

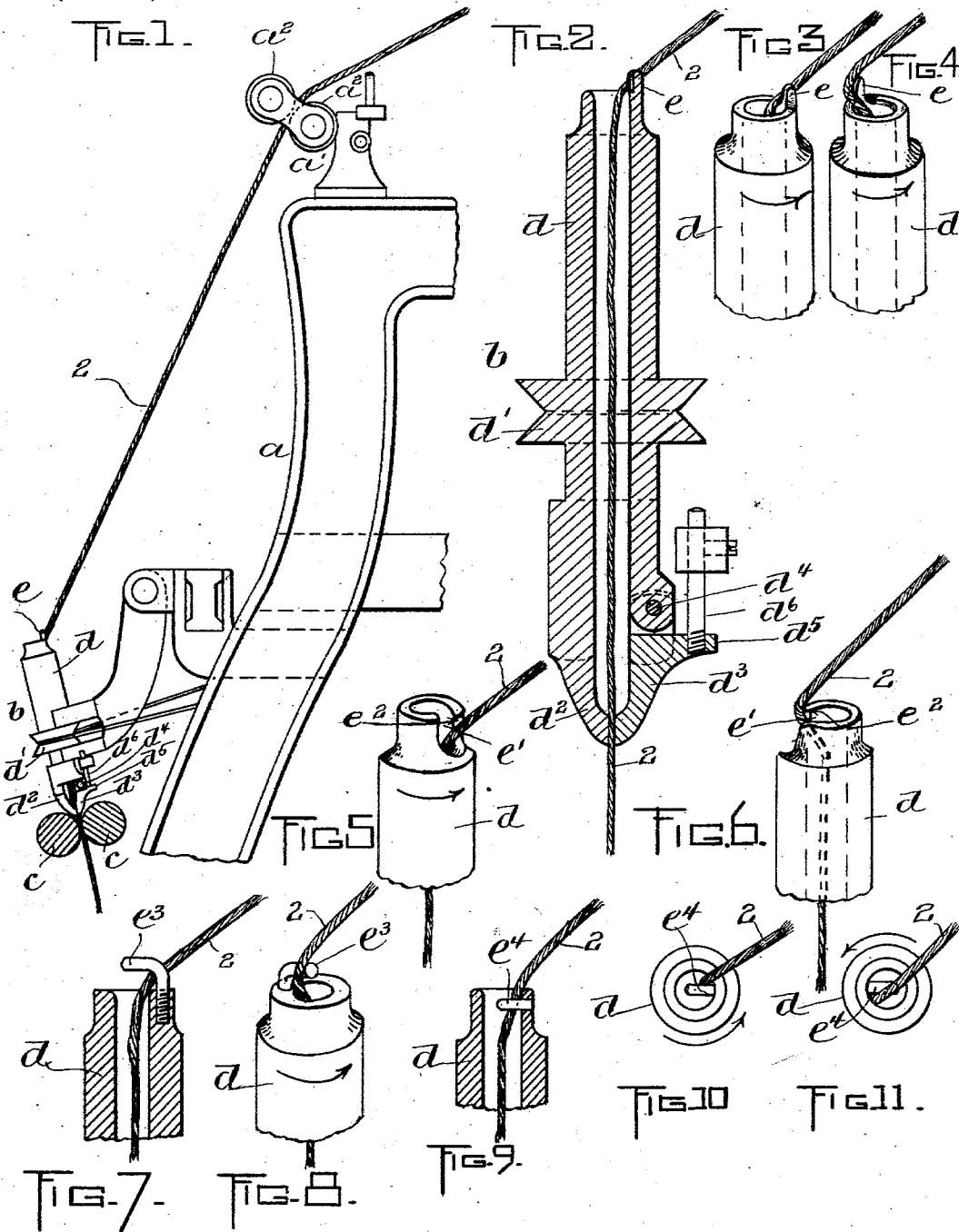
No. 633,964.

Patented Sept. 26, 1899.

W. McMICHAEL.
SPINNING MACHINE.

(Application filed Mar. 19, 1898.)

(No Model.)



WITNESSES

A. D. Harrison.

P. W. Pezzetta.

INVENTOR

William McMichael

By Wright, Brown & Lundy
Att'y.

UNITED STATES PATENT OFFICE.

WILLIAM McMICHAEL, OF WOONSOCKET, RHODE ISLAND.

SPINNING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 633,964, dated September 26, 1899.

Application filed March 19, 1898. Serial No. 674,435. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM McMICHAEL, of Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Spinning-Machines, of which the following is a specification.

This invention has relation to spinning-machines, and has for its object to provide certain improvements therein by means of which the yarn or wool may be drawn out or reduced uniformly and evenly to a greater extent and with greater efficiency than heretofore.

To this end the invention consists of a spinning-machine provided with certain improvements illustrated upon the drawings and which I shall now proceed to describe in detail and then point out in the claims hereunto annexed.

Reference is to be had to the accompanying drawings, and to the letters and figures marked thereon, forming a part of this specification, the same letters and figures designating the same parts or features, as the case may be, wherever they occur.

Of the drawings, Figure 1 represents a portion of a spinning-machine equipped with my improvements. Fig. 2 represents in longitudinal vertical section a twister-head constructed in accordance with the invention. Figs. 3 and 4 illustrate the operation of the drawing-out device, being, respectively, perspective views of the upper end of the spindle. Figs. 5 and 6 represent another embodiment of my invention. Figs. 7, 8, 9, 10, and 11 illustrate other embodiments of which the invention is susceptible.

