

DESIGNING AND FABRIC STRUCTURE.

MANUFACTURE OF DRESS GOODS.

Checked Zephyr. (27½ inches wide.)

Fig. 1. Actual reproduction of woven sample.

Fig. 2 Complete weave: 72 warp-threads and 12 picks. Full type: diamond effect produced with 2/40's white, mercerized yarn. Cross type; cords produced with 2/40's white, regular yarn. Dot type, the plain weave forming the body of the cloth.

Fig. 3 Drawing in draft for 10-harness.

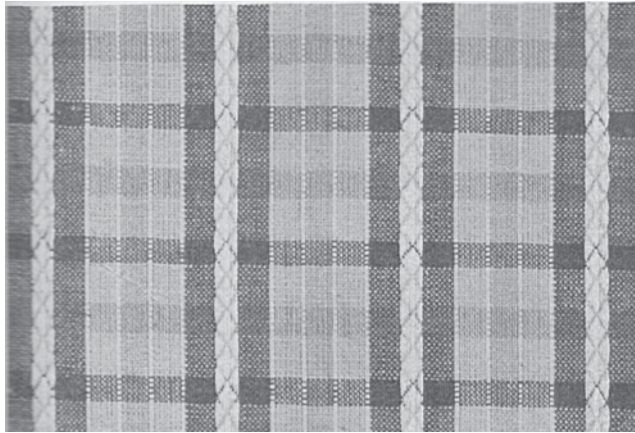


Fig. 1

Warp: 2072 ends. Dressed thus:
 12 ends 36's green
 12 " 2/40's white, mercerized
 12 " 36's green
 2 " 2/40's white, cord
 10 " 36's white
 2 " 2/40's white, cord
 10 " 40's pink
 2 " 2/40's white, cord
 10 " 36's white
 2 " 2/40's white, cord

74 ends repeat of pattern, 28 repeats of pattern in warp.

Ends of each color in warp:
 24 green × 28 = 672
 12 white, merc. " " = 336
 8 white, cord " " = 224
 20 white " " = 560
 10 pink " " = 280

Total: 2072 ends.

Selvage: Each side 18 ends; 36's white on one side and 36's green on the other side.

Take-up of Warp: 3 per cent.

Reed: 34 @ 2 = 68 ends per inch = 30½ inches wide + ¼ inch selvage each side = 31 inches, width of fabric in reed = 10 per cent shrinkage, from reed to finished fabric.

Filling: 67 picks per inch, arranged thus:

14 picks 52's white
 10 " " pink
 14 " " white
 10 " " green

48 picks in repeat of pattern

Number of picks per inch in woven and finished fabric, the same.

CALCULATIONS AS TO AMOUNT OF MATERIAL.
 40 pieces @ 50 yards.

Warp: No waste. Selvage ends to be included with warp; hence 672 + 18 = 690 ends 36's green and 560 + 18 = 578 ends 36's white.

36's green — $\frac{690 \times 40 \times 50 \times 103}{840 \times 36 \times 100} = 47.0039$ lbs.

2/40's white, merc. — $\frac{336 \times 40 \times 50 \times 103}{840 \times 20 (2/40's) \times 100} = 41.2000$ lbs.

2/40's white, cord — $\frac{224 \times 40 \times 50 \times 103}{840 \times 20 (2/40's) \times 100} = 27.4666$ lbs.

36's white — $\frac{578 \times 40 \times 50 \times 103}{840 \times 36 \times 100} = 39.3743$ lbs.

40's pink — $\frac{280 \times 40 \times 50 \times 103}{840 \times 40 \times 100} = 17.1666$ lbs.

Total amount of warp: 172.2114 lbs.

