

SPOTTING WITH EXTRA FILLING OR WARP FOR HARNESS AND JACQUARD WORK

(Continued from page 33.)

How to Prepare Point Paper Design from Sketch.

By this we understand the transferring of the sketch on a point paper ruled to suit the texture of the fabric, insert the proper ground weave, tie to the fabric structure (not visible on its face) any excessively floating picks, and give to the operator of the Royle Piano machine full details how to cut the Jacquard cards.

First prepare the sketch, showing two or more repeats of the design, warp and filling ways, in order to obviate any chances for streaks, either warp or filling ways in the design, and thus in the fabric.

Fig. 11 shows such a sketch, a fancy vesting, reproduced actual size; three repeats each way are given, i. e., nine repeats of complete pattern.

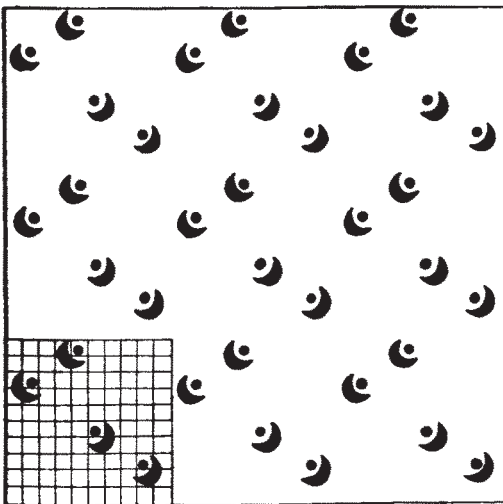


Fig. 11.

Texture of fabric is 132 warp-thread and 88 picks per inch, not considering the figure picks, which do not come into consideration with our calculations for the point paper to use.

The Point Paper to use is ascertained by proportion from the warp and filling texture and the ruling for the warp on the point paper to be used thus:

Calculating for a paper over-ruled by 12 for the warp-threads, in this instance gives us

$$132 : 88 :: 12 : x = 8 \text{ Ans.}$$

12×8 is the point paper wanted.

We selected number 12 in our proportion as the number for the warp ruling of the point paper, since the repeat of the design indicated the use of a 600 machine and which is a 12 row machine, hence the heavy rules of 12 on the point paper are of advantage for the card stamper in guiding him when cutting the cards, where any other ruled point paper would have

to be over-ruled by 12 by the card stamper, which ruling in connection with the original heavy printed ruling of the paper would not provide the ready reading-off since the original heavy ruling would come in different positions in the final ruling—all of which is overcome when selecting the original ruling to correspond with the final reading-off needed by the card stamper.

The repeat of the pattern is $\frac{7}{8}$ inch, either way. Considering warp, we find 132 (warp texture) $\times \frac{7}{8}$ (size of one repeat) = 120 ends in pattern.

The weave for ground in our example repeats on

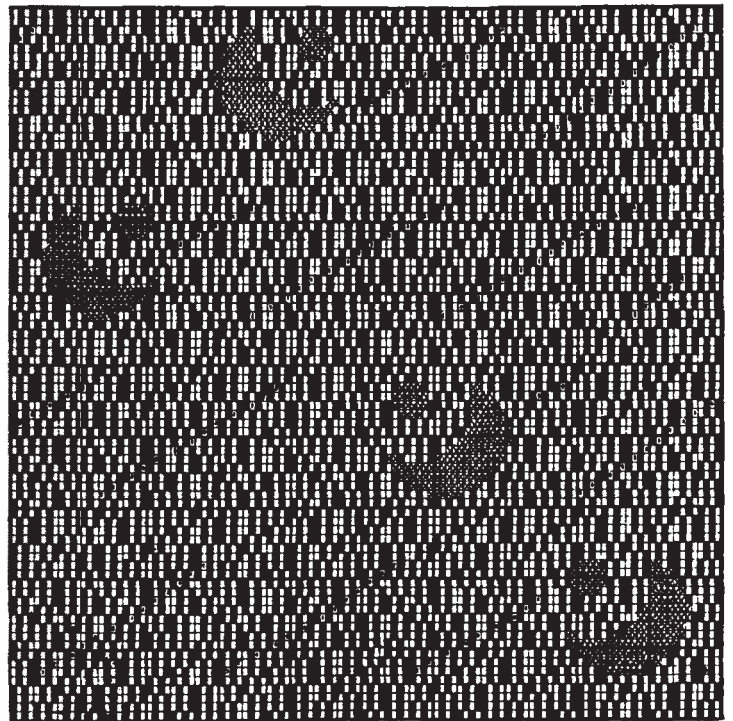


Fig. 12.

