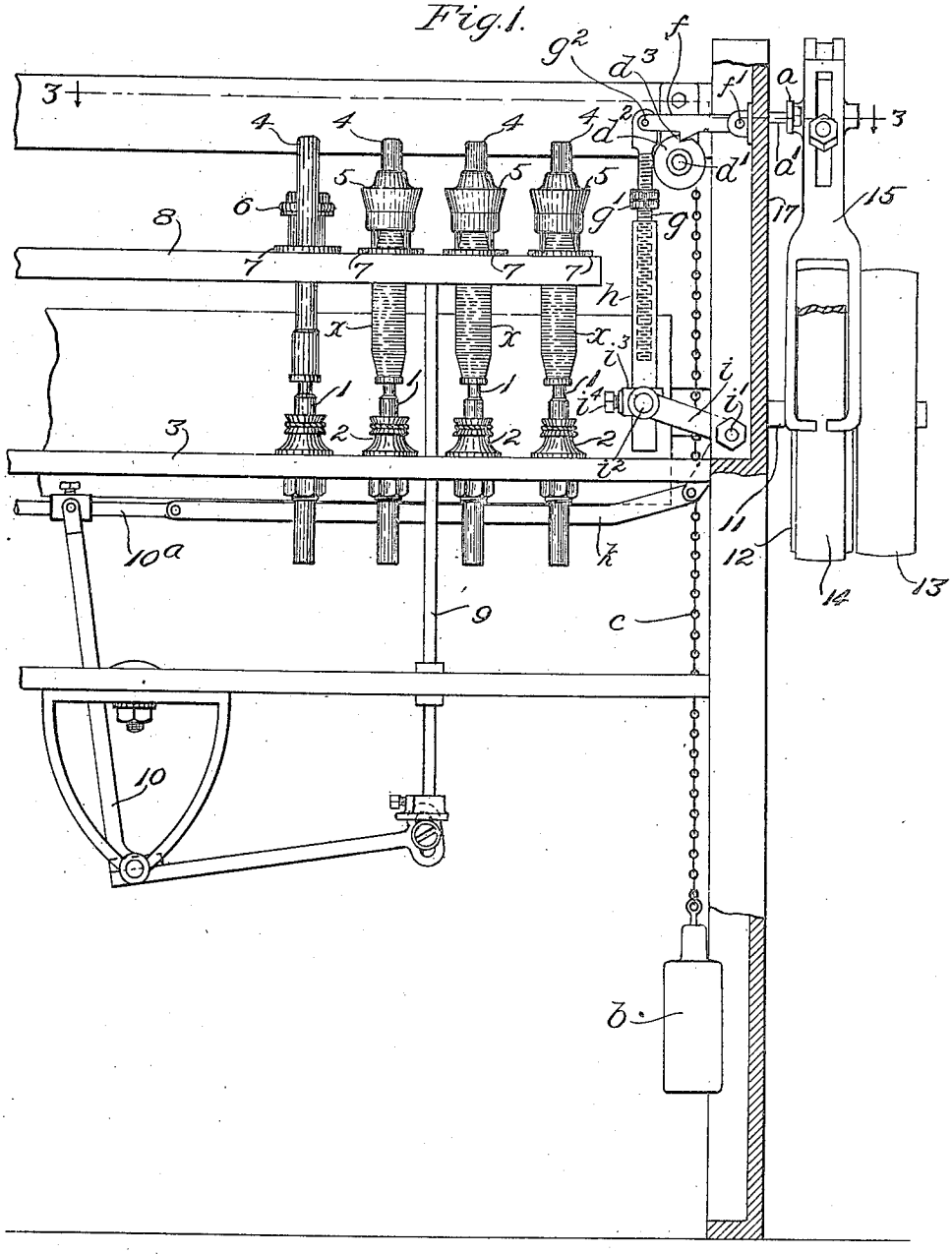
Nov. 13, 1923. 1,474,040

J. H. JONES

STOP MOTION MECHANISM FOR SPINNING FRAMES

Filed June 11, 1921 