

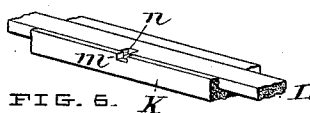
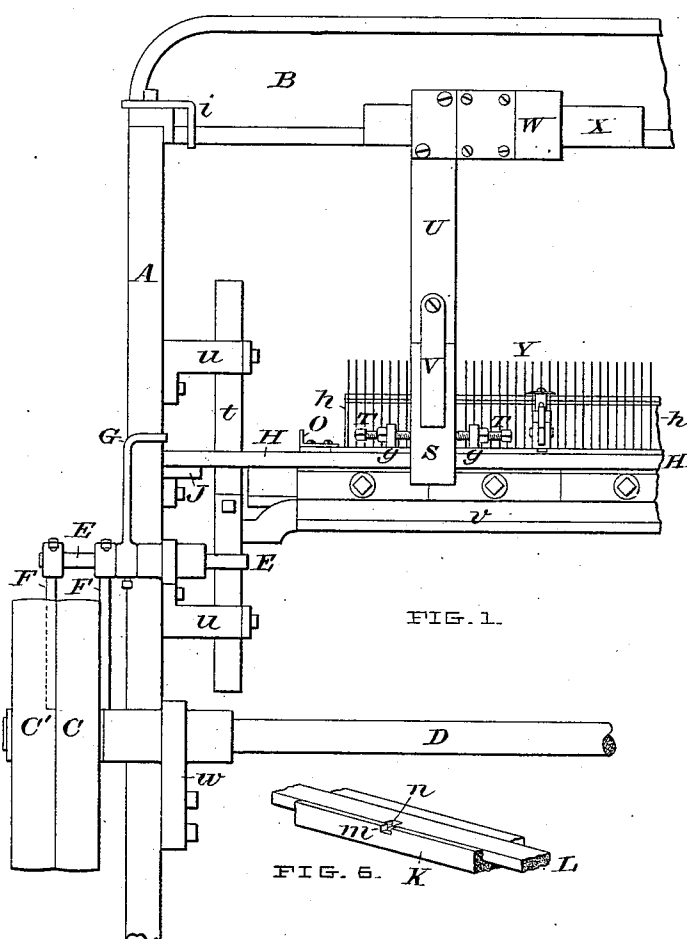
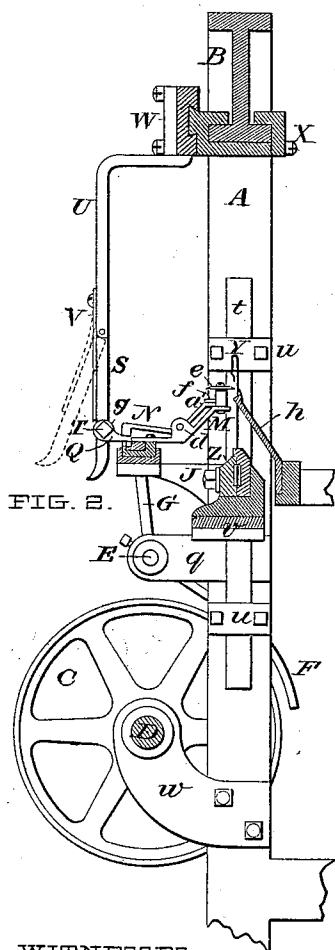
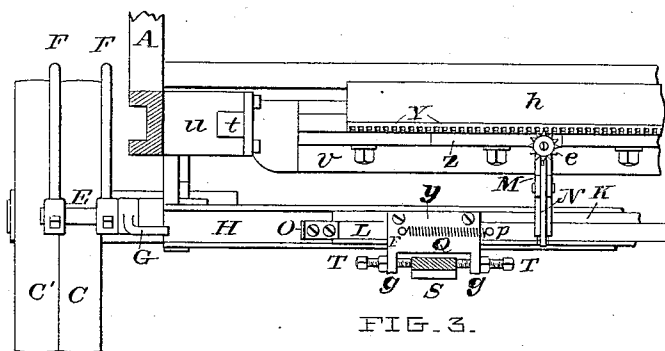
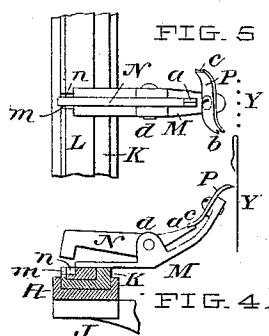
(No Model.)

