Vol. VI MARCH, 1910 No. 3

MAR 18 1910

Posselt's Textile Journal

A Monthly Journal of the Textile Industries

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Entered as second-class matter February 10, 1908, at the post office at Philadelphia, Pa., under the Act of Congress of March 3, 1879.

E. A. Posselt, Publisher, 2028 Berks St., Philadelphia, Pa.

European Agents: Sampson Low, Marston & Co., Ltd., 100 Southwark Street, London, S. E.

SUBSCRIPTION: $2 PER YEAR.—Canada: $2.50 per year, Foreign Countries: $3 per year.

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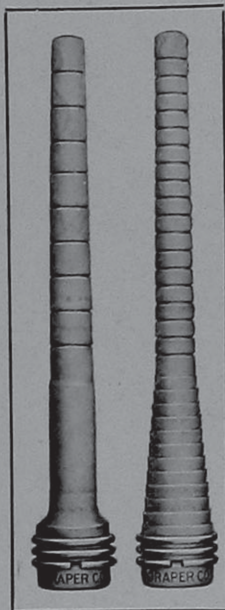

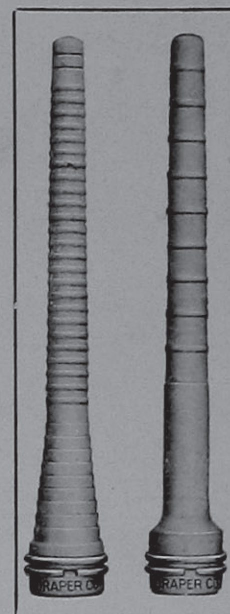

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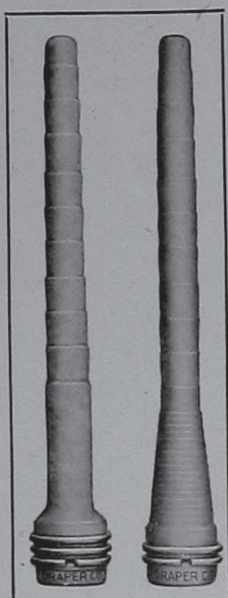

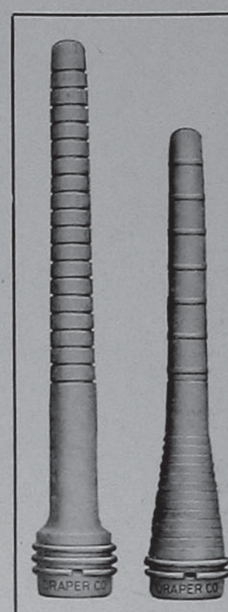

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7. Silk Piece Goods.—Rogers & Thompson, West New York, N. J., and New York.

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10 and 11. Silk Piece Goods and Silk Mixed Piece Goods.—Susquehanna Silk Mills, New York.

12 and 30. Men's Undershirts, Drawers, Socks and Knitted Shirts.—Neustadter Brothers, San Francisco, Cal.

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17. Hosiery.—A. B. Andrews Company, New York.

18. Woolen, Cotton, Linen and Silk Piece Goods. The outline of the shield and the cross-bands and square thereon being printed in gold and the extremities of the letter "J" appearing above and below the shield, being printed in red.—The Wm. B. Jennings Co., New York.

19. Undershirts and Underdrawers made of woven Material entirely, or partly of woven and partly of knitted Material.—The B. V. D. Company, New York.

20. Suspenders.—M. & S. Peller, New York.

21. Suspenders and Garters.—The C. A. Edgarton Mfg. Co., Shirley, Mass.

22. Cotton Piece Goods for Shirtings, Waistings, Linings and Dresses, either Plain or Fancy woven.—Mount Hope Finishing Co., North Dighton, Mass.

23. Wool Blankets.—The Pittsburg Dry Goods Company, Pittsburg.

24. Cotton Blankets.—German-American Company, Draper, N. C.

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29. Ladies' Underwear.—The Truefitte Underwear Co., New York.

31. Men's and Boys' Dress and other Stiff Bosom Shirts, Negligeé Shirts, Work Shirts, Pajamas and Night Shirts.—The Trenton Shirt Mfg. Co., Trenton, N. J.

32. Piece Goods composed wholly or in part of Cotton, Silk or Wool.—The Pittsburg Dry Goods Company, Pittsburg.

Frank Cheney, Jr., of Cheney Bros., the prominent Silk Manufacturers of S. Manchester, Conn., states that the company is planning a few alterations. He says business has been good all winter, and prospects are bright. The company's Bigelow Brook mill, which has been equipped with looms, is in full operation, in connection with the white weaving department.

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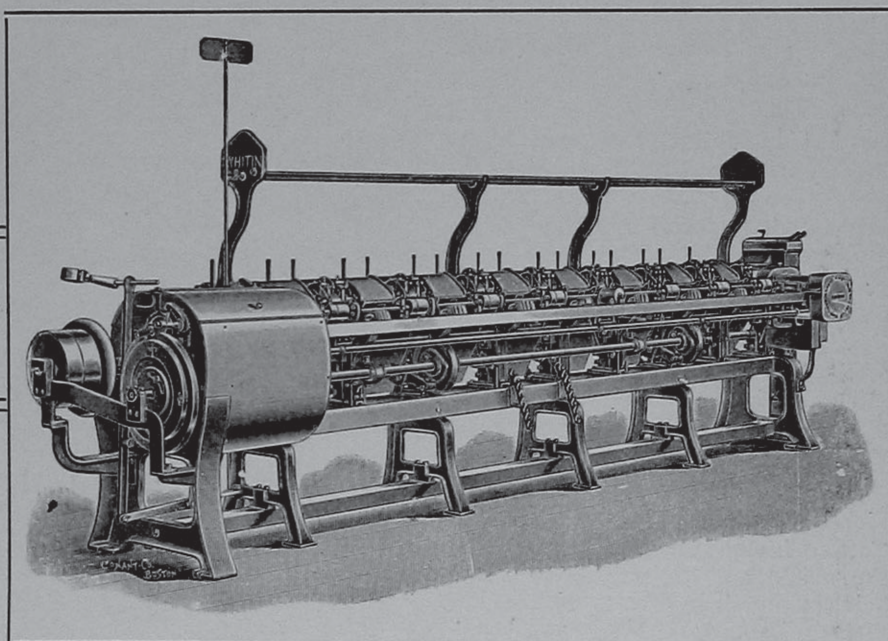

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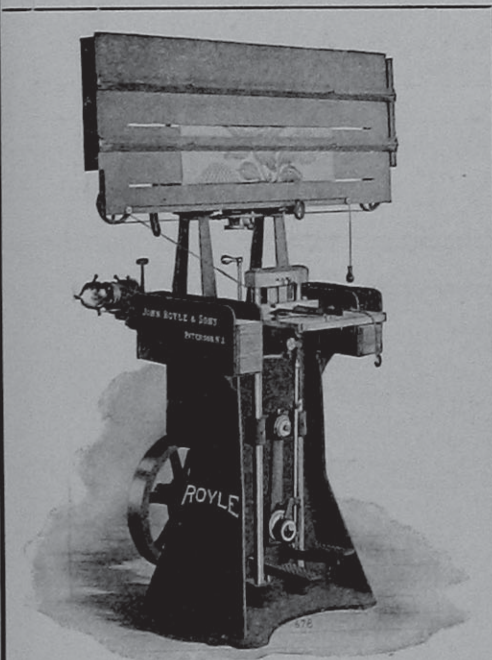

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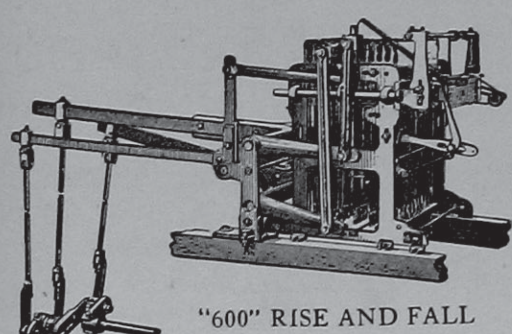

