

(Specimens.)

T. TAYLOR & J. WARBURTON.

FIGURED FABRIC.

No. 395,462.

Patented Jan. 1, 1889.

FIG. 1.

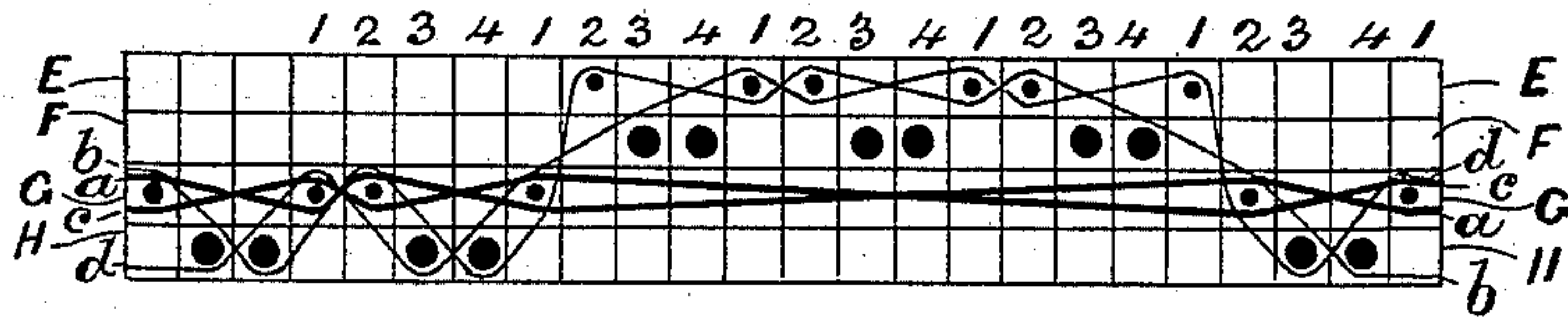


FIG. 2.

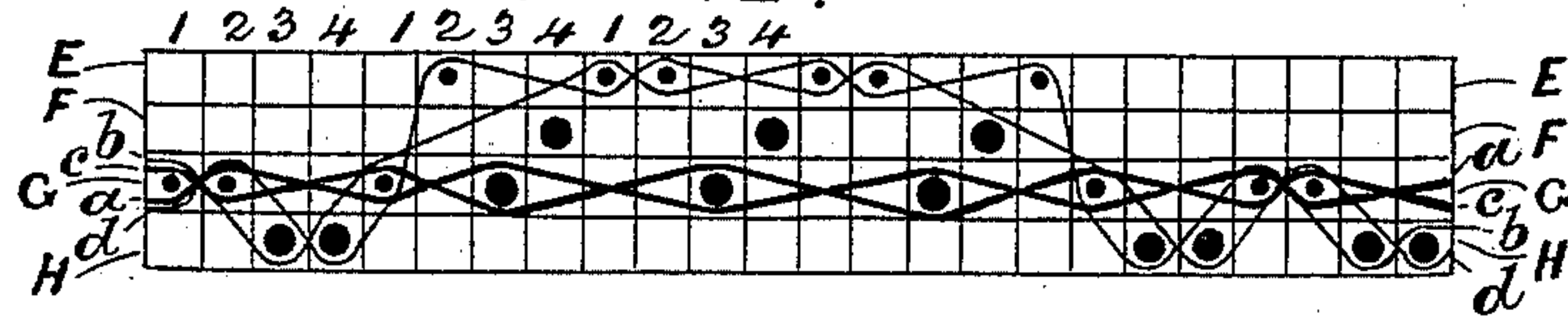


FIG. 3.

