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DERIVATIVES OF TWILLS—A STUDY IN TEXTILE DESIGNING.

Few connected with the textile industry are aware of the scope for new weaves possible to be obtained from any one of our common weaves. To give an idea of the subject we will show the transposing of one of our regular twills, resulting in a variety of new weaves obtained by a different rearrangement of the threads (warp or filling) of the foundation weave. It forms a most interesting subject, and a close study will indicate the endless number of new weaves that in a similar way can be obtained from any other weave.

Fig. 1 is one repeat of one of our numerous 16-harness regular twills, and which forms the basis for all the new weaves shown and explained in this article.

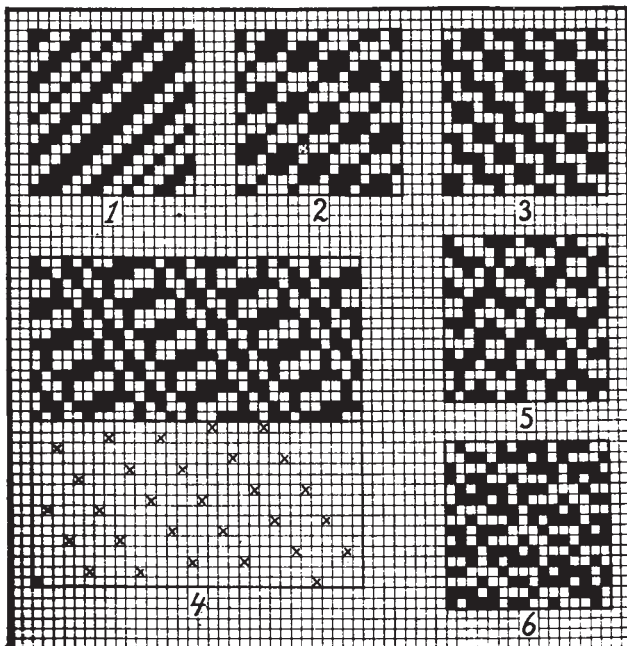
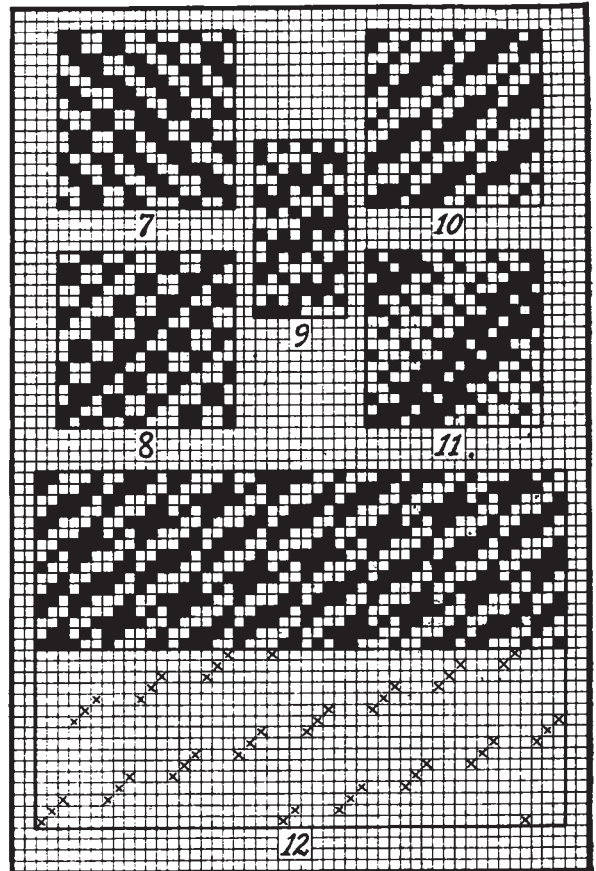
Weave Fig. 2 is obtained from Fig. 1 by drafting the warp-threads of the latter after the 16-leaf satin, counted off with 5 thus: 1, 6, 11, 16, 5, 10, 15, 4, 9, 14, 3, 8, 13, 2, 7, 12.

