W. F. HASTINGS.

STOP MOTIONS FOR SPINNING AND TWISTING FRAMES.

No. 187,010 Patented Feb. 6, 1877.

Fig. 1.

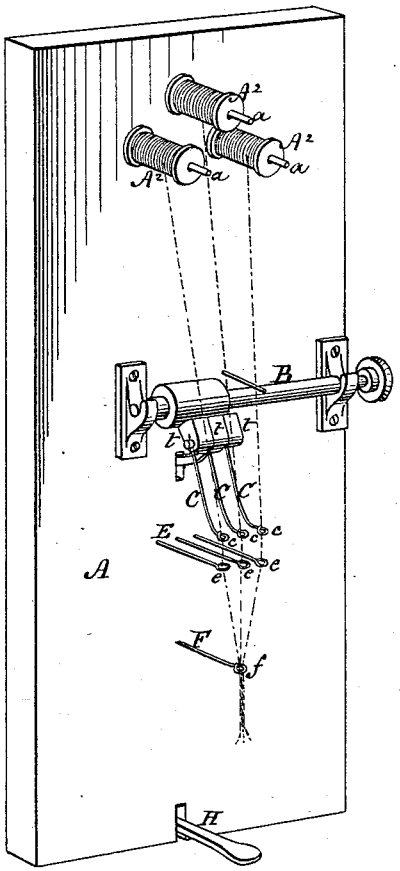


Fig. 2.

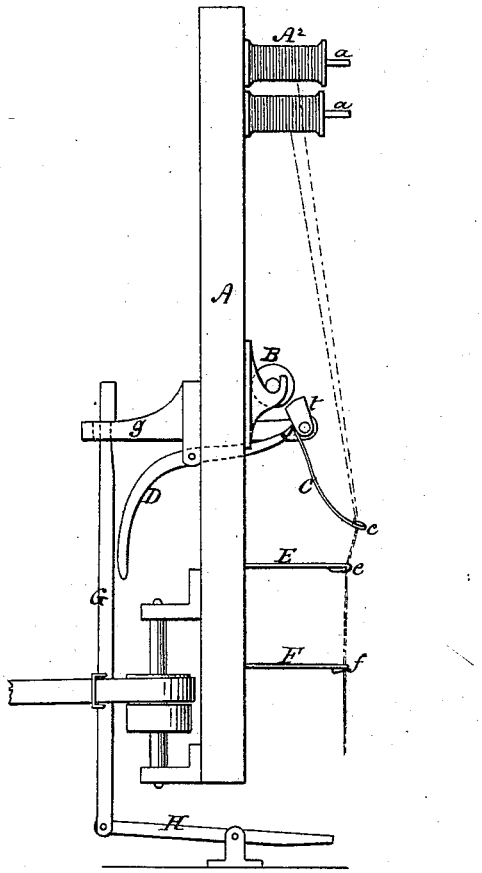
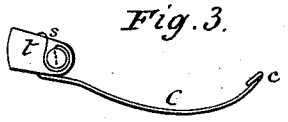


Fig. 3.



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UNITED STATES PATENT OFFICE.

WATSON F. HASTINGS, OF BRIDGEPORT, CONNECTICUT.

IMPROVEMENT IN STOP-MOTIONS FOR SPINNING AND TWISTING FRAMES.

Specification forming part of Letters Patent No. **187,010**, dated February 6, 1877; application filed January 25, 1876.

To all whom it may concern:

Be it known that I, WATSON F. HASTINGS, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain Improvements in Stop-Motions for Spinning and Twisting Machinery, of which the following is a specification:

The object of this invention is to provide a mechanical stop-motion for spinning or twisting machinery, which immediately upon the breaking of a thread, even of the finest raw silk, in the process of twisting or drawing, shall operate a belt-shifter, and thus stop the machine. To this end, therefore, the said invention consists of the parts described in detail as follows:

In the accompanying drawing, forming part of this specification, Figure 1 is a front perspective elevation of a bobbin-board, showing the stop-motion complete, except the belt-shifter. Fig. 2 is a side elevation, showing the whole device complete, mounted upon the bobbin-board interposed between the stop-fingers and the belt-shifter. Fig. 3 is a view of one stop-finger detached from its position in the machine.

