

## OUR TEXTILE DESIGN SCHOOL.

### LESSON 2. — RIB AND BASKET WEAVES.

Having given in our previous lesson, a thorough explanation of the plain, twill and satin weaves, i. e., the foundation for our weaves for textile designing, we now come to the "Derivative Weaves," i. e., weaves obtained from either the plain, twill or satin weaves, being weaves having one or the other of the foundation weaves for their basis of construction. For the present lesson we will take the plain weave for our foundation, constructing in turn from this weave one of the most important subdivisions of weaves, i. e., rib and basket weaves. Although both systems have the identical foundation, yet they vary vastly in their practical application to woven fabrics, since in rib weaves either the warp or the filling only forms the face and back of the structure, the other system of threads, warp or filling, as the case may be, thus not used, resting imbedded, between the other system of threads, in the centre of the structure.

This feature of using only one system of threads in rib weaves for producing the face of the fabric, naturally requires a high texture to be used for that system of threads as thus produce the face alone. This feature does not apply to basket weaves since in that instance both systems of threads, warp and filling, form face and back at the same time. This difference in the construction of these two systems of weaves, with reference to practical work in a mill, naturally compels us to consider them separately.

#### RIB WEAVES.

This name is derived from the characteristic rib lines they produce in the fabric, said lines running either warp or filling ways according to either filling or warp producing the face of the fabric, and for which reason we will divide rib weaves respectively into warp or filling effect rib weaves.

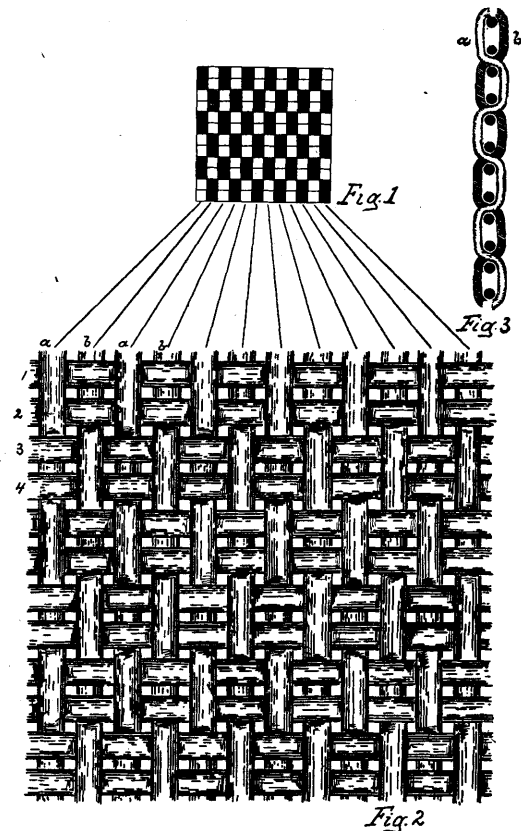
#### WARP EFFECTS.

The principal object in constructing these weaves is to introduce more than one pick in succession in the same shed of a regular plain weave. This subdivision of these weaves again can be divided into plain or fancy effects ac-

cordingly whether we will introduce either the same number of picks regularly into a shed, or vary the number of picks thus introduced, in turn producing for the plain effects ribs of equal size, whereas for fancy effects, and where the number of picks introduced into the plain weave is varied, the size of the different rib lines in the fabric will correspondingly vary also.

#### PLAIN, WARP EFFECT RIB WEAVES.

The first weave of this kind is produced by means of introducing two picks in succession into the plain weave, a feature readily explained by means of weave Fig. 1 and its diagram of a woven fabric Fig. 2.



Weave Fig. 1 shows 6 repeats warp ways and 3 repeats filling ways of this rib weave, the actual (one repeat) weave repeating on  $2 \times 4$ , requiring for its execution on the loom two harnesses for its lowest number, although in practical work 4 or more harnesses will be used.

