DESIGNING AND FABRIC STRUCTURE.
NOVELTIES IN WORSTED TROUSERING.
(Finished Width 56″)

Fig. 1: Reproduction of fabric, actual size.

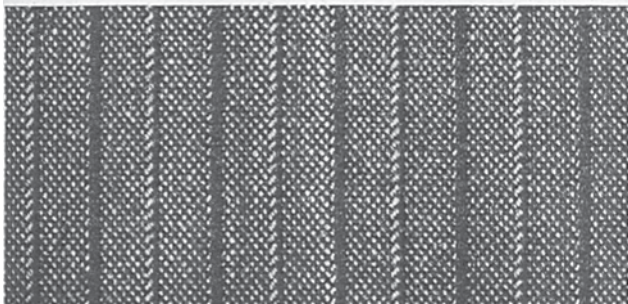Fig. 2: Weave, Repeat 104 warp-threads and 16 picks.

Fig. 1

Fig. 3: Drawing-in Draft; 16-harness, fancy draft.

Fig. 4: Color Scheme, i. e., plan showing arrangement for colors for the face weave only, the back warp-threads being omitted (the latter work by a duplicate of this color scheme, side by side; i. e., consider two ends for every end given in Fig. 4 for the color scheme for the double cloth weave, using white worsted for back where the face warp calls for spun silk.

Dot type indicates spun silk
Cross type indicates blue worsted
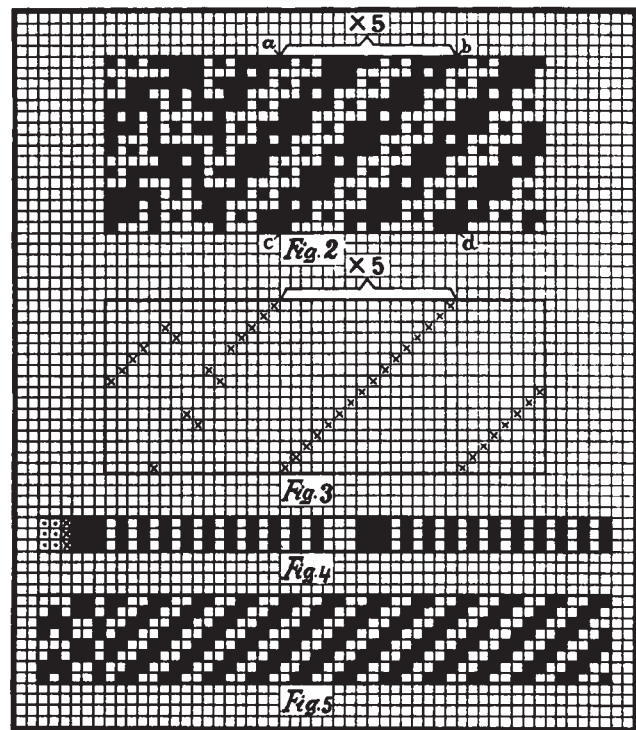Empty type indicates white worsted
Full type indicates black worsted.

Fig. 5: One complete repeat of the face weave, placed in proper position with reference to its color scheme. Arrangement of face and back warp in double cloth weave Fig. 2 is 1:1, hence repeat of face weave is (104 ÷ 2 =) 52 warp-threads, and 4 picks.

Dress: 1 end 100/2's spun silk, pearl ⎫ × 2
1 " 2/60's worsted white ⎭
2 ends " " blue
6 " " " black
2 " " " white ⎫ × 10
2 " " " black ⎭
6 " " " white
6 " " " black
2 " " " white ⎫ × 10
2 " " " black ⎭
_____
104 ends in repeat of pattern, one end face warp to alternate with one end back warp, both being yarns corresponding in count and color, using white worsted yarn on back

Ends in Warp: 8840 ends; or 85 repeats of pattern, or 17 sections each 520 ends.

REED CALCULATIONS:
8840 ÷ 8 ends per dent = 1105 dents wanted.
Width of fabric, exclusive selvage, in loom to be: 68 inches.
1105 ÷ 68 = 16.25
Reed 16¼ is wanted.

Selvage: 32 ends 2/32's worsted, white, for each side, 4 ends per dent.

Filling: 122 picks per inch in finished sample, 5 per cent. shrinkage in finishing, calls for 116 picks per inch in loom; 2/56's worsted, black.

Finish: Worsted finish, scour well, shrinkage in length 5%, clear face to show pattern distinct.

Calculations as to Amount of Material.
for 1 yard, 10 yards, 100 yards or 1000 yards.

Warp: 2 ends 100/2's spun silk, pearl
2 " 2/60's worsted, blue
48 " " " white
52 " " " black
_____
104 ends in repeat of pattern.

170 ends silk
170 " blue worsted
4080 " white "
4420 " black "
_____
8840 number of ends in warp.

Considering 5 per cent take-up of warp during weaving, calls for the following amount of warp yarn for one yard of cloth from loom:

178.9 yards 100 2's spun silk, pearl
178.9 " 2 60's worsted, blue
4294.7 " " " white
4652.6 " " " black
_____
9305.1 yards of warp yarn required.