In these figures, A is the bobbin-board; *a a a*, bobbin-pins, upon which are mounted the bobbins A^2, containing the fibers to be twisted. B is a rotary shaft, mounted in bearings, as seen in the drawing, and actuated by a pulley and belt from any suitable shaft or line of shafting. C C C are stop-fingers, mounted upon a pin or journal attached to a bracket secured to the bobbin-board in any suitable manner. These fingers consist of wires provided with eyes *e* at one end, and with toes *t* at the opposite end. The said toes are made of considerably greater weight than the wires, and their faces are curved for contact with the shaft B, or any collar or roll that may be secured to or formed thereon.

D is a lever, pivoted near its center in any suitable manner to the bobbin-board, and bent to any suitable curves, and provided with a T-head at one end, immediately under the toes *t*. The length of this T-head will depend upon the number of stop-fingers used. Beneath the eyes in the stop-fingers C are corresponding eyes, *e*, in wires E, inserted in the bobbin-board, and beneath the center wire E is a single wire, F, also inserted in the bobbin-board and provided with a single eye, *f*.

Below the wire F will be placed the spinning machinery proper. (Not shown in the drawing.) G is a belt-shifter, working in guide-brackets secured to the back of the bobbin-board, as seen in the drawing. The said shifter is provided near its top with a catch, *g*, and jointed at its bottom to a pedal, H, which pedal is pivoted to a bracket secured to the floor of the room containing the machine, and is suitably formed for operating by the foot.

The operation of this stop-motion can now be easily understood, and is as follows: The individual fibers of raw silk or other material, being passed from the bobbins A^2, are led down through the eyes of the stop-fingers C, and through the eyes of the wires E, and then through the single eye of a wire, F, whence they are led to the twisting and spinning machinery proper. Now, if any one of these threads or fibers should break while being twisted, the twisting or spinning machinery (not shown in drawing,) will be instantly stopped by the action of one of the stop-fingers C, through which the broken thread has been passed. This stoppage will be effected in the manner described as follows: The shaft B is kept in constant slow rotation, and as soon as a thread breaks, the stop-finger, through which the said thread has been passed, will no longer preserve its eye in line with the eye in the wire E, thereby keeping its toe out of contact with the roll on the shaft; but, in consequence of the weight of the toe, its face will be precipitated against the face of the roll, and the frictional contact of the two faces will cause the toe to turn downward through an arc of a circle, a sufficient distance to depress the T-head of the curved or bent lever D, which, in its turn, will strike the belt-shifter G and detach its catch *g* from the bracket in which it is supported. The weight of the lever then causes it to fall as far as the pedal H will allow it to move, and in its descent it shifts the belt which drives the machine (through the interposition of an ordinary shifting-fork) from a fast to a loose pulley, thus effectually stopping the machine the instant a single thread of the twist may break.

It is evident that the fingers C could be

operated by springs, the mechanical equivalents of the heavy toes *t*, without departing from the principles underlying this invention, the reactive force of the springs merely performing the same office as gravitation in the heavy toes; or the gravity of the toes may be assisted by the force of compressed springs reacting upon the fingers C. A method of accomplishing this purpose is seen at *s* in Fig. 3.

It is obvious that any desired number of spindles may be operated by a single line of shafting, a separate stop-motion being provided for each machine.

When it is desired to restart the machine the belt is reshifted to the fast pulley by rehooking the catch *g* of the belt-shifter upon its guide-bracket by operating the pedal H.

Having thus fully described this stop-motion as of my invention, I claim—

1. The stop-finger or fingers C, provided with a toe or toes *t*, adapted to receive mechanical motion from a driving-shaft, and to transmit said motion to a belt-shifter, substantially in the manner hereinbefore described, for the purpose set forth.

2. The combination of the stop-finger or fingers C, provided with a toe or toes, *t*, with a rotary shaft, B, substantially in the manner hereinbefore described, for the purpose set forth.

3. The combination of the stop-finger or fingers C, provided with a toe or toes, *t*, with the lever D, belt-shifter G, and toe-operating mechanism, substantially as described, whereby said belt-shifter is operated, substantially as hereinbefore set forth.

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Witnesses:

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