued from page 70.*)

Ribbons Made With Open Stripes.

Fig. 150 shows us such an open work ribbon. Each edge of the ribbon shows us a taffeta stripe (plain weave), next a satin stripe (8-leaf satin), and again a taffeta stripe. Next we find 5 times in rotation several dents in the reed left empty to alternate with a taffeta stripe, said combination being used for the centre portion of the ribbon.

Fig. 151 shows the weave plan. Three warps are used, *viz*: the warp for the edge of the fabric and which interlaces in taffeta; the warp for the centre part of the ribbon and which also interlaces in taffeta, and the warp interlacing with the 8-leaf satin. Below the weave plan, its drawing-in-draft is given, calling for a 12-harness section draw.

Below the drawing-in-draft the entering of the warp in the reed is given. The two taffeta edges are drawn with 2 ends per dent. The satin stripes are reeded 4 ends per dent or 16 dents for the 64 ends of each satin stripe.

The taffeta stripes between the satin stripes are drawn with 3 ends per dent, leaving 4 or more dents empty between these stripes.

Passamenterie Trimmings.

Fig. 152 shows us such a passamenterie trimming, showing four panels; Fig. 153 shows the weave.

The latter shows us that the filling enters successively for three picks into one panel, the last pick in one panel being at the same time the first pick for the joining panel, in this way connecting all four panels into one fabric structure.

The warp threads of each panel must at least be entered into two dents of the reed. If threaded into one dent only, the reed will not be able to drive the filling home, the filling would simply lay itself between the two reed wires.

Between the panels, leave one, two or more dents empty.

The take-up, in the repeat of the weave (9 picks) must only act three times, *i. e.,* every third pick (whenever one panel is completed, *i. e.,* its three picks inserted). At the other picks the take-up must be automatically released, which in turn will beat up the picks respectively inserted last in one panel.

Harnesses required: 10, fancy draw—as shown by means of *dot* type below the weave.

Fig. 154 shows us another sketch of a passamenterie ribbon.

In order to produce such broad trimmings, in connection with looms constructed for weaving narrow trimmings — closely packed in width of the loom, such broad trimmings as shown in Fig. 154 may be woven in two, three or more-ply, one above the other. In this case, when laying out the weave plan, remember that not only the rules governing the construction of double cloth hold good, but that at the same time you are to take into consideration the dividing of the warp threads according to the threading in the reed of the single cloth trimming, in order that the warp proportions remain correct.

Between the folds of every two structures, place several stuffer warp threads, which after the fabric

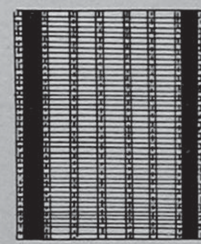


Fig.150

leaves the loom are taken out. These stuffer warp threads take up the tension of the filling; without them, the warp threads in the ply would be pulled too excessively.

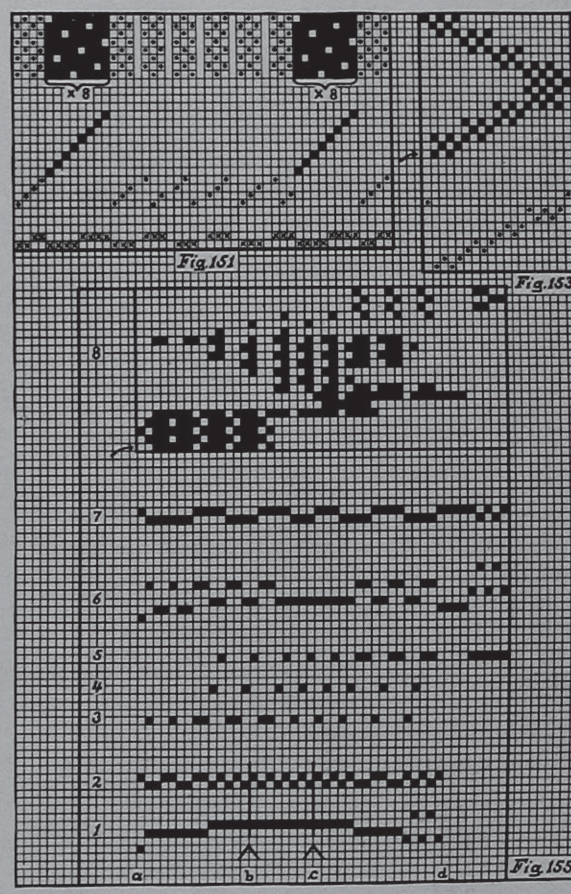


Fig.151 *Fig.153* *Fig.155*

Fig. 155 shows us the weave plan for fabric sketch Fig. 154, executed on 3-ply.

