Large 63 deg. Diagonals.

The same are what we call *Jacquard-Effect Diagonals* produced on our regular harness loom; designed

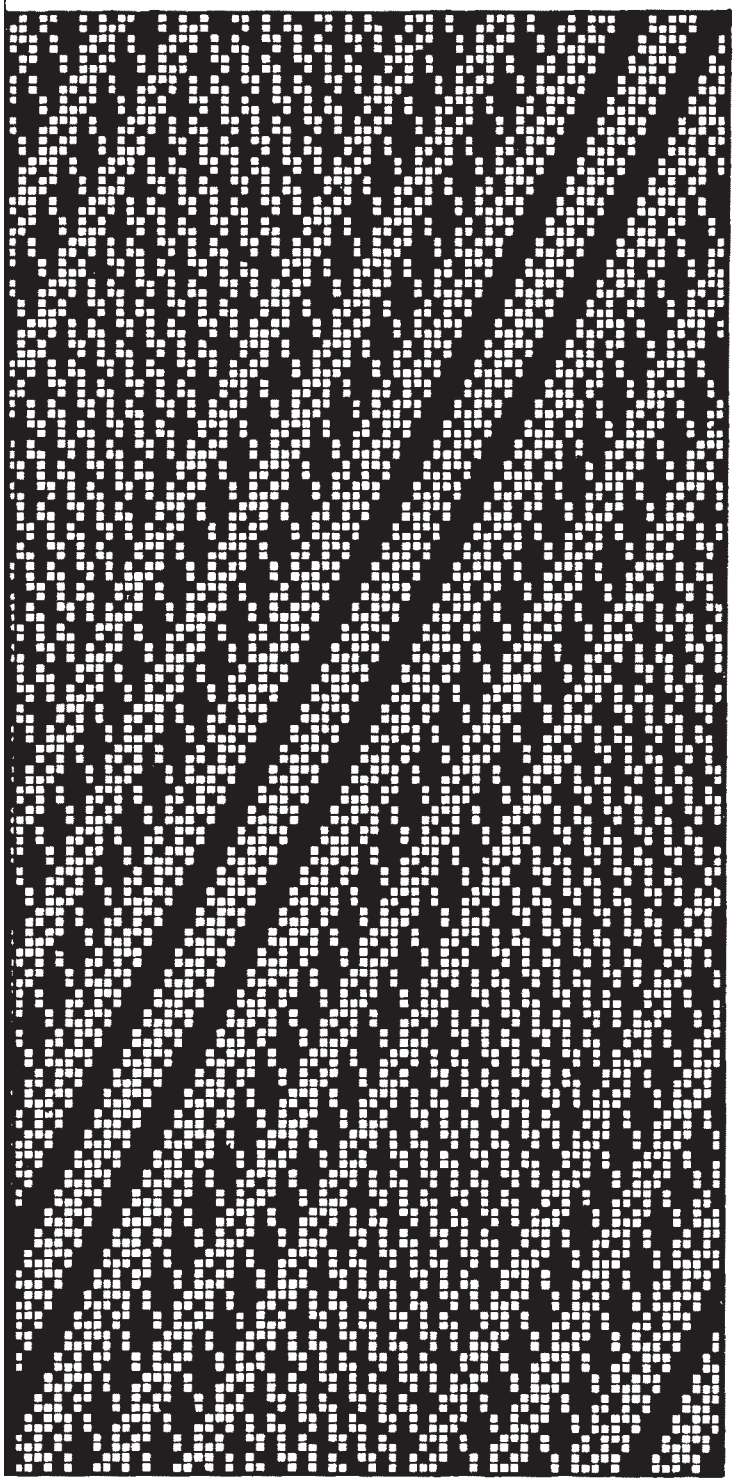
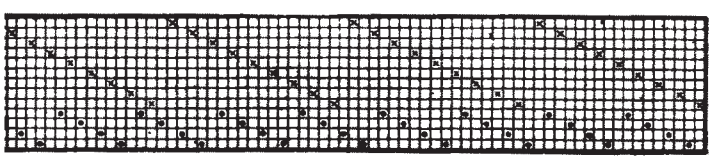


Fig. 3



more particularly for Novelties in woolen and worsteds.

