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FIGURING WITH EXTRA WARP.

(*Continued from page 144.*)

Using an Extra Warp All Over.

This arrangement finds its use in the manufacture of fancy dress goods, cloakings, draperies, etc., and is readily explained in connection with designs Figs. 20 and 22 and their analysis.

Fig. 20 shows the working design on point paper for a dress goods; Repeat: 48 warp-threads and 96 picks. 1½ repeat widthways are given to more clearly show the design; only one repeat lengthways is given.

It will be seen that the length of the float of the figure warp-threads in this instance is considerable shorter than in previously given examples; the former referred to high textured silk or high counts (better grade) of cotton fabrics, whereas in the present example we deal with a fancy worsted cheviot, or coarser count cotton yarn dress goods—a fabric of a totally different nature compared to the former.

Besides reducing the length of float for the figure warp, we used a less close weave for the interlacing of the ground warp and the filling, using in this instance the 4-harness even sided twill. The resulting fabric is one designed for warmth, compared to the former fabrics, which referred to dress or ornamental purposes more particularly.

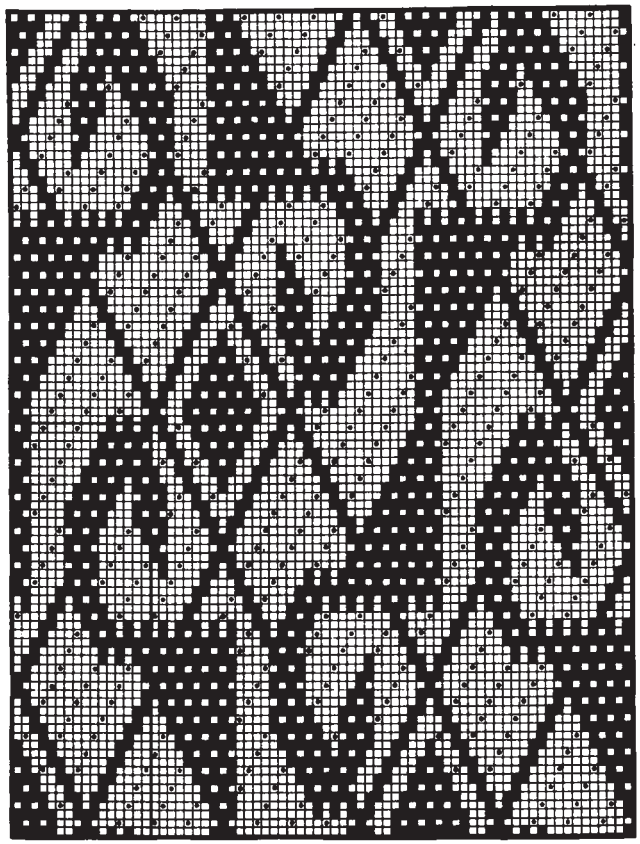


Fig. 20

Repeat of weave for warp-threads (48) indicates to us at once Jacquard work, a good number, since the same permits the use of a 200, 400 or 600 machine, tied-up straight, using in connection with the three

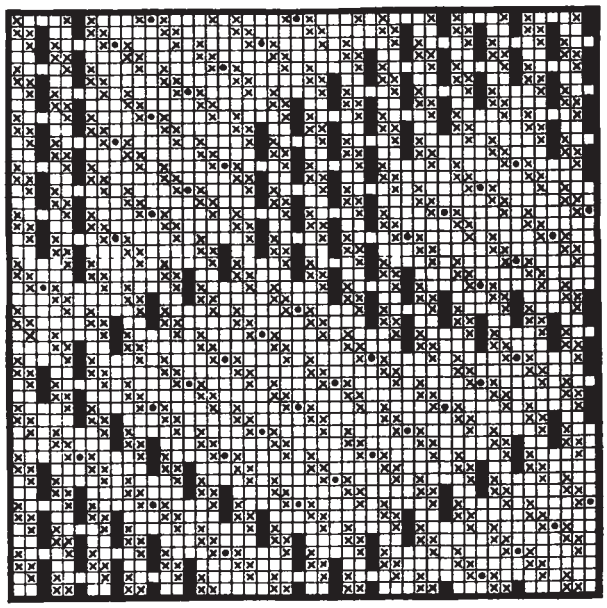


Fig. 21

machines quoted (48 × 4 =) 192, (48 × 8 =) 384, or (48 × 12 =) 576 needles of either, or as we might say, practically speaking, nearly the full machine is used in every instance.

