

Correct Reeding of Weaves

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The reed is the cause of many unpleasant appearances in fabrics. It serves three purposes:

1. To hold the warp at the desired width with each end in its proper place,
2. To act as a support to the shuttle, and
3. To beat the inserted filling yarn up to its preceding pick.

As the reed governs the spacing and grouping of the warp yarns, the space occupied by the reed wires during weaving influences the appearance of the woven goods to a large extent. For instance, assume a plain weave fabric made with an equal number of ends and picks of identically the same yarn and drawn through the reed one in a dent, the warp will show less and the

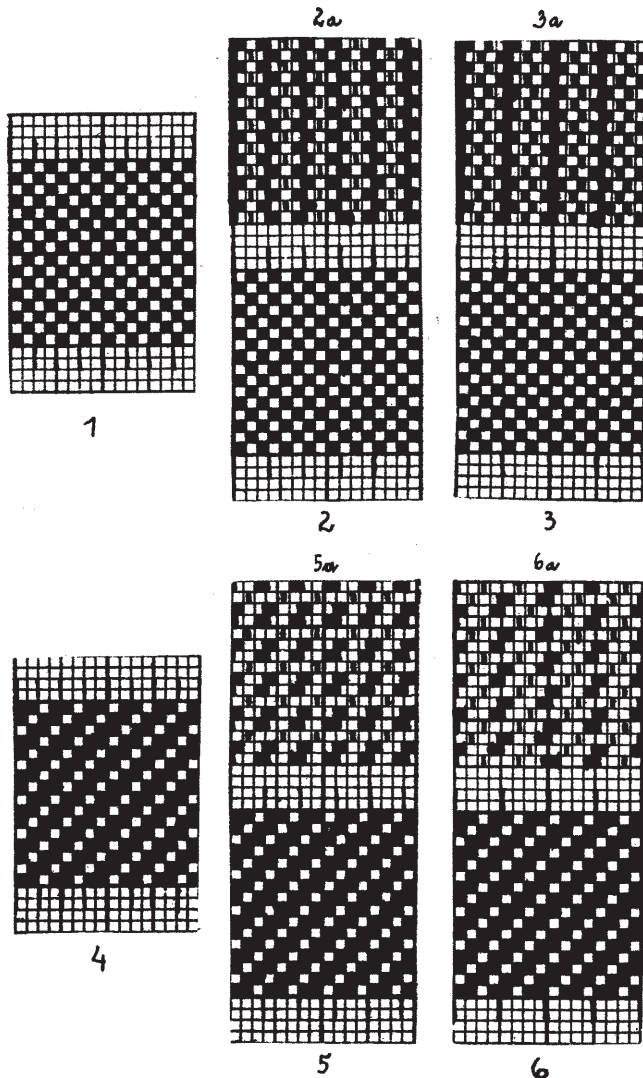
filling more on the surface of the cloth. In order to avoid this effect, the reed wires must be made as thin as possible. Of course, one cannot go below a certain limit there on account of the flexibility of the wire and the cutting of the filling when beating-up.

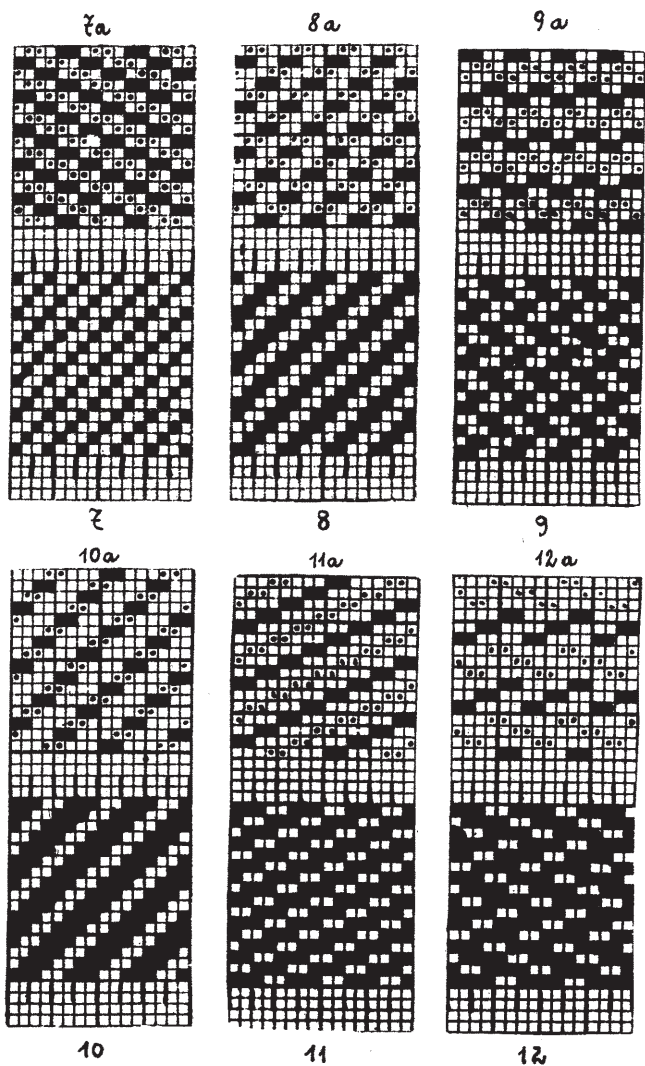
In order to conserve the space occupied by the reed wires to avoid friction, more than one end is generally inserted into each dent. Most commonly 2 per dent and in closer settings 3, 4 and even more ends per dent are used. For goods using more than one warp beam, the system of reeding depends on the character of the goods, but it often happens that filling floats become unsightly long or exceptionally short by the use of different reeds. Hence, goods are obtained that have an entirely different appearance than was planned.

