No. 803,664. PATENTED NOV. 7, 1905.

M. CAMPBELL.

SPINNING MACHINE.

APPLICATION FILED JAN. 12, 1901.

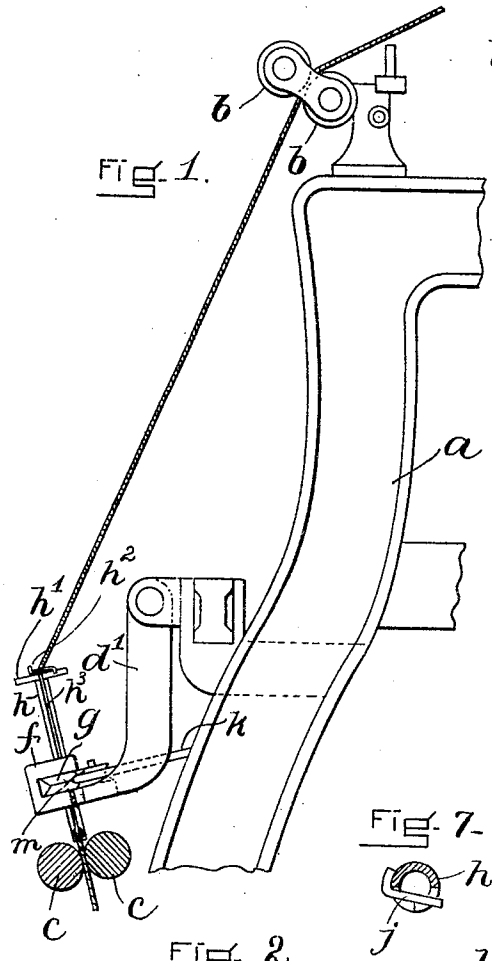

Fig. 1.

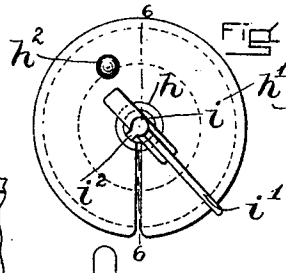

Fig. 4.

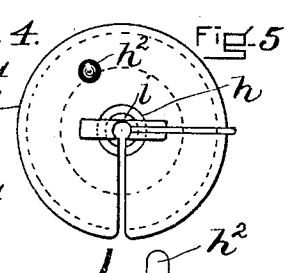

Fig. 5.

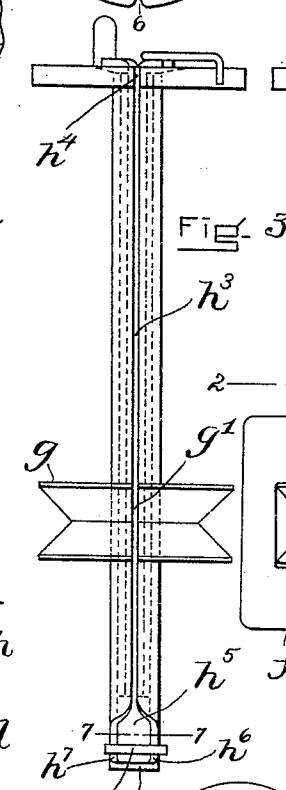

Fig. 3.

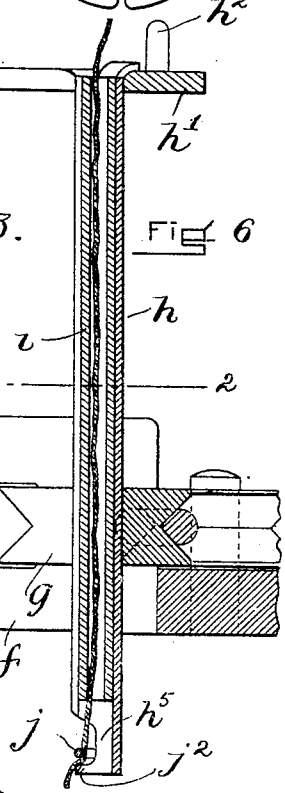

Fig. 6.

Fig. 7.

Fig. 2.