2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

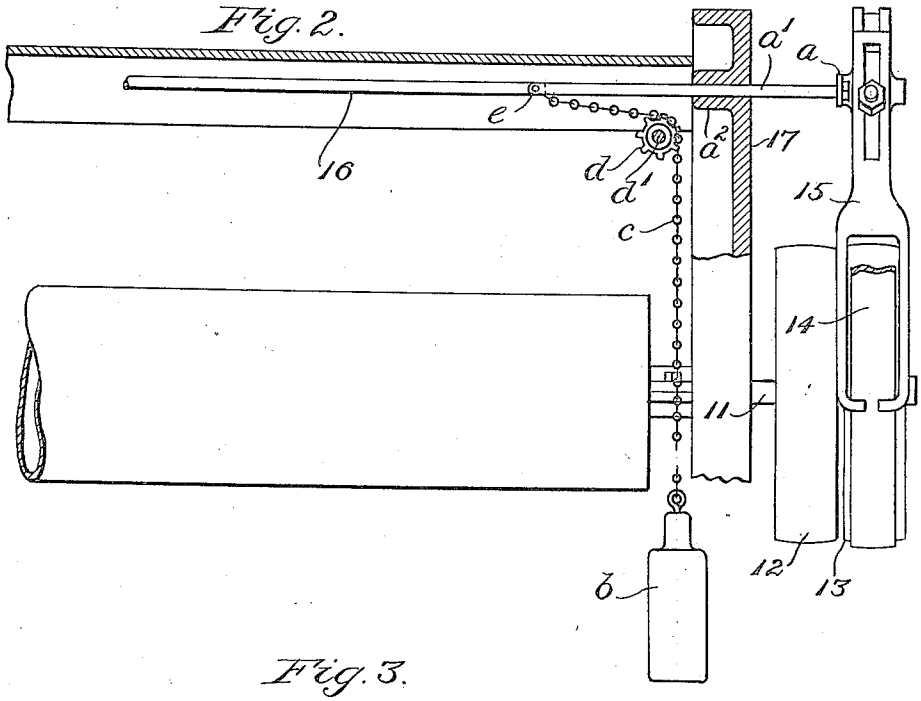
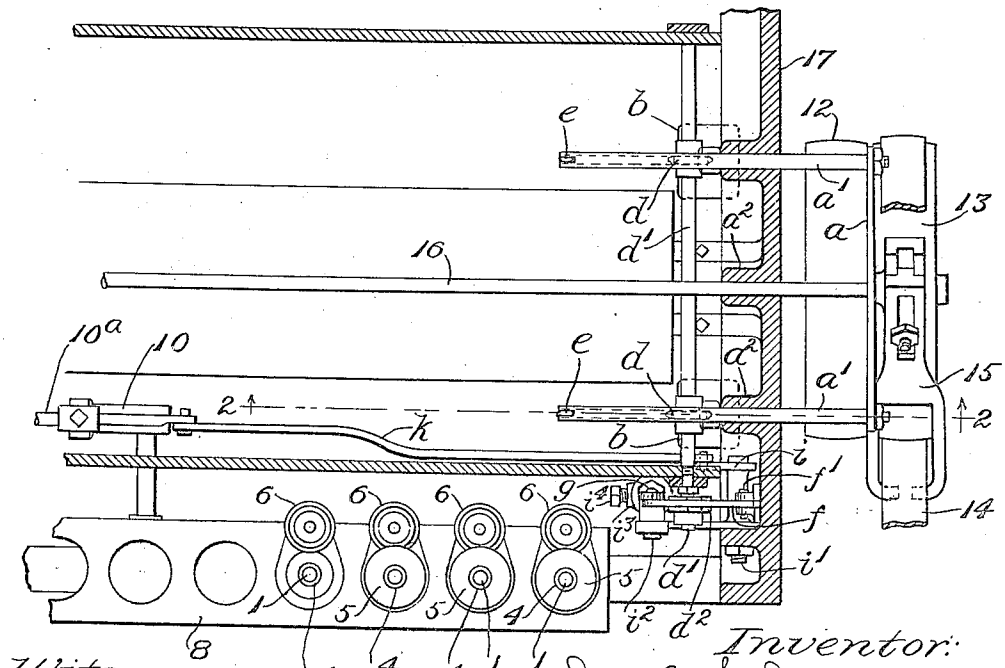


Fig. 3.



