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Table of Contents

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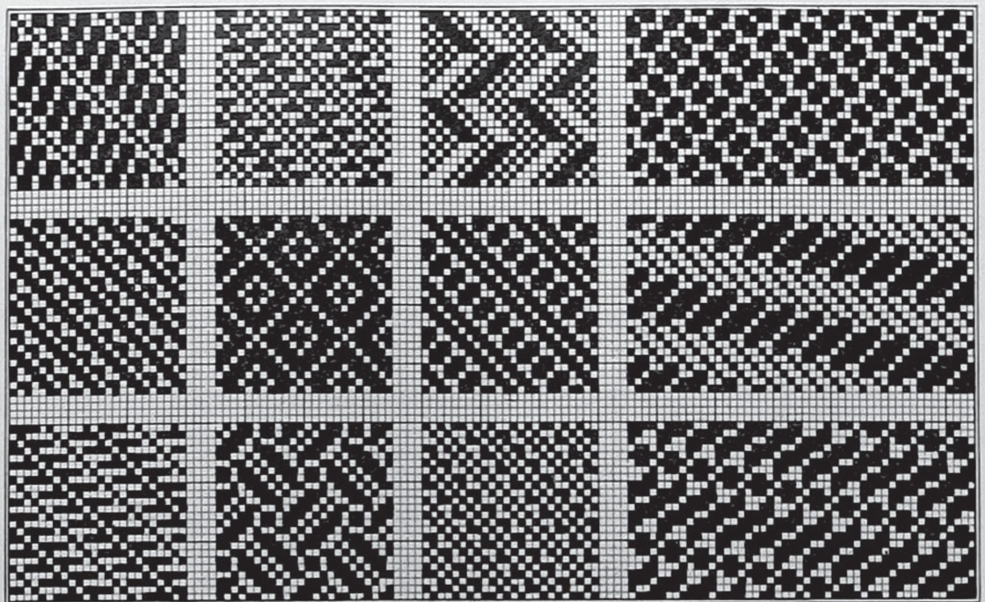

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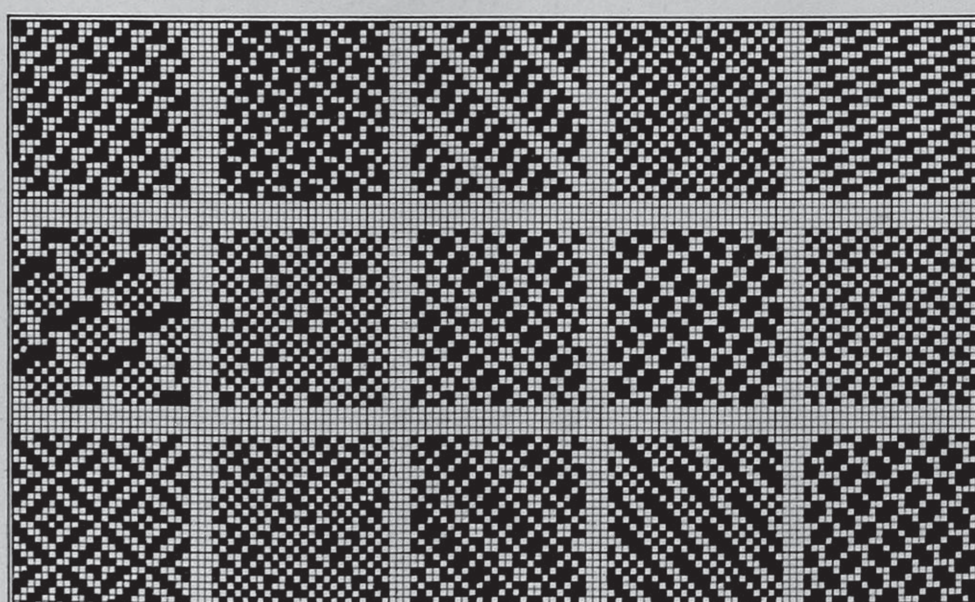

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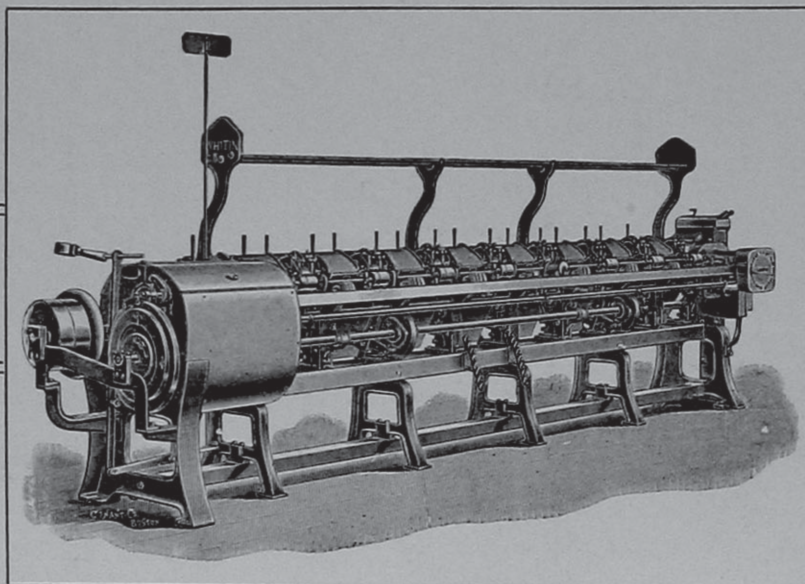

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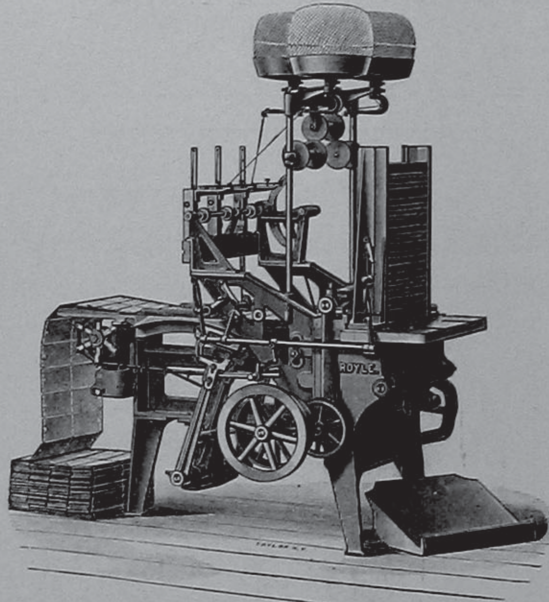

