A STUDY IN FIGURING WITH DOUBLE PLAIN.

(For Harness and Jacquard work.)

This principle of designing, *i. e.,* cloth structure finds considerable use in the manufacture of textile fabrics for all purposes, in small effects and lines in fancy woolen and worsted Trouserings, then either in its pure state or more frequently intermixed with other systems of weaves; in high counts it is in its pure state well suited for the manufacture of cotton, woolen or worsted Ladies' Dress Goods, as well as with heavier counts of yarns for the manufacture of Cloakings. With reference to figured work it is used in connection with Trimmings, Labels, Hangings, etc. It is also the principle of cloth structure for our well known Two-ply Ingrain Carpets, certain styles or makes of Bed Quilts etc.

The object in every instance is to produce a distinct exchange of colors between the ground and figure of the design, a feature impossible to be obtained by means of single cloth structure, where the colors between ground and figure must always, according to weaves used, more or less intermingle.

This system of designing is properly also known as *Reversibles,* by what is meant that the color which on one side of the fabric produces the figure effect, produces on the other side the ground, and vice versa; the weave used for either structure of the Reversible being the common plain weave.

As mentioned before, this system of cloth structure finds use both for Harness as well as Jacquard work. In connection with the latter, the mounting of the loom is such that all that the designer has to do is to paint in the figure, minus any weave, cardstamping and the tying-up of the loom, as well as the kind of Jacquard machine used, doing the rest, *i. e.,* interlace the fabric in such a way as to produce the required design. It will be readily understood, that for this reason the Jacquard designer, except he has been trained in cloth structure, knows little if any how the actual interlacing of the fabric structure is accomplished, for which reason this article will be of general interest. For the designer for Harness work this article will be interesting, since it deals with a somewhat out of the line of subject, heretofore dealt with only sparingly by textile Journals here, and will consequently remind him of a chance for effects and designs in his vocation.

To explain this system of designing, we have selected a harness loom pattern, since it will not only better illustrate the subject, cover a complete repeat of the pattern, besides illustrations being within compass of the column of the Journal.

Of the diagrams and weaves accompanying this article, Fig. 1 illustrates a sketch for a fabric, *a polka dot, set on the plain,* and when it is required to show these dots in a color or mix, distinct from the color or mix used for the ground work of the fabric. The repeat of this sketch, which for the sake of simplifying it to the student has been painted (enlarged to its appearance in the woven fabric) on point paper, calls for 18 ends, warp and filling ways, for its repeat. On account of dealing with double cloth, every end in our sketch stands for two ends in the fabric (one end ground one end figure) and what consequently calls for ($18 \times 2 =$) 36 ends in repeat of pattern (warp and filling ways) both in the plan of interlacing as well as the weave.

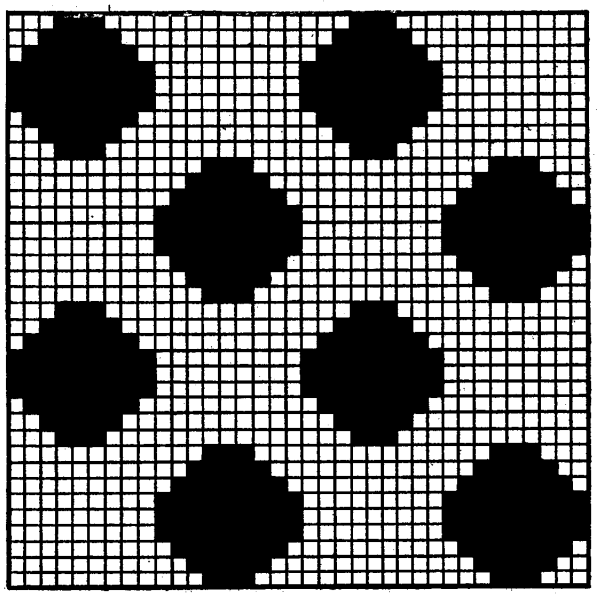

Fig. 1

Diagram Fig. 2 has been designed to illustrate the former. In the same the rows of squares shown shaded on top as well as on the left hand side, indicate what is known as the *color scheme, i. e.,* distinguish face and back, or figure and ground threads in warp and filling from each other.

