S. S. Gray.
Collar.

No. 43,400. Patented July 5, 1864.

Fig. 1.

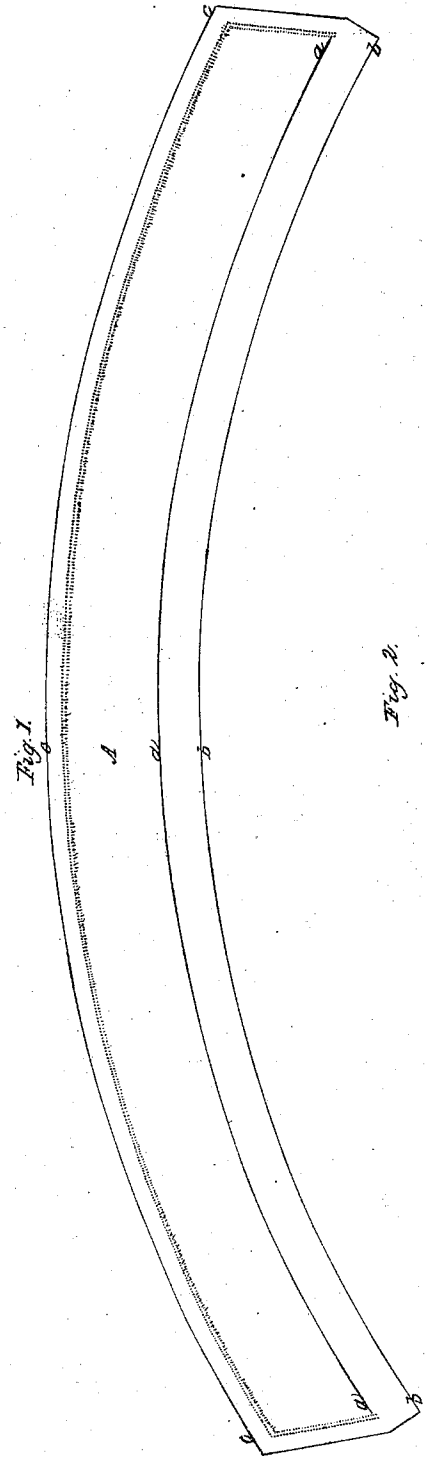
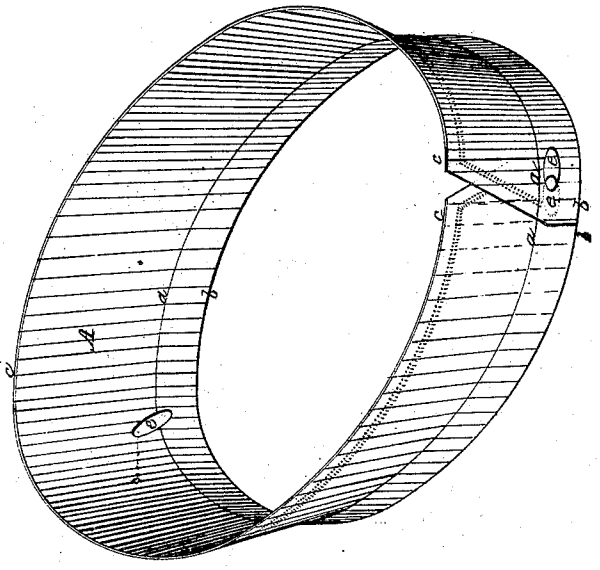


Fig. 2.



Witnesses:
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SOLOMON S. GRAY, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN PAPER COLLARS.

Specification forming part of Letters Patent No. **43,400**, dated July 5, 1864.

To all whom it may concern:

Be it known that I, SOLOMON S. GRAY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful improvements in the cutting out and molding of shirt collars made of paper, or of cloth and paper combined; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a collar as it is cut out and before it is molded, and Fig. 2 represents the same piece brought around into a circle and molded to fit the neck of the wearer or user.