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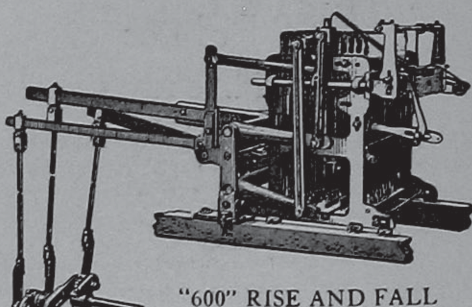

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Posselt's Textile Journal

Vol. V. September, 1909. No. 3.

A PRACTICAL TREATISE ON THE KNOWLES FANCY WORSTED LOOM.

By E. P. Woodward, *Master Weaver.*

(Continued from the June issue.)

Intermittent Chain Drives.

There are a number of different devices for driving the indicating chains.

The chain drive in general use is known as a continuous drive. By this is meant, the speed of the chain is the same at all times. This motion is driven by concentric gearing.

The intermittent chain drive is used in order to keep the vibrator levers at their indicated positions for a greater length of time than is possible when using the continuous chain motion. This admits setting the harness section cylinder gears farther ahead of the box section (when necessary) than could otherwise be done. The intermittent motion may be of the *star wheel* and *pin drive* type, giving a chain motion as follows: A part of the time the chain is not moving, and when it does move the motion is very snappy and quick.

Another method of driving the chains is by means of a combination of eccentric and concentric gearing. This is a device which is not as much used now as it formerly was.

There are two other devices for giving this varying speed to the chains. They can be described as being of the *mutilated gear and pin wheel* type.

One of these devices has six slots (equi-distant on the circumference of the mutilated chain shaft gear) in which the pin wheel, or arm carrying a stud, engages. This arm is mounted on the segment gear which imparts to the gear on the chain shaft its slowest motion or speed. This construction of a chain drive operates the indicating chains as follows: During the time the vibrator levers are held in indication, the small pinion segment gear is driving the chain shaft at its slowest speed. Just as the indicating time of the vibrator levers is finished, the arm (which is mounted as one piece with the segment gear and revolves on the same centre) engages with the slot in the mutilated chain shaft gear. This arm, describing a much larger circle than the segment gear, must move the chain shaft faster than it has been going.

On account of its construction, this arm moves the chains during the time of changing the vibrator lever indications only. For the same reason, it starts the change at about the same speed as the segment gear has been driving the chain shaft, gradually increasing to the half of its change, and then diminishing the speed gradually—finishing its part of the drive at about the same speed as the re-engaging speed of the segment gear will give.

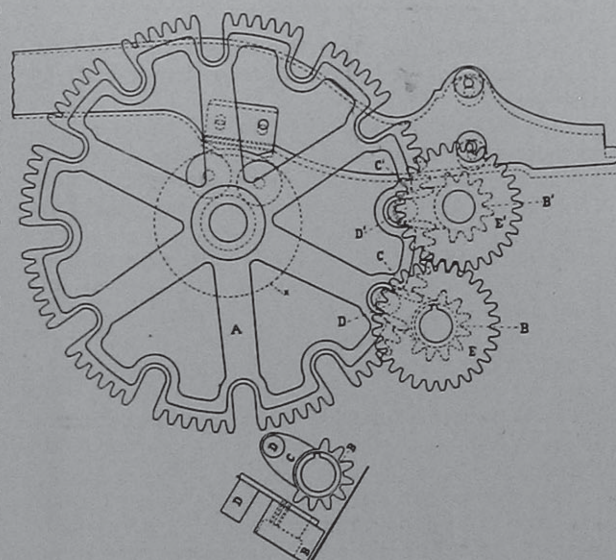
The other device is constructed on the same principle as the one just described and consist of:

(1) A mutilated chain shaft gear *A*, built with twelve slots, equi-distant on its circumference.

(2) Two segment gears *B* and B′, each with an accompanying arm *C*, *C′*, and stud *D*, D′, respectively.

(3) Two gears E and E′, of a pitch diameter equaling the distance between the two centres on which these gears revolve.

The accompanying illustration shows the different parts as follows:



CHAIN DRIVE.
¼ actual size, showing true proportions and running of parts.

A is the chain shaft gear with twelve recesses or slots, placed at equal distances on the circumference of the gear.

B, *B′* are the splined and recessed segment pinion gears.

C, *C′* are the radial arms carrying ½″ diameter studs *D*, D′ respectively. These studs fit the width of the respective slots in gear *A*.

The segment gears *B*, *B′* and the arms *C*, C′ and their studs *D*, D′ are built as one piece, the arms *C*, C′ turning on the same axis as the respective gears *B* and *B′*.

B and *B′* correspond, so do *C* and *C′* as well as *D* and *D′*.

Segmental gear *B*, arm *C*, and stud *D* are timed and fixed to gear *E*, and in the same way, gear *B′*, arm *C′* and stud *D′* are timed and fixed to gear *E′*. Gears *E* and *E′* mesh and are the same in diameter.

E is the splined gear, being bored to fit the lower cylinder shaft and recessed for part of its bore to allow the gear to turn freely on the lower cylinder shaft, when the reverse key is half way out. The rest of the distance of the bore is splined to fit the key.

It is apparent, from the illustration, that the stud on the arm *C* is located on a line bisecting the gear and projecting midway between the first and last cog of its segment gear.

This gives the construction of the chain drive in necessary detail. The assembling would be accomplished as follows:

(1) Place gear *A* on chain shaft with its set screws loose.

(2) Place segment pinion gear *B* and double reverse gear consisting of gears *B'* and *E'* in position with gear *A*. It is apparent that this double reverse gear consists of a segment gear and its arm, and a large concentric gear, all fastened together and revolving as one piece on the same stud.

