

W. O. ALDRICH.
STOP MOTION DEVICE.
APPLICATION FILED DEC. 30, 1909.

1,047,478.

Patented Dec. 17, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

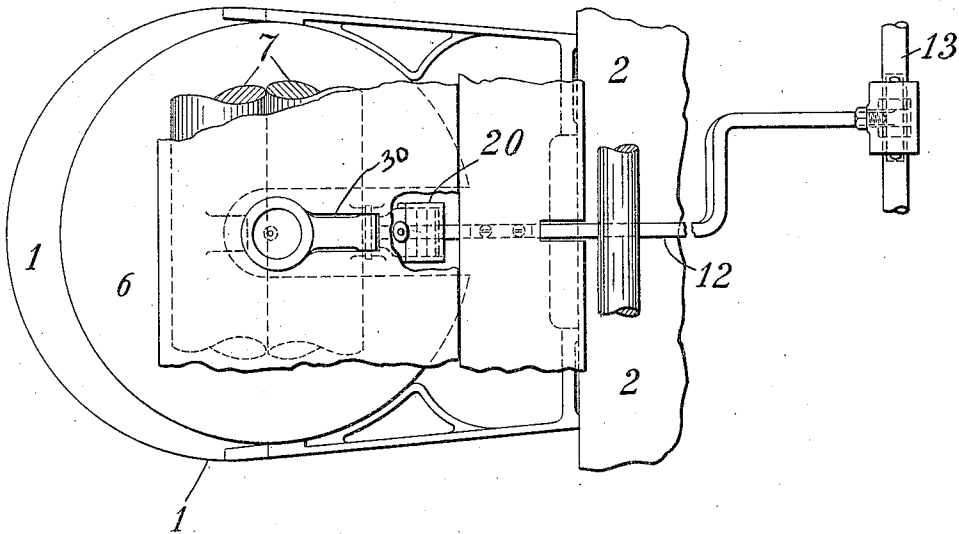
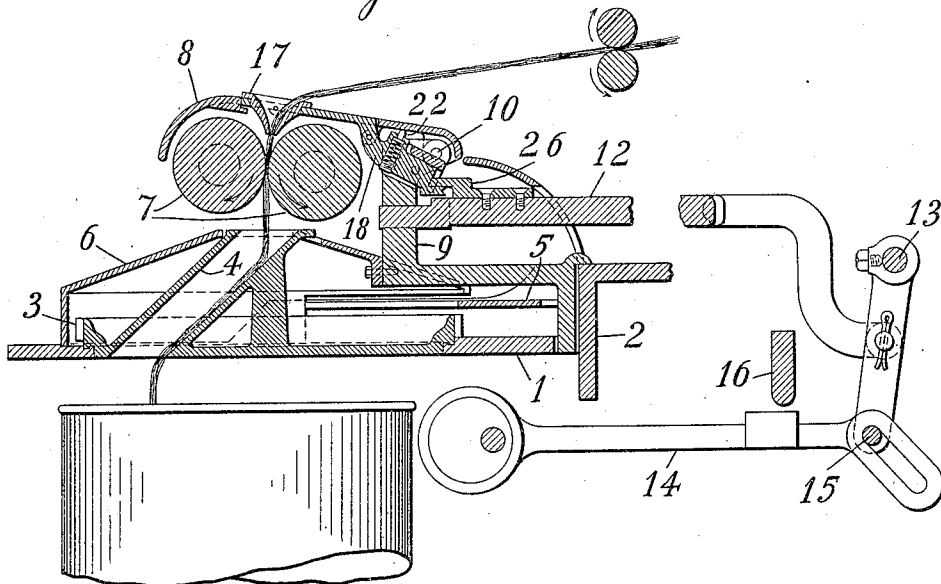


Fig. 2.



WITNESSES:

E. A. Agahan
H. E. Kumball

William O. Aldrich INVENTOR.