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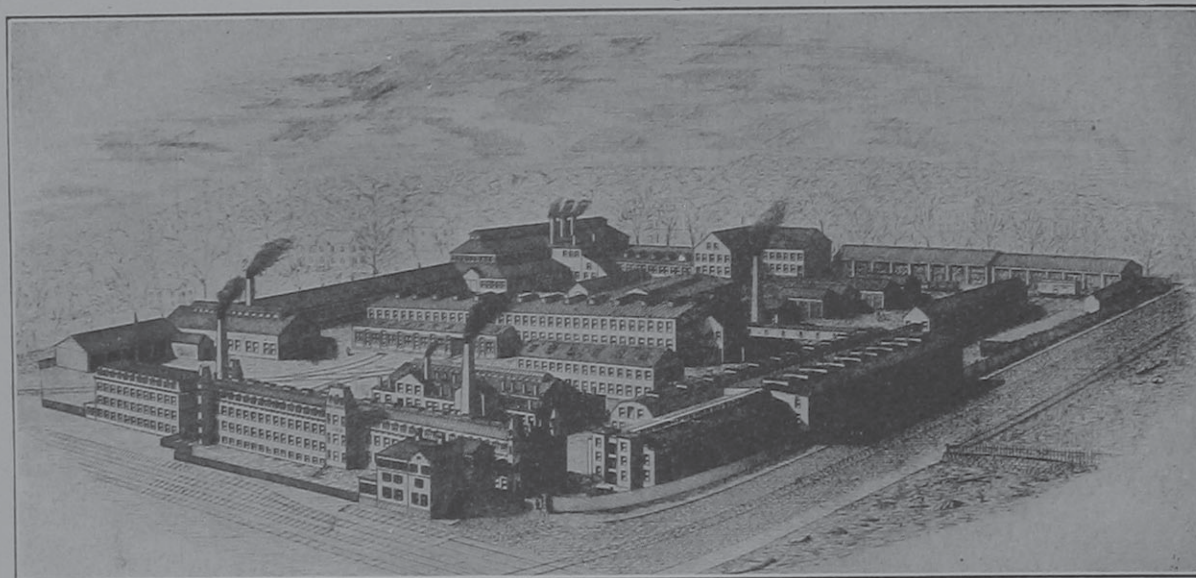

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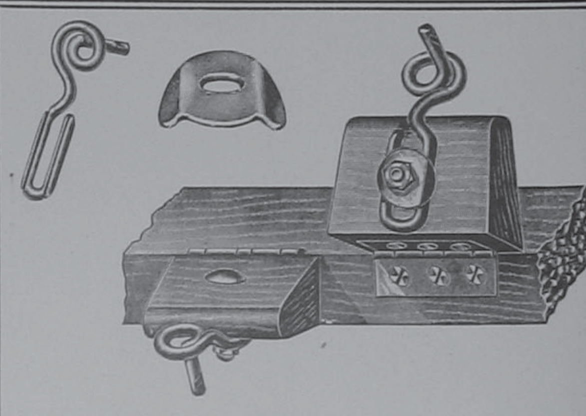

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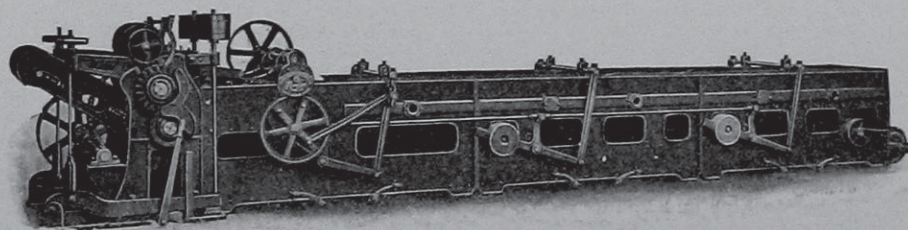

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Posselt's Textile Journal

Vol. VI. March, 1910. No. 3.

REELING THE SILK FROM THE COCOONS.

The process of reeling cocoons, while extremely simple, is still one that requires an amount of skill to acquire which the experience of several months is necessary. The cocoons are first plunged into boiling water, whereby their gluten is softened in such a manner as to render the unwinding of the filaments an easy matter. This done, they are brushed with a small broom, to the straws of which their fibres become attached. The bundle of filaments is then taken and they are unwound until each cocoon shows but one clean thread. These three operations are called *cooking*, *brushing*, and *purging*. The first two can be accomplished mechanically, and are so performed in Europe; but purging is a process to which the accuracy of the human eye and the delicacy of the human touch have so far been found necessary. The elements of the mechanism of all modern silk reels are essentially the same, and are clearly shown in the accompanying diagram.

The sorted cocoons are soaked in a suitable receptacle in hot water, after which, as the case demands, they are then brought into reservoir *a* also containing hot water. A broom *b* is rotated to and fro on the surface of the water, thus loosening the ends of the cocoon filaments, which in turn attach themselves to the straws of the broom. The fluff of the cocoon at the same time is taken up between the straws of the broom, and afterwards taken out of the broom and used in connection with inferior waste cocoons in the manufacture of spun silk. *c* is a steam pipe for heating the water in the outer reservoir *d*. The inner reservoir *a* has a perforated bottom as well as sides. *e* is a safety outlet for any surplus water in the reservoir *a*. *f* is the drive for rotating broom *b*, the latter being arrested when the reeler is convinced that the ends of the cocoons have been liberated, and which in turn is attached to the straws of the broom *b*. The cocoons with their ends loosened, are then brought into the basin *g*, and the ends attached to arm *h*. Steam pipe *c* heats the water in the basin *g*. The latter contains a sieve like partition *i*. Below this accumulates the dirt, which in turn, off and on, is drawn off through pipe *j*. Fresh water is entered into basin *g* through supply pipe *k*.

After selecting the required number of cocoon ends for the reeled silk thread, said cocoon ends are then, as one end, passed through the hole in the agate *l*. From this it runs through the croisure *m*. The making of the croisure consists in twisting the thread around itself or another thread, so as to consolidate its constituent filaments and wring the water from it, and thus aid in its drying. The mode of the formation of this croisure forms the principal distinguishing mark between the French and Italian systems of reeling. The former is called the *Chambon* system. Each reeler manages two threads. These are passed through separate agates, and after being brought together and twisted twenty or thirty times around each other, are again separated and passed through guiding eyes to the reel. The other system called *Travellette*, and which is shown in our illustration, consists in passing the thread up over a small pulley *n*, down over another pulley *o*, and then twisting it around itself, as shown at *m*, and thence over pulley *q* onto reel *z*. In its travel to the latter, it passes a guide *p*, moving to and fro (in a line perpendicular to the plane of the paper), which distributes the silk in a broad band over the surface of the reel. This facilitates the drying of the silk, without which the gluten would bind together the threads of the skein as it does those of the cocoons, and thus ruin its commercial value.

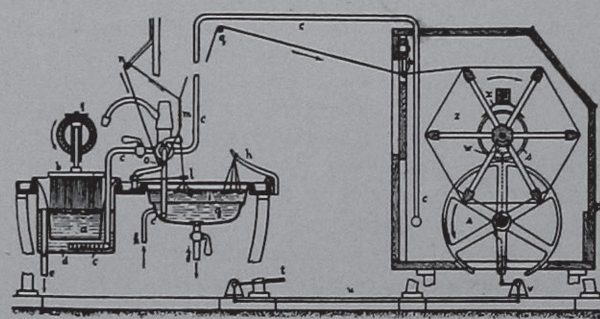


Diagram of Silk Reel.

