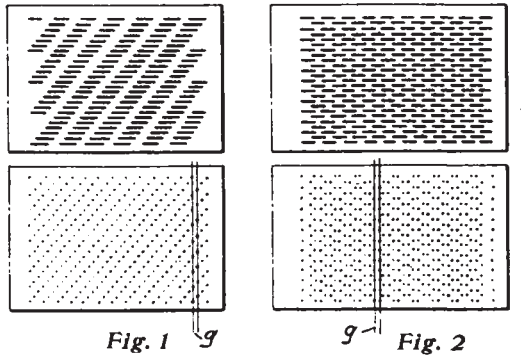


NEW CARD-CLOTHING FOR TOP FLATS.

To prevent the formation of gaps in card-clothing in the direction of its working surface, the so-called *full set* has been proposed, each ridge being composed of two or more rows of pins staggered in the direction of the backs of the wires. This arrangement, however, has the drawback that owing to the pins

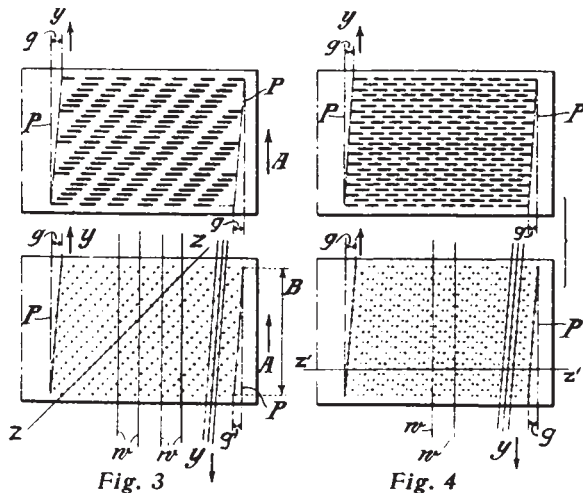


being set too closely together, it is impossible to clothe all the flats of a card with flat pointed wires and consequently at least two sets of card-clothing of different count have to be used on one machine. Moreover, in the case of staggered *full set* clothing, the closeness of the setting renders lateral grinding of the pins impossible.

The purpose of the new card-clothing is that these defects are obviated, and at the same time the formation of gaps is prevented.

The accompanying illustrations are given to explain subject.

Figs. 1 and 2 give views of card-clothing (one with rib setting and the other with open setting) seen from below and above respectively, while Figs. 3 and 4 show corresponding views of the new clothing.



Both, in rib (Fig. 1) and open set clothing (Fig. 2) pins, which are situated one behind the other, form gaps *g* parallel to the direction of the working surface, and in which the fibres are left unacted on by any of the pins.

In the new make of card-clothing, with rib setting (Fig. 3) or open setting (Fig. 4), the direction *y* of each row of pins formed by pins of the various diagonal rows *z* (see Fig. 3) or horizontal rows *z'* (see Fig. 4) differs by the width of two gaps *g* from that of line *P* drawn across the width *B* of the clothing, and parallel to the working direction *A*, through an

end pin of the row of pins in question. As shown by the lines *w* in both illustrations, gaps in the working direction are prevented by this arrangement so that all parts of the ribbon of fibres are encountered by pins, and in this way an unimpeachable, uniform carding of the cotton is obtained.

The clothing can be subjected to lateral grinding in the diagonal gaps between each two rows of pins of this kind. The deviation in the direction of each row of pins from that of lines drawn, parallel to the working direction, through an end pin of such row, may also be equal only to the width of one gap or may be equal to that of more than two gaps.

PRODUCING SEVERAL NEW WEAVES FROM ONE FOUNDATION.

This method of weave-formation provides the means for constructing an endless number of new weaves, and this of the greatest of variety as to their interlacings, referring to fabrics covering wool, worsted, cotton and silk.

The principle underlying the construction of these weaves is *drafting* either warp or filling ways from a given foundation weave, using every second, third, fourth, fifth etc. warp-thread or pick as the case may be in the construction of the new weave, until the repeat of the latter is obtained. Every different counter-off used produces a totally different weave, hence the variety of new weaves at our disposal by this method of weave formation, the same being as we might say, unlimited.

