



TWILLS WITH DOUBLE DIAGONAL

This weave may be woven on four or more harness-frames. In industrial weaving it is hardly ever used for patterns, nevertheless it has very interesting possibilities in this direction.

By "double diagonal" we mean 1-st that there are two diagonals in threading, like in fig.1, and 2-nd that the distance between two diagonals in the pattern is twice the usual distance in plain twill

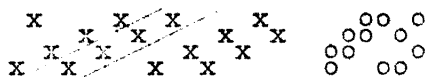


Fig.1

This peculiarity of DD may be of some interest to those weavers who like diamond twills. As we all know diamond twills produce very intricate but also very small designs. The same patterns can be woven with DD, but they will be

twice as large with the same number of frames.

Another peculiarity of DD is that it is always woven with one shuttle only. As it is obvious from the draft in fig.1, there is no tabby, and the usual tabby treadles produce pattern shots, exactly as the remaining 4 treadles. Thus the pattern has six blocks: rather unusual number with 4 harness-frames.

Double Diagonal Twill on 4 frames.

We shall first describe the possibilities of DD woven on four frames, and then a few examples of the same weave for 6 and 8 frames.

The principle of drafting is as follows: in ascending (mounting) diagonal a heddle on frame 1 is always followed by a heddle on frame 4; 2 is followed by 1; 3 by 2; and 4 by 3. In descending diagonal 1 is followed by 2; 2 by 3; 3 by 4; and 4 by 1. We can change the direction of the diagonals as often as required by the pattern.

The treadling is found in exactly the same way as in diamond twill or overshot (see MW 16/8). The only difference is that we have here 6 pattern treadles. For instance in case of the draft in fig.1 we start from the right and rear: 34 = treadle 4; 24 = tr.1; 23 = 5; 13 = 2; 12 = 6, etc. The whole treadling will be: 4,1,5,2,6,1,3,2,4,1,5,2,6,1,3,2. The last treadle (2) will be used if we keep repeating the same threading.

If in the treadling we have the same treadle used twice in a row (at the point of turning of the diagonals) then we must skip one of the two shots, because we have not tabby. The following two complete drafts show the application of all these principles of drafting. One (fig.2) is for a small and simple pattern, the other (fig.3) for a more involved one. Please examine them carefully.

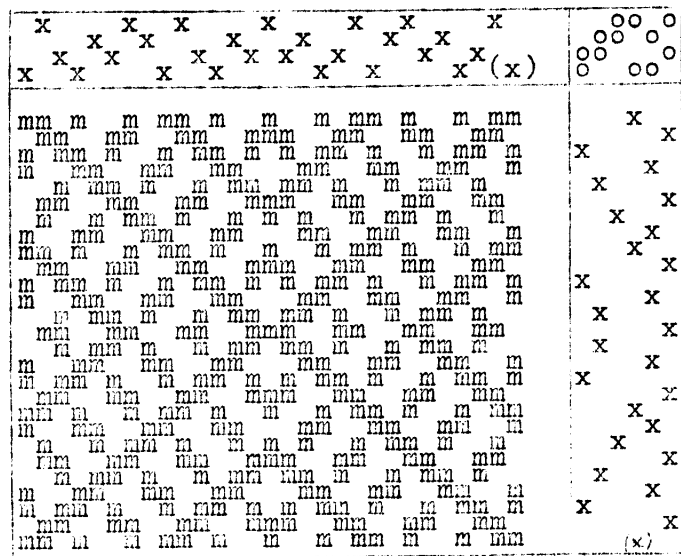


Fig.2

The diagonals in the drafts are broken at every turning point. This happens also in diamond twills woven without tabby. The space between two parallel diagonals is filled with a sort of broken twill.

The pattern is very clear if contrasting colours are used for warp and weft; usually dark for weft and light for warp.