The reel *z* receives its motion from the driving wheel *r*, through pulley *s*. If the thread breaks, the motion of the reel *z* is arrested by the reeler putting pressure onto the foot lever *t*, which in turn through rod *u*, lever *v*, and fork *w*, raises *i. e.*, throws the pulley *s* of the reel *z* out of contact with its driver *r*. At the same time the brake shoe *x* is brought into operation, so as to arrest the rotation of the reel quickly and positively, in order to prevent waste of silk.

It is advisable to dry the reeled silk as quickly as possible, for which reason care is taken to dry the same while still on the reel, and for which reason the section of the apparatus containing the reel proper is placed in a separate compartment from that in which the cocoons are soaked, and its ends reeled off. This arrangement prevents the moist air, caused by the hot water, from influencing the drying of the silk while on the reel. To still further hasten its drying while on the reel, suitable steam pipes are placed in said compartment, the heat thus caused, assisting the drying without inconvenience to the reeler.

The cocoon filament is somewhat finer in the beginning, thickens at the point of forming the more compact pod, and then very gradually diminishes in diameter until it becomes so fine as to be incapable of standing the strain of reeling. Therefore a thread which is made up of say six new filaments, becomes so small when the cocoons from which it is drawn are almost unwound, as to require an addition. This addition might also be made necessary by the breaking of any one of the constituent filaments. It is here that the skill of the reeler is needed. When her experience tells her that the thread needs replenishing from either of these causes, she takes the end of the filament of one of the cocoons which lie prepared in the basin *g*, fastened to arm *h*, and giving it a slight twist movement with the index finger, causes it to wind around or adhere to the running thread, of which it from this moment becomes a constituent part. This *lancing*, as it is called, of the end of the filament, although in hand reeling performed in the manner described, is also accomplished mechanically, several devices having been invented for this purpose.

The temperature of the water used while reeling the cocoons, varies from 140 deg. to 175 deg. F. The more the cocoons have been cooked, the lower is the temperature required, although it is customary to work in the neighborhood of the maximum limit of heat. Whenever the silk rises in the locks, the temperature of the water is too hot; again when it unwinds with difficulty the temperature is too low.

In China silks there are three different reelings—namely, tsatlee reel, re-reeled tsatlees, and filature reels. The tsatlee reel is the commonest and oldest form in which the China silks come over from the East, but is fast falling out of favor, re-reels and filatures taking its place.

Practically all Japan silks are filatures or re-reels, and the bulk of the silk shipped to this country is shipped as filatures, this country and the Continent however taking also a fair quantity of re-reels as well.

Bengal silks are all filatures or re-reels. They are quite a distinct variety from the China, Canton or Japan silks. The color is a bright yellow, except some little which is a greenish white, and is not so appreciated as the yellow.

European silks are, with the best Japans, the finest and most expensive silks used commercially, and can be had as fine as 8/10 deniers, which is equal to 31,000 yards to the ounce. The district in which the worms are reared and the silk reeled, gives the name to the silk, some of the best known qualities being the Cevennes, Piedmont, Frioul, Briance and Messine. All these silks are filature reeled, being divided into the following grades: *Extra classical, classical, sublime* and *common*.

Doppione silk is coarse and uneven, and as a rule, of a light yellow color. This silk is reeled from double cocoons, *i. e.*, where the worms have spun their cocoons side by side, and so joined that it is necessary to reel the cocoons together, the end of neither cocoon being free without the other. The production is comparatively small, and its unevenness makes it unsuitable for a good class of work; hence its use is confined to the manufacturing of the cheapest materials, and heavy sewing threads.

COTTON SPINNING.

The Ring Frame.

(Continued from page 40.)

Bobbin Clutches.—A great deal of the trouble in yarn spinning is due to the slipping of the bobbin on the spindle, especially when it is running at high speed, and to obviate this, efforts have been made to perfect devices whereby the bobbin will be held securely on the spindle and kept from slipping and yet will permit quick and easy doffing. Such a device is known as a bobbin clutch, and it is claimed for them that not only will they hold the bobbin securely and prevent slipping (hence less slack yarn and less waste) but will also allow the use of a longer traverse, with less frequent doffing, fewer knots in the yarn, etc.

The most successful bobbin clutch now on the market is that known as the *Rabbeth Centrifugal Bobbin Clutch,* made by the Draper Co. This device, in essence, consists of loose bearing segments, above the whirl of the spindle, which fit loosely within the bobbin when the spindle is at rest. When the spindle is in motion, however, these segments are thrown out by the centrifugal force of revolution and press against the interior of the bobbin with sufficient force to prevent any slipping. Naturally, the higher the speed of revolution, the more firmly will these segments press against the interior of the bobbin, and the tighter it will be gripped. A great advantage of this clutch is that, by its use, all the bobbins can be run at a common level on all the spindles of a frame, which allows about one-half inch more of yarn traverse on the bobbin. Another merit is that there is no tendency to split bobbins, and, as the bore of the bobbin can be made smaller than for a frictional drive, the bobbin can be made stronger. There will be no difficulty with swollen or shrunken bobbins, as the segments will fit different bores, and because of their loose fit, doffing is made much easier and spindle blades are less apt to be bent by forcing the bobbins off.

This bobbin clutch is shown in Fig. 279. In this illustration, diagram *A* is a side elevation of that portion of a spindle to which the new clutch refers, members of the latter being also shown. Diagram *B* is a similar view, with the clutching members omitted, so as to more clearly show certain parts hidden in diagram *A*. Diagram *C* is a diametrical vertical section on the line *x*-*x* of diagram *A*, showing in section a portion of a bobbin in operative position, the spindle being shown in elevation and the whirl partly in section. Diagram *D* is a detached view of one of the clutching members.

Numerals of reference accompanying the diagrams indicate thus: 1 the spindle, 2 the whirl, 3 the extension of the latter terminating in the enlarged base 4 for carrying the bobbin during the processes of spinning or twisting. The upper face of this base 4 is provided with an annular raceway 5, concentric with the spindle and V-shaped in cross-section, the inner and upright wall of it being formed by an elongated enlargement 6 of the spindle, said enlargement presenting at its upper end an annular shoulder 7.

The outer wall of the raceway 5 flares outward, and into the said raceway the lower ends of a series of clutching members 8 are seated; their lower ends are beveled at 9, to fit into the raceway in such manner that while the members 8 may tip or rock on their lower ends, they are held from any appreciable outward or radial movement. The upper ends of these clutching members present up-turned heads 10, of less width than the body portions of the members 8. The clutching members, by being made thicker at their lower ends, are shaped longitudinally so as to give a slightly larger circumference there, even when the said members are thrown outward at their upper ends by centrifugal action when the spindle is revolving, so that when the bobbin *B* is applied to the spindle, the clutching members exert a wedging action upon the walls of the bobbin recess *b*, particularly so at the lower ends of these clutching members, obtaining thereby a positive and fixed positioning of the bobbin base with relation to the spindle. The clutching action of the members 8, at their upper portions, is due to centrifugal force, as the upper ends of the clutching members, as previously referred to, are permitted only limited outward movement. A sheet metal collar 11, of sufficient thickness to give it the desired strength, and cup-like in shape, is secured in an inverted position on the spindle above the upper ends of the clutching members 8, the heads 10 of the latter extending upward loosely within the down-turned rim of this collar, which thus loosely embraces the heads of the clutching members, this permitting outward movement thereof by centrifugal action when the spindle is rotating at speed, but at the same time limiting such outward movement and retaining the clutching members in place when the spindle is running free. A series of depending extensions 12 extend below the rim of the collar integral therewith, said extensions being bent inward at their extremities against the spindle and abutting against the shoulder 7, thus forming a positive limiting-stop for the collar when driven down onto the spindle, so that there is no possibility of the collar being driven down far enough to pinch the clutching members and prevent their proper operation.