Diagram Fig. 2 clearly shows the interlacings

of warp and filling in connection with this weave, the respective lines between the warp threads in the weave as well as in the fabric guiding the eye for this purpose. A feature impossible to be shown in the diagram but which must be remembered by the student, is the fact that the warp threads as shown spread apart in said diagram will in the woven fabric be pushed up close together; every alternate warp thread as floating over or under two picks, forming respectively either face or back of the structure. By this we mean that warp threads indicated by *a* in diagram, i. e., every uneven numbered warp thread will join on picks indicated by 1 and 2 and thus form the face of the structure at that time, warp threads indicated by *b* forming at that moment the back of the structure. This arrangement is completely reversed with reference to picks 3 and 4 and when in that instance warp threads indicated by *b*, will form the face of the structure (said warp threads resting then closely side by side on the face of the fabric) warp threads *a* at that time forming the back. The filling, as now visible in the diagram, shown thus for the sake of illustrating the interlacings of the threads, will not be visible in the woven fabric.

refers to a section of woven fabric Fig. 2, cut in the direction of the warp.

Fig. 4 shows this plain warp effect rib weave ( $2 \times 4$ ) executed on point paper, being especially given for the purpose to bring a complete history of rib weaves within the grasp of the student, compiled on one sheet of diagrams of weaves, handy for future use for reference.

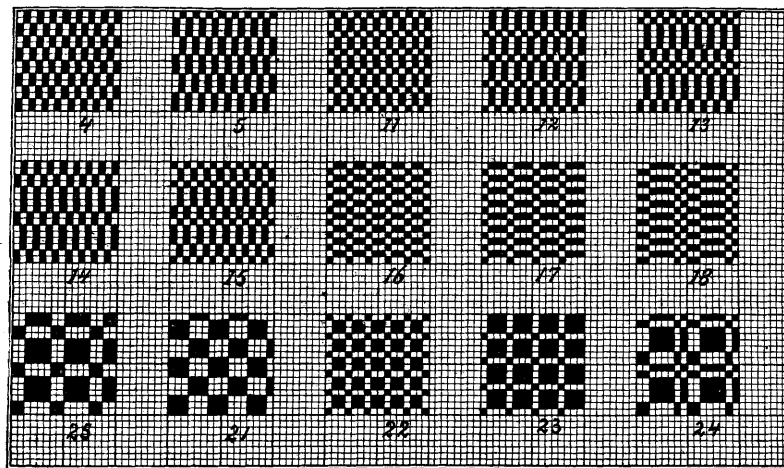
Weave Fig. 5 shows the plain warp effect rib weave having three picks in a shed, repeating on  $2 \times 6$ .

In the same manner as thus using either two or three picks in a shed, four or more picks might be used, a feature, however, rarely resorted to in practical work.

PLAIN FILLING EFFECT RIB WEAVES.

The construction of these weaves and their application to woven cloth is readily explained by means of diagrams 6 and 7.

Weave Fig. 6 shows the plain filling effect rib weave, having two warp threads working alike, the filling in this instance forming both the face and back of the structure, the warp resting imbedded between. Lines connecting diagrams 6 and 7, are given to the respective warp threads in weave and fabric. Every point

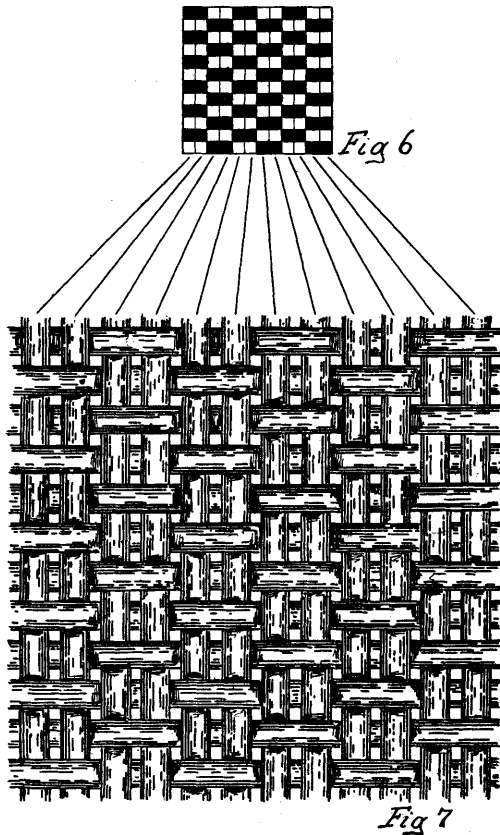


In diagram Fig. 3 a section of a fabric interlaced with weave Fig. 1 is given, showing the warp threads *a* and *b* respectively in outline and shaded; the section of the picks being shown in full black circles, a feature which will readily demonstrate to the student that diagram Fig. 3

mentioned before, with reference to warp, in connection with diagrams Figs. 1 to 5, refers to filling in diagrams 6 and 7 and vice versa. The repeat of weave of Fig. 6 is  $4 \times 6$ .

