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WELTS, PIQUÉS, TOILET CLOTH, QUILTINGS, BED SPREADS.

(Continued from page 60.)

Raised Cords.

Corded fabrics can also be produced by pure plain weaving in connection with two kinds of filling, one of which is a regular single yarn, the other, either a

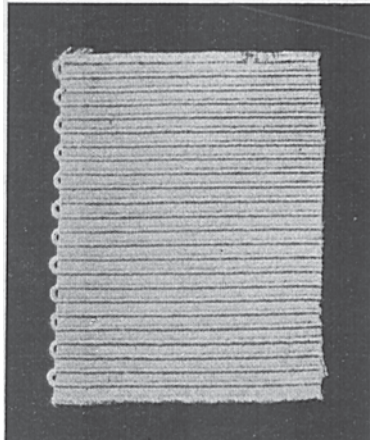


Fig. 43

heavy count of yarn or a 2, 3 or 4 fold single yarn, the latter producing the better effect in the fabric.

Fig. 43 is given to illustrate the subject, being a photographic reproduction of the actual fabric. The weave used is the plain weave throughout.

Warp: 320 ends per inch, 2 fold 10/12 den. silk.

Filling: 5 picks 21/23 den. silk
1 pick 4 fold 2 60's worsted

6 picks in repeat of pattern.

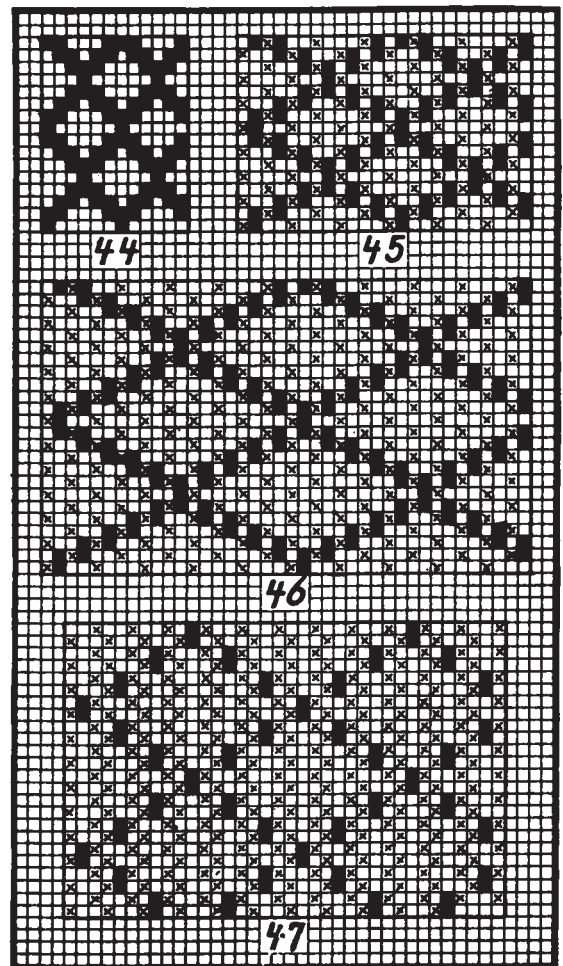
It will be readily understood that size and distance of the cords can be varied, but this will not change the principle of fabric structure explained and illustrated. Cotton yarns may be substituted for the silk yarns referred to.

Piqués.

The same are what we can consider as a modification of a welt structure, distributing the stitching of the back warp into the face structure after a given motive in place of using two certain picks taken regularly for every back warp-thread for stitching the latter, as was done in connection with the regular welt structures previously described. This will give us an endless variety of designs, *i. e.*, weaves at our disposal. The same as welt structures, they can be made either without or with wadding picks, depending on the character of the effect in the fabric, wadding picks assisting in the boldness of the embossed effect and are the ones most often met with. Both systems will be referred to.

Using No Wadding Picks.

