

W. W. COLLINS

STOP MOTION

3 Sheets-Sheet 1

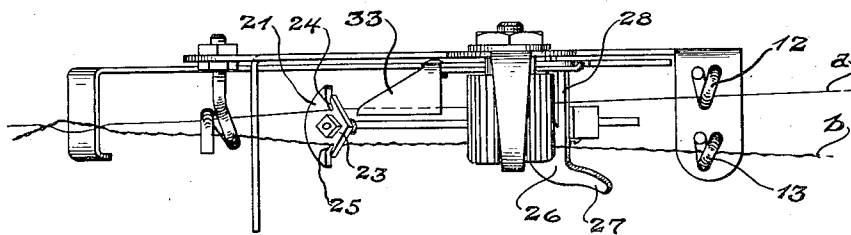
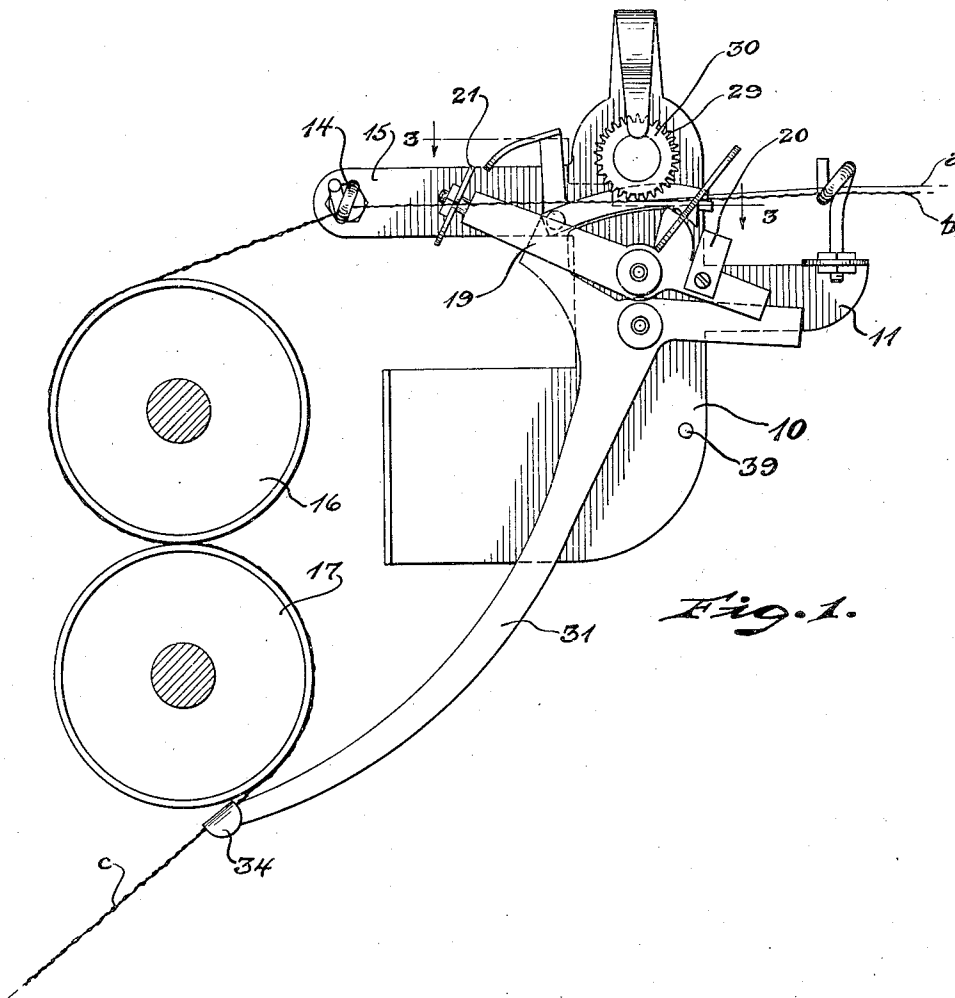


Fig. 2.

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July 14, 1936.

