

Posselt's Textile Journal

A Monthly Journal of the Textile Industries

PUBLISHED MONTHLY BY

E. A. POSSELT, 2028 BERKS STREET,
PHILADELPHIA, PA.

SUBSCRIPTION RATES:

United States and Mexico, \$2.00 per year.

Canada, \$2.50 per year.

Other countries in the Postal Union, \$3.00 per year.

Single Copies, 25 cents.

This Journal is published on the tenth of each month.

Postage prepaid by the Publisher.

Subscriptions begin with the number following the date on which the subscription is received at this office.

In writing about subscriptions, always give your full name and address.

When writing for changes in address, always give the old address as well as the new address to which copies are to be sent.

Money should not be paid to agents or solicitors unless they can show authority from this office. This Journal cannot be responsible for money paid to unauthorized persons.

Subscriptions are payable in advance. Money can be sent by check, draft, money order or in registered letter. Make all drafts, checks, money orders, etc., payable to E. A. POSSELT, Publisher, 2028 Berks Street, Philadelphia, Pa.

ADVERTISING RATES ON APPLICATION.

COPY FOR ADVERTISEMENTS must reach this office not later than the 25th of month preceding date of issue, to insure proper attention.

ALL COMMUNICATIONS WILL BE CONSIDERED AS CONFIDENTIAL.

Letters to receive attention must be accompanied by the signature of the sender, but this will not be published unless so requested.

We will always be glad to receive articles of a practical nature relating to the textile industries, and will publish such as are available.

EUROPEAN AGENTS: Sampson Low Marston & Co., Ltd., 100 Southwark Street, London, S E., England.

Samples of Letters from Practical Men.

FROM THE BOSS DYER OF ONE OF THE LARGEST WESTERN KNITTING MILLS:

E. A. Posselt:—Please find enclosed M. O. for the Journal for another year. I must let you know that I am well pleased with the Journal. O. L. 10-12-08.

FROM A PHILADELPHIA DYER AND BLEACHER:

E. A. Posselt:—It gives me great pleasure to renew my subscription to the most practical Textile Journal published. J. H. 10-16-08.

FROM CANADA:

Gentlemen:—I thank you for the copy of the "Journal," which you sent me two weeks ago. I will try it for twelve months, as it seems good. F. W. 10-15-08.

FROM LAWRENCE, MASS.:

E. A. Posselt:—Enclosed, please find M. O. for renewal for one year's subscription for the Textile Journal, and wish you all success to your valuable paper. A. S. L. 10-29-08.

THE WHITIN GINGHAM LOOM.

(Continued from page 113.)

Take-up Motion. The same is best explained in connection with diagram Fig. 11. Below the breast beam *a* is located the sand or friction roll *b*. If desired this friction roll is covered with perforated metal in place of sand paper. In back of this friction roll are located two guide or club rolls *c* and *d*, carried on stands *e*, (one on each side) connecting breast beam and the girth of the loom. Below the friction roll *b* is placed the cloth roll *f*. *g* is an extension, provided (if so desired) to the breast beam.

The run of the cloth from its *fell* to the cloth roll, provided extension *g* is used is thus: over breast beam *a*, around extension *g*, partially around club roll *c*, partially around friction roll *b*, onto cloth roll *f*.

If more friction desired, the cloth, after coming around extension *g* then is run partially around both club rolls *c* and *d*, previous to striking the friction roll *b*, coming in this case for a longer distance (more friction) within contact of the friction roll.

Provided extension *g* is not used, the run of the cloth is then thus: Over breast beam *a*, under and partially around friction roll *b*, then up and partially around the upper club roll *c*, passed in back of lower club roll *d* and finally under and around the cloth roll *f*.

The shaft of the latter is carried on each side of the loom in the head *h* of a plunger *i*, working in a stand *j* secured to the girth of the loom. This stand *j* is hollow and holds in it a spring *k* on which the head of the plunger rests. This arrangement produces what the builders term their *patent high cloth roll motion*, *i. e.*, the roll of cloth as it forms itself on the cloth roll *f* and working against the friction roll *b*, in getting always larger in diameter is in turn subjected to more pressure by means of the spring in the stand exerting more pressure onto the cloth as it is wound on the roll, a feature which in turn will result in a more compact wound roll of cloth than otherwise possible.

Doffing the Cut of Cloth Woven. Onto the girth near the stand is fastened a bearing, carrying a short crank shaft *l*, having fast to it at its far end a screw, meshing with a gear fast on a shaft extending between the two plunger stands, carrying on each end a grooved roller *m*, to which is connected a chain *n*, extending throughout the stand *j* and plunger *i*, being at its other end secured to the head *h* of the plunger, by a pin. The other end of the short crank shaft, previously referred to, has secured to it a handle *o*, which can be folded back on itself at *p*, in order to be out of the way of the weaver, while the loom is running. Turning this handle *o* from left to right, will compress the spring *k* and lower the cloth roll *f*, bringing it out of contact of friction roll *b*, and when the weaver can then conveniently *doff* the woven cut, in the usual way, while loom is running. *q* shows in dotted lines the full cloth roll.

Let-off: The same is of the usual friction type, either rope or preferably chain friction being used to bear on the rim of the beam head. The pressure is brought to bear on the chain or rope by the usual lever weighting principle. The weights are supplied by the

builders as desired, either movable or fixed, in the latter instance the fixer can make any necessary changes to suit the picks per inch; the weaver in this case being prevented from tampering with the weights.

WHIP ROLL: The same is of the usual vibrating style, but by taking off the spring on the vibrating rod and loosening and in turn moving and fastening the nut which held the spring in action, to the bracket (as fast to the side frame of the loom, and which held the vibrating rod in position) the vibrating whip roll is then changed to a stationary whip roll.

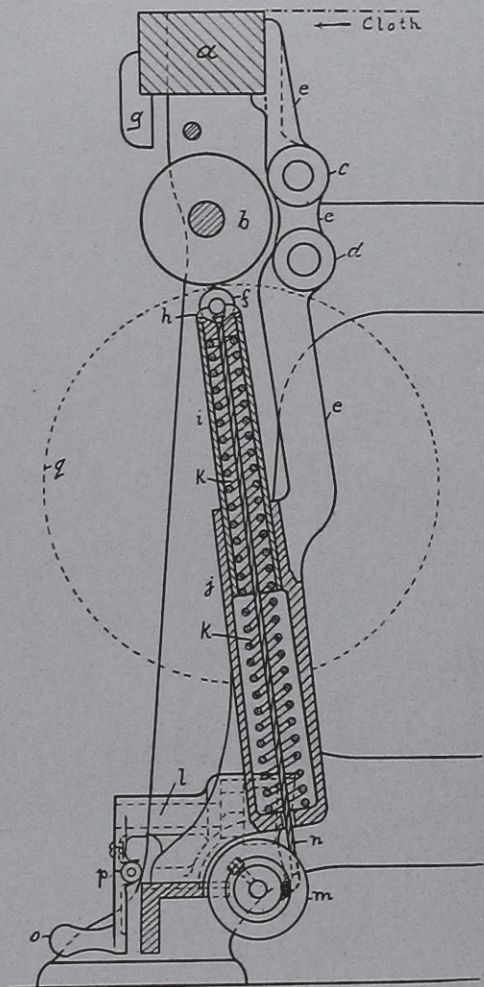


FIG. 11

To Ascertain Picks per Inch, observe the following calculation:

$$\frac{A \times C \times E \times G}{B \times D \times F \times H} = \text{picks per inch.}$$

- A = 72 tooth gear on sand roll shaft, meshing with
- B = 28 tooth gear on stud shaft, carrying also
- C = change gear, 42 to 82 teeth, meshing with
- D = 12 to 42 tooth gear on shaft carrying
- E = Ratchet, 100 teeth.
- F = 14.25", or Circ. in inches, of sand roll.
- G = Cam shaft gear, and
- H = Crank shaft gear.

The Box Motion. As is readily understood, this motion is of great importance in connection with weaving ginghams, on account of the excessive variations in colorings, these fabrics call for. The Crompton

style of Box Motion of 4 × 1 is used. The shuttle boxes are carried positively into their proper positions by means of sliding gears and eccentrics combined with a lifting lever, motion being imparted to the sliding gears by a mutilated gear on a cam shaft. The changing of the boxes is accomplished by means of a wire connection between the sliding gears and pattern chain mechanism. A break-down motion is provided to prevent any damage to the shuttle boxes or box mechanism, due to a picker sticking or a shuttle failing to enter a box.

THE PATTERN CHAIN mechanism is fastened to the arch and is driven from the cam shaft.

With reference to building the box chain, there is space provided on each bar of the chain for either 3 individual tubes or 3 balls (rolls). Either one or the other can be used.

	BOX MOTION	MULTIPLIER
For Box 1 use :	Tube - Tube	Tube
" " 2 " :	Tube - Ball	Tube
" " 3 " :	Ball - Tube	Tube
" " 4 " :	Ball - Ball	Tube
For Multiplier: use either Ball,		
or Tube according which		
shuttle to be multiplied by,		
with		Ball

From the foregoing, it will be seen that the two left hand situated levers of the motion work the boxes, the right hand lever actuating the multiplier. The latter is of the *Whitin patent* and only supplied to looms when specially ordered. It multiplies 30 picks or any multiple of 30 up to (8 × 30 =) 240 picks of one shuttle.

The box motion is provided with a stop motion to arrest the former on the same pick where filling absent; or in other words, cams and box motion work in unison.

JACQUARD DESIGNING.

(Continued from page 99.)

SINGLE CLOTH FABRICS,

Using a Different Texture for Warp and Filling.

Planning the design for such fabric structures is best explained by means of reproducing a silk dressgoods fabric constructed under such conditions, and for which reason, sketch Fig. 49 is given, illustrating in actual size a silk dressgoods fabric produced with a texture of 277 warp threads and 111 picks per inch.

The design shows separate figures (a variety of circles) produced either by means of warp or filling floating, the ground being produced by *taffeta*, and illustrates the practical application of circles, of different sizes, to form a design based upon the 5-leaf satin setting. Four repeats (2 each way) are given to better illustrate the effect of this kind of setting circles, or spots in a fabric structure.

Repeat of design: 2½ by 2½ inches.

Size of Jacquard machine to be used: (2½ × 277 =) a 600 machine.

Point paper to use: $277:111::x:8$, and
 $277 \times 8 = 2216 \div 111 = 20.1$, or
 20×8 is the proper point paper to be used.

To illustrate the working out of the sketch on point paper,

Fig. 50 is given, being the $\frac{1}{16}$ th part of the complete design, practically worked out on 20×8 point paper, and calling for 150 warp threads and 60 picks of the complete design of 600 warp threads and 240 picks.

This worked out portion of the complete design on

11 picks, *i. e.*, are less than $\frac{1}{10}$ th of one inch long in woven cloth, are not touched, *i. e.*, are simply produced by warp floats without any binding to the filling. This effect is designed to form more of a background for the cloth to effects mentioned before.

The ground weave used is the taffeta, or plain weave, which however on account of the low filling texture as compared to that of the warp, will give to the fabric somewhat of a rib effect, similar to the general appearance on the painted weave of the point paper.

