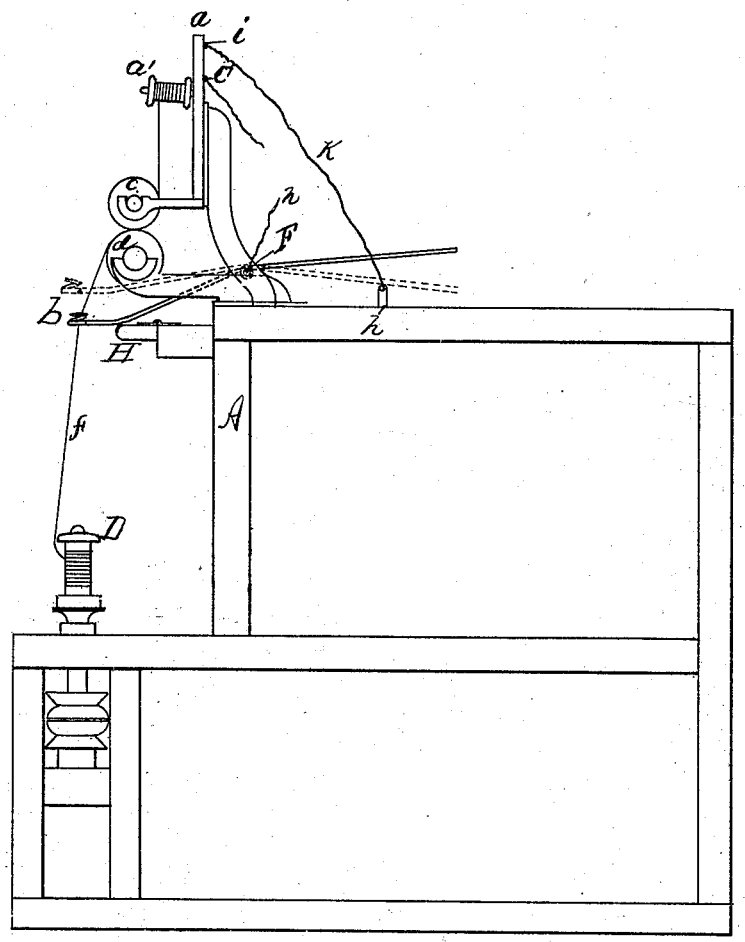
H. A. CHAPIN.

Electro-Magnetic Stop-Motion for Spinning-Machines.

No. 211,222. Patented Jan. 7, 1879.



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HENRY A. CHAPIN, OF SPRINGFIELD, MASSACHUSETTS.

IMPROVEMENT IN ELECTRO-MAGNETIC STOP-MOTIONS FOR SPINNING-MACHINES.

Specification forming part of Letters Patent No. **211,222**, dated January 7, 1879; application filed August 2, 1877.

To all whom it may concern:

Be it known that I, HENRY A. CHAPIN, of Springfield, county of Hampden, and State of Massachusetts, have invented a new and useful Improvement in Electro-Magnetic Stop-Motions for Spinning and Twisting Machines, which improvement is fully set forth in the annexed specification and in the accompanying drawing.

My invention has for its object the stopping of the spindle and feed-rollers of a spinning or twisting frame when the yarn breaks between the feed-rollers and spindle, or when in ring-spinning a traveler flies off from or out of a ring, or when, from any other cause, the proper tension upon the yarn between the feed-rollers and spindle is interrupted.

This invention is somewhat in the nature of an improvement upon my patent of November 7, 1876, for improvement in electro-magnetic stop-motions for spinning and twisting machinery, and this improvement may be employed in conjunction with the stop-operating devices set forth in said patent, or may be with advantage employed on machines stopped wholly by electro-magnetic action.

In spinning-machines heretofore constructed with electro-magnetic stop-motions the circuit-connecting stop-fingers have been arranged to lie upon the separate strands or yarns above the feed-rollers before they had been joined together and twisted into one strand below the feed-rollers. In the latter case any breakage of any one of the said separate strands would cause the spindle and feed-rollers to stop; but if the material united and being twisted below the feed-rollers became broken, or from any cause was running slack, thereby injuring the yarn and causing loss, neither the feed-rollers nor spindle would stop, and the feed-rollers would continue to draw the strands from the bobbins on the bobbin-board, thereby keeping the stop-fingers from acting to stop the machine, and meanwhile waste would be made below the feed-rollers.

My improvement provides an effective remedy for the above defect by placing a circuit-connecting stop-finger between the feed-rollers and spindle, which may act simply to stop the machine, or may at the same time serve also as a substitute for the usual eye-piece employed to keep the yarn in a central position over the center of the spindle.

In the drawing is shown an end elevation of a spinning-frame, showing the manner in which my improvement is applied and its operative relation to the feed-rollers, yarn, and spindle, and in which—

A is the frame of the machine; *a*, the bobbin-board; *a'*, a spool from which yarn is drawn. *c*, is a pressure or upper roller. *d* is the feed-roller. H is the usual eye-board of a spinning-frame. *b* is a circuit-connecting stop-finger, made of wire, with an eye bent on its outward end. F is a metallic fulcrum, upon which finger *b* swings. *h'* is a connecting-bar, upon which the rear end of finger *b* may fall. *i i'* are two line-wires, running along the back side of bobbin-board *a*, and connecting with a battery. K is a connecting-wire from bar *h'* to line-wire *i*. *n* is a connecting-wire from fulcrum F to intermediate stop devices between said fulcrum and line-wire *i'*. D is a bobbin on the spindle, and *f* is the yarn. The finger *b*, in dotted lines, shows its position when its eye end rises up, allowing its rear end to rest on bar *h*, and thus make a circuit-connection.

The drum for driving the spindle and the devices for running the feed-rollers may be of the usual construction.

The operation of my improvement is as follows, viz: The yarn *f* is led from bobbin *a'* down between pressure-roller *c* and feed-roller *d* through the eye in finger *b*, and thence down to the bobbin D on the spindle.

When the frame is started up a certain amount of tension is produced upon that portion of the yarn between the rollers and the spindle.

It will be observed that the face of feed-roller *d* sits back from the vertical line of the sides of bobbin D on the spindle, while the eye on the end of finger *b* is over the center of the spindle, or nearly so, so that the yarn *f*, in passing from between the rollers, takes at first a somewhat oblique direction to and through the eye in the finger *b*, and thence downward to the bobbin D on the spindle. The draw of the yarn thus obliquely against the eye in finger *b* causes the eye end of the finger to be depressed, and so lift its rear end from con-

tact with bar *h;* but should the yarn break between the roller *d* and the bobbin D, or from some cause slack up, as hereinbefore set forth, then, the eye end of finger *b* being freed from the draw of the yarn, the finger will swing on its fulcrum F, bringing its rear end into contact with bar *h*, and this, through connecting-wires K and *n*, establishes magnetic connection between the line-wires *i i'*, the current passing through the proper stop devices, hereinbefore mentioned, whereby they operate to stop the feed-rolls and spindle, and thus prevent waste of material.

The finger *b* may be used with or without the usual eye-wire inserted in the front edge of eye-board H, as for ordinary work it is found to be sufficiently firm to answer the purpose of a stop-finger and eye-wire combined.

What I claim as my invention is—

The oscillating circuit-connecting stop-finger *b*, arranged in combination with the feed-rollers *c* and *d* and the bobbin D on the spindle, to serve as a substitute for the usual eye-wire, substantially as set forth.

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Witnesses:

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