No. 878,995. PATENTED FEB. 11, 1908.

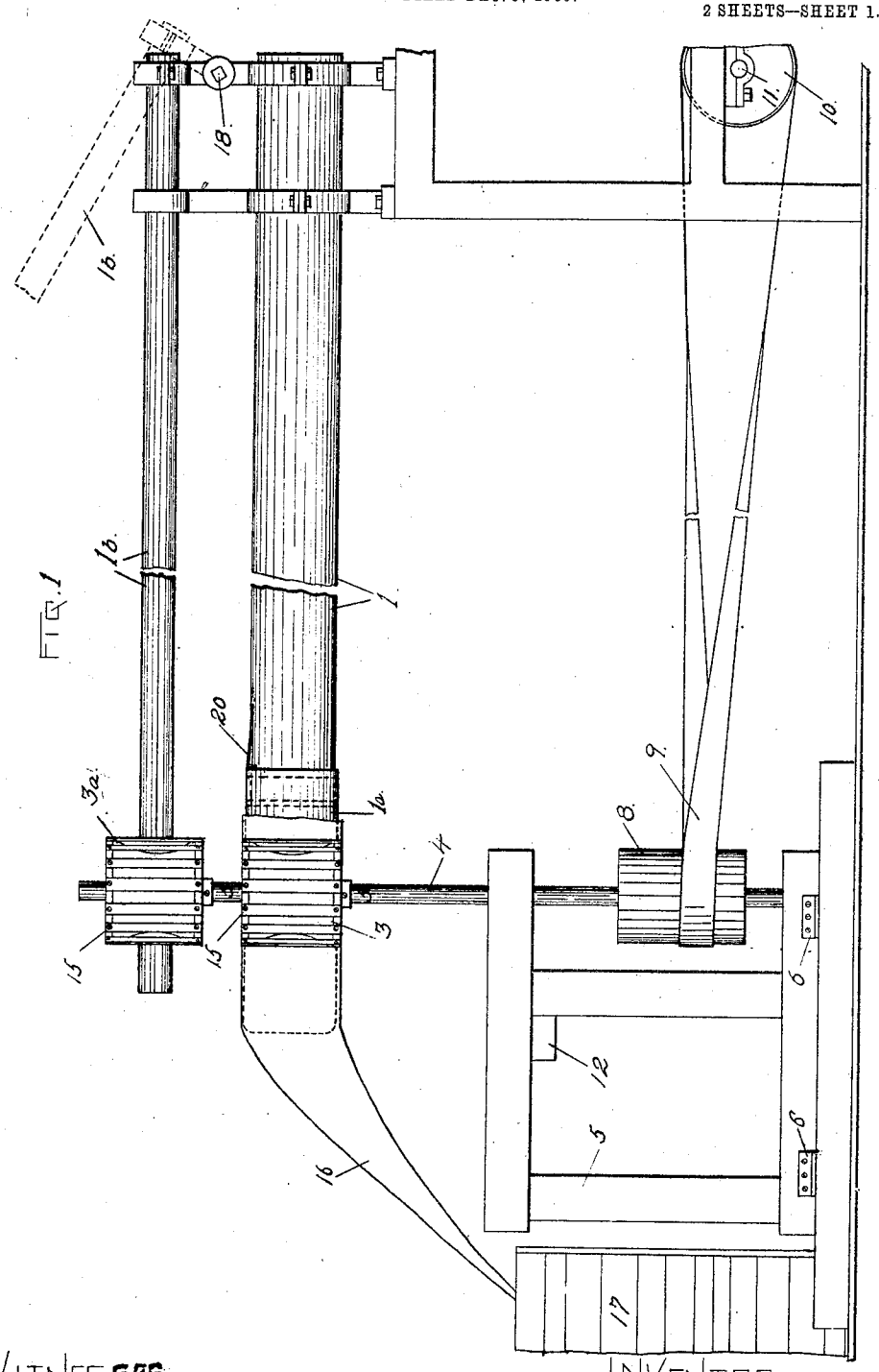
W. B. PALMER.

APPARATUS FOR INVERTING TUBULAR FABRICS.

APPLICATION FILED DEC. 5, 1905.

