Vol. II JUNE, 1908 No. 6

Posselt's Textile Journal

A Monthly Journal of the Textile Industries

Table of Contents

Jacquard Designing 327
Designing and Fabric Structure for Harness Work 329
A Practical Treatise on the Knowles Fancy Worsted Loom 330
Reversing Mechanism for the Take-up of the Knowles Loom 334
Ribbons, Trimmings, Edgings, Etc. 335
The Manufacture of Plushes, Carpets, Etc. 338
Picker Check for Crompton & Knowles Looms 340
New Warp Pile Fabrics 341
Cotton From Field to Factory 342
The "Mason" Coiler Drawing Frame 345
Setting the Rolls in Fly Frames 347
The Ring Frame 348
Dictionary of Technical Terms Relating to the Textile Industry 350
Dictionary of Weaves 352
A Study of Knitting 353
Knit Fabric Presenting a Curled Face 354
Prevent "Running-back" of End of Discontinued Wales in Knit Fabrics 355
Silk Lustring 356
Sponging and Re-Finishing Woolen Fabrics 357
Testing of Chemicals and Supplies in Textile Mills and Dye Works 358
A New Spot-Veiling Machine x
Some Special Cotton Finishes xii

Buyers' Index vi
Mill News xiv

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

POSSELT'S TEXTILE JOURNAL

A PRACTICAL AND EDUCATIONAL JOURNAL

DEVOTED TO

THE TEXTILE INDUSTRIES.

2028 BERKS STREET,
PHILADELPHIA, PA.

Announcement:

We beg to announce that in the interest of *our Advertisers* we have facilities for Exhibiting smaller classes of Machinery, Working Models, Supplies and Devices Relating to the Textile Industry; to look after their interest and demonstrate advantages.

For the convenience of the practical men and the busy manufacturers, the Exhibit will be open from 8.30 A. M. to 5.30 P. M. daily and every Tuesday from 7 to 10 P. M.

Full particulars on request.

POSSELT'S TEXTILE JOURNAL, Philadelphia.

LIST OF ADVERTISERS

Altemus, Jacob K., Philadelphia.....VII
American Textile Specialty Machinery Co., Providence, R. I.....XVI
Berge, J. & H., New York.....XI
Brinton, H., Co., Philadelphia.....VIII
Campion, Richard, Philadelphia.....XI
Chapin, Geo. W., Philadelphia.....IX
Cheney Brothers, South Manchester, Conn.....V
Commercial Photo-Engraving Co., Philadelphia.....XIII
Crompton & Knowles Loom Works, Worcester, Mass.....Outside back cover
Cumming, J. W., Clonliffe, Dublin.....X
Draper Company, Hopedale, Mass.....Inside front cover
Farbenfabriken of Elberfeld Co., New York.....XVI
Firth & Foster Co., Philadelphia.....IX
Grosser Knitting Machine Co., New York.....VII
Halton's, Thomas, Sons, Philadelphia.....III
Howard Brothers Mfg. Co., Worcester, Mass.....IX
Hunter, James, Machine Co., North Adams, Mass.....V
Kilburn, Lincoln & Co., Fall River, Mass.....XI
Kip-Armstrong Company, Pawtucket, R. I.....XI
Lentz, F. G., & Co., Philadelphia.....XI
Littauer, Ludwig, New York.....IX
Mason Machine Works, Taunton, Mass.....IV
Metallic Drawing Roll Co., Indian Orchard, Mass.....III
New England Butt Co., Providence, R. I.....XVI
Nydegger, Max, New York.....VII
Philadelphia Drying Machinery Co., The, Philadelphia.....XVI
Queensbury Mills, Worcester, Mass.....IX
Roessler & Hasslacher Chemical Co., New York.....XV
Royle, John, & Sons, Paterson, N. J.....III
Ryle, William, & Co., New York.....IX
Schaellibaum, Rob., Co., The, Providence, R. I.....XI
Schuchardt and Schütte, New York.....VIII
Sipp Electric & Machine Co., Paterson, N. J.....XIII
Strouse, Theodore & Co., Philadelphia.....XIV
Textile Publishing Co., Philadelphia.....XI
Weimar Bros., Philadelphia.....XIII
West Indies Chemical Works, The, New York.....IX
Whitaker Reed Co., Worcester, Mass.....XIII
Whitin Machine Works, The, Whitinsville, Mass.....II
Woonsocket Machine & Press Co., Woonsocket, R. I.....XV
Wright, Robert A., Philadelphia.....XIII

BUYERS' INDEX

Apparatus for the Dye Trade.
Berge, J. & H.

Automatic Feeds for Cotton and Wool Stock.
Philadelphia Drying Machinery Co.

Bleachers.
Firth & Foster Co.

Bleaching Kiers.
Philadelphia Drying Machinery Co.

Bleaching Materials.
Roessler & Hasslacher Chemical Co.

Bobbins.
Draper Co.

Braiding Machinery.
New England Butt Co.

Carbonizing Machinery.
Hunter, James, Machine Co.
Philadelphia Drying Machinery Co.

Card Clothing.
Howard Bros. Mfg. Co.

Card Stampers.
Lentz, F. G. & Co.

Carpet Machinery.
Altemus, Jacob K.
Philadelphia Drying Machinery Co.

Chemicals.
Berge, J. & H.
Roessler & Hasslacher Chemical Co.
West Indies Chemical Works, Ltd.

Chroming Machinery.
Philadelphia Drying Machinery Co.

Cost and Accounting Systems.
Wright, R. A.

Cotton Combers.
Mason Machine Works.
Whitin Machine Works.