E. TIFFANY.

STOP MOTION FOR KNITTING MACHINES.

No. 521,190.

Patented June 12, 1894.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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STOP-MOTION FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 521,190, dated June 12, 1894.

Application filed June 2, 1892. Serial No. 435,261. (No model.)

To all whom it may concern:

Be it known that I, ELI TIFFANY, of the village of Bennington, in the county of Bennington and State of Vermont, have invented certain new and useful Improvements in Stop-Motions for Knitting-Machines; and I do hereby declare that the following description, in connection with the accompanying drawings, constitutes a complete specification thereof.

This invention relates to means for stopping a knitting machine when yarn or snarls have collected on the needles from any cause, and it is especially adapted for use on straight knitting machines in which the yarn is delivered to the needles by a reciprocating yarn carrier. The details thereof are fully set forth in the drawings, in which—

Figure 1 is a partial view in elevation of the front of a straight knitting machine. Fig. 2 is a vertical transverse section of the same machine. Fig. 3 is a sectional plan view of the parts of such a machine showing the parts constituting my invention as connected with the driving shaft and pulleys. Figs. 4 and 5 are respectively an elevation and a plan of a modification of the device shown in the other figures for engaging the accumulated yarn upon the needles and by its revolution on its pivot throwing into play the mechanism which actuates the belt shifter and stops the machine. Fig. 6 is a detail of the locking notch in the shipping bar.

The apparatus consists of the following co-operative parts:—A slide bed H which is attached to the brackets J of the main frame. A reciprocating slide K which is fitted to move longitudinally in a way provided for it in the upper surface of the bed H. A shipping bar L which is fitted to reciprocate longitudinally in a way provided for it in the upper side of the slide K. A striking lug O on the end of bar L which is adapted to impinge against the end of the arm G which is connected with the belt shipping rod E. The shipping rod E carrying the fingers F F. The plate *y* having the ears *g g* through each of which passes an adjusting screw T for adjusting the lateral position of the driving arm U S with reference to the slide K. The jointed driving arm U S which is connected with the yarn carrying slide head W X and

moves with the part W. The upper section U is attached to and moves with the member W of the yarn carrier slide W X. The lower part S is hinged to the upper section U as shown, so that the part S can be pulled forward out of engagement with the plate *y* at any time if desired. The spring V bridges the joint for the purpose of keeping the part S in engagement during the normal action of the devices. The slide W X which moves on ways on the crosshead of the machine frame B and which drives the yarn carrier bar (which bar is not shown), by any suitable connection. This slide W X is reciprocated by any of the well known appliances now in use. The retractile spring Q which connects plate *y* with the bar L by its attachment to the pins *r* and *p* on the plate and bar respectively. Its function is to restore the plate and bar to their proper relations whenever they have become separated by reason of the lug O striking the end of the arm G and stopping there while the driver S carries the slide K further toward the arm G, as it does on each stroke when the machine is running normally. The bracket M which is attached to the top of the slide K and carries pivoted on its upper side the locking dog N and the spur wheel *e* or latch claw P, as may be preferred. The locking dog N pivoted on the bracket M adapted to drop into the notches *m* and *n* of the slide K and bar L whenever its upper end is released from engagement with either the wheel *e* or the latch claw P, and when the notches *m* and *n* shall have been brought into coincidence beneath it. The spur wheel *e* and the latch claw P, as may be preferred, are both furnished with spurs to engage yarn gathered on the needles as seen at *b* in Fig. 5, or at *e* as seen in Fig. 3, and on the side or extremity opposite the spurs is a provision to engage and hold in working position the locking dog N, such provisions in both cases consisting of a V shaped groove in one piece into which fits a pin or V shaped fitting of the other piece. These features are shown at *a* and *c* in Fig. 5, and at *f* and *a'* in Fig. 2. These parts are combined and mounted on a straight knitting frame A B substantially as shown.

