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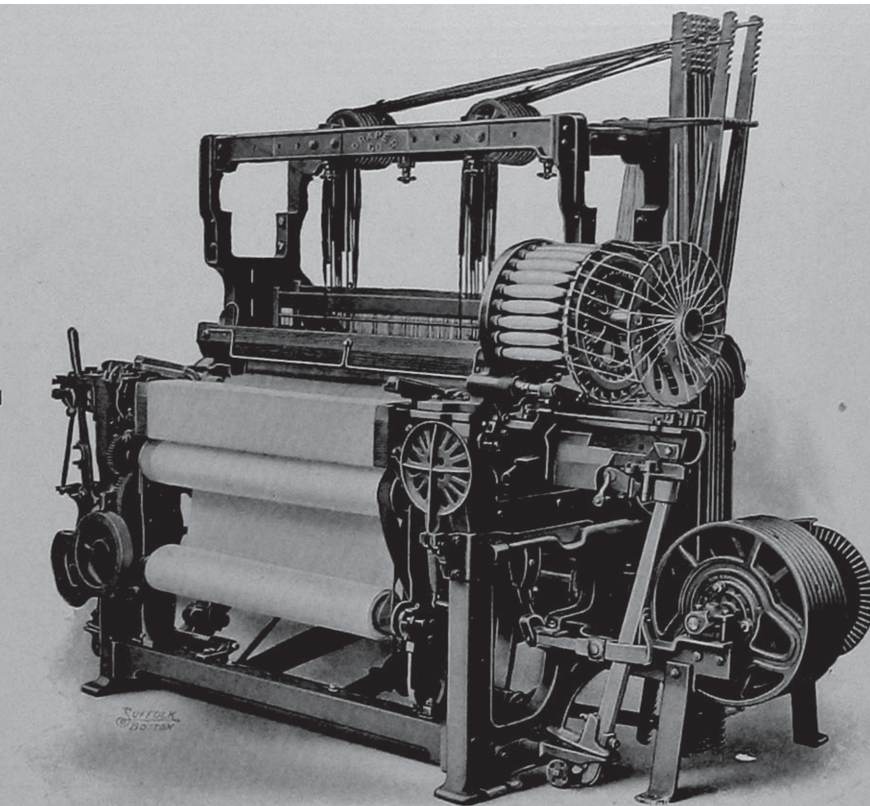

NORTHROP SIDE CAM CORDUROY LOOM.

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.

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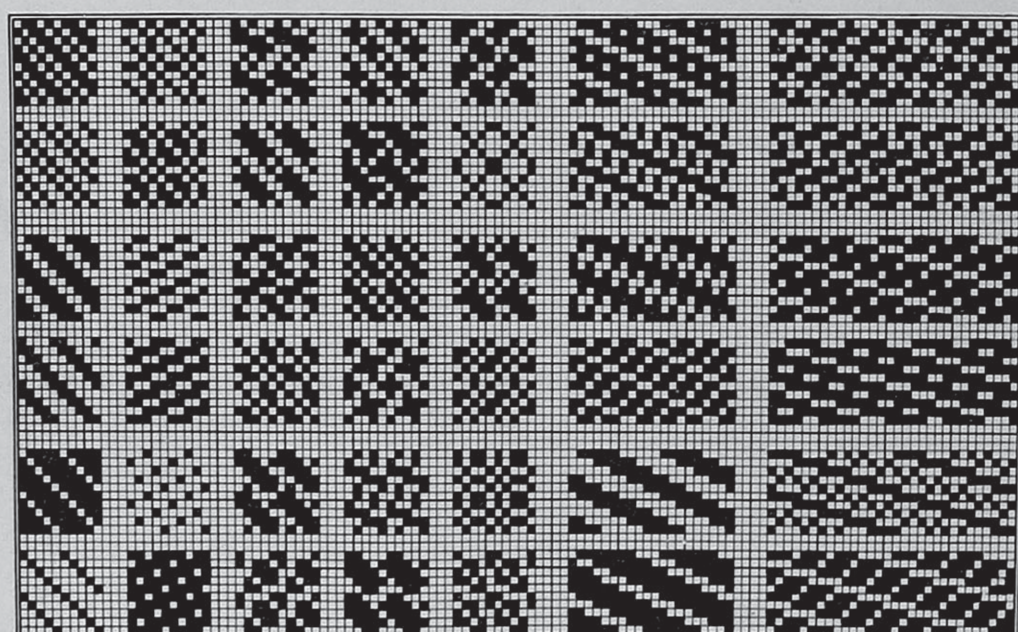
DICTIONARY OF WEAVES

(The Most Important Addition to Textile Literature Published.)

FIVE HARNESS



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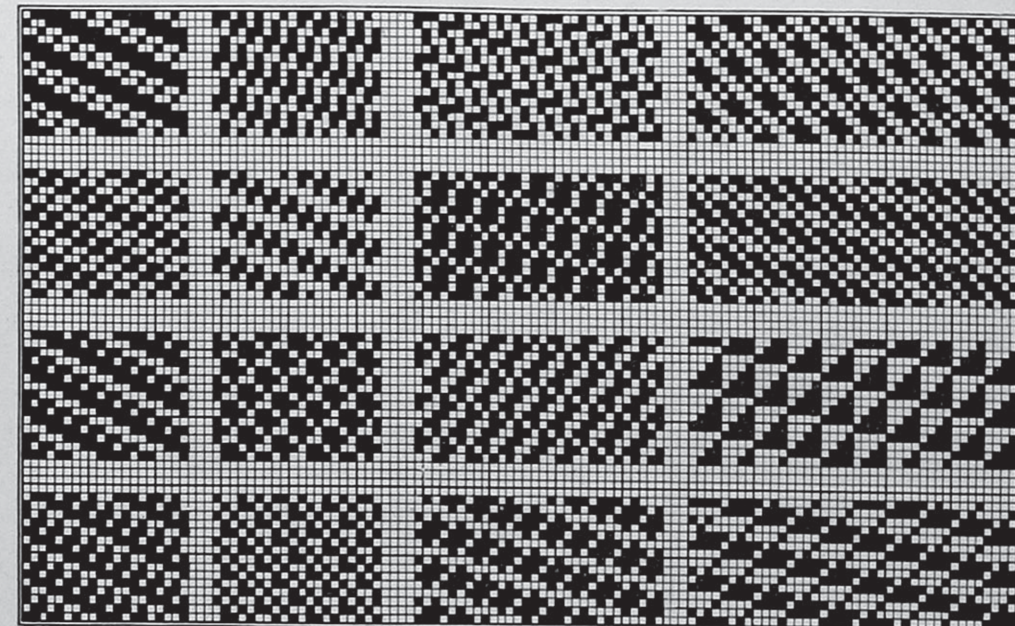
FIVE HARNESS



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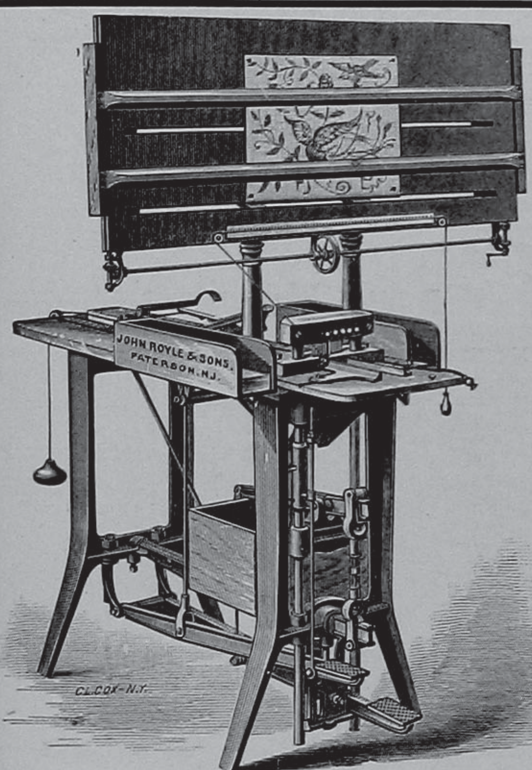
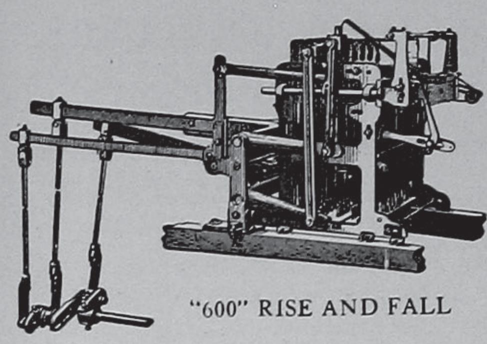
Complete, this Dictionary will contain over TWENTY THOUSAND PRACTICAL WEAVES.

Over 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.





"600" RISE AND FALL

JAMES HUNTER MACHINE CO.
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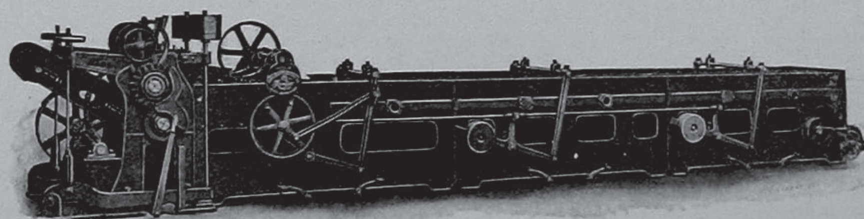
NORTH ADAMS MASS.