16-harness, and 120 ($120 \div 16 = 7$ plus 8 ends over) is not evenly divisible by 16, but is evenly divisible into 240, i. e., two repeats of the pattern, for which reason the point paper design must be prepared for 240 warp-threads, to take up effect-figure and ground-weave uniformly; hence Fig. 12 shows only one-half of the working design, considered in its width, and which, when completed, afterwards is cut twice over on the Royle Piano machine.

Filling ways we find that we also have to use a ground weave repeating on 16 picks.

88 picks per inch, filling texture in finished fabric (as previously quoted) gives us in $\frac{7}{8}$ inch for the repeat of the pattern ($88 \div 8 = 11 \times 7 =$) or 77

picks, and for which we used 80 picks in our point paper design since the latter is the nearest number into which 16 (repeat of weave) and 8 (ruling-off of point paper) is evenly divisible.

Adhering to the 77 picks would be not practical, since to accomplish this (77×16) 1232 cards would have to be designed and cut (1152 more than necessary) with its corresponding loss in time and labor. Again nobody could discover the difference of 3 picks in the design under consideration.

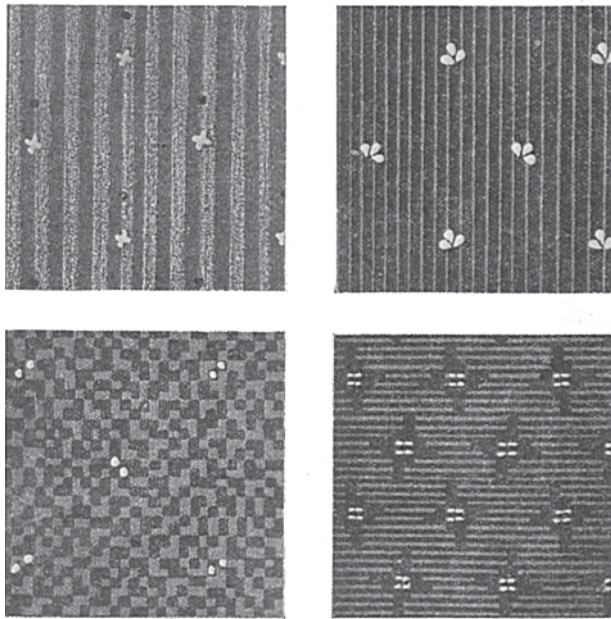


Fig. 13.

Thus repeat of design on point paper is 20 squares @ 12 = 240 warp-threads and 10 squares @ 8 = 80 picks.

Having to use a 600 machine we then cut design twice over, *i. e.*, use 40 rows ($40 \times 12 = 480$, and $240 \times 2 = 480$) of the 50 or 52 (if including the 2 customary selvage rows of the machine) rows the machine actually contains, but which are insufficient for another repeat of the pattern. This omitting of 10 rows is best distributed over the entire length of the card, *viz.*: Use 4 rows, miss 1 row, ten times over.

Transferring Sketch on Point Paper.

Having obtained all details, *viz.*:

Texture of fabric: 132×88

Ground Weave: 16×16

Dimensions of one repeat of design in sketch $\frac{7}{8} \times \frac{7}{8}$ inches

Point paper to use: 12×8

Repeat of pattern on point paper: 240×80

Size of Jacquard machine to use: 600.

We now come to the actual work of the designer, that of transferring the sketch on the point paper.