Full squares in design shows the floating figure warp-threads, *dot* type shows the stitching of this figure warp (when floating on the back, not visible on the face) to the body of the fabric structure, thus preventing any longer float than 7 down for said figure warp while resting on the back of the fabric structure. The ground warp interlacing with the filling then take the place of the face of the fabric, the figure warp being stitched (invisible on the face) to it.

Fig. 21 shows the analysis, *i. e.*, method of interlacing of a portion of design Fig. 20. The left hand lower corner of the latter, 16 warp-threads and 48 picks, *i. e.*, the rectangle enclosed with a heavy line, is shown in the analysis.

Corresponding type as that used in the design Fig. 20 is the one used for the figure warp in the analysis, hence any reference made to it before will not be repeated.

Cross type in analysis shows the interlacing of the ground warp and filling, showing 2 ends up (one on each side) every time the figure warp stitches to the body structure, thus hiding these places on the face of the fabric.

The arrangement of ground and figure warp in the fabric is 2 ends ground warp to alternate with 1 end figure warp, giving us (48 × 3 =) 144 warp-threads for the repeat of the pattern.

Fig. 20 is the point paper design for the Jacquard

machine, one repeat being 4, 8 or 12 times cut over, according to whether a 200, 400 or 600 machine is used.

The ground warp is operated from 4 or 8 harnesses, placed in front of the comberboard, and which are operated independent from the Jacquard by cams driven from the main driving shaft of the loom. If

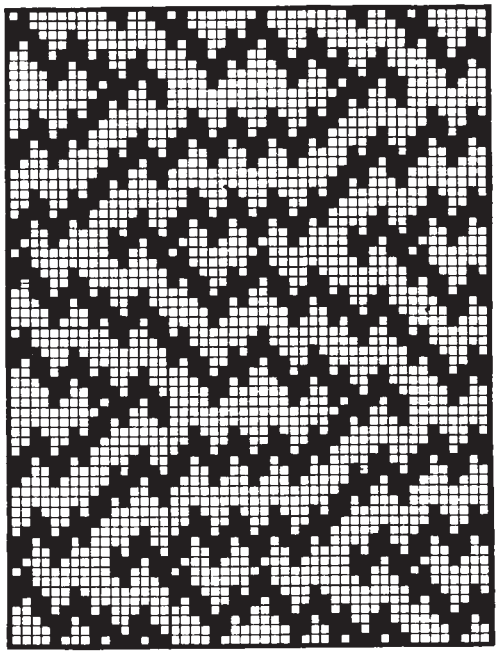


Fig. 22

so desired, these harnesses can be operated from the Jacquard machine direct, using heavy hooks in the reserve rows of the machine for this purpose.

96 cards have to be cut for the pattern.

Fig. 22 shows the design for the figure warp for another kind of fabric structure using an extra (or figure warp) in addition to the regular single cloth structure.

Fig. 23 shows a portion of this design (its left hand lower rectangle, as outlined heavier) applied to the ground structure, which is interlaced with the 8 by 8 granite weave, obtained by adding one spot to the top, one to the side, and one in an oblique direction to every spot of an 8-harness satin weave, filling effect; it is one of the most often used granite weaves.

Type used indicates thus: *Full* type = figure warp, *cross* type = ground warp. No binding of the figure warp while floating on the back of the structure is made use of, the longest float being below 9 picks.

Repeat of figure effect: 24 warp-threads and 32 picks, two repeats each way being given in Fig. 22.

The arrangement of figure warp to ground warp is 1 : 2, hence ($24 \times 3 =$) 72 warp-threads repeat of pattern in complete analysis, and of which 48 are given in Fig. 23.

The figure warp can be drawn (reduced to) 10-harness, which in connection with the 8-harness granite for ground weave, thus calls for 18 harness for weaving the complete weave of the analysis repeating on 72 warp-threads. The weave is thus within compass of the regular harness loom.

It will be noticed that in this example, the same as in the one previously given, the difference between the float of the figure warp to that of the ground warp is not as pronounced as in designs given up to and including Fig. 19; the nature of the goods, neither their purpose of wear calling for it.

In any of the designs thus far given in this article no attention has been paid to coloring—the figure warp has been treated simply as a system of threads distinct from that of the ground warp-threads. It must be mentioned that these figure warp-threads in the repeat of the pattern may be of more than one color, in fact any color arrangement may be met with, giving the appearance of having used more than one system of figure warp in the construction of the fabric, the latter thus appearing to be of more value than it actually is. To accomplish this, shows skill of the designer.

Two Systems of Figure Warp.