Details with reference to diagram Fig. 155:

1—The threading of the warp in the single cloth structure.

2—The threading in the reed for the single cloth structure with indications for the folds. The same must be selected so as to make as few double picks as possible. (In connection with sketch Fig. 154 these folds are indicated with *b* and *c*. Above fabric sketch Fig. 154 the plan for its 3-ply working on the loom is given.)

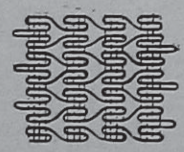


Fig.152

3—Indicates the warp threads for the first fabric structure (*a — b* of Fig. 154).

4—Indicates the warp thread for the second fabric structure (*b — c* of Fig. 154).

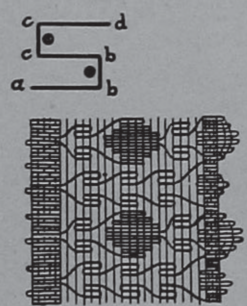


Fig.154

5—Indicates the warp threads for the third fabric structure (*c — d* of Fig. 154).

6—Plan for complete threading of the 3-ply trimming.

7—Plan for threading reed for the 3-ply trimming.

8—A portion (the start) of the complete weave.

THE CROMPTON & KNOWLES SILK RIBBON LOOM.

(*Continued from page 20, January issue.*)

The Take up Rollers, of the Take up Mechanism.

In these ribbon, *i. e.*, narrow ware looms, a series of take up rollers are mounted on a common take up shaft and revolve with said shaft to take up or wind the fabric as it is woven. Each take up roller can be revolved in either direction independently of the take up shaft, in case of a shuttle thread breaking or for any other reason.

Of the accompanying plate of illustrations, Fig. *A* is an edge view of one of these take up rollers, shown mounted on its take up shaft, as extends the entire length of the loom. Fig. *B* is a central vertical section of the take up roller shown in Fig. *A*. Fig. *C* is a view of the hand wheel, detached, looking in the direction of arrow *a*, Fig. *A*. Fig. *D* is a section on line *c*, Fig. *B*, looking in the direction of arrow *b* same figure. Fig. *E* corresponds to Fig. *D* only that the hand wheel is removed.

A description of the mechanism is best given by quoting numerals of reference accompanying our illustrations, of which 1 indicates the take up shaft of the loom, extending the entire length of the latter, and which shaft corresponds to shaft 5 in our article on the "*Take up Mechanism*" in the January issue of the Journal. 2 is a flanged gear secured on shaft 1 by set screw 3. This flange gear 2 has gear teeth 4 extending around its periphery, and also has the annular flange 2′ extending out therefrom, and on said flange 2′, is mounted to turn loosely, the hand wheel 5, which has the circular recess 5′ to fit onto said annular flange 2′ and the eccentric opening 5″, within which extends loosely a part of the *combination gear rim* 6, which has internal gear teeth 6′ thereon, to mesh with the external gear teeth 4 on the flanged gear 2.

The number of the teeth 6′ is greater than the number of the teeth 4.

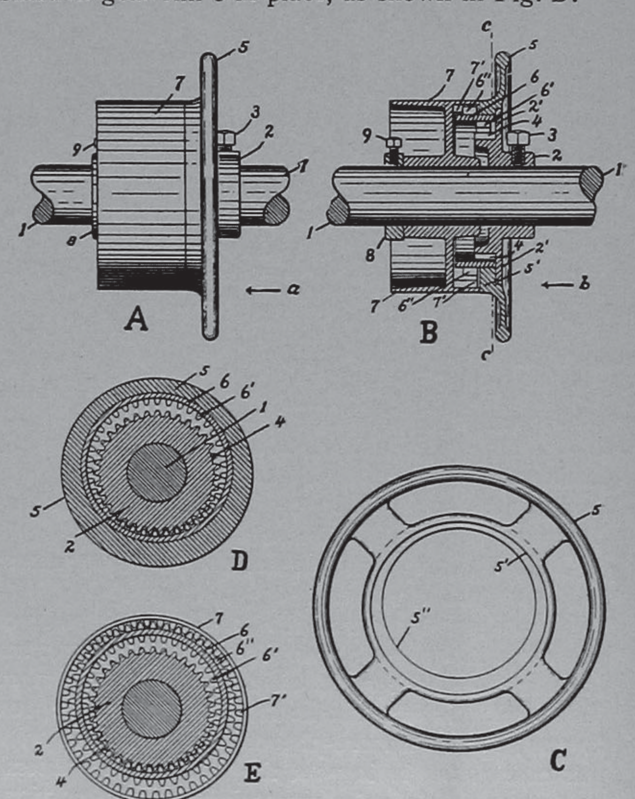
The gear rim 6 also has external teeth 6″ thereon, to mesh with the internal teeth 7′ on the inner edge of the pulley 7, loosely mounted on the shaft 1.