With these parts assembled, the head can now be timed as follows:

(1) Tighten one set screw on gear *A* and turn chain shaft forward until vibrator levers start to change.

(2) With chain shaft held in this position, turn cylinder gears forward until the top cylinder gear on the box motion has thrown its vibrator gear. With all cylinders held in position, as described, loosen set screw in gear *A*, and turn gear on chain shaft forward until the stud on segment pinion gear engages the slot in gear *A*. Both set screws can now be tightened and the key ways of segment pinion gear and chain shaft will be found to be in line.

(3) Place reverse key in position to hold its pinion gear for forward chain drive, and turn all cylinders forward by means of hand wheel, until the vibrator levers have finished indicating, *i. e.*, reached their extreme positions.

(4) Loosen set screws on harness cylinder gears and turn both forward until first tooth of cylinder gears engage with their vibrator gears. Set screw cylinders to this position, and the forward timing is completed.

To time head for the reverse motion of the chains:

(1) Turn all cylinders backwards by means of hand wheel until vibrator levers are at half change.

(2) With all parts held in this position take out reverse key and place reverse pinion gear on the lower cylinder shaft with the key way of the gear in line with the key way in the shaft. The reverse time will now be found to be identical with the forward timing of the chains, and the cylinders set to the limit of the chain time. The lock knife finger and cam, can now be timed and located as described in detail, in previous article on *"Timing the Head."*

The head, when properly timed as here described, will show all gears and parts described in position exactly as shown in the illustration.

The latter shows the chain drive with the indicating chains at half change.

To assemble the parts quickly and methodically it is always better to start the timing from the finish of the indicating time of the chains, and the gearing contact of the box vibrator gears, as has been described in a previous, as well as the present article.

This method of timing the head *starts* at what should be the *beginning*, and *finishes* at the *end*.

The fixer has exactly the same principles of timing to consider when working on this chain drive, as are involved in the continuous one, the only difference being the mechanism.

When placing the segment gears in position with the chain shaft gear, it can be readily done in the following manner:

Turn chain shaft gear until its own centre, and centre of slot in gear are on a line drawn through centre of chain shaft gear and extending through the centre of lower cylinder shaft.

Place segment gear (on lower cylinder shaft) with the gear part in mesh with chain shaft gear, and the centre of stud on the arm standing on this line.

Place double reverse gear in similar relation with gear *A* and all centres involved.

When the segment gears have been turned half way around by the chain shaft gear, the studs will each be found in their respective slots, as shown in drawing.

Detail illustration shows the segment gear, consisting of gear *B*, arm *C* and stud *D*. The cogs have been left off, to better show the construction of the gear. It is machined from one piece of steel.

Dotted lines show recessing for release of reverse key. Dotted lines of vibrator lever show the head and lever at half change of chain time.

It will be seen with head in this position, that the chain rollers are exerting an equal pressure on each side of the chain runs and the reverse pin can be moved from one gear to the other without resistance from the pinion gears.

The lower segment gear is called the forward pinion gear.

The upper segment gear with its accompanying gear *E'* is called the double reverse gear. The reverse pinion gear is gear *E*.

Reverse key and collar are not shown, since they are the same as are common to the continuous chain drive.

When laying out this chain drive, the designer had in mind everything that the fixer could require so far as early changing of the harness cylinders and latest changing of box cylinders at the same time, is concerned. With this chain drive properly timed it is well within the compass of the head to set all cylinders to any position in which they need run in conjunction with any reasonable timing of the picking motion and have every part involved moving smoothly and safely and not in any way crowding in any part of the entire motion.

It was built to admit of setting the shedding motion as far ahead of the picking motion as the shuttle time will permit, and it has fully accomplished its object.

Where an intermittent chain drive of this type is desired this will prove very simple and satisfactory if properly cared for.

(To be continued.)

New Pattern Mechanism for Whitin Loom.

In this new device, of the Whitin Machine Works, to their looms, arrangements are provided for simultaneously controlling the shedding and the box chain mechanisms. The new device can be readily added, at a low cost, to looms put in the market previously to the introduction of this new device.

Fig. 1 is a side view, in elevation, of a Whitin Dobby, having the new mechanism applied to it; Fig. 2 is a front view of Fig. 1, with parts broken away in order to more clearly show details of the mechanism.

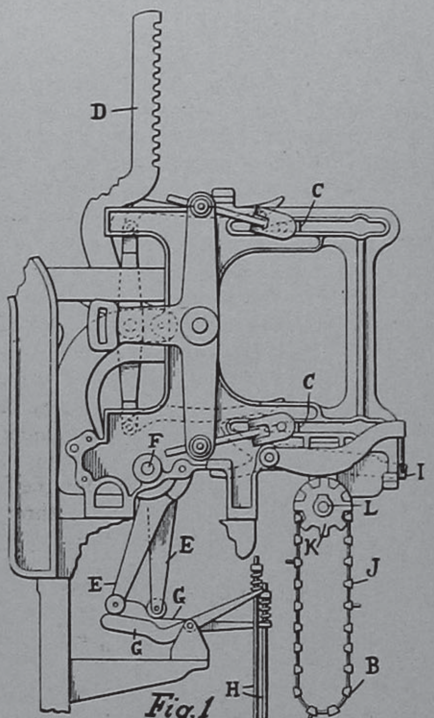


Fig. 1

In the operation of the loom, certain of the indicator levers *A* are lifted and certain of them left quiet, in accordance with the arrangement of the pegs on the pattern chain *B* traveling beneath them, which causes the corresponding levers *A* to become coupled with the reciprocating knife bars *C* and thereby swung forwardly.

Certain of the levers, such as *D*, are not intended to be brought into operation by the pattern chain *B*, although they may be so controlled if desired. These levers *D* have depending arms *E* extending below the fulcrum shaft *F*, and into engagement with one or more horizontal lifter levers *G*. The latter are fulcrumed on a stationary bracket of the loom frame and are connected at their free ends with the lifter rods *H*, which are the means for shifting the shuttle boxes (not shown). Arms *E* engage with the levers *G* by means of the rollers at their ends.