In the same manner as in connection with weave Fig. 6, using two warp threads to work

alike, we can arrange 3, 4 or more warp threads to work in this manner, in turn increasing the repeat of the weave warp-ways as well as the size of the rib line effect in the fabric (which in this instance runs in the direction of the warp). This one example of the plain rib weave effect, will suffice for others.



FANCY WARP EFFECT RIB WEAVES

are produced by varying the number of picks in a shed, in turn producing narrow and wider rib lines (in the direction of the filling) in the structure. In order to explain the subject more in detail, the accompanying diagrams 8, 9 and 10 as well as weaves 11 to 15, are given.

Weave Fig. 8 illustrates the fancy warp effect rib weave, produced with the exchanging of  $\frac{1}{2}$ , i.e., one pick in one shed of the plain weave to alternate with one pick of said weave having two picks in its shed. Repeat of weave  $2 \times 3$ .

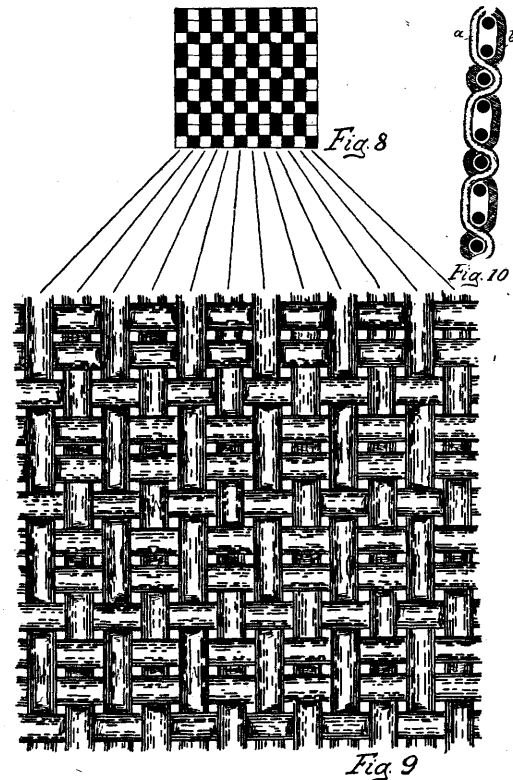
Diagram Fig. 9 (as mentioned before), is the fabric constructed with weave Fig. 8, the

lines between weave and fabric being given to guide the student with reference to the respective warp threads.

Diagram Fig. 10, is a section of a fabric shown in Fig. 9, the latter being cut in the direction of the warp for this purpose. Warp threads are indicated by *a* and *b* respectively in outline and shaded, the section of the filling threads being shown by full black circles.

Diagram Fig. 11 shows weave fabric 9 executed on regular point paper, the weave repeating  $2 \times 3$ .

Weave Fig. 12 is another fancy warp effect rib weave, being constructed with the exchange of  $\frac{1}{3}$  and  $\frac{1}{3}$  respectively for every alternate warp thread, i.e., one pick in one shed of the plain weave to alternate with three picks in the other shed of said plain weave. Repeat of weave  $2 \times 4$ .



Weave Fig 13 has for its foundation :

$$\left. \begin{array}{l} 2 \text{ picks in one shed} \dots\dots\dots \\ 4 \text{ picks in the next shed} \dots\dots\dots \\ 1 \text{ pick in the next shed} \dots\dots\dots \\ 1 \text{ pick in the next shed} \dots\dots\dots \end{array} \right\} \text{in 2 repeats of the plain weave, the} \\ \text{weave thus given repeating on } 2 \times 8.$$

Another fancy warp effect rib weave is given by means of diagram Fig. 14, having for its

basis of construction, two picks in one shed, to alternate with four picks in the other shed, of the common plain weave. Repeat  $2 \times 6$ .

Weave Fig. 15 shows still another fancy effect rib weave, having for its basis of construction  $\frac{1}{2}-\frac{3}{1}-\frac{2}{3}$ , repeating on  $2 \times 12$ .

These 5 examples thus given will readily explain to the student how to construct any fancy warp effect rib weaves, no matter what fabric he may deal with.