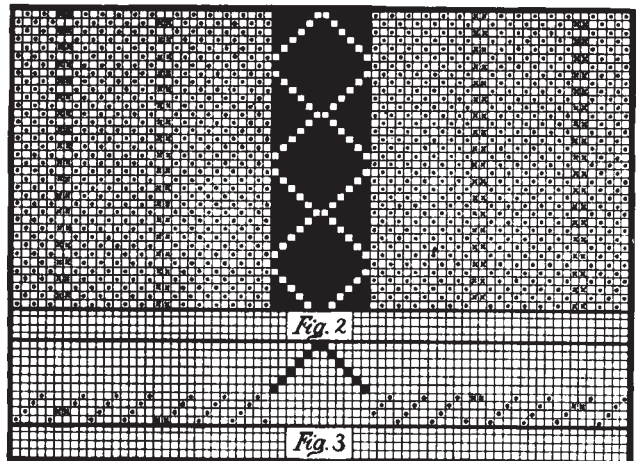


Fig. 2

Fig. 3

Filling: Allowance of waste in winding, weaving, etc., 5%.

$\frac{67 \times 31 \times 40 \times 50}{840 \times 52 \times 48} + 5\% = \left\{ \begin{array}{l} 2.0855 \text{ lbs. per} \\ \text{pick in repeat of} \\ \text{pattern, for 40} \\ \text{pieces @ 50 yds.;} \\ \text{or 2,000 yds. of} \\ \text{finished cloth.} \end{array} \right.$

$$\begin{aligned} 2.0855 \times 28 &= 58.394 \text{ lbs. } 52\text{'s white} \\ 2.0855 \times 10 &= 20.855 \text{ " " pink} \\ 2.0855 \times 10 &= 20.855 \text{ " " green} \end{aligned}$$

Total amount of filling 100.104 lbs.

Warp: 172.2114 lbs.

Filling: 100.104 "

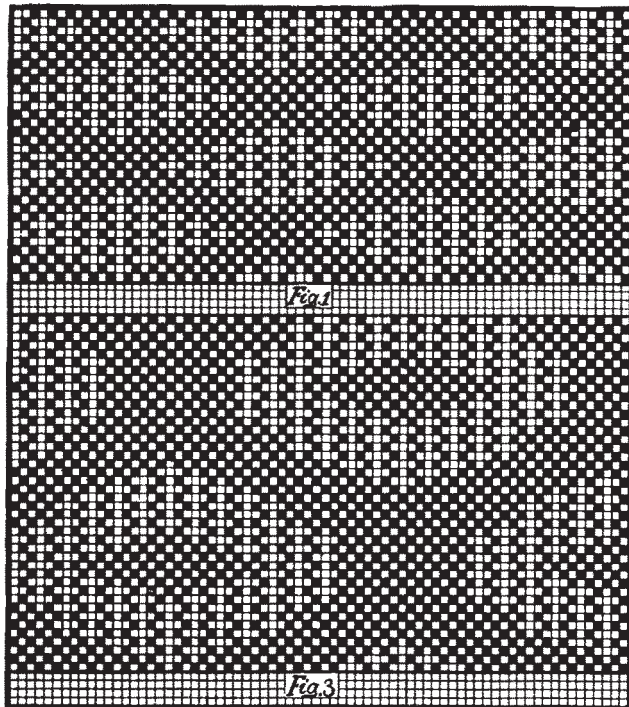
272.3154 lbs., amount of yarn needed to produce 2,000 yds. woven or finished cloth.

$272.3154 \times 16 \div 2000 = 2.1785$ ($2\frac{1}{6}$) oz., weight of yarn required to produce one yard of cloth.

To obtain finished weight, deduct 5% loss to filling, added previously for waste made in winding, weaving, etc.; against this allow for weight added for dressing in the finishing process. In the present sample both items will about counterbalance each other, hence $2\frac{1}{6}$ oz. weight of one yard finished cloth.

CHANGING TEXTURE OF WARP IN REPEAT OF WEAVE TO PRODUCE DESIGN.

This system of designing, with reference to general appearance of the fabric produced, closely resembles such as known as piqué or matelassé, *i. e.*, embossed fabric structures and where the exchange of raised and depressed effects produce the design. Either effect may be used for ground, *vice versa*, its mate for the figure.