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STOP MOTION

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3 Sheets-Sheet 2

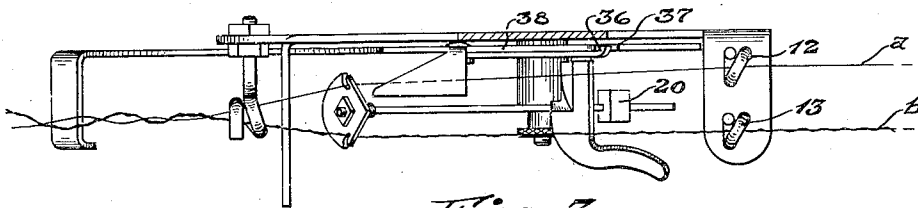


Fig. 3.

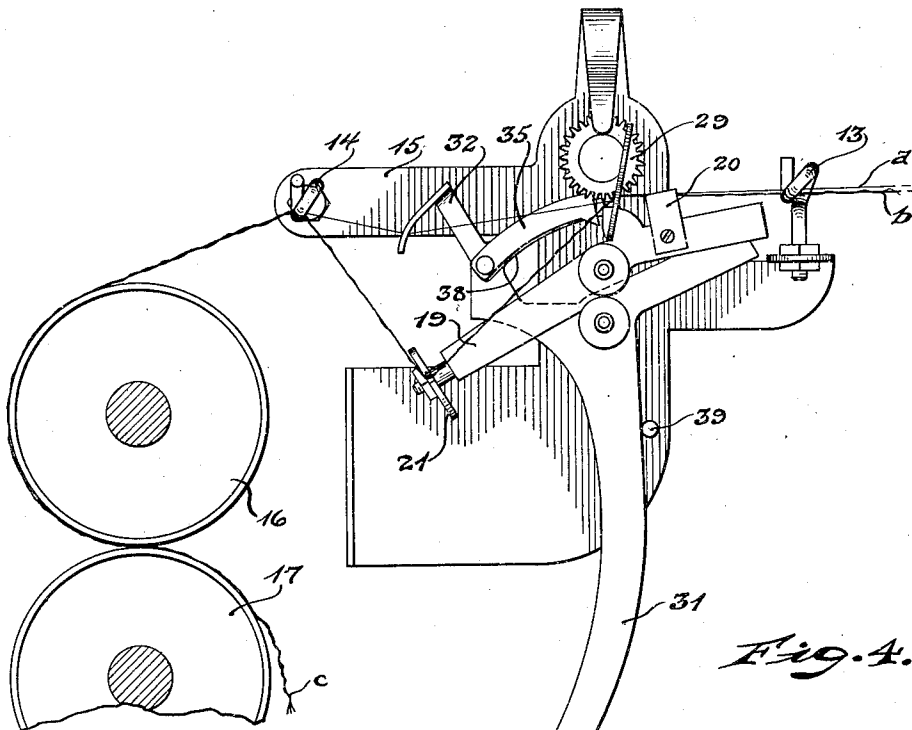


Fig. 4.

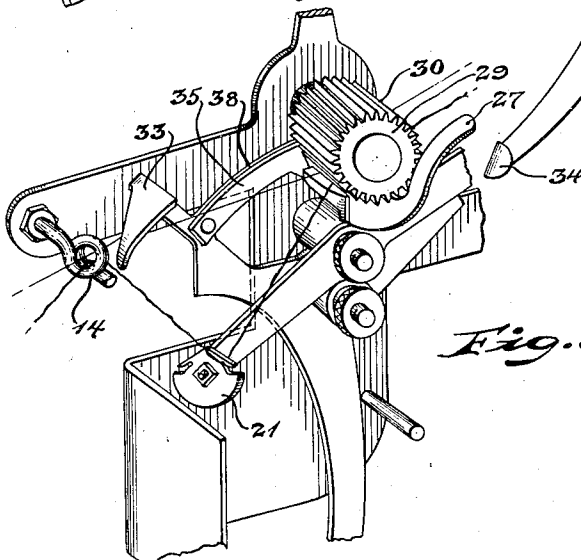


Fig. 5.