The drafting of each foundation weave may be done either from left to right, or from right to left, or from bottom to top, or from top to bottom; again the drafting of two or more ends may be done in one direction and the skipping *i.e.*, counting-off in the opposite direction.

On account of the variety of new weaves thus at our disposal, not every weave produced will be perfect, but most of them will produce good, practical, well broken up weaves for daily use in the mill; again in many instances, in connection with fancy skipplings, some excellent novelties for dress goods will result.

In some cases it may be found necessary (on account of excessive floats in the filling) to turn the resulting new weave 45 degrees, *i.e.*, change warp for filling.

In some instances a reduction in the number of harnesses required for the new weave compared to that of the foundation weave may take place on account of the counter-off used in distributing the warp-threads of the foundation twill being a multiple of the latter. In no case will the number of harnesses be increased for the new weave compared to that of the foundation weave, in connection with warp drafting.

Drafting the filling will not change the repeat for the new weave compared to that of the foundation weave.

In order to fully explain the construction of these weaves to the reader, the accompanying plate of thirteen weaves is given, illustrating at the same time an unlimited variety of new weaves possible to be constructed by this method of weave formation.

Warp Drafting.

Fig 1 is the $\frac{3}{1} \frac{1}{2} \frac{2}{2} \frac{1}{1}$ 13-harness regular twill, *i.e.*, the foundation weave in this instance, and from which weaves Figs. 2, 3, 4 and 5 are obtained thus:

Fig. 2: Take alternately one warp-thread and miss one of the foundation weave, *i. e.*, draft the latter thus: 1-3-5-7-9-11-13-2-4-6-8-10-12 and the result is diagonal weave Fig. 2, producing a most excellent, well broken-up effect.

Fig. 3: Take alternately one warp-thread and miss three (missing two would result in a less valuable new weave—hence omitted) of the foundation, *i. e.*, draft the latter thus: 1-5-9-13-4-8-12-3-7-11-2-6-10 and the result is granite weave Fig. 3, a neat effect of its class of weaves.

Fig. 4: Take alternately one warp-thread and miss four of the foundation, *i. e.*, draft the latter thus: 1-6-11-3-8-13-5-10-2-7-12-4-9 and the result is granite-twill weave Fig. 4, a most excellent weave of its class, showing broken twill effects in both directions on the face of the fabric.

Fig. 5: This weave, after having been formed, has been turned by us 45 degrees, presenting it to the reader in the position in which it will be used by him on the loom. In its original position this weave was drafted from our foundation weave Fig. 1, thus: take alternately one warp-thread and miss five, *i. e.*, draft the foundation weave thus: 1-7-13-6-12-5-11-4-10-3-9-2-8. The result, weave Fig. 5, gives us a most pronounced diagonal effect.

No reduction in harnesses required for new weaves Figs. 2, 3, 4 and 5 compared to the number of harnesses required for their foundation weave Fig. 1, takes place, all five weaves calling for 13 harnesses and 13 picks.

Filling Drafting.

Weaves Figs. 6, 7, 8, 9 and 10 are given to illustrate and explain the procedure.

Fig. 6 is the $\frac{3}{2}\frac{3}{2}\frac{1}{2}$ 13-harness regular twill, *i. e.*, the foundation weave in this instance, and from which weaves Figs. 7, 8, 9 and 10 are obtained.

Fig. 7: Take alternately one pick and miss six of the foundation weave, *i. e.*, draft the latter thus: 1-8-2-9-3-10-4-11-5-12-6-13-7, resulting in the granite diagonal shown.

Fig. 8: Take alternately one pick and miss three picks of the foundation weave, *i. e.*, draft the latter thus: 1-5-9-13-4-8-12-3-7-11-2-6-10, resulting in the steep diagonal given.

Fig. 9: Take alternately one pick and miss seven of the foundation twill, using the following drafting: 1-9-4-12-7-2-10-5-13-8-3-11-6, resulting in this instance in a granite weave.

