

(No Model.)

E. FLETCHER.

METHOD OF STITCHING BUTTON HOLES.

No. 389,840.

Patented Sept. 18, 1888.

Fig. 1.

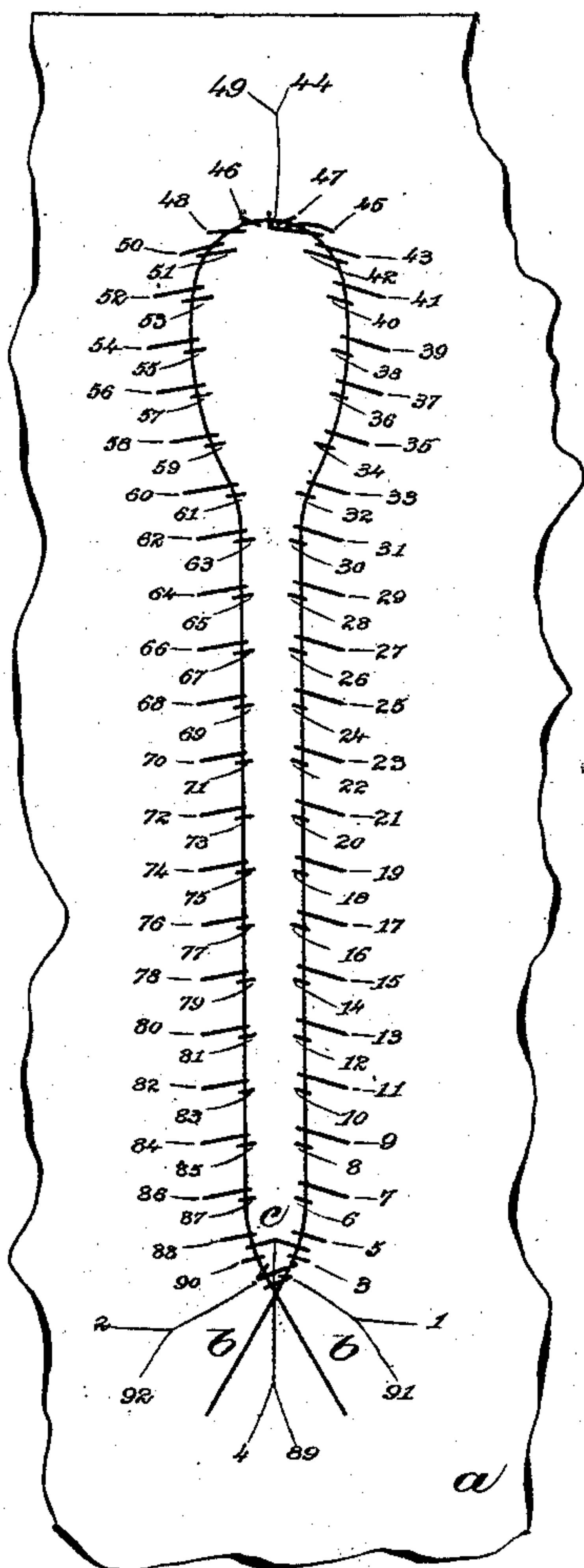


Fig. 2.