(To be continued)

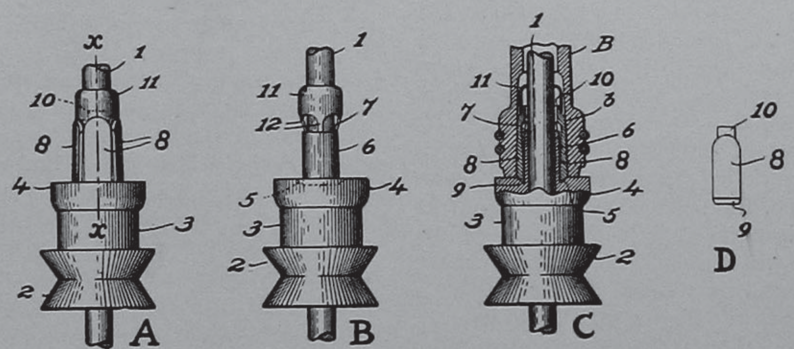


FIG. 279

THE IMPORTANCE OF THE PROPER MIXING OF COTTON.

MIXING. The mixing of cottons is essential for good yarn, since thus the fibres of the different bales composing a lot are incorporated together with some regard to the affinity of such fibres one to another. This operation is one that can scarcely be overestimated in its importance on the ultimate result of the quality of the yarn spun, especially when dealing with medium grades of yarns. Mistakes made in this department, whether arising from carelessness or incapacity, are irremediable when once the cotton has got into the machines, and in consequence reflect in the finished yarn. The saying that "there is a deal of spinning done in the mixing room" is sufficient proof of the importance of careful mixing, the object of which is to obtain as near as possible uniformity in length, quality and color of staple. To attain even partial success in arriving at these results, it is absolutely necessary to have experience and judgment.

Mixing does not mean simply the mixing up of various classifications or varieties of cotton, for mixing is just as necessary if only one growth of cotton is used, since irregularities of growth and staple exist in every bale. Cotton from the same district, or even from adjoining fields, will vary in quality through a difference in the character of the soil in which the plants grow. The length of time the open boll has been exposed to the sun will also vary the quality of cotton, again the grading or classification, for one reason or the other, may be imperfect, thus a buyer has no guarantee that every bale is to sample. Considering two or more different grades of cotton we will find that they possess characteristics which are the complements of those possessed by others. It is therefore possible, instead of using one class of cotton only for spinning, to use two or three, by combining them in a judicious manner. The purpose of this practice is to enable a material to be finally obtained which will be more economical than if any single variety be used, in this instance the object of mixing being a purely commercial one. Considerable experience is absolutely necessary to obtain comparative perfection as a mixer, for a failure in this first stage cannot be remedied afterwards, and a very heavy loss may be incurred by the mill.

In mixing different classes of cotton, a great many points have to be considered in making a perfect mixing all around, and of which the following are the most important: Choose cottons of equal staple; mix strong harsh fibres with others a little weaker and softer for warp, however not for filling and where only soft pliable fibres should be used; again, try and select cottons of colors which when amalgamated produce the required shade in the yarn; also consider the cleanliness of the cottons; and lastly take into account the price of the cottons mixed.

STAPLE. This is the most important point since if mixing cottons which do not approximately equal each other in length of staple, a great evil is created, both from a standpoint of quality and economy. The tendency in carding and combing being to separate the short and long fibres and to eliminate the former, will readily explain that long and short staples will not mix for good and economical work. The draft rollers in the process of drawing cannot be set to accommodate and work long and short stapled cottons at the same time, for if set to accommodate the shorter fibres, loss is entailed by the rupture of the long fibres, and on the other hand, if set for the longer fibres, the yarn is weakened by the loss of a great many short fibres which, not able to be held by the rollers, are thrown off and accumulate on the clearers. Consequently, in such a case, no matter how the rollers are set, the result will be disastrous to the yarn since the same will be of a weak and irregular character. In the process of twisting, the short fibres, not having the same grip as those of greater length, are not properly twisted in the thread and an oozy yarn will be the result. The average length of staple of a lot of cotton is readily ascertained by taking a few loose fibres and holding them firmly down at one end upon a rule divided into sixty-fourths of an inch, and then by evening the fibres upon the rule, find out their length. After a little practice this procedure will be soon mastered.

CHARACTER. It is to be remembered that in mixing, the character of the fibre is of equal importance as its length, and that the facility with which fibres will twist has an important bearing upon the subject. For warp yarn a harsher or stronger variety of cotton may have to be mixed with one more flexible, so long as their other characteristics are the same, with the result that a stronger yarn will be produced; but a harsh wiry fibre like Rough Peruvian and a soft pliable one like Bender, however well their length might agree, would make an unsuitable mixture, as the treatment which is absolutely essential in one case is different in the other. For filling purposes only cottons of a pliable nature must be mixed. This is the reason why some cottons are classed as filling cottons and others as warp cottons.

COLOR. Though this may be considered of little importance from a colorist's point of view, yet it is different from a cotton spinner's standpoint, the color of cotton mixed being an important factor which should be carefully considered. Cottons often differ very widely in this respect, and a few bales of a different color may soon affect the general character of the mixing, and of course depreciate the value of the yarn, consequently cottons of different colors are usually not mixed. If a white thread is wanted, colored cottons must be avoided. In selecting cottons so far as color is concerned, it is advisable to take into consideration whether they are wanted for warp or filling purposes, as, owing to the incidence of light on the fibres after twisting, the former is always many shades darker than the latter.

CLEANLINESS. Cottons to be mixed should not vary too much in regard to cleanliness, as the amount of scutching required in a great measure depends upon the cleanliness of the cotton; a clean cotton requiring not as much scutching as a cotton containing much foreign matter. Thus when a clean and a dirty cotton are mixed, the scutching which is required to adequately clean the dirtier portion will be more than sufficient for the clean, and as a result the action of the beater, in the picker and scutcher, on the cotton will more or less damage and weaken said fibre, and in turn the yarn spun from it. When a number of cotton bales have dirty ends or sides, which is frequently the case, these ought to be taken off and kept away, in order not to soil the clean cotton with the dirt arising from such portions of the bale, which cotton later on may either be used up by degrees, or made up into a separate mixing, to be made into separate laps, and mixed in the scutcher when convenient.

PRICE. Provide length and character of staple as well as color are satisfactory for mixing two or more kinds of cotton, yet we have to consider the price of each kind in order to arrive at an average value of the mixing. For example: Find average price per pound for a mixing of 40 bales of cotton of which the lint in 20 bales = 9600 lbs. costs $14\frac{1}{2}$ cents per lb.; in 10 bales = 4785 lbs. costs 14 cents per lb., and in 10 bales with 4722 lbs. costs 12 cents per lb.

Answer: 9,600 × $14\frac{1}{2}$ cents = \$1392.00; 4,785 × 14 cents = \$669.90; 4,722 × 12 cents = \$566.64.

\$1392.00	9,600 lbs.
669.90	4,785 "
566.64	4,722 "
\$2628.54 cost of mix	19,107 lbs. of lint in mix

and \$2628.54 ÷ 19,107 = 13.7046 cents; or considering it in a rough way, the price of the mix per pound is $13\frac{7}{10}$ cents.