For this reason outline one repeat of the pattern on your sketch and subdivide it both ways in 10 equal parts, as done in left hand lower corner in sketch Fig. 11, giving us ($10 \times 10 =$) 100 small squares

and which correspond with the heavy outlines in our 12×8 , point paper we are to use.

Transfer (enlarge) your figures on your sketch onto its size on the point paper, taking your heavy overruling of the latter as a guide to the overruling on sketch Fig. 11.

Next paint your figures on the point paper design in the usual manner in light blue or yellow, following closely the outlines as drawn by pencil or charcoal by the designer used when transferring the sketch or the point paper, as previously referred to. Wherever your line includes all or the greater portion of a small square of the figure effect, it is to be painted. When it does not touch or only covers less than half its surface, do not touch it, again if the line covers about one-half of the surface of the small square, use good judgment whether to cover it or not, guided by the importance of preserving a pleasing outline for your figure.

Having in this way transferred the individual figures of the repeat of the design on the point paper the next to do is to insert the weave, preferably in vermilion, the most satisfactory color to handle by the textile designer, also the easiest color to be read off by the card stamper. The weave in our example calls for 16×16 , hence is easily inserted since warp ways it calls for $1\frac{1}{2}$ squares, and filling ways for $1\frac{1}{2}$ squares. Whenever you join this ground weave to the filling spotting, use good judgment; make the best connection you can make without disfiguring the design as produced by the extra filling.

Being careful to compare both ways the outline of the design, to see that they properly join, complete the design which then is ready for the *Royle* card stamper.

Fig. 12 shows one half of the complete design for the card stamper executed on 12×8 paper. The design shows the four figures as forming the complete repeat of that part, but Fig. 12 is only one half of the working design for the fact that the ground weave does not repeat with the repeat of the figure. $120 \div 16 = 7$ times + 8 ends over. For this reason 7 repeats of the design have to be painted by designer and when the 8 ends over will equal 16 ends over = one repeat of the weave. $120 \times 2 = 240 \div 16 = 15$

Fig. 12 conveys a perfect idea of the working design, the other repeat painted to the right being about a duplication of the four figure effects with the ground weave joining said figures in a slightly different position, not possible to be noticed by anybody in the woven fabric.

Cutting Jacquard Cards on the Royle Machine.

For every horizontal line in design Fig. 12 containing only ground weave cut one card: Take or cut red, *i. e.*, full squares.

For every horizontal line in design Fig. 12 containing ground weave and figure effect cut two cards

(a) Take, or cut, red, *i. e.*, full squares

(b) Take, or cut, red and white, *i. e.*, full an empty squares; miss or drop blue, *i. e.*, cross square and dot squares. The cross squares dropped pro

duce the figure, whereas the *dot* squares hitch the floating figure pick, not visible on the face, to the back of the fabric structure. These hitching

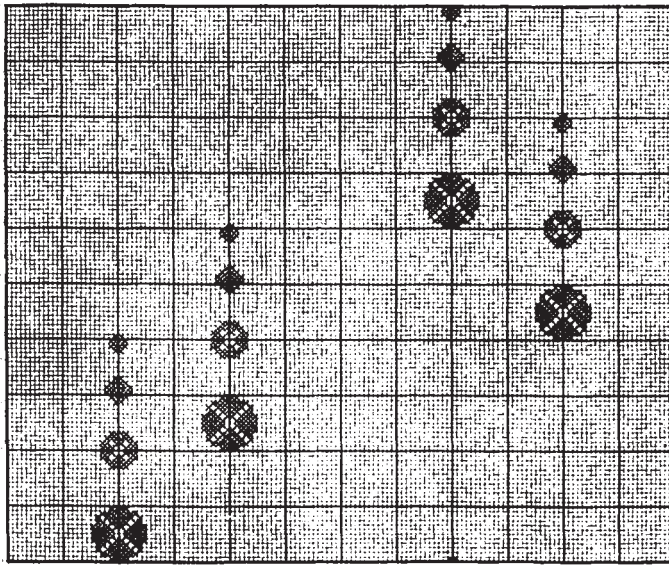


Fig. 14

stitches need not be in regular order; keep them as far apart as possible and be sure that they are hid by one or both of the joining warp-threads.

