

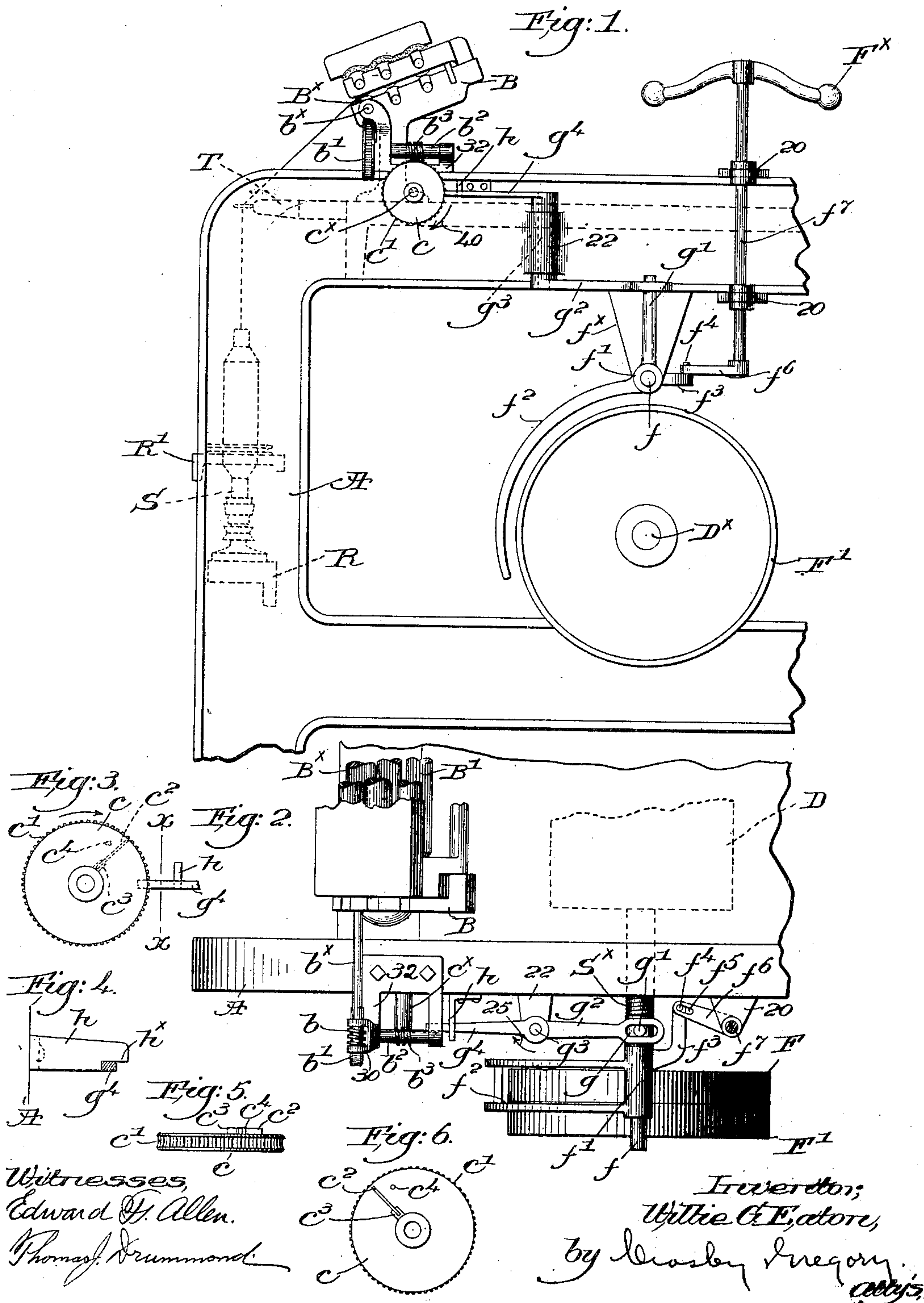
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W. G. EATON.
STOP MOTION FOR SPINNING FRAMES.

(Application filed May 31, 1900.)

(No Model.)



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STOP-MOTION FOR SPINNING-FRAMES.

SPECIFICATION forming part of Letters Patent No. 668,039, dated February 12, 1901.

Application filed May 31, 1900. Serial No. 18,561. (No model.)