They have for their foundation 75 deg. diagonals, weaves or motives, two of which are combined, thread for thread, for the new large 63 deg. diagonal. As will be readily understood, in order to obtain a large resulting new weave, the repeat of these two foundation weaves must be prime numbers to each other, *i. e.*, not the same, neither evenly divisible by the same number.

Multiplying these two numbers will then give us their lowest possible multiple, which when multiplied by 2 (on account of drafting these two weaves alternately thread for thread in the formation of the new weave) gives us the repeat (warp ways) for the new large diagonal.

Example. In this manner a 4 and a 9-harness foundation weave will result in:

$4 \times 9 = 36 \times 2 = 72$ ends repeat of the new large diagonal, and which requires

Fig. 1

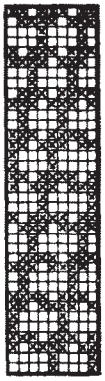


Fig. 2

$4 + 9 = 13$-harness for its execution on the loom.

Another Example. A 5 and 11-harness foundation weave will result in:

$5 \times 11 = 55 \times 2 = 110$ ends, repeat of the new large diagonal, and which requires

$5 + 11 = 16$-harness for its execution on the loom.

FILLING WAYS the repeat of the new large diagonal is the lowest common multiple of the repeat of the two foundation weaves (since no filling drafting is done).

Example. The 4 and 9-harness foundation weaves previously given, repeat filling ways respectively on 16 and 36 picks.

Their lowest common multiple is 144.

$16 \times 9 = 144$

$36 \times 4 = 144$

Thus 144 picks will be the repeat of the new combination weave, having 16 and 36 pick weaves for its foundation; or the complete weave of the new Jacquard-Effect Diagonal will be 72 warp threads and 144 picks; 13-harness double draw.

Another Example. The 5 and 11-harness foundation weaves, previously quoted, refer to weaves (75 deg. diagonals) repeating on 20 and 44 picks respectively.

220 is the lowest common multiple; hence repeat of new Jacquard-Effect Diagonal will be 110 warp threads and 220 picks; 16-harness double draw.

To illustrate the construction of these large diag-

onal weaves thoroughly, the accompanying three weaves are given:

Fig. 1. First foundation weave, a 75 deg. steep twill, repeating on 4 by 16.

Fig. 2. Second foundation weave, another 75 deg. steep twill, repeating on 9 by 36.

Fig. 3. The resulting Jacquard-Effect Diagonal repeating on 72 by 144.

Below weave, the drawing-in draft is given, calling for a 13-harness double draw.

Stains on Dyed Cotton Goods.

Stains are frequently caused by agents over which the dyer has little if any control, for instance, singeing or bleaching, and in most cases are wrapped in mystery.

With bleached goods which are subsequently dyed, a great responsibility rests upon the bleacher, since initial stains may be formed then which do not show until the dyer has completed his work, and then it is often too late to remedy matters. Such stains arise from various facts of which those which follow are the more numerous:

From the incomplete removal of saponified matter in the lye boils.

Lime left in from liming and souring.

Chemic stains by this body being left in through insufficient souring and washing.

Mildew stains usually result in a damage, as the piece generally drops out during the dyeing process, but to all appearances before putting into the dye there is nothing to see. Mildew spores feed upon the starchy matter which is found in grey cotton, and when this is exhausted the spores turn their attention to the cotton itself, weakening it but not showing any visible damage until other operations follow. Of course the great factors in mildew growth are those common to all fungoid growths—that is: damp, warmth and darkness, and the grey rooms for storing undyed cotton should above all be dry, light, and well ventilated.

Stains caused by the formation of oxy- or hydro-cellulose only become visible by taking on a greater quantity of dye, and how is the dyer to prove the presence of oxy-cellulose in these particular portions? Acids may also be the cause of these, by a part of the fabric containing acid becoming partly dried either by exposure to the air or by coming into contact with a warm surface. In dilute form, acids have no harmful action upon cotton either cold or boiling, but when not thoroughly washed out can give rise to any amount of trouble in future processes. The tendering effect of acids is caused by the cellulose being converted into the hydro form, which can be seen by dyeing a sample which has been dried with acid in the cloth, for example with Diamine Green B, for which it has a weak affinity compared with ordinary cellulose.