The indicating levers *I*, which correspond in position to the pattern levers *D*, although located in position where they might be actuated by pegs in the pattern chain *B*, are connected for operation by separate means located on the rear side of the dobby. Such means comprise a second pattern chain *J* on a drum *K*, secured to the extended projecting end of the shaft *L* beyond the drive gear *M*, and driven thereby through the slip clutch, the same as the chain *B*. Two chain levers *N*, pivoted on the fixed stud *O*, extend over the chain *J* in position to be operated by the pegs thereon, and at their forward ends are turned in a lateral direction around the front edge of the dobby frame, to a point somewhat above the protruding ends of the indicator levers *I* previously referred to, and to which they are respectively connected by the links *P*.

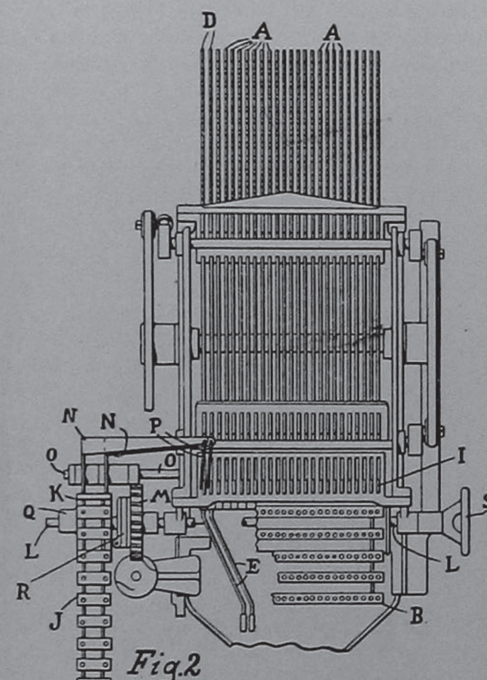


Fig. 2

The chain drum *K* is secured to the shaft *L* by its boss *Q*, and is recessed on its side nearest to the dobby, so that the spring and adjacent parts of the slip clutch *R* can be compactly housed within it.

In the operation of the loom, the shed pattern chain *B* and the box pattern chain *J* are driven in unison by shaft *L*. Chain *B* controls the warp pattern, and chain *J* the filling pattern by means of the levers *N* and their connections with the levers *D*. Each chain is separately made up and can be of different lengths, if so desired.

In case of a mis-pick or any other cause necessitating the turning back of the harness and the box chain, they are then rotated by hand, in unison and without confusion of the patterns, by utilizing the hand-wheel *S*, *i. e.*, when the weaver has found the proper pick, he at the same time has set the proper box.

The Mason Machine Works, Taunton, Mass., are so rushed with orders for their Machinery, that they are compelled to run over-time. They are booked well up into 1910 with orders.

DESIGNING AND FABRIC STRUCTURE FOR HARNESS WORK.

Corkscrew Weaves.

Corkscrew Weaves, or for short Corkscrews, are double twill effects, or what we might also call, oblique, warp effect, rib weaves. Similar to the latter system of weaves, they require a high warp texture, the filling, except where required to show on the face for special figured effects, resting imbedded between said warp threads; being neither visible on face or back of the structure.

Corkscrews have for their foundation the regular, *i. e.,* 45 deg. twills, and are obtained from the latter by means of double draws. The lowest number of harnesses for designing corkscrews is 5, after which they can be designed for any number of harnesses; although 13 is the highest number of harnesses used in connection with regular corkscrews. We will now describe the construction of a few of the most often used corkscrews, and from which any corkscrew, for any number of harnesses, or any fancy effect desired, may be designed.

Regular Corkscrews for Uneven Number of Harness Repeat.

Fig. 1 shows us the $\frac{3}{2}$ 5-harness regular twill.

Diagram Fig. 2 shows us a double draft, which, if applied to the 5-harness twill previously quoted, will result in the 5-harness corkscrew, shown in Fig. 3, the same repeating on 5 warp threads and 5 picks; four repeats warp ways and two repeats filling ways being given to more clearly show the nature of this weave, as well as its construction.

The double draw below diagram Figure 2 is given in two kinds of type; *white dots* showing one draw, and *black dots* the other section of this double draw, and in this way explains the construction of corkscrews from the regular twills by means of these double draws.

With reference to Fig. 3, all the warp threads painted in *full* squares, will join each other and form one twill effect line on the face of the fabric. In the same way will all the warp threads shown by *cross* type join each other, in this way forming the other twill effect line of the corkscrew, the filling resting between the two twills, since where one of the series of warp threads forms face with one twill, the other series of warp threads forms the back, and vice versa; thus hiding the filling.

In some instances these 5-harness corkscrews may be used as filling effect, *i. e.,* giving the filling a chance to show somewhat on the face for the fabric, in this instance using *empty* squares of weave Fig. 3 for risers, when building the harness chain, *full* squares and *cross* type being then considered as sinkers. The corkscrew is used in this style with low textured, fancy worsted suitings, both in plain as well as mixes, said corkscrew weave in this instance resembling a granite, the filling showing through at the joining of the twill lines, on the face of the fabric.

Fig. 4 shows us the 7-harness corkscrew, as obtained by means of its double draw from the $\frac{4}{3}$ 7-harness regular twill, the corkscrew repeating on 7 warp threads and 7 picks; four repeats warp ways and two repeats filling ways being given to more clearly show its construction. The type used in painting the weave is the same as used in connection with weave Fig. 3, to simplify explanations.

These two corkscrews are the ones most frequently met with, and they will explain the construction of any corkscrew for any number of uneven harness repeat.

Corkscrews for an Even Number of Harness Repeat.

Six harnesses is the lowest number for a foundation twill from which these corkscrews can be designed, giving us in every instance a choice of two foundation twills for every number of harness. For example, in connection with 6-harnesses, we may use either the $\frac{3}{3}$ 6-harness regular twill, or the $\frac{4}{2}$ 6-harness regular twill, as the foundation. The first mentioned foundation twill will produce a twill line in which the filling will show in one instance near one of the lines, whereas the second quoted foundation twill will produce a rather close covered face, the twill lines somewhat overlapping into each other, *i. e.,* joined twill effects being produced.