In this instance two figure warp-threads, each of a different color, work in pairs. When one works on the face, the other floats on the back, and again in some instances both threads float on the back, the ground warp and the filling, *i. e.*, the ground structure, then showing on the face of the fabric. This then shows us three distinct color effects possible to be produced in place of the two effects possible for weaves thus far shown in the article.

Since adding an extra end to each figure and ground warp-threads thus far used in the construction of the fabric, means additional cost to the mill, we must be careful not to increase its cost too much, for which reason we must use this third set of threads sparingly, resorting to what we call *planting* this additional, *i. e.*, second figure thread, using it only in places to bring up special details in a figure, giving the fabric the character of a 3-ply warp fabric, thus commanding a better price, or to tone-up a range of 2-ply warp fabrics.

Figs. 24, 25 and 26 are given to illustrate subject.

Fig. 24 shows a two color stripe, one color being shown by *full* type, the other by *shaded* type.

Repeat: 11 rows of vertical squares comprising

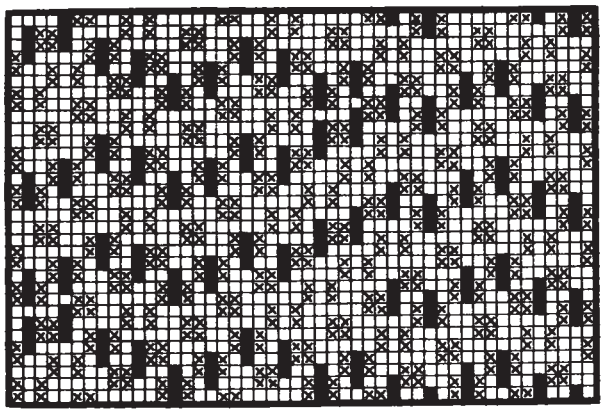


Fig. 23

11 ends of figure threads shown by *full* type, and 5 ends of figure threads shown by *shaded* type, or ($11 + 5 =$) 16 figure threads, repeat of pattern.

Wherever two kinds of type, *i. e.*, colors, appear on one vertical row of squares in the design, two figure warp-threads are required for producing this effect in the analysis, the loom, and the fabric.

Fig. 25 explains subject thus:

2 warp-threads shown by *dot* type single cloth—plain weave.

The next 6 warp-threads show figure and ground warp arranged 1 : 1; see *full* and *dash* type.

The next 15 warp-threads show two sets of figure warp-threads working as mates to one ground warp-thread. Figure warp-threads is shown by *full* and *shaded* type, ground warp-threads by *dash* type. It will be readily seen that where *full* type is up, its mate (*shaded*) thread is down and vice versa; in some in-

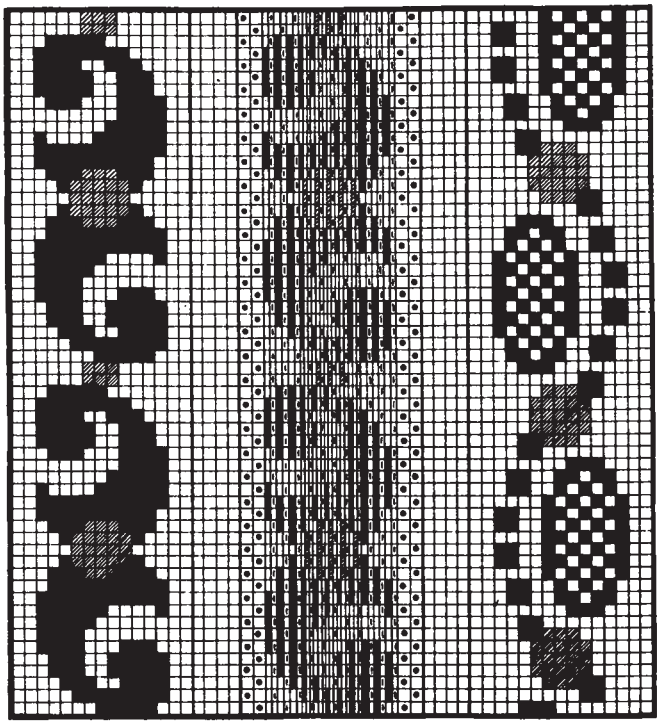


Fig. 24 *Fig. 25* *Fig 26*

stances both colors are down and then the ground warp (see *dash* type) takes the place of the face of the fabric, both figure warp-threads then resting on the back of the structure.

HOW DOUBLE SATINS ARE MADE.

The same are obtained from our regular satins by adding either a riser or a sinker, on top, bottom, or in an oblique position, respectively to every riser or sinker of the filling or the warp effect foundation satin.