FANCY FILLING EFFECT RIB WEAVES.

Their construction is closely related to the previously referred to system of weaves, the only difference being that what previously referred to warp, refers in this instance to the filling and vice versa. For this reason only three examples have been quoted on our plate of weaves, viz.:

Weave Fig. 16 which has for its basis of construction  $\frac{1}{2}$  and repeats on  $3 \times 2$ .

Weave Fig. 17 has for its foundation  $\frac{1}{3}$ , being a more prominent affair compared to the previously quoted weave.

Weave Fig. 18 is a more elaborate weave, having for its basis of construction  $\frac{2}{4}-\frac{1}{1}$  and repeats on  $8 \times 2$ .

In either case, with reference to weave Figs. 16, 17 and 18, the rib lines in the fabric run in the direction of the warp.

BASKET WEAVES.

These weaves are divided into plain and fancy effects and are obtained from the plain weave by working two or more warp threads alike and two or more picks in the same shed. With reference to a technical definition, they are a combination of the respective rib weaves, warp and filling effects combined. In this system of weaves, as previously mentioned, warp and filling form portions of the face and back of the fabric and thus are of a totally different character with reference to cloth construction, than compared to rib weaves, where only one system is used for interlacing face and back of the structure.

PLAIN BASKET WEAVES.

These are readily explained by means of diagram and weaves Figs. 19, 20 and 21, and of which weave Fig. 19 is the common  $\frac{2}{2}$  four harness basket weave.

Diagram Fig. 20 shows the fabric structure to this weave.

Weave Fig. 21 is the common  $\frac{3}{3}$  six harness basket, being obtained by working three warp threads alike and inserting three picks in one shed.

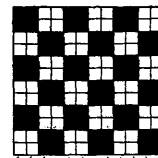


Fig. 19

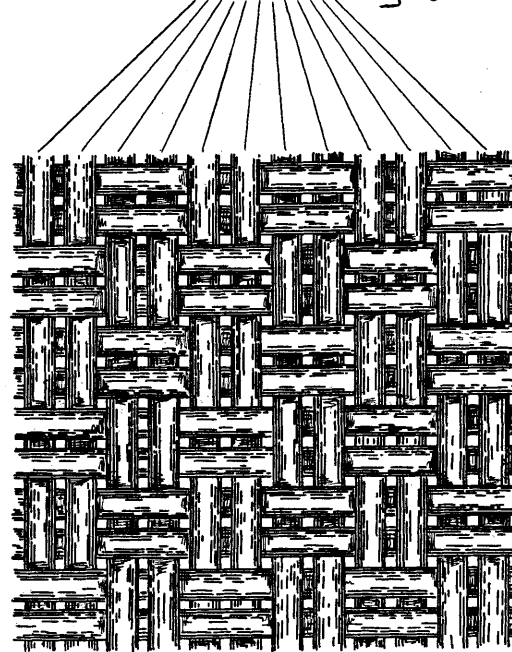


Fig. 20

Having thus given an explanation of the common basket weaves, we will in turn take up the

FANCY BASKET WEAVES,

a system of weaves readily explained by means of diagram Figs. 22, 23, 24 and 25.

Weave 22 shows the fancy basket weave having for its foundation  $\frac{1}{2}$  and repeating on  $3 \times 3$ .

Weave Fig. 23 has for its foundation  $\frac{1}{3}$ , repeating on  $4 \times 4$ .

Weave Fig. 24 has for its foundation  $\frac{2}{4}-\frac{1}{1}$ , repeating on  $8 \times 8$ .

Weave Fig. 25 has for its foundation  $\frac{2}{4}$ , repeating on  $6 \times 6$ .

Considering weave Fig. 22, the same is a combination of weaves Figs. 11 and 16; weave

Fig. 23, being a combination of weaves Figs. 12 and 17; and finally weave Fig. 24, a combination of weaves Figs. 13 and 18.

Examples thus given will readily explain to the student how to construct any fancy rib or basket weave he ever will come in contact with, for which reason we will now call the student's attention to figuring with these rib weaves, an affair which may be done for various purposes.

#### RIB WEAVES WITH INTERWOVEN BACK.

The construction of these weaves is readily explained by means of weaves Figs. 26 and 27.