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Patented Nov. 13, 1923. 1,474,040

UNITED STATES PATENT OFFICE.

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STOP-MOTION MECHANISM FOR SPINNING FRAMES.

Application filed June 11, 1921. Serial No. 476,781.

To all whom it may concern:

Be it known that I, JOSEPH H. JONES, a citizen of the United States, residing at Winthrop, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Stop-Motion Mechanism for Spinning Frames, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention is applicable to spinning-frames and other machines in which yarns are wound upon bobbins or other receivers or carriers in weft-wound masses. An important application of the invention is in connection with a spinning frame or the like of the class in which live caps are combined with and applied to the blades or barrels of rotating spinning elements.

The invention provides improved stop-motion mechanism designed to unship the driving power of a machine when the yarn-masses which are being wound upon the bobbins or other receivers therein have attained the predetermined length, to thereby discontinue the working of the machine. It provides, further, stop motion mechanism by which, in the case of a spinning frame or the like of the class referred to, stopping is occasioned when the traverse brings about predetermined proximity of the caps to the tips of the blades or barrels of the rotating spinning elements, to safeguard thereby against disconnection and dislodgment of the caps from the spinning elements. Thereby I obviate the inconvenience of having the caps fall to the floor, and the breakage of the caps or injury thereto which would result from such falling.

The invention consists, essentially, in full-bobbin stop-motion mechanism comprising, in combination with a shipper and a shipper-actuator, a revoluble controller, tension-means, connections combining said shipper-actuator, controller, and tension-means, a detent for said controller by which the tension-means is held under restraint, and means connected with the traverse mechanism operating to disengage the detent to free the controller so as to permit actuation of the shipper-actuator and shifting of the shipper by the tension-means. It consists, further, in stop motion mechanism by which stopping is brought about when the traverse brings about predetermined proximity of the caps to the tips of the blades or barrels of the rotating spring elements.

The invention, in the preferred form of embodiment thereof, is illustrated in the drawings, in which latter,—

Fig. 1 is a partly sectional front elevation of portions of a cap-spinning frame with the said embodiment applied thereto, the machine being represented as in running condition.

Fig. 2 shows the same in vertical section in a plane parallel with the front of the machine, on line 2—2 of Fig. 3, showing the driving belt shifted upon the loose pulley.

Fig. 3 is a view thereof partly in horizontal section on line 3—3 of Fig. 1; also with the belt shifted upon the loose pulley.

The invention is applicable in connection with machines or frames of various types. It is shown herein applied to a spinning-frame in which the spinning is performed by means of spindles 1 mounted in bearings 2 carried by a spindle-rail 3, bobbins 4 mounted upon the said spindles, and live caps 5 mounted upon the blades or barrels of the said bobbins and caused to revolve by frictional engagement with the said blades or barrels. In the operation of such a spinning-frame the yarns which are in process of being spun extend down to and around the edges of the mouths at the lower ends of the caps 5 on their way to the bobbins, on which latter they are wound to form the yarn-masses *x*. The caps 5 are governed as to their position vertically through the peripheral engagement of their upwardly flaring bodies with supporting wheels or so-called pivots 6 having their pintles fitted to bearings in supports 7 carried by a rail 8. The rail 8 is the traverse-rail in the case of this spinning-frame, it being given the usual movements required in the case of a filling-wind, namely a short rise and fall to distribute the yarns upon the bobbins in cone-shaped layers, and the usual gradual elevation to build the yarn-mass progressively upward upon the bobbins, by means of usual mechanism including vertical rods or pokers 9 supporting the rail 8 by their upper ends, rockers 10, and traverse and builder-motion devices (not shown) connected with and actuating the rockers.

For the driving of the illustrated spinning-frame, its main shaft 11 is provided with a fixed or fast pulley 12 and loose pulley 13 to receive a driving-band 14, and also is provided with a shipper 15 for said driving-band, the said shipper being carried by a shipper-rod 16 which in practice has combined therewith one or more operating handles (not shown) by means of which the shipper may be operated to shift the driving-band from the loose pulley to the fast pulley, or vice versa.

