

(No Model.)

E. K. WARREN & J. H. HOLDEN.
CORSET STIFFENER AND METHOD OF MAKING SAME.

No. 559,827.

Patented May 12, 1896.

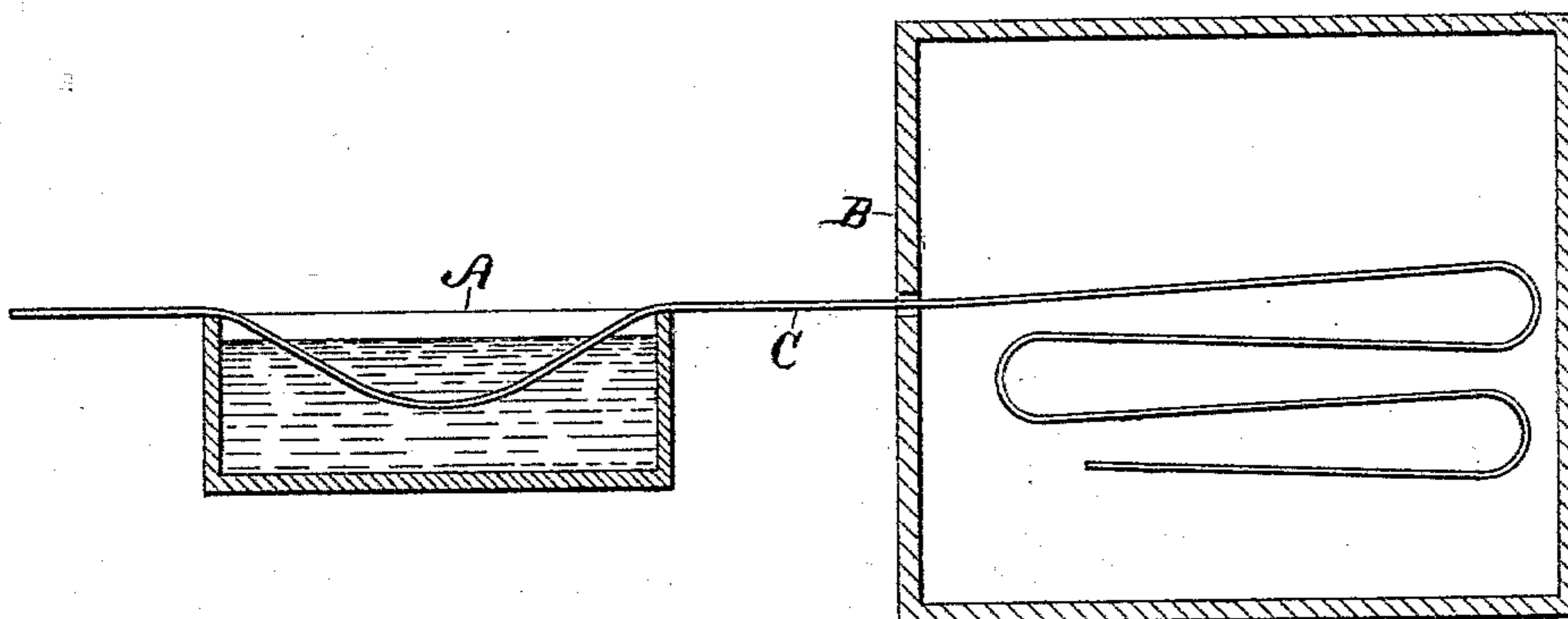


Fig. 1

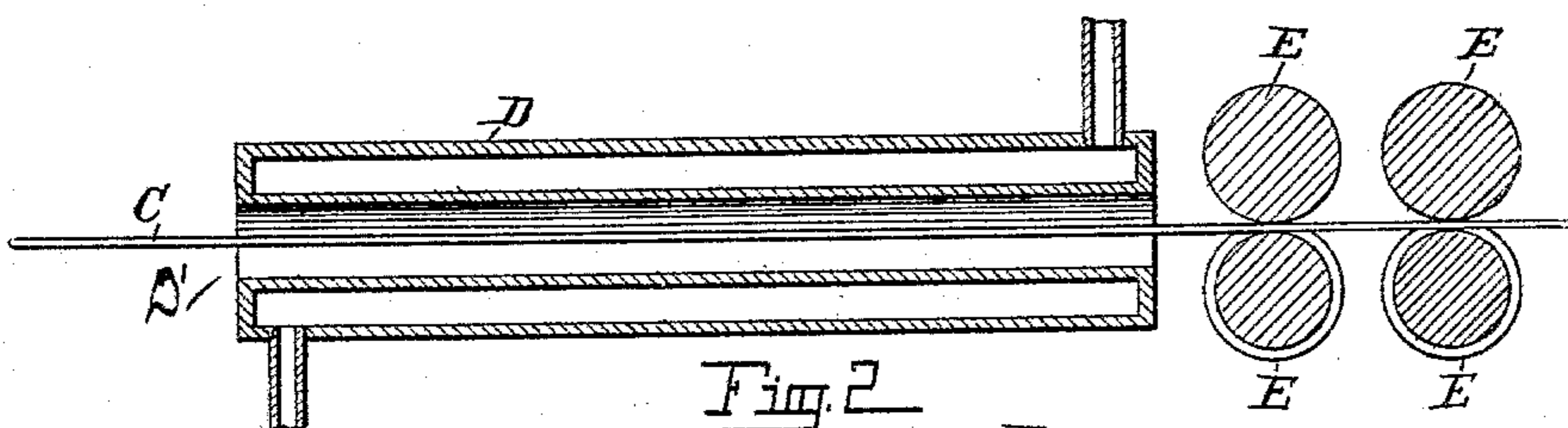


Fig. 2

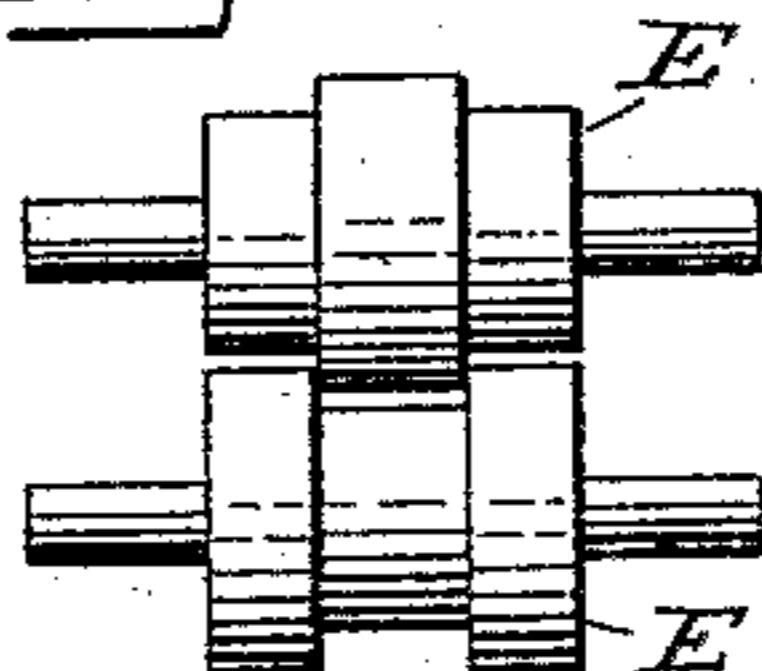


Fig. 3

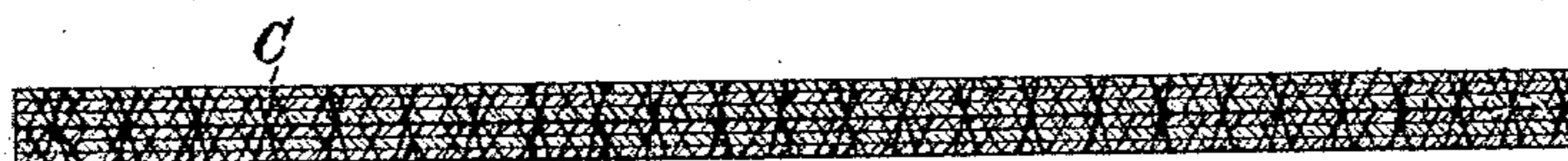


Fig. 4

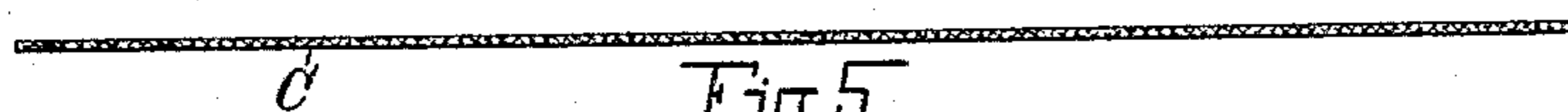


Fig. 5



Fig. 6

Witnesses:

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UNITED STATES PATENT OFFICE.

EDWARD K. WARREN AND JONAS H. HOLDEN, OF THREE OAKS, MICHIGAN.

CORSET-STIFFENER AND METHOD OF MAKING SAME.

SPECIFICATION forming part of Letters Patent No. 559,827, dated May 12, 1896.

Application filed March 5, 1895. Serial No. 540,586. (No model.)

To all whom it may concern:

Be it known that we, EDWARD K. WARREN and JONAS H. HOLDEN, citizens of the United States, residing at the village of Three Oaks, in the county of Berrien and State of Michigan, have invented certain new and useful Improvements in Corset-Stiffeners, Dress-Stays, and Like Articles and the Method of Manufacturing the Same, of which the following is a specification.