Shirt-collars made out of paper, or cloth and paper combined, from the very nature of the material out of which they are made, require certain manipulations that a woven fabric does not require, and that to make a paper shirt-collar, or a paper and cloth combined shirt-collar, out of one piece, that will fit and set easy on the neck of the wearer has required much time, patience, skill, and invention.

Paper made on a cylinder-machine, which is almost the universal mode now in practice, is non-yielding in the direction of its length, and any attempt to mold or stretch it in that direction will result in fracture, but across the web or felt it will bear stretching.

My invention consists, first, in cutting out the strip of paper or similar material of which pulp is an essential part, across the web or felt, or at right angles, or nearly so, to the length of the paper, so that a portion of the strip may be stretched or molded to fit the neck of the wearer without fracturing the material; and my invention further consists in stretching or molding the under or lower portion of the collar, so that when bent around it will fit the neck of the wearer more exactly and comfortably.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A represents a strip of paper, cut out crosswise of the bolt or sheet, and in the form of an arc of a circle of such radius and of such lengths as will suit the various sizes to be made. On this strip, and in the direction of its length, is indented, by means of a die, or of a pointed instrument drawn along a gage or former, a line, *a*, from which line to the base of the collar *b* the material is stretched or molded, so as to elongate said base *b*, while the portion between the line *a* and the top of the collar *c* may be left in its original condition. This strip, when bent around into a circle to form the collar, will flare out at the bottom portion, so as to conform to the shape of the neck, while the upper portion, though not stretched, will form the shape of the strip, and, as shown in Fig. 2, stand off, so as to conform also to that part of the neck which it surrounds. The stretching or molding may be done by a die forced against the portion of the collar to be thus treated while its two ends are securely held together; or it may be done by running the portion to be stretched or molded between pressing-rollers that will draw or stretch out that portion, and which rollers may be cylindrical or conical; or it may be done by a single roll and a flat or stationary surface, upon which the strip may rest. When a roll or rolls are used to do the stretching, the indented line *a* may or may not be previously made in the strip, as a gage may be connected with the rolls to accomplish the purpose. The line *a* is important, however, not only as a defined mark between the portion stretched and the portion not stretched, but it also adds to the finish and appearance of the collar.

Strips cut lengthwise of the bolt or sheet of paper will not stretch with any degree of certainty, but will under the stretching process fracture, as there is no elasticity to the paper in that direction. By cutting the strips crosswise of the bolt or sheet, which is an essential part of my invention, I can stretch or mold one portion of the strip with entire safety without stretching the other portion.

e represents the usual button-holes by which the collar is fastened to the shirt.

I have represented a stand-up collar in the drawings only, but, of course, a turn-down collar may be made after this plan also, it being only necessary to make the upper portion of the strip large enough to afford the material for the turned-down portion. The turning down of the collar may be done by any of the means or appliances heretofore described or patented by me.

I am aware that cloth for garments is cut with a view of having the or warp weft run in a

particular direction for a particular purpose, and am informed that leather is similarly cut to have the "grain" in a special direction for a special purpose. I, of course, lay no claim to any such thing, as my invention is confined exclusively to the making of collars, and out of a material that has neither the texture of cloth nor the strength of leather, but which is very fragile and difficult to put into any other form than that which it takes to itself in the paper-machine. Nor do I claim the cutting out of the collar so as to have the greater expansibility of the paper in the line of the length of the collar for any other purpose than that of availing myself of that expansibility afterward in molding the collar into shape.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. Cutting out the paper strips from which the collars are to be made so as to have the greater expansibility of the paper in the line of the length of the collar when the collar is to be formed or shaped by extension of the material in whole or in part, substantially as and for the purpose described.

2. Flaring the under portion of the collar to cause it to fit more exactly the shape of the neck of the user or wearer, substantially as described.

SOLOMON S. GRAY.

Witnesses:

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JAMES A. WOODBURY.