Selvage: 64 ends, considering 5 per cent take-up calls for 67.4 yards of yarn required.

AMOUNT OF MATERIAL REQUIRED FOR ONE YARD.

Warp:

0.034 oz. 100 2's spun silk, pearl
0.111 " 2/60's worsted, blue
4.090 " " " white
4.431 " " " black
0.121 " 2/32's worsted, selvage
_____
8.787 oz. amount of warp yarn required to produce one yard of cloth from loom.

Filling:

68 inches, width of warp in reed
1 inch selvage
_____
69 inches total width of fabric in reed.

116 picks per inch, 2 56's worsted, black.

8.168 oz. amount of filling required to produce one yard of cloth from loom.

Total Material:
Warp: 8.787 oz.
Filling: 8.168 oz.
_____
16.955 oz. total amount of material required to produce one yard of cloth from loom.

To calculate material required for weaving 10,100 or 1000 yards, expressed in lbs., for any of the items or all: Move decimal point correspondingly one, two, or three places to the right and divide by 16; hence, for example, considering the last item, 1000 yards cloth to be woven we find:

16.955 gives us
16955 ÷ 16 = 1059 $\frac{11}{16}$ or practically 1060 lbs., amount of material required to produce 1000 yards of this worsted trousering on the loom.

EXPORTS OF ARTIFICIAL SILK FROM FRANCE.

The same continue to grow year by year—the figure for 1911 being 179,200 kilos. (394,240 lb.), as compared with 161,700 kilos. (355,740 lb.), and 78,500 kilos. (172,700 lb.) in 1910 and 1909 respectively. The consumption of this chemical product is constantly increasing, and the French firms engaged in its manufacture are unable to meet the demand, especially from Germany, where the weaving industry, using this product, has greatly developed of late.

Novelties in Cotton Dress Goods.
(Finished Width 27½")

Fig. 1: Reproduction of fabric, actual size.
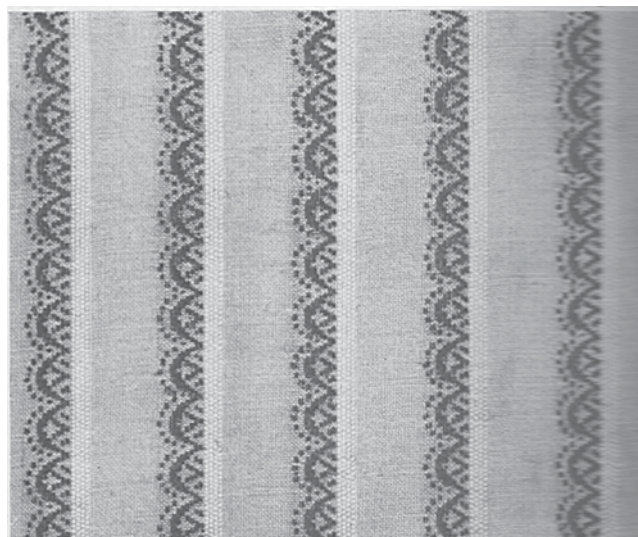**Fig. 2:** Weave, repeat 84 warp-threads and 22 picks.

Fig. 1

Dot type: Ground or body warp, sk blue or any fashionable color.
Full type: Figure warp, black or anyother contrasting but harmonizing colr to that of the body warp.
Cross type: Warp for the four, filling;ffect, ribs; white (bleached) or the samecolor as is used for filling, to produce dtinct, clear, uni-color ribs, to contrast disnctly from the ground and figure effects

Fig. 3: Drawing-in draft, 16-harness fancy dhw.

Warp: 3276 ends, i. e., 39 repeats of pattern.

Dress: 16 ends, ground, 40's.
1 end figure, 40's }
1 " ground, 40's } × 20
12 ends rib, 2 40's
16 " ground, 40's
_____
84 ends in repeat of pattern.

Selvage: 24 ends 2 40's white (bleached) or each side; 2 ends per dent.

Total Ends of each warp including selvage:
2028 ends ground warp
780 " figure "
516 " rib warp and selvage
_____
3324 ends in warp (complete).

Two beam work: Ground warp o one beam, take-up 5 per cent; Figure an Rib warp, also Selvage, on the other beam:ake-up 3 per cent.

Reed: Number 40, drawn in thus:
16 ends ground: 2 per dent.
40 " figure and ground: 4 per ct.
12 " rib: 3 per dent.
16 " ground: 2 per dent.
_____
84 ends for 30 dents.

$$30 \times 39 = 1170 \text{ dents}$$
$$48 \text{ ends selvage} = 24 \text{ "}$$

1194 total number of dents used.

$1194 \div 40 = 29.85$ inches, width of fabric in reed.

No waste to be calculated for warp, the same being bought in the ball.

Filling: 80 picks per inch, 56's white, bleached; allowance of waste 5 per cent.

Fig.2

Fig.3

Ascertain Amount of Material.
Required for 1000 yards of Fabric.