Our invention relates to improvements in "featherbone" and in the method of manufacturing the same and to improved apparatus for the purpose. "Featherbone" is a fanciful name given to the corset-stiffener, for which Edward K. Warren received Letters Patent No. 286,749, dated October 16, 1883, and Letters Patent No. 311,621, dated February 3, 1885, issued to him for a further improvement in the manufacture of said featherbone. In the construction of featherbone as described in these former patents, in the first patent the fiber was wound into cords, and in the second one the cords were wound together side by side to form a broad flat blade, then the flat blade was stitched through, and this, with winding it, gave the same firmness and prevented it from becoming loose or falling apart; but in this construction there would frequently be small projections formed upon the blade or cord, which would remain there constantly and a mere rolling or laundering was insufficient to make the blade smooth and flat, and the blade as then constructed was more liable to injury, for when a thread became broken, as the featherbone depended entirely upon winding to hold the fibers together, the blade or cord was likely to become frayed in this way.

Our invention has for its objects improvements in featherbone and in the method of manufacturing the same, to construct the same so that the blade shall be smooth and flat and thin and possess continuity in itself, not depending entirely on winding of the quill fiber to make the blade firm, and also to compact the blade so that it will be more strong and elastic where such qualities are desired to answer its purpose. We desire to state, however, that in some instances it is not desired to make the blade stiff and firm, and we only refer to this as a means of construct-

ing the same when it is desired to so manufacture the blades or cords of featherbone.

We accomplish these objects of our invention by the processes and methods (employing apparatus) shown in the accompanying drawings, in which—

Figure 1 shows the manner and apparatus for accomplishing the first two steps of our process. Fig. 2 shows an illustration of a device for accomplishing another two steps of our process. Fig. 3 is a detail elevation of two rollers adapted for use in our process. Fig. 4 is a top plan view of a blade of featherbone manufactured as we have described. Fig. 5 is a side elevation of the same. Fig. 6 is an end view showing actually and definitely the illustration of a blade of our improved featherbone as manufactured by our improved process.

In the drawings similar letters of reference refer to similar parts throughout the several views.