To all whom it may concern:

Be it known that I, WILLIE G. EATON, a citizen of the United States, and a resident of Nashua, county of Hillsborough, and State of New Hampshire, have invented an Improvement in Stop-Motions for Spinning-Frames, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention has for its principal object the production of means for stopping automatically a spinning-frame when a predetermined amount of yarn has been wound upon a bobbin, and I have herein so arranged the apparatus that the stoppage of the frame is effected when the front roll has made a definite number of revolutions.

In weaving certain classes of goods the pick must be notched, and having given a certain definite length of yarn on the bobbin or filling-carrier in the shuttle the loom can readily be arranged to effect automatic change of filling just previous to the exhaustion of the filling in the shuttle, and by my present invention a predetermined amount of yarn can be spun upon the bobbin.

Figure 1 is an end elevation of a portion of a spinning-frame of usual construction with one embodiment of my invention applied thereto. Fig. 2 is a top or plan view of a portion thereof, showing the stop-motion. Fig. 3 is an enlarged detail showing the tripping device for the belt-shifting means. Fig. 4 is an enlarged detail of the keeper, to be described, on the line *xx*, Fig. 3, looking toward the right. Fig. 5 is a top view of the tripping device, and Fig. 6 is a side elevation thereof opposite to that shown in Fig. 3.

Referring to Figs. 1 and 2, a portion of the end frame A of a spinning-frame of usual construction is shown, provided with the drum-shaft D^x, having thereon the driving-drum D (see Fig. 2) for driving the spindles S, Fig. 1. The spindle-rail R, ring-rail R', thread-board T, the drawing-roll stands B, the drawing-rolls B', including the front roll B^x, and the fast and loose pulleys F F' on the drum-

shaft may be and are all of usual or well-known construction in spinning-frames. A stud *f*, extended from a bracket *f*^x on the end frame, has mounted thereupon a sliding sleeve *f*¹, to which is attached a belt-shifter *f*², of usual construction, to shift the belt from the fast to the loose pulley, or vice versa, said sleeve being provided with an arm *f*³, having at its free end a pin *f*⁴ to enter a slot *f*⁵ in an arm *f*⁶, fast on an upright rock-shaft *f*⁷, mounted in bearings 20 on the end frame, said rock-shaft having at its upper end a suitable handle F^x, adapted to be grasped by the operator when it is desired to manually shift the belt. Referring to Fig. 2, it will be obvious that by turning the rock-shaft *f*⁷ in one direction or the other the sleeve *f*¹ will be slid in or out of the stud *f* to thereby shift the belt as desired, the slotted pin connection *f*⁵ *f*⁴ permitting the necessary play between the arms *f*³ *f*⁶. Between the inner end of the sleeve *f*¹ and the bracket or stand *f*^x I have mounted a sliding collar *g*, which is normally pressed outward by a suitable spring S^x (see Fig. 2) against the sleeve, the collar having an upturned stud *g*¹, which enters the slotted end of one arm *g*² of a bell-crank lever, said arm being connected by a short upright rock-shaft *g*³ with the other arm, to be referred to, the rock-shaft being supported in a suitable bearing 22 on the frame. The arm *g*⁴ of the bell-crank lever constitutes a latch and is made resilient in order that it may be depressed at times out of engagement with the notch *h*^x of a keeper *h*, (shown separately in Fig. 4,) the said keeper being secured to the end frame A and projecting therefrom substantially at right angles to the latch, as shown best in Fig. 2. So long as the latch is in engagement with the keeper and in the position shown in Figs. 1, 2, and 4 the spring S^x will be compressed and the belt-shifter will be maintained in position to retain the belt on the fast pulley F. If, however, the latch *g*⁴ is depressed sufficiently to disengage it from its keeper, the spring S^x will immediately act to swing the bell-crank lever *g*² *g*⁴ in the direction of the arrow 25, Fig. 2, to throw the shifter

into position to transfer the belt from the fast to the loose pulley to stop the frame. It will be manifest from an inspection of Fig. 2, however, that the belt can be shifted manually entirely independently of the action of the latch device and spring described, and so, too, when the belt is on the loose pulley and it is desired to start the frame the manual operation of the shifter will set the latch g^4 in normal operative position by or through the action of the sleeve f' on the collar g , compressing the spring S^x .

