

(No Model.)

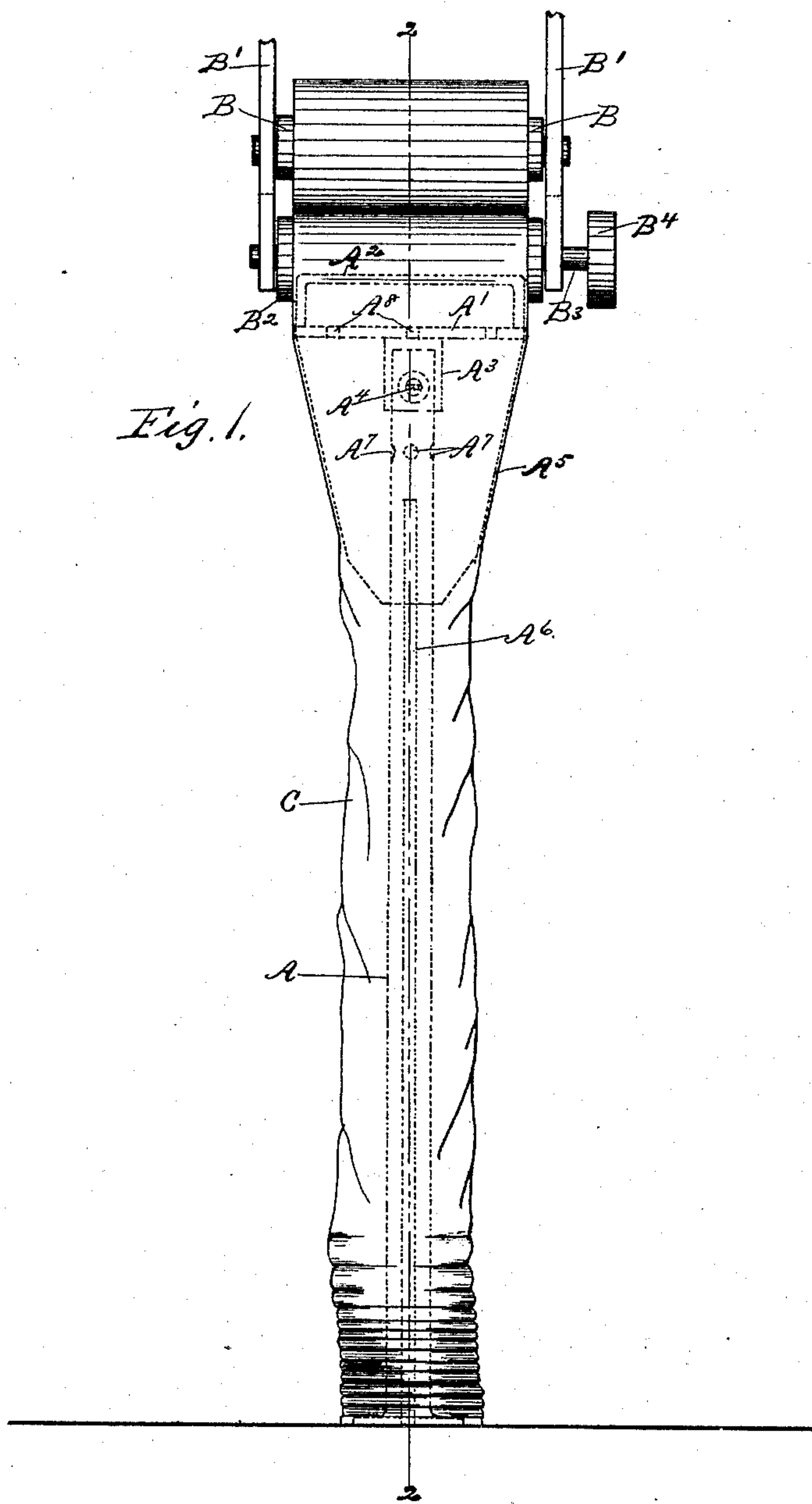
2 Sheets—Sheet 1.

W. A. HARDER.

ART OF TREATING TUBULAR KNITTED FABRICS.

No. 448,817.

Patented Mar. 24, 1891.



witnesses:

Frank C. Curtis
John T. Booth

Inventor:

William A. Harder,
by Geo. A. Mowbray
Atty.