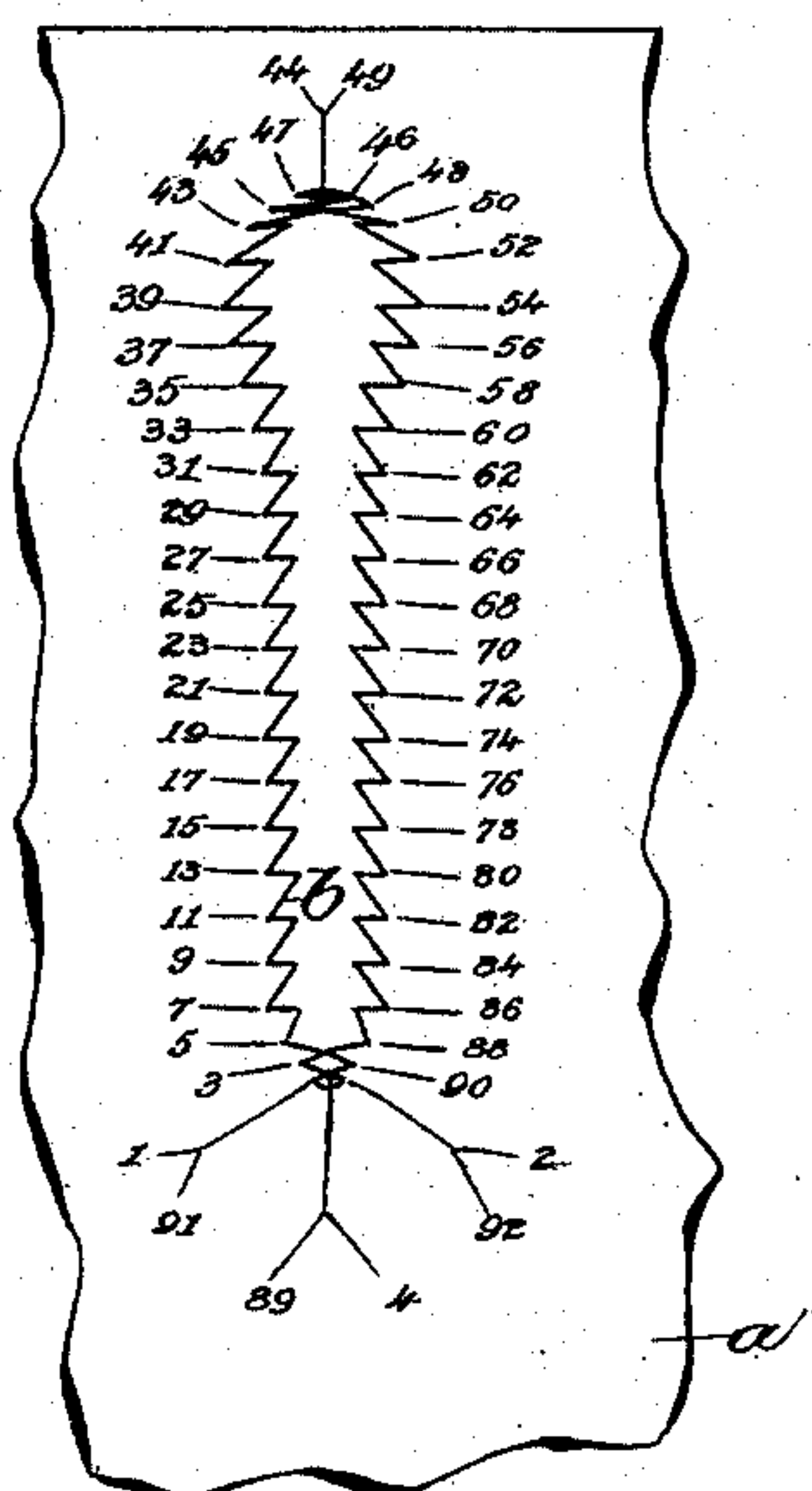
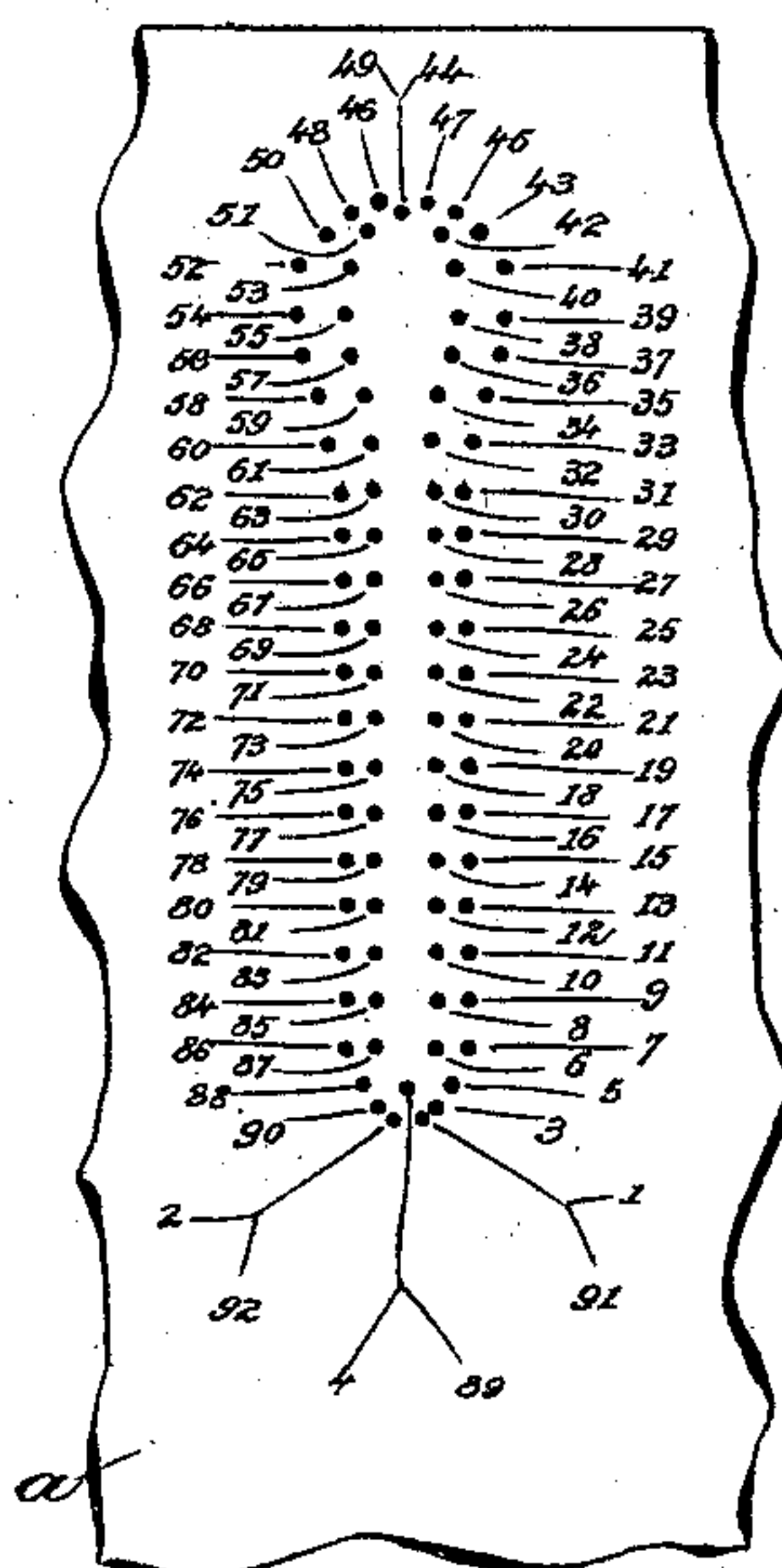


Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

ELMER FLETCHER, OF NEEDHAM, ASSIGNOR OF ONE-HALF TO GEORGE W. HILLS, OF BOSTON, MASSACHUSETTS.

METHOD OF STITCHING BUTTON-HOLES.

SPECIFICATION forming part of Letters Patent No. 389,840, dated September 18, 1888.

Application filed March 1, 1888. Serial No. 265 831. (No model.)

To all whom it may concern:

Be it known that I, ELMER FLETCHER, of Needham, county of Norfolk, and State of Massachusetts, have invented an Improvement in the Method of Manufacturing Button-Holes, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention has for its object the production of a button-hole in a novel manner, it having an enlarged eye at its outer end, the stitches forming the apex of the eye being superimposed or accumulated at that point, thus strengthening that part of the stitching at and about the central part of the rounded or enlarged eye.

Prior to my invention button-holes stitched on machinery have been provided at their outer ends with enlarged round or nearly round eyes, the stitching being, however, radial to the center of the eye, either the clamp holding the material to be stitched or the stitching mechanism being given a semi-rotation while stitching the eye. Straight button-holes are commonly "barred," as it is called, by stitching across the end of the button-hole; but prior to my invention I am not aware that a button-hole having an enlarged rounded eye has been stayed at the central part of the enlarged eye or at the extremity of the button-hole, where the greatest strain falls.

My invention consists in the herein-described method of producing a button-hole—
35 *i. e.*, clamping the material in a clamp, and while so clamped stitching the same with two threads back and forth to form a series of zig-zag stitches, the thread at the under side of the material co-operating with a thread at the upper side thereof; moving the clamped material to cause the stitching for one straight side of the button-hole, and when near the outer end of the button-hole moving the said material so as to form substantially one-half of an enlarged eye; then stitching the material across the center line of the button-hole and eye at substantially a right angle to the length of the button-hole, thus superimposing the stitches to strengthen the central part of the enlarged eye; then again moving the material in such path as to enable the stitching to form

the second half of the enlarged eye, and thereafter stitching the second straight side of the button-hole and joining the stitching for both straight sides at the small end of the button-hole, as will be described.

Figure 1 is an enlarged top or plan view showing a piece of material with a button-hole worked in it according to my invention, the stitches being shown widely separated to avoid confusion of the drawings; Fig. 2, an under side view of Fig. 1, on a smaller scale; and Fig. 3 is a diagram showing a piece of material punctured, as it will be, by the usual eye-pointed needle employed for the upper thread when stitching the button-hole, the scale being the same as in Fig. 2.