Cotton Machinery.
Altemus, Jacob K.
Crompton & Knowles Loom Works.
Draper Co.
Halton's, Thomas, Sons.
Kip-Armstrong Co.
Mason Machine Works.
Metallic Drawing Roll Co., The.
Philadelphia Drying Machinery Co.
Schaellibaum, Rob., Co., The.
Whitin Machine Works.
Woonsocket Machine & Press Co.

Cotton Yarns.
Chapin, George W.
Littauer, Ludwig.
Strouse, Theodore & Co.

Designers.
Lentz, F. G. & Co.

Design Paper.
Textile Publishing Co.

Drawing Frames.
Mason Machine Works.
Whitin Machine Works.

Drying Machinery.
Hunter, James, Macnine Co.
Philadelphia Drying Machinery Co.

Dust Collectors.
Philadelphia Drying Machinery Co.

Dyers & Finishers.
Firth & Foster Co.

Dyeing, Drying, Bleaching and Finishing Machinery.
Hunter, James, Machine Co.
Philadelphia Drying Machinery Co.
Schuchardt and Schütte.
Woonsocket Machine & Press Co.

Dye Sticks.
Philadelphia Drying Machinery Co.

Dyestuffs.
Farbenfabriken of Elberfeld Co.

Dynamos & Motors.
Sipp Electric & Machine Co.

Electric Fans.
Philadelphia Drying Machinery Co.

Engravers.
Commercial Photo-Engraving Co.

Grids for Lappers.
Schaellibaum, Rob., Co., The.

Harness Builders.
Crompton & Knowles Loom Works.
Halton's, Thomas, Sons.
Lentz, F. G & Co.

Harness Twine.
Littauer, Ludwig.

Heating and Ventilating Apparatus.
Philadelphia Drying Machinery Co.

Heddles.
Howard Brothers Mfg. Co.
Whitaker Reed Co.

Hematine.
West Indies Chemical Works, Ltd.

Jacquards.
Crompton & Knowles Loom Works.
Halton's, Thomas, Sons.

Jacquard Card Stamping, Lacing and Repeating Machinery.
Royle, John & Sons.

Knitting Machinery.
Brinton, H., Co.
Grosser Knitting Machine Co.

BUYERS' INDEX—Continued

Logwood Crystals.
West Indies Chemical Works, Ltd.

Logwood Extracts.
West Indies Chemical Works, Ltd.

Looms.
Crompton & Knowles Loom Works.
Draper Co.
Kilburn, Lincoln & Co.
Mason Machine Works.
Whitin Machine Works.

Measuring Devices.
Draper Co.
Sipp Electric & Machine Co.

Mercerizing Machinery.
Schuchardt and Schütte.

Metallic Rolls.
Metallic Drawing Roll Co., The.

Mohair.
Littauer, Ludwig.
Queensbury Mills.

Mules.
Mason Machine Works.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co.

Pneumatic Conveyors.
Philadelphia Drying Machinery Co.

Power Transmitting Machinery.
Philadelphia Drying Machinery Co.

Presses.
Philadelphia Drying Machinery Co.
Woonsocket Machine & Press Co.

Printing Drums.
Crompton & Knowles Loom Works.

Pumps.
Philadelphia Drying Machinery Co.

Quillers.
Sipp Electric & Machine Co.
Whitin Machine Works.

Railway Heads.
Mason Machine Works.
Whitin Machine Works.

Reeds.
Whitaker Reed Co.

Reels.
Draper Co.
Sipp Electric & Machine Co.
Whitin Machine Works.

Revolving Flat Cards.
Mason Machine Works.
Whitin Machine Works.

Ribbons and Piece Silks for Trimming Knit Goods.
Cheney Bros.

Shuttles.
American Textile Specialty M'ch'y Co.

Silk Machinery.
Altemus, Jacob K.
Crompton & Knowles Loom Works.
Halton's, Thomas, Sons.
Mason Machine Works.
Sipp Electric & Machine Co.

Silk Yarns.
Cheney Bros.
Littauer, Ludwig.
Ryle, William, & Co.

Sizing Compounds.
Cummings, J. W.

Spindles.
Draper Co.

Spinning Frames.
Mason Machine Works.
Whitin Machine Works.

Spinning Rings.
Draper Co.
Whitaker Reed Co.

Spoolers.
Draper Co.
Whitin Machine Works.

Tanks and Tubs.
Philadelphia Drying Machinery Co.

Tapes, Braids and Edgings.
Chapin, George W.
Weimar Brothers.

Temples.
Crompton & Knowles Loom Works.
Draper Co.

Threads.
Chapin, George W.
Littauer, Ludwig.

Tinsel.
Littauer, Ludwig.

Twisters.
Draper Co.
Mason Machine Works.
Whitin Machine Works.

Warp Stop Motions.
Crompton & Knowles Loom Works.
Draper Co.
Kip-Armstrong Co.

Winding, Beaming and Warping Machinery.
Altemus, Jacob K.
Draper Co.
Whitin Machine Works.

Wool Combers.
Crompton & Knowles Loom Works.

Woolen Machinery.
Altemus, Jacob K.
Crompton & Knowles Loom Works.
Hunter, James, Machine Co.
Philadelphia Drying Machinery Co.
Woonsocket Machine & Press Co.

Woolen Yarns.
Littauer, Ludwig.
Queensbury Mills.

Wool Washing Machinery.
Hunter, James, Machine Co.
Philadelphia Drying Machinery Co.

Worsted Yarns.
Campion, Richard.
Griswold Worsted Co.
Littauer, Ludwig.
Queensbury Mills.

Yarn Testing Machinery.
Sipp Electric & Machine Co.

Posselt's Textile Journal

Vol. II. **June, 1908.** **No. 6.**

JACQUARD DESIGNING.

(Continued from page 316.)

SINGLE CLOTH STRUCTURES.

