

FIGURING WITH EXTRA WARP.

In this instance figures are produced upon single cloth structures by means of floating (after a given design) an extra warp alternately on face and back of said single cloth. In most instances one set, or system, of extra warp-threads is thus used, whereas in others two sets are required, the latter referring to two mate extra warp-threads taking the place of the one thread called for in the first arrangement, resulting in a more expensive fabric on account of the higher number of warp-threads needed in the warp for a given width of fabric.

One Set of Extra Warp.

This method of designing finds extensive use in the manufacture of dress goods, shirtings, ribbons, and produces most attractive styles.

As previously mentioned, a regular single cloth structure (one system warp and one system filling) forms the body of the fabric, the same being interlaced either with the plain weave, the 3 or the 4-harness twill, or a closely interlacing granite, cr pe or similar well broken-up weave may be used.

Upon this single cloth structure the extra system of warp-threads, by means of floating on the face to suit the outlines of the design, forms a figure. Where not required to show in the figure portion of the design this extra warp-thread is then made to float on the back of the fabric structure, hence not visible on the face.

The design itself may in some instances refer to an all-over pattern, other times to spotting, but most often to stripe effects.

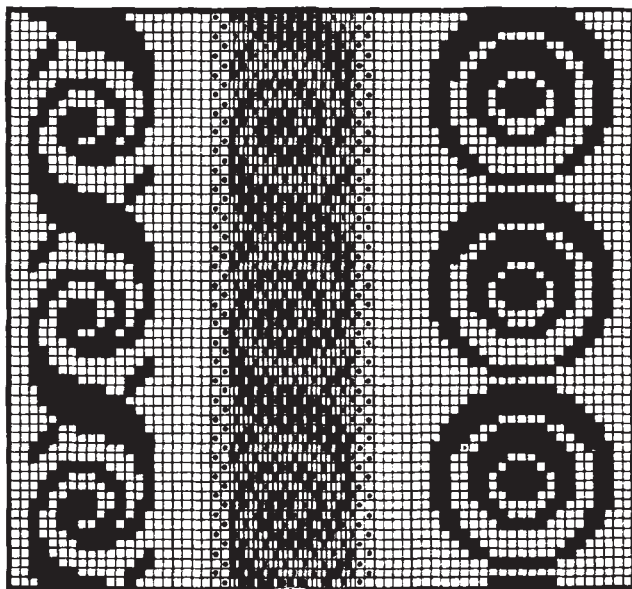


Fig. 1

Fig. 2

Fig. 3

In connection with cotton dress goods, figured gingham, shirtings etc., the extra warp used, besides being of a different color, may at the same time be of a different material, so as to heighten the pronounced appearance (lustre) of the figure. Mercerized Cotton,

Spun, Artificial or Thrown Silk, Mohair, etc., being used, depending upon the character and value of the fabric under consideration.

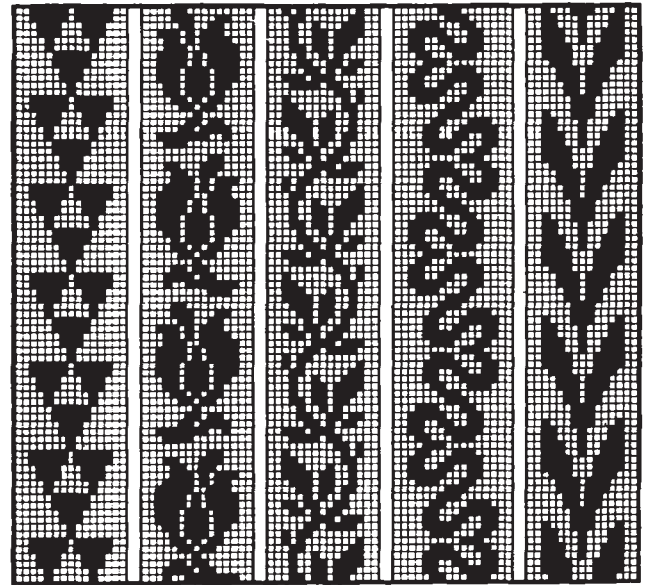


Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Figs. 1 and 2 are given to assist in explaining this weave-formation.