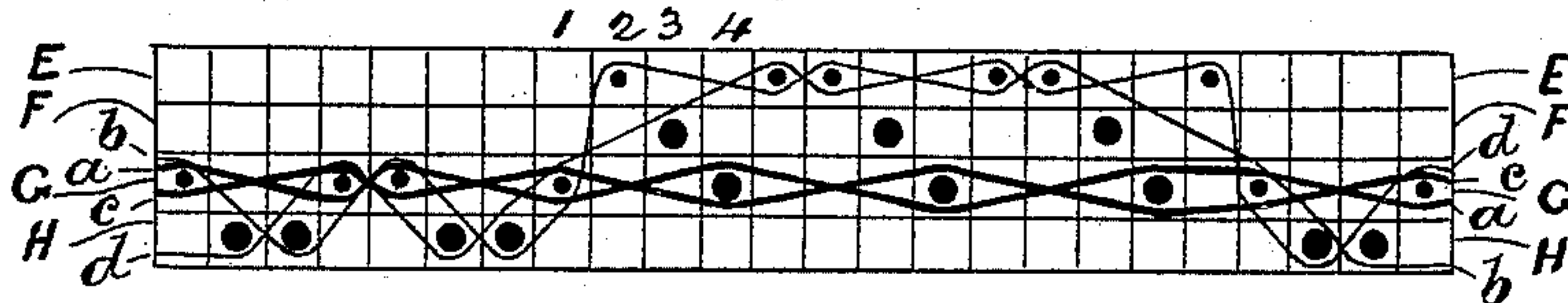


FIG. 4.

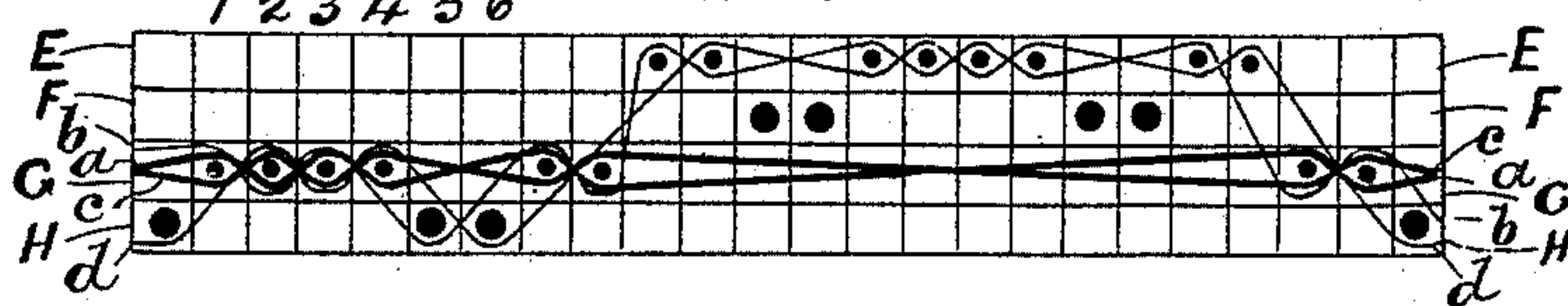


FIG. 5.

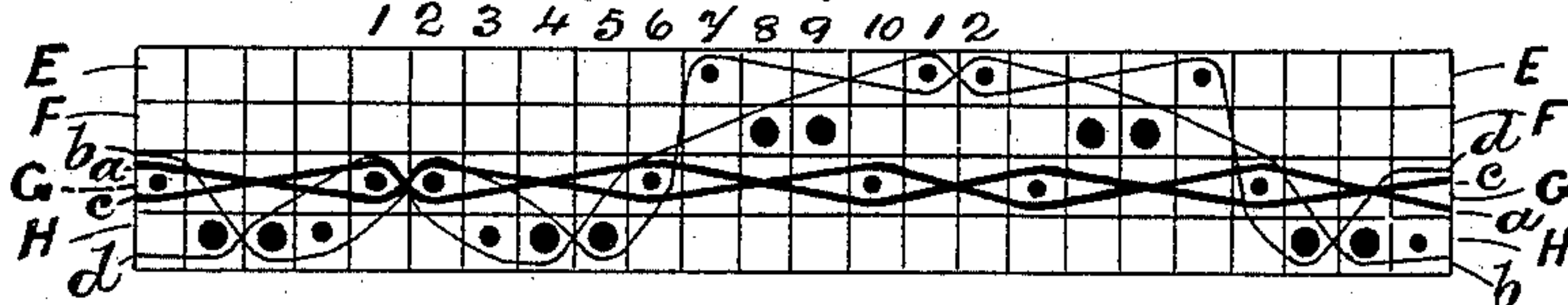


FIG. 6.