MODEL D
WOOL WASHER



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2824 North Fourth Street, Philadelphia, Pa.

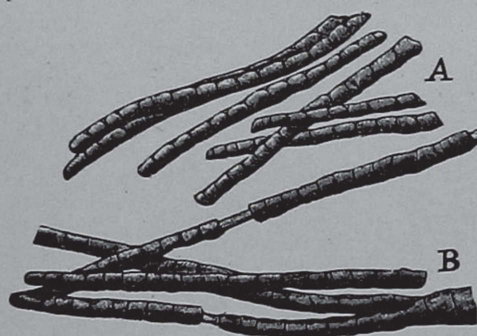
Posselt's Textile Journal

Vol. VII. September, 1910. No. 3.

Dictionary of Technical Terms Relating to the Textile Industry.

(*Continued from page 48*)

LOADING OR WEIGHTING:—The process of adding weight or body to a fabric during its finishing process. The substances used for it are known as



LOADED SILK FIBRES.
A loaded from 1½ to 2 times of original weight.
B loaded from 3½ to 4 times its original weight.

weighting materials. Used in connection with wool, cotton and silk fabrics.

LOCKRAM:—A coarse cheap linen, which derived its name from Locrenan in Brittany where it originally was made.

LOCK STITCH:—A sewing machine stitch, the under thread of which passes through loops in the upper one, interlocking therein.

LOMOND TARTAN:—A Scotch tartan having broad, white bars to relieve the green, blue and black plaids.

LONA:—A loose cheap cotton material, similar to common cotton duck, made and used in Mexico.

LONDON SHRUNK:—A special finish for woolens, although in reality not a finish, but simply a very thorough sponging. It was originated by a Mr. Farr, the proprietor of a prominent finishing establishment in London. The goods are finished in the usual manner in all respects until they reach the pressing process, then they are immersed in hot water, immediately taken from this bath and immersed in cold water. The surplus water is then squeezed out and the pieces hung on poles to dry. The hydraulic press is used for pressing and has much to do with the splendid results obtained by the *London shrunk* finish.

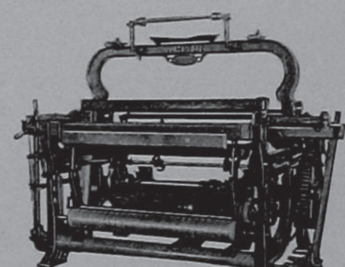
LONG CLOTH:—A fine calico or cotton fabric. It is manufactured in England, and largely exported to India, and other eastern countries. It is a shirting fabric style, usually made 36 inches wide.

LONG POIL:—A shaggy velvet.

LONG STAPLE:—Dealing with a long fibre; as applied to cotton it denotes its varieties above 1¼-inch staple; as applied to wool it indicates such as most suitable for combing purposes (combing wools), vice versa such as most suitable for carding purposes *i. e.,* short staple or clothing wools.

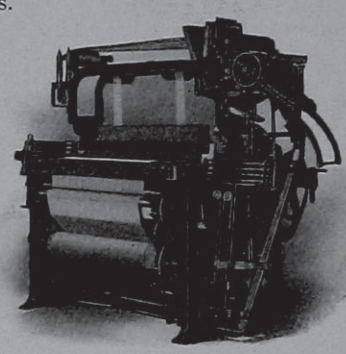
LOOM:—Literally, *a utensil;* from the Anglo-Saxon *loma,* furniture utensils. The ancient and well known machine for weaving fabrics by interlacing a series of parallel threads which run lengthwise, and are called the warp or the chain, with another series of parallel threads thrown transversely with the shuttle and which are called the filling or the picks.

The essential parts of a loom are: the frame, which supports its working parts; the warp beam, which holds the warp yarn; the cloth roller, upon which the woven fabric winds itself; the harness, its mounting and operating; the reed and batten, the first for beating up the filling, and the other for forming the raceway for the shuttle; the shuttle, with its box and picking motion; the whip roller and the breast beam, the first guiding the warp to the heddles, the latter for guiding the woven cloth, from its fell to the cloth roller.



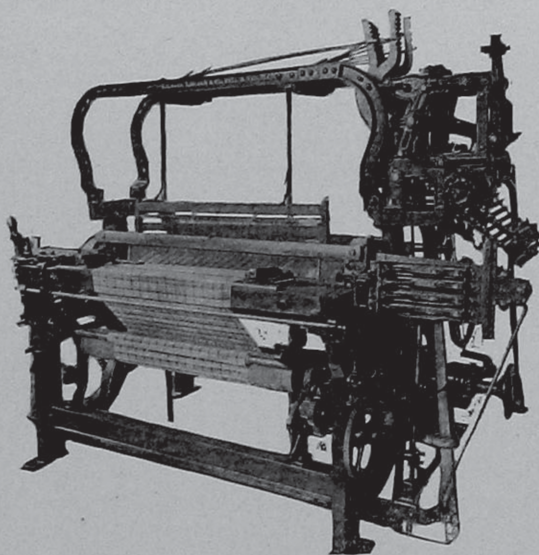
THE WHITIN PLAIN LOOM.

The means for operating the harnesses are also frequently used to designate the type of looms, *viz:* Roller Looms, Cam Looms, Open-shed Looms, Closed-shed Looms, Dobby Looms, Jacquard Looms.



CROMPTON & KNOWLES GEM SILK LOOM.

The means for operating the shuttles are also sometimes used to designate the type of a loom, *viz:* Single Box Looms; 1 by 2, 1 by 3, 2 by 2, 4 by 4, etc., Looms, indicating respectively the number of Boxes on either side of the Loom; Automatic Looms, and where the change of bobbins or bobbins and shuttles is made automatically, by suit-



The Kilburn, Lincoln Improved Dobby Loom.

able mechanism, whenever the working bobbin in the shuttle runs out.

With reference to fabrics woven, looms are divided:

(a) Such as destined for Harness Work (Harness Looms),

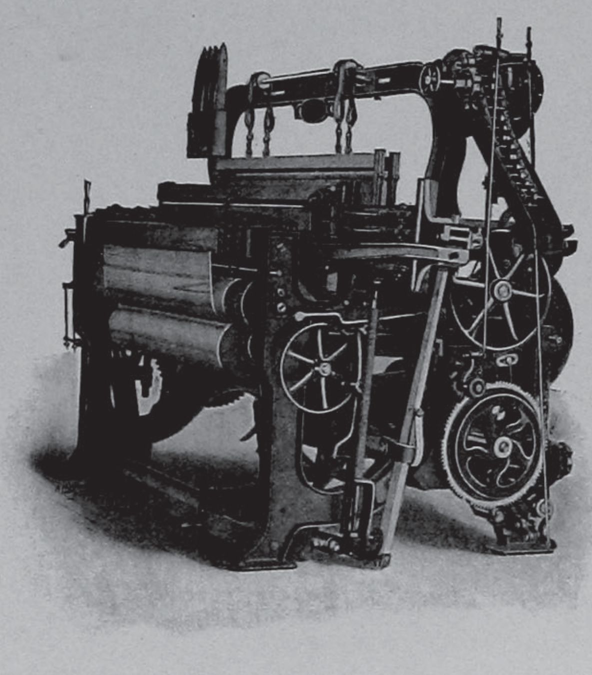
(b) Such as destined for Jacquard Work (Jacquard Looms),

and in turn again in:

(1) Broad Looms,

(2) Narrow Looms, and

(3) Narrow-Ware Looms.



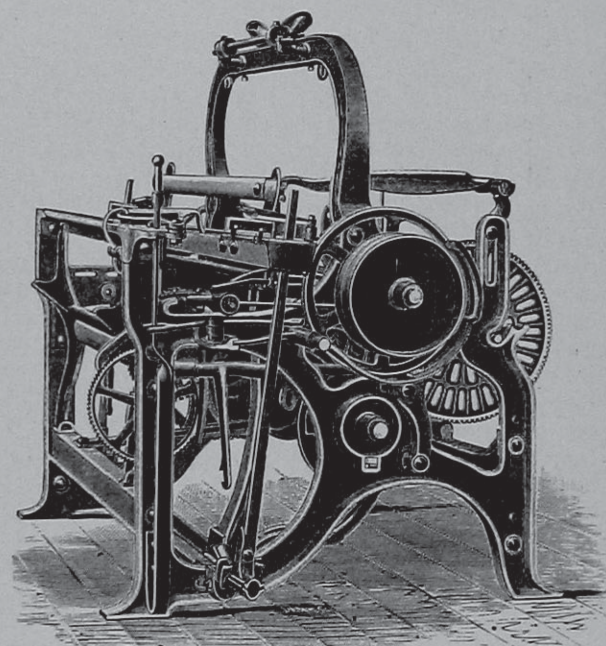
The Whitin Gingham Loom.

Looms are also designated by the kind of fabric woven upon them, *viz:* Tape Looms, Ribbon Looms, Suspender Looms, Cotton Looms, Sheeting Looms, Woolen Looms, Worsted Looms, Silk Looms, Jute Looms, Dressgood Looms, Tubular Looms, Bag Looms, Ingrain Looms, Brussels Looms, Axminster Looms, Art Square Looms, etc.

Looms are also known by the trade by the name of their Builders or Inventors, like the Crompton Knowles Looms, the Draper Looms, the Northrop Loom, the Kilburn Lincoln Looms, etc.