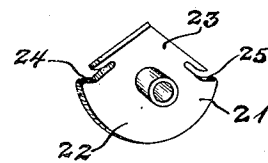


Fig. 6.

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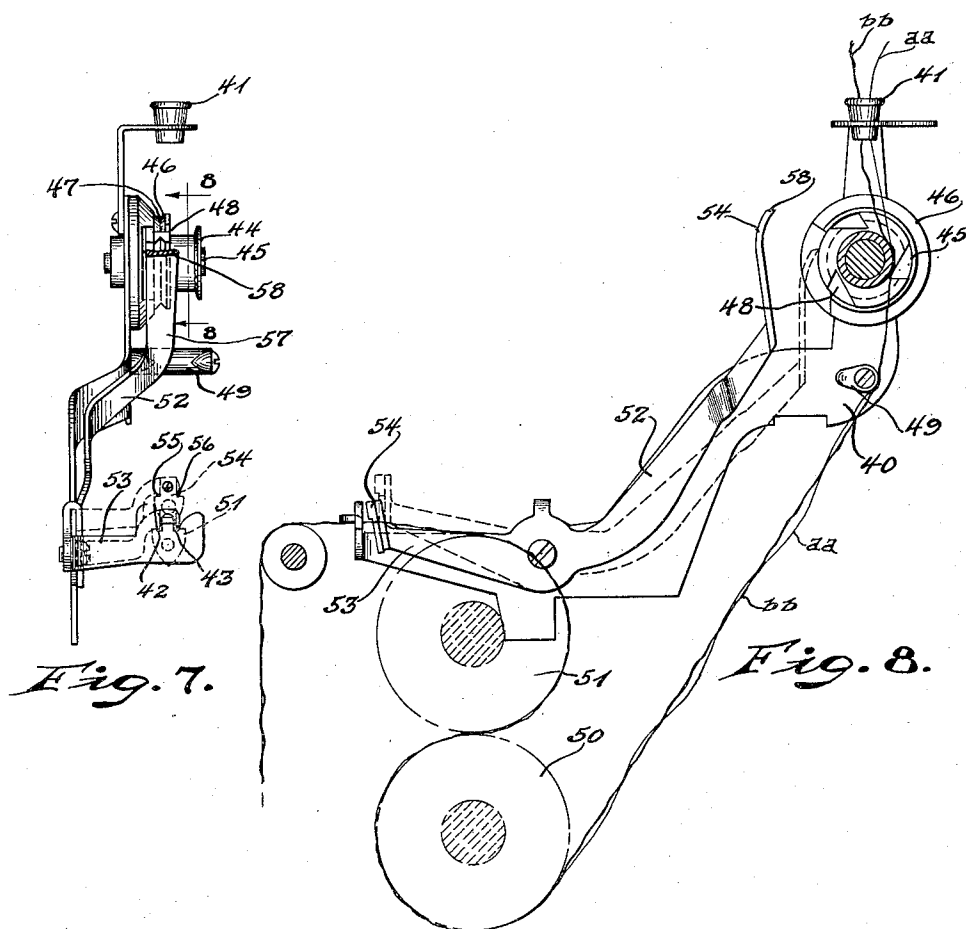
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STOP MOTION

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,047,547

STOP MOTION

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3 Claims. (Cl. 117—33)

My present invention relates to the textile art and has particular reference to automatic stop motions.

Stop motions have been used for stopping textile threads during the various weaving operations, the breaking of a thread or fibre, hereinafter broadly termed a strand, instantly stopping the machine. These stop motions have heretofore been adapted for use with single threads or fibres, and have not been adapted for use in connection with the forming of textile strands from a plurality of separate strands, and particularly in arrangements where the breakage of one strand has no effect on the continued movement of the other strands.

It is the principal object of my invention to devise an automatic stop motion which is specifically adapted to cooperate with a plurality of strands so as to stop the forward movement of the unbroken strands when any strand breaks. It is a further object of my invention to devise a stop motion which controls each of a series of separate strands, and also the resulting multiple strand, whereby the breaking of the multiple strand results in a stoppage of the separate individual strands.