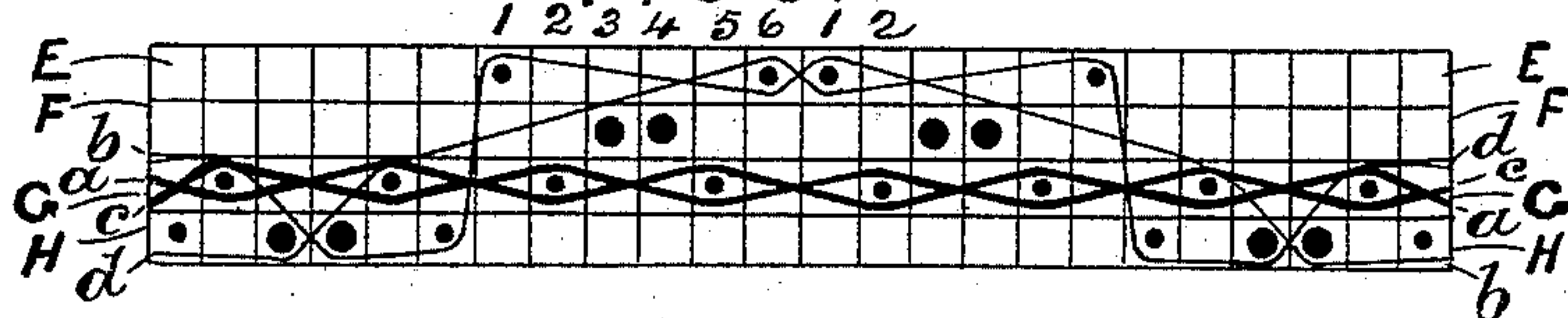
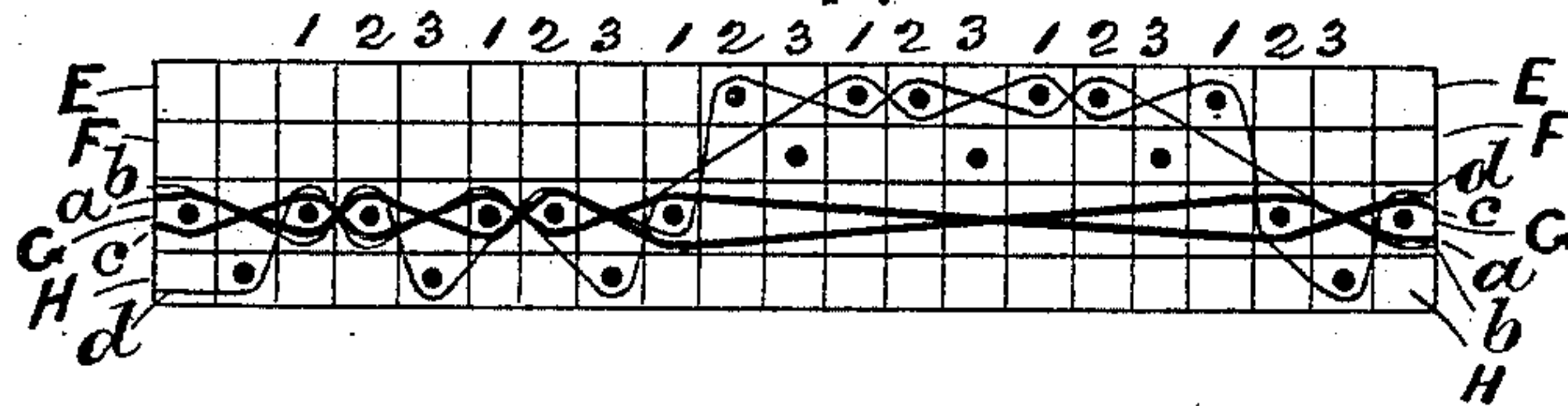


FIG. 7.



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(Specimens.)