Spotting by the Warp.

A typical example of it is given in Figs. 14 and 15, of which

Fig. 14 is a sketch for a dressgood fabric constructed by this system of fabric structure.

Fig. 15 is the point paper design, showing sketch 14 applied to a 4-harness even sided twill ground. The figure warp is shown by *cross* type, the ground warp by *full* type.

The arrangement of the warp is:

- 18 ends ground
- 1 end ground } × 12
- 1 end figure }
- 12 ends ground
- 1 end ground } × 12
- 1 end figure }
- 36 ends ground
- 1 end ground } × 12
- 1 end figure }
- 12 ends ground
- 1 end ground } × 12
- 1 end figure }
- 18 ends ground

192 ends repeat of pattern.

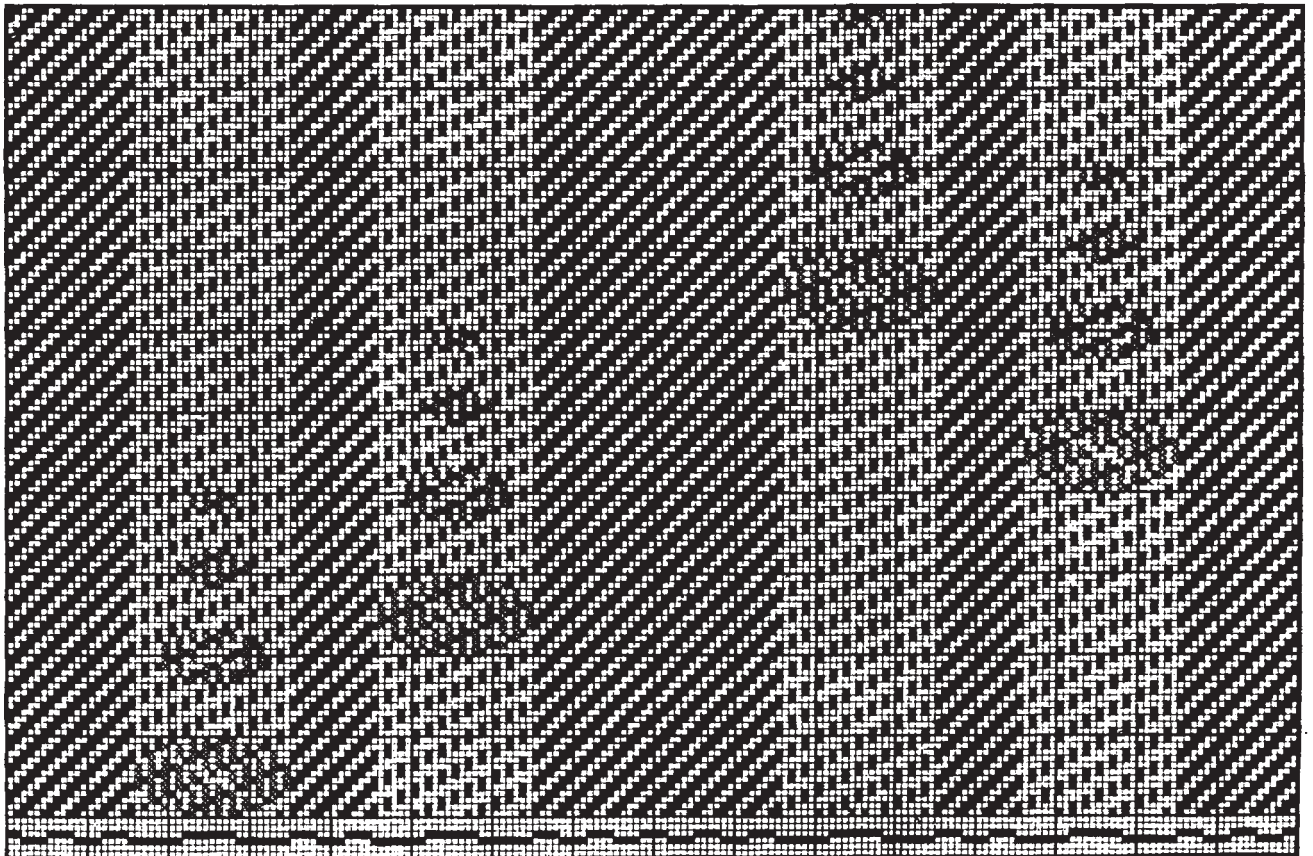


Fig. 15

Fig. 13 shows us four reproductions of figured vestings, constructed by the method thus described, *i. e.*, effects produced by means of filling spotting.

