

No. 719,668.

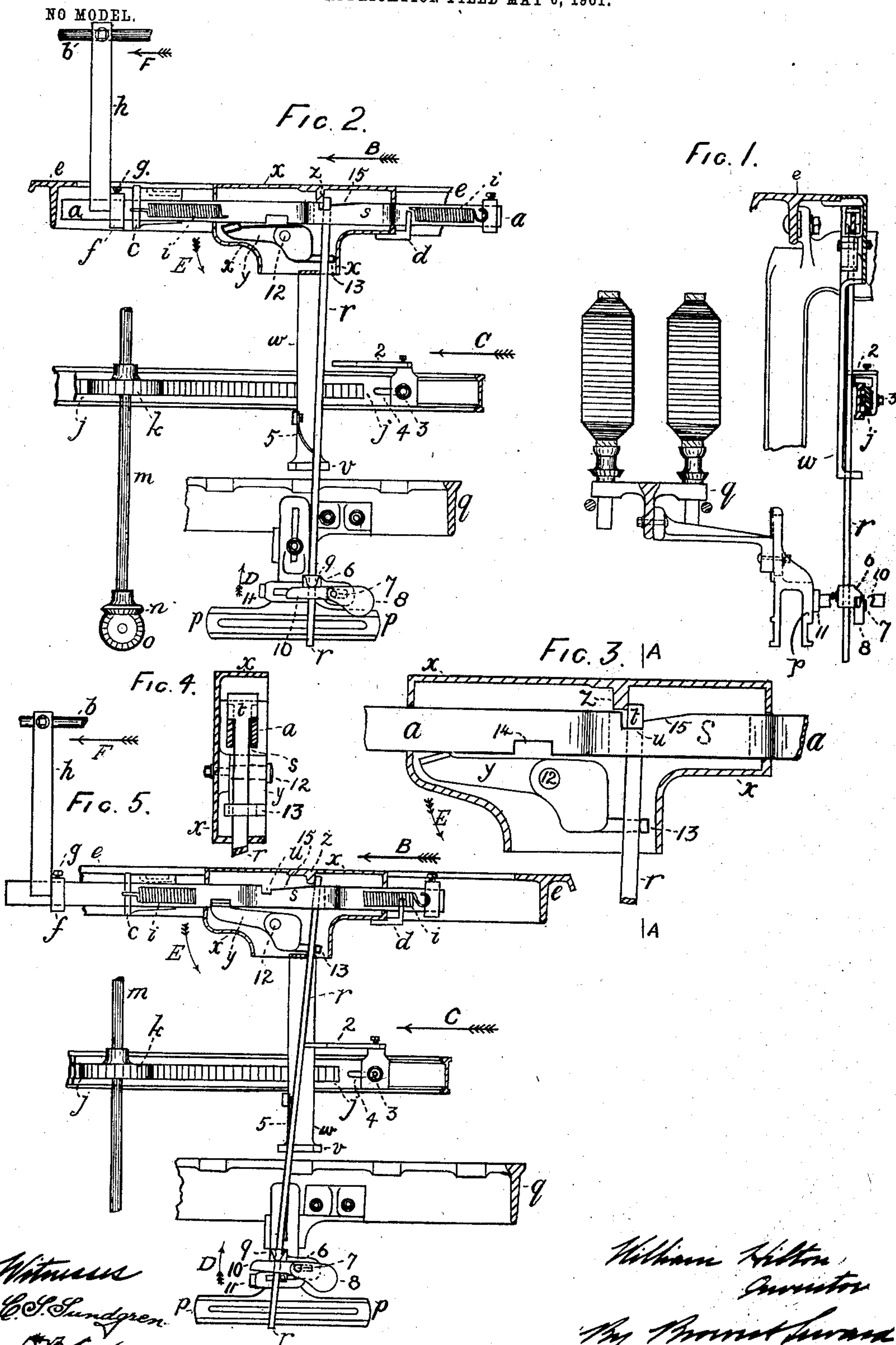
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STOP MOTION FOR PREPARING, SPINNING, AND DOUBLING MACHINES.

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NO MODEL.



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STOP-MOTION FOR PREPARING, SPINNING, AND DOUBLING MACHINES.

SPECIFICATION forming part of Letters Patent No. 719,668, dated February 3, 1903.

Application filed May 6, 1901. Serial No. 58,974. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HILTON, engineer and machinist, a subject of the King of the United Kingdom of Great Britain and Ireland, and a resident of 97 Windsor road, Oldham, in the county of Lancaster, England, have invented a new and useful Improvement in Automatic Stop-Motions for Preparing, Spinning, and Doubling Machines, of which the following is a specification.