After the blades of featherbone have been wound and stitched, as indicated in the patents to said Warren above mentioned, we proceed to treat the same by first passing the strip of featherbone (which is constructed in a continuous strip as long as it will be convenient to handle) through a suitable sizing composed of glue and any other suitable constituents, which can be so various that an attempt at enumeration would be useless. The strip should be thoroughly saturated. A long band of featherbone C is dipped down into the box or trough A containing sizing and passed into a drying-room B, which is heated in any suitable and convenient manner to dry the sized featherbone quickly and as dry as it is possible to dry it by such means. The featherbone is then passed through the steam-heated tube or pipe D'. It is passed through the small pipe D', which is inserted in the large steam-pipe D, which is connected by the pipes shown, which permits of a continuous flow of steam around the smaller pipe. This heating-pipe in actual use is over twelve feet long, but the length of it is immaterial so long as the strip of featherbone C becomes thoroughly heated, and a greater or less length than twelve feet may be used, as speed or other circumstances may require. The strip of featherbone should be so thoroughly heated

by this process that the fibers of quill contained therein are thoroughly softened; in fact, almost melted. This is accomplished by heating the same to very nearly the boiling-point of water, which is accomplished by the steam-heated tube. As soon as it is heated in the pipe it is passed out immediately before cooling between the cold rollers E E E E, which are made male and female to receive the same, and compress and form it into exactly the size strips desired. One set of rollers can be used or more than one. In practice several sets are used and the strip passed through them continuously. The process of heating and rolling can be repeated, if desired, to produce an extra quality of featherbone; but for all ordinary purposes once heating and rolling or calendering is all that is required.

We desire to state that in practice it is found that the sizing causes the thread to adhere to the fibers of the featherbone and also fills up the small interstices between the fiber of quills in the strip, and when the featherbone is properly and thoroughly cooled and dried it affords a composition which unites very firmly with the fibers of the featherbone and connects the thread very tight to it also. When the strip of featherbone is passed through the heating-tube, the heat is sufficient to soften the sizing and also the substance of the quills and makes them pliable and easy to bend, and also makes them so very soft that when they are bent in that condition they retain their shape. The substance of the quill regains its elasticity on cooling. When a strip of featherbone is heated in this way and then passed through between the cold rollers of the right dimension and size to compress all of the fibers, it crowds all very firmly into a blade and thoroughly incorporates all the featherbone together, so that it has the appearance of forming a continuous blade or cord of the same material. The reduction in temperature causes the material to chill and set in the form desired. The fact that it is wound and stitched does not appear, except on close inspection. The temperature to which the featherbone is submitted, it will be readily understood, is very much higher than the temperature of the human body, the temperature being very near the boiling-point, from the fact that the pipe D' is heated by live steam on the outside.

We accomplish by this method the result long sought for in the manufacture of featherbone and have so perfected a superior article in the first place that it has much the same appearance of the article which it is intended to supersede—whalebone—and at the same

time it possesses all of its own superior qualities—that is, it does not split. It can be sewed through in any direction with indifference with no fear of injuring the texture or quality of it.

We desire to state that the steps of our process can be considerably varied without departing from our invention. It is not absolutely necessary to pass the strip of featherbone down into the trough of sizing. The sizing can be applied in other ways so long as the strip of featherbone is saturated. It would not be absolutely necessary to have a special drying-room for the featherbone, and if it is heated in any other way to the required temperature and rolled between cold rollers the same result is attained, though the exact apparatus we have shown is found to be the most effective.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A process in manufacturing corset-stiffeners consisting in bundling together the fibers of quills to form cords or blades; sizing said cords or blades; drying the same; heating the dried sized quills until they are thoroughly softened and applying cold pressure to the same, substantially as set forth.

2. A process, in manufacturing corset-stiffeners, consisting in bundling the fibers of quills into suitable blades sizing the same; heating the blades until the fibers of the quills become softened; and applying cold pressure to the same to form the blades, as specified.

3. As an improved article of manufacture, an elastic cord or blade comprising the fiber or splints of quills of feathers, wrapping-thread and a sizing, all compacted together and molded to form the fiber or splints, and the sizing being incorporated into a continuous mass, and the thread embedded in the mass as and for the purpose set forth.

4. As an improved article of manufacture, an elastic cord or blade, comprising the fiber or splints of quills of feathers incorporated together, and a sizing, all compacted together and molded to form the fiber or splints into a continuous mass, as and for the purpose set forth.

In witness whereof we have hereunto set our hands and seals in the presence of two witnesses.

EDWARD K. WARREN. [L. S.]
JONAS H. HOLDEN. [L. S.]

Witnesses:

J. H. AMES,
WM. C. HALL.