Fig. 1 shows the design, as produced for practical work, on the point paper; a stripe effect calling for 13 warp-threads and 20 picks. *Full* squares show the floating of the extra warp on the face of the fabric, *empty* squares show where the same has to float on the back of the structure, *i. e.*, is not seen on the face of the fabric.

Fig. 2 is the analysis for design Fig. 1, *i. e.*, shows the interlacing of the ground and the extra (*i. e.*, the figure) warp with the filling.

For the sake of an example, the plain weave has been selected for interlacing the ground structure, see *dot* and *dash* type, the first kind of type being used where no extra warp comes under consideration in the construction of the fabric, the latter type being used where one figure alternates with one ground warp-thread, to produce the design. To simplify the subject, we specially prepared the point paper for this figure warp, by ruling each square lengthways in half, to suit the texture.

Suppose texture of ground warp and filling is 50 by 50, then in every instance where the extra warp comes into consideration, the proportion of the texture in that particular portion of the fabric then changes to 100 by 50.

Fig. 1 is the working design: the weave for the ground cloth (the plain weave in this instance) is built direct on the harness chain and distributed by means of the proper drawing-in draft over the lay-out of the fabric in the loom. The same calls for 13 warp-threads in its repeat and since every thread interlaces

different, requires 13 harness for its execution on the loom.

The weave for the ground cloth calls for 2 or 4 harness; using (preferably) the latter, gives us 17 harness for weaving the complete fabric on the loom.

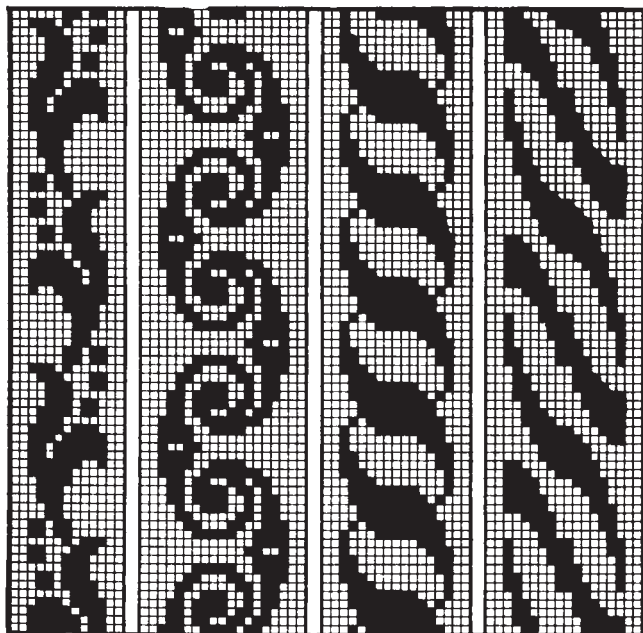


Fig. 9 Fig. 10 Fig. 11 Fig. 12

Adding cords, *i. e.*, heavy ends (one, two or more warp-threads interlacing the same side by side) to the ground portion of the fabric between two stripes, in order to produce a more fancy fabric structure, will not increase the number of harnesses necessary, neither will fancy colorings interlaced on the plain weave and introduced in the shape of small stripes in the ground portion. If these small stripes, to be produced

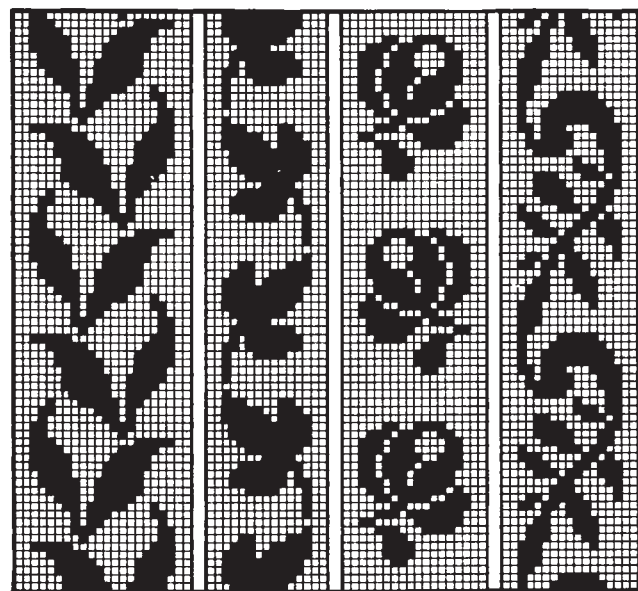


Fig. 13 Fig. 14 Fig. 15 Fig. 16

into the ground portion of the fabric, are desired pronounced, and this with a somewhat raised effect, then the 4-harness broken twill warp effect, the 5 or 6-harness satin warp effect must be used for such spe-