For plain weave goods 2 per dent reeding has been found most satisfactory (Fig. 1). It can be noted that each warp end on its left or its right comes in contact with the reed wire and is pressed to one or the other side by it. This will cause the filling floats to be lengthened to the right and then to the left, which causes them to show up balanced on the surface.

If this same cloth was made with 3 per dent reeding (Fig. 2) an entirely different effect is created. The warp ends contacting with the sides of the dent wires will allow the filling floats to be lengthened, whereas in the space between the wires the filling floats will not be so apparent, because they are interlaced closely (Fig. 2a). This condition produces lengthwise rows in the goods which are somewhat undesirable. The same applies to 4 per dent reeding (Fig. 3) as shown by Fig. 3a.

Hence, from the preceding it must be said, that the most favorable reeding of the warp ends is the one which permits the least filling floating between the reed openings, or at least not larger than the same. This also applies to other than plain weaves. For instance, with a 3-harness warp twill (Fig. 4) the same condition arises. One per dent reeding would shorten the warp floats and lengthen the filling floats, hence, make it appear as if the weave was a balanced twill. With 2 per dent the filling floats are increased only half as much as in the one per dent and crowd the ends only half as much, hence a picture corresponding more to the actual weave is obtained. With 3 per dent (Fig. 5) the warp and floats tend to lengthen and the filling floats to shorten, but they group themselves differently than in the plain weave. On the first or second pick





all filling floats lengthen, causing filling effect, but on the third pick the warp ends are crowded against the filling floats as shown in 5a. It causes this pick to lie deeper in the fabric and in heavier goods almost gives the appearance of imperfect goods.

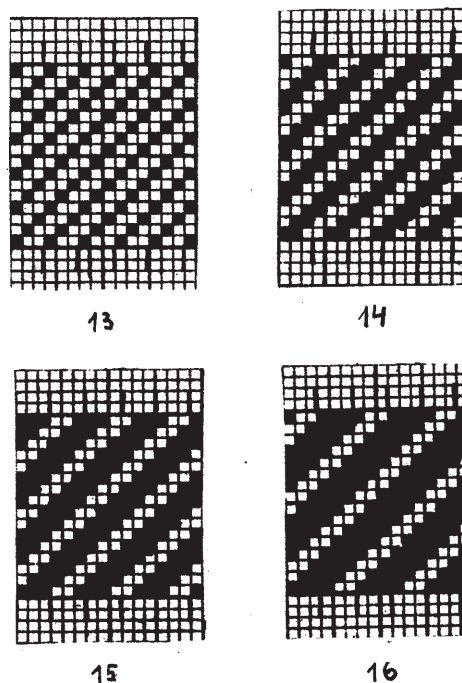
In books and leading technical magazines one usually finds rules for the correct reeding to state that the ends per dent should correspond with the repeat of the weave in the direction of the warp, if even, and if uneven, should divide evenly into the repeat of the weave. From the preceding it can be deduced that this is not always true or suitable, but only relatively correct. In Fig. 6 another phenomenon is apparent with a 3 leaf twill, drawn 4 per dent. Fig. 6a shows what actually happens in weaving that way. Similar filling floats form a lengthwise row and in addition a slightly inclining line sideways forms also. This is enough to cause one to question the correctness of the weave.

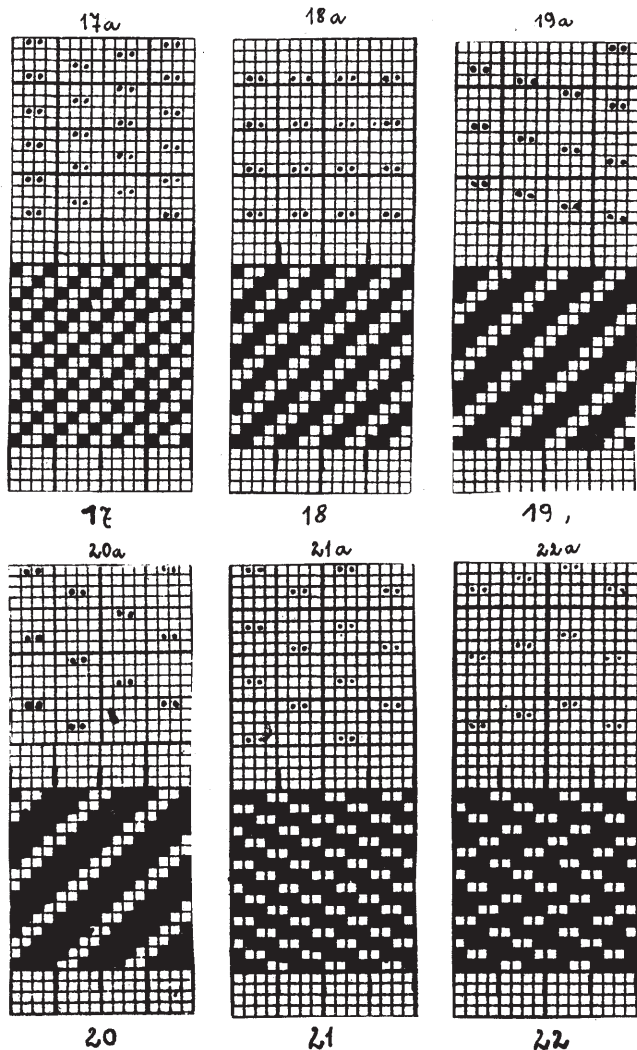
In fabrics, where the weave has filling floats extending over 2 warp ends and drawn-in two per dent, long