The number of the teeth 6″ is less than the number of teeth 7′.

The combination gear rim 6 turns freely within the eccentric opening 5″ in the hand wheel 5, and the gear teeth 6′ and 6″ on said gear rim 6 are concentric with the portion of said gear rim which extends within said opening 5″.

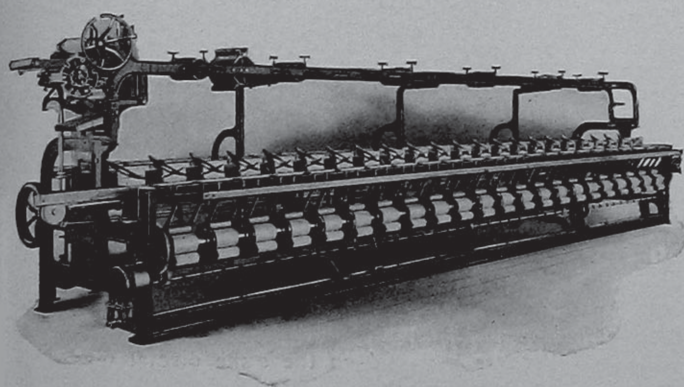
The eccentricity of the opening 5″ in the hand wheel 5 is equal to the length of a tooth on the combination gear rim 6 plus any additional amount for clearance (see Fig. *D*).

The inner edge of the pulley 7 bears against the inner edge of the hand wheel 5, and a collar 8, secured on the shaft 1 by a set screw 9, acts to keep the pulley 7 in position on shaft 1 and the hand wheel 5 on the flange 2′ of the collar 2, and also the combination gear rim 6 in place, as shown in Fig. *B*.



THE OPERATION of the take up roller is thus: When shaft 1 revolves in the ordinary operation of the loom, the flanged gear 2, fast thereon, will revolve with it and will carry the pulley 7 and the hand wheel 5 through the combination gear rim 6, extending loosely within the eccentric opening 5″ in the said hand wheel 5, as previously stated.

When it is desired to cause the pulley 7 to turn in either direction independently of the shaft 1, the



THE CROMPTON & KNOWLES SILK RIBBON LOOM.

latter continuing to revolve, the hand wheel 5 is turned in one direction or the other, according to whether it is necessary to turn pulley 7 forward or back.

When the hand wheel 5 is revolved in either direction (the same being loosely mounted on the flange 2′ of the gear 2, fast on the shaft 1, as previously explained) the eccentric opening 5″ in said hand wheel 5 (into which the concentric edge of the gear rim 6 loosely extends) causes said gear rim 6 to move, so that the internal teeth 6′ thereon will be engaged continually with the teeth 4 on the gear 2 through any movement of the eccentric opening 5″ in the hand wheel 5. It will thus be seen that by one revolution of the hand wheel 5 all the teeth 4 on the gear 2 will have been engaged by the teeth 6′ on the gear rim 6, and if there are one or more teeth 6′ than there are teeth 4, the movement of the gear rim 6 will be advanced beyond its original position by the difference in number of teeth between teeth 4 and teeth 6′.

An operation of a similar nature will take place between the teeth 7′ on the pulley 7 and the teeth 6″ on the gear rim 6 during the same revolution of the hand wheel 5, and there being more teeth 7′ than there are 6″ they will be advanced forward in the same direction around the teeth 6″ as the teeth 6′ are advanced around the teeth 4, and the movement of the pulley 7 independently of shaft 1 for one revolution of the hand wheel 5 and eccentric opening 5″ therein will be equal to the combined advancement of the teeth 6′ and 7′, previously referred to. The continued revolution of the hand wheel 5 will cause the pulley 7 to revolve on shaft 1 as desired.