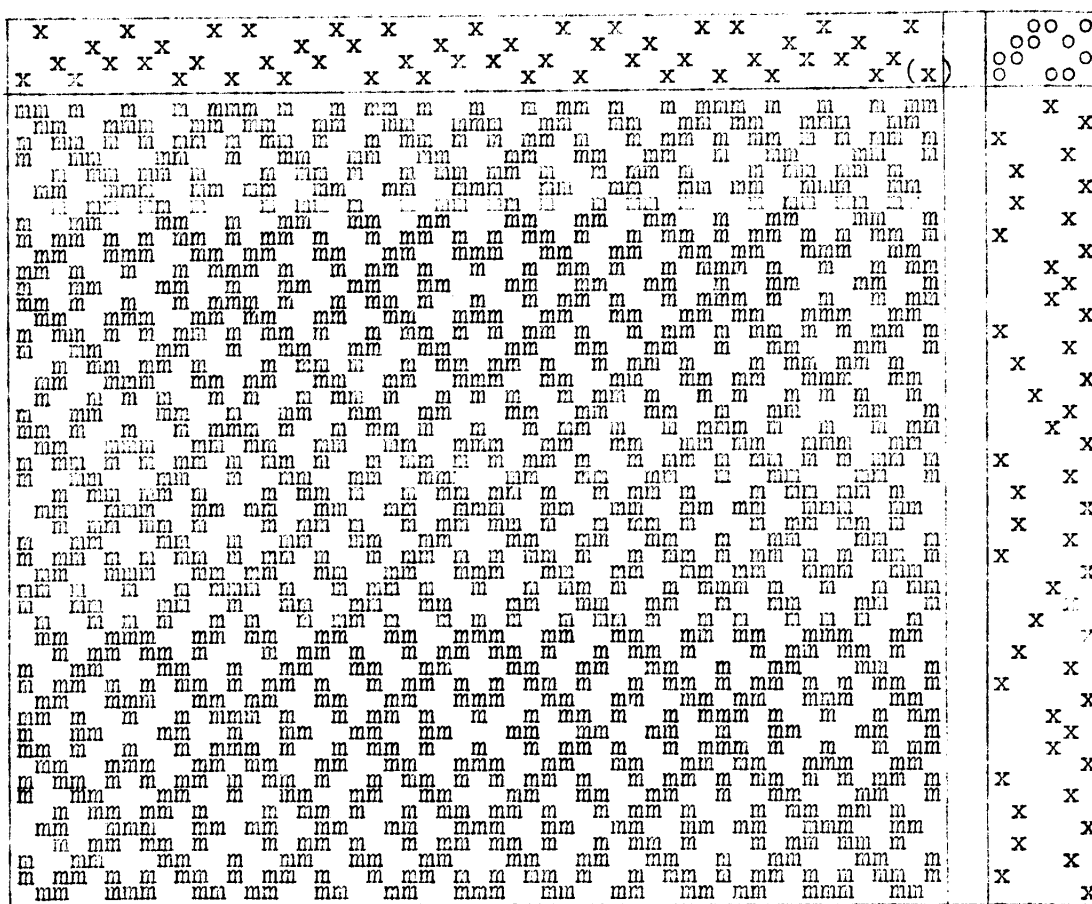


Fig.3

Fabrics woven in DD twill have very good qualities: short floats, firm and uniform structure comparable to diamond twills, crackle and summer-&-winter. They can be used for upholstery.

If the pattern is too obvious for our project, we can either use less contrasting colours for warp and weft, or change the treadingling for a simpler one. Try the following treadinglings:

- 1) 615241324152; 2) 61523142; 3) 6162515231324142; 4) 31425162;

But avoid straight sequence, like: 6543; it gives a very poor texture. For clothing and so on, the draft on fig 1 is the best. For curtains, upholstery etc., more fancy drafts like 2 or 3 may be better suited.

The yarn for both warp and weft should be of the same count and the sett of warp as for 2:2 twill.

DD twill for 6 and 8 frames

When with 4 frames we can have only one type of twill, with each added frame the number of variations increases. Thus with 6 frames the second diagonal may follow closely the first as in fig.4 or be farther removed as in fig.5

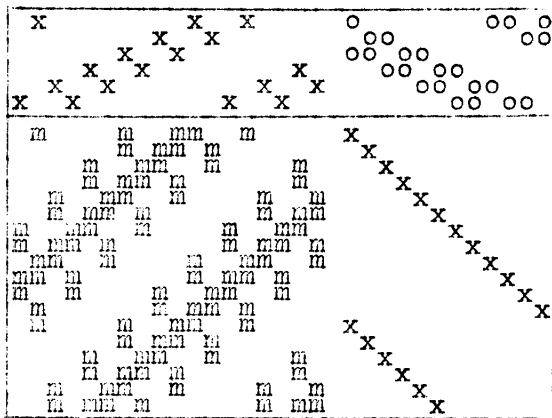


Fig.4

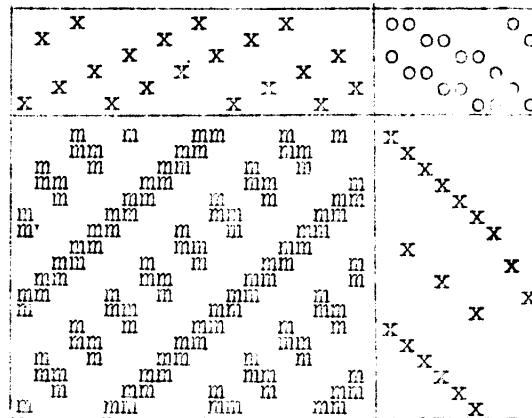


Fig.5

Here as in case of 4 frames we can have diamond twill patterns by reversing the diagonals as in fig.6.