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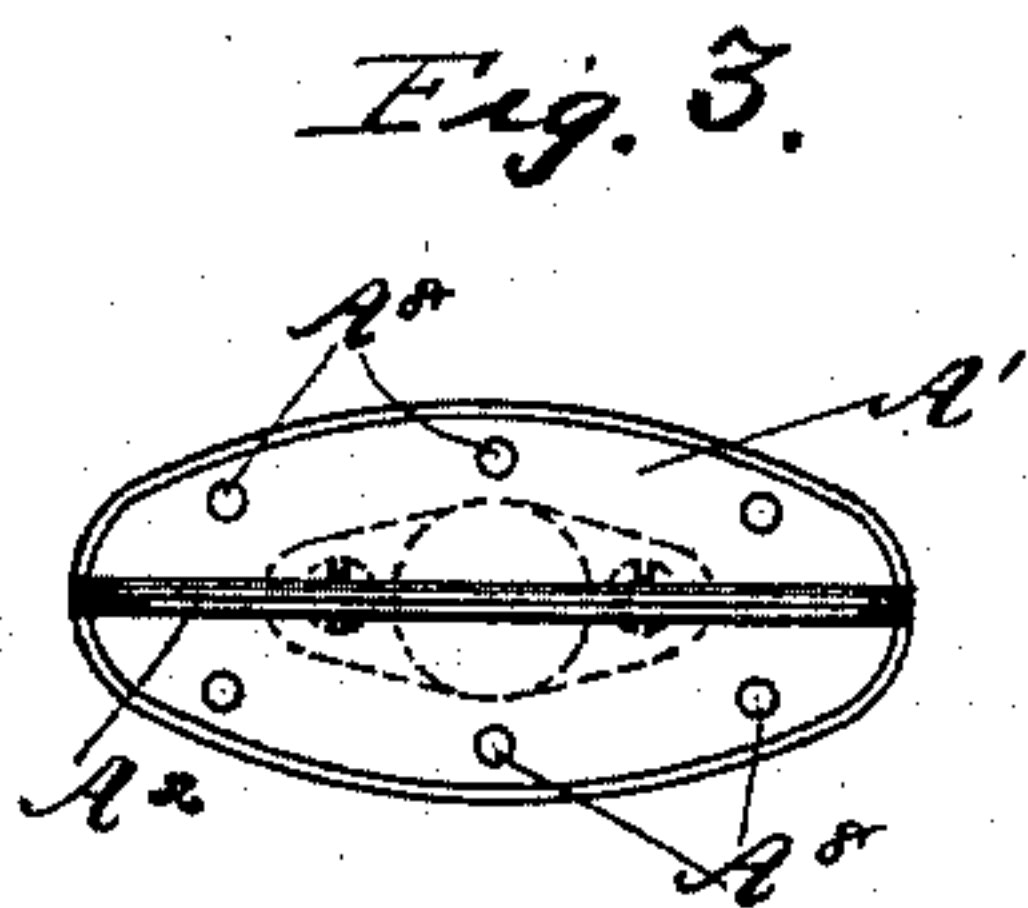
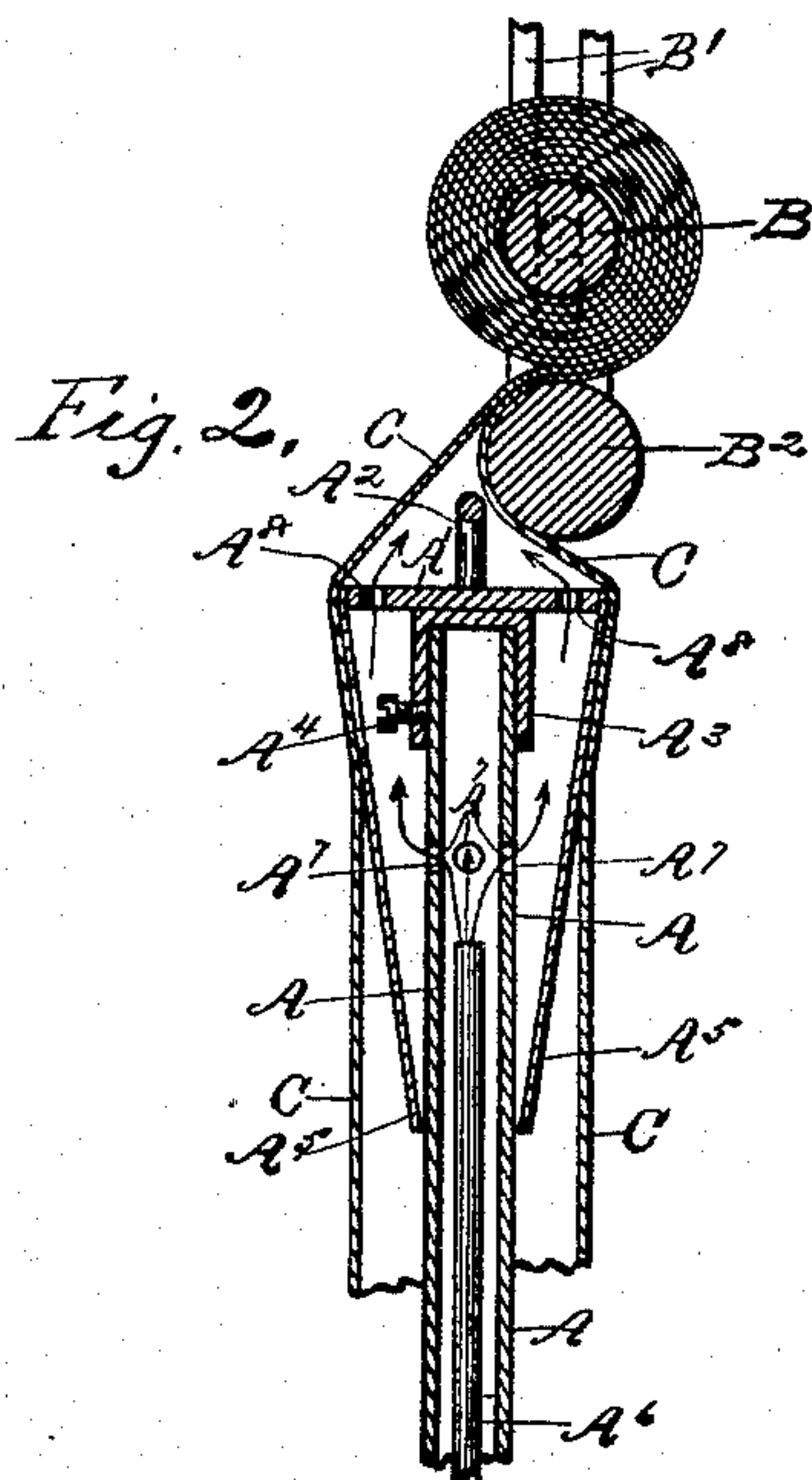
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UNITED STATES PATENT OFFICE.