2 SHEETS—SHEET 1.

FIG. 1



WITNESSES

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2 SHEETS—SHEET 2.

FIG. 4.

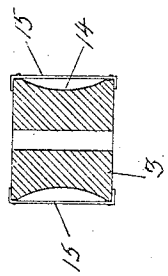


FIG. 3.

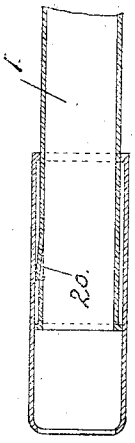


FIG. 5.

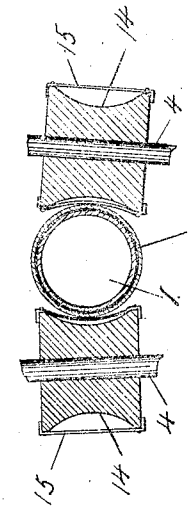
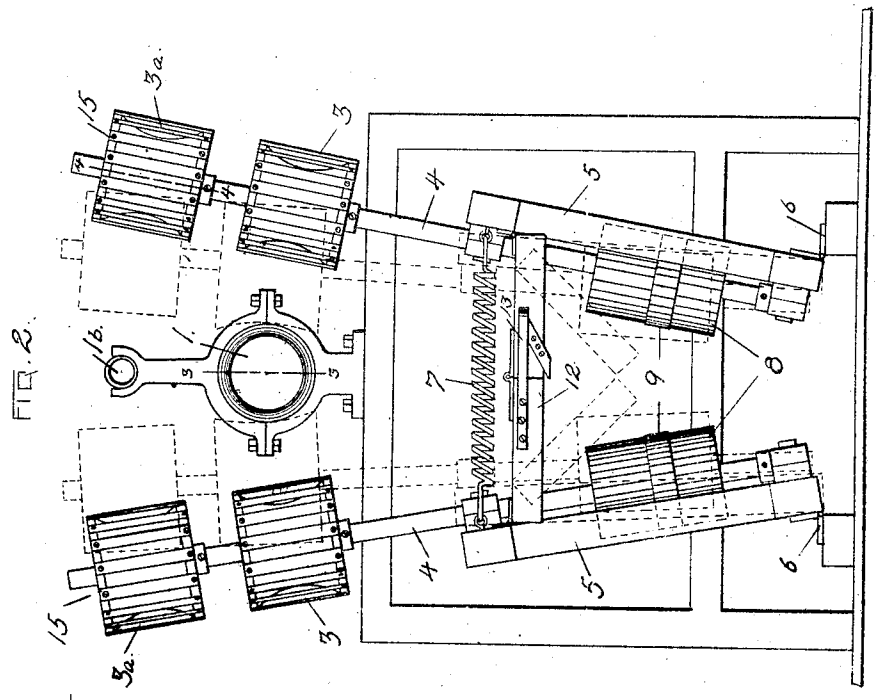


FIG. 2.



WITNESSES

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APPARATUS FOR INVERTING TUBULAR FABRICS.

No. 878,995. Specification of Letters Patent. Patented Feb. 11, 1908.

Application filed December 5, 1905. Serial No. 290,381.

To all whom it may concern:

Be it known that I, WILLIAM B. PALMER, a citizen of the United States, residing at Greenwich, county of Washington, and State of New York, have invented certain new and useful Improvements in Apparatus for Inverting Tubular Fabric, of which the following is a specification.

The invention relates to such improvements and consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

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

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

Figure 1 of the drawings is a view in side elevation of my improved apparatus for inverting tubular fabric. Fig. 2 is a front end elevation of the same. Fig. 3 is a vertical cross-section of the tubular support for the fabric taken on the broken line 3—3 in Fig. 2. Fig. 4 is a cross-section taken on the broken line 4—4 in Fig. 2 through the axis of one of the feed-rollers for drawing the fabric upon its tubular support. Fig. 5 is a cross-section taken on the broken line 5—5 in Fig. 1 on a plane passing through the axes of the coöperating feed-rollers and transversely of the interposed tubular support for the fabric.