For explaining the subject we will proceed with a practical example, selecting for this purpose a Dress Goods Pattern.

THE MATERIAL to be used is a Cotton warp with a Worsted, Mohair, Spun Silk, Mercerized Cotton, Ramie, or in fact any kind of a more or less lustrous filling.

In designing for these fabrics be careful, especially when dealing with geometrical figures, that the plain weave connects properly, and thus not destroys the prominent *cut off* of the figures at their edges, *i. e.*, that a clear, distinct cut off between ground and figure, wherever they join, all over the entire repeat of the pattern is the result.

The size of the filling float, and which depends upon the texture and counts of yarns used in the construction of the fabric, however, must not be too excessively long, more particularly when dealing with small details of a figure and where possibly 2, 3 or 4 picks have to carry the effect. This will readily explain that certain well broken up designs are better adapted for use in connection with this class of fabrics than others.

FIG. 30.

THE DESIGN, *i. e.*, the figure is to be produced by prominently floating this lustrous filling at proper intervals on the face of the fabric structure.

THE GROUND is to be produced by (tightly) interlacing warp and filling with the plain weave.

This combination will result in showing a lustrous figure on a more or less dull ground, since the characteristic lustre of the filling used is actually increased by the prominent floating effect given it, and correspondingly decreased when interlacing the filling tight (plain weave) with the warp.

Our regular twills, pointed twills and satins are the weaves mostly used for binding the filling with the warp when dealing with large surfaces of figure;

which system of weaves to use depending entirely upon the style of the design and general character of the fabric.

In our design we used a float of seven as the basis, *i. e.*, used the 8-harness regular twill, the 8-harness satin and the 8-harness pointed twill. This float of seven of these 8-harness weaves may be changed to one shorter or longer. If for example dealing with a cheaper fabric, a lower texture, we may then have to use 4, 5, 6, or 7-harness weaves; again, for higher textures we may have to use a float up to eleven.

Fig. 30 shows us a fabric sketch, actual size of design in cloth. The figure used is distributed after the 8-harness satin setting.

Repeat of design in fabric 5″ by 5″.

Warp only is taken in consideration when calculating for size of Jacquard machine required.

Texture of Cloth to be 80 warp threads and 80 picks per inch in finished fabric, thus,

Size of Jacquard Machine: 5 (inches repeat of design in fabric sketch) × 80 (warp threads in one inch) = 400, *i. e.*, a 400 or 1200 Jacquard machine is required for producing design given with warp texture quoted.

Fig. 31 shows us a portion of the complete design, *i. e.*, one of the figures of the design executed on point paper and which will clearly show to the reader how to treat designs for this class of fabrics. The part of sketch as shown executed on point paper is

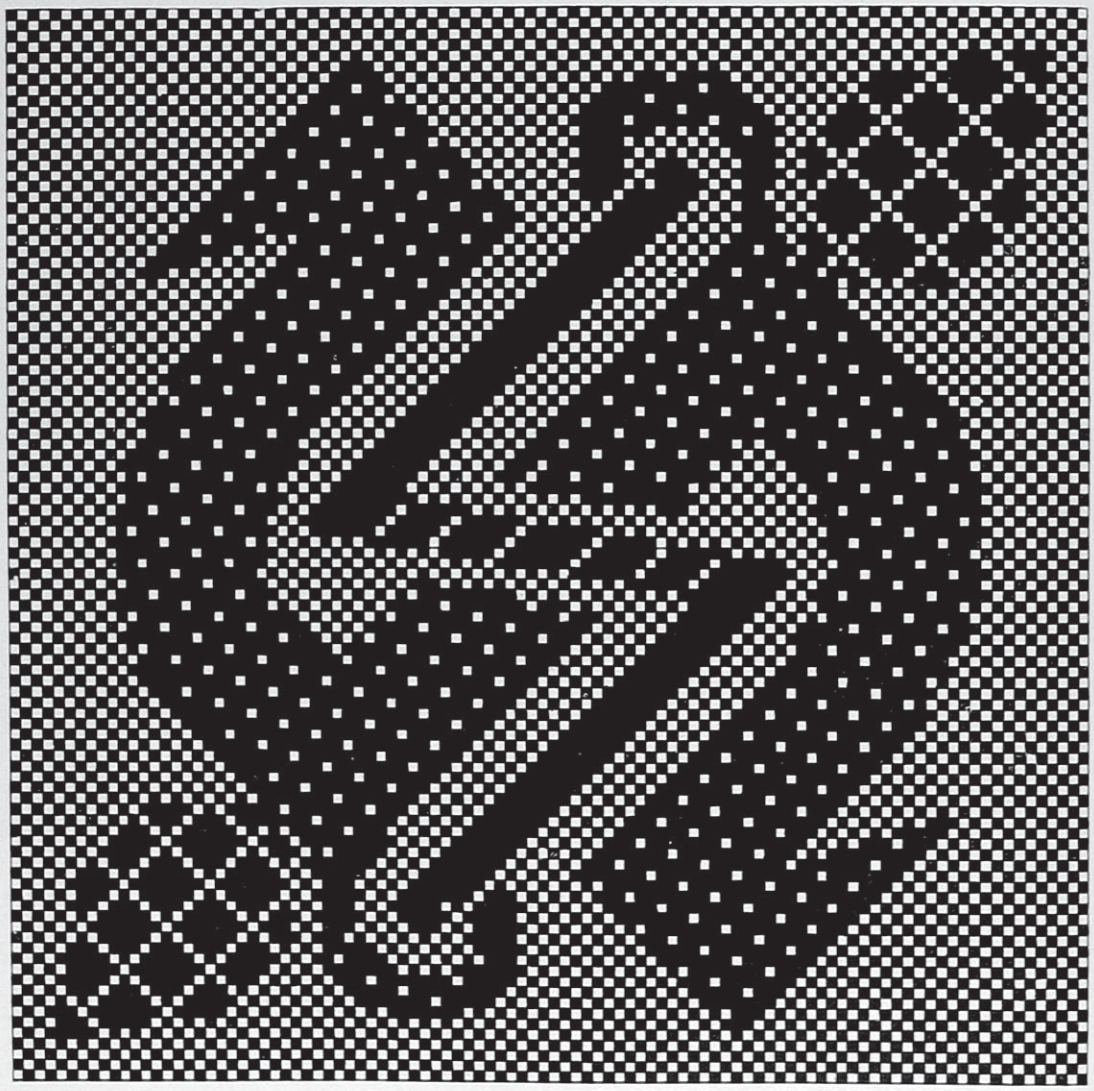


Fig. 31.

