



obviously such method of drawing would take too much time. For this reason we do not try to represent the cloth as if looked at through a microscope, but we simplify the picture by marking whole squares either black or white. Instead of fig.2 we have fig.3.



Fig.2



Fig.3

In other words we make the draw-down as if instead of more or less round thread we were using flat and thin ribbon without any space left between the shots of weft or ends of warp.

The second pick of weft is made with treadle 3 (directly above the 2-nd mark in the treadling draft). This treadle is tied to frames 2 and 3. These two frames operate the following warp ends: 1,2,5,6,7, 10,11,13,14,17,18,19,22, and 23. Consequently in the second line of the draw-down the above warp ends will be covered with weft, and represented by black squares.

The third pick of weft is thrown when the treadle No.2 is depressed (please check on the draft). This treadle is tied to frames 3 and 4, and it sinks heddles and warp-ends No.: 2,3,6,9,10,14,15,18,21, and 22. All these warp-ends will be covered with black weft and marked accordingly in the third line of the draw-down. Finally the fourth pick of weft is made when the treadle No.1 pulls down heddle-frames 1 and 4, so that the black weft covers warp-ends No.: 3,4,8,9,12,15,16,20,21,24.

Now we come to the 5-th pick of weft. Looking up from the 5-th mark on the treadling draft we can see that it has been made in exactly the same way as the 1-st pick: with treadle No.4. Thus the 5-th line must be identical with the 1-st line of the draw-down. Provided that we did not make any mistakes, we do not need any more to look at the tie-up and the threading draft, but we can simply copy the first line. The next pick is the same as the 2-nd, so that we can draw the 6-th line by copying the 2-nd, and so on. The 7-th and the 11-th line are the same as the third, the 8th and the 12th - the same as the fourth. The best way of copying the lines already made in the draw-down is to put a piece of paper across the draft just above the copied line, so as to cover the upper part of the draft.

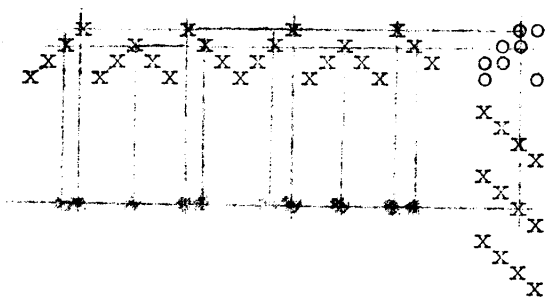


Fig.4

Once we have understood the relationship between different parts of the draft, we do not need to count picks, treadles, frames and warp-ends. We simply stick to the following rules:

From the line in the draw-down which is being made look horizontally to the treadling draft. Find the corresponding treadling mark. Follow it up (vertically) to the tie-up draft.

Find the frames tied to the corresponding treadle (fig.4), and follow them horizontally again to find the warp-ends threaded through these frames. Now from all these - drop down vertical lines (imaginary or made in pencil) until they cross the line in the draw-down which is being worked at. ALL SQUARES WHERE THESE LINES CROSS THE DRAW-DOWN LINE SHOULD BE BLACK. If not there is a mistake.

It often happens that the student will make the draw-down correctly, but still will be quite confused about the interpretation, i.e. will not see any relationship between the paper work, and the actual weaving. The following exercise may bridge the gap: Give the student a sheet of graph-paper with 4 divisions to the inch. Make him draw the threading, tie-up and treadling drafts in proper order. Now in the place reserved for the draw-down cut with a razor-blade all vertical lines on the graph paper. From a piece of black paper cut a number of strips a little less than one quarter of an inch in width, and slightly longer than the width of the draw-down. Explain the situation when the first pick of weft is to be made - which warp-ends are sunk and which raised. Then with a pencil actually make a shed in the paper, and insert one of the black strips of paper. Push it up until it is in line with the first treadling mark. Proceed in the same way with the second, third, and so on - line of the draw-down. The basket work resulting from these operations will look similar to both the draw-down and the actual work on the loom. Now make the student copy the whole draft on the normal graph-paper (8 or 10 divisions per inch) this time without cutting. Make him compare all three: the weaving on the loom, the basket work, and the final draft. If this won't help - nothing will.

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## WAFFLE WEAVES

Waffle Weave in handweaving means the same as Honeycomb in industrial terminology, and has nothing in common with Colonial Honeycomb. It is a "three-dimensional" weave i.e. that it has a certain depth, or thickness not due to the thickness of the yarn, but to the way the warp and weft are interwoven. Because of this third dimension the draw-downs give only an approximate picture of the fabric: the long floats both in warp and weft represent the raised areas, and the tabby - the sunk areas.

We can divide roughly all waffle weaves into: single (one long float in warp and one in weft in each repeat), double (two floats in each direction, single face (waffle effect only on one side of the fabric), and double face.

Fig.1 shows the draft for the smallest and simplest waffle, woven on four frames. Fig.2 is the same fabric woven on a 6x6 huckaback draft. This is double face, single waffle.

On fig.3 we have single face, single waffle. The squares are larger than in fig.1. The draft No.4 has still larger squares.

The draft on fig.5 gives double face, double waffle. It can be woven also on a 10x10 huckaback threading as in fig.6.

All the above drafts were for 4 frames. On 5 frames we can weave "perfect" waffle (see fig.8) - or rather perfect on the draw-down - in practice all waffle weaves give distorted squares, because the length of vertical and horizontal floats can not be the same. For instance in fig.6 the floats in warp are longer than the floats in weft. If we change the tie-up to the one on fig.7, we shall have the floats in weft longer than the ones in warp.

The drafts for waffle are not always symmetrical, as shown in fig.9. There is a great variety of drafts for higher number of frames, but they do not present any particular advantage.