Two systems of warp-threads are used. One of them, the ground warp, is used in the formation of the ground structure and which interlaces with the filling on the plain weave. The other system is known as the back, *i. e.*, the figure warp, and which floats on the back of the cloth until according to the design it is raised over the two or three face picks, in turn pulling in such places the ground fabric structure down and thus produce the characteristic impression in the fabric. These impressions will become so much more prominent the more distributed the stitching of the back warp to the ground structure is done. The arrangement of ground and figure warp used varies

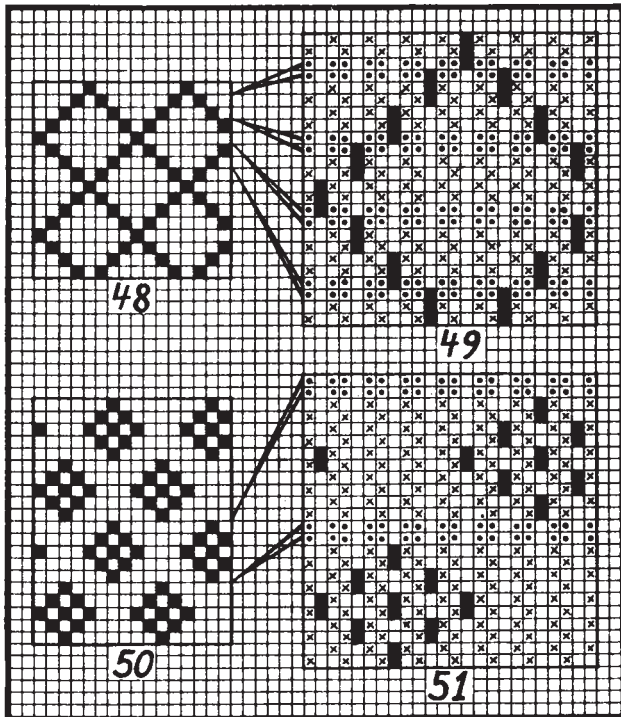


from 1 end figure (or back) warp to 1 to 5 ends ground warp, the most often met with combination being 1 end figure: 1 end ground and 1 end figure: 2 ends ground, the character of the face of the woven fabric and its weight to a certain extent indicating which combination to use.

Motive Fig. 44 and weaves Figs. 45, 46 and 47 are given to illustrate the subject. In the same, *cross* type indicates the interlacing of the ground warp and *full* type that of the figure warp.

Weave Fig. 45 has for its combination 1 end ground to alternate with 1 end figure. The effect produced in the woven fabric by the stitching of the figure warp in the face cloth is reproduced in motive Fig. 44, showing what is known as a diamond pattern, being a most frequently met with design.

Repeat of weave Fig. 45 is 12 warp-threads and



8 picks; 12-harness straight draw, which can be reduced to 6-harness, if this should be found necessary to be done.

Fig. 46 shows us a somewhat larger one of these diamond patterns, arranged similar as in the preceding example, 1 end ground to alternate with 1 end figure. The motive in this instance (see *full* type) repeats on 10 by 12, hence the weave on 20 warp-threads and 12 picks, using a 20-harness straight draw or an 8, 10 or 12-harness fancy draw, if so found necessary.

Weave Fig. 47 shows us an example having the arrangement of 2 ends ground to alternate with 1 end figure. Repeat of weave: 18 warp-threads and 12 picks; 18-harness straight draw which if necessary can be reduced to an 8, 10 or 12-harness fancy draw.

Using Wadding Picks.

Two examples of this class of weaves are given in Figs. 49 and 51.

Fig. 48 is the motive for weave Fig. 49. In the latter, *cross* type indicates the interlacing of the ground or face warp with the face filling; *dot* type shows all the face warp up and all the figure warp not called for by the outline of the design down, for inserting the wadding picks; *full* type shows the interlacing of the figure warp in order to produce the characteristic depressions on the face of the fabric. The latter in this instance is over 2 ground and 1 wadding pick, *i. e.*, over 3 picks in every instance. One square

deep in motive stands for 3 picks in weave. Repeat of weave: 24 warp-threads and 24 picks, which can be woven by means of a fancy draw on 12, 14 or 16-harness, according to texture of fabric used.