With the above and other objects and advantageous features in view, my invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more specifically defined in the claims appended thereto.

In the drawings,—

Fig. 1 is a side view of a preferred arrangement of novel stop motion, showing the mounting of the strands with respect thereto;

Fig. 2 is a top plan view of Fig. 1;

Fig. 3 is a detail of Fig. 1, on the line 3—3 thereof;

Fig. 4 is a view similar to Fig. 1, showing the parts in locking position after breaking of the multiple strands;

Fig. 5 is a perspective detail of the stop motion parts of Fig. 4;

Fig. 6 is a perspective view of the pivoted control; and

Figs. 7 and 8 are respectively end and side elevations of a modified construction of stop motion.

It has been found desirable to provide a stop motion specifically designed for controlling the manufacture of multiple strands, such as for example Jasper thread, from a plurality of separate strands, the stop motion producing an auto-

matic stoppage of the strands when an individual strand is broken, or when the multiple strand formed by twisting the individual strands becomes broken. To this end, I have devised a stop motion which contains a pivoted control, this pivoted control slidably receiving the separate strands, and being movable upon breakage of any strand to lock forward movement of all the strands; moreover, I have included a separate stop which is contacted by the multiple strand, and which cooperates with the first stop motion to lock all the strands against forward movement upon breakage of the multiple strand.

Referring to Fig. 1 of the drawings, the novel stop motion includes a base 10, which may be formed of sheet metal or the like, having an end portion 11 upon which two separate eyes 12, 13 are mounted for respectively receiving textile strands *a* and *b*, these strands passing through a common eye 14 positioned on a forward extension 15 of the base 10, and then through the usual twisting rolls 16 and 17 to form a multiple strand *c* which passes to the spindle. A stop lever 19 is rotatably mounted on the base 10 and has a regulatably shiftable counter-weight 20 at one end, and a pivot member 21 swingingly secured to the other end thereof, this pivot member 21, see Figs. 2 and 3, comprising a weighted base 22 and pointed triangular portion 23 spaced from the base to provide slots 24, 25 positioned between the base and the triangular portion. As indicated in Fig. 2, the two threads *a* and *b* are positioned in the slots 24 and 25, and the lever 19 is normally held upwardly by the weight 20 and the tension of the threads in the slots. The lever 19 has a transverse lock portion 26, see Fig. 2, with a finger graspable end 27 and a lock edge 28, the lock edge being engageable with the teeth 29 of a gear roller 30 which is rotatably mounted on the base 10. If either thread *a* or *b* breaks the pivot member 21 becomes unbalanced, and swings to permit down movement of the forward part of the lever 19 and upward movement of the lock edge 28, which engages the recesses between adjacent teeth 29 and firmly grips the threads *a* and *b* therein, whereby forward motion of the threads *a* and *b* is prevented.

A second lever 31, see Fig. 1, is also pivotally mounted on the base 10 and has a forward extension 32 terminating in a transversely positioned generally triangular hook 33, the lower end 34 of the lever 31 being laterally bent so as to be normally engaged by the multiple strand *c*, whereby the lever 31 is held upwardly so as to

normally keep the hook 33 out of engagement with but in a position directly above the space between the strands *a* and *b*. If the thread *c* breaks, the lever 31 shifts so as to bring the hook 33 downwardly, thus forcing one of the strands, such as the strand *a*, to the side and out of its slot 24, whereupon the stop lever 19 then functions to stop the strands *a* and *b*. The lever 31 has a pawl 35 hingedly mounted thereon, the pawl having an extension 36 at the rear end normally seated in a slot 37 of a rearwardly extending bar 38 fixed to the lever 31, whereby the pawl is prevented from moving downwardly, but may move upwardly to permit relative forward movement of the lever 31 with respect to the lever 19, the pawl locking the two levers for joint rearward movement.