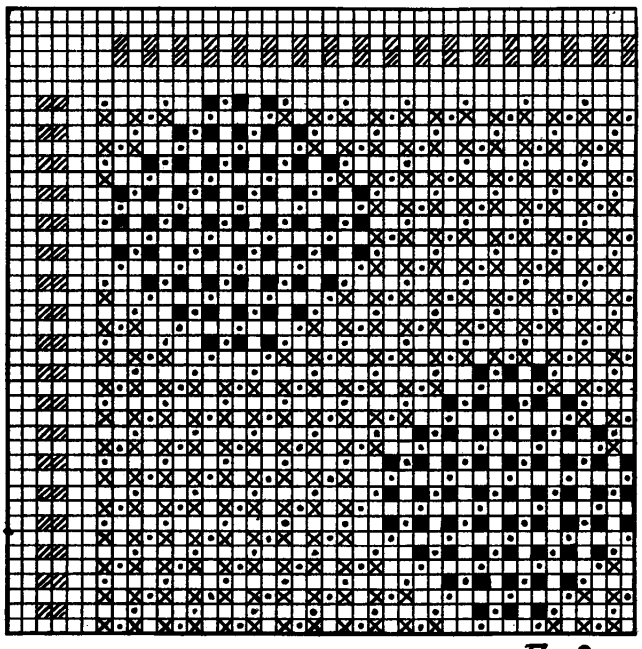

Fig. 2

Having thus planned the two systems of threads, warp and filling ways, and considering rows of squares in both directions shown shaded in *color scheme* as figure ends, next transfer figure from sketch upon

diagram Fig. 2, considering only the places where figure warp threads and figure picks meet, see full black squares (■) in diagram.

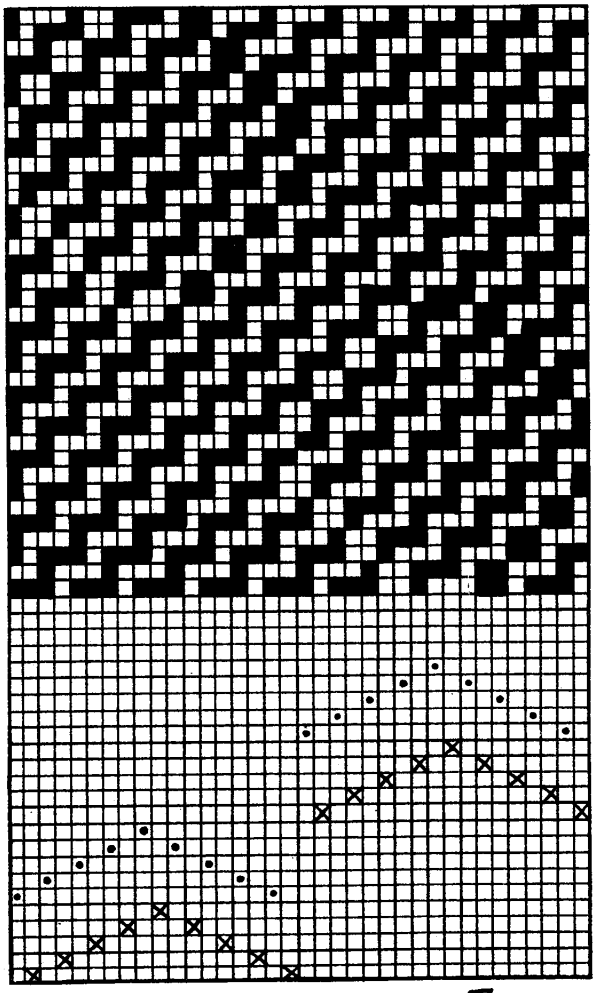

Fig. 3

Now transfer ground from sketch, upon diagram Fig. 2, considering in this instance only the places where ground warp threads and ground picks meet, see cross type (×) in diagram.