2 Sheets—Sheet 2.

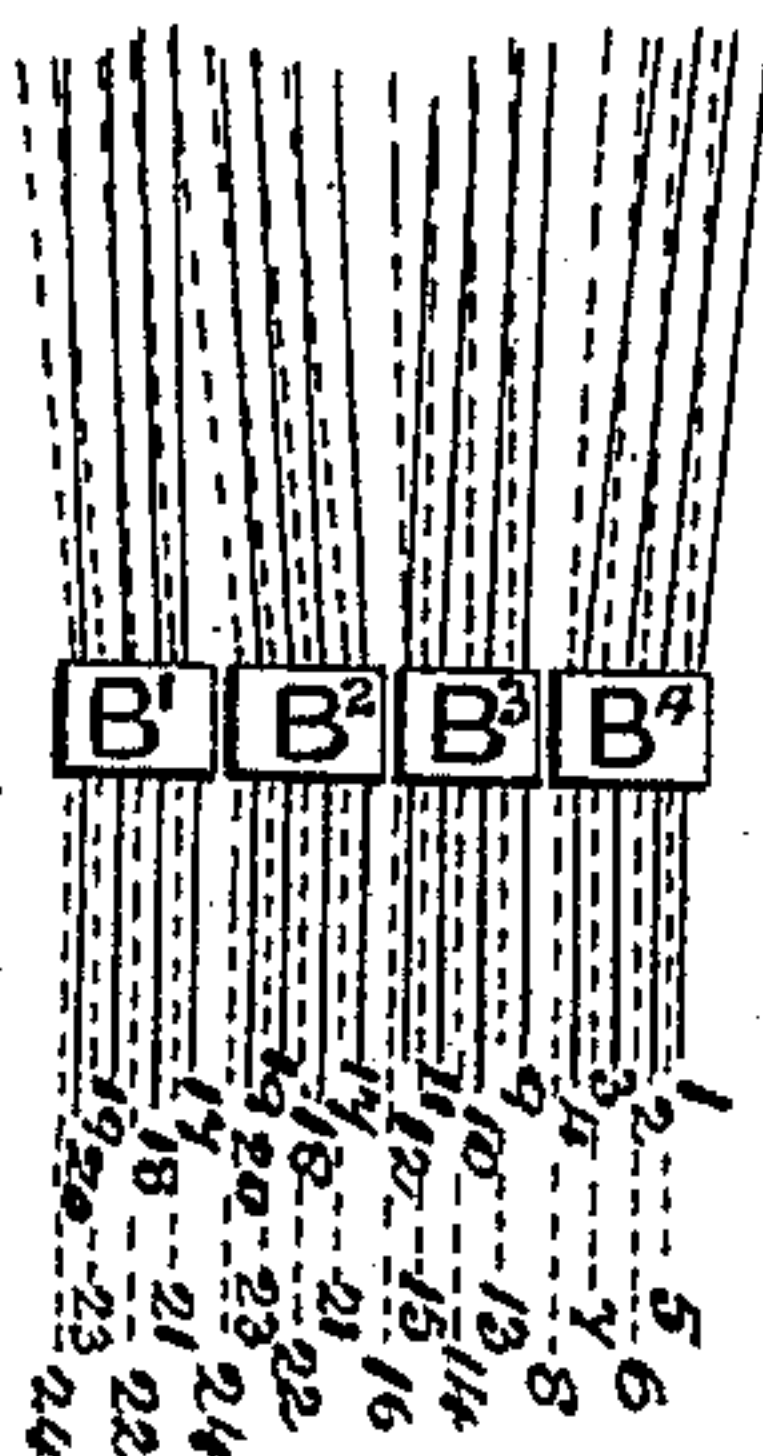
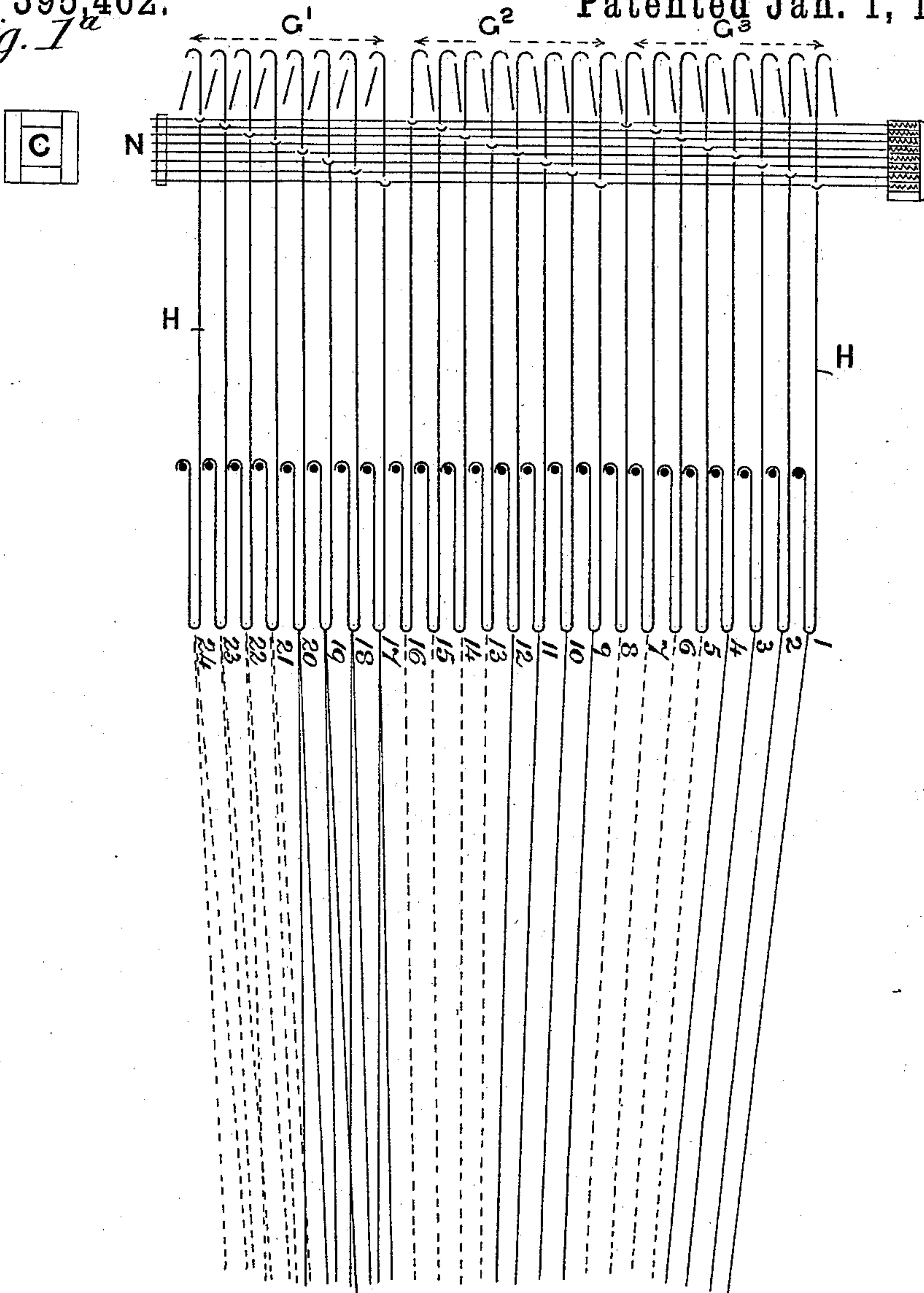
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FIGURED FABRIC.