cial stripes, in order to then hide the filling from the face and at the same time bring up the stripes pronounced, whereas fancy colored threads interlaced with the plain weave will result in a modifying of the value of the color of these threads by means of the filling showing combined (intermixed) with the fancy color of the warp in such stripes.

Ideas for Figure Stripes.

Figs. 3 to 16 are given to show a variety of such stripes to be produced with an extra warp, the same as explained in detail in connection with point paper design Fig. 1 and its analysis Fig. 2.

Geometrical as well as floral designs are given, and will show the endless variety of new designs that in a similar way can be constructed.

Designs given may be used as small single stripe effects, or two of them, placed a few ends of ground warp-threads apart, may be used as one stripe. In connection with some of the geometrical designs the position of the second effect can be inverted, producing in turn another stripe effect. Again, the position of the second effect, both in floral and geometrical designs, may be *dropped*, as compared to position of the first, producing in turn another stripe effect; single and double effects distributed may be used, in fact the combinations possible to be made are unlimited.

Fig. 3: Repeat 19 warp-threads, 9 harness point draw with 3 ends alike for the point. If using two of these effects, for one stripe in the fabric, you may *drop* the second effect 10 picks. This however will call for 9 more harnesses, *i. e.*, 18 harnesses complete for the stripe, plus the 2 or 4 harness for the plain weave for ground, or any other weave that you care to use for the interlacing of the ground. Should you desire an extra wide stripe, use three effects of Fig. 3, keeping the two outside effects the same and *dropping* the centre effect as before explained. 2 or 4 ends plain between each two effects will improve the appearance of this combination stripe effect in the fabric. Combination as thus explained with stripe effect Fig. 3 can be practised with any of the designs given in this article; no special reference to this will be made again.

Fig. 4: Repeat 11 warp-threads, to be drawn on 6 harness, point draw.

Figs. 5 and 6: Repeat 11 warp-threads, straight draw.

Fig. 7: Repeat 12 warp-threads, straight draw.

Fig. 8: Repeat 11 warp-threads, to be drawn on 6 harness, point draw.

Fig. 9: Repeat 9 warp-threads, straight draw.

Fig. 10: Repeat 15 warp-threads, to be drawn on 14 harness, drawing twice in rotation on harness 7.

Fig. 11: Repeat 13 warp-threads, to be drawn on 9 harness, drawing five times in rotation on harness 5.

Fig. 12: Repeat 14 warp-threads, to be drawn on 13 harness by drawing two ends in rotation on harness 7.

Fig. 13: Repeat 18 warp-threads, straight draw.

Fig. 14: Repeat 11 warp-threads, straight draw.

Fig. 15: Repeat 14 warp-threads, straight draw.

Fig. 16: Repeat 13 warp-threads, straight draw.

Fig. 17 shows the application of one of these floral stripe effects to a silk shirtwaisting, the illustration being a photographic reproduction of the actual fabric.

The color arrangement of the warp is thus:

30 ends light (*ground*) = 30 ends
 1 end dark } $\times 36$
 1 end light } (*floral stripe*) = 72 ends
 30 ends light (*ground*) = 30 ends
 9 ends dark } $\times 5$
 12 ends light } (*five stripes*) = 105 ends
 9 ends dark (*sixth stripe*) = 9 ends

Repeat of pattern: 246 ends

In reeding these fabrics, pay only attention to your ground warp, adding the figure warp in its proper position in the same dent with its mate ground warp-threads. This will give us in our example the following plan:

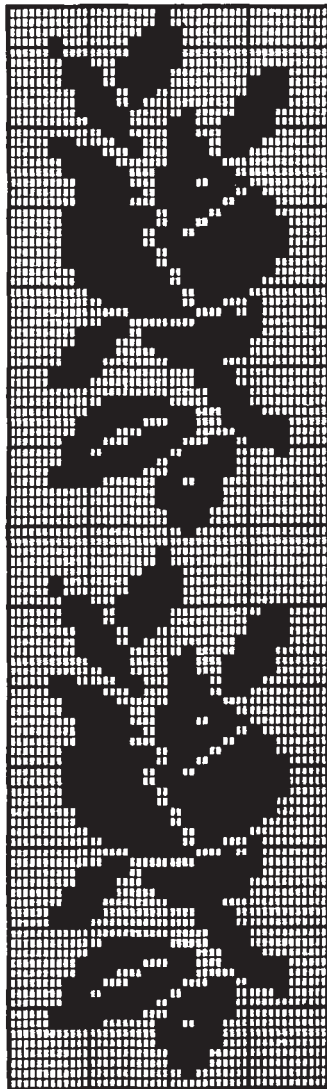


Fig. 18

Draw:

10 dents with 3 ends (*ground only*)
 12 dents with 6 ends (3 *ground* and 3 *mate figure*)
 48 dents with 3 ends (*ground only*)

70 dents for one repeat of design, *i. e.*, 246 ends.

Fig. 18 is the point paper design, executed on 12 by 8 paper, to suit texture of fabric shown in Fig. 17, two repeats of the repeat being given.

Fig. 19 shows the analysis of the stripe, the ar-

rangement of which is

1 end ground warp } 36 times over.
 1 end figure warp }



Fig. 17

Ground warp is shown by *dash* type. Figure warp by *full* type. On each side of the stripe 14 warp-threads of ground warp are shown, interlacing on taffeta, and in unison with those ground threads as are used in the figure stripe.

With reference to drawing-in the warp in its set of harness, the figure warp calls for 18 harnesses straight draw, with two threads drawn in rotation on one harness. The ground, *i. e.*, taffeta calls for 2

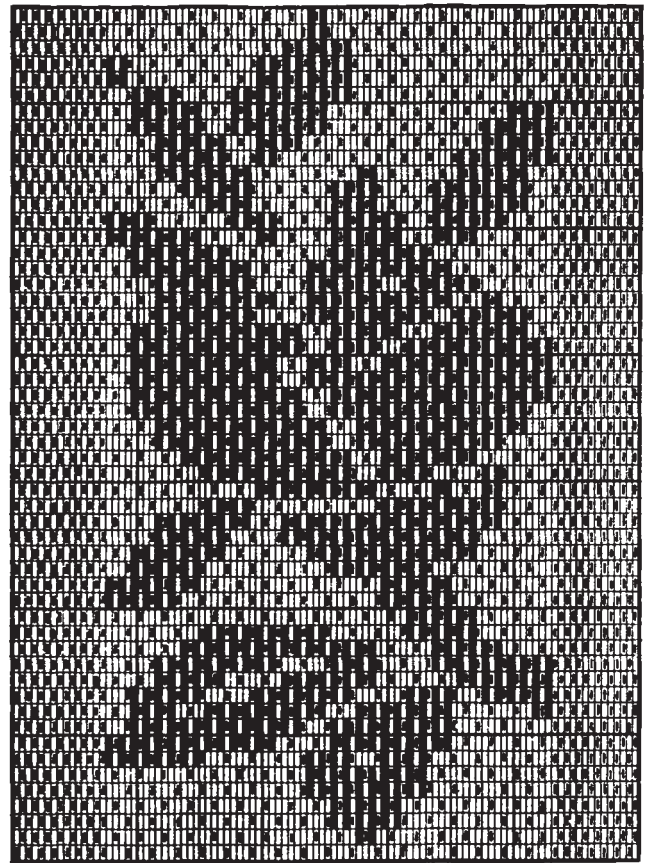


Fig. 19

harness or its multiple; 6 in this instance is the most advisable number of harnesses to use on account of the high texture of the fabric, as well as the 3 ends per dent used in the reed in drawing-in the taffeta, and which is a multiple of 6; again 6 is a multiple of

36, the unit of the figure stripe. This will give us $(18 + 6 =)$ 24 harnesses for the drawing-in draft to use.

Two figure warp-threads have been drawn on one harness, a feature which shows an enlarging (doubling) of the original design. The same principle can be applied (with proper modifications) to any one of the figure stripes given previously in this article, to produce larger, *i. e.*, more prominent effects.