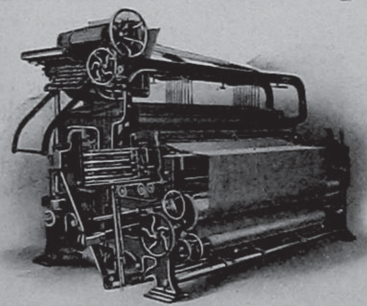
The Handloom is fast disappearing, or as we might say out of existence, the Powerloom being the loom in universal use. The origin of the latter dates back into the earlier part of the eighteenth century, although it was not until at the close of said century that the first practical powerloom was invented, the gist of its working parts having not been changed since.

A history of the invention of the Powerloom will be of interest: Dr. Gennes, a French naval officer, published in 1768 the description of a "new engine to make linen cloth without the aid of a artificer," which practically anticipated the modern



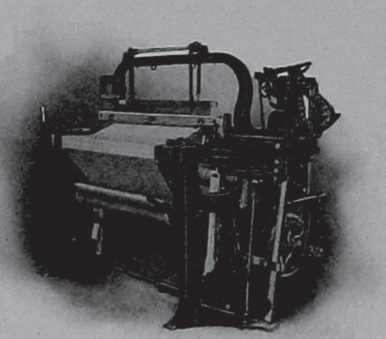
The Mason Print Cloth Loom.

power loom, and to this futile endeavor to supersede hand labor is generally ascribed the honor of first attempting to facilitate production. Lewis Paul (a well known English inventor), thirty years previous, had constructed and patented a machine with that object, although, as with that of Dr. Gennes, nothing came of it. About 1750, a swivel loom was produced by Vancanson (the well known inventor of the principle of the Jacquard machine), and tried in 1765 at Manchester. The next endeavor was made in 1784 by an English clergyman, Dr. Edmund Cartwright, and this with so much success, that modern looms are only modifications of his first power loom, although, after spending from £30,000 to £40,000 in patent fees, experiments, and efforts to establish his inventions, he yet had ultimately to abandon all hope of success. The one obstacle which defied all efforts, to obviate it, was the tenderness of the warp yarn, which frequently broke, and then necessitated the stoppage of the machine to join it. Subsequently the warp was sized, to strengthen it, but the machine still had to be stopped at intervals, and a man needed at each loom for this purpose. The cost of this still prevented the machines paying their way, and the difficulty was not overcome until 1804 by the invention of the dressing machine, which sized the warp before it entered the loom. Dr. Cartwright has him-



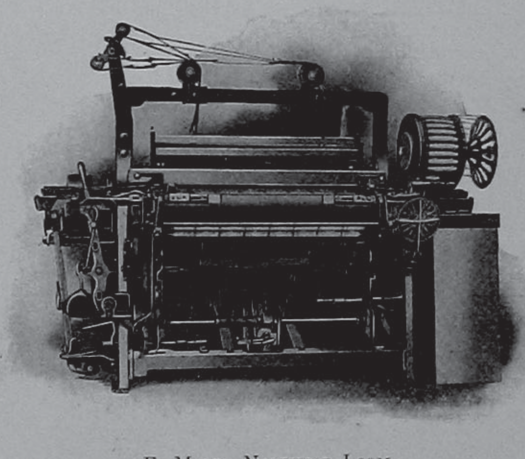
Crompton & Knowles Worsted Loom.

self narrated the use and progress of his invention as follows: "Happening to be at Matlock, in the summer of 1784, I fell in company with some gentlemen of Manchester, when the conversation turned on Arkwright's spinning machinery. One of the company observed that as soon as Arkwright's patent expired so many mills would be erected, and so much cotton spun, that hands never could be found to weave it. To this observation, I replied that Arkwright must then set his wits to work to invent a weaving mill. This brought on a conversation on the subject, in which the Manchester gentlemen unanimously agreed that the thing was impracticable; and, in defence of their opinion, they adduced arguments which I certainly was incompetent to answer, or even to comprehend, being totally ignorant of the subject, having never at that time seen a person weave. I controverted, however, the impracticability of the thing, by remarking, that there had lately been exhibited in London an automaton figure which played at chess. 'Now, you will not assert, gentlemen,' said I, 'that it is more difficult to construct a machine that shall weave, than one which shall make all the variety of moves which are required in that complicated



Crompton & Knowles Gingham Loom.

game.' Some little time afterwards, a particular circumstance recalling this conversation to my mind, it struck me that, as in plain weaving, according to the conception I then had of business, there could only be three movements, which were to follow each other in succession, there would be little difficulty in producing and repeating them. Full of these ideas, I immediately employed a carpenter and smith to carry them into effect. As soon as the machine was finished, I got a weaver to put in the warp, which was of such materials as sail cloth is usually made of. To my great delight, a piece of cloth, such as it was, was produced. As I had never before turned my thoughts to anything mechanical, either in theory or practice, nor had ever seen a loom at work, or knew anything of its construction, you will readily suppose that my first loom was a most rude piece of machinery. The warp was placed perpendicularly, the reed fell with the weight of at least half a hundred weight, and the springs which threw the shuttle were strong enough to have thrown a Congreve rocket. In short, it required the strength of two powerful men to work the machine at a slow rate, and only for a short time. Conceiving, in my great simplicity, that I had accomplished all that was required, I then secured what I thought a most valuable property by a patent, April 4th, 1785. This being done, I then condescended to see how other



E. Model Northrop Loom.

people wove; and you will guess my astonishment when I compared their easy modes of operation with mine. Availing myself, however, of what I then saw, I built a loom, in its general principles nearly as they are now made. But it was not till the year 1787 that I completed my invention, when I took out my last weaving patent, August 1st, that year." The first endeavor to make use of this invention took place at Doncaster, where the principal part of Dr. Cartwright's expenditure occurred. Another effort was made on a large scale at Manchester in 1791, under a license from the patentee, but the mill, calculated to hold four hundred looms, was burned down by incendiaries. Dr. Cartwright then gave up attempting profit by his discovery, but in 1808 a public grant of £10,000 was made to him as some compensation for his outlay and disappointments.

Loom Fixer:—The mechanic who attends to the proper running of a loom.

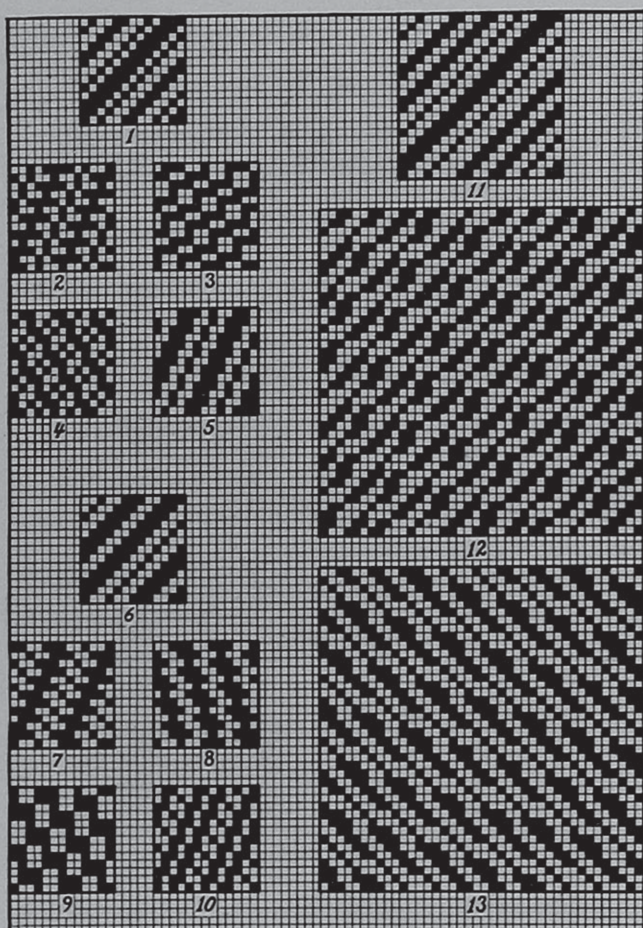
Loom Harness:—That part of a loom which raises and lowers certain warp threads at each pick, so as to form the shed, through which the shuttle travels and thus introduces the filling.

(To be continued.)

DRAFTING DIFFERENT WEAVES FROM ONE FOUNDATION.

This method of weave-formation is not only most interesting, but at the same time provides means for constructing an endless number of new weaves, of the greatest of diversity as to their interlacings, applicable for most all kinds of fabrics, covering silk, worsted, woolen, linen and cotton goods in all their varieties.

The procedure of constructing these weaves is based upon the principle of using from a given foundation weave, either one or more warp threads or picks, skipping between thread or threads thus used one or more ends of the foundation weave. The drafting of the foundation weave may be done either



from left to right or vice versa, or from bottom to top or vice versa; again the drafting of two or more ends may be done in one direction and the skipping in the opposite direction.

As will be readily understood not every result will be a perfect weave, but a great many results will produce some of the best weaves met with in practical work. In some instances, turning a resulting example 45 degrees, *i. e.*, changing warp for filling, will improve the practical value of a weave.

As will be readily understood, no reduction in number of harnesses to use will take place, the new weave requiring the same number of harnesses as the foundation weave calls for.

A few examples will explain the formation of these weaves, giving the reader the cue to construct any number of new ones by it, since the number of foundation weaves at our disposal, in itself, is unlimited.

Warp Drafting.