Referring to the drawings, *a* indicates the standard or frame of the machine, upon the upper portion of which are mounted supports *a'* for the top rolls *a² a²*, the yarn being guided thereto by suitable means.

It will be understood that although I have shown only one set of rolls *a²* they are arranged in series along the top of the frame, so that a large number of threads are spun at the same time. These top rolls *a² a²* are driven intermittingly by any of the means (not shown) which are ordinarily employed for this purpose, and the yarn passes there-

from to the twister-head, (indicated as a whole by *b*,) mounted on the frame below the top rolls. Below the twister-head *b* are the lower drawing-rolls *c c*, which are driven continuously by any ordinary devices. (Not shown.)

The twister-head is supported in bearings mounted upon the frame *a* and is arranged at a slight inclination relatively to the plane of the axes of the top rolls, so that the yarn 2 is at an angle to the axis of the head a little greater than a right angle. The twister-head consists of a tubular spindle *d*, formed with a whirl *d'*, by means of which it is driven, and at its lower end is provided with two gripping-jaws *d² d³*, one of which is movable. The movable jaw *d³* is pivoted to the twister-head at *d⁴* and is provided with an offset or outwardly-projecting portion *d⁵*, from which a pin *d⁶* extends upwardly.

The weight is adjustably secured to the pin *d⁶*, so that when the spindle or head is rotated the weight is thrown out by centrifugal action and the yarn or thread is gripped between the two jaws, the pressure of the movable jaw against the stationary jaw being varied in accordance with the speed at which the head is rotated.

The upper end of the spindle is elongated and is provided with a projection or pin *e*, arranged longitudinally of the spindle and to one side of the central longitudinal line, so as to permit the yarn or thread to pass out through the central aperture in the spindle.

In operation the grippers twist the thread from the point where they grip the yarn to the top drawing-rolls, and as the spindle rotates the yarn is caused to ride up on the pin *e*, as shown in Figs. 3 and 4, so as to draw it out. The twisted thread slides loosely down through the enlarged central aperture in the spindle. Hence the projection *e* constitutes a drawing-out device which effectually draws out and attenuates the yarn or thread at all points between the two sets of rolls and at the same time permits the twisted thread to pass through the spindle. With this construction the thread is twisted evenly and uniformly, as previously stated, from the jaws to the top drawing-rolls and not from the top of the spindle to the drawing-rolls, leaving the portion between the top of the spindle and the

grippers untwisted. By this means the thread is prevented from being broken and at the same time is drawn out to the desired extent.

It is evident that the twister-head may be modified in various ways without departing from the spirit and scope of the invention. For instance, in Figs. 5 and 6 the projection is shown as substantially annular and extends almost entirely around the end of the spindle, forming, as it were, a notch e' , the projection itself being indicated at e^2 . When the spindle formed in this way is rotated, the thread is held by the end wall of the projection e^2 until the spindle has nearly completed a half-revolution, when it is released, allowing the thread to slacken and pass in its twisted state through the spindle.

In Figs. 7 and 8 the projection is shown in the form of a bent pin e^3 , having a portion extending tangentially to a circle drawn about the central longitudinal line of the spindle. The operation of this device is substantially similar to those hereinbefore described in that the rapid rotation of the spindle causes the projection to draw thread by intermittently engaging and releasing it.

In Figs. 9, 10, and 11 I have illustrated another embodiment of the invention, in which the pin or projection is arranged radially of the spindle and projects into the aperture through the same. In this instance the pin is indicated at e^4 , and its end lies substantially in the central longitudinal line of the spindle.

In all of these devices, as previously stated, the projection or drawing-out device which rotates in unison with the gripper engages the thread or yarn rapidly and draws it out, the central longitudinal aperture through the spindle being large enough to permit of the passage of the twisted thread therethrough, whereby the thread is twisted at all points between the top rolls and the lower drawing-rolls. This is an important advantage which is peculiar to my invention, for in all previous devices in which the thread-drawing and the thread-twisting parts were rotated in uni-

son that part of the thread between them remained untwisted and was liable to be broken under the strain.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. A spinning-machine comprising top rolls, lower drawing-rolls, and a twister-head provided at one end with a gripping device for the thread and at the other end with a drawing-out device which rotates in unison with the gripping device arranged to intermittently engage and release the thread, and an enlarged open-ended through-aperture, whereby the thread is twisted at all points between the said rolls.

2. A twister-head consisting of a spindle having a thread-engaging device at its lower end, an aperture extending through the central longitudinal lines thereof, and sufficiently large to permit of the passage of twisted thread, and means on the other end of the spindle rotating in unison with the thread-engaging devices for intermittently engaging and releasing the thread, whereby said thread is twisted at all points between the top rolls and the lower rolls.

3. A twister-head consisting of a spindle having an enlarged central aperture, means on the lower end of the spindle for engaging and twisting the thread, and a projection on the upper end of the spindle for intermittently engaging and releasing and thereby intermittently engaging and disengaging the thread, whereby said thread is twisted at all points between the top rolls and the lower drawing-rolls.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM McMICHAEL.

Witnesses:

A. D. HARRISON,
P. W. PEZZETTI.