The shaft b^x of the front roll B^x is in accordance with my present invention extended to pass through a bearing 30 on a stand 32, secured to the end frame, said shaft having thereon a worm b , in mesh with a worm-gear b' , fast on a short shaft b^2 , supported in bearings on the stand 32 at right angles to the lower roll-shaft, said short shaft in turn having a worm b^3 . This train of mechanism constitutes speed-reducing means driven by the front roll, and said means is made operative to trip the latch g^4 after the front roll has made a predetermined number of revolutions.

A tripping device for the latch is herein shown as a circular disk or carrier c , rotatably mounted on a shaft c^x , extended from the frame, said carrier having peripheral worm-teeth c' , in mesh with the worm b^3 , and on one of the faces of the carrier a substantially radial spring-finger c^2 is secured in any suitable manner, as by a socket c^3 , the direction of rotation of the disk or carrier c being indicated by the arrow 40, Fig. 1. The free end of the latch g^4 extends into the path of movement of the finger c^2 , and as the carrier is rotated the finger will be brought into engagement with the upper side of the latch, the finger at first yielding to prevent shock, until it engages a fixed pin or lug c^4 on the carrier, whereupon continued rotation of the carrier will depress the latch sufficiently to release it from the notch h^x of the keeper h , and thereupon the belt will be shifted, as hereinbefore described, and the frame stopped. When the spring S^x is free to act and moves the belt-shifter, it also moves the latch g^4 laterally out of the path of the finger c^2 , permitting the said finger to spring forward into normal position relative to its stop pin or lug c^4 , as shown in Fig. 3. This is to permit the return of the latch to locking position when the shipper mechanism is operated to shift the belt to the fast pulley when it is again desired to start the frame.

The number of teeth in the various gears of the slow-motion train will be, of course, calculated according to the length of yarn to be wound upon the spindle, it being obvious that such length having been determined and the diameter of the front roll known the slow-motion train can be readily calculated.

The tripping device herein shown is supposed to make a complete revolution from the time the frame is started to begin winding un-

til it is stopped automatically when the predetermined amount of yarn has been wound upon the spindle.

The particular speed-reducing or slow-motion mechanism herein shown may be varied or rearranged and the various details of construction may be changed or modified without departing from the spirit of my invention, for so far as I am aware it is broadly new to stop a spinning-frame or the like after a predetermined length of yarn has been wound, the stopping being controlled automatically by or through a predetermined number of revolutions of the front roll.

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

1. In a spinning-frame, stopping means including a normally-locked latch, the front roll, means controlled by the front roll to release the latch and effect the actuation of the stopping means at a predetermined time, and an independent, manually-operated actuator for said stopping means, manual movement of said actuator to start the frame automatically setting the latch in normal operative position.

2. In a spinning-frame, stopping means, including a normally-locked latch, the front roll, and means controlled thereby, including a rotatable carrier and a spring-trip for said latch, to release the latter at a predetermined time, the trip returning automatically to operative condition after release of the latch.

3. In a spinning-frame, stopping means, the front roll, and means, including speed-reducing devices and a yielding tripping device, to effect the actuation of the stopping means when the front roll has made a predetermined number of revolutions, the tripping device returning automatically to operative condition after the stopping means has been actuated.

4. In a spinning-frame, fast and loose pulleys, a belt-shifter, a normally-locked latch and its keeper, to normally retain the belt on the fast pulley, the front roll, a yielding trip to release the latch, and speed-reducing mechanism intermediate the front roll, to actuate the latter when the said roll has made a predetermined number of revolutions, the trip returning automatically to operative condition after release of the latch.

5. In a spinning-frame, a belt-shifter, a spring to move it into position to stop the frame, a resilient latch and a cooperating keeper, to normally hold the shifter against the action of the spring, the front roll, a rotatable carrier, a spring-trip thereon adapted to engage the latch and bend it out of engagement with the keeper, to permit the spring to operate the belt-shifter, and means intermediate the front roll and carrier, to rotate the latter.

6. In a spinning-frame, stopping means, including a latch, an overhanging keeper therefor, the front roll, a rotatable carrier, a spring-

trip thereon movable in the path of the latch,
a fixed abutment for said trip, to support it
when acting to release the latch from its
keeper, and speed-reducing mechanism inter-
5 mediate the front roll and carrier, to rotate
the latter.

In testimony whereof I have signed my

name to this specification in the presence of
two subscribing witnesses.

WILLIE G. EATON.

Witnesses:

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