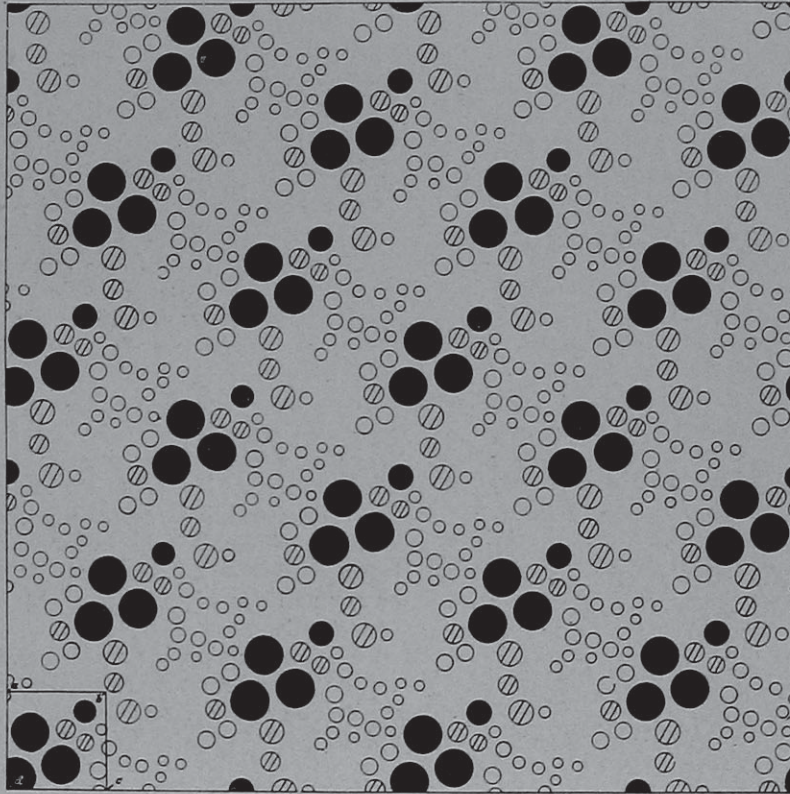


FIG. 49

point paper is indicated on sketch Fig. 49 in its lower left hand corner by means of square *a, b, c, d*.

Point paper design Fig. 50 is painted as filling up, hence when stamping the cards "cut empty" squares or what is the same "miss painted" squares.

Examining our fabric sketch Fig. 49, we find two different effects used for showing up the figure, *viz*:

The first Figure effect is shown in black circles; these we selected in design Fig. 50 for being produced by floating the filling, stitching the latter by means of the 16-harness satin. This is our prominent effect.

The other figure effect is shown by circles in outlines, selected in design Fig. 50 for being produced by floating the warp. On account of the low filling texture compared to that of the warp, we now will have to stitch all these warp threads which have too excessive a float. This point has been clearly demonstrated in sketch as well as point paper design, by running a double twill over all the larger circles, *i. e.*, adopting about 11 picks as the longest warp float permissible. Such circles as contain a shorter float then

Although our example shows separate figures, executed either by warp or filling floating, this style of designing is just as applicable to the combination of both effects in one figure.

A PRACTICAL TREATISE ON THE KNOWLES FANCY WORSTED LOOM.

By E. P. Woodward,
Master Weaver.

(Continued from page 105.)

Preventing Filling Kinking and Filling Cutting.

It will be noticed that the box cylinder gears are smaller in diameter than the box vibrator gears with which they engage.

They are so designed in order to impart to the shuttle boxes as slow and steady a change as can be given commensurate with the picking and protection time.

The picking time implies the starting of the shuttle as early as possible (at the top centre of the crank)

and having it box just early enough to prevent the lay from protecting.

The protecting point is where the reed is left a distance from the cloth which will not break the warp ends or cause a heavy place should the shuttle get caught in the shed. With the picking time and the protecting point defined, it can be seen that the box motion is entitled to all time between these two points for the changing of the shuttle boxes. It should be kept in mind by the fixer, that when necessary to do so, the box motion can be set to change earlier when the boxes make no skip than when they skip, and they

This combination of difficulties to overcome in the weaving is mentioned for the reason that what one uses ordinarily to prevent filling kinking is a heavily brushed shuttle, and a heavily brushed shuttle must put more strain on the filling and consequently stretch the yarn more, in turn causing the filling to cut more readily than if the shuttle is run reasonably well brushed.

These two features of the weaving to be overcome at one and the same time, no doubt have been the cause of putting the learner in a quandary since the conditions which will remedy the first trouble

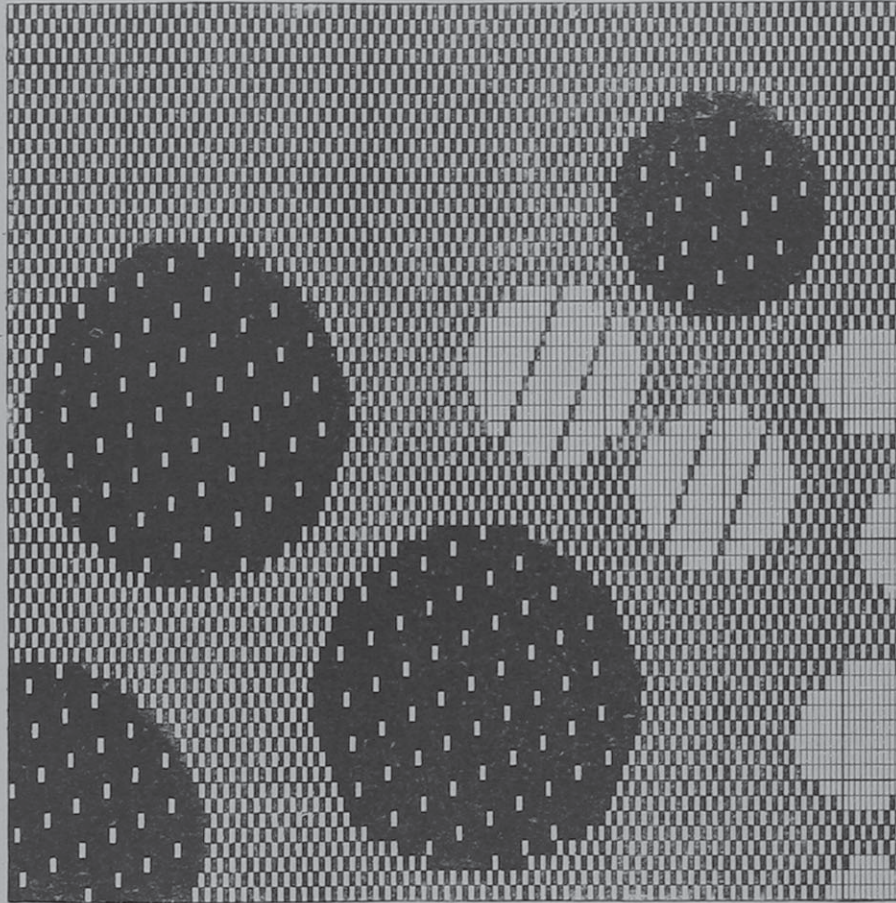


FIG. 50.

can be changed earlier when making a single skip than when making a full change. This is mentioned on account of the fact that when making a full skip, *i. e.*, changing from 1 to 4, or the opposite, the lift of the boxes at the protecting point will be three times as great as on no skip, admitting the timing of the upright shaft to be the same in both cases. For this reason, when the chains call for skip boxes or full changes, the boxes must be set to a position late enough to be safe on the protection and also late enough to avoid trapping the shuttle or the picker.

In handling difficult patterns on fine fancy worsted goods, *i. e.*, patterns which are of such a style as to cause filling kinks and filling cutting, it becomes necessary to use the head motion and the picking motion set to their best positions as regards their relation to each other, in order to get satisfactory results in the woven goods.

(filling kinks) will be quite sure to increase the second (filling cutting). This is a case where it is decidedly to the advantage of the goods to set the harness section cylinder gears ahead to the limit of their time.

The loom should also pick as early as possible and at the same time the shuttle should travel as slowly as it safely can. In this case, the shuttle boxes should start to change as early as they can, *i. e.*, as soon as the shuttle reaches the picker.

This setting of the loom will accomplish all that is necessary to assist in making smooth cloth and about all that can be accomplished so far as the picking time and the shedding time are concerned. Other things may help but they do not pertain to the timing of the boxes and head and will be taken up later.

With the loom set as described a reasonably

brushed shuttle, *i. e.*, one which simply holds the filling to a smooth tension, will be all the brush required.

By following the above directions this is what has been accomplished:

1st. The harness section cylinders have been placed where they will engage the filling as early as possible.

2nd. The shuttle has its speed reduced to the limit of safety.

3rd. The box motion has been timed to change as early as it safely can.

It is well to remember that the loom should pick smoothly with a nicely boxed shuttle as described in previous articles.

THE RESULTS OBTAINED ARE: The shuttle travels so slowly that the harness will cause the warp to close upon the filling early and while the shuttle is in motion.

This will be accomplished without running the head out of its designed time or setting the harness cylinder gears seven teeth ahead of the box motion—a place where they were never meant to be set when running with a continuous chain motion.

The shuttle will start smoothly and easily and will box easily and will not need a tight binder spring nor a tight binder to prevent its rebound.

The following reasons are why this setting of the loom will help to prevent filling kinks and filling cutting at the same time:

By crossing the warp early on the filling, the warp threads take up and stretch the filling *early* before it is *near the cloth forming point* with the result that the filling will pass smoothly by many knots over which it would otherwise kink. As the filling cuts at the cloth forming point or later, the early changing of the harness does not cut the filling but early changing of the harness has delivered equally at the cloth forming line a length of pick more in excess of the width of the cloth and reeded width than a late changing shed would, and this excess of filling is the result derived from early changing of the harness which helps to prevent filling cutting, and the early harness change also admits of binding the pick as the reed drives it home, thereby making the warp take the picks easier than it would with a late changing shed. This may be in contradiction to some fixers' ideas. Try it and see the result.

When reading this article on filling kinking and cutting and the means of preventing these troubles, it may seem to the reader that all necessary has been accomplished when the harness cylinder gears have been placed as far ahead of the box cylinder gears as their working time will admit. This is not so, and a careful reading will show, that while positive directions have been given to remedy the troubles of filling kinks and filling cutting by locating the cylinders of the harness section in a certain relation to the box motion cylinder gears and also timing the box motion to a certain picking time and boxing time of the shuttle, all has been done with a definite object in view, *i. e.*, to keep the chain and cylinders time in their designed limit, also to have a nicely timed and well running box motion combined with a picking

motion which will throw the shuttles smoothly and with equal velocity and all working with the object in view of changing the harness early enough for the warp ends to engage the filling by the time the shuttle reaches the picker. Failing to do this means failing to get results in the woven goods as satisfactory as otherwise could be obtained.

For these reasons the box motion has been timed to change as early as possible, the harnesses made to change as early as they can, and the shuttle to travel as slowly as it safely can and throw the protector daggers in time to clear the knock off levers.

Timing the boxes to change as early as they safely can has helped to make the harness cylinder gears come into action earlier in relation to the cloth forming line, and it has been done without running the head motion out of its designed time.

