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DOUBLE WEAVES

Circular and Double-Width Cloth.

In the last issue of the Master Weaver we have discussed the drafts for Double Weaves and for the time being we shall not return to this subject. We shall try now to translate the drafting or the theory of double weaves into practical operations.

We propose to take up different weaves in the following order: circular, double-width, double face, stitched layers, and patterns in double weaving.

Circular cloth. This particular weave presents very few problems, but on the other hand is very seldom used by the hobbyist. The only practical application it could find, would be seamless cushion covers, handbags etc. But since it takes much longer to weave such fabrics than to make the necessary seams, and since the said seams are not objectionable, the technique is rather pointless. Still here it is:

Supposing that we should like to have a cushion without any seams, stitching, or hemming, woven in 1:2 twill with a diamond pattern, we can use the draft on fig.1

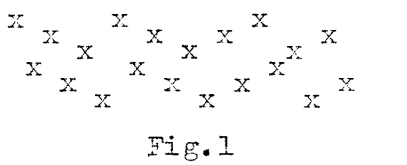

Fig.1

We start with an inch or so of tabby (treadles 1 and 2), then weave the pattern on both sides, for instance:

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then leave about 3 inches of warp to be tied into fringe. The tying should be done on the loom: groups of warp ends are cut and tied one by one. Each layer must have its fringe tied separately. Now after cutting the piece off, we turn it inside out. The inch or so of tabby will remain inside holding the two layers together at one end. After stuffing the cushion, we can finish it by tying the fringes on both sides together. Thus we shall have a woven article finished without using a needle. The achievement may be amusing, even if not very convincing.

We can go one step further and finish the cushion on the loom, so that a layman will be rather at a loss to explain how the thing was done. Let us start exactly as before, but leave enough warp below the tabby band to make fringe later on. When the cushion is nearly finished we can stuff it on the loom, first releasing the tension of the warp and then opening one of the tabby sheds (tr.1). This is the tricky part, because all the stuffing must go below the breast beam of the loom. Let us pull the warp as far forward as possible, so that

only about 2 or 3 inches of the fabric will remain on top, stuff the cushion, and then go on weaving tabby for another inch or so. The size of the cushion must be such that it won't start rolling itself on the cloth beam before it is finished. After the tabby band is woven, leave enough warp for the fringe, and cut off. Fig.2 shows the cushion in

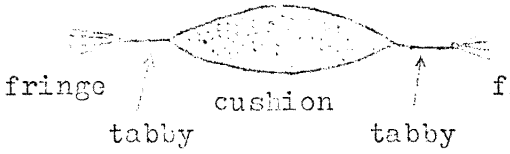

Fig.2

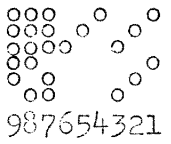

Fig.3

cross-section. If more than 8 treadles are available, the ends can be woven in twill instead of tabby, so that the pattern on the end bands will be similar to the one on the cushion. For instance (fig.3) treadles 1,2,3 will be used for the ends: 1231232132, and the remaining treadles - exactly as before: 4758694758695847695 8.

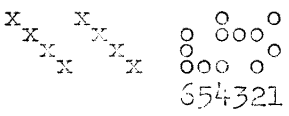

Fig.4

The same cushion can be woven on four frames in tabby. Then the draft will be as on fig.4. We shall start with tabby on treadles 1 and 2, continue with tr.: 3,4,5,6 for the cushion and finish with 1 and 2. Both layers as well as the ends will be in tabby, and the only patterns possible are either plaid, or log cabbin (see Colours in Simple Weaves, MW No.5).

Double-Width cloth. In theory double-width cloth is nothing else but a circular fabric open on one side. In practice the difference is very substantial. The only reason for weaving double-width is to have twice as wide a fabric as a single one woven on the same loom. This involves a fold in the fabric, which fold should become invisible after the fabric is opened and ironed. Besides this, there should be a continuation of pattern, if any, and otherwise the two halves of the fabric should be identical in every respect.

We have already (page 7, No.6) discussed the difficulties of drafting for such fabrics in a very simple case of a biased twill. When it comes to a definite pattern the problem is a little more difficult, but not much. As long as the pattern is symmetrical, both halves of the draft are identical, except for one central heddle ("⊙" fig.5) which may happen in either of them, and which is not repeated.

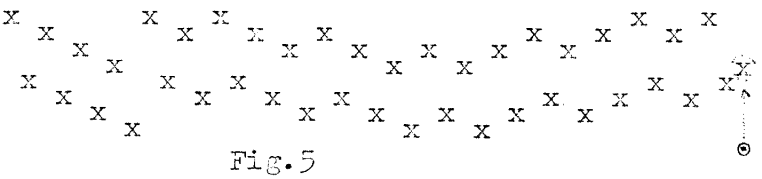
Fig.5

(binder omitted in the tie-up)

But so far we had only theoretical or drafting difficulties. These can be always solved on graph-paper. What cannot be so easily eliminated, is the fold. As long as we have the fabric on the loom, the fold is for all practical purposes - a selvedge, and it is subject to all the distortions and deformations of the latter (see our article "Selvedge", MW No.6). To make it perfect there should not be any pulling in, or letting out at the edge. This edge must be not only straight, but it must have the same count of cloth (ratio between warp and weft) as the rest of the fabric. Which is next to impossible for most of us.