When any force is applied to rotate this pulley 7 on the shaft 1 without the aid of the hand wheel 5, by reason of the multiplying power of said hand wheel and by reason of the eccentric opening 5″ therein, pulley 7 will remain positively in any position given to it by the hand wheel 5, so that there will be no backward or forward movement.

A New Way of Leno Weaving.

The same is of English origin and relates to the manufacture of that class of leno fabrics wherein a comparatively large number of warp threads are made to cross over at intervals another greater, less or equal number of adjoining threads and yet allow both series of said threads to be interwoven with the filling in the ordinary manner, in the intervals between said crossings.

To more clearly explain this new procedure of leno weaving, the accompanying three illustrations are given, and of which Figs. 1 and 2 are perspective views, showing certain of the new devices the loom for the manufacture of these fabrics is supplied with, showing them in the respective positions of having laid-hold-of the threads to be crossed and of having depressed them to form the opening for the passage of the shuttle. Fig. 3 illustrates the crossing of the warp threads in a fabric produced by the new contrivances.

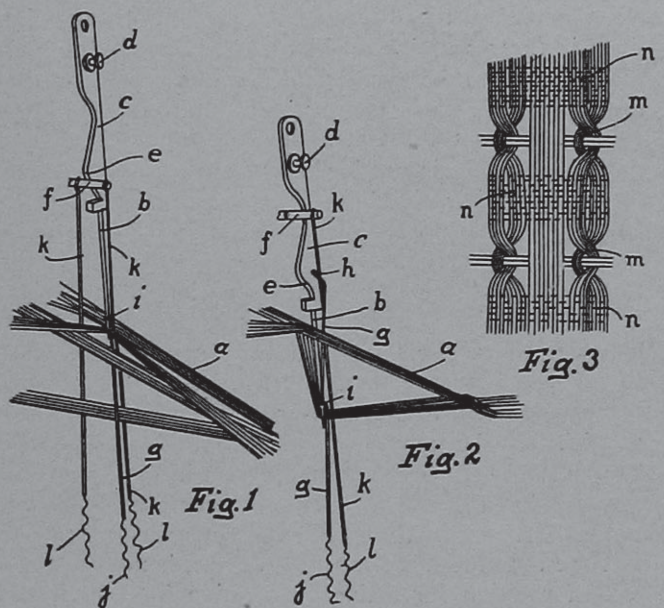
In mounting the loom, the warp threads *a* are passed through the heddles and the reed in the usual manner. The reed, however, is set sufficiently back to the rear of the shuttle race on the lay, to afford space for adding pendent needles *b*, the same to pass between these parts, and in turn operate the warp threads. These needles *b* are fixed to levers *c* which are pivoted at *d* to a cross bar extending the width of the fabric to be woven. Motion is transmitted to this bar by the loom shedding mechanism in the usual way.

The loom reed, as mentioned before, is moved somewhat back in the new loom construction, to permit the application of the new device, hence is moved out of position for acting as a guide for the shuttle, in its travel through the shed. To provide such a guide for the shuttle, projecting pins are mounted upon a bar which extends across the loom, to carry the number of pins required for the whole width of the reed. These pins, extending from said bar, pass through openings made in a guide, fixed to the under surface of the race board, causing them to ascend during the passage of the shuttle so that their upper extremities reach above the shuttle race, while during the beating up of the filling by the reed, these pins are withdrawn, *i. e.*, moved to occupy a position below the shuttle race.

The levers *c* which carry the pendent needles *b*, have cam surfaces *e* formed on their edges, to contact with projections *f* fixed to a cross bar secured to the hand rail of the loom. These levers *c* are retracted by springs (India rubber bands) so that they are always kept in contact with the projections *f*, by which means, as said levers are caused to descend, they move simultaneously in a lateral direction. Cords or bands *g* are fixed at *h* to the levers *c* and are made to extend through eyes *i* approaching the pointed and extending ends of the needles *b*, and down to the India rubber springs *j*, which are secured to hooks fixed on a bar, so as to move with the needle bar, and consequently with the needles *b* and levers *c*.

To each of the projections *f* are fixed two strings *k*, one occupying a position behind the needle *b* and the other a position in front of same. These strings *k* are secured to India rubber springs *l*, which reach down and are secured to hooks on a bar, so that as this bar descends with the parts that carry the needles *b*, said cords *k* are stretched and held in a state of tension, thus causing the threads of warp adjoining them to be pulled laterally to form an opening or leave a space for the needles *b* to pass through. The front string *k* also keeps the last pick inserted from falling or remaining in the path of motion of the said needles when they descend.