Fig. 1 is the $\frac{3}{1}\frac{1}{2}\frac{2}{2}\frac{1}{1}$ 13-harness regular twill, *i. e.*, the foundation in this instance, and from which weaves Figs. 2, 3, 4 and 5 are obtained thus:

Fig. 2: Take alternately one warp thread and miss one of the foundation, *i. e.*, draft the latter thus: 1-3-5-7-9-11-13-2-4-6-8-10-12 and the result is Diagonal Fig. 2, a most excellent, well broken-up effect.

Fig. 3: Take alternately one warp thread and miss three (miss two will result in a less valuable new weave—hence omitted) of the foundation, *i. e.*, draft the latter thus: 1-5-9-13-4-8-12-3-7-11-2-6-10 and the result is Granite Fig. 3, a neat effect of its class of weaves.

Fig. 4: Take alternately one warp thread and miss four of the foundation, *i. e.*, draft the latter thus: 1-6-11-3-8-13-5-10-2-7-12-4-9 and the result is Granite-Twill Fig. 4, a most excellent weave of its class.

Fig. 5: This weave, after having been formed, has been turned 45 degrees, *i. e.*, is presented to the reader in the position in which it will be used by him. In its original position this weave is drafted from our foundation by: take alternately one warp thread and miss five, *i. e.*, draft the latter thus: 1-7-13-6-12-5-11-4-10-3-9-2-8. The result, Weave Fig. 5, is a most (pronounced effect) Diagonal.

Filling Drafting.

Weaves Figs. 6, 7, 8, 9 and 10 are given to illustrate and explain the procedure.

Fig. 6: is the $\frac{3}{2}\frac{3}{2}\frac{1}{2}$ 13-harness regular twill, *i. e.*, the foundation in this instance, and from which Weaves Figs. 7, 8, 9 and 10 are obtained thus:

Fig. 7: Take alternately one pick and miss seven of the foundation, *i. e.*, draft the latter thus: 1-8-2-9-3-10-4-11-5-12-6-13-7, and the result is Granite-Diagonal, Fig. 7.

Fig. 8: Take alternately one pick and miss four of the foundation, *i. e.*, draft the latter thus: 1-5-9-13-4-8-12-3-7-11-2-6-10, and the result is the Steep Diagonal Fig. 8.

Fig. 9: Take alternately one pick and miss eight of the foundation, *i. e.*, draft the latter thus: 1-9-4-12-7-2-10-5-13-8-3-11-6, and the result is Granite Fig. 9.

Fig. 10: This weave, after having been formed, has been turned 45 degrees, *i. e.*, is presented to the reader in the position in which it will be used by him. In its original position this weave is drafted from our foundation by: take alternately one pick and miss eleven *i. e.*, draft the latter thus: 1-12-10-8-6-4-2-13-11-9-7-5-3. The result, Weave Fig. 10, is an excellent Granite-Twill.

Drafting Threads in Groups of Two.

This style of drafting as will be readily understood results in Novelty Weaves. Two examples will explain subject.

Fig. 11 is the foundation selected, being the $\frac{3}{2}\frac{1}{2}\frac{2}{2}\frac{2}{3}\frac{1}{2}$ 20-harness 45 degree twill, and from which we obtained Novelty Weave Fig. 12, by means of the following group drafting by 2's *viz.*, 1, 2; 7, 8; 13, 14; 19, 20; 5, 6; 11, 12; 17, 18; 3, 4; 9, 10; 15, 16. Repeat of weave 20 by 20.

By simply reversing the threads in each group of the 2's, keeping the drafting of the groups otherwise the same, the New Novelty weave Fig. 13 is obtained. The actual drafting from the foundation weave Fig. 11 is thus: 2, 1; 8, 7; 14, 13; 20, 19; 6, 5; 12, 11; 18, 17; 4, 3; 10, 9; 16, 15. Repeat of weave 20 by 20.

Both new Novelty Weaves Figs. 12 and 13 show excellent specimens of well broken-up spotted effects for fancy dress goods, in silk, worsted, wool, cotton, or union structures.

TRICOT WEAVES.

Under the name of tricot are classified fabrics presenting more or less distinct rib-effects. Fabrics interlaced with these weaves present a structure of a more elastic nature as compared to similar fabrics interlaced with other weaves. For instance, in connection with trouserings, fabrics interlaced with tricot weaves are less likely to bag at the knees than fabrics interlaced with other weaves. In the same way, if used for ladies' dress goods, cloakings, etc., they will tend to give the garment a nicer and closer fit.

Tricot weaves are graded into (*a*) tricots forming rib-effects in the direction of the filling and (*b*) tricots forming rib-effects in the direction of the warp. We will consider the former first.

Tricots Forming Rib-Effects in the Direction of the Filling.

The same are used for dress goods, cloakings, overcoatings, suitings, etc. The weave formation most frequently met with is 2 picks face to alternate with 2 picks back; other arrangements used are 1 pick face to alternate with 1 pick back, or to 2 picks face to alternate with 1 pick back, the arrangement used depending upon the size of the rib required on the face of the fabric. As a rule, the heavier the back filling used (compared to its mate face filling) the more prominent the rib-effect will be.

Fig. 1 shows us the 4-harness (filling) tricot weave, 2 picks face to alternate with 2 picks back.

Repeat: 4-harness, straight draw, 8 picks.

This weave has for its foundation the 4-harness broken-twill, 2 picks warp up, to alternate with 2 picks filling up.

Fig. 2 is the 3-harness (filling) tricot weave, 2 picks face to alternate with 2 picks back.

Repeat: 3-harness, straight draw, 12 picks.

This weave has for its foundation the 3-harness twill, 2 picks warp up to alternate with 2 picks filling up.

Fig. 3 represents the 4-harness (filling) tricot weave, one face pick to alternate with one pick back.

Repeat: 4-harness, straight draw, 8 picks.

This weave has for its foundation the 4-harness broken-twill, one pick face to alternate with one pick back.

Fig. 4 illustrates the 4-harness (filling) tricot weave, 2 picks face to alternate with 1 pick back.

Repeat: 4-harness, straight draw, 12 picks.

In designing this weave, observe the following rule: The warp-thread which is lowered in the back pick must be raised in the next following face pick.

Tricots Forming Rib-Effects in the Direction of the Warp.

This division of tricot weaves includes an endless variety of effects in trouserings, suitings, etc., both in wool and worsted goods. While filling tricot weaves, previously explained referred more particularly to plain colors, the present system is used both for plain colors as well as fancy colorings, the latter more often in connection with worsted trouserings, suitings, etc.

Fig. 5 shows the 8-harness, warp tricot weave.

Repeat: 8-harness, straight draw, 4 picks.

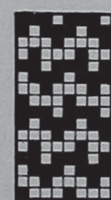


Fig. 1


Fig. 2

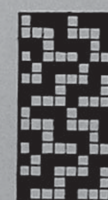


Fig. 3

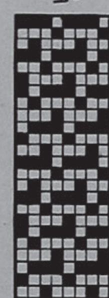


Fig. 4


Fig. 5


Fig. 6

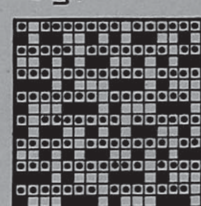


Fig. 7


Fig. 8

Harnesses 1, 3, 5 and 7 are for the face, and hence the harness where fancy ends come under consideration if referring to a fancy dressing for the warp.

Fig. 6 shows us the 12-harness, warp effect tricot weave. Repeat: 12-harness, straight draw, 4 picks. Harness 1, 3, 5, 7, 9 and 11 are for the face, hence for the fancy ends provided such are used.

Sometimes we have to make these *tricots à long* extra heavy, which may be done by adding an extra backing pick at every alternate face pick. Fig. 7 is an example. Repeat: 8-harness, straight draw, 8 picks.

In Fig. 8, a specimen of a tricot weave is given, which by the proper arrangement of its texture produces a fabric containing a considerable amount of elasticity, in fact, a fabric very closely imitating what is known as *Jersey cloth*. It is not upon the weave alone that we must depend for imparting this elasticity to the fabric.

The following dressing must be used in connection with weave Fig. 8:

2 threads of 2-ply cotton (forming, after finishing, the body of the fabric).
2 threads of single worsted (forming the face of the fabric, after finishing).
—
4 threads in pattern.

The filling is to be a fine, soft, single worsted (forming the back in the fabric after weaving and finishing) yarn.

Both kinds of warp will be visible on the face after weaving, but during the changes the fabric undergoes in finishing, the cotton warp will disappear from the face, taking its place in the body of the fabric.

These fabrics must be made very wide in the loom. Thus, in the case of a 54-inch finished fabric, the goods must be woven 92 to 100 inches wide in the loom, according to the texture and quality of the material used. (Fabrics made with weave Fig. 8 require the selvages to be sewed together when they are fulled.)

THE JACQUARD MACHINE.

(*Continued from page 31*)

The Jacquard Harness.

To the neck of the hook (*c* in Fig. 4) the neck cords are adjusted. The latter are passed separately through one of the corresponding holes of a perforated board, secured to the lower portions of the frame of the machine, known as the bottom board. To these neck cords are fastened the leashes of the Jacquard harness about ½ to 1 inch above the frame containing the rods which guide the neck cords vertically as the hooks are raised and lowered. The different harness cords are threaded through the comberboard in various ways, called tie ups, which will be explained later.

The Comberboard and Methods of Figuring for it.