In the manufacture of knit goods the fabric is commonly knitted in the form of a tube upon circular machines, in many cases with the rough or unfinished side of the fabric outermost. In such cases, and in other cases where the subsequent treatment of the fabric demands such a course, it is customary before cutting the garment from the web to invert or turn inside out the tubular web which is frequently many yards in length. The inversion of the tubular web is accomplished by drawing one end of the web out through the other end preparatory to which the web is slid upon a metal tube. After the whole web has been thus slid upon the metal tube one end of the web is inserted in the neighboring end of the tube and drawn therethrough and out from the other end.

My invention relates more particularly to an improved means for depositing the web of fabric upon the tube preparatory to inversion of the web.

The principal objects of the invention are to facilitate the depositing of the tube of fabric upon the supporting tube preparatory to inversion and to prevent injury to the fabric while thus being placed upon the supporting tube.

Other objects of the invention will appear in connection with the following description.

Referring to the drawings wherein the invention is shown in its preferred form, 1, represents a supporting tube adapted to receive the fabric preparatory to inversion of the web, which tube is made in telescoping sections, the purpose of which will be hereinafter set forth. The outer section or end, 1ª, of the supporting tube is interposed between a pair of feed-rolls, 3, fixed upon the respective shafts, 4, each rotatively mounted in bearings in a vibratory frame, 5, hinged at, 6, to the floor timbers. A coil-spring, 7, connects together the upper vibratory ends of said bearing frames tending to draw the same together so as to force the feed-rolls, 3, against opposite sides of the supporting tube, 1, as indicated by dotted lines in Fig. 2.

Power is transmitted to the shafts, 4, through pulleys, 8, fixed thereon respectively, and connected by belts, 9, respectively with the pulley or pulleys, 10, fixed upon a drive-shaft, 11, one of said belts being crossed, whereby rotative movements in opposite directions can be imparted to both rolls, 3, in a direction to engage and force inwardly along the supporting tube, 1, a web of fabric placed upon the latter.

To facilitate the application of the fabric to the supporting tube and its removal therefrom, I provide a brace, 12, in the form of a toggle, the outer ends of which are hinged to the respective bearing frames, 5, said toggle when fully opened serving to brace and hold said frames apart with the rolls, 3, withdrawn from the supporting tube, 1, in which position said toggle is adapted to be automatically locked by a spring-catch, 13, which may be of any known form adapted to be released by the hand of the operator when it is desired to close the toggle to permit the spring, 7, to draw the bearing frames together.

The feed-rolls, 3, are preferably formed with a concaved periphery, 14, across the hollow or groove formed by which are secured strips, 15, of leather or other flexible material adapted to bear upon the engaged fabric with sufficient friction to properly feed the same but without injury thereto

In the operation of the apparatus the feed-rolls, 3, are held removed from the supporting tube, 1, while the end of the tubular web or fabric, 16, drawn from a basket or box, 17, is slipped over the end of the outer section of the supporting tube, after which the toggle, 12, is operated to release the bearing frames and permit the feed-rolls, 3, to be forced into engagement with the fabric on opposite sides of the supporting tube. As the feed-rolls are rotated, successive portions of the tubular web of fabric are pushed by the feed-rolls inwardly along the supporting tube until the whole web has been thus applied thereto, after which the feed-rolls are again withdrawn from the supporting tube permitting the unobstructed removal of the fabric from the supporting tube during the process of inversion of the web as above described.

To increase the capacity of the apparatus I have shown the same provided with a second supporting tube, 1^b, adapted to be supported above the tube, 1, parallel therewith with which are adapted to coöperate a pair of feed-rolls, 3^a, when the telescoping end, 1^a, of the tube, 1, has been withdrawn from between the feed-rolls 3. The feed-rolls, 3^a, are fixed upon the same shafts, 4, as the respective feed-rolls 3.

The object of making the tube, 1, in telescoping sections is to permit the end section, 1^a, to be slid inwardly along the body section of the tube to withdraw it from between the feed-rolls, 3, to permit said rolls to be brought into closer proximity to each other when it is desired to have the feed-rolls, 3^a, engage the upper tube 1^b. By employing a plurality of such supporting tubes with feed mechanism coöperative with each separately I am able to carry on the operation of applying one web of fabric to one of said tubes, while another web of fabric previously applied to the other of said tubes is being inverted.