Weave Fig. 26 shows by means of ■ the common  $\frac{6}{6}$  rib weave, warp effect. This means that in this instance six picks are to be introduced into each shed of the plain weave, a feature which very readily will result in a loose structure, i.e., the fabric will not have enough body and for which reason more interlacing of the warp and filling has to be done, a feature readily accomplished in connection with weave Fig. 26, by interlacing the warp threads which float on the back of the structure, into the structure. (See ☒).

Weave Fig. 27 has for its foundation the fancy rib weave warp effect (see ■) in order to strengthen this structure, especially where six picks are introduced into the same shed (☒) the warp threads when floating on the back to interlace twice (in one repeat of the weave) in the structure, in this instance giving the fabric more strength.

These two examples thus given will readily explain how to proceed with any warp effect rib weave, where warp and filling interlace in the structure in too loose a manner.

#### HOW TO STITCH WARP THREADS IN A FILLING RIB EFFECT,

in order to get a float effect in the fabric, is readily explained by means of diagrams Figs. 28, 29 and 30.

In these fabrics, especially in connection with worsted trouserings, it is of the greatest importance that these rib lines receive a flat effect. If we would work 2, 3 or more warp threads alike and in the same dent, such threads would naturally roll over each other, thus giving to the fabric a coarser appearance. To prevent this, we have to separate the various warp threads as

forming each rib effect, by means of stitching them now and then to the body structure.

Weave Fig. 28 which has for its foundation the  $\frac{4}{4}$  (see ■) rib weave, has its warp threads (see ☐) stitched to the structure, i.e. the two centre threads in each rib by means of the plain weave on every other pick.

Weave Fig. 29 has for its foundation  $\frac{5}{5}$  rib weave, having its three centre threads (☐) stitched to the structure, by means of the three harness twill.

Weave Fig. 30 has for its foundation the  $\frac{4}{4}$  rib weave filling effect and has every one of its warp threads stitched to the body of the structure of the fabric by means of the four harness twill.

#### ADDING SPECIAL WARP THREADS TO STRENGTHEN THE FABRIC,

is frequently made use of in rib fabrics, especially in silk, and is readily explained by means of weave Figs. 31, 32 and 33.

Weave Fig. 31 has for its foundation the  $\frac{4}{4}$  rib weave warp effect. (See ■).

In order to increase the strength or stiffness of the fabric, there are introduced between each thread of the warp an extra thread, and which thread will not be visible in the woven fabric, since as mentioned before, warp floats will join warp floats on face and back of the structure and thus hide the threads of the strengthening warp on either side of the fabric.

Weave Fig. 32 has the same common rib warp effect foundation as the weaves before quoted, only that in this instance two ends face and back, alternate with one strengthening warp thread, the latter interlacing on the common plain weave. Repeat of the new weave is  $6 \times 8$ .

Weave Fig. 33 shows a still further variety of these rib weaves. The same rib weave as quoted in the two examples above is used, however we find that in the present arrangement 3 end face warp alternate with 1 end of the strengthening warp. Repeat of weave  $8 \times 8$ .

#### FIGURED RIB WEAVES.

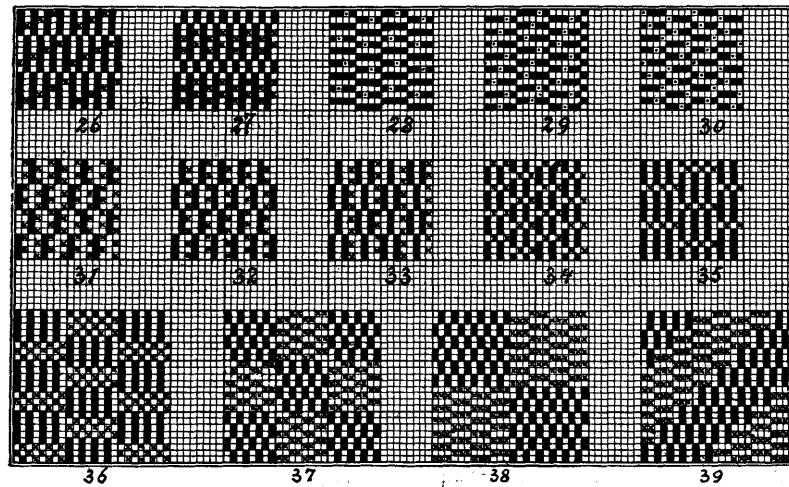
These weaves are produced in warp or filling effects, or a combination of both. With reference to warp effects, weaves Fig. 34, 35 and 36 will readily explain the subject.