Ground Warp:
$$\frac{2028 \times 1000 \times 105}{840 \times 40 \times 100} = 63.38 \text{ lbs.}$$

Figure Warp:
$$\frac{780 \times 1000 \times 103}{840 \times 40 \times 100} = 23.91 \text{ lbs.}$$

Rib Warp and Selvage:
$$\frac{516 \times 1000 \times 103}{840 \times 20 \times 100} = 31.64 \text{ lbs.}$$

Filling:
$$\frac{29.85 \times 80 \times 1000 \times 105}{840 \times 56 \times 100} = 53.30 \text{ lbs.}$$

Total: 172.23 lbs. of yarn required for producing 1000 yards of fabric.

$$\frac{172.23 \times 16}{1000} = 2\tfrac{3}{4} \text{ oz. amount of yarn required,}$$
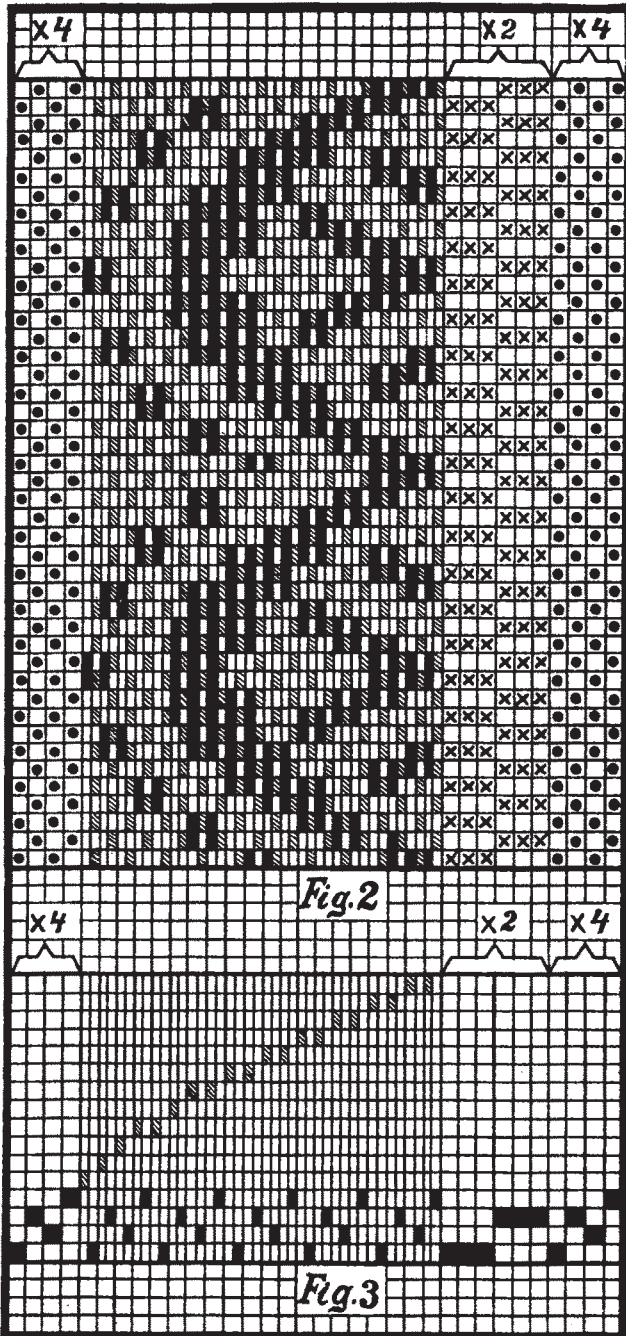in proportion, for one yard of fabric.

LAPPET WEAVING.
By Woodhouse and Milne.

Lappet weaving, or the ornamentation of woven fabrics by means of lappet frames, is executed in the loom simultaneously with the weaving of the foundation texture itself, and produces a type of textile ornament akin to embroidery. This type of figure development may and does produce some striking and varied effects, but it cannot be relied upon for absolute accuracy or for neatness in the development of the figures. While lappet ornament may be applied to many types of woven texture, its application is almost entirely restricted to plain woven muslin textures, or to fabrics of a gauze nature. The ornament itself may be either continuous or intermittent in character; if of the latter type, the loose or floating threads, which connect succeeding spots or small figures, are shorn off in a subsequent finishing process.

Although mechanical processes are not within the scope of this article, it will be necessary to refer briefly to the chief features of a lappet loom in order that our further remarks concerning lappet designs may be rendered intelligible. In addition to the ordinary parts which are essential for the production of the foundation texture—say a plain cloth—a lappet loom is provided, among other items, with the following accessories:

1. A pin frame, situated immediately behind the race of the lay; this frame rises as the lay recedes, and presents its pins close against the race-board so as to form the back support of the shuttle as the latter passes from box to box; the frame falls again, as the lay advances, until the tops of the pins are beneath the warp and the cloth, in order that the reed proper may beat up the filling, and that the needle frame, as well as the whip or ornamenting threads, may be traversed laterally by the lappet wheel through the distance required to form the ornament.

2. One or more needle frames—four being the usual limit—placed between the pin frame and the reed; the latter is supported about three inches behind the race of the lay to provide room for the frames. (The traverse of the lay of a lappet loom is usually about three inches more than that of a similar