This is why several compensatory techniques have been developped.

One of them is based on the principle that every weaver has a tendency to pull in the edges. If we knew exactly how much we pull them in, the remedy would be obvious: space the warp ends at and near the fold so much farther apart as to overcome our pulling in. If we pull them in 25% more than the body of the fabric, and then space them 25% more than other warp ends, the result should be an even count. In practice however hardly anybody knows his percentage of pulling in - except perhaps for weavers who work always with the same kind of yarn, the same weave, and setting.

Thus the first suggestion is to experiment. When sleying let us space the last half of an inch of warp at the fold - on a whole inch. For instance if the sleying is 2 ends per dent in a reed No.15, the last 15 ends should be spaced: 1,2,1,1,2,1,1,1,1,1,1,0,1,0,1. Then let us weave a few inches, cut off, iron and see what the fold looks like. If the fold is now too open, we can bring the last two ends nearer to the center: 1,2,1,1,2,1,1,1,1,1,1,1,1. Then weave another few inches, cut off and compare with the first attempt.

Another method is to have special reeds made with dents growing wider towards the fold. Such reeds of rather old vintage can be found in antique shops. The difficulty here is that regardless of the width of the woven fabric the fold must be always at the edge of the reed, which may result in weaving off the center of the loom, unless the reed can be shifted in the batten at will.

If the fabric is woven entirely in tabby, sometimes it is possible to weave it without paying any attention to the fold, and after the piece is taken off the loom, to pull out some of the warp ends where they are too close together. But they must be pulled in pairs to preserve the weave. After such an operation the warp ends will not be evenly distributed, but if the total number per inch is correct, washing and ironing should spread them more uniformly.

Besides these methods there is still the possibility of getting a satisfactory fold, by weaving very slowly and correcting each pick of weft at the fold with fingers. This is however not only slow, but rather difficult way of weaving.

So much about the fold. Another difficulty results from the fact that one layer of the double fabric is wound on the cloth beam always <u>on top</u> of the other layer. This means that the top layer is stretched more than the bottom one. How much more, depends on the thickness of the fabric and on the circumference of the beam. If the fabric is fairly thick, let us say 1/8", and the diameter of the beam rather small - 3", then the upper layer will be stretched by $\frac{3}{4}$" on each turn of the beam i.e. on each $9\frac{1}{2}$ inches. This is nearly 8%, and not every yarn can stand so much stretching. Linen for instance will stretch, but it will not come back, which means that one side of the finished fabric will be that much longer. In case of a bedspread 3 yards long, one side would be 9 inches longer than the other. Wool can take it easier, but it is about the limit for cotton or rayon. Thus when weaving such fabrics one should avoid heavy cloth, and have the cloth beam as thick as possible. This is where the old looms with beams a foot in diameter come handy.

The third obstacle in all double weaves, not only in double-width fabrics, is the great number of ends per inch. Obviously it must be double compared with a single layer weave. If the latter calls for

30 ends, then the double one must have 60. This means so much more friction when opening the shed. Fortunately in case of circular and double-width fabrics one half of the warp stays always below, or above the shed, but in other double weaves all warp ends cross each other at regular intervals. The additional friction in case of double weaving comes from several sources: friction between the warp and the heddles (twice as many as usual), the warp ends between themselves, the warp ends and the reed, and finally there are twice as many movements of the batten as in normal weaving. All in all the friction during weaving may be not twice but several times as great as usual.

What can we do about it? First, not to increase this friction any further, the reed should be the same as one used for a single-layer fabric. Thus if No.15 reed would be used for a single cloth of 30 ends per inch, the same reed must be kept for a double weave with 60 ends. If it is No.9 reed for domestic wool at 18 ends per inch, do not try No.18 reed for the same fabric woven double, or the beating will be quite a problem. With many double weaves the reed should be actually more open than the one used for a single fabric.

Since the sheds do not open as easily as in the case of single layer fabrics, the loom for double weaving should be either counter-balanced with a shed regulator (see MW, No.1), or still better - double tie-up jack-type (so called "Swedish"). Sticky or fluffy yarns should not be used for warp. Weaves which require closely set warp (rep, warp-face satin etc.) should be avoided.

To start with, one should select a rather light and fine fabric, both layers woven in tabby, or simple twill, the warp smooth, elastic, and resistant to friction. If the weft can be different from the warp, it should be not elastic. In pattern weaving if a binder is used, it would be advisable to adopt single linen for this purpose. It will overcome to a large extent the tendency to draw-in the edges, which in turn will result in a better fold.

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FROM THE EDITOR

We wish to thank here all our readers who sent us messages encouraging us to continue the publication of Master Weaver. We apologise for not being able to answer all these messages with personal letters, but their number makes it impossible.

All suggestions which we received are duly classified, and we shall act upon them as soon as possible.

One of the suggestions was to publish a sample card, which would answer the requirements of average weavers. You will find it on the inside front cover of this issue. It can be easily copied on a typewriter, or you can get any amount of them through our Information Service at $ 5.- a hundred.

S.A.Zielinski