There are three kinds of comberboards used upon Jacquard looms:

1st. Comberboards made of a solid piece of wood.
2nd. Comberboards made in strips of wood and adjusted afterwards in a frame.
3rd. The Brauch patent comberboard.

The latter two boards have for their object to permit a ready change in texture of goods woven, after a Jacquard harness is once tied up.

Comberboards Made of a Solid Piece of Wood.

Before ordering a comberboard, it is necessary to know the texture of the fabric in the loom, also the number or size of the machine to be used; for the number of holes per inch in the comberboard is regulated by this. Afterwards, we may, if we choose, arrange the number of holes in depth of the comberboard, according to the number of griff bars in the machine, (guided by the fabric to be made). We may have eight griff bars in the machine, and arrange the comberboard 4, 6, 8, 10, 12 rows deep; or we may have 12 griff bars in the machine, and arrange the comberboard 12, 10, 8, 6, 4 rows deep.

Rule: The number of holes to one inch in the comberboard must equal the texture of the fabric to one inch in loom.

Example: Suppose a fabric with a texture in the loom of 100 threads, and we are to use a 600 Jacquard machine, with 12 rows. The width of the fabric in the loom is to be 36 inches.

Required: The number of holes in the width of the comberboard.

Answer: $100 \times 36 = 3600$ holes in the comberboard.

$3600 \div 12 = 300$, the number of holes in width.

The width and depth of the comberboard are regulated by the width of the cloth required and by the design to be used.

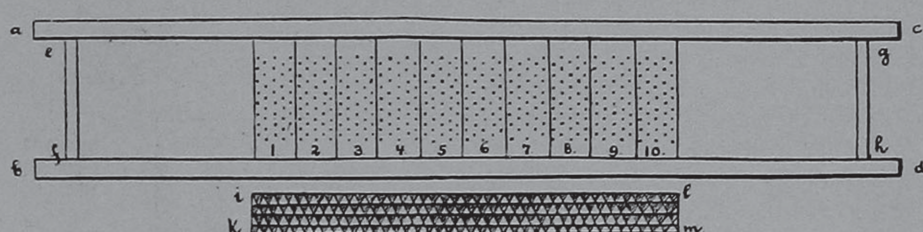


Fig. 19.

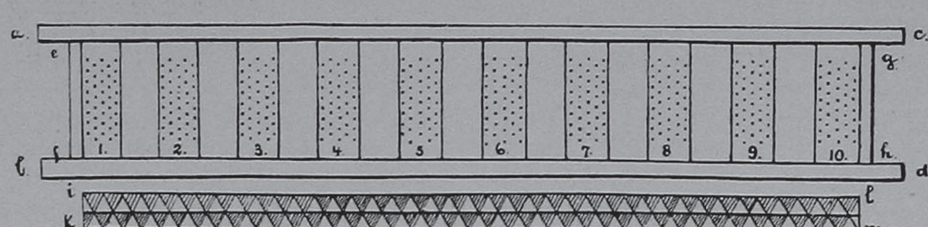


Fig. 20.

The greater the number of rows in depth, the closer they must be; the same is true of the width.

It is necessary to take care not to have the comberboard too deep, as the consequence would be a bad shed; furthermore, we must not have the holes too close together, as in a high texture this would make trouble in the weaving through the catching of the heddles with the warp, and also cause useless chafing of the warp-threads and the heddles.

Changing of Solid Comberboards for Different Textures.

In Jacquard work we generally use the same texture, or as near as possible, as the loom is tied up for; but changes are sometimes unavoidable. If we reduce

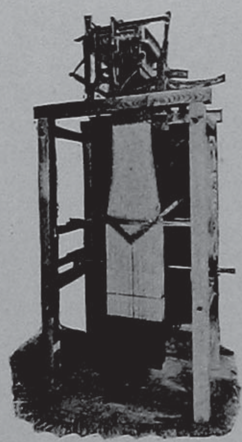


Fig. 21.

the texture of the fabric in a Jacquard loom tied up for a solid comberboard, we must reduce proportionally the number of hooks and needles used in designing, and hence the number of heddles used per inch. These heddles will thus be left empty when drawing in the warp. To accomplish this, lift the full machine and throw the hooks not to be used, from the knives, lowering in this way every mail which is not to be used.

Sometimes there may be only one, two, three, or four hooks to be thrown off, on account of the design; whereas at other times it may be necessary that one-eighth or one-fourth, or even one-half of the whole number shall be dropped for this purpose.

For instance, suppose we have a dressgoods design of 596 threads and a 600 machine. These four ends left off the 600, if 6, 7, 8, or more inches in width, would not affect the fabric nor the cost to any great extent, hence we may leave out the first or last four needles of the 600.

Suppose we have a texture of 100 in the comberboard, to lower to 66 ends per inch.

66 ends, or the nearest even part of 100 ($66\frac{2}{3}$) is $\frac{2}{3}$ of 100; hence, we only need two-thirds of our machine; and as the same is supposed to be arranged 12 rows deep, we need $\frac{2}{3}$ of 12 rows, or 8 rows. The four rows thus found necessary to drop, may be dropped from the ends, or alternately, as follows:

Every alternate 2 rows taken, 1 row missed, 4 times over = 12 rows.

Or, 2 rows missed, 8 rows taken, 2 rows missed, = 12 rows.

Comberboards Made In Strips.

By these comberboards, which are used to a great advantage on narrow looms, *i. e.*, fabrics up to 36 inches wide, we can change the texture for the fabric; for the strips composing the comberboard may be drawn more or less apart from each other, thus changing a higher texture to a lower one, or vice versa, whereas in a solid comberboard this could only be done by re-tying the harness or changing the number of needles used in the machine. To give a clear understanding, Figs. 19 and 20 are given.

Fig. 19 represents an 8-row deep comberboard, *a, b, c, d,* composed of 10 strips which are set close together. By examining each strip, 5 cross rows of holes will be found, making the whole number of holes 400.

Suppose the comberboard, as represented in Fig. 19, is intended for a texture of 100 ends per inch; this will give for the width of the fabric (*i, k,* to *l, m,*) as shown below the comberboard, as 4 inches.

In Fig. 20 the comberboard is arranged for a texture of half as many ends, or 50 holes per inch, the ten strips being arranged accordingly; the empty places between the strips are of same size as the strips themselves, and the fabric design below the comberboard is arranged to correspond.

The Brauch Comberboard.

This comberboard in connection with its harness tied up, is shown in Fig. 21 in its contracted position and in Fig 22 expanded. As seen from illustration, the comberboard is made out of two parts, hinged in their centre, and when in connection with either raising or lowering the centre of the board, the harness in turn is either expanded or contracted in its width. The centre line of the hinge is either placed above the face of the comberboard, or in the plane of the face of the said comberboard, so as to avoid the sliding of the board within the groove of the frame during adjustment. In this case, the frame may also be dispensed with, and the hinge directly arranged upon the central sections of the comberboard.

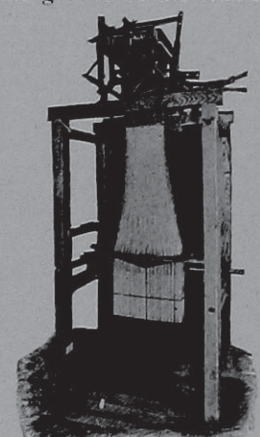


Fig. 22.

Whenever a certain pattern is completed and a different pattern is desired, calling for a different number of harness threads to the inch, the frame containing the comberboard, or the latter one if no frame is used, is swung upon its pivot until the proper adjustment is obtained.

Angular holes are bored in this comberboard so as to overcome the friction on the harness cords, which would appear if using straight bored holes.

(*To be continued.*)

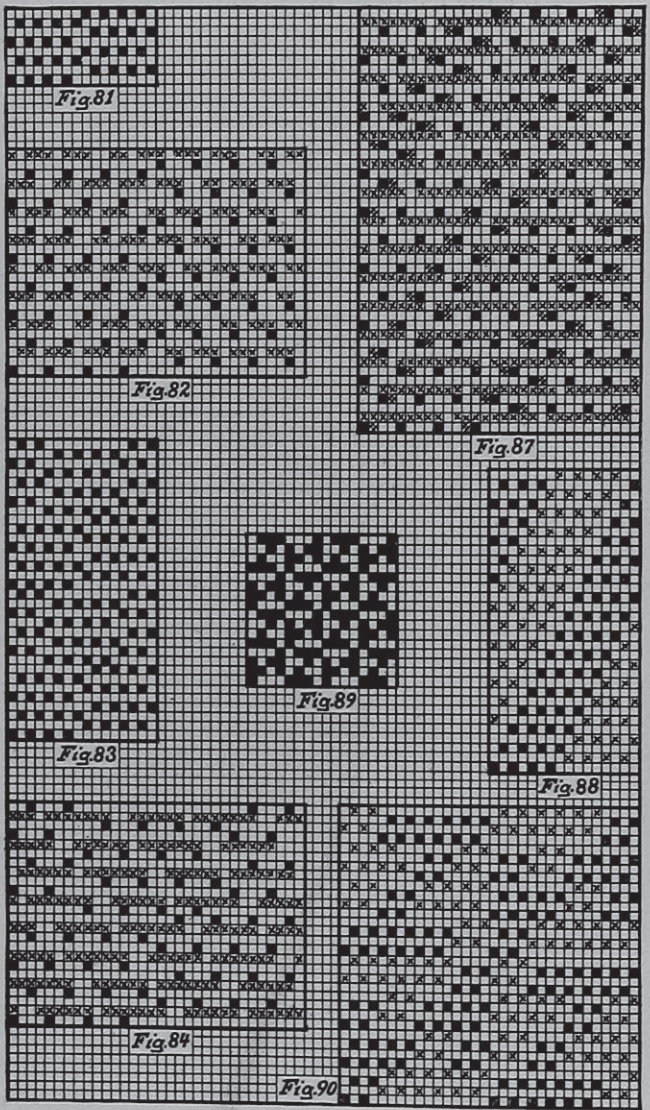
THE MANUFACTURE OF OVERCOATINGS AND CLOAKINGS.