The material *a*, of cloth, leather, or other textile, will in practice be clamped between the upper and lower members of a cloth-clamp substantially such as shown in my application, Serial No. 265,469, filed February 27, 1888, the said clamp forming part of a button-hole attachment adapted to be applied to a sewing-machine of usual construction and employing an eye-pointed needle and shuttle or under-thread carrier—such, for instance, as the Household, Domestic, Singer, &c.

In my invention as herein contained the tension at the needle-thread *b* is supposed to be in excess of that put upon the shuttle-thread *c*, so that the needle-thread in the finished button-hole is left at the edge of the button-hole at the face side of the material, (see Fig. 1,) and as a result thereof the shuttle-thread is drawn up through the material at each ascent of the needle by the needle-thread, and the latter holds closely together the loops of under thread.

The slit for the button-hole is cut in the material after the stitching has been finished. In illustration of my invention, the material *a*—held in a suitable clamp, preferably such as referred to—is placed under an eye-pointed needle, with which co-operates a complementary under-thread-carrying device, such as referred to. The needle descends through the material at the inner or small end of the button-hole—as at 1, then at 2, 3, 4, 5, 6, &c.—at substantially equal distances apart, until, as herein shown, the needle arrives at about the point 37, where the enlargement for the eye is

to be started, the stitching thereafter following in a curved line to form one-half of the enlargement for the eye at the outer end of the button-hole, the movement of the material in the direction of the length of the button-hole being gradually shortened until the needle reaches the center of the enlarged end of the button-hole, at which time the length of the stitch is practically nothing. The needle having reached the central part of the said eye, some stitches are taken across the center and end of the eye to strengthen it, and then the stitching for the opposite side of the eye is performed, the stitches being gradually increased in length until they arrive at the straight side of the button-hole, where the stitches are again of uniform length, while the second straight side is being stitched. This gradual shortening and superimposing of the stitches at the extremity of the large part of the eye of the button-hole effects a most important result—viz., the button-hole is strengthened at its point of greatest strain and wear.

By referring to the drawings it will be noticed that the stitches from the point 31 to the point 47, indicating punctures of the needle, decrease in length. When the needle arrives at the point 43, the feed motion of the material is practically suspended and the needle at its next descent penetrates the material at 44, substantially at the center line of the button-hole; but at its next descent the needle penetrates the material at the point 45 at the right-hand side of the said center; next the needle descends at 46 across the center line of the button-hole; then back again across the center line, descending at 47; then again across the center line, descending at 48; then again back to the point 49, which is substantially at the center of the button-hole, as well as the center of the eye; and then the needle descends, penetrating the material at 50, 51, &c., the stitch being gradually lengthened until the needle arrives at the point 63, after which the length of the stitches made along the left-hand side of the button-hole, or its second side, is substantially the same until the needle arrives at the point 90, when the length of stitch is somewhat shortened, the stitches 91 and 92 being taken practically into the holes made by the first and second punctures of the needle.

In the diagram, Fig. 3, it will be noticed that the depth-stitches from the right hand of the side of the eye to and across the center of the eye to the left are longer—as from 43 to 44,

and 45 to 46, and 47 to 48, and 49 to 50—than the return stitches are to the right—as 44 to 45, and 46 to 47, and 48 to 49. The depth-stitches, or the stitches from the inner to the outer side of the button-hole, are substantially the same in length, except as they are modified, due to the elliptical movement which is given to the material.

My invention lies altogether in the method of finishing the outer or enlarged end of the button-hole.

I have herein shown a button-hole requiring ninety-two stitches; but it will be obvious that the button-hole may have more or less stitches, according to its length and the length of stitch, the stitch in practice being quite short, so that the stitching completely covers the material thereunder.

It is also obvious that the length of the eye or enlarged portion of the outer end of the button-hole may be more or less, according to taste.

I do not desire to limit my invention to putting the most tension on the needle-thread, and should the most tension be put on the shuttle-thread it would draw the needle-thread, so that it, lying on the face of the material, would show, as does the shuttle thread in Fig. 2.

I claim—

That improvement in the art or method of stitching button-holes which includes clamping the material and stitching the same to form one straight side for the button-hole, then an enlarged eye portion for the outer end of the button-hole, and a second straight portion for the second or opposite side of the button-hole, the stitches forming the end of the said enlarged eye in the line of the center of the button-hole being shortened in the direction of the length of the button-hole and superimposed or crossed back and forth, substantially as described, in the line of the slit in the button-hole, thereby accumulating the thread directly at the edge of the button-hole at the extremity of the said enlarged eye and strengthening the button-hole where the strain therein is to be the greatest, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELMER FLETCHER.

Witnesses:

G. W. GREGORY,
B. DEWAR.