

**POINTS ON JACQUARD DESIGNING.**

**How to Reproduce Working Designs from a Fabric Sample Containing only a Portion of the Repeat of Pattern.**

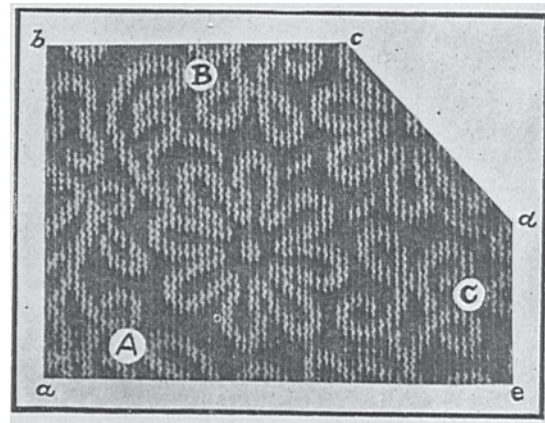
Such cases, on account of the large repeat of Jacquard Designs, are of frequent occurrence.

The quickest way to obtain this working design is to:

1st. Ascertain texture of fabric under consideration, also its method of fabric structure, with reference to point paper to use for the working design, *i. e.*, whether sample refers to pure single cloth, or whether it contains 2 or more systems of warp, filling, or both. In case of more than single cloth structures ascertain which of the systems of threads must be taken into consideration when planning the working design, *i. e.*, what ruling of point paper is needed.

Figs. 1 and 2 explain subject.

Fig. 1 is a reproduction of a woven fabric, con-



**Fig. 1**

taining only a portion of its repeat of the design.

Fig. 2 shows the design of fabric portion Fig. 1



**Fig. 2**

2nd. Sketch the given portion of the design, fabric sample contains, in its proper enlargement, in outlines, direct on the point paper calculated for, being careful to have a sufficient over-supply of paper, to the right and on the top.

worked out (enlarged proportionally to suit texture of cloth) on 8 by 8 point paper.

Letters of references *a, b, c, d, e* and *A, B, C*, are selected to correspond in Figs. 1 and 2.

The portion of the repeat of pattern shown in

fabric sample Fig. 1, is shown outlined by letters of reference *a, b, c, d,* and *e,* in working design Fig. 2.

Having thus reproduced the given portion of the design, and studying the latter, it will be seen that the same shape of figure occurs at the positions lettered *A, B* and *C,* respectively.

Considering *A* as our starting point, we see that at *B* the same figure is turned over from side to side, and in the same way at *C* from top to bottom.

#### CALCULATING WIDTH OF COMPLETE DESIGN.

Drawing a vertical line at a certain part of the design, see vertical line in the white squares near *A,* *i. e.,* between warp-threads 24 and 25, and duplicating the same through corresponding part of design at *C,* *i. e.,* between warp-threads 128 and 129, see vertical line in the white squares near *C,* will indicate to us half of the repeat of the complete design.

Thus in our example, distance between vertical lines *A* and *B* is

$11 \text{ squares} \times 8 = 88 \times 2 = 176$  warp-threads, repeat of complete design, and what is proven by the point paper design. The latter calls for 176 needles of a 200 Jacquard machine, 352 needles of a 400 Jacquard machine, or 528 needles of a 600 Jacquard machine.

#### CALCULATING LENGTH OF COMPLETE DESIGN.

Draw a horizontal line at a certain part of the design, see horizontal line on the white squares near *A,* *i. e.,* between picks 8 and 9, and duplicate this line through corresponding part of the design at *B,* *i. e.,* between picks 88 and 89. The distance between these two horizontal lines is half the repeat of the complete design for the filling.

In our example we find distance between horizontal lines *A* and *B* to be

$10 \text{ squares} \times 8 = 80 \times 2 = 160$  picks in one repeat of complete design, *i. e.,* 160 cards are required to be cut on the Royle Piano Machine, and what corresponds with our complete design given.

#### ASCERTAINING SETTING OF FIGURES IN THE REPEAT.

Points thus far ascertained will now give us all details necessary for ascertaining the principle by which the figures are distributed, considering the complete repeat of the weave.

In our example the basis on which the design has been constructed is, distributing the figures after the 4-harness satin setting, otherwise also known as the 4-harness broken twill, or the small crow-foot twill setting.

In working out the figure on the point paper it is first necessary to mark out the *unit* of the design, which then is repeated three times, either by copying square by square with the brush, or more quickly and better, by the aid of tracing paper and then painting up the figure portions in the regular way.

The required positions are readily obtained by comparing with the pattern and by noting that corresponding parts are always half the repeat (of the complete design) distance from each other in width or in length.

### TO INCREASE WEIGHT AND BULK OF FABRIC BY MEANS OF BACK FILLING.

This system of fabric structure is one of the standard methods of producing medium and heavy-weight woolens and worsteds. Two systems of filling (Face and Back Filling) are used in connection with one system of warp.

One of these two systems of filling (the Face Filling) forms with the warp the regular single cloth structure, the other filling (the Back Filling) being hitched, not visible on the face, to the back of this single cloth structure, in turn changing the latter into what is known as a heavy-weight fabric.

The weaves employed for the face of the fabrics, *i. e.,* the single cloth structure, refers to most any one of the various systems of single cloth weaves explained during the last five years in the columns of "Posselt's Textile Journal," those most frequently met with being Plain, Fancy and Figured Twills, Entwining Twills, Granite Weaves, Corkscrews, etc.

For the weave for interlacing the back filling, *i. e.,* the arrangement of hitching the latter (not visible) to the single cloth structure, wherever possible to do so, common twills, or satin weaves are used. The back of the fabric structure is produced by the back filling, the warp not being visible.

The warp-threads, on account of having to resist the strain of weaving, more particularly having to bend around the extra filling, must be composed of a better stock than the filling, and, in addition to this, receive more twist.

The backing must contain only a small amount of twist, so that the bulk of the thread (without considering its additional heavy count) will always be larger than the harder twisted face filling, or the warp. This soft twist of the backing will produce a soft handling fabric, one of the features required in the construction of these fabrics. As will be readily understood, besides using wool for the backing, by-products, like shoddy, mungo, extract, card waste, roving waste, cotton, etc., are extensively used.

In constructing these weaves, we must first deal with the face-weave (interlacing warp and face filling) and this independent of any additional backing, *i. e.,* in the same way as it applies to any weaves for single cloth.

The backing must only form an addition to this single, cloth structure, separately introduced into the face fabric, and for purpose originally intended, unless a special effect, such as *tricot,* etc., is required.

The most frequently used proportions for backing to face filling are: 1 pick face to alternate with 1 pick back, or 2 picks face to alternate with 1 pick back. Seldom do we find 3 picks face to alternate with 1 pick back, or an irregular arrangement as 2 picks face, 1 pick back, 1 pick face, 1 pick back, *i. e.,* 5 picks in repeat of combination, etc., used.

In using the arrangement of 1 pick face to alternate with 1 pick back, be careful to use a count of yarn for the backing not much (if at all) heavier than the count of yarn used for the face pick, since