The weave for the raised effect is the common plain weave, using every warp-thread and pick for its texture, *i. e.*, using the full texture of the warp. The weave for the depressed effect is the $2\frac{1}{2}$ 4 by 2 filling rib, produced by dropping, *i. e.*, floating every third warp-thread on the back of the structure, *i. e.*, using only two-thirds of the warp texture. To the naked

eye this rib weave will appear as a coarser plain weave, compared to that of the raised effect; the two ends working alike in each change in the rib weave take the place of three ends interlacing with the plain weave in the raised effect, *i. e.*, the latter effect will interlace tightly and the rib effect loosely with the filling, both on account of the great difference in the texture of the warp as well as that of the weaves used for interlacing warp and filling for either effect.

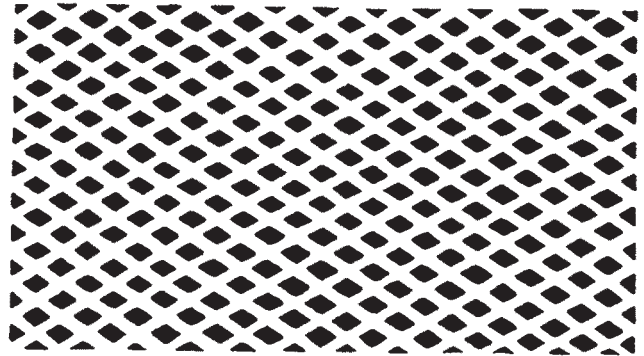


Fig. 2

Dropping every third warp-thread out of the weave, changes weaving to depressed effect;

Raising said warp-thread again into the weave changes weaving back, to embossed.

To explain this system of designing, the accompanying two weaves and sketches of corresponding fabric structures are given.

Weave Fig. 1 repeats on 36 warp-threads and 1 picks, showing a Diamond Spot for the depressed effect distributed after the Plain Setting. Fig. 2 shows the fabric sketch: the ground as interlacing with the plain weave, *i. e.*, raised effect, being shown in white, the figure, *i. e.*, the diamond interlacing with the rib weave, *i. e.*, depressed spot in the fabric, being shown in black.

Considering weave Fig. 1 for its practical work, repeat 32 warp-threads, we find

$$36 \div 3 = 12 \text{ figure threads and}$$

$$12 \times 2 = 24 \text{ plain weaving threads.}$$

There are 7 different changes in the 12 figure threads with reference to their interlacing, calling for point draw 1, 2, 3, 4, 5, 6, 7, 6, 5, 4, 3 and 2.

For the 24 plain weaving threads, 2 or 4 harnesses are required, the complete drawing-in for the weave thus calling for either ($7 + 2 =$) 9 or ($7 + 4 =$) 11 harnesses. If dealing with an extra high warp texture, 6 or 8 harnesses may be used in place of the 4 harnesses previously referred to.

Weave Fig. 3 repeats on 54 warp-threads and 4 picks; one-third more than one repeat of the weave is given in order to show up the latter more clearly. The figure, *i. e.*, depressed effect produced is an Oval Spot, distributed after the Plain Setting. Fig. 3 shows the fabric sketch, corresponding to weave Fig. 3, with white for raised ground and black for the depressed portion of the oval spot; the centre portion of the latter is similar to the ground portion plain weaving, *i. e.*, raised effect.