Weave Fig. 34 has for its foundation the  $\frac{3}{1}$  fancy rib weave, warp effect, having the portion of one pick in the shed, arranged in sections of four threads (spotting see  $\boxtimes$  type), to alternate after the "plain" setting for motive.

Weave Fig. 35 shows a more elaborate ex-

with the same number of warp threads and picks of the  $\frac{3}{3}$   $6 \times 2$  rib weave filling effect.

Weave Fig. 39 shows the diagonal arrangement of the  $\frac{2}{3}$   $2 \times 6$  rib weave warp effect to alternate with the corresponding filling effect of this weave. Repeat of weave  $24 \times 24$ .



cution of a similar weave, having for its foundation the  $\frac{4}{1}$  rib weave warp effect. The spotting in this instance (see  $\boxtimes$ ) is done in connection with six warp threads after the "plain" setting for motive. Repeat of weave  $12 \times 6$ .

Weave Fig. 36 shows a still more elaborate spotting on a rib weave, resulting in this instance more in what we may call a "granite effect," i. e., all broken up effect, since in this instance the plain weave in its pure state for 8 warp threads  $\times$  3 picks greatly influences the general appearance of the rib fabric.

WARP AND FILLING EFFECT COMBINATIONS.

For explaining this affair, weaves Figs. 37, 38 and 39 are given.

Weave 37 is a combination of the  $\frac{2}{2}$  four harness rib weave warp effect in connection with the corresponding weave filling effect; each effect being used respectively for 8 warp threads and 8 picks, the new weave repeating on  $16 \times 16$ .

Weave Fig. 38 shows the combination of two distinct rib weaves used respectively for warp and filling effect. The weaves selected in this instance are the  $\frac{2}{2}$   $2 \times 4$  rib weave warp effect for 12 warp threads and 12 picks to alternate

CORDED EFFECTS.

These effects are used extensively in the manufacture of upholstery, cloakings, cotton vestings, etc., and are readily explained by means of Figs. 40, 42, 44 and 46. The object in every instance is to have two kinds of warp and filling, i. e., a binder warp which strictly weaves on one harness  $\frac{1}{1}$  all the way through the fabric, and a figure warp or face warp which weaves just the reverse to the binder warp. The binder warp is a fine warp, whereas the figure warp is of a coarser count or very likely two threads being used for one.

In the same way as using two counts of warp threads, two different counts of filling are used, viz.: One fine pick to alternate with one coarse pick, thus producing or giving the rib effect to the fabric. The object in designing is to float the figure warp in place of interlacing it with the binder filling, according to a given motive, which in connection with weave Fig. 40, is the five leaf satin.

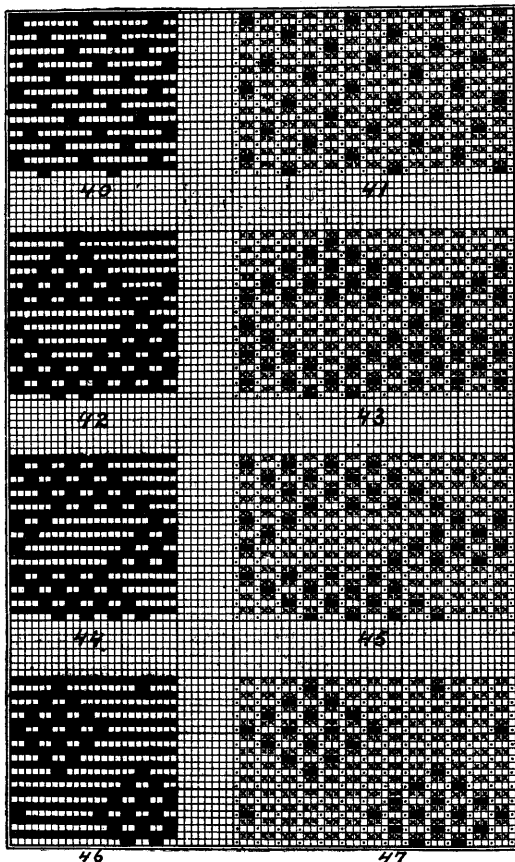
Diagram Fig. 41 is an analysis of the woven structure.  $\square$  shows binder warp, weaving  $\frac{1}{1}$  and being in the upper shed whenever the binder filling goes in.  $\boxtimes$  indicates the figure warp,

using in this instance, two warp threads in place of one. This figure warp is always up when the heavy pick goes in, and down when the binder filling pick goes in, with the exception of (see ■ type) such places where said figure warp has to float over the binder pick in order to produce the requisite figure by means of said floating, the same as mentioned before being distributed after a given motive or design.

