

connection with the even number of picks (see *dot type*).

The card stamping, as previously mentioned, is done direct from the design (Fig. 5), based on explanations given in connection with the fabric analysis previously explained.

Fig. 9 explains the subject of how the cards are cut directly from the design, showing the stamping of a portion of the first four cards, representing a portion of the first four picks of our fabric analysis, *i. e.*, a portion of stamping from the first two lines of design Fig. 5. The cards are shown in two stages, *viz*:

A shows the stamping of the double plain principle, *minus* raising face warp on every back pick, or as we have called it previously (to simplify matters to the readers) shows the $\frac{3}{4}$ -1 4-harness twill. This cutting is repeated on every four cards in the set.

In practical work the cards are numbered 1^a, 1^b, 2^a, 2^b, 3^a, 3^b, etc., indicating by these numerals the respective lines on the design they refer to.

Letter of reference *a* indicates, in the present example, *cut figure, i. e., cut black type*, or as the designer would get it *cut red*; letter of reference *b* indicates *cut ground, i. e., cut empty type*, or *cut white* as we give it to the card stamper.

The cards are cut with reference to the 4-harness twill, in changes of four, on the *Royle Repeater, i. e.*, prepared for the designer in quantities; if no repeater is at his disposal he has to stamp this weave on the cards previous to stamping the design.

Jacquard cards are stamped, *i. e.*, to be read from right to left, row for row, and which means to the reader to read cards in illustration downwards. In the repeat of the 4-harness twill, *i. e.*, 4 threads,

- Card 1 reads: 3 down 1 up, *i. e.*, miss 3, cut 1;
- Card 2 reads: 1 up 3 down, *i. e.*, cut 1, miss 3;
- Card 3 reads: 1 down 1 up 2 down, *i. e.*, miss 1, cut 1, miss 2;
- Card 4 reads: 2 down 1 up 1 down, *i. e.*, miss 2, cut 1, miss 1.

It will be readily understood that in connection with cards 3 and 4, the miss 1 and miss 2, as join in either instance, equal the miss 3 of the repeat of the 4-harness twill.

Having prepared the necessary amount of cards (*i. e.*, the 4-harness twill cut into them) on the repeater, or first on the piano card stamper, the actual card stamping now takes place, and which is (side by side for each card) shown at *B* by means of a portion of the completely cut cards. In the same

Cross in circles show the cutting of the 4-harness twill.

Black circles show the stamping of the design; both cuttings being easily traced to the fabric analysis.

After having cut the 4-harness twill into the required number of cards needed for the design, and which must be a multiple of four (4), then in connection with

- Card 1^a: cut figure; cut 1st line *black* from design;
- Card 1^b: cut ground; cut 1st line *empty* from design;
- Card 2^a: cut figure; cut 2nd line *black* from design;
- Card 2^b: cut ground; cut 2nd line *empty* from design.

and keep on this way until the complete repeat at the design is cut. *Black* in our illustration means red for the card cutter.

To simplify matters for the reader, we have shown the fabric analysis Fig. 6, ruled off, below, indicating the corresponding rows on the Jacquard card, the first