As thus far described the parts, and the illustrated construction thereof, form no portion of the invention itself.

In carrying the invention into effect I provide a shipper-actuator, as a, and tension-means, as b, for actuating the same, when required, to cause the shipper 15 to shift the driving-band 14 from fast pulley 12, (Fig. 1,) over on to the loose pulley 13, (Figs. 2 and 3). These may be varied in character, etc., more or less in practice. In this instance the shipper-actuator is a bar that is disposed between the shipper and the adjacent end-portion 17 of the machine-frame and is adapted to engage the hub by means of which the shipper is mounted upon shipper-rod 16. The said rod passes freely through a hole in the said bar. The bar is fixed upon the outer ends of two rods a', a', which are fiitted to guide-bearings a^2, a^2, in said end-portion 17, with capacity to slide endwise therein. The tension-means in this instance comprises two weights b, b, which are combined with the shipper-actuator by flexible connections, in this instance chains c, c, that are so conducted and connected with the inner ends of rods a', a' that the force due to the gravitating tendency of the weights acts in the direction to carry the shipper and driving-band over from the fast pulley to the loose pulley. Herein the chains pass upward from the weights to and partly around sprocket-wheels d, d, forming part of the revoluble controller for the shipper-actuator, and from the said sprocket-wheels the chains extend substantially horizontally to their points of connection e, e, with the inner ends of the rods a', a'.

The revoluble controller for the shipper-actuator comprises the sprocket-wheels d, d, a shaft d' on which said sprocket-wheels are fixed, and a detent-wheel or collar d^2 on the front end of shaft d', the said detent-wheel or collar having one or more, usually one, tooth or teeth d^3.

At f is the detent by means of which the revoluble controller is held from turning, so that by reason thereof and of the engagement of the teeth of the sprocket-wheels d', d', with the links of the chains c, c, the tension-means is held in restraint, and prevented from producing movement of the shipper-actuator and shipper, in the direction to carry the driving-band from the fast pulley over to the loose pulley. The detent in this instance is a dog or pawl which is hinged at f' upon a convenient support and furnished with a tooth for engagement with the tooth d^3, of the detent-wheel or with one of the teeth thereof in case the detent-wheel should have more than one. The arrangement of the shipper-actuator with relation to the shipper is such, as shown by the drawings, that when shipper-rod 16 is moved toward the left in the drawings for the purpose of shifting the driving-band over from the loose pulley to the fast pulley (Fig. 1), in order to start up the machine, the shipper-actuator is pushed inward into its idle position, raising the weights and turning the controller until the tooth d^3 is carried around past the tooth of detent f and the detent enters into engagement with such tooth, thereby locking the shipper-actuator in the said idle position, as shown in Fig. 1. So long as such engagement continues the shipper-actuator remains in the idle position, free from the pull of the tension-means. While the shipper-actuator occupies its idle position, the shipper is free to be operated by hand for the purpose of stopping and starting the machine from time to time as may be required.

In this instance, for the automatic disengagement of the detent f and release of the revoluble controller when the winding-on of the yarn has arrived at the predetermined limit and thereby brought about the predetermined proximity of the caps to the tips of the bobbins, a part or member g having an adjustable stop or collar g' thereon is connected pivotally at g^2 with detent f. A second member, h, in sliding engagement with member g, and adapted for engagement with said stop or collar, is connected with the traverse mechanism so as to be reciprocated upon member g in unison with the traverses of the traverse-rail, and also so as to progressively approach the stop or collar g' as the traverse-rail shifts progressively in the direction of the length of the bobbins. Member g is a screw-threaded rod. The adjustable stop or collar g' is a nut and check-nut upon said rod. Member h is tubular and mounted upon the rod with capacity to slide endwise thereon. The connection between member h and the traverse mechanism in this instance is by means of a bell-crank i that is mounted pivotally at i' upon the machine-frame, and a link k. One arm of the bell-crank is engaged with a pivot i^2 projecting from a collar i^3 secured upon tubular member h by means of a clamping screw i^4. The other arm of the bell-crank has connected pivotally thereto one end of link k, the other end of the latter being connected pivotally to the rod or connector 10^a which