indicated on the former by means of dotted square *a, b, c, d.*

These designs, as a rule, are painted on the point paper filling up, *i. e., full* squares in Fig. 31 refer to *sinkers* for the warp threads and the *empty* squares to *risers* for the latter; or in other words *"cut white"* when stamping the Jacquard cards.

This system of designing, as referred to dress goods in our explanations, at the same time refers to other fabric structures, whether they are broad or narrow ware fabrics.

DESIGNING AND FABRIC STRUCTURE FOR HARNESS WORK.

DIAGONALS OR 63° TWILLS.

Diagonals Obtained from one 45° Twill by means of Filling Drafting.

Any one of our regular 45° twills can be used in the construction of these diagonals, which in this instance is the foundation for more than one new diagonal. For example, a 10-harness regular twill will in this manner result in four new diagonals possible to be produced, a 12-harness regular twill resulting in five new diagonals, etc., in every instance not counting the diagonal produced by means of two picks in the shed of the regular twill.

We will now explain how to obtain these diagonals from the 45° twills. For example, let us consider plate of weaves accompanying this article, and where

Fig. 1 shows us one repeat of the $\frac{2}{2}\frac{1}{1}\frac{2}{2}$ 10-harness regular twill, as used for the foundation in constructing diagonals Figs. 4, 8, 12 and 16.

Fig. 2 shows us the same 45° twill, the only difference being that in this instance we started the weave with pick No. 3 if considering weave Fig. 1 in connection with it.

Fig. 3 shows us the combination of Figs. 1 and 2 combined in one diagonal, by drafting alternately one pick from Fig. 1 and one pick from Fig. 2. Since we selected the type in Fig. 3 to correspond to those used in Figs. 1 and 2, the affair will explain itself; besides later on in the article we will refer more particularly to the various draftings of one weave in a diagonal by means of transposing (correspondingly) numerals into all its possible combinations.

Fig. 4 is the new diagonal, constructed as shown by means of Fig. 3, executed in one kind of type, in order to explain itself better to the reader. The repeat of the new weave is 10 warp threads and 20 picks, *i. e.*, twice the repeat filling ways of the foundation twill, since two repeats of it have been combined in its construction.

Fig. 5 corresponds to Fig. 1 in the previous example.

Fig. 6 takes the place of Fig. 2 in the previous example, it being the same 10-harness twill as shown in Figs. 1 and 5, the only difference being that in this instance we started with pick No. 4 of weave Figs. 1 and 5.

Fig. 7 shows the combination of Figs. 5 and 6, in the formation of a new diagonal, and which is shown in Fig. 8 in one color, in order to show more clearly the difference of the new diagonal thus obtained, to that obtained by drafting weave Fig. 4, although in both cases the same foundation weave has been used.

Fig. 9 corresponds again to Figs. 1 and 5.

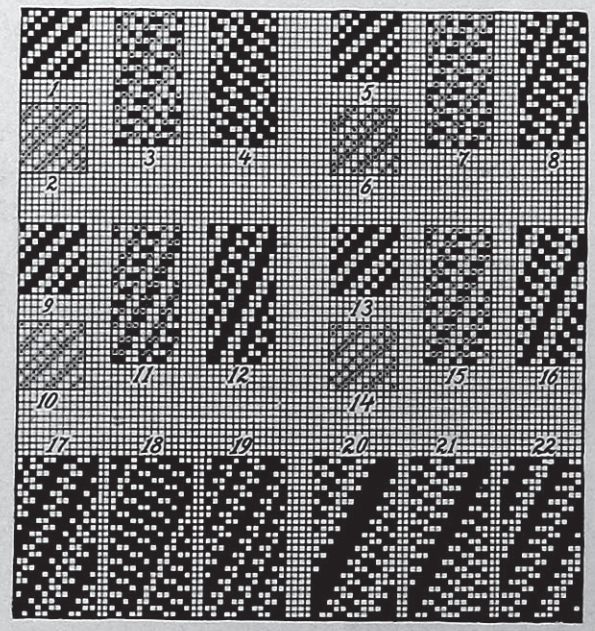
Fig. 10 is the same 10-harness twill as shown in Figs. 1, 5 and 9, the only difference being that in this instance we started with pick No. 5.

Fig. 11 shows the combination of Figs. 9 and 10, one pick from one to alternate with one pick from the other weave, in the formation of the new diagonal, which in Fig. 12 is shown executed in one color for the sake of clearness to the reader, in order to be able to compare it to its mate diagonals 4 and 8, showing the difference in effect obtained, although the same foundation weave.

Fig. 13 corresponds again to Figs. 1, 5 and 9.

Fig. 14 is the same 10-harness twill only that in this instance we start with pick No. 6.

Fig. 15 shows the combination of the two arrangements of the foundation twill for the diagonal and Fig. 16 again its execution in one color.