F. Whitneys, or Flaky Cloth.

(Continued from April issue.)

(*c*) Heavy Weights Produced by Means of Double Cloth Structures.

In the construction of these weaves, the principle underlying the structure of double cloth is made use of. Body and pile effect are produced by one filling. The generally used arrangement for face and back filling is 2 face : 1 back; 3 face : 1 back; or in some



cases 4 face : 1 back. We cannot use the arrangement of 1 : 1, since in that instance the face of the fabric would be liable to get an open appearance, a disadvantage which only can be omitted provided we would use a specially heavy filling for the face pick, a procedure which in turn would have the disadvantage of imparting a coarse knotty appearance to the face of the fabric.

Two examples are given to explain the subject, viz: weaves Figs. 82 and 84. In both weaves the arrangement of the filling is 2 picks face : 1 pick back; the arrangement of face and back warp being 1 : 1.

In connection with double cloth weave Fig. 82, its face weave is shown separate in weave Fig. 81. The same, after gigging, produces in the fabric, flakes arranged to run in the direction of the warp, *i. e.*, a stripe effect. The interlacing of the back structure is done by means of the plain weave. Face and back structure are combined by means of the 8-leaf satin weave, lowering the face warp below the

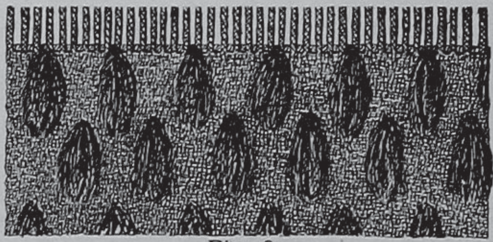


Fig. 85.

back filling. In order to produce a perfect fabric the two following points must be taken into consideration by the designer: First: the amount of stitching done must be as little as possible so as not to produce an unnecessarily stiff fabric, and second: the back warp must never cross the face filling where the latter floats, for the purpose of forming a bunch, *i. e.*, flake on the face of the structure.

Weave Fig. 83, treated in a similar manner for double cloth, results in turn in weave Fig. 84. In this case the back structure interlaces with the 4-harness twill.

In order to familiarize the novice designer with the construction of these fabrics, sketches Figs. 85 and 86 are given. In the same, the flakes are shown arranged on a *plain setting*. To still further simplify the matter for the reader, the flakes in sketch Fig. 85 are shown arranged excessively far apart. Sketch 86 represents the finished fabric.

Weave Fig. 87 shows us a double cloth Whitney weave in which the flakes are arranged in a diagonal shape. The face weave for this double cloth structure is shown separated in connection with weave Fig. 88. The interlacing of the back structure in connection with double cloth weave Fig. 87 is done by means of the 5-harness twill. There will be no objection to this twill on the back of the fabric for the fact that the face itself forms a twill effect.

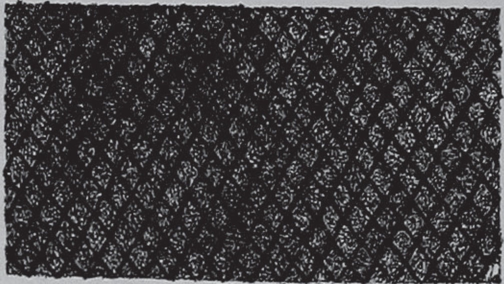


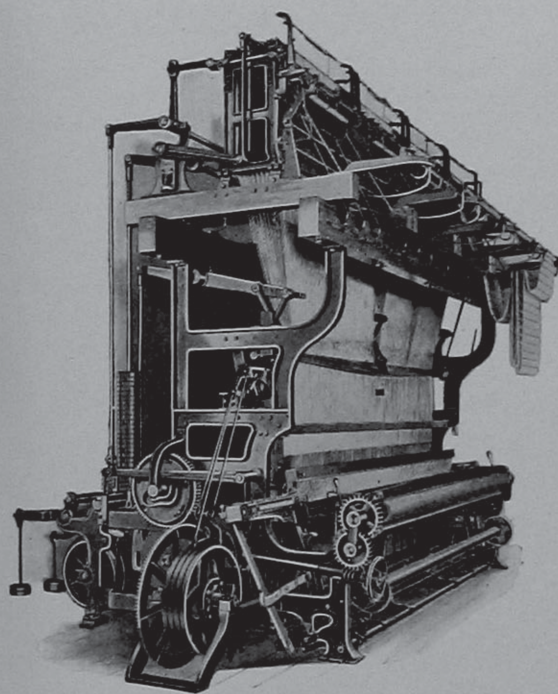
Fig. 86.

When dealing with long pile floats, see to it that the long float in every instance is alike, since the action of the teasel in this instance will be uniform, all bunches, *i. e.*, flakes receiving then the same length in the finished cloth. However, there are styles of fabrics met with in the market, in which an equal length of float is not required, *i. e.*, short and long floats are wanted. Weave Fig. 90 illustrates such an example, the motive for which is given in connection with diagram Fig. 89.

BRUSSEL AND WILTON CARPETS.

(*Continued from page 34.*)

In Brussel carpets, (the same feature also refers to Wiltons) the different colors used in the design vary considerably. Although all called for in the repeat, some are used more frequently than others. This principle of using either color at will, and thus consuming more length of one color than of the other, is the reason why every pile warp thread used in the entire width of the carpet must be delivered from a separate warp beam, bobbins, *i. e.*, miniature beams, being used for this purpose, the various frames being held in a huge creel placed in rear of the harness.



CROMPTON & KNOWLES STATIONARY WIRE BRUSSELS AND WILTON CARPET LOOM.

The sections in the creel vary with the number of frame of the carpet, for which reason for a 5-frame carpet there are placed five frames in the creel, for a 4-frame carpet there are placed four frames in the creel, etc.

What is known as *planting* will often be the cause of an additional portion of a frame. This is more readily seen when we take into consideration that the nature of the design is often such than only very small quantities of one or more colors are visible in some portions of the figure, and when it is necessary that they be *stopped out* by substituting some of the other colors, resulting in a certain number of ends being vacant, that is, a certain number of bobbins of yarn of one or more colors would be used only when necessary in producing the figure. The same number of bobbins might be placed in a separate creel, and thus an extra effect of color would be obtained in the design. This dodging of color is more often resorted to in 3 and 4-frame carpets, four or five creels respectively being then used.

In producing a 3, 4 or 5-frame fabric it is a common occurrence to *stop out* portions of color in any one frame and to abstain from introducing a corresponding amount of color in another place. This results in the saving of a certain quantity of yarn, while the general effect of the design is little, if any, the worse for the saving.

No matter what small amount of yarn is saved, it means a lower cost of production, and consequently an increased profit to the mill; but in some instances the affair is carried so far that a quarter of a frame and sometimes a half is saved.

It is customary to class carpets in which only a small portion of the threads of the frame are missing as the same grade, while if half gone it is classed as so many frames plus a fraction.

Reducing a full frame depends on the design, for the fact that a 4½-frame carpet, if well managed, can frequently be sold as a 5-frame carpet and when the manufacturer then saves 130 pile warp threads, throughout the entire length of the carpet. One of the serious disadvantages of this system of producing carpets is the depreciation of its wearing qualities compared to those containing full frames, as the body of the carpet is naturally thinner in the particular place where the threads are left out.

To explain subject it will be of interest to refer to the difference in texture between, for example, a 4 and a 5-frame carpet:

There are 1,280 ends of pile warp used, in the complete 5-frame carpet, of which 256 ends come to the face at every wire, 1,024 ends therefore assisting in forming the body of the fabric.

The same item with reference to a 4-frame Brussel carpet, comprises 1,024 ends in complete pile warp, and of which 256 ends (the same number as in the 5-frame) form the face of the fabric, but only 768 ends (in place of the 1,024 ends in the 5-frame) form the body of the fabric, additional linen, hempen, jute or cotton stuffer ends taking the place of the omitted pile warp threads in the body of the carpet. It will thus be seen that a 5-frame carpet is thicker, softer, and consequently more durable than a 4-frame, besides more elaborate designs can be produced.

In connection with *planting*, the greatest of care must be exercised by the designer. The frame thus planted must be used very sparingly, otherwise, when a number of repeats are viewed lengthwise, stripes will be the result. To avoid this, a great amount of skill is required by the designer. Stripes thus produced are fatal defects. In order to avoid them, the color in the planted frame may be shaded from side to side, using any number of shades for this purpose.

Planting will always be more successfully carried on in connection with a 4 or 5-frame carpet; a 3-frame, while also permissible for planting and while it increases the number of colors available, will at the same time impoverish the effect, for the reason that since the planted frame must be used sparingly, combinations of the remaining three foundation colors will be rather prominent.