This invention consists of an improvement in automatic stop-motions for preparing, spinning, and doubling machines, and is especially applicable to stop-motions for stopping slubbing, intermediate, and roving frames when the bobbins have attained the desired size.

The object of this invention is to provide an automatic stop-motion which shall act with greater certainty, promptitude, and precision of action and be less liable to wear and derangement than the arrangements of mechanism hitherto employed and shall be capable of being arranged to stop the machine in which it is employed at any diameter of the bobbins or other bodies into which the slubbings, rovings, or yarns are wound, as may be desirable, and in any desirable position in the "lift" or movement of the bobbin-rails or other corresponding parts.

A stop-motion provided according to this invention may, as is illustrated in the form illustrated by way of example in the accompanying drawings as arranged for application to slubbing, intermediate, and roving frames, be arranged so that when the frame has been automatically stopped at the completion of a set of bobbins the stop-motion retains the strap or belt on the loose pulley and prevents the attendant putting the strap or belt on the fast pulley and starting the frame again until the "cone-strap" has been moved back into the position for commencing a fresh set of bobbins.

In the accompanying drawings, Figure 1 is a transverse section of so much of the mechanism employed in a slubbing, intermediate, or roving frame with a stop-motion provided according to this invention applied to it as is requisite for the illustration of this invention. Fig. 2 is a side view, partly in longitudinal section, of the mechanism employed ac-

ording to this invention and the parts of the slubbing, intermediate, or roving frame with which such mechanism is arranged to act and showing the parts in the positions which they occupy during the filling of the bobbins. Fig. 3 is a longitudinal section corresponding to part of Fig. 2, on a larger scale than Fig. 2, and showing more clearly the arrangement of the stop-rod and catch rod or lever and the means provided to lock the stop-rod in position to keep the belt or strap on the loose pulley when the frame has been automatically stopped on the completion of a set of bobbins. Fig. 4 is a transverse section taken substantially on the plane indicated by the line A A of Fig. 3 and showing the arrangement of the upper end of the catch rod or lever. Fig. 5 is a side view, partly in longitudinal section, showing substantially the same mechanism as is illustrated in Fig. 2 and showing the parts in the positions which they occupy when the frame has been automatically stopped on the completion of a set of bobbins.

In the drawings, *a* is the usual stop-rod, provided in a slubbing-frame, intermediate frame, or roving-frame for operating on the setting-on rod *b*, which carries the strap-fork used to move the driving-belt into and out of position to drive or stop the machine. As shown, the stop-rod *a* is arranged in brackets *c d*, fixed upon the roller-beam *e* of the slubbing, intermediate, or roving frame, and is provided with a collar *f*, adjustable and secured by a set-screw *g* to act against a forked arm *h*, secured to the setting-on rod *b*. A spring *i* (shown only in part) is secured at one end to the stop-rod *a* and at the other end to the bracket *c*. The spring *i* is provided to move the stop-rod *a* in the direction indicated by the arrow B when the frame is to be automatically stopped. The setting-on rod *b* and the means by which it controls the belt employed being of the ordinary well-known arrangement, a portion only of the setting-on rod *b* is indicated in the drawings.

j is the usual longitudinally-movable rack employed to traverse the belt upon the cones usually employed in the machine, which being well known are omitted from the drawings. During the working of the machine the rack *j* is gradually moved in the direction indicated by the arrow C.

The rack *j* is made to receive motion in the usual way by means of the pinion *k*, shaft *m*, and bevel-wheels *n o* under the control of the usual mechanism used to regulate the winding, which being ordinary and well known is not indicated in the drawings.

p is the usual anchor-bar bracket, carried by and moving with the lifting or bobbin rail *q* and serving in the ordinary way to gradually shorten the lift or up-and-down movement of the lifting-rail *q* by the usual means, which being well known are omitted from the drawings.

According to this invention a catch rod or lever *r* is suspended from the stop-rod *a* and is adapted to be engaged in any suitable way therewith, so as to retain it in position and prevent it from acting on the setting-on rod *b* until required to act automatically to stop the frame and prevent it from being restarted until the bobbins have been doffed and the cone-strap has been moved into the position proper for the commencement of a new set of bobbins. Preferably the catch rod or lever *r* is arranged so as to be incapable of becoming displaced from the stop-rod *a*. As shown, the catch rod or lever *r* is arranged to pass through a slot *s* in the stop-rod *a* and provided with a "T-shaped" head *t*, by which it is normally suspended from the stop-rod *a*.

