

Dress:

4	ends	dark
2	"	light
8	"	dark
2	"	light
8	"	dark
2	"	light
4	"	dark
4	"	light
2	"	dark
8	"	light
2	"	dark
8	"	light
2	"	dark
4	"	light

60 ends, repeat of pattern, calling for 3 repeats of the weave.

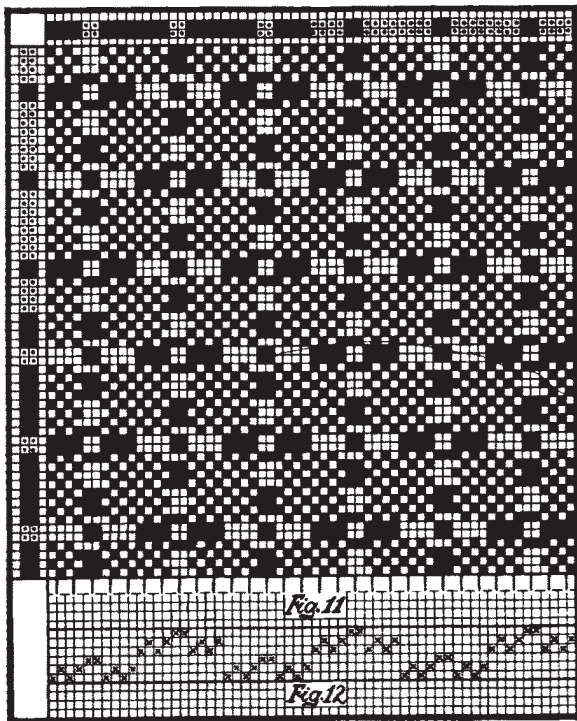
Color scheme for the warp is shown above the weave, using *full* type for indicating dark warp, and *dot* type for indicating light warp.

Below the weave is indicated, by means of dashes, the entering of the reed, *viz*: 2 ends per dents, splitting threads interlacing side by side the same, throughout the repeat of the weave, by means of the dent wires.

Filling: 90 picks per inch, same colors and arrangement of yarns as used for warp.

Color scheme for the filling is shown at the left hand side of the weave, using *full* type for indicating dark filling, and *dot* type for indicating light filling.

In reproducing this check gingham (or any similar check produced with a similar proportion of warp and filling texture) it will be advisable to reverse proportion of warp and filling texture and which in our example is 75 x 90, giving always the warp the higher texture where arrangements of warp and filling correspond in the repeat. Always give the check the



benefit of being slightly elongated in the direction of the warp, and not compressed as in our example, *i. e.*, use one to four less picks per inch than there are warp-threads per inch in the finished fabric.

RIB WEAVES, CONSTRUCTED WITH BACKING OR RIB PICKS.

(Continued from page 88.)

Diagonal Effects.

The same are sub-divided into:

(a) such as using every other pick in the repeat of the weave for rib pick, and

(b) such as using every pick for part of the repeat of the weave as rib pick, said pick for the remaining part of the repeat of the weave interlacing with the warp as face structure.

Weaves 17 and 18 are given to explain division a.

Weaves 19 and 20 are given to explain division b.

(a) USING EVERY ALTERNATE PICK FOR RIB FLOAT.

In this instance, the rib pick floats for part the time of the repeat of the weave on the back of the structure, resting for the remainder of the repeat of the weave on its face.

Weave Fig. 17 repeats on 12 warp-threads and 24 picks; in this case every even number pick is used as rib picks (see *dot* type), interlacing $\frac{8}{4}$, the remaining picks, *i. e.*, every uneven number pick interlacing with the warp threads on the plain weave. By means of this weave the face of the fabric will show two distinct different effects in each repeat of the weave, *viz*, for one-third of the repeat a common diagonal rib of solid filling effect formed by every alternate pick, showing for the remaining two-thirds of the repeat of the weave rib effect produced by all the warp-threads and every other pick interlacing with the plain weave. The floating rib picks give to the fabric the characteristic rib effect structure, since they more readily contract during scouring, etc., as compared to the interlaced part of the structure, giving in turn to the cloth raised (oblique) rib line effect.