For the above reasons only are the shuttle boxes timed to change as early as they safely can. On goods not requiring the early changing of the harnesses, it is much better for the handling of the loom and the changing of the shuttles, by the weaver to run the shuttle boxes timed to change a little later than here described.

Briefly told then, the action desired has been to have the warp cross the filling while the shuttle is in motion or before the filling slackens by the shuttle striking the picker and to do these things without running the loom out its designed time. The object has been to prevent filling cutting and filling kinking at the same time and by the same methods.

In conclusion it should be said this method of timing will not prevent filling cutting in all fabrics. Much depends on the goods and the yarns used in their construction.

Quite often the style of reed used has been the cause of filling cutting. The same can be said of filling kinks. There are in some fabrics very heavy threads carrying large knots which will either break the filling on which they cross, or make a hole in the goods by the filling catching on them. The best remedy for such a knot is to keep the filling away from it (by breaking out the knot).

It would be hard to apply any one setting of the loom to every fabric. The method here described will be found to give good results when applied to the fabric of which it treats. The principle will apply to the majority of worsted goods. Often much outside of what is given here is necessary to prevent filling cutting and kinking, but as it does not in any way implicate the timing of the loom, it is not taken up at this time.

(To be continued.)

Scouring White Woolen Yarn.

Ammonia presents special advantages for the scouring of white woolen yarns as a preparatory procedure to dyeing. For this reason soak the yarn in a weak ammonia bath over night, and when you will notice a considerable saving in the cost of cleaning, the subsequent treatment with soap requiring considerable less soap, less heat and time than without this treatment.

THE TEXTILE OVERSEERS' ASSOCIATION
of
PHILADELPHIA AND VICINITY.

This Association was formed on Saturday afternoon, September 26th, 1908, at the Offices of POSSELT'S TEXTILE JOURNAL and has for its objects the general discussion of subjects relating to the textile industry, the general advancement of its members, better protection from and the overcoming of abuses.

harness and filling boy, working afterwards in the carding, spinning and finishing departments, and at the age of 14 was on the loom as a weaver. Since then he has worked in the Weybosset, the Riverside and the Eagle St. Mills in Providence; also at the Kenyon Mills at Woodville, R. I. After leaving here, he was employed by the Schaghticoke Mills of Schaghticoke, N. Y. in the Designing room, returning from there to the Wickford Worsted Company of Wickford,



MEMBERS PRESENT AT THE MEETING OCTOBER 31ST, 1908.

The originators of the Association were Wm. H. Secor, James Stocks, A. Mugford, John S. Bellis, Geo. McDaniels, E. A. Posselt and H. Nelson Craig, all well known to those engaged in the textile industry.

The membership of the Association is open to any overseer who is and who has been in charge of some department of a textile mill, six months prior to his application.

The officers of the Association are Wm. H. Secor, President; James Stocks, Vice President; John S. Bellis, Treasurer; A. Mugford, Secretary and H. Nelson Craig, Asst. Secretary.

The officers of the Association are without doubt, known to the textile industry but an outline of their life's work will be of interest.

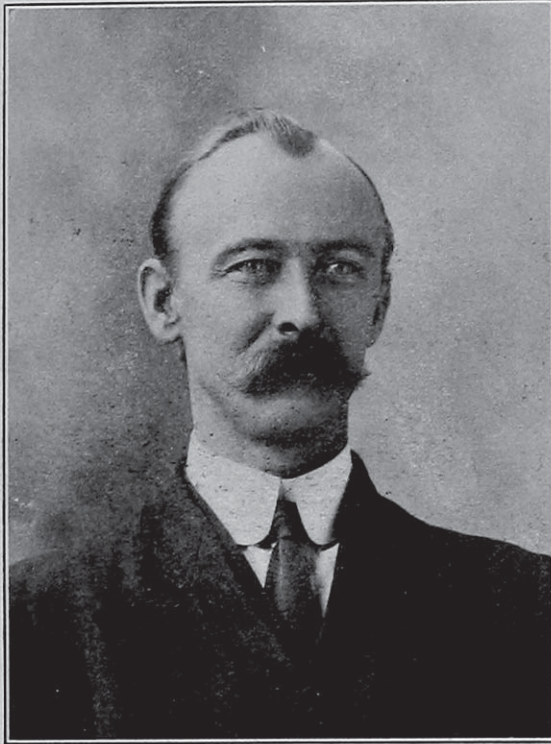
Mr. Wm. H. Secor, the President of the Association started his textile career at Wickford, R. I., as a

R. I. in 1888 having charge of their Designing and Weaving for 5 years. From here he went to Thos. H. Wilson's Hampden Woolen Mills of Philadelphia as Boss Weaver and is at present Boss Weaver and Designer for R. M. Smith, Manufacturer of Worsted Men's Wear, of this city.

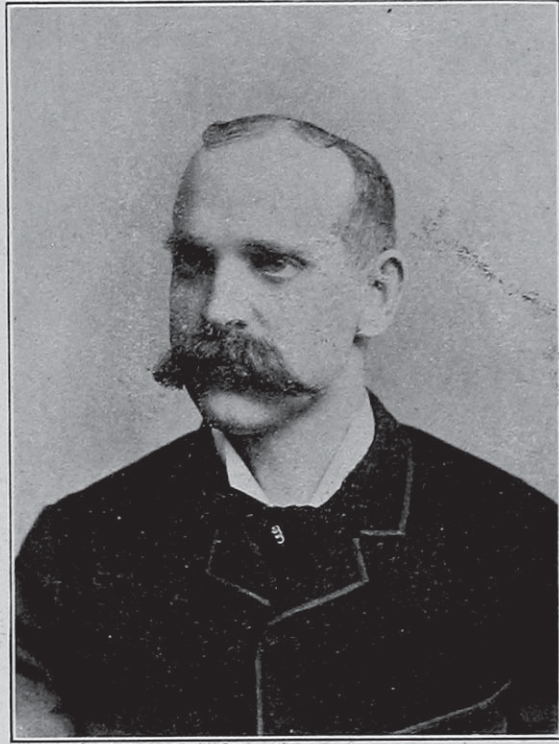
Mr. James Stocks, the Vice President of the Association, without question is one of the most widely known textile overseers in Philadelphia, having been an Overseer of Weaving and Superintendent of Mills for years, starting his career as an Overseer of Weaving with James Irvin & Son of Chester, Pa., holding that position for 6 years when he then took up the position as Superintendent for Holstein Woolen Mills, Salem, Va., and where he remained for 2 years. From this position he came to the Gulf Mills of West Conshohocken, Pa. as Overseer of Weaving and Designer, remaining there for 8 years, until he took up

his present position as Manager of the Lehigh Worsted Co. of Philadelphia.

Mr. A. Mugford, the Secretary of the Association is also well known in this locality. Mr. Mugford



WM. H. SECOR, PRES.



JAMES STOCKS, VICE-PRES.

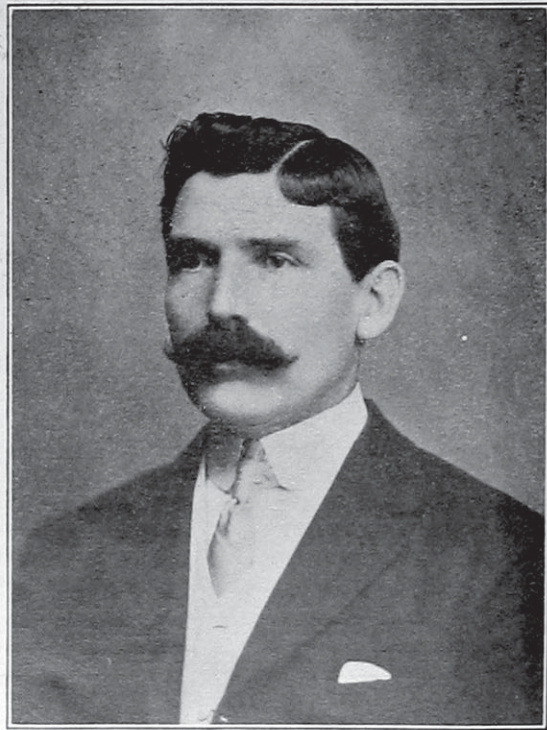
Mr. John S. Bellis, the Treasurer, is well known throughout the textile industry of this section and at

started his career in Devonshire, England, under the direction of his father, who was Overseer for Berry



JOHN S. BELLIS, TREAS.

present is in charge as Boss Weaver of No. 2 Mill of the Prudential Worsted Co. of Philadelphia.



A. MUGFORD, SEC.

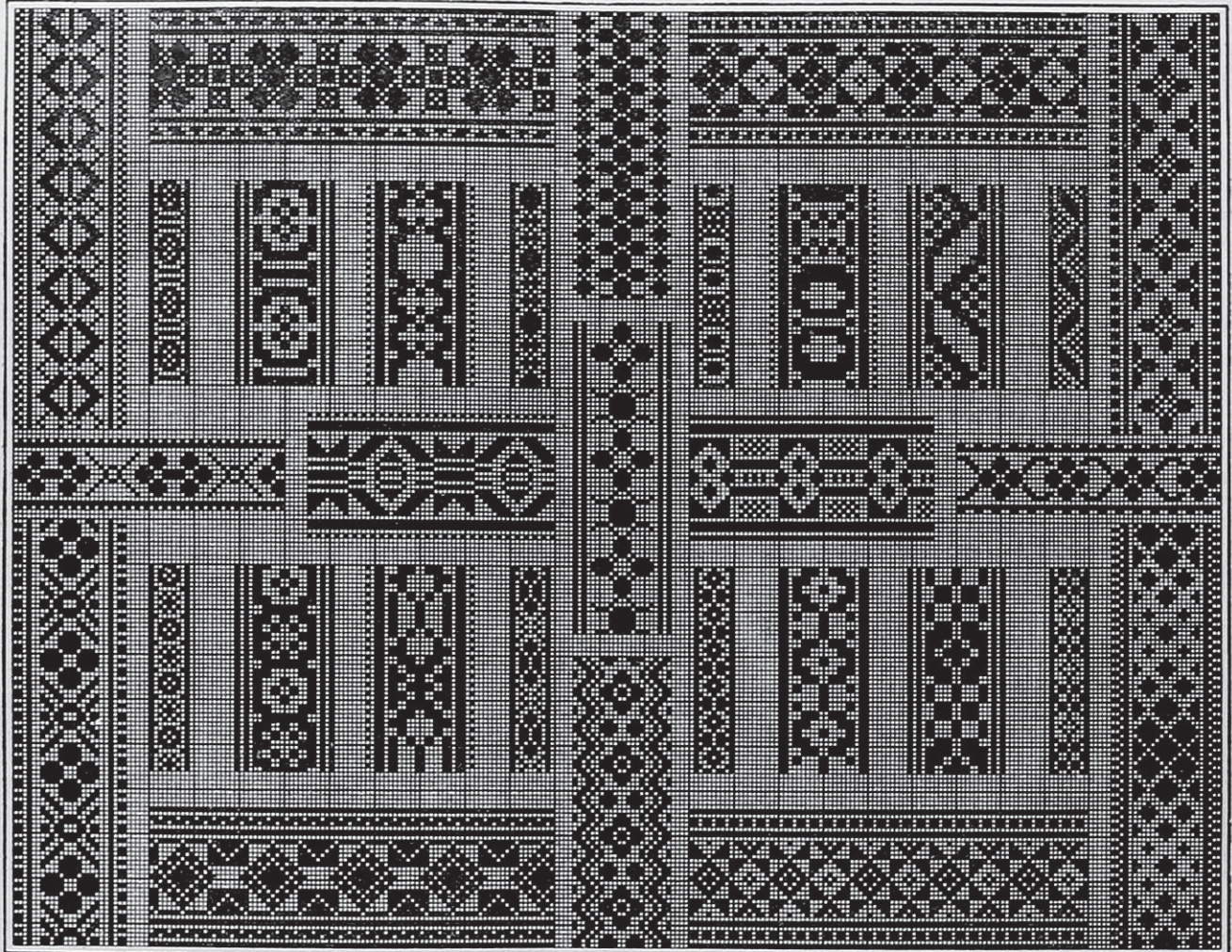
Bros., one of the largest textile manufacturers in the West of England, for over 30 years. Mr. Mugford

has been employed in several mills in this vicinity and is at present employed as Overseer of the Dressing, Spooling and Drawing-in Departments of the Saxonia Mills of this city.