Next introduce the four harness twill filling effect, *i. e.*, 1 up 3 down, all over the diagram, see dot type (●) in diagram, and when the plan showing the interlacing of warp and filling—according to sketch Fig. 1—is completed.

Fig. 3 shows by means of full black type (■) one complete repeat of the weave, *i. e.*, diagram of construction Fig. 2 executed in one color, the repeat of which, as previously already referred to is 36 × 36, and which by means of the fancy double draw given below it, requires 20 harness for its execution of the loom.

Having thus given a thorough explanation of the construction of figuring upon the double plain system, we conclude our article, by illustrating a simple stripe effect, executed upon this principle of designing and fabric structure, and of which Fig. 4 is the sketch, Fig. 5 the diagram showing the interlacing and Fig. 6 one repeat of said weave, with drawing-in draft below it, calling for 46 warp threads and 24 picks in pattern in connection with a 20-harness fancy draw. Type used in diagram Fig. 5 corresponds with that used in connection with diagram Fig. 2, and which was fully explained, hence no special explanation will be required for the present diagram. The color scheme for warp and filling has been omitted in the diagram of interlacing of this stripe pattern, since the same will explain itself, besides has been fully dealt with in connection with the polka dot diagram previously explained.

A PRACTICAL TREATISE ON THE KNOWLES FANCY WORSTED LOOM.

By E. P. Woodward.

(*Continued from page 99.*)

Belting and Gearing the Loom.

The reed and its proper lining being the last treated in the previous article, it may be well now to begin at the source of what drives the loom, *i. e.*, the belt and the pulley.

The diameter of driving pulley and the pinion gear on counter shaft of loom are the first things to be considered. Since the makers of the loom should best know what the proper speed of the counter shaft should be to get the best results from their looms, they should be the one to best determine this point. By this is meant, that, from practical tests and experience, the makers of the loom know best what the belt load, *i. e.*, power required to drive this looms is, for which reason they can best give the belt velocity required, which will give the best results for the proper speed of the loom, so far as the actual driving power needed is concerned.

If one stops to think that only the actual power needed to drive the loom through all emergencies is

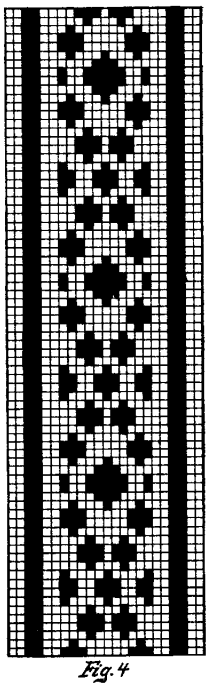

Fig. 4

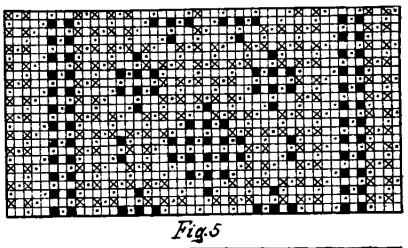

Fig. 5

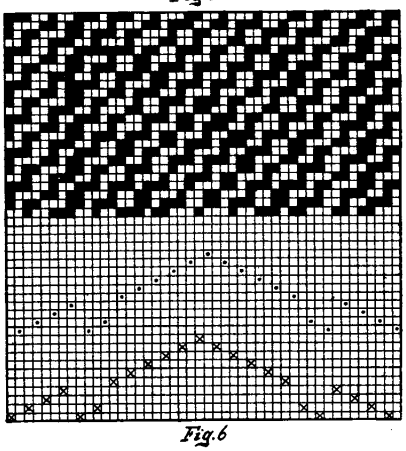

Fig. 6

the ideal transmission, the right theory of power-transmission will be apparent. It would be poor