The said head *t* of the catch rod or lever *r* is arranged so as to be engaged during the working of the machine in a notch *u*, formed in such stop-rod *a*. The catch rod or lever *r* may be guided in any suitable way. As shown, it is guided at the upper part by means of the slot *s* in the stop-rod *a*. The catch rod or lever *r* normally rests against a stop *v* on a projecting bracket *w*, formed on and extending downward from the box *x*, secured to the roller-beam *e* to carry and cover the locking-catch *y*, to be hereinafter mentioned, and a projection *z*, formed on the inside of the top of the box *x*, serves as an abutment to prevent the catch rod or lever *r* from being carried along by the stop-rod *a* in its movement. The catch rod or lever *r* is arranged to be oscillated laterally by means of an adjustable stop bracket or projection 2, mounted upon or arranged to be moved by means of the rack *j*. As shown, the adjustable stop bracket or projection 2 is secured by means of a bolt 3 to the movable rack *j*, which is formed with a slot 4 to permit the adjustment of the bracket 2. A spring 5, secured, for instance, by a set-screw to the bracket 2, serves to hold the catch rod or lever *r* in the position in which it is indicated in Fig. 2 against the stop *v* on the bracket *w* except at such times as it is moved from it by means of the adjustable stop bracket or projection 2. The lower part of the catch rod or lever *r* carries a bracket 6, adjustable up or down thereon and secured in the desired position in any suitable way, as by a set-screw. The bracket 6 has a stud 7 secured in it, and upon this stud is pivoted a tumbler-catch 8 in the form of a lever weighted at one end, so

as to tend to turn on the stud in the direction indicated by the arrow D. The tumbler-catch 8 is free to turn or yield in one direction; but it is prevented from being turned in the opposite direction by a stop 9, formed upon the bracket 6 in such a way that the arm 10 of such tumbler-catch can be turned downward but not upward about the stud 7. An adjustable knocking-off bracket 11 is mounted on some part connected with the bobbin-rail *q*, so that it can at times while moving upward act upon the arm 10 of the tumbler-catch 8 and cause the catch-rod *r* to be moved upward, as will be further explained hereinafter. As shown, the adjustable knocking-off bracket 11 is secured by means of a set-screw on the anchor-bar bracket *p*, and a slot provided in the knocking-off bracket 11 permits its adjustment upon the anchor-bar bracket *p*. During the working of the machine the anchor-bar bracket *p* moving up and down carries the knocking-off bracket 11 past the arm 10 of the tumbler-lever 8 without acting thereon until the catch rod or lever *r* is moved laterally by the adjustable stop bracket or projection 2.

The arm or locking-catch *y* is capable of being turned by the catch-rod *r* on the stud 12, secured on the box *x*, in the direction indicated by the arrow E in Figs. 2, 3, and 5 and is arranged in any suitable way—as, for instance, by being weighted, as shown—so as to turn in the opposite direction when not being acted upon by the catch rod or lever *r*. The arm or locking-catch *y* is provided with an arm or hook 13 to pass behind the catch rod or lever *r*, so as to be acted upon thereby. When the frame is at work, the stop-rod *a* is held in position by the catch rod or lever *r*, which is held against the projection *z*. While the catch rod or lever *r* is in engagement with the stop-rod *a* the setting-on rod *b* may be moved by the attendant in the direction indicated by the arrow F in Figs. 2 and 5 to stop the machine without moving or disturbing the stop-rod *a*, the forked part of the arm *h* simply leaving the collar *f* and returning thereto when the machine is again started by the attendant. The adjustable bracket 2, having been set to the right position to act on the catch rod or lever *r* when the bobbins have attained the desired size, will in due time come into contact with and move the catch rod or lever *r* and, moving it away from the stop *v*, will bring the tumbler-catch 8 into the path of the adjustable knocking-off bracket 11 on the anchor-bar bracket *p*. This bracket 11 will act upon the arm 10 of the tumbler-lever 8 and lift the catch rod or lever *r* out of the notch *u*, formed in the stop-rod *a*, when the latter being liberated the spring *i* will cause the stop-rod *a* to be moved endwise in the direction indicated by the arrow B and with it the setting-on rod *b*, which moves the strap or belt onto the loose pulley, when the frame will be stopped. The side movement of the catch-rod *r*, before referred to, also lib-