By these four new diagonals, Figs. 4, 8, 12 and 16, we have shown the four possible new diagonals to be constructed from its mate 10-harness regular twill; there being, as mentioned before, always four possible new diagonals obtained in this manner from any 10-harness regular twill; the only affair we have to mention being that we do not obtain a satisfactory, *i. e.*, practical diagonal in every instance. However, this will be of secondary consideration, for the fact that an endless number of regular twills are at our disposal and that every twill can be used in the formation of several diagonals, in this way obtaining an endless variety of new diagonals, and when we then can readily discard such as are of no practical value.

We will now explain to the reader by means of transposing numerals corresponding to the starting picks used in connection with a standard twill, that only four new diagonals can be constructed from a 10-harness regular twill, five new diagonals from a 12-harness regular twill, etc., by taking 10 (harness) for our illustration.

We herewith give ten transposings of numerals 1 to 10, taken in rotation, shown in two kinds of type, each kind of type standing for one selection of the 10-harness twill with reference to its starting point.

	1	2	3	4	5	6	7	8	9	10
(*a*)	1	2	3	4	5	6	7	8	9	10
	1	2	3	4	5	6	7	8	9	10
(*b*)	2	3	4	5	6	7	8	9	10	1
	1	2	3	4	5	6	7	8	9	10
(*c*)	3	4	5	6	7	8	9	10	1	2
	1	2	3	4	5	6	7	8	9	10
(*d*)	4	5	6	7	8	9	10	1	2	3
	1	2	3	4	5	6	7	8	9	10
(*e*)	5	6	7	8	9	10	1	2	3	4
	1	2	3	4	5	6	7	8	9	10
(*f*)	6	7	8	9	10	1	2	3	4	5
	1	2	3	4	5	6	7	8	9	10
(*g*)	7	8	9	10	1	2	3	4	5	6
	1	2	3	4	5	6	7	8	9	10
(*h*)	8	9	10	1	2	3	4	5	6	7
	1	2	3	4	5	6	7	8	9	10
(*i*)	9	10	1	2	3	4	5	6	7	8
	1	2	3	4	5	6	7	8	9	10
(*j*)	10	1	2	3	4	5	6	7	8	9

Combination *"a"* shows us nothing more but two picks in the shed of the regular twill.

Combination *"b"* shows us again two picks in the shed of the regular twill.

Combination *"c"* shows us the arrangement by means of which we obtain the first diagonal and which in this instance will correspond to Weave Fig. 4 on our plate of weaves accompanying this article.

Combination *"d"* shows us the arrangement by means of which we obtain the second new diagonal and which in this instance corresponds to Weave Fig. 8 on our plate of weaves accompanying this article.

Combination *"e"* shows us the arrangement by means of which we obtain the third new diagonal and which in this instance corresponds to Weave Fig. 12 on our plate of weaves.

Combination *"f"* shows us the arrangement by means of which we obtain the fourth new diagonal and which in this instance will correspond to Weave Fig. 16 on our plate of weaves accompanying this article.

Combination *"g"* shows us the next arrangement possible, showing, however, at the same time that it is nothing more but a duplication of Combination *"f."*

Combination *"h"* is again nothing else but the duplication of Combination *"e"* previously given; Combination *"i"* a duplicate of Combination *"d"* previously given, and finally Combination *"j"* a duplicate of Combination *"c"* previously quoted.

This will clearly explain that only four new diagonals can be produced with any of our regular 10-harness twills for their foundation, at the same time explaining the subject in connection with any other foundation twills, no matter what number of harnesses for their repeat.

Figs. 17, 18 and 19 show us three specimens of five diagonals possible to be obtained from the $\frac{3\ 3\ 1}{2\ 1\ 2}$ 12-harness regular twill, the missing two diagonals are not given.

Figs. 20, 21 and 22 show us three specimens of diagonals having for their foundation the $\frac{5\ 2}{3\ 2}$ 12-harness regular twill, the missing two diagonals are again omitted.

Questions:

(1) Construct the missing two diagonals to go with Weaves Figs. 17, 18 and 19.

(2) Construct the missing two diagonals to go with Weaves Figs. 20, 21 and 22.

(3) Construct the three new diagonals possible to be obtained from the $\frac{3\ 2}{2\ 1}$ 8-harness regular twill, the new weave repeating on 8 warp threads and 16 picks.

(4) Construct the four new diagonals possible to be obtained from the $\frac{3\ 2\ 2}{2\ 2}$ 9-harness regular twill.

A PRACTICAL TREATISE ON THE KNOWLES FANCY WORSTED LOOM.

By E. P. Woodward,
Master Weaver.

(Continued from page 312.)

The Protection Device.

When setting the protection device, one should be careful to take into consideration all factors of safety which go to make the adjustment of the different parts a success. This device is successful only when it *protects.* It must do this every time it is required to *and never miss.*

The parts involved are two protector fingers (one for each shuttle box), a protector rod on which they are mounted, two protector daggers (one on each side of the loom), two protector rod stands for mounting the protector rod, and a spring coiled around the protector rod and suitably arranged by means of a collar and set screw to keep the protector fingers at any required pressure against the ends of the binders. In addition to these parts are two grooved knock off levers against which the protector daggers strike, to cause the knocking off of the shipper should the shuttle fail to box properly. There is also a rubber cushion for each knock off lever to strike against when driven back by the protector dagger. These are placed back of the levers, to cushion the blow and prevent breakage of the loom.

On the protector stands are checks to restrict the downward throw of the protector dagger. One style of stand has a fixed check which can be filed if necessary. The other style of stand has an adjustable check. Both have their advantages.