Drafting weave Fig. 2 filling ways with the same draft would result in the original twill, but a new weave is obtained if we use a satin draft obtained by using a different counter, for instance:

Weave Fig. 3 is obtained from Fig. 2, transposing the picks after a satin draw, using 3 for counter, viz: 1, 4, 7, 10, 13, 16, 3, 6, 9, 12, 15, 2, 5, 8, 11, 14.

Rearranging warp-threads or picks after a double satin, will in turn increase the repeat of the new weave correspondingly, either warp or filling ways. Weave Fig. 4 explains the subject, being obtained from weave Fig. 1 by means of warp drafting, using for it the

turn draft: 1, 8, 14, 5, 11, 2, 8, 15, 5, 12, 2, 9, 15, 6, 12, 3, 9, 16, 6, 13, 3, 10, 16, 7, 13, 4, 10, 1, 7, 14, 4



double satin draw obtained with 13 for a counter and which we divided in turn in 7 plus 6, giving us in

and 11 as shown below the weave by means of draft in cross type, which is the drawing-in draft to use provided weave Fig. 4 has to be produced with 16-harness, using then the 16-harness twill Fig. 1 for harness chain.

Drafting weave Fig. 4 with a double satin draw for transposing the picks, will then result in a new weave, repeating on 32 warp-threads and 32 picks. Use in this instance 9 for the counter, which in turn divide into 4 plus 5 and construct the resulting weave for your exercise.

Weave Fig. 5 is obtained from Fig. 1 by means of a transposed satin draw, considering the warp-threads, using 3 as a counter, taking two threads in rotation, alternately with two threads reversed, i. e., draft thus: 1, 4, 10, 7, 13, 16, 6, 3, 9, 12, 2, 15, 5, 8, 14, 11.

Weave Fig. 6 shows weave Fig. 5 rearranged filling ways, using the 16-harness transposed satin with 7 as a counter for this purpose, with two threads taken in rotation to alternate with two threads taken in the reverse direction until repeat of weave is obtained, viz: 1, 8, 6, 15, 13, 4, 2, 11, 9, 16, 14, 7, 5, 12, 10, 3.

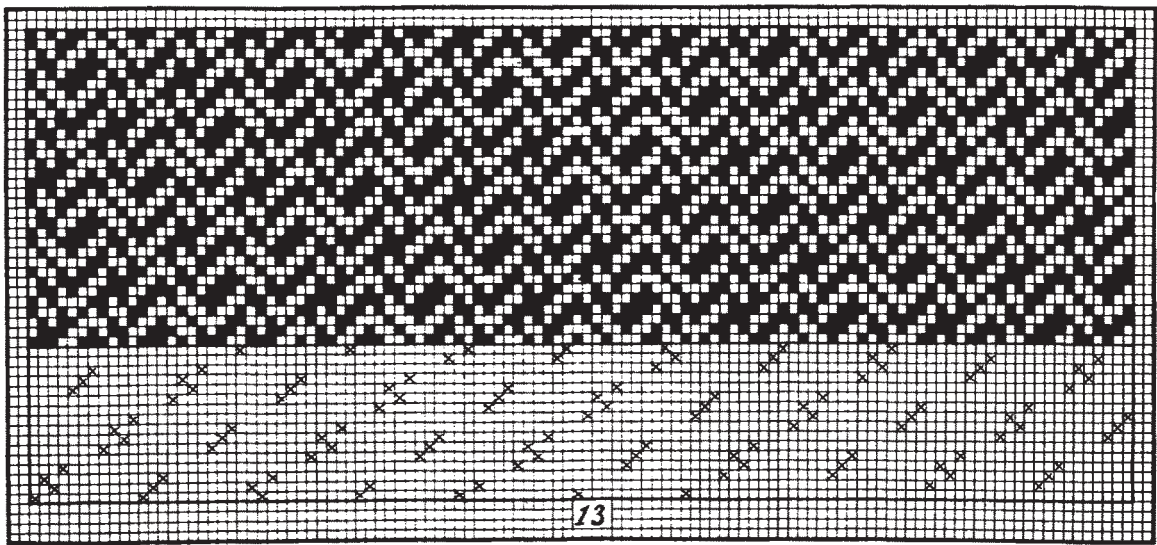
Weave Fig. 7 is obtained from weave Fig. 1. by transposing the warp-threads of the latter thus: Leave all the uneven warp-threads in its original position for the new weave, placing all the even threads in a reverse direction between the first set of threads, thus: 1, 16, 3, 14, 5, 12, 7, 10, 9, 8, 11, 6, 13, 4, 15, 2.