(To be continued.)

HOW MITCHELINE QUILTS ARE MADE.

By *W. Watson.*

The Mitcheline quilt structure is a double cloth in which two plain fabrics are so firmly bound together as to be inseparable. The design is due to the interchange of the two fabrics, and the cloth is equally compact and solid in every part. A representation of a cloth is given in Fig. 1, while Fig. 2 shows a portion of the point paper design to correspond.

The following are the weaving particulars of a medium quality of cloth:

Warp: 2 ends of 18's cotton to alternate with 1 end of 32's cotton.

Filling: 2 picks of 40's cotton to alternate with 2 picks of 8's soft spun cotton.

64 ends and 96 picks per inch.

The 18's warp contracts about 2 per cent, and the 32's warp (which is placed on a separate beam) from 20 to 25 per cent, while the shrinkage in width varies from 10 to 15 per cent.

The 18's warp and the 40's filling form the plain ground fabric, and the 32's warp and the 8's filling the plain figuring fabric, on the right side of the cloth, and vice versa on the reverse side. The 32's



Fig. 1

warp of the plain figuring fabric is really a binding warp which interweaves regularly with the 40's filling of the plain ground fabric, and thus binds the two

fabrics solidly together. The cloths are mostly woven in the grey, and then bleached, but sometimes the ends which form the ground (the 18's) are all

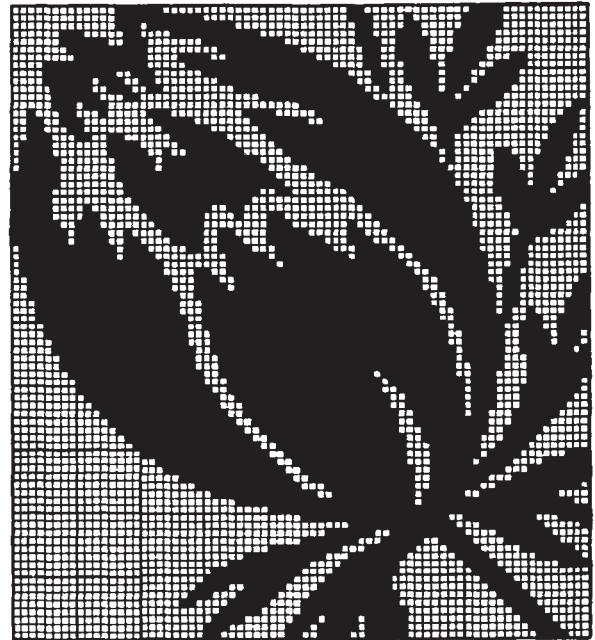


Fig. 2

colored, or are arranged in stripes of white and color; a white figure then being formed upon a colored or a striped foundation.

Method of Loom Mounting.

The same as in weaving Marseilles quilts, a combination of two working comber-boards and two harness-shafts are employed. Diagram *A* in Fig. 3 illustrates the principle of the tie-up of the Jacquard harness, while diagram *B* in Fig. 3 shows the system of drafting.

Two-thirds of the warp-threads (the 18's) are drawn upon the Jacquard harness, and one-third (the 32's) upon the two shaft harnesses, as shown in diagram *B*. Two harness cords, however, are connected to each neck-cord (as shown also at *A*); one of these harness cords passes through the front comber-board, the other through the back board, so that including a thread drawn in one of the harness shafts, each neck-cord and its corresponding hook in the Jacquard machine, is equivalent to a group of three threads.

By raising a hook, two harness threads—one on each side of a thread drawn in a shaft harness are lifted together, but by raising the comber-boards separately, the two Jacquard harness threads, by means of knots tied to them, resting upon the boards, are operated independent of each other.

Method of Designing and Structure of Cloth.

Taking the arrangement of the filling as 2 picks fine (40's) and 2 picks coarse (8's) the order of shedding then is as follows: The comber-boards lift in alternate order on the two fine picks, and form the plain weave, represented by *dots* in the diagrams *C* and *D* in Fig. 3. The harness shafts lift in 2-and-2 order alternately and produce the weave shown by *crosses* in diagrams *C* and *D* in Fig. 3. The Jacquard is raised on the first coarse pick and remains up on the second coarse pick and lifts the harness threads