The warp threads *a*, which have to be crossed over the adjoining threads, are raised by their heddles to a higher level than are said adjoining threads, in order to enable the points of the needles *b* to lay hold of or press them laterally without said points of neddles coming into contact with said adjoining threads.



When the new attachments are mounted in their initial position and the other parts of the loom adjusted, the loom is then ready for regular weaving, and this procedure is continued until the place in the fabric structure is reached when the warp threads have to be crossed over to form the leno effect desired. At this time, the shedding mechanism of the loom causes the needles *b* to descend and their points to pass below and to one side of the warp threads they have to actuate, while their cords *g* will pass down the other side of them.

As the needles *b* commence to descend, the actions of the mechanism of the loom causes said needles to move over the top of the warp threads which are lower than those threads which the needles *b* are forcing laterally somewhat, as shown by Fig. 1, so that they are thereby carried beyond same, in order that as the needles continue to descend, the threads which they actuate are gathered together between the points of said needles and their cords *g*, by which they are carried and caused to descend on the opposite sides of the adjoining threads somewhat, as shown by Fig. 2; thus the opening for the insertion of the filling between these threads is formed, and on such insertion being completed, the several needles and parts return to their normal positions, and the loom proceeds with regular weaving, leaving the leno effect produced in the fabric as desired. *m* in fabric sketch Fig. 3 shows leno effect, and *n* regular weaving.

When the warp threads cross over all the adjoining threads, as is shown by Fig. 2, then the rear string *k* may be dispensed with, since the lateral pull of each needle *b* upon its warp threads will form an opening or clear space for its neighboring needle. However the front string *k* must be retained to keep the filling clear of the needles.

Although only one series of needles *b* has been referred to, it will be readily understood that when more elaborate effects are desired, two or more series of such needles may be used, having them operate by their respective parts when desired, one set independent of the other set.

Again, if the spaces between the needles are too large for the pattern desired, then additional needles with their levers mounted on the same pivotal pins *d* may be employed; in this case, said additional needles *b* or their levers *c* must be bent to fall or occupy positions in vertical planes adjoining the other series of needles.

If dealing with Jacquard work, in order to enable the Jacquard Machine to retain the crossing threads in their raised positions during the period of their crossing actions, although this may be for several picks, a shaft carrying a series of metal loops is arranged to support such threads as are to be raised, and this shaft is retained by being coupled to two levers, which are actuated by a primary lever through the medium of a **T**-piece. The lever thus referred to, is then operated by two or more needles in the Jacquard, half of which are coupled to one end thereof, and the other half to the other end. The needles in the Jacquard machine which are coupled to either end may raise said levers at such end, while when such raised end is descending by or with its actuating needles, then if the lever is desired to be retained in its highest position, the needles at the other end thereof are raised so that the central part of the lever neither descends nor ascends at such time, in turn retaining the shaft previously referred to in its desired position.