To prevent striping, have the objects to be planted overlap each other, never stop abruptly at the line dividing two bands of color, but have them somewhat overlap each other.

If the main part of objects planted are colored with all over shades, and if in the central portion, up to the dividing line, the planted color be used, the eye will be deceived, since it will imagine that the planted colors overlap.

In making a planted design, place a strip of paper across it, planting across said strip the intended arrangement of stripes. This will guide you in your work showing you any time how far any particular planting may be carried.

An experienced person will readily notice whether a carpet is planted or not. He knows that if a color appears only in spots, or in small masses of any kind, and that these spots or masses are separated from each other by some distance in the width of the carpet, that planting has been done. At the same time, however, remember that a carpet properly planted will command a readier sale than one not planted, since it will present a richer appearance.

(*To be continued.*)

THE FINISHING OF CARPETS AND RUGS.

(*Continued from page 36.*)

In connection with Ingrain carpet another style of shear is used, the same carrying the name of the fab-

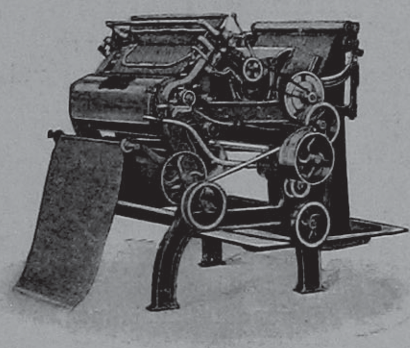


Fig. 6.

ric handled by it, *i. e.*, Ingrain Carpet Shear. Figure 6 illustrates a perspective view of this machine as built by the Curtis and Marble Machine Co. It is designed for shearing one side of Ingrain carpets at a time. The machine is identical in its principle with that of their woolen shear, with such modifications to adapt it for the handling of Ingrain carpets.

It has a raising brush in front for brushing up the fibres from the thread, previous to shearing, containing also a back brush for cleaning off lint and dirt from the back of the goods, a folding attachment being provided at the rear of the machine for laying the goods off in loose folds.

In some mills we may find used what is known as the Curtis and Marble Double Cutter Ingrain Carpet Shear, the same being designed for shearing simultaneously the face and back of the fabric. One of the sets of the shear blades handles the face of the goods, the other its back, raising brushes being provided respectvely for either sides of the fabric, in order to brush up dirt, dust, as well as fibres adhering to the goods, *i. e.*, protruding from the body of the threads, previous to shearing.

There is also a third brush provided to the shear, the same being located back of the top cutter, to pick

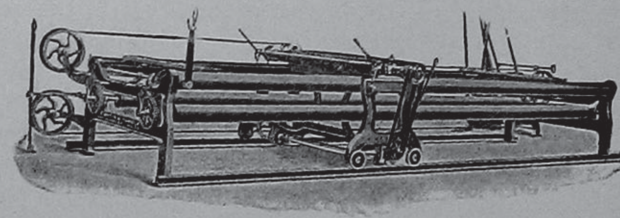


Fig. 7.

up any threads that may remain on the face of the goods, so as to leave both sides of the fabric clear, ready for rolling.

A folding attachment is also provided at the rear of the machine, for laying the goods off in loose folds.

For handling extra wide rugs, such as Smyrna, Axminster, Chenille, etc., the Curtis and Marble Machine Co., build a special shear known as their Cross Cut Rug Shearing Machine. The same is shown in its perspective view in Fig. 7. The shear blades in this machine have 54 inches of cutting surface and are held in a carriage which travels back and forth on a track on the floor.

For handling them in the machine, the rugs are wound onto one of the long rollers, and the end is then carried over the top rail, across over the cloth-rest, under the blades and attached to the other roller. The edges of the rugs are held in clamps at each end of the frame, and the part that is being sheared is drawn out straight and smooth by means of hand levers. The carriage holding the blades runs forward and back over the rug, shipping itself automatically, and shearing the goods as many times as desired. As soon as one section is sheared, four and one-half feet more of the rugs are drawn over and sheared in a similar manner, and the process is repeated till the whole roll has been sheared. The pulley frame, with the necessary pulleys for driving the revolver and carriage is placed near one end of the machine, and a countershaft furnished to go overhead, with hangers and tight and loose pulleys. These machines are usually made

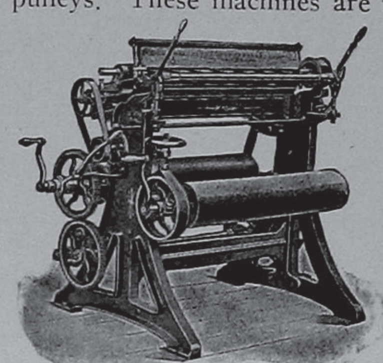


Fig 8.

to handle rugs up to 15 or 18 feet wide, and are adjustable for narrower rugs; larger machines for exceptionally wide rugs are also built.

Another shear frequently met with in our carpet and rug mills is the one known as the Smyrna Rug

Shearing Machine. Fig. 8 shows this machine, as built by the Curtis and Marble Machine Co., in its perspective view. In the same the rugs are held by hooks in the ends of canvas aprons fastened to the front and back rollers and are sheared as they run back and forth from one roller to another. The rugs are drawn forward by power, with a stop-and-start motion, governed by a friction clutch, and are run back by hand by means of a crank. The requisite amount of tension on the rugs while being sheared is obtained by a friction clamp on the front roller. As will be readily understood the cutting device of this shear is built extra strong and heavy in order to adapt the machine to the hard usage they are subjected to in handling these rugs. They are also used in connection with shearing rugs made from old carpets, and are built in different widths to handle respectively 36, 48, 60, 72, 96 or 108 inch wide fabric structures.

(To be continued.)

Economy In Warping.

As the market changes with the demand for certain lines of cotton fabrics, so the process of manufacturing these fabrics changes.

This is especially true in the warping department of the mill, where the method of making the warp may necessitate any time, either *ball* warps or *beam* warps.

Either process requires a different machine, each of which takes up considerable room, which from the standpoint of economy is a considerable item with a majority of the mills.

At the same time, the machines represent the investment of considerable capital and as either one only is used at a time, as the occasion occurs, it necessitates a portion of capital laying idle, which is always a question of vital importance with mills of small spindleage and limited capital.

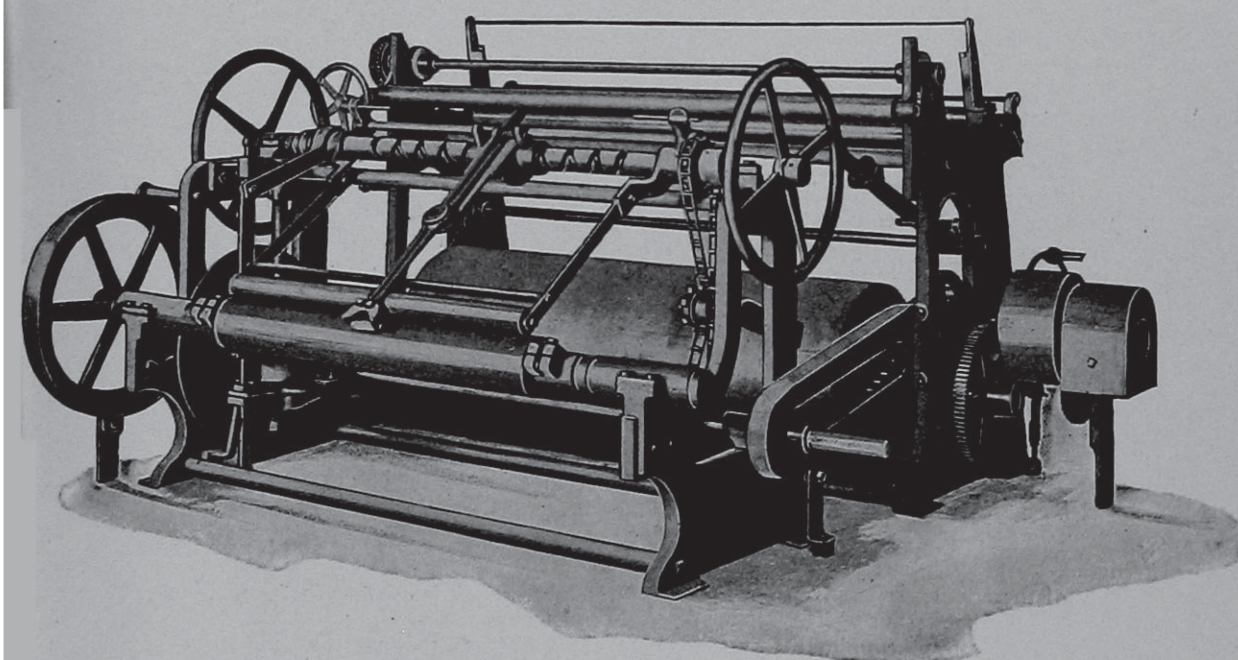
For these reasons many mills, although they see the advantage and recognize the necessity of having both equipments, but having installed only one type, hesitate going to the additional expense of installing the other, and for this reason may have to refuse a certain line of goods.

With these conditions in view, the situation naturally demanded that the manufacturer be helped over this difficulty.

The problem has been solved by the introduction of the New *"Denn"* Spindle Driven Ball Warper used in Combination with their Section Warper.

This machine, as can be seen from the illustration, is very durably constructed and condensed, and from the standpoint of economy, with reference to space occupied as well as cost of installation, puts the small mill, which heretofore could only afford to operate on one system, on the same level as the larger ones.