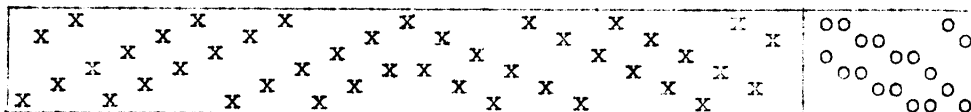


Fig.6

With 8 frames we shall have still more variations. The second diagonal in threading can be spaced from the first one by one, two, or three frames. Compare figures 7,8 and 9.

With each of the variations a number of tie-ups is possible. The simplest tie-up is the one which produces a diagonal only, or a tie-up for "woven-as-drawn-in" fabric. Such tie-ups have been used in figs: 8 and 9. If the floats are too long, we must introduce additional ties as in fig.7, 10 and 11. These additional ties may result in a hit and miss effect between the diagonals (fig.7 and 10) or in secondary faint diagonals running in the

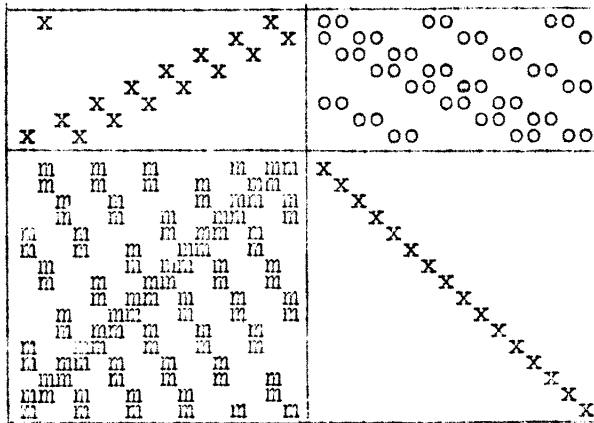


Fig. 7

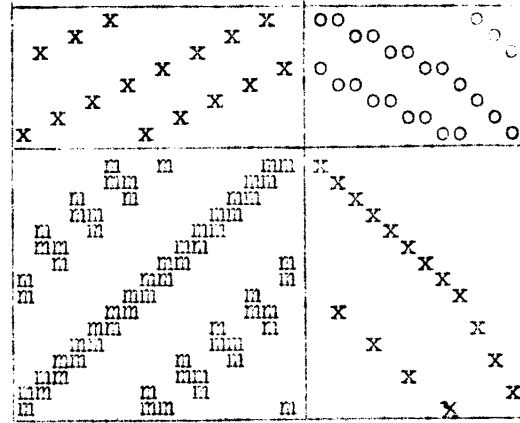


Fig. 9

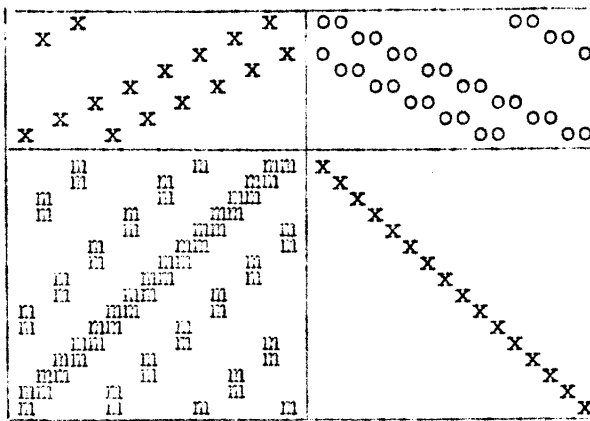


Fig. 8

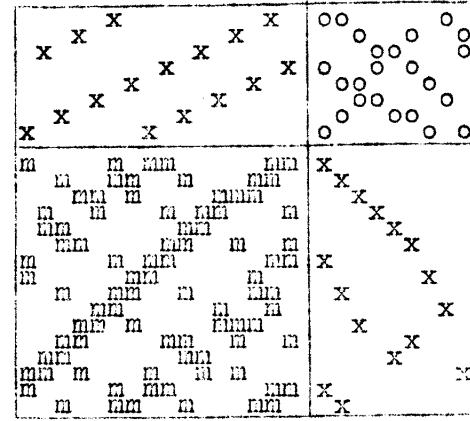


Fig. 10

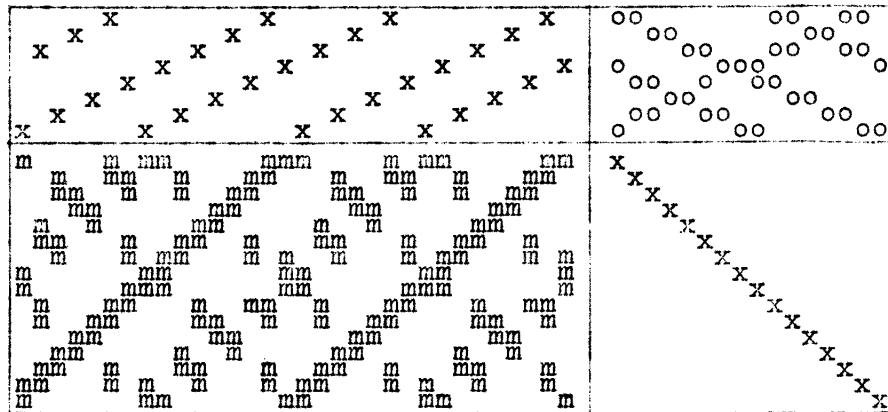


Fig. 11

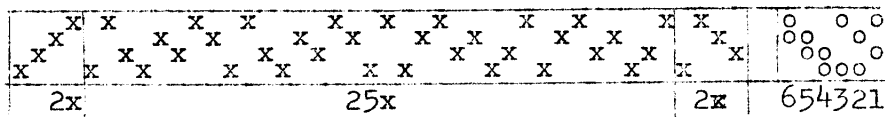
opposite direction as in fig. 11. The directions for treading given with all the above drafts are for biased twill. By changing the treading we can have all kinds of broken twill as well.

Whatever the tie-up, and whatever the number of frames, tabby is impossible to get. Therefore we cannot have binder between shots of pattern.

Probably by this time you have noticed that many of the tie-ups for the DD twills require an unusually high number of treadles. If the loom has less than the necessary number, the only way to weave is to use a direct tie-up and press two or three treadles