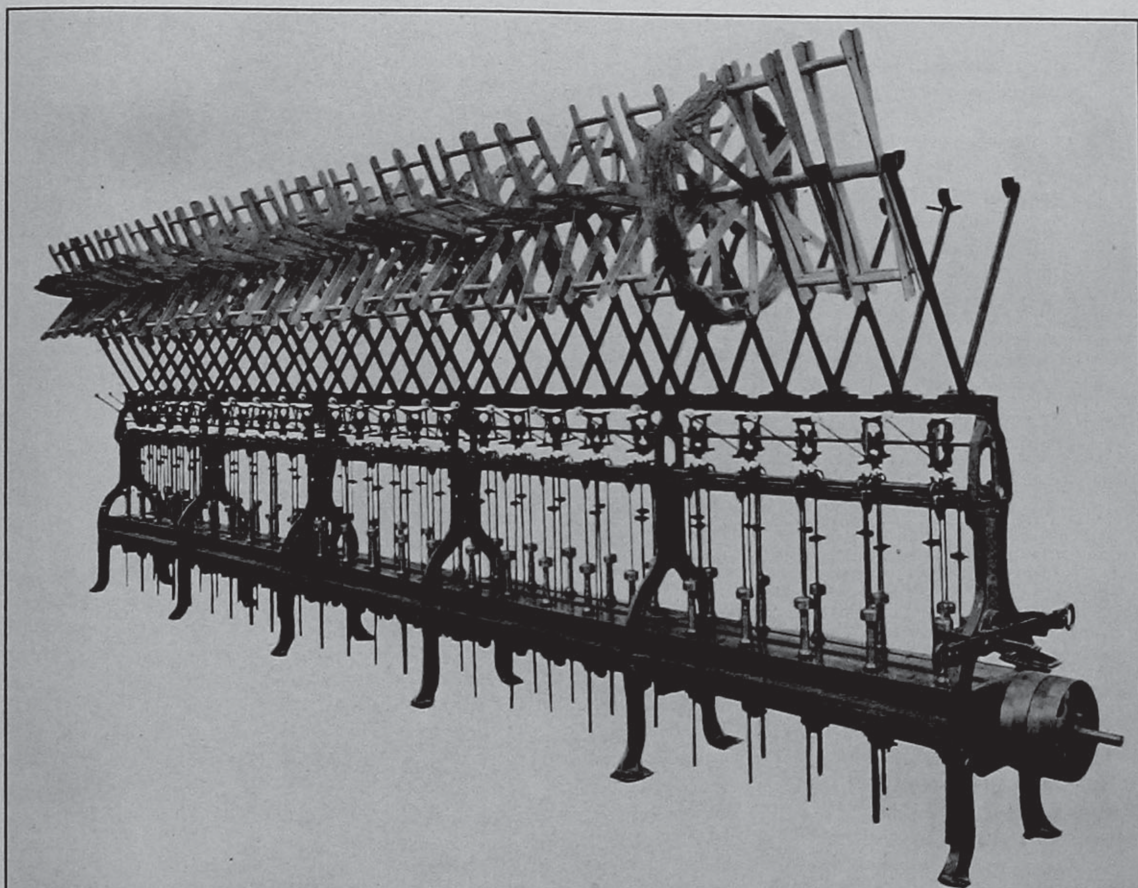
Water and Soap Proof Gloss on Cotton Goods.

An improved process has recently been patented in England for imparting a gloss on cotton goods which shall be both water and soap proof. The goods are first strongly moistened and then hot calendered in order to produce a high gloss. The gloss is fixed by submitting the goods in a stretched condition to great heat; for instance, by passing them over a strongly-heated drum. By the action of the heat a portion of the gloss is lost, owing to the displacement of the fibre. In order to remedy this defect, the goods are treated by any shiny adhesive material. They are then treated with water, soap solution, moist steam, and, if starch has been employed, with malt extract, whereby the fatty gloss disappears, and a clean and equable silky gloss remains. By repeating the process, the glossing effect is correspondingly increased.

The Winding of Carpet Yarns.

There are a number of winders on the market, but attention, at this time, is directed to the Vertical Spindle Gear Driven Cop Winder, built by the Oswald Lever Co., Inc., Philadelphia.

This machine is very strong and durable, being made entirely of iron, and capable of being operated at a very high rate of speed.



It is designed to wind direct from the spool or skein, as desired, and is especially adapted for the heavy grades of carpet yarns as used in the Wilton, Brussel and Tapestry Trade.

The machine is a great improvement over those on the market, all belt and band troubles being eliminated, as the machine is gear driven, each spindle working independently. Another feature is that the spindle stops when the cop is formed or when the yarn breaks, and can be fitted with either fixture swift stand and detachable swifts, or with the falling stands.

The illustration shows a five section machine, the great feature being that the machine requires very little room. A 20-spindle machine occupies a space about 5 feet 2 inches long and 3 feet 6 inches wide, 5 feet having to be added for every additional section of 20-spindles.

The success of the machine has been assured from the start, at the present time, one large carpet mill having twelve machines of 60 spindles each in operation, the production being sufficient to supply 700 looms.

These are but a few of the facts regarding this machine which has proven of such great interest to carpet manufacturers who have used them, and we suggest, in the interest of the trade, that you write the builders for further information.

Perborate Bleaching.

According to a German patent, means have now been found of applying perborate bleaching to silk. The actual bleaching process practised in connection with silk, is the one well known in cotton bleaching, with the exception that the silk must first be soaked in a 1 per cent solution of sodium bicarbonate, after degumming, *i. e.,* before bleaching. The actual bleach bath for silk is prepared by dissolving, in 200 gallons of water, 30 lbs. of perborate of soda, 6 lbs. of concentrated sulphuric acid, and 18 lbs. of waterglass of 40° B. The silk must not be left in the bath too long at a time. If it does not bleach quickly, it should be lifted, wrung, again soaked with the bicarbonate, and re-entered into the bleach bath. It is claimed, that the silk obtained by the new process is stronger than it was before.