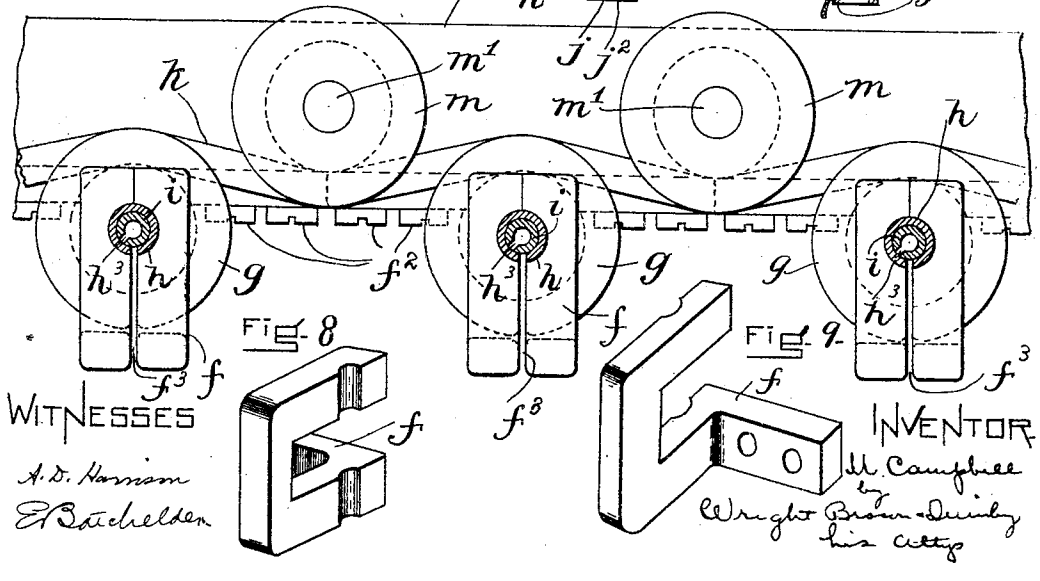

Fig. 8.

Fig. 9.

WITNESSES

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UNITED STATES PATENT OFFICE.

MALCOLM CAMPBELL, OF BOSTON, MASSACHUSETTS.

SPINNING-MACHINE.

No. 803,664. Specification of Letters Patent. Patented Nov. 7, 1905.

Application filed January 12, 1901. Serial No. 43,008.

To all whom it may concern:

Be it known that I, MALCOLM CAMPBELL, of Boston, in the county of Suffolk and State of Massachusetts, 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 whereby the yarn may be threaded into the twister-head with greater facility than heretofore.

In carrying out the invention I provide means whereby the yarn may be passed laterally into the twister-head, thereby obviating the necessity of drawing the thread longitudinally through the twister-head by means of a hook or similar tool. To this end the twister-head is slotted from end to end, and means are provided for preventing the yarn from passing outwardly through said slot, said means consisting in the illustrated form of the invention of a slotted rotatable bushing inside the twister-head and adapted to have its slot register with that in the head. The whirl may be slotted and also the bearings in which the twister-head is journaled. With this construction a yarn extending from the top rolls to the lower drawing-roll may be threaded unbroken into the twister-head.

Referring to the accompanying drawings, Figure 1 illustrates a portion of a spinning-frame equipped with my invention. Fig. 2 represents in plan view the rail for the twister-heads and shows the devices for driving said heads. Fig. 3 represents a side elevation of my improved twister-head. Figs. 4 and 5 show plan views of the same with the slot closed and open, respectively. Fig. 6 represents a longitudinal section on the line 6 6 of Fig. 4. Fig. 7 represents a transverse section on the line 7 7 of Fig. 3. Figs. 8 and 9 illustrate in perspective view the two-part bearings for the twister-head.

Referring to the drawings, a indicates a portion of the framework, such as is usually employed in spinning-frames.

The top rolls are indicated at b, and they, together with the other rolls which are located in the top of the frame, are rotated intermittently by any suitable means.

The lower drawing-rolls are indicated at c c, and they rotate at either a constant or a differential speed.