The operation of the novel stop motion may now be explained. The strands *a* and *b* are threaded through the separate eyes 12 and 13 and then through the common eye 14, thus providing an elongated space between the two threads to permit positioning of the two strands within the slots 24 and 25. The twisted multiple strand *c* is then positioned underneath the end 34, thus lifting the hook 33 so as to position this hook directly above the spaced strands *a* and *b*, and simultaneously causing the lever 19 to move back due to engagement of the pawl 35 with the lock portion 26, whereby the pivot member 21 moves upwardly between the threads *a* and *b* to cause the threads to slide laterally over the triangular portion and then enter into the slots 24 and 25 because of the thread tension. This provides a self-setting feature of simple operation. If either strand *a* or *b* breaks, the pivoted member 21 swings, and the stop lever turns so as to bite the strands *a* and *b* between the lock edge and the geared roller; if the multiple strand *c* breaks, the hook 33 is released to move downwardly, forcing the strand *a* out of its slot and thus permitting the stop motion to function so as to bite the strands *a* and *b* as before. A suitable stop such as a stop pin 39 is provided to limit backward movement of the lever 31.

It may be preferred to use a somewhat different construction for certain types of textile strands, and I have therefore devised an alternative construction, illustrated in Figs. 7 and 8; this construction includes a base 40, having an eye of porcelain or the like 41 at one end, and two spaced outlet slots 42, 43 at the other end. Two strands *aa* and *bb* are passed through the common eye 41 and over roller 44 rotatably mounted on the base 40, the roller having a barrel 45 and a disk 46 having a V-groove 47, the disk 46 having a series of cuts 48 in the sides thereof of generally triangular shape, whereby the two threads when passed over the barrel are guided into the V-groove to seat therein. The strands *aa* and *bb* are then passed over a porcelain spacer bar 49 to two rolls 50, 51 and forwardly to the spaced outlet slots 42, 43. A lever 52 is pivotally mounted on the base 40, and has a forward arm 53 at the end of which a pivoted member 54 is mounted, this member 54 having shoulders 55, 56 for respectively receiving the strands *aa* and *bb*; the other end of the lever 52

is extended upwardly to form a stop bar 57 which has a sharpened end 58 normally positioned away from the slotted disk 46. If either thread *aa* or *bb* break, the pivoted member 54, which normally is held downwardly by the tension of the strands, swings so as to throw the remaining strand off its associated shoulder, whereupon the lever 52 swings so as to move the edge 58 into a cut 48 of the disk 46 to grip the strands *aa* and *bb* and to stop forward motion thereof.

It is thus evident that the novel stop motion functions to stop each of a plurality of strands upon breakage of any one strand, and is thus particularly suitable for controlling the twisting of multiple strands. Moreover, stoppage of the individual strands is also provided for in the event that the multiple strand breaks for any reason whatever. The term "strand" is used in the description and the claims to broadly designate any textile thread, fibre, or filament.

While I have described specific constructional embodiments of my invention, it is obvious that desired changes in the structure of the parts, which preferably are made of sheet metal, and in their relative arrangement and size, may be made to suit the requirements for different textile operations involving the use of multiple strands, without however departing from the spirit and the scope of the invention as defined in the appended claims.

I claim:

1. In a stop motion, means providing passages for a plurality of moving strands, a movable lever having parts contacted by said strands, said strands being twisted into a multiple strand, a second movable lever adapted to be engaged by said multiple strand, means for locking said strands against movement upon motion of said first lever, and means responsive to movement of said second lever upon breakage of said multiple strand for moving said first lever.

2. In a stop motion, a pivoted lever, a control member swingingly attached thereto, said control member having slots on each side of the pivotal attachment thereof each adapted to be engaged by a moving strand, said strands being twisted into a multiple strand, means responsive to swinging of said control member to lock said strands against movement, and means responsive to breakage of the multiple strand to shift one strand out of its slot.

3. In a stop motion, a pivoted lever, a control member swingingly attached thereto, said control member having slots on each side of the pivotal attachment thereof each adapted to be engaged by a movable strand, said strands being twisted into a multiple strand, means responsive to swinging of said control member to lock said strands against movement, and a second pivoted lever having one end adapted to be contacted by the multiple strand, and the other end positioned adjacent one slot and adapted to engage one strand and shift said strand out of its slot upon movement of said second lever in response to breakage of said multiple strand.

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