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Fig. 1st

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UNITED STATES PATENT OFFICE.

THOMAS TAYLOR AND JACOB WARBURTON, OF BOLTON, COUNTY OF LANCASTER, ENGLAND.

FIGURED FABRIC.

SPECIFICATION forming part of Letters Patent No. 395,462, dated January 1, 1889.

Application filed December 9, 1887. Serial No. 257,414. (Specimens.) Patented in England December 13, 1886, No. 16,284.

To all whom it may concern:

Be it known that we, THOMAS TAYLOR and JACOB WARBURTON, both subjects of the Queen of Great Britain, residing at Bolton, in the county of Lancaster, England, have invented certain new and useful Improvements in Figured Fabrics, (for which we have obtained a patent in Great Britain, No. 16,284, dated December 13, 1886,) of which the following is a specification.

Our invention relates to improvements in a certain class of figured fabrics used principally for bed-quilts, toilet-covers, mats, quiltings, and the like; and the object of our improvements is to produce such figured fabrics with a raised fine figure upon a level ground.

We weave our improved fabric with two shuttles, one carrying a coarse weft for the back and the filling of the figure and the other a fine weft for the face both of the ground and figure, and we employ two warps having an equal number of ends, of which warps one—the back warp—is a coarse warp, and is woven as tight as possible, and the other—the face warp—is woven sufficiently slack to allow a raised figure or pattern to be formed.

In manufacturing our improved fabric we either use a separate Jacquard machine for each warp, or a special Jacquard machine, constructed for the purposes of this invention, that will control both warps from one and the same set of cards. This specially-constructed Jacquard machine has three separate griffs. Consequently one needle governs three hooks, all sprung toward the cylinder of the Jacquard machine. One of these three hooks faces the cylinder, and is tied up to the harness-cords of two face-warp threads which are drawn through separate comber-boards and knotted for pressing—that is, raising for forming sheds. The other two hooks are turned away from the cylinder and are tied up to the harness-cords of two back-warp threads, one to each hook, from separate back boards, also knotted for pressing. These four threads—*i. e.*, two face and two back threads—all work in one space or dent of the reed, end and end—that is, one face end and one back end, alternately.

In cutting the cards for our special Jacquard machine we cut that part intended to be the figure so that when the cylinder brings a card against the needles those hooks which are turned toward the cylinder are pressed off their griffs, and those hooks which are turned away from the cylinder are pressed onto their respective griffs by the uncut portion of the card, while those hooks which are turned toward the cylinder are left standing on their griffs, and those hooks which are turned away from the cylinder are left standing off their respective griffs by the cut portion of the card.

In the accompanying drawings, Figure 1^a is a diagram showing the special Jacquard mechanism; and Figs. 1 to 7, inclusive, illustrate the positions of the wefts and warps as interwoven in the various methods specifically described hereinafter, the thick horizontal lines representing the thicker warp and the fine horizontal lines the finer warp. The small circles represent the picks of the finer wefts and the larger circles picks of the coarser wefts.

In Fig. 1^a, C designates the cylinder or barrel; N, the needles; H, the hooks; G' G² G³ the three griffs; and B' B² B³ B⁴ the comber or harness boards. Each needle N is furnished with three eyes and actuates three hooks, H, one in each griff. One of these three hooks has its hooked part facing the cylinder C, and is operated by the griff G'. The other two hooks are turned in the opposite direction and are operated by the griffs G² G³. Each of the griffs G' G² G³ has a separate motion, G' being used to work all the face warp, while G² G³ each work half the back warp.

The diagram shows twenty-four hooks numbered from one to twenty-four. The threads from one to sixteen are passed through the boards B³ and B⁴, and control back-warp threads, and those numbered seventeen to twenty-four pass through the boards B' B² and control face-warp threads.

The numbers placed below the boards indicate the order in which the threads are passed through them.

When weaving our improved fabric with four picks to a card and with two shuttles for weft, the movement in a loom changing shut-

ties at one end only, and when weaving "tabby"—that is, plain cloth or calico—would be as follows:

First pick.—This is a fine pick. Face-board B and back griff G^2 rise. The effect of this is to lift half of the face-warp all across and half of the back warp in the ground only.

Second pick.—This is also a fine pick. Face-board B^2 and back griff G^3 rise. The effect of this is to lift the other half of the face warp all across and the other half of the back-warp in the ground only.

Third pick.—This is a coarse pick. Face-board B^2 remains up as before and all the three griffs are lifted. This face-board keeps up the same half of the face warp in the ground, while the griffs lift all the face warp in the figure and all the back warp in the ground, leaving the back-warp down under the figure. This coarse pick is put in the same face-shed as the previous fine pick under the ground, and is used as filling or wadding where the figure is to come.

Fourth pick.—This is also a coarse pick. Face-board B' lifts and all the three griffs G' G^2 G^3 remain up.

All the face warp in the figure and all the back warp in the ground are kept raised, the back warp being still left down under the figure. This coarse pick is put in the same face-shed as the first pick under the ground, and is used, as in No. 3 pick, for filling or wadding where the figure is to come.

