(No Model.)

A. WHITAKER.

CAP SPINNING FRAME.

No. 539,561. Patented May 21, 1895.

Fig. 1.

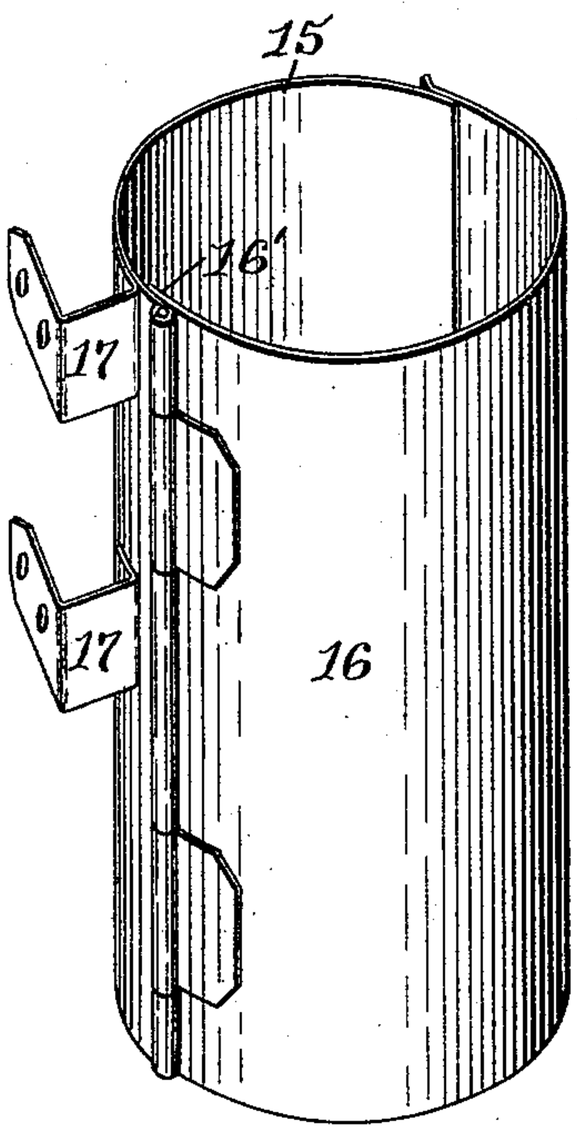


Fig. 2.