WASTE. The waste usually returned to a mixing room is that which is technically known as *soft* waste, that is, such waste as contains little if any twist. It includes waste from the carding, combing, drawing, roving and spinning departments; but excludes yarn waste (*hard* waste) or carding engine flat waste or fly (*short* waste), which waste has to be kept separate, and if re-used by a mill can only be done in connection with cheap and low counts of yarns, *i. e.*, waste yarns. Where this system of using soft waste is in use, great care should be exercised to carefully spread the waste over the mixing, using it at the same time very sparingly, or else considerable trouble and irregularity will be introduced by the laps licking, as well as by the yarn getting weak, since the fibres of this waste have been shortened by the various operations they have passed through, and many being short fibres from the start. If using too much of this waste, a very great loss can soon be sustained by means of irregular work, bringing with it a whole train of attendant evils. We will find greater accumulations of fly and waste in all the different processes, especially in the spinning department where it displays itself very conspicuously by the increased amount of waste made. This loss, however, is intensified by the fact that in a great majority of instances the operatives experience great difficulty in coping with the increased work, and in consequence cannot exercise the same vigilance over their work. How much of this soft waste to use in connection with a mixing varies considerably according to the counts of yarn that are required to be spun from cotton under operation. Some mills prefer to use up much of their waste in filling lots, upon the basis that the filling does not require to be a strong yarn. This may be all right with some fabrics, but it does not apply in all cases. For example with print cloths, where warp and filling are of equal importance all around, and where the amount of size used is only just sufficient to sustain the warp while the cloth is being woven, it raises an interesting point as to where the waste ought to be mixed. If it is used in connection with the filling it means a weaker filling, and if it is used in connection with the warp it may mean the same fault; but the warp yarn, and with it the waste, receives a coating of size, and although it is lightly used, yet it imparts a certain amount of strength which could not be imparted to the filling and therefore it may sometimes be found that waste is used in connection with warp mixings.

(To be continued.)

RIBBONS, TRIMMINGS, EDGINGS, ETC.

Cross, Gauze or Leno Weaves.

(Continued from page 38.)

(*c*) METAL DOUPS.

The same are made use of more particularly in connection with Jacquard ribbon weaving, although off and on they are used in connection with harness work. Said metal doups (see diagram Fig. 137—*A* the front and *B* its side view) are made to form an eye *a* on their top for carrying the whip thread. Its two legs *b* are inserted into the mails (eyes) of the two harness heddles, which by means of raising and lowering, produce the crossing, *i. e.*, twisting of the whip thread with its mate standard thread. Use for these two heddles, *i. e.*, harness cords, if possible, the first two cords of the row deep in the comber board. After inserting the two legs into the mails of the respective harness cords, fasten to them their lingoes, *i. e.*, weights.

Next pass the standard warp thread between the two harness cords and above the eye of the metal doup. Diagram Fig. 138 is given to illustrate the subject, and where letters of reference indicate thus:

a—eye of metal doup.

b—legs of said doup.

c—lingoes of the metal doup.

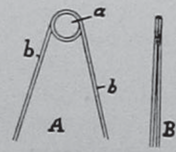


Fig. 137

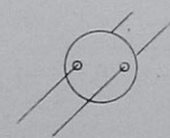


Fig. 141

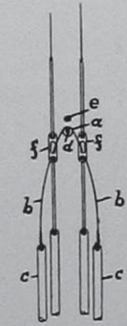


Fig. 138

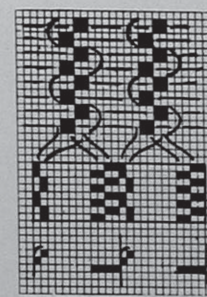


Fig. 149

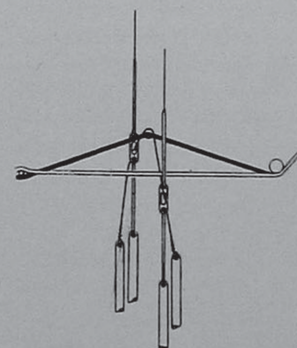


Fig. 139

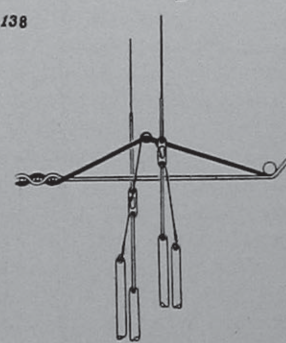


Fig. 140

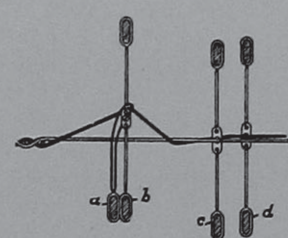


Fig. 143

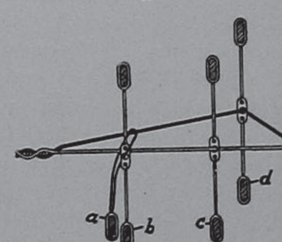


Fig. 144

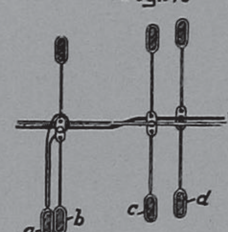


Fig. 142

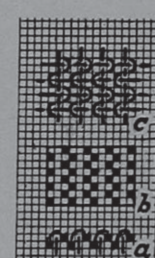


Fig. 145

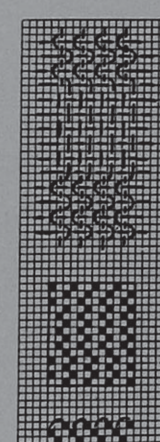


Fig. 148

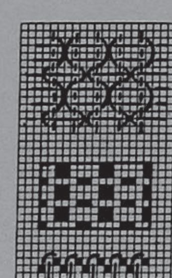


Fig. 146

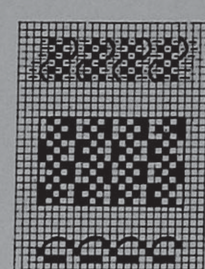


Fig. 147

d—section of whip thread.

e—section of standard thread.

f—mails of the two harness cords.

Raising one of the harness cords, for instance the one at the left of the standard, will raise the whip thread on that side (the left in this instance) of standard thread. This procedure is shown in diagram Fig. 139.

Raising in turn the other harness cord (the one at the right hand side of the standard) will raise the whip thread on that side of the standard thread. This procedure is shown in diagram Fig. 140.

As will be readily understood, never raise both harness cords at one time, since this would raise both the whip and the standard thread, the filling then passing below both.

If in connection with metal doups or douping harnesses provided with half heddles (as explained in the February issue) the standard threads remain continually either in the lower shed or respectively in the upper shed; no special shafts or harness cords are required for carrying the standard threads. However, if besides douping, regular weaving with the two systems of threads has to be done at times, throughout the repeat of the pattern, special shafts or harness cords are then required for carrying the standard threads.

When twisting has to take place, at that pick the standard warp thread must be always in the lower shed.

(*d*) Wheel or Disc Doups.

In connection with Congress cloth, wheel or disc doups are used. Diagram Fig. 141 shows us such a doup with two warp threads threaded into it. During weaving, this wheel or disc is then, by means of any suitable contrivance (cams or gearing), alternately turned in one direction and then in the other. The result is not actual gauze or leno weaving, but only a twisting of the threads alternately in one and then the other direction.

(*e*) Douping with Half Harnesses.

Diagrams Figs. 142, 143 and 144 are given to explain this system of douping.

Fig. 142 shows the standard warp thread entered in the heddle eye of the regular harness *c*; in a similar manner the whip thread is threaded first in the heddle eye of its mate regular harness *d*, after which it is passed through the doup secured at its bottom to the half harness *a*. The doup as carrying the whip thread is threaded besides to the eye of its whole harness *b*. The whip thread is shown threaded at the left from the doup.

Raising harness *b* and half harness *a* will raise the whip thread, resulting in a twisting of the latter to the right hand side of the standard thread (see Fig. 143).

Raising harness *d* will raise the whip thread (drawing with it the doup *a* with its raised half harness) at the left hand side of the standard thread (see Fig. 144).

A Few Gauze or Leno Weaves.

Fig. 145 shows us at *a* the arrangement of the doups and the standard threads. Such of the threads as are shown connected by brackets belong to one set. *b* indicates the weave and *c* a diagram of the fabric structure.

Fig. 146 illustrates a larger doup effect.

Fig. 147 shows one thread douping around three standard threads as are interlacing with the plain weave.