Below the design the arrangement for the reed is given, calling for either 4 or 8 ends per dent.

For its execution in the loom, either a 200, 400 or

600 Jacquard machine can be used, missing in a 200 machine one row, in a 400 machine two rows, and

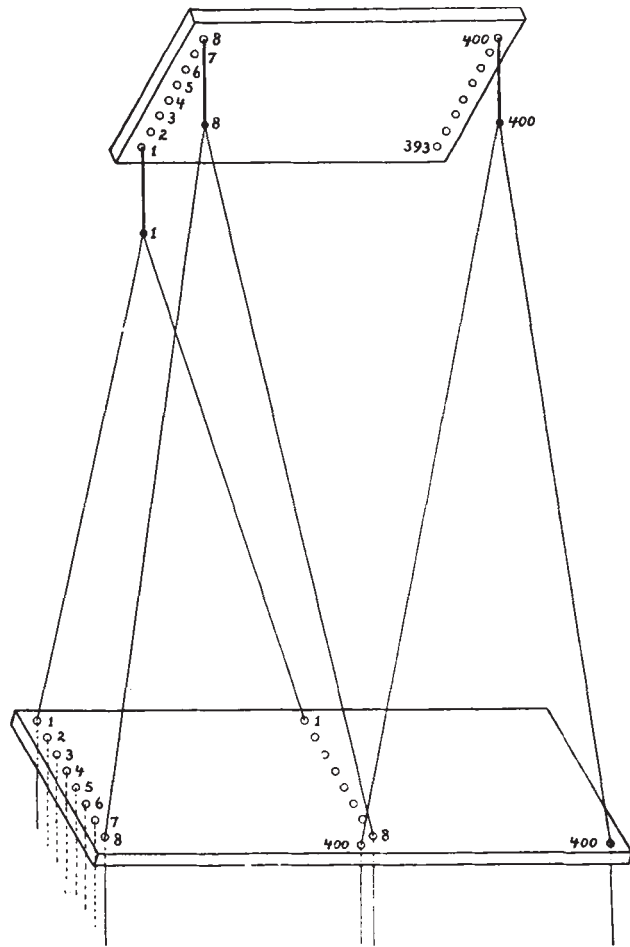


Fig. 16

in a 600 machine also two rows. 200 and 400 are 8 row deep machines, whereas 600 refers to a 12 row deep machine, exclusive of reserve rows in either machine.

Again we may use a small Jacquard machine for operating the figure warp, say a 200 machine, using four or eight front harnesses in connection with it to carry the ground warp.

Either arrangement has its advantages according to the class of goods made by the mill.

When using a Jacquard machine only, a 400 machine will be the one most advisable to use in connection with this class of fabrics, permitting larger designs, if so desired, to be produced without changing the tie-up of the Jacquard harness.

Fig. 16 illustrates such a tie-up showing a 400 machine tied-up straight for 2 divisions. More divisions can be used to suit the texture and width of the class of fabrics to be made, the same being simply duplicates of the second division in our example.

The system of tie-up used is called the English system in opposition to what is called the German system. In the English system the Jacquard machine is adjusted on the loom so as to have its cylinder placed parallel with the comber-board, and is the one shown in Fig. 16.

It is the easier system for tying up the Jacquard harness, the number of rows deep of the machine and that of the comberboard corresponding, producing in turn a smooth, well threaded harness, easy for the weaver to locate and correct broken harness cords. The eight hooks of one cross row (one hook from each of the 8 griffe-bars of the Jacquard machine) runs in the direction of the warp-threads, from the whip roll towards the breast beam of the loom. Having the same number of rows in depth in the comberboard as there are griffe-bars, and threading the harness correspondingly, one may readily see the advantages of this tie-up.