When setting the protecting device, the first things to locate would be the protector rod stands, and these should be so positioned that the protector fingers would rest on the middle of the end of the binder when the shuttle box was level with the shuttle race. This would also leave the protector dagger practically level when it delivered the knock off blow. This is as it should be to give the least possible strain to the parts involved. In other words, the back centre of the hole in the protector rod stand and the end of the protector dagger should stand on the same line when the knock off blow is struck and this line should be the line of traverse of the lay, or its parallel.

Care should be taken when the protector rod is set into the stands to have it work freely. Should it bind, a few well placed blows of a hammer on the rod will usually ease it.

The knock off levers may now have some attention. To set them pull on the shipper handle and see that they set as closely to it as they can and not interfere with the locking of the shipper. If they are not up to position by this test throw off the shipper handle and bend them as they stand in the loom until they fit against the shipper as they should. They can be readily bent to position by striking with a hammer and should be set that way. When set in this manner they act as early as they can, and help to save the breaking of the loom castings which take the strain of the blow. Now bring the lay forward until the grooves of the knock off levers have received the ends of the daggers and the lay is as far forward as the protection will allow it to come. The lay should now stand with the reed line parallel with the breast beam and will measure about $7\frac{7}{8}$ inches from the reed line to the inside of the breast beam.

The protector dagger would measure about $5\frac{3}{8}$ inches from the front of the protector rod to the end of the dagger, and the crank and lay connector would be about $18\frac{1}{4}$ inches from inside to inside of bearings. A different length of connector of course would require a different length of dagger, in order to get the same protecting position in relation to the cloth forming line. The above measurements will agree with builders' work. While the lay is in this position, the protector fingers can be positioned and their place is as near to the binder as they can be set and not throw the dagger towards the bottom of the groove in the knock off lever. Properly set, as directed, they will stay set. If they are crowding the dagger toward the lower part of the groove, the force of the blow, when the loom protects, will move them and burr the protecting rod.

The protector rod spring should be active enough for safe protection. More than this causes undue wear of the picking parts and the shuttle. The binder springs should also be run as loosely as possible for the same reasons.

With the protecting device set as described and only binder spring sufficient to keep the shuttles from creeping (when they rest for a long time) one will have as little wear on the picking device as can be expected on a regularly equipped loom.

Earlier in this article mention was made of two styles of protector rod stands:

One style, which had to be filed to give the proper checking position of the dagger in its downward movement. The advantage of this dagger check is that it is filed to position, and once right it must stay right.

The advantage of the check which is adjusted by means of the set screw and check nut is that it can be quickly and nicely adjusted. Its disadvantage is that the fixer cannot tell how long it will stay in the position he sets it as other hands and heads are quite apt to be busy with such things.

The proper setting of the dagger check should be such a position as will allow the protector finger to stand about $\frac{1}{8}$ inch from the binder end when the binder is held out against the check pin. This setting will allow an even boxing of the shuttle and give the shuttle boxes a freedom of action unhampered by the protector finger. This will be found necessary when running a loom at high speed and on skip boxes.

In setting the protection, then, the following things should be remembered as being necessary.

(1.) The protector rod mounted as to its proper position with regards to the protector fingers, knock off levers and the grooves in these levers with which the protector daggers engage.

(2.) The proper grinding of the protector daggers, *i. e.*, a chisel edge with the edge blunted to about $\frac{1}{16}$ inch thickness to insure a more durable dagger.

(3.) Daggers which leave the lay parallel with the breast beam and holding equally when they have driven the knock off levers home against the rubber cushions.

(4.) Knock off levers so set as to allow the locking of the shipper and yet close enough to the shipper handles as to cause the knock off of the shipper handle as early as possible with the striking of the protector dagger.

(5.) The protector fingers set closely to the binder and at the same time have the dagger engage the groove of the knock off lever properly.

(6.) The protector rod spring to be only strong and active enough to insure the safe following of the protector finger to the binder.

(7.) The protector dagger check on the protector stand to be so adjusted as to allow the protector finger due freedom of action in clearing the binders on the downward throw of the protector dagger.

The distance from the reed to the cloth forming line should be sufficient to prevent breaking of the warp or making an uneven place in the cloth (caused by the reed crowding the shuttle against the fabric).

It will be noticed that one factor of safety in connection with the protection has not been treated here, *i e.*, the *timing* of the shuttle boxes. This will be taken up, however, under the proper heading in a future article.

Setting the Upright Shaft and Head Motion Drive.

The parts to be treated are those which comprise the connections between the lower shaft, known as the picking shaft, and the head motion or the shedding and shuttle box changing mechanism.

These parts consist of a short counter shaft carrying a spur gear (concentric or eccentric as desired) on one end and a bevel gear on the other end. The spur gear meshes with a like gear mounted on the picking shaft. These are the means of driving an upright shaft on which are mounted bevel gears to drive the cylinder shafts and listing motion. The head frame is fitted with many parts of the shedding device and parts for moving the shuttle boxes. The cylinder gear shafts are mounted in the head frame. The counter shaft is mounted in a frame and supported on the outer end by another casting which bolts to the loom side and by means of a yoke and set screw holds the counter shaft frame in rigid and true alignment.

With the loom frame level, the head motion frame is ready to be fitted to its position. This position includes its relation to the part of the loom frame to which it is bolted, its position as to its bearing for the upright shaft being perpendicular, and its true alignment with the bearing of the casting in which the lower end of the upright shaft rests. These positions should all be truly given to the parts involved to secure an easy working shaft and its gearing. While it may seem to the fixer that much is required of him to do the setting properly, it will be found that his task is comparatively easy if he does the fitting with a clear working knowledge of what is required. The task will be found much simplified for the reason that the draftsman's work is well done and the castings in most instances will be found to be fairly well lined when they are matched to their positions on the loom side.

The head frame is built and drilled to accurate gauges and can always be treated and considered as one piece. It is well for the fixer when assembling the loom to know the parts in detail, hence these explanations.

