

971,923.

Fig. 1

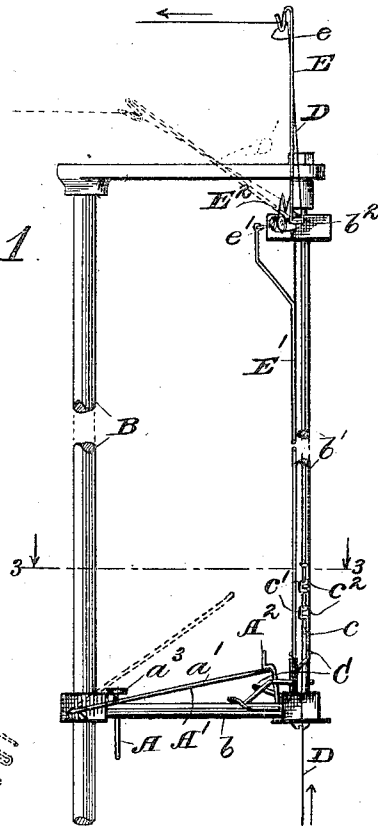


Fig. 4

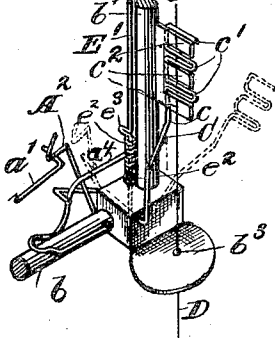


Fig. 3

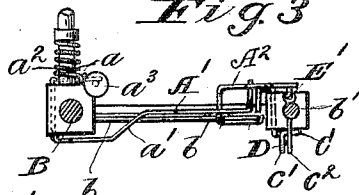
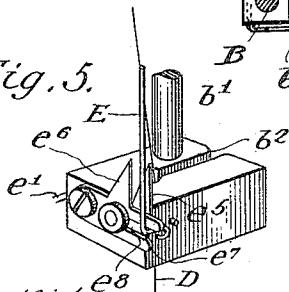


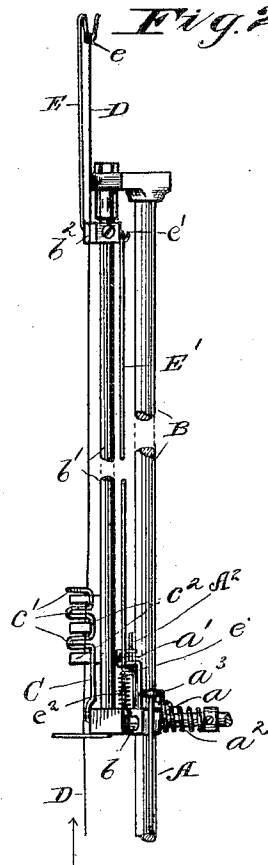
Fig. 5.



Witnesses:

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Fig. 2



Inventor,

Exhibits Paquette
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UNITED STATES PATENT OFFICE.

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STOP DEVICE FOR KNITTING-MACHINES AND THE LIKE.

971,923.

Specification of Letters Patent.

Patented Oct. 4, 1910.

Application filed December 28, 1908. Serial No. 469,521.

To all whom it may concern:

Be it known that we, EXILIAS PAQUETTE and CHARLES F. DEEG, both citizens of the United States, residents of Lowell, county of Middlesex, and State of Massachusetts, and Elyria, county of Lorain, and State of Ohio, respectively, have jointly invented a new and useful Improvement in Stop Devices for Knitting-Machines and the Like, of which the following is a specification, the principle of the invention being herein explained and the best mode in which we have contemplated applying that principle, so as to distinguish it from other inventions.

The object of the present invention is the provision of a stop device or stop motion, as it is variously called, that will be particularly adapted for use in connection with knitting machines, or other like apparatus which it is desirable should be stopped in case of a knot or break in the yarn or thread, in order to prevent injury to the mechanism or an imperfection in the article being manufactured. The present invention has in regard more particularly still the provision of a stop motion for the purpose described that will be sensitive and efficient and yet avoid the placing of any undue strain upon the yarn, which is objectionable, not merely because it will tend to break the latter, but also because it puts the needles, in the case of a knitting machine, under a harmful tension.

To the accomplishment of the above and related ends said invention, then, consists of the features hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—Figure 1 is a side elevational view of a stop motion wherein have been incorporated our several improvements; Fig. 2 is a front elevation of the same; Fig. 3 is a plan view thereof taken on the line 3—3, Figs. 1 and 2; and Figs. 4 and 5 are perspective views of details of such device.