erates the locking catch or arm *y*, so that when the stop-rod *a* has been liberated and made its movement the locking-catch *y* will engage into a notch 14, provided for it in the stop-rod *a*, and thus lock it and prevent the frame from being restarted until the rack *j*, carrying the cone strap-forks, has been wound back in the direction opposite to that indicated by the arrow C to the proper position for the commencement of a fresh set of bobbins. In the winding back of the rack *j* the adjustable bracket 2 will be withdrawn from contact with the catch rod or lever *r*, when the spring 5 will again move the catch rod or lever *r* against the stop *v*—that is to say, approximately to the position in which it is indicated in Fig. 2—and the locking-catch *y* will be disengaged from the stop-rod *a* and unlocked. The stop-rod *a* being then free to be moved, the setting-on rod *b* may be moved in the usual way to put the belt onto the fast pulley, when the catch rod or lever *r* will engage with the notch *u*, formed in the stop-rod *a*, and hold it in position, so that the setting-on rod will be free to be used again to stop and start the frame whenever required until, the bobbins having attained the desired size, the automatic apparatus again comes into operation and the frame will be stopped, as hereinbefore described. When the stop-rod *a* is moved in the direction indicated by the arrow B, the incline 15, leading from the notch *u* to the upper surface of the stop-rod *a*, raises the catch rod or lever *r* so as to lift the tumbler-lever 8 clear from the knocking-off bracket 11, so that as the rack *j* is wound back into position for the commencement of a new set of bobbins the catch-rod *r* is free to swing back into its normal position and eventually disengage the locking-catch *y* from the stop-rod *a*. By the bracket 2 being secured nearer to or farther from the catch rod or lever *r* at the starting of a set of bobbins the extent to which the bobbins are filled before the automatic apparatus acts to stop the machine may be decreased or increased, as may be requisite from time to time. The adjustment of the knocking-off bracket 11 affords a further means of adjusting the time of the automatic stoppage of the machine. By the bracket *x* and tumbler-catch 8 being secured higher up or lower down on the catch rod or lever *r* the position in the lift of the bobbin-rail *q* at which the automatic stoppage of the machine takes place may be regulated as may be desirable.

The locking lever or arm *y* can obviously be dispensed with in cases in which it is not necessary to lock the machine from being restarted.

The arrangements hereinbefore described are certain and prompt in action and not liable to wear and derangement.

What I claim, and desire to secure by Letters Patent, is—

1. In an automatic stop-motion of the kind herein described for a machine of the class

herein referred to, the combination with the setting-on rod, the stop-rod, the belt-traversing rack and a moving part connected with the bobbin-rail and means for moving the said stop-rod and the said rack, of a catch-rod with means to engage the said stop-rod, means for suspending such catch-rod from the stop-rod and enabling it to be oscillated laterally thereon, means for preventing the said catch-rod from being moved laterally in the direction of the longitudinal movement of the said stop-rod when such stop-rod is moved, a fixed part to guide the said catch-rod, an adjustable stop-bracket for moving the said catch-rod laterally, means to connect the said bracket with the said rack and permit it to be adjusted in relation thereto, a bracket adjustable upon the said catch-rod and a tumbler-catch carried by the said bracket and a knocking-off bracket which is carried by the aforesaid moving part connected to the bobbin-rail and is adapted to engage with the said tumbler-catch when the catch-rod has been moved laterally by the said stop-bracket and thereby disengage such catch-rod from the stop-rod all for the purpose hereinbefore described.

2. In an automatic stop-motion of the kind herein described for a machine of the class herein referred to, the combination with the setting-on rod, the stop-rod, the belt-traversing rack and a moving part connected with the bobbin-rail and means for moving the said stop-rod and the said rack, of a catch-rod with means to engage the said stop-rod, means for suspending such catch-rod from the stop-rod and enabling it to be oscillated laterally thereon, means for preventing the said catch-rod from being moved laterally in the direction of the longitudinal movement of the said stop-rod when such stop-rod is moved, a fixed part to guide the said catch-rod, an adjustable stop-bracket for moving the said catch-rod laterally, means to connect it with the said rack and permit it to be adjusted in relation thereto, a bracket adjustable upon the said catch-rod and a tumbler-catch carried by the said bracket, a knocking-off bracket which is carried by the aforesaid moving part connected to the bobbin-rail and is adapted to engage with the said tumbler-catch when the catch-rod has been moved laterally by the said stop-bracket and thereby disengage such catch-rod from the stop-rod and a locking-catch with means to engage the said catch-rod and with means to engage the said stop-rod, all for the purpose hereinbefore described.