Fig. 148 shows a fancy gauze fabric, threads interlacing part the time with gauze and part the time with regular weaving.

Fig. 149 illustrates a gauze weave with fabric structure for a 12 row harness. To the first two mails of every row of harness cords (row deep in the comber board) metal doups are provided. The rear four harness cords carry the standard threads as work on plain weave.

(*To be continued.*)

THE MANUFACTURE OF OVERCOATINGS AND CLOAKINGS.

(*Continued from page 46.*)

F. Whitneys, or Flaky Cloth.

The characteristic features of these fabrics consists in having their face covered with small bunches of fibres, called flakes, produced by breaking up during gigging, special long filling floats, arranged for this purpose by the weave. The fibres thus liberated at one of their ends from the floating picks, are during gigging combed out into a small bunch protruding from the body of the fabric structure.

To explain the subject, diagram Fig. 66 is given. In the same the face or pile pick, *i. e.*, the pick which

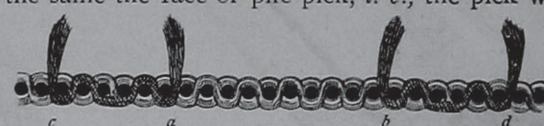


Fig. 66

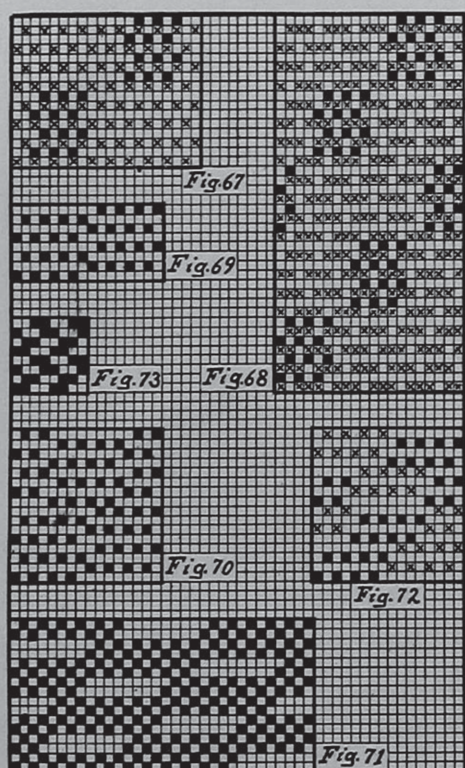
after gigging produces the bunches of fibres fastened to the body of the fabric structure, is shown cross-hatched. The long float of the filling, see *a* to *b*, has been broken during gigging, the ends furnishing in turn bunches of fibres standing nearly vertical upon the face of the fabric. Between points *a* and *c*, and *b* and *d*, this pile pick interlaces into the fabric structure, and thus holds the bunch of fibres to the body of the fabric. At *c* and *d*, long floats of the filling again commence to form, respectively towards the left and right. To properly raise said bunches or flakes of fibres from the floating pick, is the work of the finisher; however the proper weaves must be selected by the designer to assist the finisher in his work.

The pile picks, as cut during the gigging process, do not influence the structure of the body or ground cloth.

Figs. 67 and 68 furnish two examples of weaves for such fabrics. Every other pick is a pile pick, and shows a float of the filling over 15 warp threads. In weave Fig. 67 the motive for spotting the bunches is the *plain setting*, whereas in connection with weave Fig. 68 the 5-*leaf satin setting* is used for the motive of distributing the bunches of fibres on the face of the fabric structure. Every bunch or flake is formed in both weaves by four successively joining pile picks. The long floats of said pile picks alternate with tight interweaving (plain), which furnishes sufficient strength to the pick to hold the bunch or flake to the fabric structure.

In connection with weave Fig. 67, the ground picks are interlaced with the warps by the plain weave; the 4-harness broken twill (warp up) being used for this purpose in connection with weave Fig. 68.

The formation of bunches or flakes, by means of special pile picks, although now extensively used, was formerly not made use of, manufacturers then using



one system of filling only for producing both the ground as well as the pile effect in the fabric structure, each pick interlacing part ways with the warp to form the body of the fabric, next floating, *i. e.*, forming pile effects.

Specimens of weaves of this kind are given in Figs. 69, 70, 71 and 72. In this case we deal with pure single cloth, whereas in connection with weaves Figs. 67 and 68, we then produced the fabric with one system of warp and two systems of filling. The motive for distributing the bunches or flakes, in connection with either system of weaves, depends upon fashion, *i. e.*, the inspiration of the designer.

In connection with weave Fig. 69, the bunches are arranged to form a distinct *stripe effect* in the fabric, whereas Fig. 70 has the *plain setting* for the motive for distributing the floating picks. For weave Fig. 72 the motive for distributing the pile picks is given in diagram Fig. 73. Provided a mill should use these weaves (69 to 72) or similar ones constructed by this principle of designing, the greatest of care must be exercised during finishing such cloth. The floating part of the pick cannot then be entirely broken at the gigging, since otherwise a tender fabric would be the result. For example let us consider weave Fig. 69. If breaking the floating picks entirely on the gig, the cloth would be separated between warp threads 8 and 9 as well as 1 and 16. This feature would not be the result in connection with the other two specimens of weaves, although a tender fabric would be the result in either case. To overcome this trouble, when using such weaves, use heavy counts of yarn; for example use a 3 or 4-ply yarn, which will permit the finisher to gig up the filling sufficiently to permit the formation of the bunches or flakes without breaking every minor thread of the compound pick at its float. In some cases, fabrics thus constructed are left without being gigged, the float of the heavy thread imparting to the fabric a flaky appearance in itself.

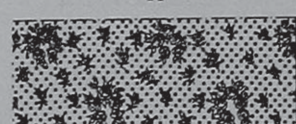
(To be continued.)

NEW DESIGNS.

Figs. *A, B, C* and *D* show new designs by H. W. Wild of Chiswick, England, just patented by him in this country.

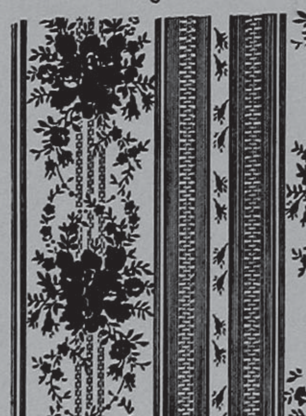
A

B



C

D



E

F

Figs. *E* and *F* show two new ornamental designs for Textile Fabrics, designed and patented by John Korzinek of Passaic, N. J.

NOVELTIES FROM ABROAD

Worsted Cheviot Dressgood. (*Stripe effect.*)

Warp: 1860 ends; 2/22's worsted cheviot, brown mix.

Weave: See Diagram **Fig. 1**; repeat 32 warp threads and 16 picks; 12-harness fancy draw.

Reed: 15 @ 2 ends per dent; 36 ends per inch; 62 inches wide in reed.

Filling: 30 picks per inch, 2/22's worsted cheviot, black.

Finish: Worsted cheviot finish; 52 inches finished width.