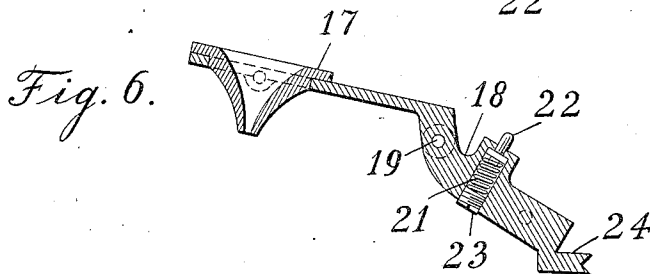
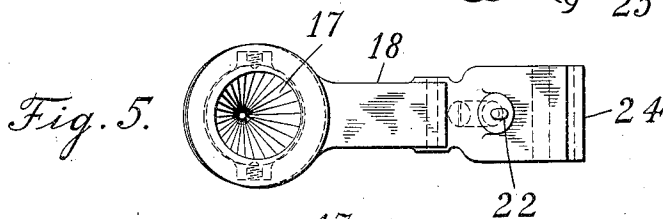
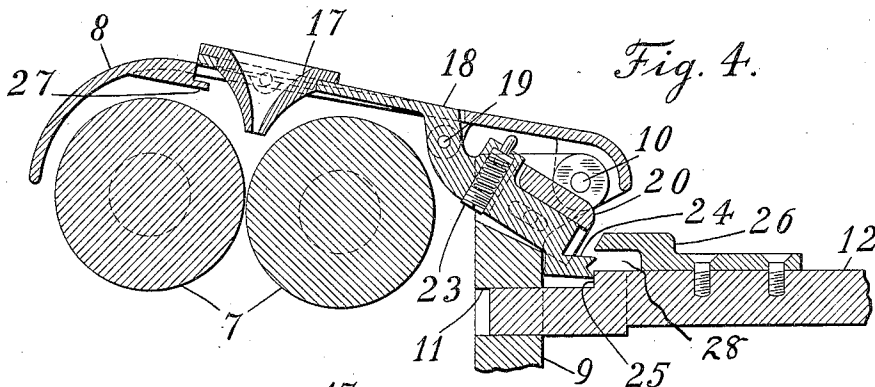
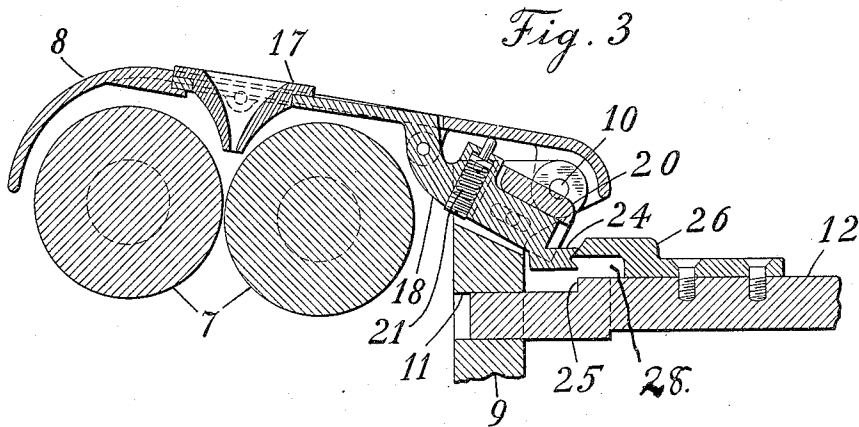
BY

Arthur J. Freeman ATTORNEY.

W. O. ALDRICH.
STOP MOTION DEVICE.
APPLICATION FILED DEC. 30, 1909.

1,047,478.

Patented Dec. 17, 1912.
2 SHEETS—SHEET 2.



WITNESSES:
E. H. Agahan
H. Kimball

INVENTOR.
William O. Aldrich
BY
McKee & Jones ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLIAM O. ALDRICH, OF WHITINSVILLE, MASSACHUSETTS, ASSIGNOR TO THE WHITIN MACHINE WORKS, OF WHITINSVILLE, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

STOP-MOTION DEVICE.

1,047,478.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed December 30, 1909. Serial No. 535,554.

To all whom it may concern:

Be it known that I, WILLIAM O. ALDRICH, a citizen of the United States, residing at Whitinsville, in the county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Stop-Motion Devices, of which the following is a full and concise specification, as required by statute.