WILLIAM A. HARDER, OF LANSINGBURG, ASSIGNOR OF ONE-HALF TO
CHARLES A. BROWN, OF TROY, NEW YORK.

ART OF TREATING TUBULAR KNITTED FABRICS.

SPECIFICATION forming part of Letters Patent No. 448,817, dated March 24, 1891.

Application filed June 20, 1890. Serial No. 356,110. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. HARDER, a citizen of the United States, residing at Lansingburg, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in the Art of Treating Tubular Knitted Fabrics, of which the following is a specification.

My invention consists in the novel art or method of treating tubular knitted fabrics as hereinafter described, and subsequently claimed.

Reference may be had to the accompanying drawings, and the letters of reference marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the several figures therein.

A common method of washing tubular knitted fabric is to repeatedly pass the flattened tube lengthwise in a wet condition between impinging rollers. The washing process serves to elongate the fabric-loops lengthwise of the tubes, which increases the length and diminishes the width of the flattened tube, so that when blanks are cut from such a tube and made into garments or parts of garments the fabric-loops in such garments will approximately assume their natural knitted position when the fabric is again wet and dried, as in laundering such garments. The tubular extremities, including the body and sleeves of the shirts and the legs of the drawers, will therefore when laundered shrink lengthwise and become too short, at the same time stretching widthwise of the flattened tube and becoming too large in diameter for the body, arms, and legs. If allowance is made for such changes when the garments are manufactured, they are ungainly and less salable, and it is more difficult to secure the proper shape. I have ascertained that the tubular fabric can be restored to its normal knitted shape after the washing and drying by stretching the tube widthwise and at the same time dampening the fabric, winding it upon a drum in its stretched damp condition, and leaving it in the roll until dry.