Fig. 5 shows us the corkscrew obtained from the $\frac{3}{3}$ 6-harness regular twill, the corkscrew repeating on 12 warp threads and 6 picks. One repeat warp ways and two repeats filling ways are given in connection with weave Fig. 5. It will be understood, from this example, that corkscrews having regular twills of an even number of harnesses for their foundation, require twice the number of warp threads for their repeat that their foundation twill calls for, *i. e.,* 6-harness foundation twills will call for 12-harness for the repeat of its mate corkscrew. The latter then can be woven either on a 12-harness straight draw, or in connection with a fancy draw on 6-harness.

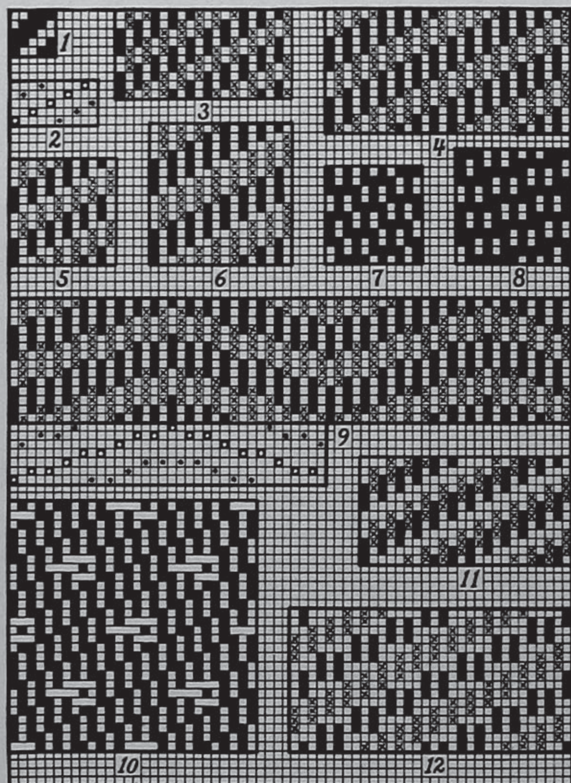
Fig. 6 shows us one of the two 8-harness corkscrews possible to be designed, having for its foundation the $\frac{4}{4}$ 8-harness regular twill. Its mate corkscrew is the one having for its foundation the $\frac{5}{3}$ 8-harness regular twill. Explanations given in connection with Fig. 5, will explain weave Fig. 6, as well as that of its mate corkscrew, of which no weave is given.

Satin Effect Corkscrews.

Under this system of corkscrews we classify, more particularly, two special corkscrew weaves, extensively used for Piece Dye Worsted Suitings and Coatings, *i. e.,* the 11 and 13-harness corkscrews, as commonly called.

Fig. 7 shows us the 11-harness corkscrew having for its foundation $\frac{4\ \ 3}{2\ \ 2}$ 11-harness, regular twill; the corkscrew being obtained from the latter by what we call a satin draw, *i. e.,* using the 11-harness satin: 1, 5, 9, 2, 6, 10, 3, 7, 11, 4, 8, as the draft by which to obtain this 11-harness corkscrew from foundation twill quoted. The same as in the previously quoted examples, alternate warp threads join in the formation of the twill lines on the face of the fabric, and which twill lines in this instance will be *more flat,* compared to the twill lines in the previously explained corkscrews. At the same time the variations of the warp float will change, considering either twill line in the repeat of the weave; one warp thread floating over 4 picks, the other over 3 picks.

Weave Fig. 8 shows us the 13-harness corkscrew, and which in this instance has for its foundation the $\frac{5}{2}\frac{4}{2}$ 13-harness regular twill. Explanations given



in connection with weave Fig. 7 will readily explain the construction of the present corkscrew weave, and which is obtained from the regular twill quoted by means of satin draw 1, 5, 9, 13, 4, 8, 12, 3, 7, 11, 2, 6 and 10.

CURVED CORKSCREWS.

One example is given to explain this sub-division of corkscrew weaves.

Fig. 9 shows us a curved corkscrew, having for its foundation the $\frac{4}{3}$ 7-harness regular twill. The draw for the curved corkscrew is given below the weave and will explain the construction of the latter without any further comment; the draw actually illustrates the corkscrew, since they both go hand in hand, *i. e.,* the double draw effect of the drawing in draft, and the double twill effect of the corkscrew. The repeat of the weave is 36 warp threads and 7 picks, and which if using foundation draw as given below the weave for its drawing in draft, can be woven with 7 harnesses, using the foundation twill for its harness chain.

FILLING SPOTTING.

Corkscrews are warp effects, *i. e.,* the warp forms the face. In some instances it may be desired to form spots upon such warp face structures, by means of floating the filling in small spots, after a given motive.

Fig. 10 is an example, and which will readily explain the formation of additional effects, if so desired. It shows us spotting after the plain motive upon a 7-harness corkscrew weave as was shown in its pure state in Fig. 4. The repeat of this spotted corkscrew is 14 warp threads and 14 picks: two repeats each way being given in order to more clearly show the motive of the spot effect.

Fig. 11 shows us another way to spot with the filling, *i. e.,* shows three twill line effects in the fabric, *viz:* one warp twill shown in *square* type, the second warp twill shown in *cross* type, and finally a twill produced by means of the filling, *i. e.,* the filling resting on the face of the fabric over four warp threads. Repeat of the weave is 12 warp threads and 6 picks; two repeats each way being given to more clearly show the effect.

FIGURED CORKSCREWS.

In this sub-division of corkscrews, any size or form of figure may be produced by arranging a corresponding floating of alternate warp threads.

Fig. 12 is given to explain the subject. Repeat of weave 16 warp threads and 8 picks; two repeats each way are given to more clearly explain its construction.

Questions:

(1) Construct the 9-harness regular corkscrew, obtained by means of a double draw from the $\frac{5}{4}$ 9-harness regular twill.

(2) Construct the 6-harness regular corkscrew obtained from the $\frac{4}{2}$ 6-harness regular twill.

(3) Construct a curved corkscrew from the $\frac{3}{2}$ 5-harness regular twill.