15 The invention is an improvement in stop-motion devices for machines that operate upon cotton sliver or analogous material, and consists in a new and improved arrangement of the power-controlling members and
20 sliver-guide, for enabling the latter to stop the machine under extreme conditions of sliver tension; that is to say, under excessive tension, due to abnormal thickness of sliver, or insufficient tension, generally due
25 to failure of the supply. The invention seeks to perform these functions with a minimum number of parts compactly arranged and susceptible of ready application or adaptation to existing types of machines,
30 and to provide a stop-motion device of this character which will be capable of ready inspection and adjustment when necessary, being at the same time confined to a location protected from falling dirt; more particularly,
35 to provide such device within and supported by the usual hinged roll-cover so as to be separable from the reciprocating member of the power-controlling means, by simply lifting the cover on its hinges to
40 thereby expose the entire mechanism so that it can be returned to operative position by replacing the cover. These and other obvious advantages are attained by the apparatus hereinafter defined by the appended
45 claims.

The accompanying drawings show a form of embodiment of the invention as adapted to the coiler-head of an ordinary cotton drawing frame, Figure 1 being a top plan
45 view of a single coiler-head with parts broken away; Fig. 2 is a central vertical section through the coiler-head; Fig. 3, an enlarged central section through the sliver guide in one of its machine-stopping positions, the position to which it is moved by
50 excessive tension; Fig. 4, a similar view with the guide in its other stopping position to which it is moved by decreased tension or failure of the supply; Figs. 5 and 6,
55 being respectively top view and longitudinal

section of the sliver guide with certain parts removed.

The usual parts of the drawing-frame coiler-head appearing in Figs. 1 and 2 comprise the horizontal coiler-gear plate 1, which is rigidly supported in projecting
60 relation from the main supporting beam 2 and carries the revolving coiler gear 3, rim-journaled on the margin of a large circular aperture therein. The coiler-gear is formed
65 with a diagonal channel or sliver tube 4, extending from an upper central point thereof to a lower point close to the periphery, so that the sliver passing down said
70 tube, as the gear is revolved, is thereby laid in coils in the sliver-can placed beneath the coiler-gear plate. The gear is shown in Fig. 2 with its removable protecting covers 5 and 6 both in place.

The sliver is delivered to the mouth of the
75 diagonal sliver-tube by a pair of calender rolls 7 and these rolls are protected by a roll-cover 8 which is hinged by its rear margin to the upper extremity of a roll-cover bracket 9, the latter being a fixed part
80 securely bolted to the girder 2, and overhanging the gear. The hinge 10 of the roll-cover is located on the under side thereof and is adapted to support the same in a position
85 immediately over the rolls, as shown in Fig. 2. The upright post portion at the outermost end of the bracket 9 is slotted, as shown at 11, to receive or support the end of a
90 constantly reciprocating sliding-bar 12, constituting the member of the power-controlling means through which the sliver-guide exerts its control of the motion of the machine. Such control is effected, in the case
95 illustrated, by intercepting or blocking the movement of the bar, which is so organized that when obstructed or held against outward movement it will turn off the power, but it will be understood that such bar can
100 likewise be arranged to hold the power on while its own motion is obstructed and stop the machine by releasing it or allowing it to reciprocate, or it can be otherwise arranged according to well known methods. The
105 power-controlling means shown in the drawings is of the kind first mentioned. The reciprocating motion of the sliding bar 12 (see Figs. 1 and 2) is imparted to it by the
wag-shaft 13, which is itself rocked by an eccentric-rod 14 connected to the crank arm
110 of the shaft by a diagonal slot and pin con-

nection. When the forward motion of the sliding bar is obstructed, the slotted eccentric-rod rides upwardly on the pin 15 and by encountering and shifting the belt-shipping lever 16, stops the machine.