3. In an automatic stop-motion of the kind herein described for a machine of the class herein referred to, the combination with the setting-on rod, the stop-rod with a slot therein, the belt-traversing rack and a moving part connected with the bobbin-rail and means for moving the said stop-rod and the said rack, of a catch-rod made to pass through the said stop-rod and with means to engage the said stop-rod, means for suspending such catch-

rod from the stop-rod and enabling it to be oscillated laterally thereon, means for preventing the said catch-rod from being moved laterally in the direction of the longitudinal movement of the said stop-rod when such stop-rod is moved, a fixed part to guide the said catch-rod, an adjustable stop-bracket for moving the said catch-rod laterally, means to connect the said bracket with the said rack and permit it to be adjusted in relation thereto, a bracket adjustable upon the said catch-rod and a tumbler-catch carried by the said bracket and a knocking-off bracket which is carried by the aforesaid moving part connected to the bobbin-rail and is adapted to engage with the said tumbler-catch when the catch-rod has been moved laterally by the said stop-bracket and thereby disengage such catch-rod from the stop-rod, all for the purpose hereinbefore described.

4. In an automatic stop-motion of the kind herein described for a machine of the class herein referred to, the combination with the setting-on rod, the stop-rod with a slot therein, the belt-traversing rack and a moving part connected with the bobbin-rail and means for moving the said stop-rod and the said rack, of a catch-rod made to pass through the stop-rod and with means to engage the said stop-rod, means for suspending such catch-rod from the stop-rod and enabling it to be oscillated laterally thereon, means for preventing the said catch-rod from being moved laterally in the direction of the longitudinal movement of the said stop-rod when such stop-rod is moved, a fixed part to guide the said catch-rod, an adjustable stop-bracket for moving the said catch-rod laterally, means to connect it with the said rack and permit it to be adjusted in relation thereto, a bracket adjustable upon the said catch-rod and a tumbler-catch carried by the said bracket, a knocking-off bracket which is carried by the aforesaid moving part connected to the bobbin-rail and is adapted to engage with the said tumbler-catch when the catch-rod has been moved laterally by the said stop-bracket and thereby disengage such catch-rod from the stop-bracket and a locking-catch with means to engage the said catch-rod and with means to engage the said stop-rod, all for the purpose hereinbefore described.

5. In an automatic stop-motion of the kind herein described for a machine of the class herein referred to, the combination with the setting-on rod, the stop-rod with a slot therein and with a notch to receive a catch-rod and with means to raise the said catch-rod in the movement of such stop-rod in one direction, the belt-traversing rack and a moving part connected with the bobbin-rail and means for moving the said stop-rod and the said rack, of a catch-rod made to pass through the said stop-rod and with means to engage the said

stop-rod, means for suspending such catch-rod from the stop-rod and enabling it to be oscillated laterally thereon, means for preventing the said catch-rod from being moved laterally in the direction of the longitudinal movement of the said stop-rod when such stop-rod is moved, a fixed part to guide the said catch-rod, an adjustable stop-bracket for moving the said catch-rod laterally, means to connect the said bracket with the said rack and permit it to be adjusted in relation thereto, a bracket adjustable upon the said catch-rod and a tumbler-catch carried by the said bracket and a knocking-off bracket which is carried by the aforesaid moving part connected to the bobbin-rail and is adapted to engage with the said tumbler-catch when the catch-rod has been moved laterally by the said stop-bracket and thereby disengage such catch-rod from the stop-rod, all for the purpose hereinbefore described.

6. In an automatic stop-motion of the kind herein described for a machine of the class herein referred to, the combination with the setting-on rod, the stop-rod with a slot therein and with a notch to receive a catch-rod and with means to raise the said catch-rod in the movement of such stop-rod in one direction, the belt-traversing rack and a moving part connected with the bobbin-rail and means for moving the said stop-rod and the said rack, of a catch-rod made to pass through the stop-rod and with means to engage the said stop-rod, means for suspending such catch-rod from the stop-rod and enabling it to be oscillated laterally thereon, means for preventing the said catch-rod from being moved laterally in the direction of the longitudinal movement of the said stop-rod when such stop-rod is moved, a fixed part to guide the said catch-rod, an adjustable stop-bracket for moving the said catch-rod laterally, means to connect it with the said rack and permit it to be adjusted in relation thereto, a bracket adjustable upon the said catch-rod and a tumbler-catch carried by the said bracket, a knocking-off bracket which is carried by the aforesaid moving part connected to the bobbin-rail and is adapted to engage with the said tumbler-catch when the catch-rod has been moved laterally by the said stop-bracket and thereby disengage such catch-rod from the stop-rod and a locking-catch with means to engage the said catch-rod and with means to engage the said stop-rod, all for the purpose hereinbefore described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 27th day of April, 1901.

WILLIAM HILTON.

Witnesses:

ELDON ALFRED KING,
HOWARD CHELTHAM.