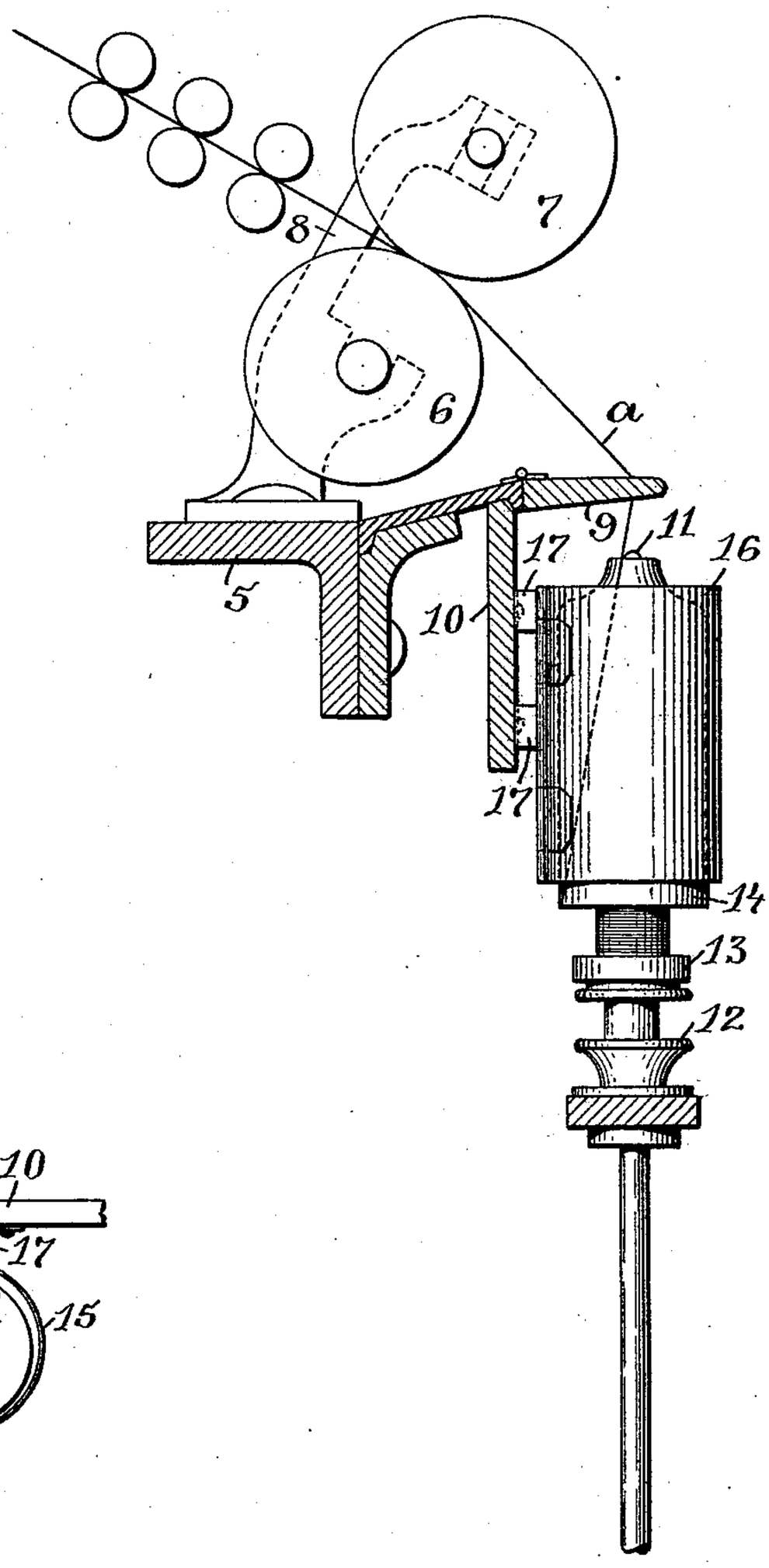
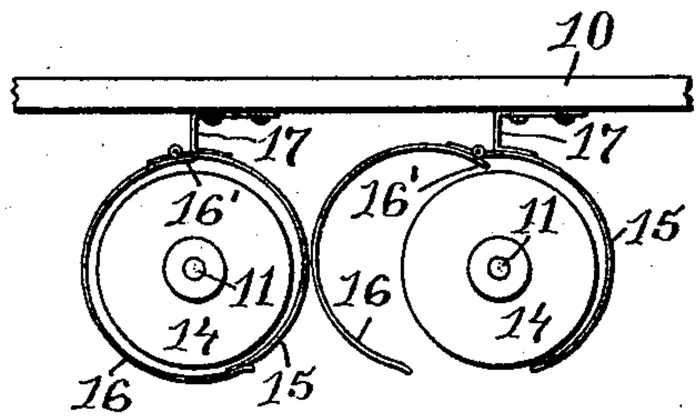


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ABRAM WHITAKER, OF PROVIDENCE, RHODE ISLAND.

CAP-SPINNING FRAME.

SPECIFICATION forming part of Letters Patent No. 539,561, dated May 21, 1895.

Application filed December 6, 1894. Serial No. 531,007. (No model.)

To all whom it may concern:

Be it known that I, ABRAM WHITAKER, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Cap-Spinning Frames; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to improvements in that class of machines known as cap-spinning frames, in which the yarn passes from the rolls to the spool, or bobbin, over a cap mounted on the upper end of the spindle.

The object of the invention is to improve the finish on the yarn.

Another object of the invention is to so confine the yarn in its passage over the cap that the ballooning of the yarn is prevented by a finishing surface, whereby the speed of the bobbin or spool may be increased.

Another object is to so construct a device for preventing the ballooning of the yarn that the cap and bobbin, or spool, is readily accessible while a finishing surface is provided for the yarn.

The invention consists in surrounding the cap with a yarn-confining device supported independently of the cap and extending for practically the length of the cap.

The invention also consists in the peculiar construction of the yarn-confining device and in its combination with the cap and with supporting means.