Mr. H. Nelson Craig, the Assistant Secretary, is known to a majority of the textile industry in representing POSSELT'S TEXTILE JOURNAL.

MOTIVES FOR HARNESS WORK.

In the above plate of designs, we present a collection of 31 ideas for figured harness work, suitable for all classes of textile fabrics where stripe effects are desired. They are taken from the work of Prof. R. Müller on this subject, with the object that they will assist designers in new ideas for figured harness



The Association meets on the second and fourth Friday of every month at 8 P. M., temporarily at the offices of POSSELT'S TEXTILE JOURNAL, 2028 Berks Street, Philadelphia.

The membership of the Association comprises Overseers in all departments of mills, including Preparatory Processes, Carding, Spinning, Weaving, Designing, Knitting, Dyeing and Finishing, and although only in its infancy, the organization is destined to become a prominent factor of the textile industry.

The members of the Association are: William H. Secor, James Stocks, Alfred Mugford, John Bellis, E. A. Posselt, George McDaniels, H. Nelson Craig, John Coonan, F. G. Hirst, Ernest Peel, Albert Schofield, W. W. Sudders, James Dunn, Frederick Grundy, Albert Holmes, James Fitzpatrick, H. Manuel, Thomas Barnett, Phillip Lindsay, George Wissman, John Crumley, Adolph Kries, John Gaul, Herbert Atack, John Finan, Charles Hopper, William Lord, Charles Franck, Louis Franck, George Buchanan, Frank Oeser, Ernest Haig, Joseph Naylor.

work, cotton, worsted and silk dress goods, shirtings, ribbons, tapes, etc., and where the harness capacity of the loom is limited. The bordering stripes as well as edges, shown in connection with the various motives, will in most instances be omitted in practical work, they having been added by the author to more properly separate the collection of designs on the plate. If said stripes however are desired to be used, in connection with one or the other design, they will require tying down of these warp threads by means of satin weaves, or other arrangements; a feature which will call for the use of additional harnesses, the various designs themselves being constructed with the object in view to use as few harnesses as possible, designs given, calling only for from 4 to 9 harnesses respectively (not considering bordering stripes or edges) for their execution on the loom.

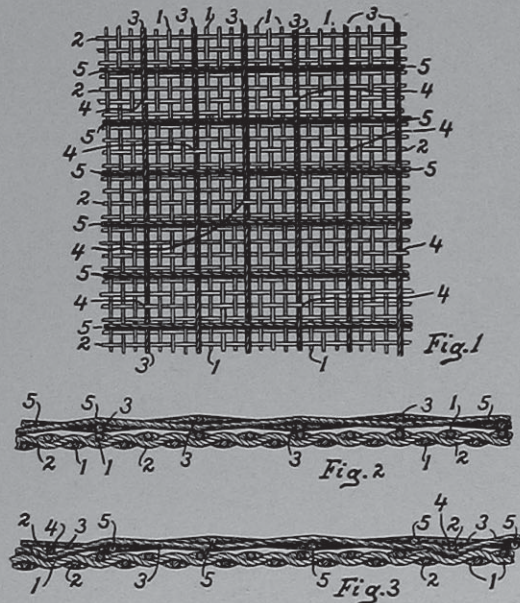
As will be readily understood, designs presented may be enlarged to suit the texture of the fabrics they are to be used for. They refer more particularly

to fabrics constructed with one system of filling and two systems of warp, viz.: a ground warp and a figure warp, the designs referring to the interlacing of the latter system. Under certain conditions, and with a few modifications, some of the designs are also applicable for being used in connection with one system of warp and two systems of filling, viz.: ground and figure picks, the design then referring to the latter system considering in this instance *empty squares* for risers and *full squares* for sinkers; again, they can be also applied to double cloth structures, in fact, as we may say, their use is unlimited in the textile art.

A New Woven Fabric Structure

intended for use as a lining or for buckram, and which may be employed for dress goods and also to the process of making such fabric.

Heretofore, in the formation of fabrics of this general character, suitable for linings and for buckram, it has been customary to form a closely woven fabric and separately to form an open mesh woven fabric, the two



fabrics being then cemented together by sizing. Not only is this process slow and expensive, but it is impossible to produce an elastically sized fabric in this manner, for the reason that the amount of sizing or cement necessary to fasten the two fabrics together inevitably results in stiffening the same unduly.

To produce a fabric structure which will overcome these difficulties has been the object aimed at in the construction of the new fabric, forming the subject of this article, and which is the invention of Mr. I. E. Palmer, the President of the well known I. E. Palmer Co. of Middletown, Conn. By this construction we can either produce an elastically or a stiffly sized fabric, the former being more particularly applicable for dress goods and the latter for buckram, by suitably manipulating the fabric during the drying operation following the sizing application or applications.

In order to be able to more clearly explain the construction of the new fabric the accompanying three illustrations are given, and of which Figure 1 is a top

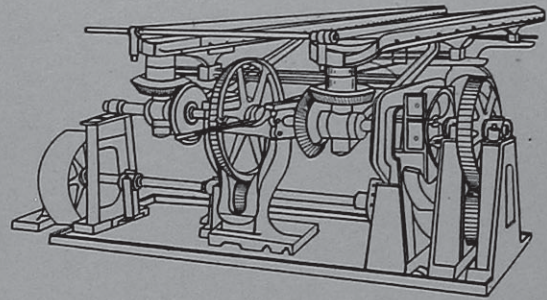


FIG. 4.

view of the woven fabric, Figure 2 a section (enlarged, compared to Figure 1) through the warp, and Figure 3 a section through the filling.

With reference to counts of yarns used, warp and filling may correspond or vary, again they may be singles or 2 or more-ply twist, according to the nature of fabric desired.

Examining our illustrations, we find provided upon one surface of the body fabric (1 indicates warp, 2 indicates filling) floating supplemental warp threads 3, bound to the body fabric at any desired intervals by the body picks, as indicated at 4. Upon this face of the fabric are provided supplemental floating picks 5, bound into the fabric only by the floating supplemental warp threads 3. The supplemental picks 5 may be installed in any suitable manner; for example, if a box loom is used, the supplemental picks may, if desired, be of heavier counts than the body picks. If, however, dealing with a single box loom, 2, 3 or more picks are then to be inserted in the same shed to produce in effect a single ridge like formation. The distance apart from each of these extra warp and filling threads is varied, to suit the character of fabric constructed; again, if so desired, the supplemental warp threads may be arranged to work alternately for a certain length on the face of the structure and then on its back, being for this reason passed through the body of the fabric. This procedure will interrupt periodically the warp ridges upon face and back of fabric.

THE FINISHING PROCESS. As previously men-

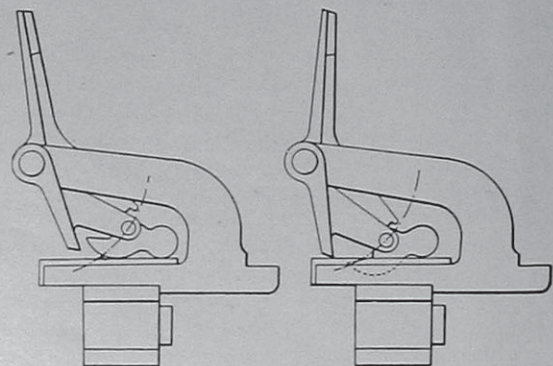


FIG. 5.

tioned, this class of fabrics is intended for use as lining or for buckram, for which reason it is after its

formation subjected to a sizing operation. To this end, the fabric is in any suitable manner subjected to several applications of sizing, the fabric being dried after each application.

If it be desired to provide a sized elastic fabric, the fabric is suitably vibrated in the plane thereof as it is dried.

Figure 4 gives us an illustration of a Dryer suitable for such work, the same being the vibratory Tentering Machine as built by the H. W. Butterworth & Sons Co., of Philadelphia, a machine specially built for drying cotton goods where an elastic finish is desired. This dryer is provided with a patented centre drive which gives regularity to the swing motion. Another special feature of this make of machine is the patented automatic clamps used, the same being of simple construction but at the same time most effective in operation. Figure 5 shows a specimen of this clamp in opened and locked position.

By drying the new fabric structure in this manner, the cementing, *i. e.*, sizing together of the threads as forming the body fabric, is prevented. If, however, the fabric be not vibrated as it is dried, then the sizing acts to bind or cement together the threads of the body fabric with the result that the completed fabric is stiff. A minimum amount of sizing may be employed to secure the requisite amount of stiffness or elasticity to the fabric but it must be remembered that sizing is not needed to secure the floating threads to the body fabric, since they are bound thereto in weaving.

From explanations given it will be seen that in the formation of such elastically finished fabrics, it is possible to produce a bulkier fabric than has heretofore been obtainable.

COTTON SPINNING.

The Ring Frame.

(Continued from page 88.)

Threadboards.—After leaving the front rolls, the strand of cotton, now called yarn, passes downward through a wire or porcelain guide, called the *thread guide*, each thread guide being screwed or clamped to a small board or metal plate, called the *finger board* of the thread board, which is fastened by hinges to the back rail, this latter extending the whole length of the frame and may be metal or wood. In Fig. 227 (see page 16 of Vol. I.) the thread board is shown at *H*, the finger board at *h*, and the thread guide at *I*. This figure illustrates the wooden thread board, which consists of wood blocks (finger boards) hinged to the back rail in the rear and carrying the thread guides in front, these being screwed into the blocks by means of a threaded end.

The thread guide in this type of finger boards is usually a piece of wire, or metal rod, shaped at one end to form an eye, of various shapes; that part of the eye where the thread rests being placed so as to be directly over the centre of the spindle, the other end of the thread guide being screwed into the wooden finger board. The thread guide is made in such a shape that the thread can be readily slipped into its guide eye, but cannot slip out again easily. The lower part, or tail, of the thread guide, is made to project

downward, and in some instances has in its lower end, cut a narrow slot, called the thread arrester, for catching the end when the thread breaks.