Weave Fig. 18, repeats on 16 warp-threads and 32 picks. In this instance every rib pick interlaces $14 \frac{2}{2}$ and every face pick $\frac{2}{1} \frac{2}{1} \frac{2}{1} \frac{2}{1} \frac{2}{1} \frac{2}{1} \frac{2}{1} \frac{2}{1}$.

This weave will produce oblique rib effects in the fabric, each effect being separated from the other by means of a regular prominent filling twill line formed by every pick throughout the repeat of the weave.

USING EVERY PICK PART THE TIME FOR RIB FLOAT AND PART THE TIME FOR FACE WEAVE.

Weave Fig. 19 repeats on 13 warp-threads and 26 picks. In this weave every pick in its turn and proper position floats for 6 warp-threads as rib pick on back of the structure, interlacing with the remaining 7 warp-threads on plain weave.

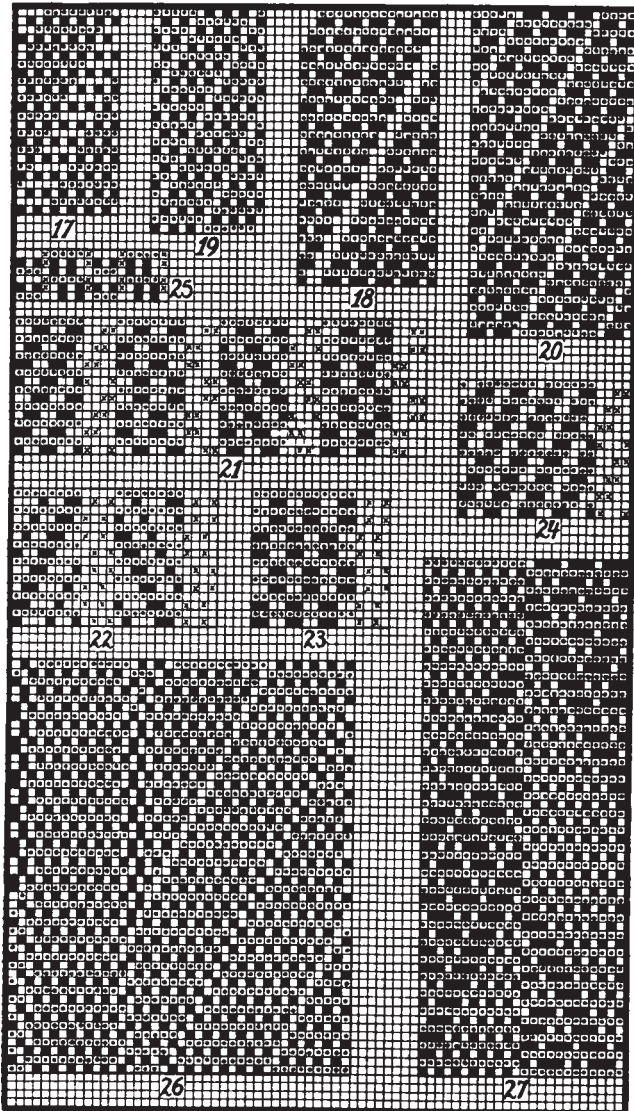
Weave Fig. 20 repeats on 19 warp-threads and 38 picks; it has every pick in its turn, and proper position, floating for 9 warp-threads on back of the structure as rib pick, interlacing the remaining 10 warp-threads with the 3-harness warp-effect twill.

Combining Different Weaves.

Weave Fig. 21 shows every other pick throughout the repeat of the weave, used as a rib float. The size of this float (see *dot* type) is for 8 warp-threads; for the joining 4 warp-threads said pick floats on the face. The weaves as used for interlacing the face

structure for the 8 warp-threads first referred to (see full type) are:

- 8 ends 4-harness twill, left to right,
- 8 ends 4-harness basket,
- 8 ends 4-harness twill, right to left,
- 8 ends 4-harness basket.



The same weaves thus quoted (see cross type) are used in the respective joining 4 warp-threads for interlacing the ground structure when the filling floats on the face for said 4 warp-threads and thus completely covers the latter. Repeat of weaves 48 x 16, but which by means of fancy draw, if required, can be reduced as low as 8-harness.