Figure 1 represents a view of one form of the yarn-confining device. Fig. 2 represents a vertical sectional view of portions of a cap-spinning machine, showing the yarn-confining device secured in place. Fig. 3 represents a plan view of portions of the same, showing two caps with the yarn-confining devices shown in relation therewith, the spaces between the caps and the confiners being exaggerated.

Similar numbers and letters of reference designate corresponding parts throughout.

In carrying my invention into practice I surround the cap at the upper end of the spindle with a yarn-confining device which is in the nature of a separator in so far that it prevents the ballooning of the yarn passing through the confining device to spool or bobbin. The confining device, in practice, has, however, been found to possess other functions than that of preventing the undue ballooning of the yarn, serving as a finishing surface against which the yarn is brought in contact by the centrifugal motion of the spool or bobbin, while at the same time the drawing of the yarn, by its being taken up on the spool, gives a downward movement on the inner surface of the confining device. This results in a lengthwise rolling of the yarn on the inner surface of the confiner and consolidates the fibers of the yarn, producing a smoother finish than in the ordinary manner. The contact of the yarn thus described also results in a slight frictional resistance to its passage to the spool whereby the yarn is wound tightly thereon and it is found that more yarn can thus be wound on the spools. In practice it is also found that loose fibers, which in the ordinary manner of cap-spinning became separated from the yarn as it passed from the rolls to the spools or bobbins and floated about the room to the detriment of the machinery, herein are confined until they are consolidated with the main portion of the yarn.

In the drawings 5 represents a portion of the frame of a cap-spinning machine. 6 and 7 are rolls which are journaled in brackets, as 8, secured to the frame of the machine. 9 is the thread-board through eyes in which the yarn passes after leaving the rolls, and 10 is the back-board.

The spindles 11—11 are secured in the usual manner below the outer portion of the thread-board. On these spindles are mounted sleeves having whirls, as 12, adapted to be driven by bands, in any well-known manner, to impart rotation to the whirls and their sleeves and the spools or bobbins, as 13, carried by the whirl-sleeves. At the upper end of the spindles are secured the caps 14—14 having sufficient internal diameter to allow of the spools, or bobbins, being moved upward into the caps during the building of the yarn on the spools, the lower circular edges of the caps serving as guides for the yarn passing to the spools.

To the back-board 10 are secured cylinders which embrace the caps 14—14, being of an internal diameter but slightly larger than the

external diameter of the caps. The distance between the cylinders and the caps may vary somewhat depending on the tension and finish desired to be on the yarn, the cylinder extending for nearly the entire length of the caps so as to present a long contact-surface to the yarn.

The preferred form of the confining device consists of a cylinder formed in two concave parts 15 and 16 hinged together at the back, the part 15 being secured by the arms 17—17 to the back-board. The part 16 has a lip 16′ extending beyond the hinge and forming a stop, so that when the parts are closed together this lip will prevent the closing of the parts too closely on the cap. In the closed position the free edge of the part 16 overlaps the corresponding edge of the part 15 in a direction opposite to that in which the yarn moves around the cap 14 during the winding.

The yarn, or thread, *a*, passes through the rolls 6 and 7, thence down through the guide-eye in the thread-board 9, then between the cylinder and the cap 14 to the spool 13. When rotation is imparted to the spool that portion of the thread passing under the lower edge of the cap will be carried rapidly around the same somewhat similar to the movement of the thread passing through the traveler in ring-spinning. This revolution of the thread around the cap will cause a centrifugal ballooning of the yarn between the cylinder and the cap which will cause the contact of the same with the cylinder's inner surface, while the rotation of the spool will cause the lower portion of the yarn in following the same to be inclined from the perpendicular, assuming a spiral direction in its contact with the cylinder and, no doubt, from time to time with the surface of the cap, this movement of the yarn giving it rolling or rotative contact which will tend to consolidate the fibers and exert a frictional tension on the yarn.

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

In a machine of the nature described, the combination with the spindle 11 supported in the machine, and the cap 14 mounted on the upper end of the spindle, of a cylindrical yarn-confiner consisting of the concave part 15 provided with arms by means of which it is secured to the back-board, and the part 16 hinged to the part 15 and having the stop-lip 16′.

In witness whereof I have hereunto set my hand.

ABRAM WHITAKER.

Witnesses:
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