In what is known as the German system of tying-up a Jacquard harness, the cylinder is placed cross-wise, *i. e.*, at 90 degrees to the comberboard. There are again two subdivisions of the procedure, *viz*:

Threading the harness to the machine, *i. e.*, its neck-cords, from Front to Rear, and what is known as an *open harness*, or

Threading the harness to the machine, *i. e.*, its neck-cords, from Rear to Front, and what is known as *section harness*. The latter is shown in Fig. 17, showing needles, hooks, neck-cords, harness and comberboard, complete. This tie-up shows 4 divisions, *i. e.*, $(400 \times 4 =)$ 1600 heddles capacity for warp-threads. More or less divisions can be used without changing the principle of the tie-up; the number of divisions used depend upon the warp texture and the width of the fabric under consideration.

If dealing with a Jacquard machine with front harnesses attached, the 96 ends of ground warp in the repeat of weave Fig. 15 are drawn straight in sections of 12 and 36 ends, alternately, into the heddles of four front harnesses, while the four figure sections of 24 ends each (one ground, one figure) = 96 ends are drawn in the mails of the Jacquard harness, which is as a rule a 200 Jacquard machine, tied up straight.

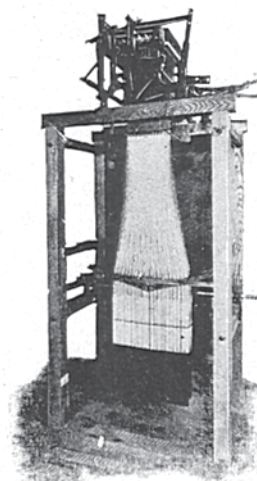


Fig. 18

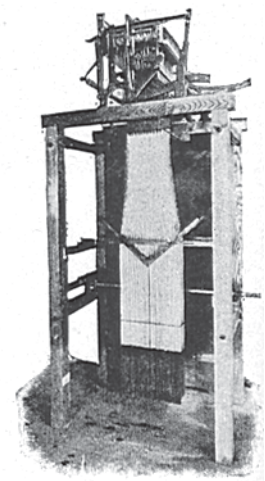


Fig. 19

This will give us 2 repeats of the pattern to one repeat of the machine, leaving one row $(96 \times 2 = 192 \text{ and } 200 - 192 = 8 = 1 \text{ row})$ besides the two usual reserve rows of the machine empty, with the exception of such of the needles as are used for sel-