d indicates a rail supported by the arms d', attached to the framework. The twister-heads are journaled in bearings secured to the rail d, said bearings being formed in two parts f f, as shown in Figs. 7 and 8, and they are screwed to the edge of a rail d by screws f^2. The bearings are yoke-shaped to receive the whirls g. The twister-heads to which the whirls are rigidly secured consist of tubes h, each having at its upper end a flange or collar h', with the projection or pin h^2 mounted eccentrically with relation to the axis of the twister-head. The tube is arranged at an angle to the line between the drawing-rolls e e and c c considerably greater than a right angle, so that as the head rotates the pin h^2 intermittently engages the yarn and gives it a jerk to draw it out. The twister-head is so formed that the yarn may be threaded into it laterally, and to this end the tube h is provided with a slot h^3, extending substantially from end to end, the whirl and the flange or collar h' having registering slots g' h^4, respectively. The two parts f f of each bearing are cut away to provide a slot f^3 between them, and consequently when the whirl g is rotated to bring its slot coincident with that at f^3 the yarn may be moved laterally into the twister-head, as will be readily understood. In order to prevent the disengagement of the yarn after it has been threaded into the twister-head, I employ a bushing i, which extends practically from end to end of the tube h and is provided at its upper end with a finger i', by means of which it may be rotated to bring its slot i^2 into and out of alinement with the slot h^3, the tube h and the bushing i being large enough to provide a relatively large aperture through the twister-head to provide for the yarn readily twisting between the gripper at the lower end and the drawing-rolls b b. The gripper, by which the yarn is yieldingly held as the head rotates, is constructed as follows: The lower end of the tube h is cut away, as at h^5, and across the opening thus formed, the walls of which constitute the gripper, is placed a cross-bar or finger j, secured at one end to the side of the tube h and having its opposite end free, as shown in Fig. 7. The lower end of the opening h^5 is bounded by a bridge j^2, which is preferably unslotted, so that the yarn may be slipped under the bar j and engaged with the walls h^6 h^7 at their juncture with the bridge j^2. Now it will be seen that when the yarn is slipped under the finger j, as shown in Fig. 6, the twister-head may be rotated in either direction without its becoming disengaged from the twister-head. Preferably the space between the

bridge j^2 and the bar j is large enough to receive the yarn loosely, so that the latter is given an S-shaped bend, as shown in Fig. 6.

From this description it will be seen that in order to thread the twister-head the slot g' of the whirl is brought to register with the slot f^3 of the bearings, and the bushing i is rotated by the finger i' until its slot i^2 registers with the slot h^3 of the tube h. The yarn is then slipped laterally through the slots until it reaches the interior of the bushing i, after which it is slipped under the bar j. Then by means of the finger i' the bushing i is rotated to close the slot h^3.

In order to drive the whirls without closing the slots, I employ an endless belt k, which is driven by any suitable means and which engages the rear portions of the whirls, as shown in Fig. 2. In order to effect a positive engagement of the belt with the whirls, I employ a plurality of idlers m, loosely journaled upon studs m' and projecting upward from the rail d, said idlers being so located as to cause the belt k to assume a zigzag form, as shown.

It will be understood that any suitable means may be employed for rotating the whirls, that illustrated being only one form of many that I have contemplated using.

Having thus explained the nature of the invention and described a way of constructing and using the same, although 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 twister-head for spinning-machines having a gripper, a drawing-out device, and provisions for the lateral insertion of the yarn, in combination with a driver engaging the rear portion of the head.

2. A twister-head for spinning-machines having a gripper, a drawing-out device, and provisions for the lateral insertion of the yarn in the threading operation, and provisions for preventing the displacement of the yarn after it has been threaded into the head.

3. A twister-head for spinning-machines, comprising a slotted tube and means for closing the slot.

4. A twister-head for spinning-machines comprising a slotted tube and a slotted bushing rotatable therein.

5. A twister-head for spinning-machines, comprising a slotted tube having an opening at its lower end, the walls of which constitute a gripper and having a drawing-out device at the other end.

6. A twister-head for spinning-machines comprising a tube having a transverse slot at its lower end to receive the yarn and constitute a gripper and having an eccentric projection at the other end to constitute a drawing-out device.

7. A twister-head for spinning-machines comprising a tube having a drawing-out device at its upper end, and having a longitudinal slot laterally enlarged at its lower end the walls of the enlargement constituting a gripper, and a finger projecting across said enlargement.

8. A twister-head for spinning-machines comprising a tube having an aperture in its side near its lower end, and a finger projecting across said aperture and having a free end.

9. In combination, a twister-head having a slot for the lateral insertion of the yarn, and a separable two-part bearing for said head, the parts being separated to form a slot.

10. A twister-head for spinning-machines comprising a rotary tube provided with an open slot of fixed width for the lateral insertion of the yarn, and a slotted bushing held frictionally and rotatably within said tube.

11. A twister-head for spinning-machines comprising a slotted rotatable tube, and a slotted bushing rotatably held therein and having a laterally-projecting finger for rotating it.

12. A twister-head for spinning-machines having an eccentric yarn-gripper, and a finger projecting across said gripper and having a free end.

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

MALCOLM CAMPBELL.

Witnesses:

M. B. MAY,

C. C. STECHER.