The driving shaft D carries the fast and loose pulleys C and C' respectively, over

which is adjusted the belt shifting rod E and fingers F F. Only the front needle bar Z is shown which is mounted on the vertical slides t as in the usual way.

5 The bed H is attached to the frame of the machine and in its upper grooved surface carries the slide K. This in turn carries the bar L, and the other minor details are attached and adjusted as previously described.

10 The operation of the machine is as follows:—The fabric having first been started on the needles in the usual way, the slides and latch claw are then put in adjustment by pressing back the upper part of the dog N so that the

15 pin *a'* on the hub of the spur wheel *e* or the notch on the under side of the tail end of the latch claw P can be rotated so as to come into position over it when the dog will sustain its position by reason of the weight of its other

20 or locking arm. This adjustment brings the points of the spur wheel or the claws *c* of the latch claw P into close proximity to the needles as seen in Figs. 2 and 4. The machine is then started. While the knitting progresses properly the reciprocation of the yarn-carrying

25 head W X by means of the driving arm U S will correspondingly reciprocate the slide K and the spur wheel or latch claw P which is mounted upon it as before described. If the

30 needles Y are free and not loaded with any superfluous or superabundant yarn, the claw or spur wheel will pass along freely without collision, but if from any cause yarn should accumulate on the needles in front of the claw

35 teeth the movement of slide K would cause such teeth to engage the yarn and further motion would cause the spur wheel or the claw P to be turned on its pivot, the result of which would be a release of the upper arm of the

40 dog N and its lower arm would fall and rest upon the upper surface of the bar L, until in the course of the action of said bar either by the force of the spring Q which draws the bar in one direction, or by reason of the stop

45 lug O impinging against the end of the arm G which forces it in the other direction, the notch *n* is brought into apposition with the other notch *m* of the slide, at which moment the dog N falls into said coincident notches

50 and thus prevents the further slipping of the bar L upon the slide K. Further movement of slide K and bar L toward the arm G results in carrying the lug O against the arm G which being forced along with it moves the

belt shifter E to the left off from the tight to the loose pulley, thus stopping the machine. 55

In practice the latch claw P is preferable to the spur wheel for the reason that after the release of the locking dog N it swings around into a transverse position out of the 60 way of possible engagement with the obstruction which stopped the machine, but the operative principle of both devices is essentially the same. Hence

I claim as my invention— 65

1. In combination with the belt shifting mechanism of a straight knitting machine, a pivoted claw adapted to be reciprocated in front of and in close proximity to the needles and to be rotated by engagement with any 70 abnormal accumulations upon said needles, a reciprocating slide with which said claw is connected and carrying a bar which actuates the belt shifter and has an endwise movement upon said slide, means substantially as shown, 75 for reciprocating said slide and claw, a resilient device, as a spring, connecting said slide and bar, a locking device for effecting fixed engagement between said slide and bar and adapted to be controlled in its action by the 80 action of the pivoted claw, constructed and arranged to operate substantially in the manner described and for the purposes specified.

2. The combination with the needles of a straight knitting machine, of the described 85 pivoted claw and locking dog fitted with intermediate provisions for setting said dog out of engagement with the bar which coacts with the belt shifting apparatus for stopping the machine, and the slide K and bar L, mounted 90 on said slide and adapted to slide longitudinally thereon and therewith as and for the purposes specified.

3. The combination with the arm G of the reciprocating slide K, the bar L and spring 95 Q, and means substantially as shown, for reciprocating said slide and bar, substantially as described and for the purposes set forth.

4. The jointed driving arm U S, in combination with the yarn carrying head W X, and 100 the slide K, substantially as specified.

In testimony whereof I have hereto subscribed my name, at Bennington, Vermont, this 13th day of October, A. D. 1891.

ELI TIFFANY.

In presence of—

FRANKLIN SCOTT,
CHARLES H. HOUGHTON.