In view of the applicability of the device to the stopping or control of various machines of the general class described, namely machines operating upon yarn or thread, it

has not been deemed necessary to indicate any specific form of brake or "throw-out", but merely the element or member, actuation of which by the stop mechanism proper will result in the stopping of the machine through any suitable intermediate agency. In the device as illustrated, the element in question comprises a vertically reciprocable rod A normally free to assume its lowermost position, in which the brake or throw-out referred to is held inoperative, but adapted to operate such brake or throw-out upon being raised. To thus raise said member, which is in effect a latch member, a lever A' is provided, the short arm *a* of which engages a head *a*³ on the upper end of the member, the long arm *a*' of which extends substantially horizontally in the normal position of said lever. From this position, a spring *a*², or other like means, tends to raise said lever into the position indicated in dotted outline, and thereby raise member A to actuate the brake or throw-out, all as aforesaid.

To retain the lever in its normal lower position, a catch A² pivoted at the forward end of a transverse bar *b* constituting a part of the frame B upon which the several operative parts of the device are mounted, is provided. This catch, as also lever A', is preferably constructed of wire, but irrespective of this the material of such catch is so disposed as to normally retain the same in position thus to engage the lever arm in question. To tilt the catch from such engaging position, so as to disengage the lever therefrom, two independently operable devices are provided, the one being adapted to be actuated upon a break in the thread or yarn, the other upon a knot occurring in the same or the occurrence of a tight cop. These will now be taken up and described in the order named.

A weighted lever or trip C is formed with its pivotal axis parallel to that of the catch A². The trip C is carried at one end of its pivotal axis; at the opposite end, the axis is bent upwardly and rearwardly, forming an arm which extends behind the catch A² and, upon the falling of the trip C, strikes the catch and releases the lever A' therefrom. The weighted portion of such trip comprises an upwardly extending arm *c*, provided with laterally displaced fingers *c*' projecting at right angles thereto, and adapted to lie be-

tween fingers e^2 projecting from an upright supporting member b' that rises from the outer end frame arm b . The yarn D passing up from the spool (not shown) is threaded between these fingers, so that as long as its continuity is not interrupted, the trip member C will be retained in its upper inoperative position. The latter being only slightly overbalanced in this position, it will be obvious that practically no strain or tension is put upon the thread; but once such trip is released and begins to fall, it quickly gains sufficient momentum to insure its disengaging lever A' from the catch A^2 .

Substantially directly above the device just described, the thread or yarn D, after passing through a suitable guide b^2 , is conducted across a loop or fork e in the upper end of a lever E pivoted so as to rock, upon occasion, in the vertical plane in which the thread lies as it passes therefrom to the machine (not shown) controlled by the stop device. The short arm e' of this lever is connected with the upper end of a vertically disposed rod E' that is slidably supported at its lower end in the horizontal frame arm b . A spring e^2 serves normally to elevate such rod, so as to retain lever E, thus seen to be connected with its upper end, in a substantially vertical position. Depression of such lever, however, is effective to lower the rod, and thereby to trip the catch A^2 , by means of engagement of an offset e^3 on said rod with an arm a^4 projecting rearwardly from said catch. The aperture b^3 in frame arm b , through which the thread is guided just before it passes between the fingers or pins c' , c^2 , is of such size as to prevent such passage, in case a knot is encountered. The pull upon the thread thereupon becomes effective to depress the lever E, and, through connecting rod E' , to actuate latch A^2 to release lever arm A' , and so stop the machine as before explained. The occurrence of a tight cop is equally effective to depress the lever E.

In connection with the lever just described as operating to stop the machine upon a knot being encountered in the thread or upon the occurrence of a tight cop, we also provide means E^2 for severing such thread, thus immediately relieving any tension that may have been put upon the needle, or other delicate operative parts of the machine, to which the thread passes. Such severing device comprises (Fig. 5) a fixed blade e^5 and a movable blade, e^6 the latter of which is adapted to be actuated by depression of the lever through engagement of a crook e^7 in the latter with a handle portion e^8 wherewith it is provided. Such severing device E^2 lies to one side of the thread when passing upwardly, as it does under normal circumstances, to the loop e in lever E' , but as the latter is tilted down-

wardly into the position indicated in dotted outline in Fig. 1, the thread, it will be seen, is drawn between the blades just previously to their closure, so that the thread is severed very quickly after the actuation of the stop motion proper by operation of connecting rod E' .