Weave Fig. 22 has every other pick used as a rib pick, and this for 8 end rib float to alternate with 4 ends floating on face of the fabric. The weave (see full type) for interlacing said 8 end rib float is the $\frac{2}{2}-\frac{1}{2}-\frac{1}{2}$ 8-harness twill, running for 8 ends from left to right and for 8 ends from right to left. The 2 by 4 rib weave (see cross type) is used for interlacing the fabric on the back when the filling floats for 4 warp-threads on the face of the cloth, and thus hides any points of interlacing. Repeat of weave 24

warp-threads and 16 picks, which by means of fancy draft can be woven on 12-harness.

Weave Fig. 23 shows another weave of the present sub-division of rib weaves. In the same every rib pick floats alternately under 12 warp-threads and above 4. The weaves for the face effect is the 4-harness basket (see full type), vice-versa the weave for the ground (or back) structure (see dot type) which is the 2 by 4 rib weave. Repeat of weave 16 warp-threads and 16 picks, which by means of a fancy draw can be reduced as low as 6-harness, although 16-harness straight draw if within the capacity of the loom, will be more suitable.

Weave Fig. 24 shows another weave of this sub-division of rib weaves. In the same every rib pick floats for 16 warp-threads on the back of the structure and over 4 warp-threads on its face. The weave as used for interlacing the fabric is the 4-harness twill (see full and cross type). Where indicated by full type, said twill forms the face structure for its respective portion of the weave, forming in the other part of the repeat of the weave (see cross type) the interlacing for the back structure.

This weave also explains another feature, viz., how to interlace large rib floats, i. e., how to stitch them not visible to the fabric. In the present instance we used for said stitching the 8-leaf satin.

Weave Fig. 25 shows a combination of rib weaves applicable for fancy trouserings. Repeat of weave 9 warp-threads and 6 picks.

Dot type shows the rib float, alternately under 3 and under 4 warp-threads.

Full type with reference to the first rib effects (warp-threads 1, 2 and 3) acts as a binder.

Full type, with reference to the second rib effect (warp threads 5, 6, 7, and 8) indicates the face weave for that rib, the 2 by 4 rib weave.

Cross type refers to a special binder warp-thread as placed between every rib effect previously referred to.

Figured Effects

are also permissible with this system of weaves, the same being explained by weave Fig. 26, showing a stripe effect in combination with diagonals in the fabric.

Dot type shows the respective rib floats and full type the face weave.

Herring-Bone Effects.

technically known as broken twills, form most excellent weaves for the face of rib fabrics.

Weaves Figs. 27 to 33 explain subject.

Weave Fig. 27, repeat 24 warp-threads and 60 picks, shows a fancy effect of this kind. The rib float (see dot type) is arranged for 12 warp-threads, the face weave a fancy broken twill is shown by full type.

Weave Fig. 28 has its rib pick float under 16 warp-threads. The face weave is the 3-harness (warp effect) twill arranged for a broken twill, running direction of twill alternately for 16 ends from left to right and for 16 ends from right to left. Repeat of weave: 32 warp-threads and 9 picks. Draft for 6 or 12-harness.

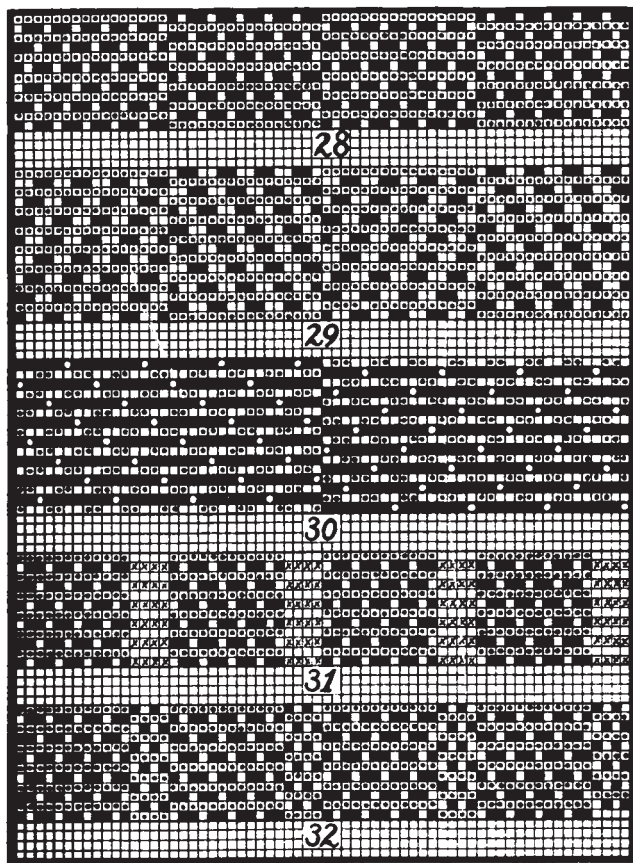
Weave Fig. 29 has its rib float 16 warp-threads. The weave for the face is the 4-harness even sided twill, arranged for a broken twill with 16 ends of direction of twill from left to right to alternate with 16 from right to left. Repeat of weave 32 warp-threads and 8 picks. Draft for 8 or 16-harness.