connects together the rockers 10 of the traverse-mechanism. Through these connections the tubular member h is caused to reciprocate endwise upon member g in unison with the up and down movements of the traverse-rail in distributing the short conical layers of yarn upon the yarn-masses x upon the bobbins, and also to gradually approach the stop or collar g' as the progressive shift of the traverse-rail lengthwise of the bobbins takes place. When, finally, such progressive shift has brought the caps and the winding to the predetermined closeness to the tips of the bobbins, the gradual approach of the upper end of tubular member h to the stop g' brings about in one of the short traverses to the nose of the tapering filling-mass engagement of such end with the said stop and thereby disengages the detent f from the tooth of the detent-wheel d^2, thereby freeing the revoluble controller and permitting the tension-means to actuate the shipper-actuator and shipper to ship the driving-band over upon the loose pulley and thus bring about stoppage of the working of the machine.

Through adjustment of the stop g' upon member g, or of member h in connection with collar i^3, the stoppage may be caused to take place when the winding arrives at any predetermined point in the lengths of the bobbins.

In practice, the construction and arrangement of the parts may vary more or less, according as preferred or as made necessary by specific differences in the build, arrangement and mode of operation of the spinning frames and of other machines with which the features of the invention are combined.

What is claimed as the invention is,—

1. Full-bobbin stop-motion mechanism comprising, in combination with a shipper and a shipper-actuator, a revoluble controller, tension-means, connections combining said shipper-actuator, controller, and tension-means, a detent for said controller by which the said tension-means is held under restraint, a bell-crank actuated in unison with the traverse mechanism, and adjustable detent-disengaging means actuated by said bell-crank.

2. Full-bobbin stop-motion mechanism comprising, in combination with a shipper and a shipper-actuator, a revoluble controller having one or more sprocket-wheels, tension-means, one or more chains connecting said tension-means with said shipper-actuator and also engaging said sprocket-wheel or wheels, a detent for said controller by which the said tension-means is held under restraint, and means connected with the traverse mechanism operating to disengage the detent to free the controller so as to permit actuation of the shipper-actuator and shifting of the shipper by the tension-means.

3. Full-bobbin stop-motion mechanism comprising, in combination with a shipper and a shipper-actuator, and tension-means for actuating them, operatively connected with said shipper-actuator, a controller for the shipper-actuator, a detent for said controller, a member connected with said detent, having an adjustable stop in connection therewith, and a member in sliding engagement with the first-mentioned member, actuated by the traverse mechanism, and adapted through engagement with the stop to disengage the detent and permit the tension-means to shift the shipper-actuator and shipper.

4. Full-bobbin stop-motion mechanism comprising, in combination with a shipper and a shipper-actuator, and tension-means for actuating them, operatively connected with said shipper-actuator, a controller for the shipper-actuator, a detent for said controller, a member connected with said detent, having an adjustable stop in connection therewith, and a member in sliding engagement with the first-mentioned member, and a bell-crank actuated by the traverse mechanism, operatively connected with the second member, and actuating the same to engage the stop and thereby effect disengagement of the detent so as to permit the tension-means to shift the shipper-actuator and shipper.

5. In a spinning machine having weft-wind traverse mechanism, full-bobbin stop-motion mechanism comprising, in combination with a shipper and a shipper-actuator, tension-means operatively combined with said shipper-actuator, a revoluble controller for the shipper-actuator, a detent for said revoluble controller by which the said tension-means is held under restraint, and adjustable detent-disengaging means actuated in unison with the traverse-rail of the machine.

6. Full-bobbin stop-motion mechanism comprising, in combination with a shipper, a shipper-actuator, and tension-means for actuating said shipper-actuator and shipper, a controller for the shipper-actuator, a detent for said controller, members respectively combined operatively with said detent and with the traverse mechanism, one of such members having an adjustable stop for engagement with the other member to disengage the detent so as to release the controller.

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

JOSEPH H. JONES.

Witnesses:
CHAS. F. RANDALL,
ELLEN O. SPRING.