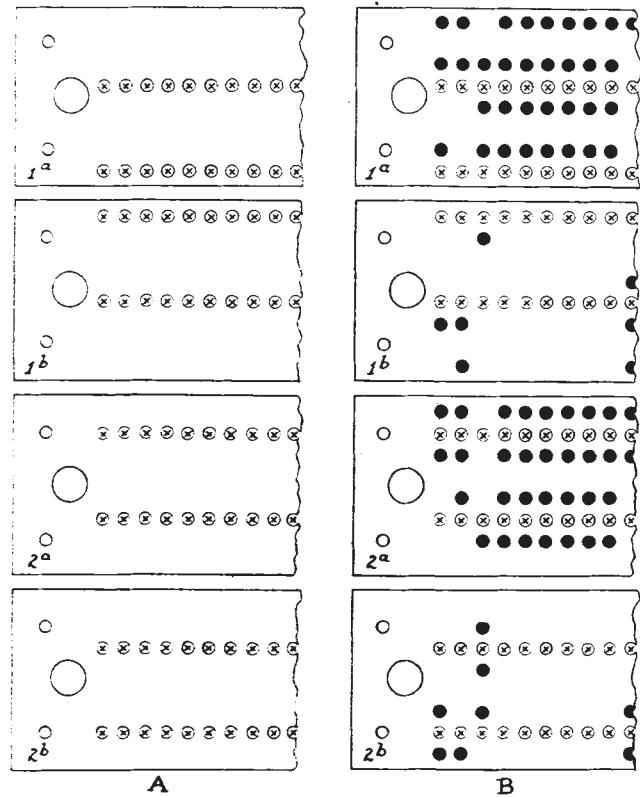


Fig. 9

20 rows being shown in the analysis. 9 complete rows and one broken row are shown on each card (*B* Fig. 9).

(To be continued.)

RIBBONS, TRIMMINGS, EDGINGS, ETC.

(Continued from page 4, July issue.)

Three Systems Warp and Three Systems Filling.

Fig. 175 shows us a portion of a point paper design and Fig. 176 a portion of its analysis, *i. e.*, plan necessary to be prepared, to in turn, either cut from it the cards or build the harness chain for the dobbie.

Fig. 175 has been prepared to illustrate figuring with two extra systems of warp and two extra systems of filling, upon a fabric interlaced with a ground warp and a ground filling.

1st Figure warp is shown by type *shaded* from right to left ();

2nd Figure warp is shown type *shaded* from left to right ();

1st Figure filling is shown by *full* type;

2nd Figure filling is shown by *cross* type.

The design is prepared by painting (showing effect wanted) all the different figure picks to be inserted between two ground picks, on one horizontal row of squares of the design. In the same way paint all figure warp threads as resting between two ground warp threads, upon its respective vertical row of squares.

Analysis, Fig. 176, illustrates the method of interlacing of the 16 lines indicated by the bracket, shown

on the left hand side of the design Fig. 175, calling, in its repeat, for the two figure effects, both in warp and filling.

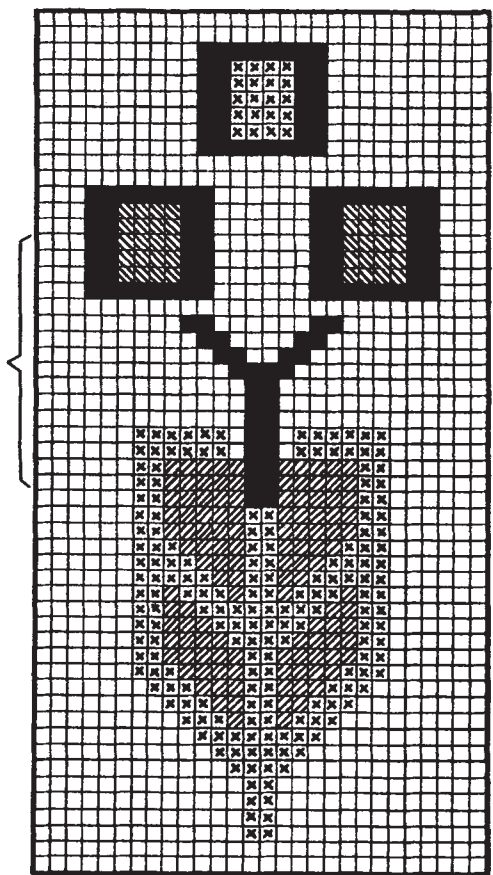


Fig. 175

The plan observed in the analysis, Fig. 176, is to weave *face down* in the loom. For this reason the formation of the various parts of the design, by means of the figure picks, is done by means of raising the respective warp threads, floating the filling below them; the figure warps, in turn, form parts of the design by means of sinkers in the analysis, *i. e.*, the weave, floating below the picks when so called for by the design.

Above the analysis, the entering of the warp threads in the reed is diagrammatically shown, the same being thus: 2, 2, 4, 4, 4, 5, 2, 4, 4, 5, 4, 2, 2, 2.

To simplify matters for the reader, illustration Fig. 177 has been specially prepared, the same being a duplicate of analysis, Fig. 176, executed in colors (*i. e.*, crochet type) to correspond with design Fig. 175.