vage purpose, or for the operation of the front har-

With reference to the holes in the comberboard

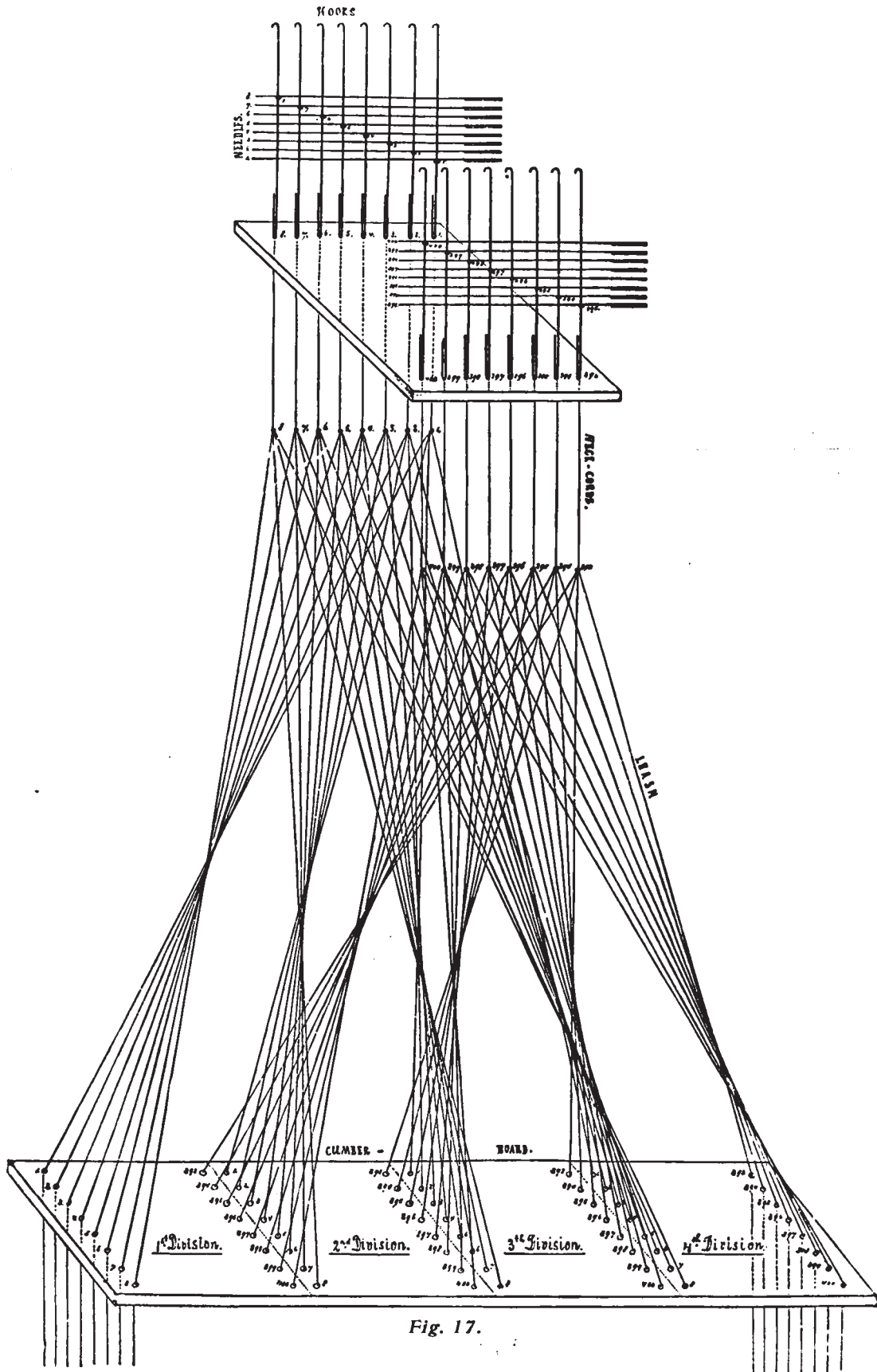


Fig. 17.

ness, provided the latter are not operated direct from the loom, by cams.

they either must be bored in sections taking the passing of the 12 and 36 ends of plain ground into considera-

tion, or a regular comberboard must be used, taking the complete texture of the fabric into consideration, omitting threading of the board, where said ground warp-threads for the front harnesses have to pass.

Fractions of divisions may be used with any of the tie-ups quoted to suit the proper number of ends to use to obtain a certain width of finished fabric desired.

As is well understood, the texture and width of a fabric in connection with Jacquard work must be known before tying up the loom. No changes in texture can be made after the loom is tied up except we use a movable comberboard as shown in Figs. 18 and 19, and where the first shows the comberboard expanded, *i. e.*, in normal condition, while Fig. 19 shows the comberboard contracted, providing in turn for a proportional increase in the texture above the standard texture, *i. e.*, the expanded comberboard.

HONEYCOMB WEAVES

(Continued from page 34.)

The Use of Honeycomb Weaves for Jacquard Work.

Their most extensive use in that line of work, rests with the manufacture of Bedspreads and Draperies, and where they are used in connection with twills, satins, pointed twills, etc., for figure or all-over ground effects, using the plain weave, as a rule, for small portions of ground work, since the latter permits a more distinct cut-off of ground and figure, compared to any other weave, besides imparting to the joining figure effects a somewhat raised appearance.

With reference to the tie-up of the Jacquard harness for Bedspreads, as a rule, the point tie-up is used, one complete-repeat in connection with a 1200 Jacquard machine being a specimen of a frequently used texture.