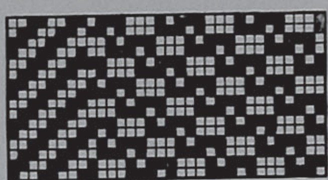


Fig. 1

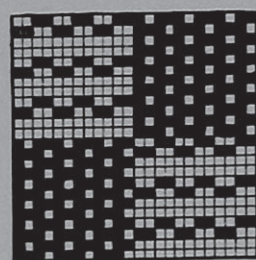


Fig. 2


Fig. 3

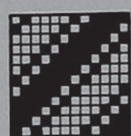


Fig. 4

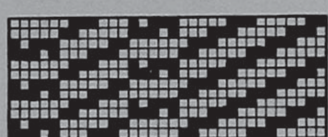


Fig. 6

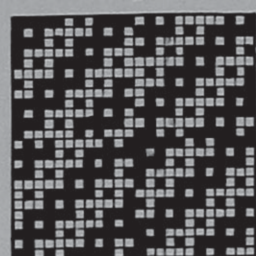


Fig. 7

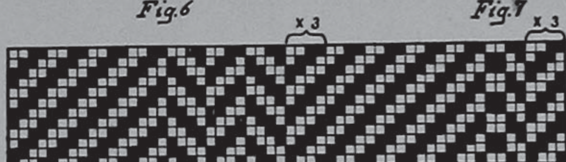


Fig. 5

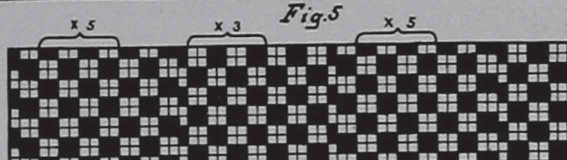


Fig. 8

Fancy Dressgood. (*Stripe effect.*)

Warp: 3256 ends.

Weave: See Diagram **Fig. 5**; repeat 88 warp threads and 4 picks; 8, 12 or 16-harness fancy draw.

Reed: 17½ @ 4 ends per dent; 70 ends per inch; 46½ inches wide in reed.

Dress: 2 ends 2/64's worsted, brown mix.
9 " 1/36's " , brown mix.
1 " 2/64's " , peacock green.
3 " 1/36's " , brown mix.
1 " 2/64's " , peacock green.
72 " 1/36's " , brown mix.
—
88 ends in repeat of pattern.

Filling: 70 picks per inch, all single 36's worsted, gray mix.

Finish: Scour well, shear, press; 44 inches finished width.

Worsted Cheviot Dressgood. (*Basket effect.*)

Warp: 3524 ends.

Weave: See Diagram **Fig. 2**; repeat 24 warp threads and 24 picks; 8-harness fancy draw.

Reed: 15½ @ 4 ends per dent; 62 ends per inch; 57 inches wide in reed.

Dress: 1 end 2/22's worsted cheviot, chocolate mix.
1 " 2/100's black cotton.
—
2 ends in repeat of pattern.

Filling: 65 picks per inch, arranged thus:
2 picks 2/22's worsted cheviot, chocolate mix.
2 " 2/100's black cotton.
—
4 picks in repeat of pattern.

Finish: Worsted cheviot finish; 52 inches finished width.

Worsted Dressgood. (*Stripe effect.*)

Warp: 4256 ends.

Weave: See Diagram **Fig. 3**; repeat 8 warp threads and 8 picks; 8-harness fancy draw.

Reed: 21 @ 4 ends per dent; 84 ends per inch; 50½ inches wide in reed.

Dress: 31 ends 2/64's worsted, gray mix.
1 end " " , green.
1 " " " , dark gray mix.
1 " " " , gray mix.
1 " " " , dark gray mix.
1 " " " , gray mix.
1 " " " , dark gray mix.
1 " " " , green.
31 ends " " , gray mix.
1 end " " , dark gray mix.
1 " " " , gray mix.
1 " " " , dark gray mix.
1 " " " , gray mix.
1 " " " , dark gray mix.
1 " " " , gray mix.
1 " " " , dark gray mix.
—
76 ends in repeat of pattern.

Filling: 70 picks per inch, all single 36's worsted cheviot; gray mix.

Finish: Scour well, shear and press.

Diagonal—Homespun Dressgood.

Warp: 1650 ends; 2/20's worsted cheviot; brown mix.

Weave: See Diagram **Fig. 4**; repeat 12 warp threads and 12 picks; 12-harness straight draw.

Reed: 12½ @ 2 ends per dent; 25 ends per inch; 65¼ inches wide in reed.

Filling: 25 picks per inch, 2/20's worsted cheviot, brown mix.

Finish: Full slightly; scour, clip on shear, press.

Men's Wear Suiting. (*Checkerboard effect.*)

Warp: 7440 ends; 2/52's worsted.

Weave: See Diagram **Fig. 7**; repeat 24 warp threads and 24 picks; 24-harness straight draw.

Reed: 17 @ 6 ends per dent; 102 ends per inch; 72½ inches wide in reed.

Dress: 1 end 2/52's worsted, black.
1 " 2/52's worsted, gray mix.
—
2 ends in repeat of pattern.

Filling: 100 picks per inch, same counts, colors and arrangement of yarns as used for the warp.

Finish: Worsted finish; 56 inches wide.

Men's Wear Suiting. (*Stripe effect.*)

Warp: 6600 ends.

Weave: See Diagram **Fig. 6**; repeat 64 warp threads and 4 picks; 8 or 12-harness fancy draw.

Reed: $15\frac{1}{2}$ @ 6 ends per dent; 93 ends per inch; 71 inches wide in reed.

Dressing of the Face Warp:

18 ends 2/28's worsted, dark bordeaux-green mix.
4 " " " , dull olive-brown mix.
28 " " " , dark bordeaux-green mix.
1 end 2/52's " , green (fancy).
2 ends 2/28's " , dull-olive-brown mix.
1 end 2/52's " , red (fancy).
10 ends 2/28's " , dark bordeaux-green mix.
—
64 ends in repeat of pattern.

Dressing of the Back Warp:

18 ends 2/52's worsted, dark bordeaux-green mix.
4 " 2/52's worsted, dull olive-gray mix.
10 " 2/52's worsted, dark bordeaux-green mix.
—
32 ends in repeat of pattern.

Finish: Worsted finish; 56 inches wide.

Men's Wear Suiting. (*Stripe effect.*)

Warp: 5400 ends; 2/52's worsted.

Weave: See Diagram **Fig. 8**; repeat 136 warp threads and 4 picks; 12 or 16-harness fancy draw.

Reed: 20 @ 4 ends per dent; 80 ends per inch; $67\frac{1}{2}$ inches wide in reed.

Dress: 2 ends 2/52's worsted, black.
2 " 2/52's worsted, lt. and dk. gray mix.
—
4 ends in repeat of pattern.

Filling: 82 picks per inch, same counts, colors and arrangement of yarns as used for the warp.

Finish: Worsted finish; 56 inches wide.

THE JACQUARD MACHINE.

Its Construction and Operation; Description of the different Systems of Machines; the various Methods of Tyeing-up the Harness; Stamping, Lacing and Repeating of Jacquard Cards.

History of the Jacquard Machine.

The Jacquard machine itself is the invention of Joseph Marie Jacquard, born in Lyons, France, in 1752; his parents being silk weavers. Jacquard's invention in itself was based upon the older inventions in the line of figured weaving machinery, by Bouchon, Falcon and Vancanson.

Bouchon, in 1725, employed a band of pierced paper, pressed by a hand-bar against a row of horizontal wires, so as to push forward those which happened to lie opposite the blank spaces, and thus bring loops at the lower extremity of vertical wires in connection with a comb-like rack below. Falcon submitted in 1728 a chain of cards, and a square prism, known as the cylinder, in lieu of the band of paper of Bouchon. In 1745, Vancanson suppressed altogether the cumbrous tail-cards of the draw-loom, and made the loom completely self-acting by placing the pierced paper or card upon the surface of a large pierced cylinder, which traveled backwards and forwards at each stroke, and revolved through a small angle by ratchet work. He also invented the rising and falling griffe, and thus made a machine very nearly resembling the actual Jacquard.

Jacquard was an experienced weaver besides an inventive mechanic, and in combining the best parts of the machines of his predecessors, succeeded in 1804, as the first person, in obtaining an arrangement sufficiently practical to be generally employed, *i. e.*, the first Jacquard machine had then been constructed by him. Until 1810 Jacquard had great troubles, as his machine was not understood by the weavers. So violent was the opposition made to its introduction that he was compelled to leave Lyons in order to save his life. The Conseil des Prudhommes broke up his machines in the public places, and Jacquard was delivered over to universal ignominy. But after some years had passed, the machine proved to be of the greatest value, and on the spot where the model was destroyed a statue to Jacquard now stands.