The purpose of this thread arrester is thus: Yarn during its winding upon the bobbin frequently becomes kinked (for which reason the device is also called kink preventor, kink arrester, snarl catcher, etc.) and, failing to pass through the traveler as it is fed down from the drafting rolls, will bow out between the guide eye and the traveler, frequently interfering with the operation of adjacent spools. To avoid this, various shapes of thread catchers have been devised, so arranged relatively to the guide eye that they will catch the loose thread and break it. In ring spinning,

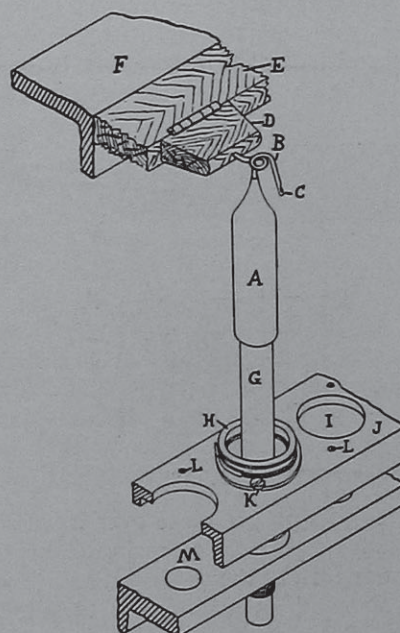


FIG. 247.

as a rule, the spindles are so revolved that the thread, carried by the traveler, will move in circles from left to right, or clock wise, or, in other words, in the direction of the movement of the hands of a clock, for which reason the thread catcher is generally so arranged, relatively to the guide eye, that the former is on the right hand side of the circle and usually upon the opposite side of the straight portion of the device from that on which such guide eye is located. The thread arrester, unless held in right position, may be the cause for many broken ends, for if this arrester is not placed in exactly right position on the finger board, it either fails to arrest the end when a thread does break and lets the end whip around and break down the adjoining thread, or, in other words, it catches and breaks a thread that is running all right. For this reason, many mills, having wooden finger boards in their thread boards, do not use this form of guide having a thread arrester, simply because, they claim, it is so liable to become displaced and injure the work rather than benefit it.

The metal finger board is made of thin sheet metal, steel or brass, bent to shape and stiffened with flanges, its outer surface usually being nickel plated. It is hinged to the thread rail and the latter is secured to

the roller beam, by screws or rivets, in the same manner as the wooden one. A metallic back rail may also be used. Metal boards are an improvement over wooden ones, as in the former, the thread guide can be adjusted in all directions in a horizontal plane, *i. e.*, to right or left or in and out, consequently the eye of the thread guide can be easily set in the correct position over its mate spindle. With the wooden finger board, the thread guide can be made longer or shorter, only by screwing it in or out, and side adjustment can be obtained only by bending the thread guide from side to side, in order to properly set them over the spindle. This alternate screwing the thread guide in or out its finger board will soon wear the hole larger and will loosen the guide and cause it to work out, as will also the bending from side to side. At the same time it must be remembered, that in screwing thread guide in and out into the wooden finger board, in order to try

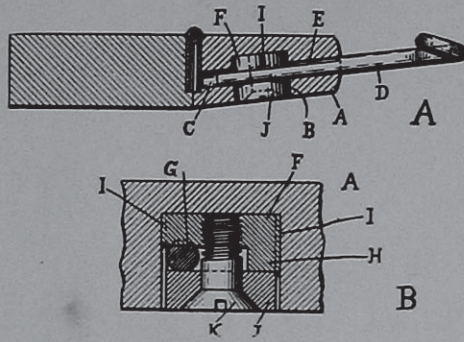


FIG. 248.

and adjust it in its proper place over its mate spindle, it is practically impossible to make an exact adjustment, since one turn of the guide out or in (or in plain words, one-sixteenth of an inch) is the limit to their adjustment. Now again, one-sixteenth of an inch either way from the centre, however, makes one-eighth of an inch difference from the opposite sides of the ring, and a similar variation of the guide eye from the centre has the same action on the thread and traveler as a ring would that was so much out of round, and which would be very quickly discarded by the spinner.

The grooving of guides is another cause for broken ends, and was undoubtedly the reason for the introduction of the so called vibrating thread guide and with reference to which there is a difference of opinion among spinners. It certainly cannot be disputed that vibrating the thread will prolong the wear of the guide, but as to what some persons claim that this vibration permits the twist to run up to the bite of the roll better, we simply have to consider that while during spinning, the vibration one way is with the twist, the opposite vibration is naturally against the twist, and consequently the gain one way is offset by the opposite vibration. There will be also any number of spinners who will have found that the gain made by the longer wear of this guide, is lost by the greater breakage of travelers and the extra and uneven wear of the rings, caused by this vibration. The vibrating thread guide certainly cannot help but cause an uneven, jerky motion upon the thread and thus in turn upon the traveler, a feature certainly not in its favor.

Thread guides should be made of not less than No. 8 wire, and when wooden finger boards are used, should be screwed in as taut as possible. In new frames, the guides should not be turned in too far, as it may become necessary to draw them out, thus loosening their hold in the finger board.

Thread guides should not be used after they become grooved. They should be kept carefully set so that the point where the thread bears will be exactly over the top of the spindles, otherwise they will be the cause for bad work. Too much care cannot be taken in the setting of guides, because if not centered, it causes the yarn to chafe on one side of the bobbin, causing it to break more frequently.

There should be from $5\frac{1}{2}$ to 6 inches distance from bite of front rolls to thread guides, on warp, and at least $2\frac{1}{2}$ inches from top of bobbin to thread guide, although 3 inches is better for 2 inch rings and long traverse. On filling frames, this distance may be reduced to $1\frac{1}{2}$ inches.

Thread guides should be set while the spindles are running, as modern spindles are in a slightly different position when running than when standing. In setting the thread guide, a round wooden piece, called a *set*, tapered to a point on its top and provided with a hole which just fits the spindle at its bottom, is placed on the spindle, after the latter is adjusted, the length of this *set* being such as to bring its point just under the thread guide, which is then adjusted so that the thread will draw from the back side of the guide eye to the centre of the spindle, as shown in diagram Fig. 247, and in which *A* is the wooden thread guide *set*, *B* the thread guide, *C* its thread arrester, *D* a wooden finger board hinged to its wooden back rail *E*, which in turn is hinged to the iron roller beam *F* of the machine. *G* is the spindle, *H* a spinning ring as set into the holes *I* of the ring rail *J*, and fastened to it by means of screws *K*, extending into the small holes *L* provided for this purpose in the ring rail. *M* is the spindle rail. *Sets* made of steel are also used. As a large proportion of the broken ends that occur at the spinning process are caused by the faulty setting of thread guides, this is a point which should be given careful attention.

We now might ask the question: what constitutes a perfect thread board? In answer we find: (1) Easy and accurate adjustment of the thread guides, that said guides are capable of adjustment, both longitudinally as well as in a swinging direction, *i. e.*, the guides to be provided with a universal adjustment in a plane, or plane traverse to the axis of the spindle. (2) Permanence of adjustment of the thread guides. (3) The finger board of the thread board to be of such a make to allow easy renewal of its thread guides when worn, and hold the new guides as solid as a new board would. (4) The thread board to be strongly made, so as to last as long as the frame, and this without any repairs. (5) The thread guides should be of some hard material to prevent grooving. (6) The thread boards should be made of some material that can be easily cleaned. (7) Permitting handy turning back of the finger boards for the purpose of doffing.

THE WHITIN THREAD GUIDE, and its adjustment to a wooden thread board is shown in Fig. 248. The same consists in a specially shaped thread guide and a clamping device on the finger board, for receiving and clamping the stem of said guide, so that the same can be easily adjusted, to bring the eye of the thread guide in the proper position over its spindle. Of the illustration, diagram *A* is a sectional view through the finger board and back rail with the thread guide and clamping mechanism shown in full lines, and diagram *B* is a somewhat enlarged, as compared to diagram *A*, cross sectional view through the finger board, thread guide stem, and clamping mechanism.

Letters of reference accompanying the diagrams indicate the parts as follows: *A* represents the hinged finger board, having the circular recess *B* in its under side, and a small hole *C* located on the side of the recess *B* to receive the stem of the thread guide *D*,

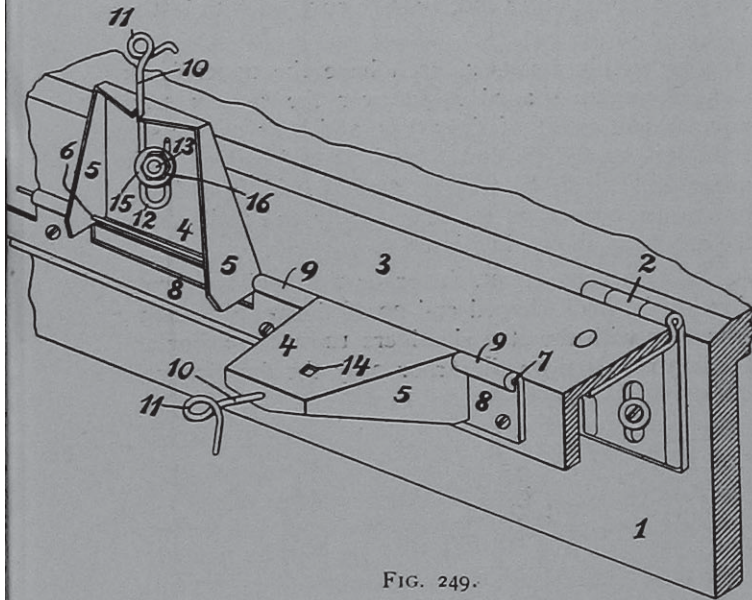


FIG. 249.

which has the stem made with a flattened portion *E* on its upper surface. The clamping mechanism, which is placed in the circular recess, consists of a circular clamping nut *F*, having the flat surface *G*, the projecting boss *H*, and the two fins *I*, which are pressed into the sides of the recess *B* and hold the clamping nut *F* in position. A circular clamping head *J* secures the flattened portion *E* of the guide *D*, between the clamping nut *F* and the clamping head *J*, by having the latter centrally countersunk to receive a screw *K*, which is threaded into the clamping nut *F*, and thus the left hand side of the clamping nut is pressed against the stem portion of the thread guide *D* with its right hand side acting as a fulcrum. To adjust the thread guide *D*, the screw *K* is loosened, the eye placed over the centre of the spindle and the screw tightened.

THE WHITIN METAL THREAD BOARD is shown in its perspective view in diagram Fig. 249. It permits an easy adjustment of the guide eye to any variation in position required, the finger board being at the same time of such a construction so as to guard the mechanism for adjusting the thread guide, against any accumulation of fly, etc. In the illustration, one of the

finger boards is shown down, or in working position, and the other in its raised position, to show the adjusting means for the guide.