From the foregoing description of the construction and operation of our improved stop motion, it should be obvious that simplicity characterizes all the parts thereof, there being practically nothing to get out of order, nor any members apt to be interfered with by the presence of oil thereon, a frequent source of trouble in machines of this kind. Not only is operation certain upon the occurrence either of the several difficulties, referred to, but in the absence of such difficulties, practically no interference with the free passage of the thread through the device is offered, thus lessening the likelihood of such difficulties, particularly breaking of the thread, which it is the object of the device to provide for.

Other modes of applying the principle of our invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

We therefore particularly point out and distinctly claim as our invention:—

1. In a device of the character described, the combination of a normally inoperative stop-actuating rod; a lever adapted, upon movement, positively to render said rod operative; means tending thus to move said lever; a catch engaging the free end of said lever and adapted to restrain such movement; and a trip member retained against falling by the thread, said member carrying a projection adapted, upon falling of said member, to contact with said catch and disengage the catch from said lever.

2. In a device of the character described, the combination of a rod designed, upon movement, to operate a mechanism to stop the machine; a lever adapted, upon movement, positively to actuate said rod; means tending thus to move said lever; a catch normally engaging said lever and adapted to restrain such movement, said catch being held in such engagement only by the tendency of the lever toward such movement; and means controlled by the tension of the thread adapted positively to trip said catch.

3. In a device of the character described, the combination of a rod designed, upon movement, to operate a mechanism to stop the machine; a lever adapted, upon movement, positively to actuate said rod; means tending thus to move said lever; a catch normally engaging said lever and adapted to restrain such movement, said catch being

held in such engagement only by the tendency of the lever toward such movement; a second lever, across the free end of which the thread passes in a substantially horizontal line; resilient means normally retaining said lever in a substantially vertical position, undue tension of such thread being effective to depress said lever; and a rod connecting said lever with said catch and adapted upon such depression of the former, positively to trip the latter.

4. In a device of the character described, the combination of normally inoperative stop-actuating means; a lever adapted, upon movement, to render said means operative; means tending thus to move said lever; a catch adapted to restrain such movement; a second lever across the free end of which the thread passes; resilient means normally retaining the second lever in its normal position, undue tension on such thread being effective to move said lever; means connected with the second lever and adapted, on movement of such lever, to trip said catch; a fixed and a movable cutter blade located to one side of the thread in the normal position of parts, but disposed to receive the same between said blades upon such movement of the second lever, the latter being connected with the movable blade to operate the same near the final position of the second lever.

5. In a device of the character described, the combination of normally inoperative stop-actuating means; a lever adapted, upon movement, to render said means operative; means tending thus to move said lever; a catch adapted to restrain such movement; a second lever, across the free end of which the thread passes in a substantially horizontal line; resilient means normally retaining said lever in a substantially vertical position, undue tension on such thread being effective to depress said lever; a fixed and a movable cutter blade, constituting thread-severing means, located to one side of the thread in the normal position of parts, but disposed to receive the same between said blades upon such depression of said lever, the latter being connected with said movable blade to operate the same near the final depressed position of said lever.

6. In a device of the character described,

the combination of normally inoperative stop-actuating means; a lever adapted, upon movement, to render said means operative; means tending thus to move said lever; a catch adapted to restrain such movement; a second lever, across the free end of which the thread passes, said lever being normally angularly disposed with respect to the portion of such thread therebeyond but being movable from such position under undue tension of such thread; means, operatively connected with said second lever, adapted to trip said catch; and thread-severing means connected with the same lever, said lever being adapted to bring the thread into operative relation to the severing means subsequently to the operation of said trip means.

7. In a device of the character described, the combination of normally inoperative stop-actuating means; a lever adapted, upon movement, to render said means operative; means tending thus to move said lever; a catch adapted to restrain such movement; a second lever, across the free end of which the thread passes in a substantially horizontal line; resilient means normally retaining said lever in a substantially vertical position, undue tension on such thread being effective to depress said lever; a rod connecting said lever with said catch and adapted upon such depression of the former to trip the latter; and a fixed and a movable cutter blade, constituting thread-severing means, located to one side of the thread in the normal position of parts, but disposed to receive the same between said blades upon such depression of said lever, the latter being connected with said movable blade to operate the same near the final depressed position of said lever.

Signed by EXILIAS PAQUETTE, this 21st day of December, 1908.

EXILIAS PAQUETTE.

Attested by—

ALBERT O. HAMEL,

WILMER C. DOTY.

Signed by CHARLES F. DEEG, this 24th day of December, 1908.

CHARLES F. DEEG.

Attested by—

W. L. FAY,

LOUIS L. WILSON.