Arrangement of warp:

2 ends ground warp
1 end back or figure warp

—
3 ends in repeat.

Arrangement of filling:

4 picks ground
2 picks wadding

—
6 picks in repeat.

Connecting lines between weave and motive show where the wadding picks of the weave enter into the motive, *i. e.*, the design of the fabric.

In large floral and other patterns of this class, such as toiletings, the binding of the back, *i. e.*, figure warp into the face, follows the outline of the figure, the veining of leaves, the petals of flowers and other parts of the design where the cloth is required to be pulled in at the face, to produce the desired effect. The back warp in large patterns is allowed to interlace by the plain weave with the wadding picks, the order being two fine picks face, two coarse wadding picks one of which passes between the two warps for stuffing, the other interlacing with the back warp on the plain weave.

Fig. 50 is the motive for weave Fig. 51. Type used in the latter for indicating the different kinds of warp and filling is the same as used in the previously given example, hence no special reference necessary. Every *full* square in motive equals two *full* squares in weave, *i. e.*, the back or figure warp interlaces over two ground or face picks.

Arrangement of warp:

2 ends ground warp
1 end back or figure warp

—
3 ends in repeat.

Arrangement of filling:

10 picks ground
2 picks wadding

—
12 picks in repeat.

The peculiar close interlacing of each diamond, as well as its distribution after the *plain setting* in the repeat of the pattern, taken into consideration with the floating portion of the weave produces a most pleasing effect in the woven fabric. The raisers of the tight stitching back warp-threads force the wadding picks first in one direction, and then in the other so that waved lines are formed across the cloth, as seen from Fig. 52, which is a reproduction of the fabric, actual size, produced by using weave Fig. 51 with details of fabric structure given later on.

Fig. 53 is a reproduction of the same fabric viewed from the back given to show the principle of the interlacing of the back warp.

FINISHED TEXTURE OF FABRIC.

Warp: 76 ends Face, 40's cotton
38 ends Back, 28's cotton

—
114 ends per inch.

Reed: 1 Face }
 1 Back } per dent.
 1 Face }

(2) Ascertain the proportion of face picks to wadding picks, which in our example is 10 : 2.
 (3) Ascertain the weave for the face structure

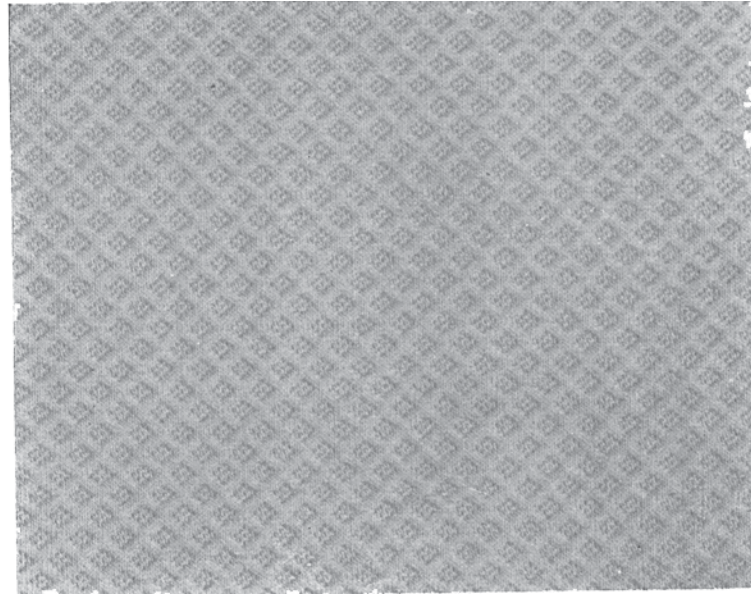


Fig. 52

Filling: 95 Face picks, 50's cotton
 19 Wadding picks, 20's cotton

 114 picks per inch.

For ascertaining weave from actual samples of this class of fabrics the following rules will be found valuable:

(the plain weave in our example).