In leveling the head frame, level from the bearings in which the cylinder rests. At the same time have the part of the frame which bolts to the loom side match in height the part of the frame to which it bolts. The arms of the head frame should stand level. They should also stand parallel to a line drawn lengthwise of the arch, in order to have the different parts (which go to make the head) working truly.

This accomplished, the casting through which the counter shaft, which drives the upright shaft, is fitted should be examined and care taken to see that the casting is so fitted that the web of the gear will stand at right angles to the line of the picking shaft.

This means that the counter shaft and picking shaft must be true parallels. A simple way to get the shafts to a parallel position is to use a level and rule. With the rule keep the distance required from the picking shaft; with the level keep the counter shaft level. The counter shaft and picking shaft spur gears, which drive the upright shaft, should be as closely meshed as possible. When setting new gears, they had much better bind a little than work freely. Much depends on the close meshing and smooth running of all the gears which drive the head motion if one wishes to have the shuttle boxes move steadily on heavy and unevenly planned weaves. The counter shaft casting must be placed a distance above the back girt which will allow an eccentric gear to be used. This description will cover what the draftsman had in mind when laying out the counter shaft gearing and its support. The reason why one should be careful to have the counter shaft parallel to the picking shaft is that when running eccentric gears to drive the upright shaft, the gears will not mesh evenly unless the two shafts are parallel. This does not imply that the cogs would not mesh evenly for depth all the way around the gears. It means the gears would not maintain the same relation to each other all the way around. All of these things, it should be borne in mind, are only the planning of the parts. In practical work it will be found that as the parts have already been placed, by the builder, in their respective positions, the matter of replacing them when necessary is a very simple matter to any one who is willing to give his attention to the work.

With this part disposed of, the head frame can now be moved a trifle back or forward and also, by means of the filing bands on the loom side, be fitted to its true perpendicular. This means simply setting the upright shaft in its bearings and moving the head frame until the level shows plumb at any point on the circumference of the upright shaft. If necessary, the counter shaft casting may be adjusted to position (to agree with head frame, by means of its filing bands.

The stand which is bolted on the outside of the loom frame, to brace the counter shaft casting, can now be fastened in position and the set screw turned up to line with the sleeve which it supports. This screw should not be turned tightly enough to pinch the shaft.

The head frame, the counter shaft frame, and the outside support for the counter shaft frame are now all ready to be drilled and dowel pins set.

The upright shaft can now be set in and also the top and lower cylinder shafts and their gears brought to their meshing. It will be noticed that the bevel gears on the upright shaft are all splined with a fixed relation to the section of cogs in each gear. The gears on the cylinder shafts are also splined in the same manner in relation to the filled section between the cogs. This makes it impossible to mesh the gears out of their relative positions when coupling the gearing of the counter shaft and the cylinder shafts. This is a precaution taken by the builder against getting the cylinder shafts out of their relative positions, since to do so would bring other parts which work on the cylinder shafts out of their designed order of working. The lugs to which the box cylinder gears fasten, the keying of the hand wheel, the slots in which the harness cylinder gears set, screw to the key way for the reverse pin, and the lock knife cam as well as the position of one box cylinder gear in relation to the other are all given their position (in the final and complete assembling of the head motion parts here treated), subject to the meshing of the bevel gears in relation to their blocks and recesses when coupling the counter shaft and the cylinder gear shafts.

Now put the counter shaft in its sleeve and when the bevel gear and the spur gear are set, be sure that there is no undue play between the gears and the ends of the bearing. In the bearing for the lower end of the upright shaft will be found a fibre disk, placed there to prevent wear of the shaft end and bearing and also to correctly position the bevel gear on the upright shaft with the bevel gear on the counter shaft.

The gear on the upright shaft should mesh closely with the gear on the counter shaft, but it should not ride on it. The lower part of the box clutch on the upright shaft should be held as closely to the middle section as possible and at the same time turn freely. This lower section is held up by a collar placed on the end of the shaft, the collar being swedged on. The middle section of the box clutch is keyed to prevent turning and the shaft spotted and the section is then set screwed to the spotted place on the shaft to prevent moving. The top part of the clutch carries the locking pin and this pin should always be tightly set in its casting.

Thus fitted, the clutch box and gears will give a smooth and even drive to the head. The gears and all parts will also wear longer and run with less breakage.

The collar on the upright shaft which checks the lifting tendency of the shaft should always be kept closely to the end of the box against which it checks. When in this position, it prevents the upright shaft from lifting and the shaft will run steadily and not carry its gears partly out of mesh every time the harnesses change.

Next put on the stand which carries the listing motion cam and gears, being careful to see that this casting does not bind on the upright shaft.

The ball handle and the different castings which form the connections for moving the locking pin in the box clutch should be so arranged that when the clutch is closed, the collar which is engaged by the yoked casting shows the yoke free from contact with the sides of the groove in which it acts, since if this casting is maintained in constant contact with the revolving clutch, it will soon wear away the ends of the yoke. This setting can all be accomplished so easily that it requires no explanation and but a moment's time on the part of the fixer.

Some of these castings will be found to have their respective shafts spotted. These should always be kept in their spotted positions. The adjusting should all be done on the parts where the shafts are not spotted for the set screws.

By following closely the directions here given one has the assurance of—

(1.) Setting the spur gear on the picking shaft and the spur gear on the counter shaft in true alignment and having the two gears mesh as closely as possible.

(2.) Having the head frame level and in its intended position on the loom frame and its bearing for the upright shaft as it should be—perpendicular.

(3.) Having the counter shaft casting and its supporting casting correctly located for either concentric or eccentric gearing.

(4.) Setting the upright shaft to a true perpendicular, the lower end resting as it should and the upper end secured by a collar against any upward motion the shaft would be inclined to receive.