(4) Arrange spotting after the plain motive upon the $\frac{5}{4}$ 9-harness corkscrew, the repeat of the weave to be 36 warp threads and 36 picks, to be woven with a fancy draw on 13 or 15-harnesses, as the case may require, for the weave.

THE MANUFACTURE OF DAMASK TABLE CLOTH.

(*Continued from page 37*)

Fig. 3 shows us such a fabric sketch for damask table cloth, with floral designs used for the centre and the borders. Two repeats of the centre design *B-C* and *C-D* are shown in connection with its joining border *A-B*.

Planning for the tie-up of the loom for the present design, in connection with a 600-Jacquard Machine, we find

A to *B* = 2 inches, ½ % point = 1 inch
B to *C* = 1½ inches

2½ inches

$2\frac{1}{2} = \frac{5}{2}$
$600 \div 5 = 120$

Border: *A* to *B*=1" =$\frac{2}{2}$=2×120=	240	needles
Centre: *B* to *C*=1½"=$\frac{3}{2}$=3×120=	360	"
Margin:	8	"
Selvage:	4	"
Total:	612	needles,

calling for 51 rows of a 600-Jacquard Machine and which is a 52 row machine; thus leaving either one row of the machine empty, or the same may be used up in Centre, Border, Margin or Selvage.

WARP TEXTURE TO USE:

In connection with 51 rows of a 600-machine we have:

FIG. 3

In connection with the Centre, we can only use 8 of the 12 needles, provided the usual 8-leaf satin is used for ground work, since 368 is the next number above 360 which is evenly divisible by 8. In this instance the number of warp threads used will be increased by (8×6=) 48 warp threads, over the figures given later on. The remaining four needles can then

Border: 240×4=	960	warp threads
Centre: 360×6 divisions=	2160	" "
Margin:	80	" "
Selvage:	48	" "
Total:	3248	warp threads

This will give us about one hundred ends less in

FIG. 4

be added to the Border, provided you insist in using the complete 52 rows of a 600-Jacquard Machine. If row *over,* is to be added to Border, it will be an increase of (12×4=) 48 warp threads over figures given later on, provided we then use the full row *over,* increasing in turn the needles used for the Border, from 240 to 252 needles.

the complete warp (a fraction of slightly above one end per inch less) as compared to fabric texture used in connection with the design in Fig. 1. If desired, we may make up some of the difference by means of using a few more ends in margin, again we might use one more centre division, increasing the number of warp threads then by 360, a feature which would result in either a higher textured or a wider fabric structure, *i. e.*, a more expensive piece of cloth to be made.

All designs for damask table cloth have straight tie-ups for their centre divisions, but not all of them use point tie-ups for their borders, a great many of them using straight, and a few, combination tie-ups for these borders. It will be readily understood that using point tie-ups for the borders, will leave us a larger number of the needles of the Jacquard Machine at our disposal for the execution of the details of the design, both for the centre as well as the border. Against this, it will be found that point tie-up does not give the freedom for sketching which a straight tie-up gives.

Fig. 4 shows us a sketch for a damask table cloth, in which the border calls either for a straight or a combination tie-up.

In connection with a straight tie-up for the border you will find:

$A\text{-}B=\frac{15}{8}''$, $B\text{-}C=\frac{14}{8}''$; Total $\frac{29}{8}''$.

Using a 600-Jacquard Machine, and reserving one row for margin and selvage, we find:

$51\times12=612$

$612\div29=21.1$ and

$21.1\times14=295.4$.

296 is the proper number of needles to use for the centre, it being a number evenly divisible by 8, the repeat of the 8 leaf satin, the weave in the present instance desired to be used for ground, and which weave has to repeat all over, *i. e.*, connect properly from one division into the other.

$21.1\times15=316.5$, hence 316 is the number of needles to use in connection with the border.

316 Border, *A* to *B*
296 Centre, *B* to *C*

612
8 needles for Margin
4 needles for Selvage

624 needles, the full capacity of a 600-Jacquard Machine.

CALCULATIONS AS TO TEXTURE.

316 Border × 2 =	632 ends		
296 Centre × 8 Divisions used =	2368	"	+
Margin 40 each side =	80	"	+
Selvage 12 double ends each side =	48	"	
Total,	3128 ends		

If there are not a sufficient number of ends to suit texture desired so as to produce a given quality of goods; provided only a few ends short, increase size of margin; if however, a considerably higher warp texture is desired, arrange compart board and tie-up of the harness for 9 divisions for the centre design, in this way adding 296 ends to the warp. If one division added is too much, add in the same way a fraction of said division only. In this case, some of the leashes of the Jacquard harness will then carry 8 harness cords, others 9. This is the only way out of it, since border cannot be changed.

(To be continued.)

THE MANUFACTURE OF OVERCOATINGS AND CLOAKINGS.

(Continued from page 35.)

C. Velvet Cloth.

In fabrics of this system of Mantel Cloth, the face consists of a short covering, which must be most evenly clipped on the shear so as to give the fabric its velvet like appearance.

The difference between velvet and fur cloth consists that in the first kind of cloth the nap is cut short on the shear, the fibres composing the same, standing straight up, on account of this shortness of the nap; whereas in connection with fur cloth, said fibres are left at the shearing process as long as possible, and for this reason hang, *i. e.*, lie down, more or less, on the face of the fabric. In connection with both fabrics, the nap is produced by means of gigging.

FIG. 62.

Explanations given in connection with fur cloth weaves, also apply to this system of weaves. Be careful to select for the face filling a fine and short material, adding if necessary, a fine quality of noils. The use of long wool fibres for the face filling would result in a loss of material during shearing, hence must be avoided.

To more clearly explain the subject to the readers, diagram Fig. 62 is given, illustrating a section of a velvet fabric, showing the effect of gigging, upon a face pick, technically known as a velvet pick.

As clearly shown by the illustration, said face pick floats over seven warp threads and interlaces below one. The back filling floats similarly on the back of the fabric. This diagram, with reference to its points of interlacing, corresponds to Fur Cloth weave Fig. 47, given in the July issue of the Journal.