(4) Ascertain the interlacing of the back warp-threads into the face cloth (the *motive* of the stitching); this can be done by taking a small part of the sample the wrong side up and pull out the warp-threads one by one instead of the picks, noting down on paper with a *full square* (or its equivalent) whenever the back

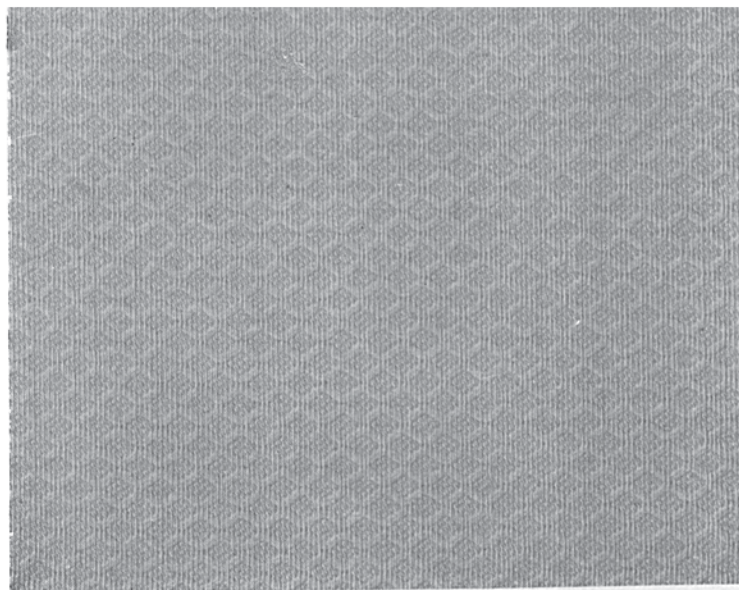


Fig. 53

(1) Find the proportion of face to back for the warp-threads. For this purpose count on the back of the sample the number of back ends per half inch, which is say 19, then pull away the back warp-threads and also the wadding picks and count the number of warp-threads per half inch in the face cloth, which for example we found to be 38. Considering the two results 19 and 38 will indicate to us the proportion of face to back warp to be as 2 : 1.

warp-threads are taken into the face cloth. This will result in the motive of stitching the back warp into the face cloth, and in our example Fig. 52 will result in a motive of twice the length as that shown in Fig. 50, *i. e.*, this motive with 2 picks (as we might call it) introduced into one shed, with 8 back warp-threads in one repeat of the pattern and including the four wadding picks allowing 24 picks to the repeat; there are 2 face warp-threads for each back warp-thread, there-

fore the repeat of the pattern will equal 24 warp-threads.

(5) Plan final weave, placing the weave for the face cloth on its own system of warp-threads and picks previously indicated on the point paper (see *cross* type in weave Fig. 51). Next raise all face warp-threads on every backing pick (see *dot* type in weave Fig. 51). Then fill in the interlacing of your back warp-threads from your pickout (motive) previously obtained (and referred to before) being careful to place the latter in proper position as to your wadding picks (see *full* type in weave Fig. 51) and then the complete working design, *i. e.*, weave is obtained.

DRESSING WOOLEN WARPS.

The most essential features required in the dressing of woolen warps are patience, carefulness, and a thorough knowledge of the calculations for spooling and dressing.

The spooling department should be under the supervision of the boss dresser, as here occur many of the difficulties in dressing which by careful oversight could be avoided. A few of these will be quoted: Proper adjustment of the vibrating lever on the spooling frame; not too much traverse to cause the threads to overlap, nor too little to create wide spaces or ribs between; an even tension throughout the width of the spool, as the tension-rods will sometimes get twisted, by reason of the bearings working loose on either end, causing the threads to run slack on one side and tight on the other; the pin holding the vibrating lever to the traverse-bar should be securely fastened; close attention on the part of the spooler-tender to detect broken threads and threads run out, which, if not attended to in time, will make uneven spools, compelling the dresser-tender to substitute extra threads from bobbins, until the hollow places on the spool become level again.