Considering weave Fig. 3 for practical work on the loom, the same calls for

$$54 \div 3 = 18 \text{ figure threads and}$$

$$18 \times 2 = 36 \text{ plain weaving threads.}$$

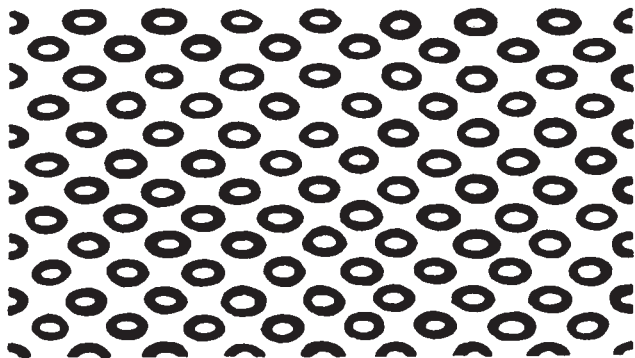


Fig. 4

There are 10 different changes of the interlacing in the figure threads, calling for 10-harness point draw, thus: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 9, 8, 7, 6, 5, 4, 3, and 2.

Adding this to 2, 4, or more harnesses, required for interlacing the plain weaving warp-threads, we thus find 12 or 14 or more harnesses required for drawing the warp-threads in their set of harness.

GAUZE OR LENO WEAVING.

(Continued from page 36.)

Fig. 27 illustrates the plan of another fancy gauze fabric, and Fig. 28 its corresponding drawing-in of warp in ground-harness and the threading of the whip-threads in two doups (1' and 2').

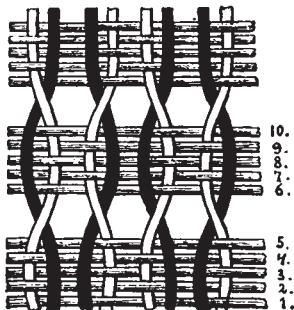


Fig. 27

Fig. 29 shows the harness-chain required for weaving fabric shown in Fig. 27.

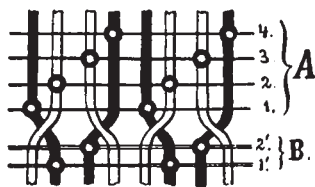


Fig. 28

Besides using 2 doups, more can be used, remembering that more doups we use, the more complicated we make the work for the weaver.

A further step in producing fancy gauze fabrics is the combining of gauze and regular weaving in the form of stripes. By this we mean that after using a

St.	1 st Doup	2 nd Doup	3 rd Doup	4 th Doup	5 th Doup	6 th Doup	7 th Doup	8 th Doup	9 th Doup	10 th Doup	11 th Doup	12 th Doup
1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1	1

Fig. 29

certain number of warp-threads, drawn in its own set of harness, for interlacing with the filling either on plain, twill or satin, or any combination of weaves, use similar gauze effects as previously illustrated and

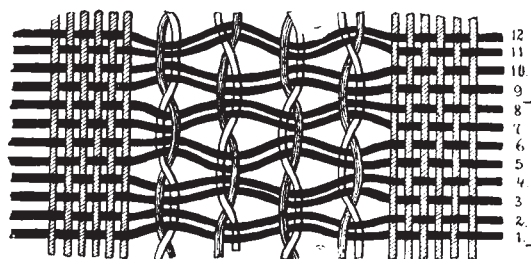


Fig. 30

explained, either with one, two or more left or right-hand doups, or all the effects combined.

Fig. 31 illustrates such a stripe effect in a fabric.

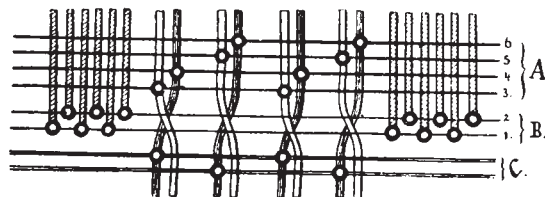


Fig. 31

Fig. 31 shows the corresponding drawing-in draft and threading of the doups. Warp-threads shown in outlines are the standard-threads, and warp-threads

St.	1 st Doup	2 nd Doup	3 rd Doup	4 th Doup	5 th Doup	6 th Doup	7 th Doup	8 th Doup	9 th Doup	10 th Doup	11 th Doup	12 th Doup
1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1	1

Fig. 32

shown shaded (in a vertical direction) are the whip-threads; warp-threads shown cross-hatched are the threads to interlace regularly (plain weave in present example).