Numerals of reference in illustration indicate as follows: 1 is the roller beam of the ring frame, and to which is secured, by means of hinges 2, the metal back rail 3, extending the entire length of the machine. Hinges 2 are provided in their lower leaves with slots for receiving fastening bolts, by means of which the back rail 3 is adjustably secured to the roller beam 1, whereas the other leaf of the hinge 2 is fastened to the under side of the back rail and where it acts as a pivotal support, whereby the back rail, and thus all the finger boards of that side of the machine can be swung upwardly, when so required for doffing purposes, etc. 4 shows two of the series of finger boards of the machine, made of a single piece of sheet metal, stamped so as to have a flat top surface, with depending flanges on all four sides. The side flanges 5, and which hold the finger boards in proper working position by contact with the back rail (see finger board at the right in illustration) are perforated at their rear upper corners, as at 6, for the reception of a hinge wire 7 (common to a number of finger boards) held in the long hinge plate 8 (also common to a number of finger boards) by means of extending ears 9. The finger boards are movably mounted on said hinge wire 7, their rear flange being turned down at a sufficiently rearward point, so as to overlap the hinge wire 7, the flange being wide enough to form a closure for the space between the back rail and the respective finger board, thereby preventing the accumulation of fly or dirt from falling upon and incorporating itself with the thread, while twist is inserted in the latter. The thread guide 10 is formed, at its eye-end 11, of usual construction, while its adjusting end is provided with an oblong loop 12, opened at one end in the shape of a hook for receiving a bolt 13, as countersunk in recess 14, of the finger board. This loop end 12 of the thread guide is clamped against the under side of the holder by means of washer 15 and nut 16, and securely held thereby (adjustably) in the proper position, after once adjusted.

Lately the Whitin Machine Works patented a new construction of a thread board and which is shown in Fig. 250 in its vertical section, showing also those parts of a ring frame to which the device more particularly refers to.

The construction and operation of the new thread board is best explained by quoting numerals of references accompanying the diagram, and of which 1 shows the delivery rolls, 2 the roller beam, and 3 the spindles.

Between the rolls 1 and spindles 3, each thread is guided by the guide 4, and in case of breakage of any such threads the broken end falls into a trough like receptacle 5, located directly beneath the delivery rolls 1, and which serves to hold the accumulations of the thread following a break, free from entanglement with the adjacent unruptured threads, until the operator finds time to repair the break. The said receptacle is held by its rear margin to the under side of the roller

beam and by its front margin to a horizontal (flat bar) beam 6, supported by means of a series of studs 7.

The thread board rail 8, consisting of a flat bar, of about the same dimensions as the supporting beam 6, is hinged to the latter, so that when in its upright or working position it occupies the same vertical plane

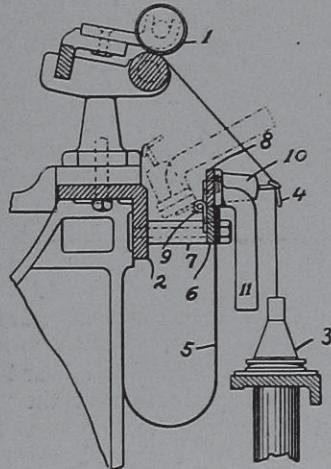


FIG. 250.

as beam 6. Hinges 9 are applied to the rear faces of the two members so that the rail may be turned rearwardly or downwardly, into or toward the yarn receiving space 5. The thread board rail 8 supports the finger boards 10, hinged to the rail, so as to be capable of being individually turned back.

The rail 8 is coextensive with the beam 6 throughout its length, and is at one end provided with a hand grip 11, by means of which it may be turned on its hinges so as to shift, for the purpose of doffing, all the finger boards simultaneously into their rearward position. This hand grip, by its own weight, holds the thread board rail in its normal position during the operation of spinning.

(To be continued.)

AN IMPROVED TOP ROLL FOR FLY FRAMES.

In this new construction of top rolls, means are provided whereby the arbor of the top roll is held stationary by the weight hook, and the shells revolve on the arbor; means being also provided for conveniently lubricating the shells. This stationary arbor and its revolving shells are of such construction that they will replace the old style of revolving arbor and top rolls without in any way having to alter the roller stand, cap bars or nebs on the cap bars, *i. e.*, permits the application of the new top roll to fly frames of former construction and now installed in mills.

Of the accompanying illustrations, Figure 1 is a vertical sectional view of a roller stand provided with the new top rolls, and Figure 2 is an enlarged face view of a stationary arbor with revolving shells, showing the nebs and one of the shells in section.

Letters of reference in the illustrations indicate thus: 1 the drawing rolls, 2 the stationary arbors, 3 the shells, 4 the weight hooks, 4' weight wires, 5 the

weights, and 6 the pivoted cap bars, having nebs 7 for the ends of the arbor 2, as shown in dotted lines in Figure 1 and in section in Figure 2.

The stationary arbors 3 are a round bar, provided with a round central boss 8, in which is a top cavity 9, having end walls 10 and bottom 11, forming stop shoulders 12. The bar is then reduced in diameter to form the bearings 13 for the shells 3 and the annular shoulders 14, and then again reduced in diameter to form the smaller ends 15 adapted to be held in the nebs 7 on the cap bars 6.

A semi-spiral oil groove 16 is formed in the bearings 13 and extends from the top of the ends 15 to the bottom of the bearings 13 and slightly beyond the centre of the bearings, as shown in Figure 2.

The shells 3 are cylindrical in form, each having the central bore 17 adapted to have a rotatable fit on a bearing 13 and merging into an enlarged annular cavity 18 at the other end, and are covered with leather 19.

The weight hooks 4, each have the upper hook-shaped end 20 shaped to fit over the convex semi-circular bottom 11 of the arbor, and bear on the stop shoulders 12 and the lower hook-shaped end 21. The upper end 20 of the weight hook is held from longitudinal movement on the arbor 2, by end walls 10 on the arbor, as shown in Figure 2.

IN THE OPERATION, the arbor 2 is held from rotation by the hook-shaped end 20 of the weight hook 4 engaging with the stop shoulders 12 on the arbor and shells 3 revolved on the arbor 2 by the drawing rolls

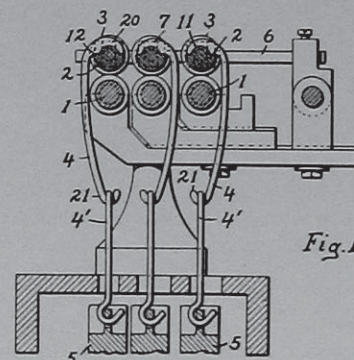


Fig. 1

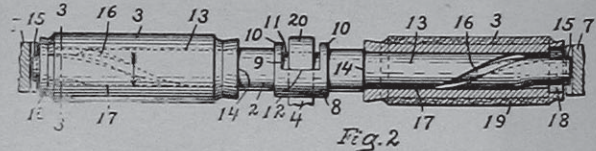


Fig. 2

1. The bearings 13 are lubricated by dropping oil into the outer end of the oil grooves 16, the revolving of the shells on the bearings carrying the oil down to the bottom of the bearings from which it is distributed over the bearings. This operation of oiling is greatly facilitated by the annular cavities 18 in the outer ends of the shells, which allow an easy insertion of the oiler between the nebs 7 and the ends of the shells.

DICTIONARY OF TECHNICAL TERMS RELATING TO THE TEXTILE INDUSTRY.

(Continued from page 115.)

- DOUBLING**:—The combining of two or more laps or slivers.
- DOUBLING OR 2 PLY OR 2 FOLD**:—Bringing (winding) two threads from two bobbins or skeins, side by side, on to one bobbin, but without any twist.
- DOUP OR DOUP HEDDLE**:—A worsted, silk, or long staple cotton heddle, of special construction, required in gauze weaving, to produce the douping (or twisting) of the whip threads around their ground threads.
- DOUPING WARP**:—The thread or threads which twist around their mate (standard) threads in gauze weaving. The Whip Threads.
- DOUP WEAVING**:—In this system of weaving, some of the warp threads (the whip threads) are twisted around others (the standard threads) and held in this position by the filling; the fabrics produced containing the characteristic open meshes. Used in dressgoods, curtains, etc.; also called leno or gauze weaving.
- Downs**:—The name given to various breeds of sheep in England, which have become more or less naturalized in this country. Although the different breeds of Downs are somewhat of the same character, however, soil and climate affect them.
- The Southdown* is considered a short stapled wool, the longer qualities being sometimes used for combing and the shorter for carding purposes only.
- The Hampshire Down* differs from the former in being coarser, and in having a somewhat longer staple.
- The Oxford Downs* exceed the last in strength and coarseness of staple.
- The Norfolk Down* is of a very fine and valuable character.
- The Shropshire Down* is longer in staple, and has more lustre than any of the other Down breeds.
- DRAFT**:—In spinning, the amount of attenuation of a lap, sliver or roving.
- That ratio of movement between two points, which if not named, are understood to be the two extreme parts, viz: the feed and the delivery.
- It is an ever varying factor and has to be adjusted with reference to counts of yarn spun.
- In weaving, the plan showing the order in which the warp threads are drawn in the harness; also called the drawing-in-draft.
- DRAP**:—Cloth.
- DRAP DE LYON**:—A plain, rich silk fabric of French origin.
- DRAP DE PARIS**:—A fabric showing a granite twill effect.
- DRAP DE SOIE**:—(the French for Silk cloth) A silk fabric showing rather pronounced cords.
- DRAP D' ETE**:—An all wool fabric showing a twilled face and a smooth back. Produced with a broadcloth finish, with the lustre left on the back of the fabric.
- DRAP D' OR**:—(the French for Cloth of Gold) A trade name for a silk fabric with the silk woven in the gum, the warp used being classic Italian and the filling Tussah; the woven fabric then being boiled off to a pale gold color.
- DRAP SATIN**:—A woolen dress goods fabric, with a satin like finish.
- DRAP SOLEIL**:—A corded silk fabric showing flat, wide ribs.
- DRAPER**:—The English term for a manufacturer or dealer in clothing.
- DRAPERY**:—The artist's term for the clothing or dress of a model; in the upholstery trade it is applied to curtains, tapestries and hangings of all kinds.
- DRAW**:—The motion of a mule or jack, which, after the feed rollers are stopped, then draws out (elongates) the roving.
- DRAWER-IN**:—The person who threads or draws in the warp in its set of harnesses.
- DRAWING**:—The process which arranges the fibres in parallel order, and at the same time elongates the sliver, slubbing or roving as fed, by passing them through rollers running at different surface speeds.
- With reference to cotton spinning, the term considered more directly, refers to combining six (or more or less) slivers into one strand to about the size of one fed.
- With reference to worsted spinning, there are three different systems of drawing in use, viz: *open* drawing, *cone* drawing and *French* drawing.
- DRAWING FRAME**:—The machine which performs the process of drawing.
- DRAWING-IN**:—The process of drawing the ends of the warp through the heddle eyes or the mails of the Shaft, or the Jacquard harness.
- DRAWING-IN-HOOK**:—A strip of steel with a slot near its end, for the insertion of warp threads; used in drawing-in the warp in its harness.
- DRAWING ROLLS**:—The rolls as set in pairs in carding and spinning machinery.
- DRAW LOOM**:—An old style loom for weaving figured designs.
- DRAWN WORK**:—Ornamental work in which some of the threads of a woven material are drawn out, and others fastened together, so as to form different patterns.
- DRESDEN**:—Chiné effects in silk fabrics, produced by means of printing the warp previously to weaving. Effects somewhat in imitation of figures and colorings of the famous decorated Dresden porcelain.
- DRESS**:—To prepare or finish cloth by some special treatment. To prepare the warp for weaving.
- DRESSER, DRESSING MACHINE OR SIZING MACHINE**:—A warping machine used in the weaving department of a woolen mill, which applies size (thus smoothens) to the warp yarn, and places the threads side by side on a reel, from which they are afterwards rewound on the warp beam. A machine for applying sizing to fabrics.
- DRESSER TENDER OR DRESSER**:—The person attending to a dressing machine in a woolen mill.
- DRESSING**:—The material used for sizing the warp yarn in a woolen mill, as glue, Irish moss, etc.
- The glaze, stiffening, or finishing applied to textile fabrics to give them greater smoothness and firmness, sometimes to give them artificial weight.
- DRILL OR DRILLING**:—A heavy, twilled cotton cloth, usually sold for export in an unbleached condition. Used extensively in China and is a large item to the exports of cotton goods from the United States.
- DROP BOX OR RISING BOX**:—A shuttle box containing more than one compartment for holding shuttles, any one of which can be brought in line with the raceway of the lay; invented in 1760 by Robert Kaye, a son of John Kaye, the inventor of the fly shuttle.
- DROP BOX LOOM**:—A loom having a drop box on either one or both sides.
- DROPPINGS**:—The primary impurities removed from cotton during the processes of picking and scutching. Proper droppings are termed *Pea* droppings, faulty ones being known as *Fatty* droppings.
- DRUGGET**:—A coarse woolen, felted or woven fabric, either of one color or printed on one side, used as a rug; finer grades of the same being used for table and piano covers.
- DRY GOODS**:—Textile fabrics, as cloth, shawls, blankets, ribbons, thread, yarn, hosiery, etc.
- DUCAPE**:—A medium grade of a corded silk fabric.
- DUCHESS SATIN**:—A superior quality of satin, of good body and high lustre; usually made in black or plain colors.