As a rule, the filling effect satin is used by the designer for the foundation weave, since the same is more conveniently handled on the point paper, and when then the *empty* squares in the double satin weave are taken for risers on the loom.

Warp effect double satins (the same as their foundations, the regular satins) are the ones most often used in practical work, the double satins retaining the valuable properties of smoothness, lustre, etc., of the regular, *i. e.*, single satin, adding to it strength in fabric structure.

Double satins, the same as single satins, start with 5-harnesses, after which they can be made for any number of harnesses.

The accompanying collection of fourteen double satin weaves will readily explain to the reader how to proceed to construct others.

Adding Risers on Top.

Weaves Figs. 1 to and inclusive 8 illustrate the subject, also explaining at the same time "adding one riser on bottom of foundation riser" since in that instance *foundation* and *added spot*, in our example of weaves given, only exchange position.

Weave Fig. 1, shows us by *dot* type one repeat of the 5-harness satin weave. Considering this one repeat (5 warp-threads and 5 picks only) we then have shown by means of *full* type, the additional spot as placed on top of the original spot of the foundation satin, in this way transferring the latter in a double satin.

As will be readily understood, the repeat of the weave, between the regular or foundation satin and its mate double satin, does not change, it remains the same. Three repeats each way of the double satin have been given in our example, one of them, as explained, is shown in two kinds of type, the other two being shown in *full* type, in order to more clearly show the weave formation. We have observed this same plan (of showing one repeat only in two kinds of type) in connection with all the other filling effect double satins given in this article.

Fig. 2 shows us a warp effect 5-harness double satin, *i. e.*, the mate weave of Fig. 1, obtained by adding an additional sinker on top of every sinker of the 5-harness regular satin warp effect, or copying weave Fig. 1, risers for sinkers.

Weaves Figs. 1 and 2, besides being double satins, by their method of construction, are also known respectively as filling and warp effect corkscrews. Fig. 1 produces what we might call a neat granite effect, extensively used in connection with light-weight dress goods, whereas weave Fig. 2 is our standard corkscrew weave.

This reference of intermixing corkscrew weaves with our double satins, however, only refers to 5-harness; after that both systems of fabric structures separate, *i. e.*, differ in their foundation as well as construction.

Weave Fig. 3 shows us by means of *dot* type the 6-harness satin, showing by *full* type an additional riser placed on top of said risers of the foundation satin.

Weave Fig. 4 is the mate of weave Fig. 3, *i. e.*, the warp effect 6-harness double satin.

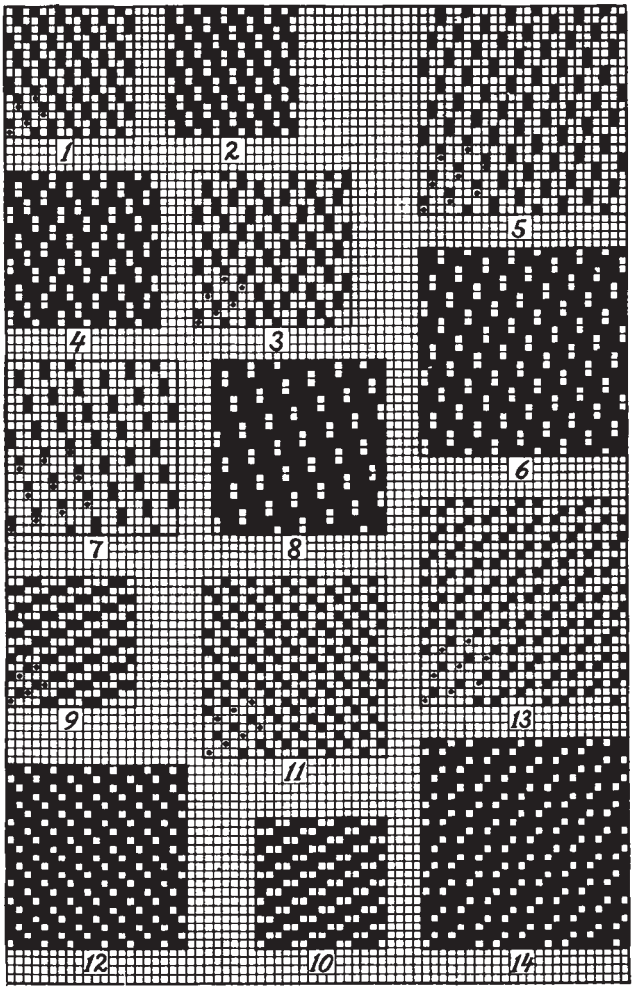
In the same manner, weave Fig. 5 shows us the 8-harness double satin, filling effect and weave Fig. 6 its mate or the 8-harness double satin, warp effect.