Following out these movements, it will be seen that on the face of the fabric the ground is composed of the coarse-warp threads and fine-weft threads woven as calico—i. e., plain cloth—while the figure on the surface is composed of the fine-warp threads and fine-weft threads woven as calico or plain cloth, with the coarse weft interwoven at the back of the ground with the face warp and lying between the face-cloth and the back warp, where the figure comes, thereby producing a raised fine figure on a level ground, such a result not having been previously thus obtained.

Fig. 1 shows in longitudinal section the structure of the fabric made with a loose back and woven by means of two shuttles and four picks to a card, as described. The back warp is represented by the strong lines a and c , the face warp by the fine lines b and d , the fine weft from one shuttle by small circles, and the coarse weft from the other shuttle by the larger circles. The line of spaces marked E on all the diagrams shows the picks which go to form the face of the figure. The line of spaces marked F shows the picks which go to fill or wad the figure. The line of spaces marked G shows the picks which in Figs. 1, 4, and 7 only go to form the surface of the ground, but which in Figs. 2, 3, 5, and 6 are also used for binding the warp under the figure, as hereinafter described. The line of spaces marked H shows the picks which go to form the back of the ground.

If it be desired to weave a fabric with a fast

back, then, pick No. 3 may, as shown in Fig. 2, be interwoven with that portion of the back warp, a and c , which would otherwise float under the figure, as shown in Fig. 1, and this interweaving is effected by raising the back comber-boards alternately, one at the time of the third pick in one round and the other board at the time of the third pick in the next round, the fourth picks being wadding-picks; or this may be reversed, as shown in Fig. 3, by making the third picks the wadding-picks.

Although we have described four picks to a card and a special Jacquard machine only, a similar effect may be obtained if the fabric be woven with three, five, or six picks to a card, or if woven with an ordinary Jacquard machine or Jacquard machines.

Fig. 4 is a diagram showing three picks to a card, the fabric being woven with two shuttles having a drop-box at one side only of the loom. Fig. 5 is a diagram showing five picks to a card, woven with two shuttles. Fig. 6 is a diagram showing six picks to a card, woven with two shuttles.

Although we have described means and methods of proceeding which we find convenient and which give good results in practice, it is obvious that slight modifications may be made without departing from the nature of our invention. For instance, one shuttle in place of two, as preferred by us, may be employed, an illustration of this being given by the diagram, Fig. 7, which represents a cloth made with a loose back, in weaving which one shuttle and three picks to a card are used. The other diagrams, Figs. 1 to 6, drawn as now shown, but with the circles showing wefts all of one size, as in Fig. 7, would represent the same cloths, but woven by one shuttle instead of with two shuttles, as now described; again, the warps may have an unequal number of ends instead of an equal number, as described, and in place of using a separate Jacquard machine for each warp or the special Jacquard machine described and illustrated by Fig. 1^a, both warps might be actuated by an ordinary but sufficiently extensive Jacquard machine, which last arrangement would, however, be clumsy and inconvenient; again, in place of drawing two face and two back threads, end and end, into each dent of the reed, a finer reed may be employed, in which three ends are drawn into each dent, two from one warp and one from the other, or two ends may be drawn into each dent, one from each warp; also, twills or special forms of weaving may be produced in lieu of calico or plain cloth in either the ground or the figure, or both, or at the back of the fabric.

In a loom fitted with what is known as a "pick-and-pick" motion for changing the shuttles, or in a loom fitted with one shuttle only, the order of the picks herein laid down may be varied.

What we claim, and desire to secure by Letters Patent of the United States, is—

A figured fabric, of relatively fine and coarse

weft and relatively fine and coarse warp
threads, having raised figures in fine weaving
upon a level ground or surface composed of the
coarser-warp threads and finer-weft threads
5 interwoven as calico or plain cloth, in combi-
nation with a backing composed of the coarser-
weft threads interwoven with the finer or face
warp, said coarser-weft threads lying between
the face-cloth and the back warp where the
10 figure comes, substantially as herein described
and illustrated.

In testimony that we claim the foregoing as
our invention we have signed our names, in
presence of two witnesses, this 16th day of
November, 1887.

THOMAS TAYLOR.
JACOB WARBURTON.

Witnesses:

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