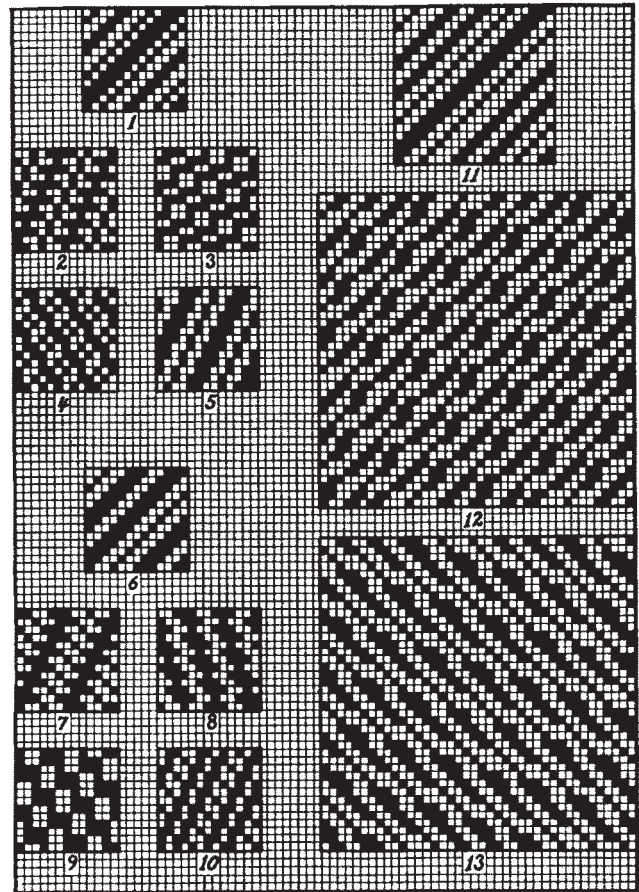
Fig. 10: This weave shows again the transposing of a resulting weave turned 45 degrees in order to present the new weave produced for practical work, similarly as was done in connection with weave Fig. 5. This weave in its original position was drafted from our foundation twill thus: take alternately one pick and miss eleven, or what would be the same, considered in the reverse direction of drafting, take one pick and miss three. Considering eleven as the counter-off, weave Fig. 10 was drafted thus: 1-12-10-8-6-4-2-13-11-9-7-5-3, a flat diagonal in its original position, but which by turning it 45 degrees, *i. e.*, changing warp for filling, was changed into a 63 degree granite twill, resulting in a most excellent weave, although the weave in its original position is constructed good and is used in practical work.

Drafting Threads in Groups.

This style of drafting, using our regular twills for foundation weaves, as mentioned before, will result in novelty weaves extensively used in the manufacture

of dress goods. Two examples are given and which will fully explain the subject to the reader, using in both instances two warp-threads in rotation previous to skipping threads uniformly by means of a counter-off. No increase in harness for the new weaves is needed in either instance, that of the foundation twill being the one required.

Fig. 11 is the foundation twill, being what is known as the $\frac{3}{2}\frac{1}{2}\frac{2}{2}\frac{2}{3}\frac{1}{2}$ 20-harness 45 degree twill, and from which novelty weaves Figs. 12 and 13 are obtained, using in connection with either weave a different drafting and skipping of the two threads taken in rotation, reversing the drafting of the two threads compared to each other in the two weaves. By this we mean that in connection with weave Fig. 11, we drafted the two threads taken in rotation from



left to right, reversing it in weave Fig. 13 in the opposite way, *i. e.*, from right to left, previous to skipping in either instance.

Weave Fig. 12: Take two warp-threads and skip four, keep on this arrangement until the repeat of the new weave is obtained by the following drafting: 1, 2; 7, 8; 13, 14; 19, 20; 5, 6; 11, 12; 17, 18; 3, 4; 9, 10; 15, 16, repeating on 20 warp-threads and 20 picks the same as its foundation weave, two repeats each way being given in weave Fig. 12 as well as in the next weave.

Weave Fig. 13 is obtained by reversing the drafting of the warp-thread in each group of 2 threads, compared to the former weave, the drafting from foundation weave Fig. 11 in this instance being: 2, 1; 8, 7; 14, 13; 20, 19; 6, 5; 12, 11; 18, 17; 4, 3; 10, 9; 16, 15. Repeat of weave corresponds again to that of the foundation weave, *i. e.*, 20 warp-threads and 20 picks.