In case a mill is equipped with the sectional beam warper and the line of fabrics makes necessary the use of ball warps, it is now no longer necessary that the mill install a complete ball warper, but they can install



THE NEW SPINDLE DRIVEN BALL WARPER IN COMBINATION WITH THE SECTION WARPER.

the New "Denn" Spindle Driven Ball Warper to be used in conjunction with their Section Warper.

This overcomes the objection as to lack of room and cost of equipment. In the illustration this New "Denn" Spindle Driven Ball Warper is shown in position and connected with a Section Warper.

It is driven by means of the sprocket chain principle and the only connection with the beam warper is the chain guard, which as can be seen from the illustration is held in position by two bolts.

While the ball warper is being used, the beam warper is idle, the large gear wheel which drives the sectional warper drum being slipped out of mesh with the pinion.

When the ball warper is no longer needed, the two bolts in the chain guard are removed, the chain disengaged and the machine moved to one side so that the beam warper can be used. This method, as can be readily seen, results in the saving of considerable room, and at the same time an economic production.

In either case, the direct pull V-type creel, having the well known electric stop motion located within it, may be used.

The advantages of this creel and the electric stop motion are that its operation is positive and instantaneous, and there is no possibility of fly getting on the ball. Again it allows the greatest possible distance between the spools and the ball, where a majority of broken ends originate.

For the purpose of convenience in measuring the leases, the upright two dial measuring device is also used. This is so constructed that one dial will read up to 24,000 yards while a smaller one is graduated in multiples of 1,000 yards, both being connected with the stop motion and the electric bell circuit, a signal being given to the operator when the required number of yards have been wound on the machine.

Another improvement is the direct drive, used in winding the yarn on the shell, the speed of the machine reducing proportionately with the size of the ball. This method of driving does away with the slipping of the friction rollers, which caused the yarn to become chafed or rough, and at the same time eliminates the squeezing out of the ends, due to the pressure on the friction rollers necessary to bring the yarn from the spools.

The advantage of this direct pull principle is readily seen, when it is taken into consideration that the friction roller drive will not pull more than 600 ends without an unnecessary amount of slipping and that the ball is usually in a rather unacceptable condition due to the ends having been pushed out, while by the use of the direct pull principle the number of ends is limited only by the number of spools it is possible to arrange in the creel, usually about one thousand.

A point which has presented itself with the mercerized trade is that the yarn has been glazed in spots by the slipping of the friction rollers, which naturally gave the yarn a mottled appearance. This trouble has been entirely overcome by the spindle driven ball warper, and the ball warp is equal to the link warp in every respect for mercerizing purposes.

The fact that these machines are a saving to the manufacturer is something to be considered when we look upon the keen competition in the cotton goods line and it is essential that the manufacturer who is looking for increase in profits turn to the Globe Machine and Foundry Co., Fkd., Phila., to demonstrate the advantages further.

Hungerford & Terry, Filtration Engineers, Pennsylvania Bldg., Philadelphia, have installed a 2,000,000 gallon filter in the E. 5th St. Works of the National Silk Dyeing Co., Paterson, N. J.

DIRECTORY OF TRADE MARKS RELATING TO THE TEXTILE INDUSTRY.

Registered August, 1910. (*Complete.*)

1. Silk Piece Goods.—Rogers & Thompson, West New York, N. J.

2. Cotton Piece Goods.—Warner-Godfrey Co., New York.

3 and 7. Silk, Cotton, Mercerized and Machine Sewing Threads.—Gudebrod Bros. Co., New York.

4. Hosiery.—Howard J. Clark, Orchard Park and Buffalo, N. Y.

5. Hosiery.—Walter Wesendonck, New York.

6. Overalls and Overall-Coats.—High Point Overall Company, High Point, N. C.

8. Silk Netting in the Piece.—Bamberg & Risser, New York.

9. Dress Goods Made of Linen, Silk and Cotton Mixtures, and Silk.—L. Hess & Co., New York.

10. Mercerized and Otherwise Processed Cotton Yarns.—Harding Tilton & Company, Boston.

11. Veilings.—Strauss Bros. & Company, New York.

12. Knitted Goods.—S. D. Stretton Sons, Leicester, England.

13. Cotton Piece Goods.—Hayward & Thurston Co., New York.

14. Hosiery.—Oneida Hosiery Company, Philadelphia.

15. Children's Hosiery.—Central Knitting Company, St. Louis, Mo.

16. Cotton Goods in the Piece.—Wm. H. Brown Son & Co., New York.

17. Cotton Sateens.—Warner-Godfrey Co., New York.

18. Dress, Negligée, Night and Under-Shirts, also Pajamas.—The New Era Mfg. Co., St. Louis, Mo.

19. Cotton Fabrics, Merinos, Plushes, etc.—Gravenhorst & Co., New York.

20 and 21. Spool Cotton, Sewing Cotton, Thread and Cotton Yarn.—The American Thread Company, Jersey City, N. J.

22 and 23. Wearing Apparel.—The Salt's Textile Mfg. Co., Bridgeport, Conn.

24. Shedding Mechanism for Harness and Jacquard Looms.—Levy Fils, A. Bernheim & Cie., Paris, France.

25. Wearing Apparel.—The New York Mackintosh Company, New York.

26. Jute Bagging for Baling Cotton.—The American Mfg. Co., New York.

27. Rugs and Carpets.—John W. Masland.—Philadelphia.

COTTON SPINNING.

The Ring Frame.

(*Continued from page 18.*)

Band Tension Scale.—There is no excuse for tight or slack bands, even when the person in charge has not had much experience, if a band tension scale be used for testing the tension of the bands. A very reliable band tension scale is manufactured by the Draper Co., and by the use of this tension scale, the exact pull of the band can be ascertained. This means a saving in bands and in power, as well as the prevention of soft yarn spun. This device is to the spinning room what an indicator is to the engine room. It multiplies the efficiency of the overseer, or second hand, although the results are shown at the coal pile, rather than in their immediate department. It is, however, important to the spinning room itself, to have its bands well adjusted to a uniform scale of tension, so that they will wear longer, and protect the weave room against soft yarn. The band scale absolutely determines the exact tension of any band, or number of bands. The construction of this scale has recently been improved, so that one scale will do for different whirls, doing away with the necessity of a complete scale for each style of spindle in the room. Fig. 282 shows this scale.

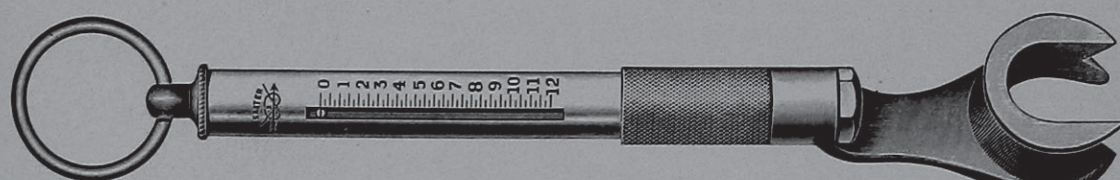


FIG. 282

To use the scale, the frame must be stopped and if the spindle is of the old type with a hook, the hook must be turned. The whirl of the scale is then applied by its slot under the whirl of the spindle, which will thereby be raised, and the band is slipped off the spindle whirl onto the band scale whirl. By drawing the lower whirl even with the spindle whirl, the tension is shown on the scales.

Tin Cylinders.—The tin cylinder, by which the spindles of the ring spinning frame are driven, extends the full length of the frame, in about its central line. Sometimes two cylinders are used, but this practise refers more to mills abroad, the cylinders in this case being set parallel in the centre of frame, each cylinder driving then the spindles on the opposite side of the frame. The cylinders are fitted with steel shafts, which extend through their central axis, to which the external tin cylinder is fastened by means of radial spokes and braces. Power is transmitted through the central steel shaft, by means of belting, gearing or individual electric motors.

Cylinders are constructed of two thicknesses of tin, making them very stiff and capable of high speed. Sometimes strips are riveted inside for additional strength and stiffness. Cylinders are rarely made over ten feet in length and are usually supplied in the following four sizes, viz.: 6¼ inches, 7 inches, 8 inches and 9 inches in diameter. Cylinders should be tested at full speeed and be perfectly balanced in the shop before they are put in place. The boxes or bearings are lined with brass with return oil channels and ring oilers.

Most modern frames are built so that the cylinder can be set higher or lower as required, so that the centre of the cylinder shaft can be set exactly level with the bottom of the groove on the whirl. Cylinders should be exactly straight throughout their whole length and parallel to the spindle rail, so that bands will be of equal length. The cylinder should be brushed at least once in every ten days. This should be done carefully, taking care not to unduly strain the bands, the purpose being to keep the cylinders and bands clean and as free from oil and lint as possible; also to detect any bands that may have come to the point when they may cause soft yarn to be made.

(To be continued.)

The Whitin Machine Works are duplicating at present former orders for their Duck Looms, having 28 of the heaviest type of these looms at present in course of erection at their floors, designed for weaving the heaviest construction of Duck, from 30 to 120 inches wide in reed. The looms referred to are ordered by the Thistle Mills, Ilchester, Md. They are also building the necessary Warping Machinery, to be used in connection with these looms.

The Whitin Machine Works have also designed a new Multiplier for their well known Gingham Looms, also an Improved Warp Stop Motion. They are running their plant with a full force (about 3000 hands) on full time.