In the same the two different filling floats (face down in the loom) are shown by the respective raisers of the warp, being shown in different type, viz., *full* type for one color and *cross* type for the other color. With reference to the two warp effects floating, where so required by the design, below all filling (*i. e.*, sinkers in the analysis, Fig. 176) the same have been shown in illustration Fig. 177 by type corresponding to the one used in design Fig. 175. See type *shaded* respectively either / or \. This procedure (*i. e.*, indicating raisers and sinkers for a given design) will give us in illustration Fig. 177 the design, as is pro-

duced face down in the loom, shown in colors to correspond to such as used in Fig. 175, a feature which will go far to simplify matters to the reader.

Remember that:

Full type shows portions of the design produced by means of raisers, by one of the figure fillings.

Cross type shows portions of the design produced by means of raisers, by the other figure filling.

Shaded (\) type shows portions of the design produced by means of sinkers, by one of the figure warps.

Shaded (/) type shows portions of the design produced by means of sinkers, by the other figure warp.

Remember, that both kinds of *shaded* type in illustration Fig. 177, with reference to weaving, *i. e.*, interlacing of warp and filling, refer to sinkers, *i. e.*, *empty* type in analysis Fig. 176.

Thus with reference to illustration Fig. 177 if considered as a weave read:

Shaded and *Empty* type to be sinkers.

All other style or type (*full*, *cross*, large and small dots) to be raisers, and when you obtain duplicate of analysis or weave Fig. 176, shown there in two kinds of type only, viz:

Full type for raisers.

Empty type for sinkers.

The *gammat* (plan of arranging threads or systems of threads as they interlace—are placed side by side) for the warp is shown on top and that for the filling at the right hand side of special illustration Fig. 177.

The dressing of the warp, according to the *gammat*, is thus:

4 ends ground warp	
1 end ground warp	
1 " figure warp #1	} 4 times
1 end figure warp #2	
1 " ground warp	} 5 times
1 end ground warp	
1 end ground warp	
1 " figure warp #2	} 4 times
1 end ground warp	
1 end figure warp #1	
1 end figure warp #2	
1 end ground warp	
1 " figure warp #1	} 3 times
1 " figure warp #1	
6 ends ground warp	

46 ends in pattern

The arrangement of the filling, according to its *gammat*, given on the right hand side of illustration, reading from bottom upwards, is thus:

1 pick ground	
1 " figure #1	} twice
1 " figure #2	
1 " ground	
1 " figure #2	
1 " figure #1	
1 " ground	} 12 times
1 " figure #1	

36 picks given in illustration

The weave for the ground structure is the taffeta, see *large dots*. The *small dots* indicate the raising of the two systems of figure warp on any portion of

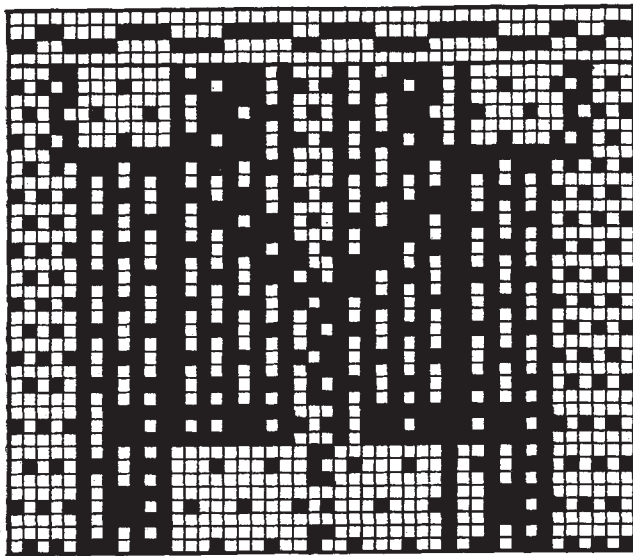


Fig. 176

the design where not required to be shown on the face of the fabric structure, which, as mentioned before, in this instance, is woven face down in the loom.