Weaves Figs. 7 and 8 treat in a similar manner the 10-harness satin; the first is its filling effect, and the latter its warp effect.

Considering our warp effect satins, *i. e.*, weaves Figs. 4, 6 and 8, and which are the combinations most frequently met with in practical use, we find that the same retain their prominent warp float on the face of the fabric structures, nearly as prominently as their foundation single satins, hence retain their characteristics—smoothness and lustre. Considering these double satins Figs. 4, 6 and 8, to their foundation single satins—filling ways, we find that every pick interlaces twice as often with the warp in a given number of ends, hence produces a stronger fabric, and this more particularly filling ways.

Adding Risers Obliquely.

Designing double satins in this way changes, to a certain extent, the face of the fabric to that of its mate single satin, since in this instance, besides in-



terlacing the filling twice in one repeat, as compared to the foundation satin, we do the same also with the warp, *i. e.,* break up the characteristic satin or long floating of the warp, and which floats in turn were one of the means which impart the characteristic satin face to the fabric.

This interlacing of warp and filling twice in one repeat, as will be readily understood, will make the new fabric structure stronger, both warp and filling ways, as compared to its mate foundation satin structure.

The same as with all our satin weaves, 5-harness, is the lowest number for which the present sub-division of double satins can be designed for, after which they can be constructed for any number of harnessses, with the exception of six.

Weave Fig. 9, shows us by means of *dot* type the 5-harness foundation satin, and by means of *full* type the additional riser, added oblique to the right of said *dot* in the repeat of the weave; *dot* type is used to show the construction of this double satin, the remaining repeats of the complete weave being all shown in *full* type, so as to show the formation of the weave. The same affair is also observed in connection with the other two filling effect double satins quoted later on.

Fig. 10 is the mate double satin to weave Fig. 9, *i. e.,* the warp effect.

Weave Fig. 11 shows us the 7-harness double satin, filling face, obtained by adding obliquely to the left one additional riser, to each riser of the foundation satin.

Weave Fig. 12 is the warp effect to weave Fig. 11.

Weave Fig. 13 is the 8-harness double satin, obtained by means of adding an additional riser to the right, of every riser of the 8-harness foundation satin; weave Fig. 14 is the mate effect to it, *i. e.,* the warp effect.

Aubusson Carpets.

The Aubusson carpet industry, which has a world-wide reputation, is experiencing a crisis that is causing much unrest among the inhabitants of the two little towns of Aubusson and Felletin, where the industry is carried on, and unless help comes from some quarter the industry may disappear entirely or at least have its reputation seriously impaired. Aubusson has a population of 7,300 and Felletin 3,050. The waters of the River Creuse, on which the two towns are situated, are especially suited for dyeing wool.

Tradition has it that this industry owes its origin to the Saracens who escaped the disaster inflicted upon the army of Abd-el-Rhaman by Charles Martel on the battlefield of Poitiers in the year 732.

For several centuries the towns of Aubusson and Felletin have preserved the monopoly of manufacturing the carpets that are so much appreciated throughout the world. The town of Aubusson has a museum where can be seen the different looms, tools, and apparatus used in the carpet industry since its establishment; the different classes of silk and wool yarns used for making carpet; the different kinds of dyes; and samples, arranged chronologically, of carpet made since the industry was established. This museum is frequented by the apprentices from the various establishments, in order to cultivate their taste and to acquire, in addition to their practical experience, a good technical training.

The process of manufacturing has always remained the same. The rudimentary looms of wood used for carpets with low warp are such as still exist in certain provinces of Asia Minor. It seems that modern progress has been unable to add anything to the artistic side of the industry.

Two kinds of carpet are manufactured at Aubusson, *viz.:* Carpeting of oriental and Bulgarian style, which is manufactured mechanically, and the artistic rugs and hangings made entirely by hand.

The machine-made carpets, known to the trade as *tapis de pied,* comprise the kinds known as Wilton carpets, Jacquard-loom carpets, stair carpets, small carpets for the middle of the room, bedside carpets and rugs, etc.

The artistic carpets, made by hand, are divided into two classes: Short-napped rugs or hangings made on looms with low warp, and velvet rugs made with coarse wool on looms with high warp, after the style of the Gobelins. Only women make the latter kind, which are very expensive. Certain of the artistic carpets remain on the loom as long as four or five years. The United States and England are the leading foreign buyers.