and short floats will be noted. In the direction of the filling (Fig. 7) a noticeable diagonal will be apparent. Observing the first and lowest pick (Fig. 7) it will be noted that the first filling float from the left has a reed wire in the middle of it. The first warp end on this pick is raised and the reed wire presses it a little to the right, the fourth is also raised and is pressed to the left by the wire. Hence, the filling float between these is shortened somewhat in this instance. As the second filling float from the left on the first pick has a wire at the right and left of it respectively, the filling float between them is made larger thereby. On every pick following the filling floats move over two ends to the left, and the long as well as short filling floats form a diagonal which runs opposite to the filling twill. (Fig. 7a). The long floats are filled in solid in the squares, whereas the short floats are dotted.

In the four harness balanced twill (Fig. 8) drawn 2 in a dent, both short and long floats appear in the manner shown in Figure 8a. Since the short and the long filling floats do not touch each other, the effect of the warp floats causes no diagonal in this case like it did with the previous weave. Hence, drawing this weave 2 per dent does not offer difficulties here.

With a four harness fancy twill (Fig. 9) drawn 2 per dent, a cross rib develops in the long filling floats as shown in Fig. 9a. In the five harness 3 up and 2 down warp twill (Fig. 10) the short and long filling floats alternate (Fig. 10a) but they are far enough apart not to disturb the picture. With a satin like in Fig. 11, drawn 2 per dent, a diagonal of each of the short filling





floats and long filling floats develops as seen in Fig. 11a. The six harness satin shown in Fig. 12, if drawn 2 per dent, and dissected in this manner, forms on 3 picks long filling floats in a diagonal line and on the next three picks, short filling floats in a diagonal pointing in the same direction as shown in Fig. 12a, which causes a fabric of fine ribs fillingways.

In all preceding weaves the filling floats did not extend over 2 warp ends on the face side. No irregularities due to reeding will be encountered if these are drawn 3 per dent, as can be seen from Figs. 13-16, i.e. every filling float comes in contact with only one reed

wire. In the weave of Fig. 13, for instance, the first filling float at the lower left comes in contact with a reed wire at its right, so do the rest on that pick. On the next pick, the reed wire is in the middle of the filling float in every instance, and on the next pick the reed wire comes to the left of the filling float. This repeats in regular order and hence causes no disturbing elements. The same applies to the other weaves up to and including Fig. 16.

The three harness filling effect twill is influenced disadvantageously by a 4 per dent arrangement (Fig. 17). The first filling float at the lower left is shortened, because the first warp end is forced to the right by the left reed wire, whereas the fourth end is forced a little to the left by the reed wire on its right. The three successive floats in the three successive picks following the twill angle are each touched by one reed wire, therefore lengthened slightly. Fig. 17a shows all the shortened floats in the weave and it can be noted that they form a more declined twill line than the weave itself, hence would not appear prominently.

With the 4 harness balanced twill shown in Fig. 18, shortened as well as lengthened floats are found. The former arrange themselves in parallel order as shown in Fig. 18a and give the impression of harness skips or driving-in errors. In the 5 harness (three up and 2 down) twill, a declining twill to the left is formed by the shortened floats as indicated in Fig. 19a, which is opposite to the weave twill and disturbs the appearance of the same, although the prominent warp twill minimizes the same considerably. Fig. 20 shows a four up and 2 down, 6 harness warp twill and here as before, the shortened floats form a left twill but steeper than before. In the satin 3 up and 2 down, Fig. 21, the short floats lie the same as in Fig. 20 and become quite noticeable in lustrous or bright colored goods. In the 6 harness (4 up and 2 down satin, Fig. 22) the shortened floats form a twill on the first 3 picks, whereas the next three picks form even floats (Fig. 22a).

From these observations in the 4 per dent reeding it can be readily seen that it is not suitable for weaves with floats over more than 2 warp ends. Hence, it can be derived that any reeding arrangement is unsuitable, which contains 2 more ends per dent than a filling float covers.

(To be continued)