The operation will be described in connection with the drawings, in which—

Figure 1 is a front elevation of the mechanism

employed in my improved method of treatment, showing a knitted tube undergoing treatment. Fig. 2 is a central vertical section of the mechanism, taken on the broken line 2 2 in Fig. 1, with the lower portion broken away. Fig. 3 is a top plan view of the stretching mechanism with the take-up rolls removed.

In the application of my improved method of treating tubular knitted fabrics, after the same have been washed and dried after the usual method, I make use of an upright tubular post A, provided with a stretcher consisting of an elliptical plate or frame A' and a depending socket-sleeve A², adapted to receive and fit the top of the post, to which it is firmly secured by the set-screw A⁴. The elliptical plate is also provided with a case or shell A⁵, in the form of an inverted partially-flattened frustum of a cone, the lower end or apex of which is provided with an opening adapted to receive the tubular post. A steam-supply pipe A⁶ is inserted in the tubular post, entering through the bottom and passing up to a point near the top of the post, as shown. The post is provided with egress-openings A⁷, adapted to permit steam escaping from the steam-supply pipe to pass out into the surrounding case. The elliptical plate is also provided with apertures A⁸, through which the steam can pass from the interior of the case.

The practice of my method and operation of the mechanism which has been described are as follows: After the tubular web of fabric has been washed and thoroughly dried it is threaded upon the tubular post, previously divested of the spreader, until the upper end of the post projects through the web. The spreader is then fixed upon the upper end of the post and the upper end of the tubular web of fabric drawn over the spreader and connected with a take-up mechanism, which may be of any known form. I have shown a roller B, journaled in slotted hangers B', adapted for contact with the feed-roll B², fixed on shaft B³, supported by the same hangers and provided with the driving-pulley B⁴, fixed on such shaft.

C represents the tubular knitted web of fabric, which is shown partly threaded on the tubular post and partly wound upon the roll

B. As the web passes over the stretcher it is expanded and stretched widthwise and held in such expanded position by the guide A² until it reaches the feed-roll, which holds it until it is wound upon the take-up roll B. The guide A² consists of a horizontal rod extending lengthwise of the stretcher and supported at its ends in an elevated position about opposite the feed-roller by means of uprights
 10 secured to the ends of the stretcher, as shown by solid lines in Figs. 2 and 3 and indicated by dotted lines in Fig. 1. While the web is traveling from the stretcher to the rolls it is dampened by forcing live steam through the
 15 fabric, the steam passing from the supply-pipe through the stretcher in the direction of the arrow to and through the fabric.

The amount of moisture deposited upon the fabric can be varied by varying the velocity
 20 of the moving fabric, the temperature of the fabric, or the steam-pressure.

By maintaining a constant velocity, temperature, and steam-pressure I am able to uniformly dampen and stretch the whole web of
 25 fabric, and when the web has been thoroughly dried after washing, so as to be uniformly dry, the whole process is uniform.

The dampened and stretched fabric is allowed to remain in the roll until dry.

30 I am thus able to wash knitted tubular fab-

ric in any known manner and afterward restore the knitted loops of the fabric to approximately their normal relative positions, producing a clean web of knitted fabric from which blanks can be cut to form uniformly-
 35 fitting garments.

What I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described method of treating tubular knitted fabric, which consists in wash-
 40 ing and drying the fabric, stretching widthwise and uniformly dampening the dried fabric, winding the stretched and dampened fabric in a roll, and drying the wound fabric in the roll, substantially as described. 45

2. The herein-described method of treating tubular knitted fabric, which consists in wash-
 ing and drying the fabric, stretching the fabric widthwise, admitting live steam into the stretched portion of the fabric for the pur-
 50 pose of uniformly dampening the same, winding the stretched and dampened fabric in a roll, and drying the wound fabric in the roll, substantially as described.

In testimony whereof I have hereunto set
 55 my hand this 17th day of June, 1890.

WILLIAM A. HARDER.

Witnesses:

FRANK C. CURTIS,
 CHAS. L. ALDEN.