at the same time. This whole subject of combining treadles in multiharness looms is too large to be treated here. We shall have a special article on this problem. In the Practical Project described here, we give an example of how to arrange the treadles, but the same method may not be practical in other cases.

Practical Project for 4 frames.

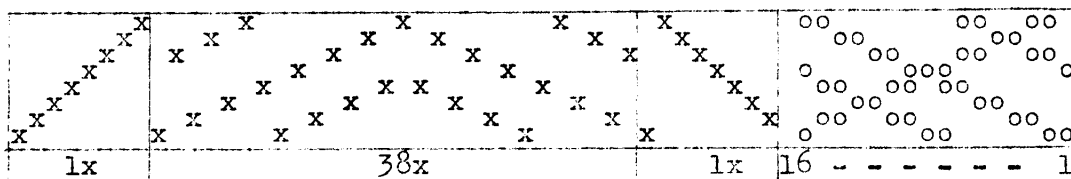
Upholstery in 10/2 cotton, 36" wide. Sett of warp - 24 ends/". Number of ends: 866. Reed No.12. Two ends per dent. Draft:



Warp: 10/2 old gold; weft: 10/2 brown.
Treadling: 314251623142516231326152413261524132.

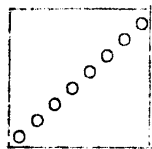
Practical Project for 8 frames.

Curtains in 20/2 cotton, 30" wide. Sett of warp - 36 e/". Number of ends: 1080. Reed No.18. Two ends per dent. Draft:



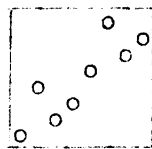
Warp: 20/2 silver grey; weft: 20/2 navy blue.
Treadling: 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,15,14,13,12,11,10,9,8,7,6,5,4,3,2.

Since our loom probably has only 10 or 12 treadles, we must use a direct tie-up. A plain tie-up as in fig.12 will not do because



87654321

Fig.12



87654321

Fig.13

for instance instead of treadle No.16 we would have to press treadles 8, 4 and 1, which would require three feet. Therefore we rearrange the tie-up as in fig.13. Now we press treadles 3 and 4 with one foot, and treadle 8 with the other. The new treadling will be: 48,238,236,16,15,235,237,478,48,467,267,25,15,167,367,348, and reverse.

WE HAVE SAMPLE CARDS FOR THE PRACTICAL PROJECT FOR 4 FRAMES.