The upper roll, 1^b, is pivotally mounted at, 18, upon a suitable support whereby it is adapted to be swung upwardly out of the way when not in use.

An automatic spring-catch, 20, serves to prevent inward telescopic movements of the end section, 1^a, of the tube, 1, during the operation of the feed-rolls, 3, in engagement therewith.

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

1. In an apparatus of the class described, the combination with the fabric supporting tube; of a pair of feed rolls adapted to engage the opposite sides of said tube; and yielding means for forcing said feed-rolls against said tube.

2. In an apparatus of the class described, the combination with a fabric-supporting tube; of a pair of feed-rolls disposed on opposite sides of said tube; yielding means for forcing said feed-rolls toward each other; and locking mechanism for maintaining said rolls withdrawn from said tube at certain times.

3. In an apparatus of the class described, the combination with a fabric-supporting tube; of a pair of bearing frames pivotally mounted at one side of said tube; yielding mechanism for drawing said frames toward each other; a pair of shafts rotatively mounted in bearings in the respective bearing frames; feed-rolls fixed upon said shafts respectively adapted to engage opposite sides of said tube; and means for transmitting power to said shafts.

4. In an apparatus of the class described, the combination with a pair of fabric supporting tubes, one of said tubes formed of a plurality of telescopic sections, of a set of feed rolls coöperating with each of said tubes, and yielding supporting means for forcing said feed rolls against the tubes.

5. In a machine of the character described, the combination with a fabric-supporting tube, of a pair of bearing frames, one mounted at each side of the tube, a resilient connection between the two frames whereby the frames are drawn towards each other, and a rotatable feed roll carried by each of said frames, said feed rolls adapted to engage opposite sides of the tube.

6. In a machine of the character described, the combination with a fabric-supporting tube, of a pair of bearing frames, one mounted at each side of the tube, a resilient connection between the two frames whereby the frames are drawn towards each other, a rotatable feed roll carried by each of said frames, said feed rolls adapted to engage opposite sides of the tube, and means for maintaining said rolls out of engagement with said tube.

7. An apparatus of the class described comprising a fabric-supporting tube, a pair of swinging frames, means for normally drawing said frames towards each other, an upright shaft carried by each of the frames, a feed roll connected with each of the shafts, said feed rolls positioned one at each side of the tube, and means for operating the shafts.

8. An apparatus of the class described comprising a fabric-supporting tube, a pair of swinging frames, means for normally drawing said frames towards each other, an upright shaft carried by each of the frames, a feed roll connected with each of the shafts, said feed rolls positioned one at each side of the tube, means for operating the shafts, and means for maintaining said rolls out of engagement with said tube.

9. A machine of the character described comprising a plurality of fabric-supporting tubes, a pair of vertically-extending rota-

table shafts, a plurality of feed rolls carried by each of said shafts and adapted to engage the tubes, and means for normally maintaining said rolls in engagement with the tubes.

10. A machine of the character described comprising a plurality of fabric-supporting tubes, a pair of vertically-extending rotatable shafts, a plurality of feed rolls carried by each of said shafts and adapted to engage the tubes, means for normally maintaining said rolls in engagement with the tubes, and means for temporarily maintaining said rolls out of engagement with the tubes.

11. An apparatus of the class described, comprising the combination with a plurality of fabric-supporting tubes, one arranged above the other, a pair of hinged frames, an upright shaft journaled in each of said frames and projecting above the top thereof, a plurality of feed rolls carried by each of the shafts and adapted to engage with said tubes, yielding means for normally maintaining said feed rolls in engagement with the tubes, and means for operating the shafts.

12. An apparatus of the class described comprising the combination with a plurality of fabric-supporting tubes, one arranged above the other, a pair of hinged frames, an upright shaft journaled in each of said frames and projecting above the top thereof, a plurality of feed rolls carried by each of the shafts and adapted to engage with said tubes, yielding means for normally maintaining said feed rolls in engagement with the tubes, means for operating the shafts, and means for temporarily maintaining said rolls out of engagement with the tubes.

In testimony whereof, I have hereunto set my hand this 27th day of November, 1905.

WILLIAM B. PALMER.

Witnesses:
HERBERT VAN KIRK,
JESSE V. PALMER.