(5.) Having all bevel gears which help to drive the head motion properly positioned and running as closely in mesh as they can.

(6.) Having the box clutch set with the least possible lost motion and all castings which help to work the locking pin adjusted as the builder meant them to be.

The whole, a head motion drive, running as closely set as the construction of gears and box clutch will allow.

Setting the Chain Cylinder and Lining the Vibrator Lever Combs.

When setting the chain cylinder, it is best to allow at least 1¼" between the inside of the end of the flange on the box chain section and the side of the head motion frame. This is necessary on account of giving clearance to the long hanger bars now used in conjunction with chain folders and in some cases on account of long bars used in multiplying devices. If care is not taken about this matter when setting up the head frame supplies, quite often it will be found necessary to go over the work again in order to get the required clearance for the long bars. On the other hand, if one works with this point in mind there will be found ample room in which to position all parts. For this reason alone this feature is spoken of. This applies to a loom right hand belted. On the opposite hand, ample room is always found for the hanger bars to pass the frame. This is on account of the way the head supplies fit in—a right hand cylinder being a little different from the left hand cylinder, necessarily making the difference in measurements.

With the chain cylinder located as described, a perfect chain can now be put on and with a suitable lining bar or a vibrator lever trued to a straight edge set the heel comb and the comb which carries the harness evener where they will leave the vibrator lever parallel to the loom side and at the same time have the chain run on the vibrator lever in its correct position over the roll which raises it. As it is possible that the combs may vary a trifle, it is perhaps better to take four vibrator levers and place them as spoken of and from these four, when in, take the position which shows to be the best for all four levers in their relation to the rolls which lift them.

With the chain cylinder located, the larger block of the two should be grooved its entire length to match the position of its side adjusting screw. This allows the chain shaft to be readily kept in its position when necessary to raise or lower it. The smaller block should always be kept closely to the shoulder of the bearing of the chain cylinder, since if it were otherwise the sliding of the chain cylinder would be apt to cause harness miss-picks.

The comb can now be set as regards its highest

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, $3.00 per year.

Other Countries in the Postal Union, $4.00 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:

WANTS, FOR SALE, ETC. If set solid under Classified Advertisements, Special Notices, Help Wanted, Situations Wanted, Machinery for Sale, Etc., will be inserted at the rate of 25 cents per line, for each issue, if the answers are to come in care of this office to be forwarded; 20 cents per line, if replies are directed to advertiser. Count 10 words to one line.

Payment must be made in advance for all transient advertisements.

Rates for Regular Advertisements will be furnished on application.

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

position, to allow the rolling evener to lift the harness vibrator gears well in mesh with the top harness cylinder gear. To do this, throw the evener to its highest lifting position and with two vibrator levers (which are tested to the gauge and carry vibrator gears), one on either end of the harness section of comb, raise the comb until the gears mesh as they should when the loom is running and mark and file the fitting lugs on the comb to maintain this position.

Now throw the evener to its lowest position and when there, it should allow the vibrator gears to mesh fully in the lower harness cylinder gear. If it does not mesh fully, file the bar where the vibrators rest on it and nowhere else, since to do so would cause a failure of the bar to work properly. The same treatment applies to the box evener. In both cases, care should be taken to file the eveners that the pressure of the levers will cause the check lugs on the back of the eveners to rest snugly against the comb, since if they do not the eveners will *whip* from side to side on some weaves and while it may do no harm it looks decidedly unworkmanlike.

These directions followed will leave the vibrator gears meshing well in lower cylinder gears and when they lift into the upper cylinder gears there will be ample room for the entrance of the lock knife. The rolling eveners will give the vibrator levers their correct positions and the combs and chain cylinder will be well positioned.

(To be continued.)

Reversing Mechanism for the Take-up Mechanism of the Knowles Loom.

This mechanism is brought into operation when it is necessary that the pattern chain of the head motion of the loom is reversed for the purpose of picking out imperfectly woven portions of the cloth, etc. This

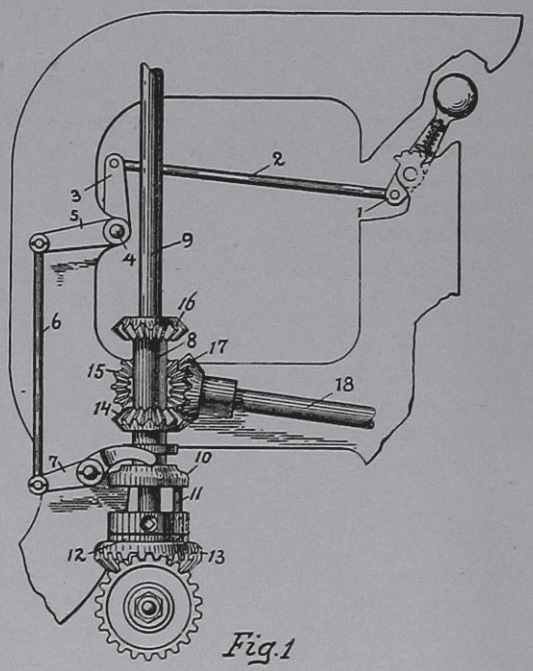


Fig.1

reversing mechanism for the take-up mechanism is combined with the ordinary clutch mechanism of the upright driving shaft of the Knowles head motion, the construction being such that by means of it

(1) the driving shaft of the take-up mechanism can be rotated in the proper direction, through the rotation of the upright driving shaft of the head motion,

(2) permitting the disconnection of said upright shaft from its driving gears, to allow it to be rotated by the hand operated mechanism of the head motion, for reversing the pattern chain, and cause the driving shaft of the take-up mechanism to be rotated in a reverse direction, and

(3) cause the driving shaft of the take-up