D. Fancy Coatings and Cloakings.

Coatings and Cloakings are constantly subjected to fashion, a feature which is the cause of a great many new designs. In order to give prominence to the effect or pattern, a clean face finish is required.

The points to be taken into consideration in the manufacture of these fabrics, is its weight and softness to the touch of the hand.

Face warp and face filling must be brought up on the face of these fabrics equally prominent, and the weave must show up clear and distinct. To accomplish this result, the material selected for the face must not be too short, and possess lustre, for which reason wool fibres of a less wavy character must be used, putting at the same time, a sufficient amount of turns of twist per inch into the yarn. Said twist must run in the opposite direction to that of the twill of the weave. The yarn used for the face of the fabric must be as smooth as possible, obtained by using a long, straight wool fibre.

If having to produce weight to the fabric by means of backing or stuffer picks, be sure to omit the use of a harsh material in the manufacture of these yarns; neither put any more twist than is absolutely necessary into these yarns, so as not to make the fabric hard to the touch of the hand. For the back warp, a lower grade of material can be used, since the same is not visible on the face, and only very little seen on the back of the fabric.

E. Chinchillas and Ratinés.

By this name are classified overcoatings (or cloakings), showing on their face characteristic little knobs or raised wavy ridges. Both effects are produced by the chinchilla machine. Weaves required are either such as were given in connection with *Fur Cloth* on page 23 in the July issue in Figs. 41, 43, 45, 47; or we may use regular double cloth weaves with or without a stuffer. An example of a frequently used weave for these fabrics is given in diagram Fig. 63, page 35 in connection with the plate of weaves given in the August issue of the Journal.

The face and back of these fabrics is produced by the filling, the object of the warp being to hold the filling in its place. For this reason select a strong, healthy fibre, without a special reference to its fineness, for the warp. Frequently cotton or union (cotton and wool mix) warps are used.

Upon the proper selection of the proper materials for the face filling, the entire success of the manufacture of these fabrics depends. The material to be used must be a short, fine staple. The finer the fibre used in the face filling, the easier and better the respective knobs or ridges are formed in the process of finishing the fabric.

Provided we would use a coarse fibre for the face filling, the formation of said knobs or ridges would be difficult, if at all possible to be accomplished.

For the backing or stuffer filling, use a fair quality of material, of not too long a staple, so as not to rob the finished fabric of its soft, spongy handle.

The warp, as used for these fabrics, must have a hard twist, the direction of the twist being of no consequence.

The face filling must be a soft twist, so as to permit easy handling of the fabric in the finishing room.

The counts of the yarn for the face filling to be used, vary between 3500 to 6400 yds. per lb. Frequently a two or three-fold face filling is used, so as to permit an easier raising of the nap, during gigging.

In order to leave the fabric as soft and spongy as possible, backing and stuffer filling must have a medium, if not a soft, twist. Its counts are regulated by the arrangement face, stuffer and backing are introduced. The backing must not hinder the face filling in the formation of a close and full face, permitting the forming of an even and full arrangement of knobs or ridges all over the face of the fabric.

The warp should have the same color or mix as the face filling, since otherwise it would show through; if not in the finished state, anyway after some wear to the garment.

See to an easy tension for the filling, when leaving the shuttle; again, omit superfluous tying of knots in the handling of the filling previously to weaving. Don't permit the weaves or burlers to tear out threads carelessly with their hands, since otherwise that piece of thread required for forming the nap would be missing, resulting in an imperfection produced on the face of the finished fabric. Always have your help use scissors for trimming off knots or any other imperfection which requires removal at the weaving, inspecting and the burling.

(To be continued.)

NOVELTIES IN MEN'S WEAR.

FROM ABROAD.

Worsted Suiting. (Stripe Effect.)

Warp: 3960 ends, 2/36's worsted.
Weave: See Diagram **Fig. 1;** repeat 132 warp threads and 8 picks; 12-harness fancy draw.

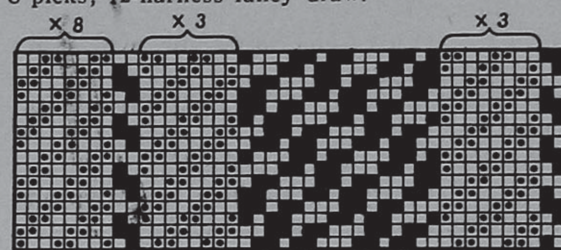


Fig. 1

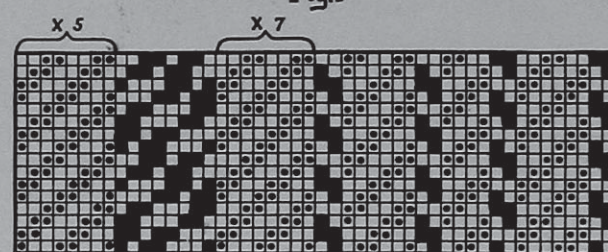


Fig. 2

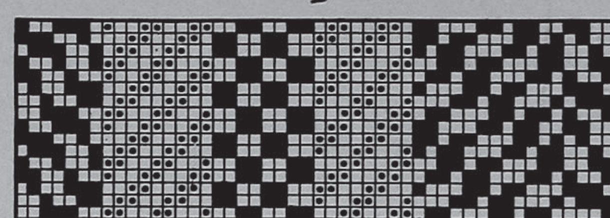


Fig. 3

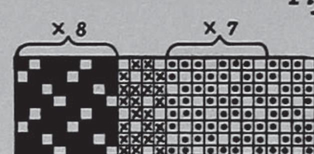


Fig. 4

Fig. 5

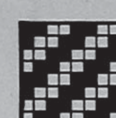


Fig. 6

Reed: 15 @ 4 ends per dent; 60 ends per inch; 66 inches wide in reed.

Dress:	4 ends green.	times 4.
	4 " dark blue.	
	4 " emerald.	
	4 " dark blue.	
	2 ends dark blue.	
	1 end green.	times 7.
	1 " dark blue.	
	1 " emerald.	
	1 " dark blue.	
	1 end green.	
	5 ends dark blue.	
	1 end emerald.	times 7.
	1 " dark blue.	
	1 " green.	
	1 " emerald.	
	1 end emerald.	
	3 ends dark blue.	