The knot to be used by the spooler-tender, although simple, is nevertheless important. The spooler-tender, if instructed at the outset how to make the weaver's or flat knot, and not the common dog-head knot, will become more expeditious in tying, and the knot will freely pass through the reeds of the dressing frame and the loom, will be more secure, and will show less on the face of the cloth.

It will be found a great saving and convenience to have a few extra thread-guides for the spooling frames. They may be made of wood (hickory is the best), and spaced off for any number of threads, say from 20 to 40 or a few more when dealing with high counts of yarns. The divisions must be correctly marked before boring the holes, and when fitted to the frame the traverse-pin must be regulated to vibrate evenly.

Calculations for a Plain Warp.

As there is a wide difference between the calculations for a plain warp and those for one of many colors, we will treat them separately:

Suppose the order reads: 10 warps, 4000 threads each, 10 cuts long, 33 yards to a cut, 64 inches wide on the beam.

The number of reed to use can be judged by the fineness of the yarn and the number of threads we can put in a section on the reel. Suppose we use a 500 reed; then $4000 \div 500 = 8$, the number of sections to make for the warp.

To calculate for the spooling: 10 cuts on a beam each 33 yards long = 330 yards \times 8 sections = 2640 yards on a spool. As the clock or dial on the spooling frame measures 60 yards to a hole, we find $2640 \div 60 = 44$ holes to set the pin at for the number of yards on each spool. The number of yards of yarn to put on a spool depends on its count, as well as the number of holes in the width of the thread guide. In our example we refer to a $4\frac{1}{2}$ run yarn, if any coarser yarn used, it would not be possible to get so many yards on; as the coarser the yarn, the less number of yards the spool will hold.

There being 500 threads to a section, and suppose the spooling guide is made for 40 threads to a spool we find: $500 \div 40 = 12\frac{1}{2}$ spools.

For a warp the half spool could be made with 40 threads, one-half the number of yards in length, or 1320 yards, or we could use a 20-thread guide and make it 2640 yards long. As the order is for 10 warps, we will make the even number of spools—that is, $12\frac{1}{2} \times 10 = 125$, using one for every two warps by running the 20 threads off of one side for a few sections, then breaking out, and tying in the 20 from the other side.

The beam being ordered 64 inches wide, and we have calculated for 8 sections, we then have $64 \div 8 = 8$ inches for the width of a section. Measure off then 8 sections each 8 inches wide on the dresser-reel, and insert the guide pins accordingly.

Suppose there is a new dresser to start up, or one where the last warp has been run through, no yarn having been left in to tie the new warp-threads to, which for this reason must therefore be drawn through. After placing the spools in the creel, 6 on one side and 7 on the other (the odd spool being for the 20 threads, as mentioned) we take the ends of the threads of the 6 spools and commence drawing through the reed by the use of a reed-hook. We take, first, the outside end of the top spool, then the outside end of the one next to the top, then the outside end of the third from top, and so on down to the bottom spool. Then commence again with the top spool, taking the thread next to the outside, taking up every second thread on each spool to the bottom, then next the third thread, the same way, and so on until the whole number, or 240 threads of these 6 spools, are drawn through the reed. Then take the 7 spools on the other side of the creel, drawing them in the same way, but being careful to take only 20 threads from the one we have decided for the half spool, placing it at the top of the creel, as it can be better seen and attended to.

All the threads are now tied on the inside of the reed, to prevent pulling through. A thread-lease is picked up with the fingers, and secured on the inside of the reed with yarn. A rope or strong cord is passed through the dressing frame, in the same direction the yarn is to travel—that is, over the small roller back of the reed, under the small roller next, then through the size rollers, across the coils of steam pipes to the bottom roller at the other end; around that, from underneath, and back again to the bottom roller next to the size rollers; around this one, and back again across the coils to the top roller; over this and down around the large copper steam cylinder, coming back again across the coils to the top roller; under this and over, and back again across the coils to the lease-reed.