The roll cover 8 being supported over the rolls by the bracket 9 as above described, is provided with a slot 30 to accommodate the sliver-guide, which in the present case comprises a condensing trumpet 17 and a lever or trumpet-holder 18, though other means, subject to the tension of the sliver, can be used in place of the trumpet with equal effect, and such equivalent means are to be understood as included in any reference to the sliver-guide herein contained. The trumpet 17 is detachable from its lever so that others of different sizes can be substituted in its place to accommodate slivers of different weights. The lever 18 is disposed beneath the cover, except for a portion of it next to the trumpet, which may, if desired, occupy the slot 30, and is fulcrumed at 19 (Fig. 4) upon suitable ears or lugs depending from the under side of the cover, so that the trumpet is held in position within or in registry with the slot and is capable of movement toward or from the rolls. The tension or frictional drag of the sliver in passing through the trumpet tends to move or swing the lever toward or into its excessive tension position, indicated in Fig. 3, but such movement is made to take place against a two stage resistance having two successive degrees of force; the resistance of one stage is predetermined and adjusted so as to yield to a desired normal tension of the sliver, and that of the other is adjusted to resist such normal tension without yielding to it, and to yield only to a superior force, such as may be imparted to the lever by excessive tension or frictional drag of the sliver, so that thus while the normal tension obtains, the sliver-guide will be maintained in an intermediate position, as indicated in Fig. 2, and wherein it overcomes the lesser degree of resistance and is arrested against or held by the greater resistance. In this position it permits the unobstructed reciprocation of the sliding bar 12 above referred to. The lower of the two stages or degrees of resistance is provided by counterweighting the rear arm of the lever to an extent sufficient to overbalance the weight of the trumpet when it is not subject to normal tension but insufficient to do so when it is subjected to normal tension. For convenience in adjusting this resistance, the counterweight shown at 20 is made shiftable along the rear end of the lever, being preferably slotted and in the form of a saddle embracing the lever and held in adjusted position by a screw in the slot. The screw and slot connection is indicated by the dotted lines in the drawings.

The higher of the two degrees of resistance is provided by a spring interposed between the lever-arm and the cover, and preferably carried by the arm itself and arranged to thrust upwardly against the under side of the cover. The spring is marked 21, and is housed in a recess in the lever-arm 18 between a plunger 22 in one end of the recess and a screw 23 threaded into the other. The plunger has a stem that projects upwardly toward the under side of the roll-cover which it is adapted to engage as a yielding abutment while the lever occupies its intermediate or running position shown in Fig. 2. The screw 23 is intended to form a means for adjustably varying the tension of the spring and thereby provide a suitable margin of stability for the thread-guide in its said running position.

The rear arm of the sliver guide lever is made to obstruct the sliding bar when in either of its extreme positions and the abutting parts are specially formed and arranged so that the intermediate lever position will clear the bar and permit the running of the machine. For this purpose one of the parts is provided with two abutting members adapted to encounter or be encountered by a single member on the other part and such members are separated from each other by a space sufficient to accommodate the single member without obstruction. As herein shown and preferred, the single abutment member is carried by the lever arm, being formed integrally thereon as indicated at 24 and somewhat depressed below the counterweight 20, so as to be capable of swinging into the path of movement of the double abutment members 25 and 26, which are formed on the sliding bar. The abutment member 25 is formed by a shoulder on the sliding bar and the other, 26, is formed by a horn bolted on top of the shoulder and with a clearance space 28 between it and the bar, of sufficient width to accommodate the lever abutment. In the intermediate position in which the lever of the sliver guide is held when the tension is normal, as above explained, the abutment 24 is in alinement with the space, escaping both of the sliding bar abutments and the motion of the machine continues. In such position the stem of the spring plunger is held against the underside of the roll-cover but its spring is not compressed. On the failure of supply or excessive thinness of sliver, the lever abutment drops into the path of the sliding bar abutment 25 under the influence of its counterweight; on an excessive increase of tension it is raised against the compression of the spring and the gravity of the counterweight into the path of the horn 26, in either case intercepting the forward stroke of the sliding bar and stopping the machine. The thrust between the horn and the lever abut-

ment takes place in a direction tending to swing the lever on its pivot, and to counteract such movement I have formed the engaging faces of these two members on a plane which is substantially tangential to the lever's arc of movement. This may be done by beveling the end of the horn, as shown, and cutting a matching notch across the rear edge of the lever abutment 24. When the parts are engaged as thus formed, the tendency for the lever to swing in either direction is avoided and a positive obstructing engagement is assured. The machine being stopped it is thereupon possible to raise the roll-cover on its hinges and thereby withdraw the lever abutment 24 from its engagement with the sliding-bar, and in such opened position the stop motion mechanism, particularly the adjustment means thereof, will be easily accessible for cleansing or for adjusting either of the two degrees of resistance, as may be desired, and afterward the parts will be restored to operative position by replacing the cover. A ledge formed on the roll cover serves as a positive stop to the movement of the sliver guide in its movement toward the rolls.