Weave Fig. 30 has for its original rib float 32 warp-threads. The face weave is the 4-harness even sided twill, arranged for a broken twill by running direction of twill effect alternately for 32 threads one way and 32 threads the other, the complete weave repeating on 64 warp-threads and 8 picks.

This rib float of 32 warp-threads would be too excessive for most fabric structures, for which reason we must tie the same not visible to the face structure. This we did in our example by means of the 8 leaf satin (see *white dots*) placing the interlacing of this 8 leaf satin so as to have the warp-threads, when interlacing the rib pick, down in the face pick preceding and that following it. Draw weave on 16-harness.

Weave Fig. 31 shows a herring-bone effect rib fabric structure, having the 3-harness twill for its face weave (see *full type*) separated at each break of 12 threads (see *dot type*) by 4 threads of common rib weave (see *cross type*). Repeat of weave 32 warp-threads and 6 picks.

Weave Fig. 32 shows the same rib fabric structure as used in the previous example, using in place of the



4 threads of common rib weave the same number of threads interlaced with rib pick and plain weave for face, *i. e.*, rib fabric structure, the same as the broken twill parts of the repeat of the weave.

CARE IN WINDING WARP YARN.

By James B. Hetherington.

Winding, although looked upon as a very simple operation, in the manufacture of colored cotton goods, is a process requiring a considerable amount of care on the part of the operator who must be constantly on the lookout for imperfect or mixed yarns as are occasionally received from the dye-house. Hanks which are soiled, or stained with dye, must be separated from those perfect, and rejected if too bad, or kept apart if the imperfection is slight, and used in connection with fabrics most likely to hide its defects.



Fig. 1

Mixed yarns will be detected by the winder in various ways. More or less bulk of the hank will indicate a likely coarser or finer count of yarn, although occasionally mistakes in reeling may be responsible for such deviations in the general appearance of hanks.

The threads which are tied round the hanks vary with nearly every spinner, either in the character of material used, the number of threads composing the band, the manner in which it is tied, *i. e.*, whether all round the hank or leaved through it, as well as the number of bands on one hank.

Double bands are sometimes used with the better class of cotton yarn, having either one band tied all round the hank and the other leaved through it, or in other cases both bands are alike. The winder will readily detect any irregularity in these ties, and in this way detect mixed yarn and thus prevent the weaving of imperfect cloth.

The knots tied by the winder must receive attention, more particular with the better class of goods and where high counts of reeds are used. In the manufacture of cheap goods, and where coarse reeds are used, little attention is paid to this, the all important word in this case being production, the winder not giving a second thought to the material beyond piecing it up and getting it on bobbins.

Fig. 1 shows a knot often tied in piecing up yarns at the winding, to be used in connection with cheap goods, and which knot may be permitted to pass, because no objection is raised against its use; but in connection with the better class of fabrics and where a higher count of reed has to be used, such a knot is unsuitable. The bulk formed by the manner of securing the threads would prevent its working through the reed freely, and then become a constant source of breakage to the warp-threads and in turn lose production as well as imperfections in the woven fabric. This knot is not only very liable to breakage by the reed, but should it pass the reed, it is objectionable to the face of the fabric, in connection with the better class of fabrics, hence its name "dog knot."

Fig. 2 shows a knot generally insisted upon by fine goods mills; its bulk is only about half that of