Jacquard died in 1834, at which time over 30,000 Jacquard machines were then in use in his native city, Lyons.

Jacquard machines may be conveniently divided into: (1) Single lift machines; (2) Double lift single cylinder machines; (3) Double lift double cylinder machines; (4) Open-shed machines; (5) Machines for special fabrics, like Leno machines, Marseilles Quilt machines, Drop shed machines, Brussel and Ingrain Carpet machines, etc.

The Single Lift Jacquard Machine.

The Single lift, also called the straight lift or single acting Jacquard machine is the oldest and most simple type, and notwithstanding that, is quite generally used at the present time. It has its objections and its limitations. It is not policy to run it at a high rate of speed, particularly as compared with some other forms of shedding of the present day, and yet there are many cases where it is desirable to use it, particularly where speed is not an item. Its simplicity commends it. It is not suitable for making a heavy, well covered cloth. As compared to other forms of shedding, it may be described as follows: In the straight lift or single acting machine, so-called, the yarn is depressed at its lowest point when the shed is closed, and preferably that point is as near as possible to the shuttle race without rubbing hard upon it, and in its action in shedding, such hooks as are indicated to rise, carry with them the warp threads, moving from the extreme lowest position to the extreme highest position to admit of passage of shuttle, and immediately returns, thus performing a shed in a revolution of the crank shaft; whereas, in comparison, a double lift machine has its yarn in a normal or close shed position practically central, or in line with the cloth being woven, and in shedding, a certain portion of the warp rises into the upper shed, and the remainder descends into a lower shed, thus forming the opening for the passage of the shuttle by moving the warp threads in two directions.

A single lift Jacquard is a very simple machine, and when properly made should give very little trouble in working, particularly if the motions are properly set in relation to each other, and if such methods of working are adopted as will cause the least wear and tear on it.

If such a fabric contains a great number of ends of warp bound differently in the filling, the method of guiding the warp by harness frames is too cumbrous and inefficient; in such cases it becomes necessary to use the Jacquard machine for raising the warp threads separately by means of hook and leash.

The hooks as used for raising leash, mails, lingoes and warp threads, consist of wires with a crook on each end. On the lower crook is fastened the leash by means of the neck cord.

The cords of each leash are threaded through the holes of the comber board; the holes being separated from each other according to the texture of the warp in reed.

To the harness cords are adjusted the heddles (either twine or wire), on which are fastened the lingoes as weights. In the mails of the heddles are drawn the warp threads.

Now, from the foregoing explanations, it will be apparent that by raising the hook in the Jacquard machine, we raise the leash, and the latter raises every warp thread throughout the width of the fabric for interlacing with the filling.

The next point required to be known is, which hooks are to be raised, and which are to be lowered? To regulate this, a design (pattern) is prepared, in which the floating of the warp over the filling is indicated.

For the warp threads required to be raised, holes are punched in the cards. In these holes the point of the needles, as extending through the needle-board, are pushed by a spring, fastened to the rear of each needle. The needles are adjusted in rows of different heights, the arrangements most used being 4, 8 and 12 rows high. Each row as to heighth in the machine contains a bar (knife) in the griffe, *i. e.,* the frame holding the knives. When the griffe is down, or the machine at rest, the upper crooks of the hooks are raised about half an inch above the griffe bars.

The needles which control the position of the hooks, permitting them to rise, or compelling them to remain stationary, are pressed by the springs fastened in the rear towards the cards, which are moved on a quadrilateral and perforated cylinder. This cylinder performs a movement similar to a pendulum towards the points of the needles. Any needle for which a hole was punched in the card will penetrate the cylinder; consequently, the corresponding hook will remain in its natural position, the crook over the corresponding griffe bar, and upon lifting the griffe, the hook will be raised.

Again, needles for which no holes are punched in the cards will be thrust back by moving the cylinder containing the cards towards the needle board; this motion forces back the corresponding hooks, pushing them away from the griffe bars above, and upon raising the griffe they will remain stationary; hence, if a blank card were pressed against all the needles of any machine, the entire number of needles the machine contains would be pushed back, and none of the hooks would come in contact with the griffe bars, and consequently raising the griffe would produce an empty lift. On the other hand, using a card having every hole of the cylinder punched (or the empty cylinder used), would lift every needle in the machine. Pressing the needles towards the rear compresses the springs; these will again expand as soon as the cylinder leaves the needle board. The hooks, which were left standing in their position over the griffe bars, are caught by the latter at the raising of the griffe. The elevation of these hooks raises the leashes fastened to them, thus causing the lifted warp threads to form a shed with those not lifted.

Jacquard machines are made of different sizes and descriptions, some having only a few hooks and others a large number. The sizes most often used are 100, 200, 400, 600, 900, 1200 hooks. The number or size is always indicated by the number of needles and hooks which it contains, without counting the reserve rows, of which there are generally two. For this reason a 600 machine, and which is a 12 row machine will contain actually ($12 \times 2 = 24 + 600 =$) 624 needles. Other sizes of machines frequently met with are those known as Fine Index, containing 1304 or 2608 needles; Wilton Jacquards using up to 2580 needles.

Sometimes a few of the needles and hooks from the reserve are added to the main part of the needles and hooks. For example: Take a design in which the ground weave repeats on 12 ends; working a 400 machine, we find:

$400 \div 12 = 33$ repeats of the weave, less 4 hooks; Consequently, if this ground weave is repeated all over the width of the fabric, we must either use:

396 hook, leaving 4 hooks not used; or 408 hooks, requiring us to call upon the reserve rows for eight extra hooks.

Hooks which have no leashes adjusted, must be taken out of the machine.

Sometimes two, three or more machines are employed on one loom.

Parts Composing the Jacquard Machine.

A Jacquard machine is composed of the following parts: (*a*) its Frame; (*b*) the Griffe with necessary contrivances for raising and lowering the latter; (*c*) the Needles; (*d*) Hooks; (*e*) the Springs for the needles, and the box for holding them; (*f*) the Needle board; (*g*) the Cylinder or Prism for carrying the cards into and out of action with the points of the needles by suitable mechanism; (*h*) the Catches for turning the cylinder; (*i*) the Jacquard cards, and (*j*) the Bottom board for guiding the neck cords connecting hooks with leash.

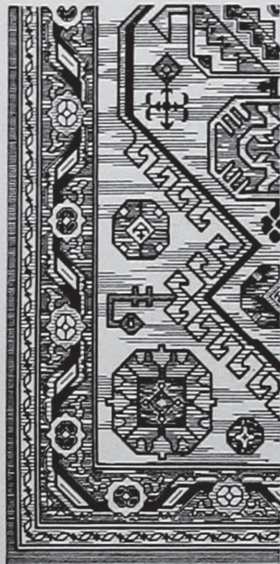
(To be continued.)

(To be continued.)

Fortunately for Australia, the heavy import duties levied upon wool, though enabling our flock masters to obtain more for their clip, have not resulted in any material increase in the locally (American) grown wool, which in 1904 amounted to 291,783,032 pounds, and in 1908 to 311,138,321 pounds.

NEW DESIGNS FOR RUGS AND CARPETS.

We herewith show ten new designs for Rugs and Carpets just patented, viz:



A

B

C

D

I

H

J

E

F

G

A and *F* new designs for Rugs by John H. Witzel, New York.

B, C, D and *E* new designs for Rugs by William A. Spring, Brooklyn, N. Y.

G a new design for a Rug by William G. Reith, New York.

H a new design for a Rug by Adolph Petzold, Philadelphia.

I a new design for Carpets, by Emil Sauer, Richmond Hill, N. Y.

J a new design for Carpets, by John Merry, New York.