I claim:

1. In a sliver stop motion, a sliver guide consisting of a single lever having a trumpet removably carried on one end thereof, and an adjustable counterweight therefor on the lever, in combination with a roll-cover to which said lever is fulcrumed and a spring yielding abutment opposing the movement of the lever which is against the gravity of the weight.

2. The combination of a roll-cover, a sliver-guide comprising a supporting lever fulcrumed to said cover with its rear part located beneath the same, said lever being movable under the action of gravity on failure of sliver tension, and a spring yielding device between and thrusting against said lever and the underside of the cover and adapted to resist the normal tension of the sliver upon said sliver guide and to yield to excessive sliver tension.

3. In a sliver stop motion, the combination with power-controlling means, of a movable roll-cover, a sliver-guide comprising a lever fulcrumed on said roll-cover and subject to movement by the tension of the sliver, means, including a spring carried by said lever and adapted to exert thrust against the underside of the roll-cover, whereby said lever is movable in opposite directions from normal tension position in response to excessive tension and insufficient tension, respectively, and means whereby said lever in responding to either extreme condition of sliver tension stops the machine through said power controlling means.

4. In a sliver stop motion, a roll-cover, a sliver-guide comprising a trumpet and sup-

porting lever fulcrumed to the underside of the cover and provided with a counterweight insufficient to support said lever and trumpet against the normal sliver tension, in combination with a spring-yielding device between said lever and cover, affording resistance to said tension in degree sufficient to resist said normal tension.

5. In a sliver stop motion, a movable roll cover, a lever fulcrumed thereto, a trumpet removably carried by the lever and subject to movement by the action of gravity upon the lever, in combination with a spring resisting the movement of the lever which is against the direction of gravity and means for varying the tension of the spring.

6. In a sliver stop motion, a double abutment power controlling bar and means for longitudinally reciprocating the same, in combination with a fulcrumed sliver-guide bearing means constituting a two stage resistance to movement of said guide by the sliver tension and a single abutment projecting approximately horizontally rearward from said guide adapted for engagement with said double abutment bar.

7. In a sliver stop motion, a double abutment power controlling bar, a fixed part in which said bar is longitudinally reciprocated; a roll cover hinged to said fixed part and bearing a fulcrumed sliver-guide raisable with the cover, having an abutment member adapted for engagement with either of the double abutments under the control of the sliver tension.

8. In a sliver stop motion, a power controlling sliding bar, a fixed part supporting the same and a roll-cover hinged to said part, protecting said bar, in combination with a yieldingly supported sliver guide fulcrumed to the underside of said cover so as to be raisable therewith, said bar and lever having abutment portions arranged to contact in opposite extreme positions of the lever.

9. In a sliver stop motion, a trumpet-holding lever having a counterweight sufficient to overbalance the trumpet but insufficient to move said lever against normal sliver tension and bearing a spring adapted to yield to movement by excessive sliver tension, and a power controlling member controlled by the position of said lever.

10. In a stop motion, in combination with a roll-cover, a trumpet holding lever fulcrumed on the underside of the roll-cover and containing housed within it an adjustable abutment spring.

11. In a stop motion, a trumpet holding lever having an arm adapted to fall by gravity into a lower position, thereby raising the trumpet, and bearing a spring providing yielding resistance for said lever against movement toward an upper position, and an abutment co-acting with the spring.

12. In a sliver stop motion, coöperating parts comprising a reciprocating power controlling bar, and a lever having a trumpet carried on one of its arms and a spring and adjustable counterweight on the other arm, one of said parts having a double abutment and the other a single abutment arranged to contact in the extreme opposite positions of said lever.
13. In a sliver stop motion, a trumpet holding lever having the trumpet on one of its arms and a spring yielding device housed in a recess in the other arm and a counterweight adjustably secured to the latter arm adjacent to said device.
14. In a sliver stop motion, a lever fulcrumed to the roll cover and having an abutment member, in combination with a reciprocating power controlling bar adapted for engagement with said abutment member, one or both the engaging faces thereof being tangential to the path of movement of said lever.
- In testimony whereof, I have signed this specification in the presence of two witnesses.
- WILLIAM O. ALDRICH.
- Witnesses:
HARMON O. NELSON,
OSCAR L. OWEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."