132 ends in repeat of pattern.
10 Sections @ 3 patterns, or 396 ends to each section.

Filling: 56 picks per inch, all plain 2/36's worsted, dark blue.
Finish: Worsted finish; 56 inches wide.

Worsted Suiting. (Stripe Effect.)

Warp: 4608 ends.
Weave: See Diagram **Fig. 2**; repeat 128 warp threads and 8 picks.
Reed: 17½ @ 4 ends per dent; 70 ends per inch; 66 inches wide in reed.
Dress: 8 ends 2/48's worsted, black.
8 " " " , dark brown.
8 " " " , dark blue.
8 " " " , dark brown.
24 " " " , black.
8 " " " , dark gray.
6 " " " , black.
2 " 2/52's worsted, black, and 11/13 den. silk, green.
8 " 2/48's worsted, dark gray.
2 " 2/52's worsted, black, and 11/13 den. silk, blue.
6 " 2/48's worsted, dark blue.
2 " 2/52's worsted, black, and 11/13 den. silk, blue.
6 " 2/48's worsted, dark gray.
2 " " " , bordeaux.
6 " " " , black.
24 " " " , dark gray.
---
128 ends in repeat of pattern.
12 Sections @ 3 patterns, or 384 ends to each section.
Filling: 60 picks per inch, all plain 2/48's worsted, black.
Finish: Worsted finish; 56 inches wide.

Worsted Suiting. (Stripe Effect.)

Warp: 4608 ends, all 2/48's worsted.
Weave: See Diagram **Fig. 3**; repeat 48 warp threads and 8 picks.
Reed: 17½ @ 4 ends per dent; 70 ends per inch; 66 inches wide in reed.
Dress:
1 end olive.
1 " scotch blue. } times 4.
8 ends olive.
2 " olive.
1 end dark green. } times 2.
42 ends olive.
1 end dark blue.
1 " olive. } times 3.
5 ends olive.
1 end dark blue.
1 " olive. } times 3.
15 ends olive.
1 end olive.
1 " scotch blue. } times 4.
8 ends olive.
2 " olive.
1 end dark green. } times 2.
45 ends olive.
1 end dark blue.
1 " olive. } times 5.
19 ends olive.
---
192 ends in repeat of pattern.
12 Sections @ 2 patterns, or 384 ends to each section.
Filling: 60 picks per inch, all plain 2/48's worsted, olive.
Finish: Worsted finish; 56 inches wide.

Worsted Suiting. (Large Check Effect.)

Warp: 4608 ends.
Weave: See Diagram **Fig. 4**; repeat 128 warp threads and 4 picks.
Reed: 17½ @ 4 ends per dent; 70 ends per inch; 66 inches wide in reed.
Dress:
4 ends 2/48's worsted, black.
4 " 2/60's worsted, light & medium gray tw. } times 3.
2 ends 2/48's worsted, black.
2 " 2/60's worsted, light & medium gray tw. } times 4.
4 ends 2/48's worsted, black.
4 " 2/60's worsted, light & medium gray tw. } times 3.
2 ends 2/48's worsted, black.
2 " 2/60's worsted, light & medium gray tw. } times 16.
---
128 ends in repeat of pattern.
12 Sections @ 3 patterns, or 384 ends to each section.
Filling: 66 picks per inch, arranged thus:
4 picks 2/60's worsted, light & medium gray tw.
4 " 2/48's worsted, black. } times 6.
2 picks 2/60's worsted, light & medium gray tw.
2 " 2/48's worsted, black. } times 4.
4 picks 2/60's worsted, light & medium gray tw.
4 " 2/48's worsted, black. } times 3.
2 picks 2/60's worsted, light & medium gray tw.
2 " 2/48's worsted, black. } times 18.
---
136 picks in repeat of pattern.
Finish: Worsted finish; 56 inches wide.

Worsted Suiting. (Stripe Effect.)

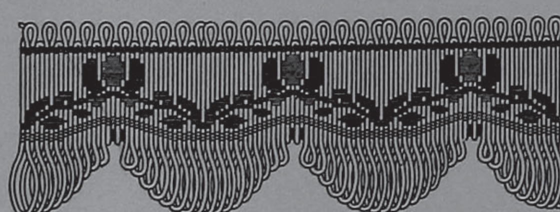
Warp: 4800 ends, 2/40's worsted.
Weave: See Diagram **Fig. 5**; repeat 6 warp threads and 6 picks; 12-harness straight draw.
Reed: 18 @ 4 ends per dent; 72 ends per inch; 66⅔ inches wide in reed.
Dress: 5 ends pearl and medium gray twist.
2 " black.
---
7 ends in repeat of pattern.
10 Sections @ 48 patterns, or 480 ends to each section.
Filling: 64 picks per inch, all 2/40's worsted, arranged thus:
1 pick pearl and medium gray twist.
3 picks black.
---
4 picks in repeat of pattern.
Finish: Worsted finish; 56 inches wide.

Woolen Cheviot Suiting. (Stripe.)

Warp: 2460 ends, all 4 run woolen cheviot yarn.
Weave: See Diagram **Fig. 6**; repeat 4 warp threads and 4 picks.
Reed: 12 @ 3 ends per dent; 36 ends per inch; 68⅓ inches wide in reed.
Dress: 3 ends 4 run, white.
3 " 4 " , gray.
3 " 4 " , white.
3 " 4 " , black.
---
12 ends in repeat of pattern.
5 Sections @ 41 patterns, or 492 ends to each section.
Filling: 36 picks per inch, arranged thus:
1 pick 8 run white and 6 run dark gray twist.
1 " 4 run gray.
1 " 8 run white and 6 run dark gray twist.
1 " 4 run black.
---
4 picks in repeat of pattern.
Finish: Woolen Cheviot finish; scour well, full slightly, clip on shear; 56 inches wide.

New Design for Woven Edging.

The figure in the accompanying illustration is a face view of a piece of woven edging, showing the



new design, just patented by the William H. Horstmann Company of Philadelphia.

The French Government, in response to requests made by French merchants, has opened negotiations with Washington for an extension of the commercial arrangement with the United States until the month of August, or at least until February of 1910.