DUCK:—A heavy, coarse fabric, but lighter and finer than canvas, woven from coarse cotton yarn, with a plain weave. Commonly used where a strong, heavy fabric is necessary, as for small sails, awnings, etc.; but is also used for making men's and women's garments for summer wear, in which case, however, only lighter weight fabrics are used. Usually finished white or unbleached, but sometimes dyed, for specialties.

DUNG:—The process in calico printing to remove superfluous mordant by immersing the fabric in a dung bath, consisting of a mixture of cow's dung and chalk in warm water.

DUNGAREE:—A coarse textured cotton fabric worn by sailors when working.

DUNROBIN:—A fine textured Scotch plaid.

DUPION:—A double cocoon formed by two silkworms spinning together; also silk of such cocoons.

DUTCH CARPET:—A cotton and wool floor covering.

DYE BECK:—A name sometimes used for dye bath.

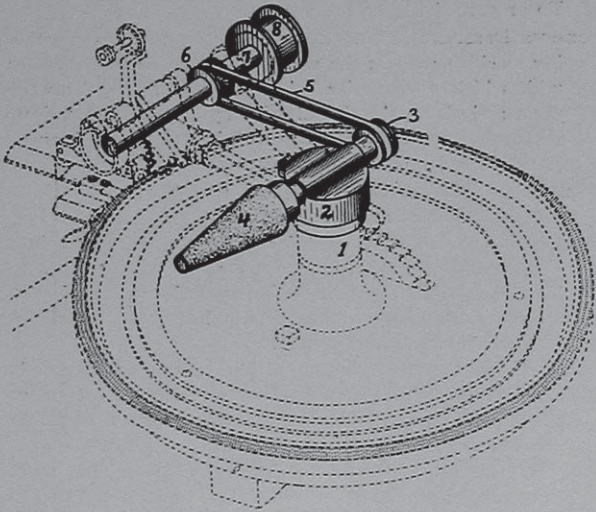
DYEING:—The process of fixing colors on fibres, yarns or cloth.

DYER:—The one engaged in the business of dyeing.

(To be continued.)

A Winding Attachment for Loopers.

Loopers are provided with attachments for cutting off waste courses from the end of the stocking after the same has been looped, but this leaves a rough edge at the loop where the ends are brought together, as in the toe of a stocking, and is objectionable. For



this reason, in the better grade of stockings, the operator unravels two or three courses until the loop is reached, as this makes a much better finish at the end of the fabric. However, operators object to this hand unraveling process as it is very tedious. To dispense with this tedious process of unraveling by hand is the object of the new attachment, the use of which, as will be readily understood, at the same time dispenses with the cutters in the looper used in removing the waste courses.

The accompanying illustration is given to explain the procedure. In this illustration a specimen of a looper, with the exception of its shaft, is shown in dotted lines and the new device in outlines and shaded, so as to show up prominently against said looper.

Examining this illustration we find mounted and secured by means of a set screw, on the top of the centre bearing 1 of the looper, a cap 2. A shaft (not seen in illustration) extends through this cap and has secured to it at one end a pulley 3 and to its other end a cone 4, provided with a comparatively rough surface, or if so desired the same may be covered with felt or rubber. 5 shows a driving band passing around pulley 3, and around pulley 6 as is secured to the shaft 7 of the looper and which shaft is driven by a belt passing around the pulley 8 as is secured to its outside end.

In using the attachment the end of the waste course is placed upon the revolving conical winding head 5, and as the head revolves the thread is caught up and wound upon it; as the thread is wound upon the head it will unravel to the looping point, where it is severed. The band 6, which drives the shaft 2, is made sufficiently loose that it will slip when any severe tension is placed upon the thread, so that it is impossible to draw the thread past the looped course, the fabric being held at the periphery of the dial by the quills in the usual manner.

A Double Acting Knitting Machine.

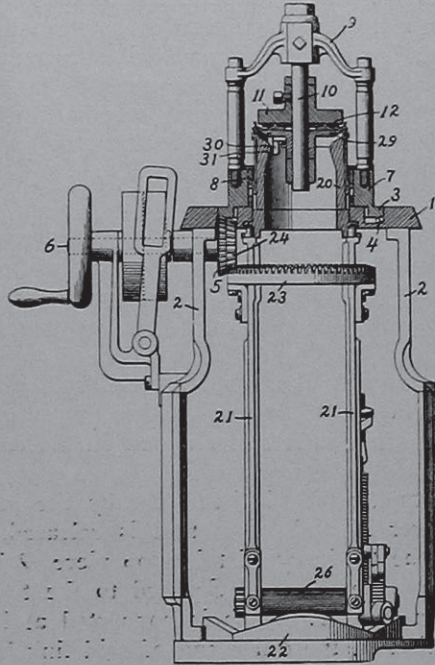
Every visitor to the exhibition of the last Hosiery and Knit Goods Manufacturers' Convention in Philadelphia, will remember this machine, then claimed for it by its patentee, that it produces double the quantities of goods in a given time as compared to single action knitting machinery of any standard make, at present built, a feature which, if proven a success, would correspondingly have reduced the demand for knitting machinery about one half, certainly an item of the greatest of importance to knit goods manufacturers and builders of knitting machinery.

Considering the principle construction of this machine, from a technical point of view, then suggested at once that there are obstacles present which will not permit such a double production neither one towards it, however we are glad to note that said mechanism has been awarded sufficient novelty to have a patent granted and for which reason, as well as to satisfy the curiosity of knit goods manufacturers who were not able to visit said convention and see this machine, and who possibly heard or read about it, we are now able to give an illustrated description of the gist of the construction and operation of the mechanism.

Considering any one of our different makes of circular knitting machines in the market, we find that either the needle cylinder is held in a fixed position while the cam cylinder is made to rotate, or vice versa, the latter held in a fixed position while the needle cylinder is made to rotate.

THE GIST OF THE NEW CONSTRUCTION of a knitting machine consists in rotating against each other these two cylinders, or in other words, obtaining the same result as if doubling the speed of a present make of a circular knitting machine. Allowing some reduction in wear to the gearing in favor of the new arrangement, it must be remembered that for a doubled pro-

duction, those parts of the mechanism which do the knitting, must perform double the amount of work in a given time, with its consequent wear and tear. Again such a special high speed on any mechanism may be found to work all right for a short time, a



few hours or so and while then under the care of an expert, but when subjected to every day mill life some of those high speed affairs soon become a costly experiment to a mill.

THE WORKING OF THE NEW KNITTER is readily explained by means of describing the accompanying diagram of a rib frame and which can be of any make. In said illustration 1 indicates the bed plate, 2 the standards, 3 the annulus which is provided along its lower outer edge with a rack 4, meshing with bevel gear 5, fast to the main driving shaft 6.

7 is the cam cylinder, 8 the knitting cams, and 9 the yoke provided with stem 10, upon which is secured the dial cam plate 11, having the dial cams 12, for operating the dial needles. 20 is the needle cylinder, supported by the uprights 21, which stand upon the plate 22, as is supported for rotation upon the base of the machine. Uprights 21 carry bevel gear 23, which meshes with the bevel gear 24 also secured to the main driving shaft 6. The takeup rollers are indicated by 26, and are driven in the usual way.

The dial 29 is free to rotate upon the stem 10, beneath the dial cam plate 11, but is held in fixed relation to the needle cylinder by the engagement of its lug 30, with a lug 31, in the needle cylinder 20.

From explanations given, it will thus be seen that when the main shaft 6 is rotated, the needle cylinder 20 and dial 29 are driven in one direction, while the cam cylinder 7, and dial cam plate 11 are driven in the opposite direction, hence the high speed to the knitting mechanism, proper.

A STUDY OF KNITTING.

(Continued from page 57.)

The Rib Top Machine.

In order to show more in detail the connection between the pattern wheel and the movable cams, diagrams Figs. 24, 25 and 26 will be referred to. Fig. 24 will be used to show how movement is given to the bob pin. Fig. 25 shows the diagram of the levers, as actuated by the bob pin, for operating the movable cylinder cam; and Fig. 26 shows a diagram of the levers, as actuated by the bob pin, for operating the dial cam.