Diagram Fig. 43 is the analysis of weave Fig 42.

Diagram Fig. 44 is the analysis to weave Fig. 43 and diagram Fig. 46 the analysis to weave Fig. 45.

In every instance with reference to weaves Figs. 40, 42, 44 and 46, only the figure warp is shown, no notice of the binder warp being taken, since the latter works uniformly  $1_1$  from



one or two harnesses as the case may be.

LESSON.

1.—Construct the plain, warp effect, rib weave,  $\frac{4}{4}$  motive. Repeat  $2 \times 8$ .

2.—Construct the plain, filling effect, rib weave,  $\frac{3}{3}$  motive. Repeat  $6 \times 2$ .

3.—Construct the following fancy warp effect, rib weaves :—

$\frac{1}{3} \frac{3}{1}$  motive. Repeats  $2 \times 8$ .

$\frac{4}{1} \frac{2}{4}$  motive. Repeats  $2 \times 11$ .

$\frac{3}{4} \frac{1}{4}$  motive. Repeats  $2 \times 12$ .

4.—Construct the following fancy filling effect, rib weaves :—

$\frac{1}{2} \frac{2}{1}$  motive. Repeats  $6 \times 2$ .

$\frac{3}{1} \frac{3}{3}$  motive. Repeats  $10 \times 2$ .

$\frac{4}{1} \frac{3}{2}$  motive. Repeats  $10 \times 2$ .

5.—Construct the following fancy basket weaves :—

$\frac{3}{1} \frac{1}{3}$  motive. Repeats  $8 \times 8$ .

$\frac{1}{2} \frac{4}{2}$  motive. Repeats  $9 \times 9$ .

$\frac{1}{3} \frac{2}{2} \frac{3}{1}$  motive. Repeats  $12 \times 12$ .

6.—Since fancy baskets are used to a great extent as motives in connection with figured fabrics executed on the harness loom (jacquard effects) like table covers, upholstery, shawls, etc., produce the following extreme examples of fancy baskets (for use for motives for such fabrics) :

$\frac{1}{1} \frac{2}{3} \frac{4}{5} \frac{8}{5} \frac{4}{3} \frac{2}{1}$  motive. Repeat  $39 \times 39$ .

$\frac{1}{1} \frac{2}{2} \frac{3}{3} \frac{4}{4} \frac{5}{5} \frac{6}{6} \frac{7}{7} \frac{8}{8}$  motive. Repeat  $72 \times 72$ .

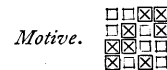
7.—Produce the following four figured rib weaves, according to their respective motives :—

$\frac{2}{3} \frac{3}{2}$ warp rib $10 \times 10$	$\frac{2}{3} \frac{3}{2}$ filling rib $10 \times 10$	$\frac{1}{2} \frac{3}{2} 1$ warp rib $9 \times 9$	$\frac{1}{2} \frac{3}{2} 1$ filling rib $9 \times 9$
$\frac{2}{3} \frac{3}{2}$ filling rib $10 \times 10$	$\frac{2}{3} \frac{3}{2}$ warp rib $10 \times 10$	$\frac{1}{2} \frac{3}{2} 1$ filling rib $9 \times 9$	$\frac{1}{2} \frac{3}{2} 1$ warp rib $9 \times 9$
Repeat $20 \times 20$		Repeat $18 \times 18$	



Motive.

For every  $\boxtimes$ , paint  $8 \times 8 \frac{2}{2}$  warp rib  
 “ “  $\square$ , “  $8 \times 8 \frac{2}{2}$  filling rib  
 Repeat  $32 \times 32$ .



Motive.

For every  $\boxtimes$ , paint  $8 \times 8 \frac{2}{2}$  warp rib  
 “ “  $\square$ , “  $8 \times 8 \frac{2}{2}$  filling rib  
 Repeat  $32 \times 32$ .