Weave Fig. 8 is obtained from weave Figure 7, by transposing the picks of the matter in the same way as was done in the previous example with the warp-threads.

Weave Fig. 9 was obtained from weave Fig. 1. by transposing the warp-threads of the latter weave satin like, using 6 as a counter. This is a wrong number to use for a perfect satin, and will result in a new weave repeating on 8 warp-threads only, *i. e.*, only half the number of warp-threads of the foundation weave are called for in the new weave.

warp-threads of weave Fig. 1 for each set. 3 is not divisible into 16, neither in 32, and for which reason 3 repeats of the foundation weave, *i. e.*, 48 warp-threads are required for the repeat of the new weave. The drafting for the latter is given below it in *cross* type, and will clearly explain the subject, and which (*cross* type) would form the drawing-in draft for producing weave Fig. 12 on 16 harness, in connection with using weave Fig. 1 as harness chain.

Weave Fig. 13 shows a more elaborate idea of producing weaves of a large repeat in this manner. Weave Fig. 1 is again the foundation weave used, the draft in sets of 4 and 3 threads is given below the weave in *cross* type. The four threads are taken broken up, *i. e.*, the centre two threads of the set are reversed (like a four harness broken twill) whereas the three threads in a set are taken in rotation. Repeat of



Weave Fig. 10 has been obtained from weave Fig. 1 by separating the warp-threads of the latter in eight sets of two threads each, and distributing these eight sets of threads after the 8-leaf satin setting plan: 1, 4, 7, 2, 5, 8, 3 and 6. This will give us the drafting for the new weave, taken direct from weave Fig. 1 thus: 1, 2; 7, 8; 13, 14; 3, 4; 9, 10; 15, 16; 5, 6; 11, 12.

Weave Fig. 11 was obtained from weave Fig. 10 by rearranging the filling (similar as done before for warp) in sets of two picks each, and distributing these eight sets of threads after the 8-leaf satin setting plan, using every alternate set drawn in rotation, and every other set drawn in reverse direction, *i. e.*, using the drafting for the picks, taken from weave Fig. 10, thus: 1, 2; 8, 7; 13, 14; 4, 3; 9, 10; 16, 15; 5, 6; 12, 11.

Provided the number of threads used in a set is not evenly divisible in the repeat of the foundation weave, the resulting new weave will call for a larger repeat compared to its foundation weave, *i. e.*, the new weave will not repeat until the number of threads taken in the set repeat evenly considering two, three or more repeats of the foundation weave, as may be found necessary to use. Weave Fig. 12 is given to illustrate the subject, and where we used three

weave 108 warp-threads and 16 picks. In practical work, *cross* type refers to the drawing-in draft, and weave Fig. 1, to harness chain for producing weave Fig. 13.

INCREASING THE FIGURING CAPACITY OF JACQUARD MACHINES.

By W. Watson.

To increase the figuring capacity of a Jacquard machine it is necessary to employ parts which are additional to the ordinary form of mount; the machine in its modified form may also include a Jacquard harness tied-up in sections, a special connection of the hooks and needles, or a special threading of Jacquard harness in its comberboard.

The additions to and modifications of the ordinary form of a Jacquard machine are chiefly as follows:

- (1) Inverted hooks; two mates of which are connected to one needle as one ordinary hook.
- (2) Ordinary harness shafts combined with a Jacquard harness.
- (3) Lifting rods or bars.
- (4) Pressure harnesses combined with a Jacquard harness.
- (5) Working comberboards.