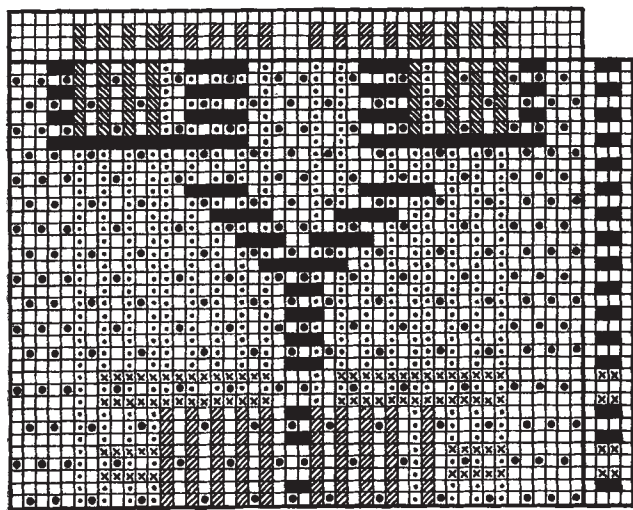


Fig. 177

With certain fabrics (galloon-laces, which after weaving are then cut out) requiring several shuttles, we may prefer to weave them face up. In connection with such fabrics, as a rule, entering threads are placed at the cut line, and to have these prominently in view of the weaver, such trimmings are then woven face up in the loom.

(To be continued.)

A German patent has been taken out for removing iron stains by dampening and rubbing powdered hydrosulphite over them. The specification says that an English patent protects the use of a mixture of oxalic or tartaric acid with tin salt, and that the method requires the co-operation of heat whereby the fibre is seriously tendered, hence the advantage of the new process.

DYEING BLACK SILK.

By T. Schickl.

The loading of silk has grown steadily since its introduction, some mills on the Continent loading as much as four times as heavy as it was originally; fortunately, however, this excessive weighing can only be done for dyeing black. This enormous weighing is carried out in several large factories in the Wuppertal, and in Switzerland, but the usual thing is to treble the weight only.

Extreme loadings require great changes in the dyeing methods. The old process for black-dyeing, by mordanting with iron, soaping, and dyeing with logwood, has disappeared in favor of using a mixture containing unoxidized logwood, when the silk has been loaded with phosphate of tin. The dyeing is finished in an alkaline soap-bath with artificial dyes. Large quantities of dye are required to give a deep black, with the result that the silk loses its scroop completely.

The following is a description of the method: The silk having been loaded up to the prescribed extent with phosphate of tin, is put through a bath of unoxidized logwood extract at about 120 deg. *F.* It is then lifted, the bath is heated to from 130 to 140 deg. *F.*, and the silk is re-entered. These passages are repeated, heating up the bath in the meantime so that the last treatment takes place at about 194 deg. *F.* The silk swells visibly during this process, and absorbs the logwood readily.

On leaving the logwood bath the goods have a dark red color, and are then passed to a soap bath at 105 deg. *F.* After a short working in this latter bath, they are rinsed twice in cold, soft water, hydro extracted, and dyed first in a bath prepared simply with oxidized logwood (10 to 20 per cent. of the weight of the goods). The silk is entered at 120 deg. *F.* and worked from three to five ends; it is then passed to the artificial dyebath, which must contain plenty of olive-oil soap. Here the reddish brown ground is converted into black by suitable combinations of blues and yellows, but the black obtained is inferior to the old-fashioned logwood black in shade, and also in fastness. The dyebath is gradually heated, if necessary up to 194 deg. *F.* When a level black has been reached, the goods are transferred to a second soap bath containing some alkaline blue, and given five ends. Throughout the process the increased affinity of the silk for dyestuffs is very noticeable. The next step is a warm 20 per cent. soap bath without dye, which bath is heated to 105 deg. *F.* After this the goods are rinsed in the machine. Then follows the brightening, which is done as usual, except that any topping that may be required for corrective purposes is put into the brightening bath. The dye used is any brand of Methylene Blue, or sometimes a suitable violet. Then comes a second brightening bath, containing oil, dextrine, etc., instead of dye. The method described has advantages in the way of rapidity, and of enabling the dyer to face competition more readily. Its disadvantages are those of weighing processes generally.