Fig. 13 shows a sketch for such a honeycomb bedspread, illustrating $\frac{1}{4}$ th of the complete fabric, which

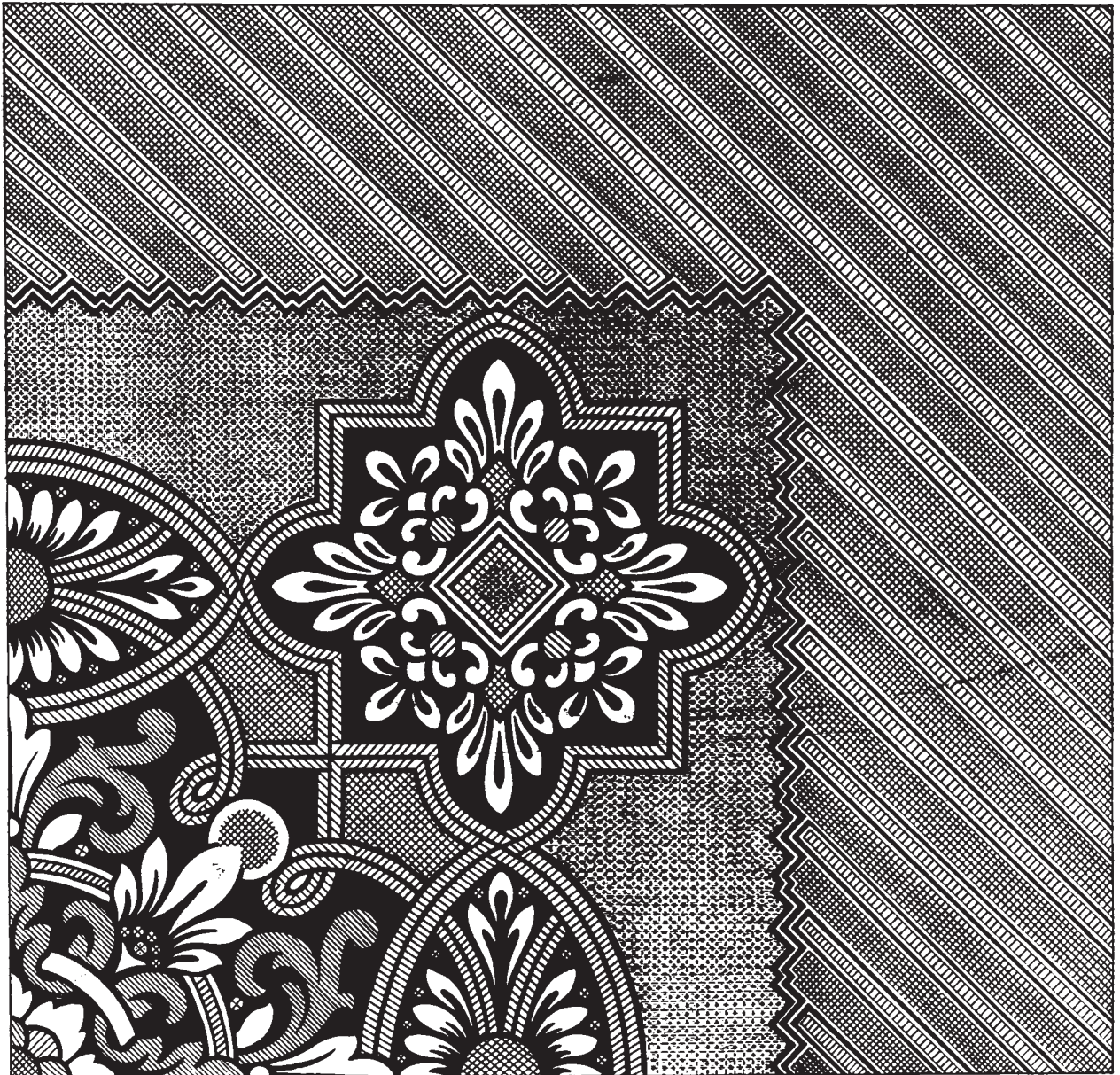


Fig. 13.