Referring to Fig. 24, the pattern chain cylinder *A* is fast on the shaft *B* which is driven through gears and a measuring wheel from the take-up of the knitted fabric. The pattern wheel *C* is loose on the shaft *B* and is driven by the reciprocating pawl *D*. As was mentioned, on one side of the pattern wheel, the pattern screw pins are placed in rows of holes 1, 2, 3 respectively, while on the other side, a screw pin is used, being placed in row 2, in order to throw the pattern wheel out of action. This is done by having the pin come under the arm *E* and raises it, which in turn comes under the pawl *D* and raises it out of contact with the ratchet on the pattern wheel *C*. Before the pawl *D* can again engage the ratchet, the arm *E* must drop. This is accomplished by having a

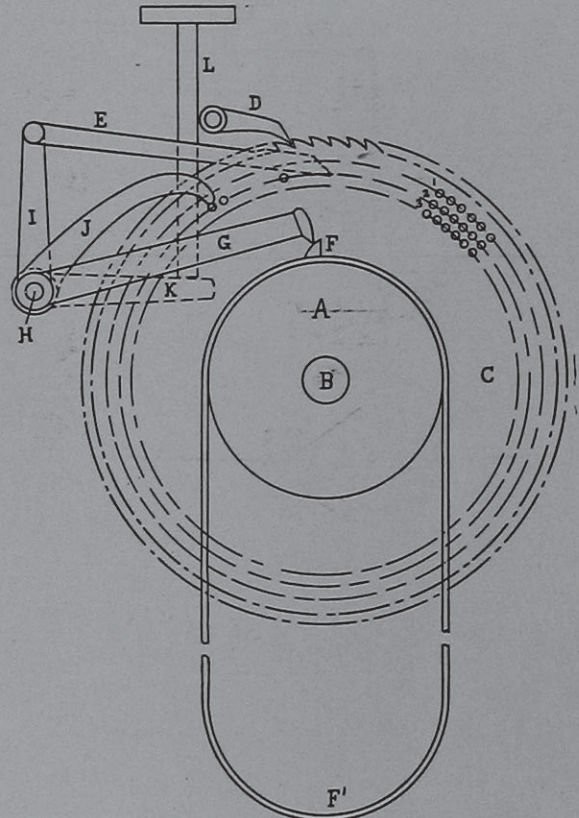


FIG. 24

raiser *F* on the pattern chain *F'* come under the lever *G* and raise it. This lever is centred at *H* and has an upwardly projecting arm *I*, which is attached to the rear end of the arm *E*, so that when the lever *G* is raised, arm *I* goes slightly backwards, carrying the

arm *E* with it, thus taking it off of the screw pin which previously raised it, and allowing the pawl *D* to again engage with the ratchet.

Centred at the same point *H*, but not connected with the lever *G*, is an arm *J* with its other end rest-

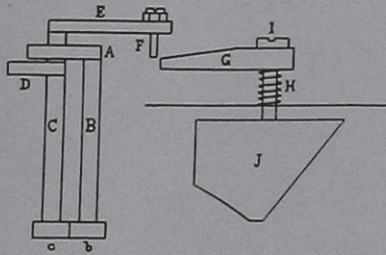


FIG. 25.

ing on the pattern screw pins of the pattern wheel *C*. On the same collar with this arm *J* is the arm *K* which supports the bob pin *L*. By placing the pattern screw pins in different holes on the pattern wheel, when it revolves, the arm *J* is given an upward or downward movement to correspond to the placing of these pins, and through the arm *K*, the bob pin *L* is raised or lowered accordingly.

It was mentioned that when a screw was in the top hole of the pattern wheel, the movable cylinder cam was operated to make the slack or loose course

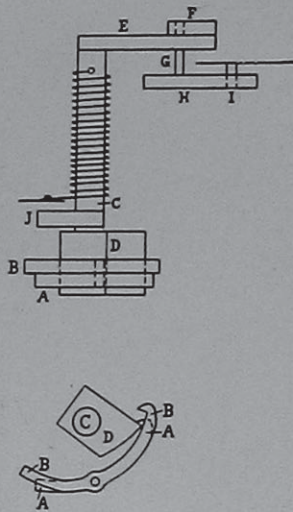


FIG. 26.

stitch. Referring to diagram Fig. 25 for the details of this operation, this motion is placed on the cam cylinder and consequently revolves with it. The diagram shows more the action of the parts on each other than their relative positions on the cylinder. A top finger *A* projects from the cylinder and is fastened to a rod *B*, the lower end of which carries a small gear *b*, which meshes with a similar gear *c* on the end of the rod *C*, this rod *C* also carrying a projecting finger *D* situated just under the finger *A*. Secured to the top of the rod *C* is a lever *E* carrying at its end a projecting screw *F*. As the cylinder revolves, the finger *A* strikes against the bob pin (previously explained) and is pushed in. This action gives the rod *B* a left hand movement, the rod *C* a

right hand one and consequently the lever *E* is moved inwardly, causing the projecting screw *F* to come in contact with an inclined surface plate *G* and pushes it down against the action of the spring *H* which is on the screw *I* connecting the plate *G* with the movable cam *J*. By thus lowering the cam *J* with this movement, the desired loose course stitch for the fabric is obtained. To get said cam to its normal position, a screw pin is put in the second hole on pattern wheel, which causes the bob pin to be struck by the finger *D* and thus throw the projecting screw *F* off of the inclined surface plate *G*, and when the spring *H* raises said plate and the cam *J* to their normal positions.

THE METHOD OF OPERATING THE MOVABLE DIAL CAM is similar to the one just described and is shown in diagram Fig. 26. As was mentioned, the dial cam is used to make the welt, and first has to go in half way for one stitch and then entirely in for two stitches. A finger *A* is used for the half way movement while a longer finger *B* makes the entire movement. This motion is also situated on the cam cylinder. A spring controlled rod *C* has a stop piece *D* at the bottom, which is held first by the inner end of the finger *A* and when that is released, by the finger *B*, the tendency of this stop piece *D* being to revolve past the fingers. Secured to the top of the rod *C* is a lever *E* which is connected at its other end to a link *F*, the other end of said link being attached to a peg *G* projecting up from the movable dial cam *H* (see *A*, Fig. 22) as pivoted at *I*.

When the bob pin is struck by the finger *A*, the stop piece *D* is released until it comes to the finger *B*, the movement of the rod *C* being transmitted, through the levers shown, to the cam which is moved half way in to give that stitch. On the next revolution of the cylinder, the finger *B* comes against the bob pin (see *L*, Fig. 24) and the stop piece *D* is entirely released, thus giving a rotary movement to the rod *C* which in turn, through the levers shown, moves the cam *H* entirely in and causes the lost stitch. When two stitches have been lost, the cam is brought to its normal position by having a finger *J* as attached to the rod *C*, strike against the bob pin and cause the rod *C* to revolve in the opposite direction to its first movement. This causes the levers mentioned to move the cam *H* out to its normal position for plain knitting. It will be seen from the foregoing explanations that it is necessary for the pattern wheel to revolve when putting in the special stitches, but for the plain stitch, its use becomes unnecessary.

THE TAKE-UP for the knitted fabric consists principally of a swinging frame carrying a pair of fluted rolls between which the fabric is held. These rolls are geared from a shaft having a grooved pulley attached to it. Another grooved pulley on the driving shaft of the machine drives the bottom pulley through a rope when the tension is sufficient, because the bottom pulley is carried by the swinging frame. The rolls are weighted by weights shown in front of the machine. This weight acts to put tension on the fabric and as the latter is being produced, the weight

descends, carrying the swinging frame with it. When the latter has descended far enough to cause the rope to grip the pulleys, the fluted rolls are revolved through gearing from the pulley, and thus work themselves up on the fabric, carrying the swinging frame with them. As soon as the rope becomes slack again from this movement, the revolutions of the rolls stop and the swing frame begins to descend again. In this manner a constant and even weight is put on the fabric, which in turn will give a smooth fabric.

STOP MOTIONS are also provided on the machine, one for controlling the feed of the yarn and another for controlling the delivery of the fabric, in either instance the absence of material causing the machine to stop with the brake applied. These stop motions, *i. e.*, their construction and operation, have nothing directly to do with the principle of knitting of the machine, their chief function being to insure a perfect fabric, reduce waste of yarn to a minimum and production of the machine at the same time to its maximum capacity.

A New Silk Dyeing, Washing, and Stripping Machine.

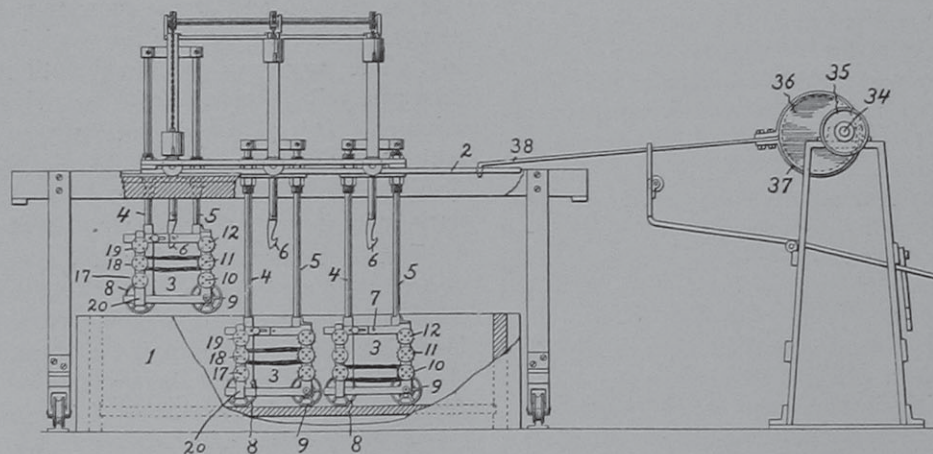
The object of the new apparatus is to provide improvements whereby the skeins of silk, during any of the above mentioned processes, are made to travel back and forth on their carrying sections, while the carrying sections simultaneously are caused to travel back and forth within the tank, so that the skeins are submitted to a thorough action by the liquid within the

rise two parallel rods 4, 5, which are fitted to slide vertically through the bar 2 of the yarn frame. Sections 3, for loading or unloading, are held in their raised position by a hook 6 depending from the bar 2, which hook is arranged to engage a pin 7 on the skein carrying section, the latter being provided with two traction wheels, 8 and 9.

Each section 3 is provided with means for carrying a plurality of silk skeins, horizontally upon both sides thereof as follows: Three rotary shafts 10, 11, 12, extend transversely through the framework 3 of each section, in a vertical line over the traction wheel 9. These shafts are rotated from the traction wheel 9 through a train of gears (not shown). Stationary shafts 17, 18, 19 project from adjustable bars 20, upon opposite sides of the framework 3 of the skein carrying section, in a line above the traction wheel 8, said shafts corresponding respectively to the shafts 10, 11, 12. Each of the latter is provided exterior to the framework 3, upon both sides of the skein carrying section, with disks which are fixed to rotate with the shaft.

Each rotary shaft is provided with a skein reel, which reel is arranged to be conveniently locked to and released from its disk. The other reel of each pair of reels is not locked to and released from its shaft, but is free to rotate thereon, the driving of one of the reels of each pair being sufficient to cause the skein to travel around its pair of reels.

The means for reciprocating the skein carrying



tank when the machine is in operation. Means are also provided for conveniently loading or unloading skeins of silk from their carrying reels.

The accompanying illustration shows so much of a dyeing, washing and stripping machine, in side elevation, as is necessary to be given to obtain, in connection with numerals of references quoted, a clear understanding of the location of the parts and the means for reciprocating the skein carrying sections within the tank.

1 indicates the tank, within which the skeins of silk are to be treated, *i. e.*, immersed in the liquid. 2 is a longitudinal bar of the yarn frame, each section of said frame comprising a framework 3, from which up-

sections within the tank 1, comprises a rotary horizontal shaft 34 having a pulley 35 driven from any source of power. An eccentric 36 is fixed to rotate on the said shaft and which eccentric is provided with a strap 37 carrying a longitudinally extended hook bar 38, the end of which is fitted to removably engage the longitudinal bar 2 of the yarn frame.

For loading, the pair of skein reels upon which it is intended to place a skein are moved outwardly a sufficient distance to permit the skein to be placed thereon without interfering with the skeins on adjacent pairs of reels. The reels are then permitted to be moved inwardly by their springs, thus causing one of the reels of the pair to be locked to its rotary shaft.