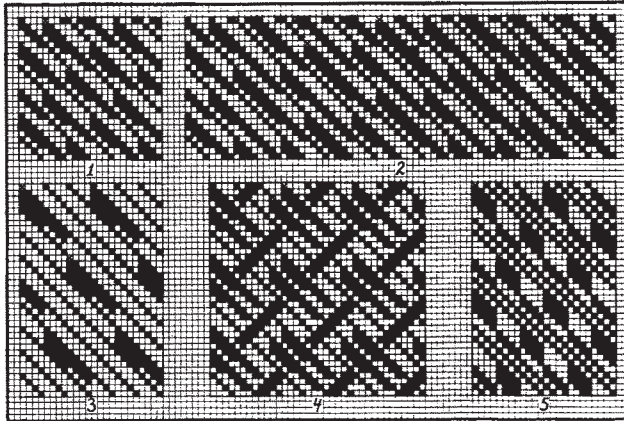


### ORNAMENTATION OF THE "HARVARD" WEAVE OF CLOTH.

It is a common practice to ornament shirtings or dress goods interlaced with the harvard, or 2 up 2 down principle of weave, otherwise also called the 4-harness even sided, or the fancy cassimere twill.

The ornamentation usually takes the form of a figured stripe, with the additional variation which may be obtained by the introduction of colored threads in their multifarious combinations. Many neat patterns are produced by placing two threads of dark color along with a color of a more delicate shade, or of white. The dark colored threads are placed on either the first



and third or the second and fourth harness, and give a neat fine line effect, which is so easily produced along with the harvard weave, and plays a prominent part in many of our best designs.

The constant search for new styles cause the designers to wander from the trodden path of ornamenting the weave by additional fancy stripe effects, and to commence tampering with the ground weave itself.

Fig. 1 is a style of weave requiring 12 harnesses, presenting an interlacing of threads which may be considered a suitable substitute for the ordinary harvard. The fact that this design is built up by combining three kinds of four-end twill ( $2\frac{1}{2}$ ,  $3\frac{1}{1}$  and  $1\frac{3}{1}$ ) renders the structure similar to the harvard, with reference to interlacing of texture. The repeat of the weave is 12 warp-threads and 12 picks.

The design also shows an equal amount of warp and filling on the surface.

This design, if used for the ground weave of a cloth, does not allow of much extra figuring in the common make of dobby loom (*vis.*, 16 shafts capacity) although the additional four shafts may be used to advantage; again colored stripes may be introduced, and for a fact very good results can be obtained in this way.

It must be mentioned here that Fig. 1 is really a twelve-end diagonal in broken order, and that it is possible to produce some good effects by arranging stripes of the regular diagonal, alternating with the broken effect. The design can be increased in size by using, for example, the following drawing-in draft:

1-2-3-4-5-6-7-8-9-10-11-12, 5-6-7-8-9-10-11-12, 1-2-3-4, 9-10-11-12, 1-2-3-4-5-6-7-8; using one repeat of weave Fig. 1 for harness chain, and which will result in weave Fig. 2. Repeat of weave, 36 warp-threads and 12 picks.

Designs, Figs. 1 and 2, cover the cloth very regularly, and show the same proportion of warp and filling, no matter from what point they are viewed.

These figured weaves may be combined with stripes of harvard, although such a design would require sixteen harnesses in its execution in the loom. When the designs are intended to produce stripes, they do not require to show the same degree of regularity in the weave, because the stripe helps to conceal the irregularities which appear in the direction of the filling, whereas in the warp direction the stripe effect is only increased in this way.

Fig. 3 is a twelve harness weave, which may be applied along with a four harness twill stripe in the manner described. Repeat of weave, 12 warp-threads and 36 picks.

This weave would present no unsatisfactory features if woven as an all-over figure upon a cloth the warp of which was composed of dark color with white stripes introduced. Forty threads indigo and eight threads of white would give a good effect, or the white stripes may be inserted in smaller quantities and in a more irregular order.

Manufacturers need not be confined to the mild substitute for the 2 up 2 down twill already illustrated, but may branch out in bolder lines, as cloths of this description are pleasing to a number of buyers, and some novelty, or suitable striking feature, carries a good influence into a range of patterns.

Weave Fig. 4 is a step in the direction indicated, and although it is built partly on the lines of the preceding designs, it is further ornamented by placing a bar at right angles to the tapered twill.

It may be noted that the designs have been built upon a 3 up 1 down 4-harness twill basis, which is a convenient guide in forming the design when repeating on twelve threads, and would be an equally suitable basis on which to form designs repeating on sixteen threads. This twill also ensures that there shall be exactly two intersections for four threads as in the harvard weave, unless the line of twill is broken up when working in the figure. The design shown in Fig. 4 is rather cramped in appearance, but may be improved by employing sixteen threads to the repeat and allowing a greater amount of ground to surround the figured portion. Repeat of weave, 12 warp-threads and 12 picks.

Fig. 5 is a further departure from the harvard twill, but might reasonably be employed on a similar cloth. This design is particularly well bound, the longest float is four threads or picks in extent, and although it is not worked up on a four harness basis, the threads and intersections are in a similar ratio to each other. Repeat of weave, 12 warp-threads and 18 picks.

Cross type in all five weaves shows the foundation spots of each weave.

#### DIRECTIONS FOR NOVELTY EFFECTS.

Eighty threads and picks per inch, with 22's counts of warp and filling, will give a cloth suitable for a medium dress goods fabric, and the designs given would produce very good results in a cloth of this description. Shot effects might be produced in these weaves, and some color combinations would be very effective. White grounds with single threads of dark color, indigo, red, black, etc., introduced every sixth or twelfth thread, or dark grounds with single white, or contrasting colored threads, and dark filling will give a still further variety.