G. S. FOLLENSBEE & T. C. ENTWISTLE.

# Stop Mechanism for Warping-Machines.

No. 137,605. Patented April 8, 1873.

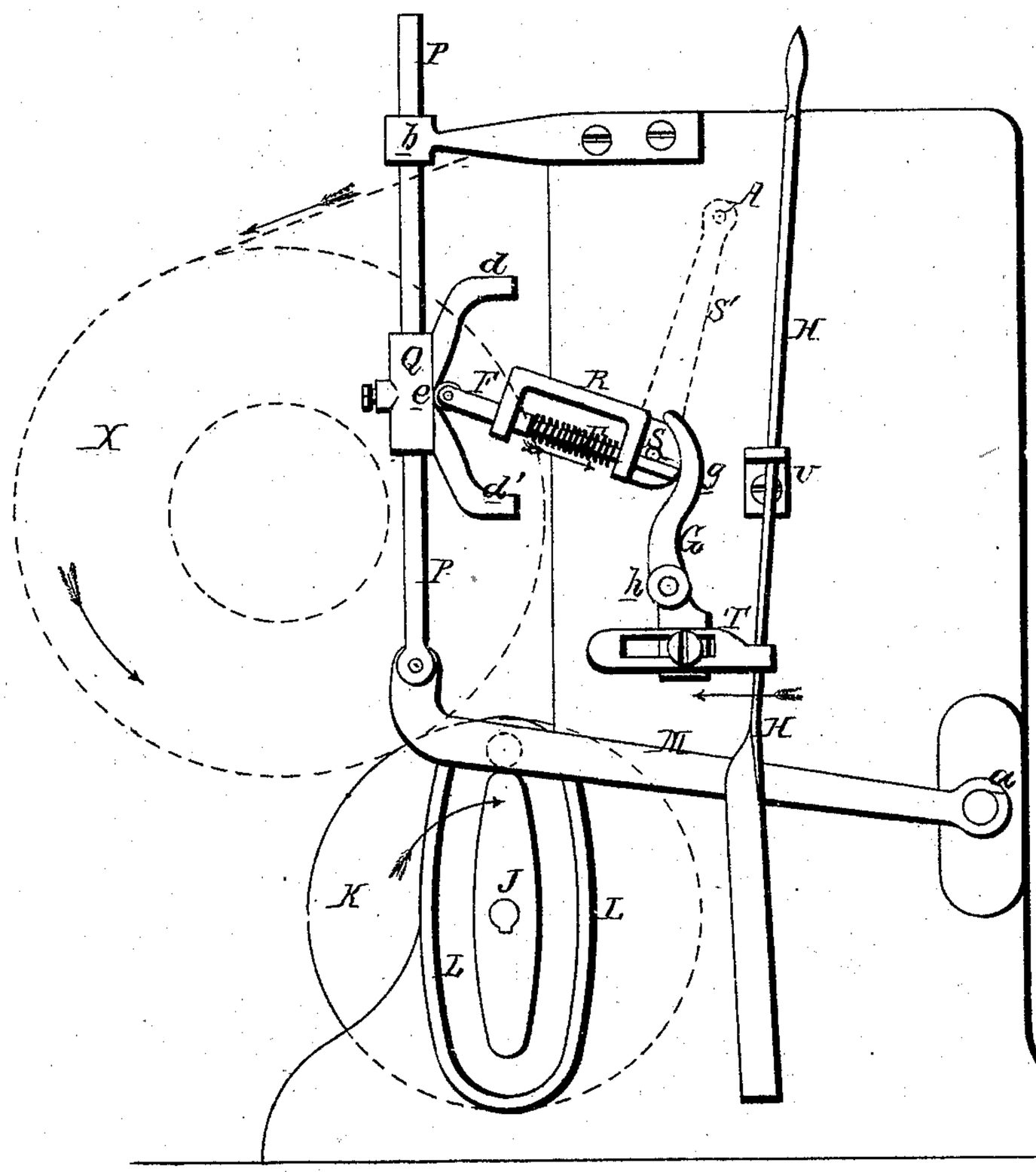



FIG. 1.

FIG. 2.

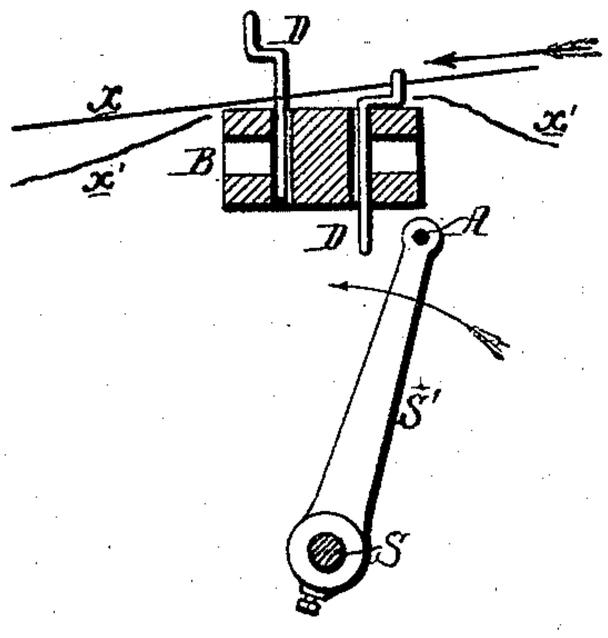
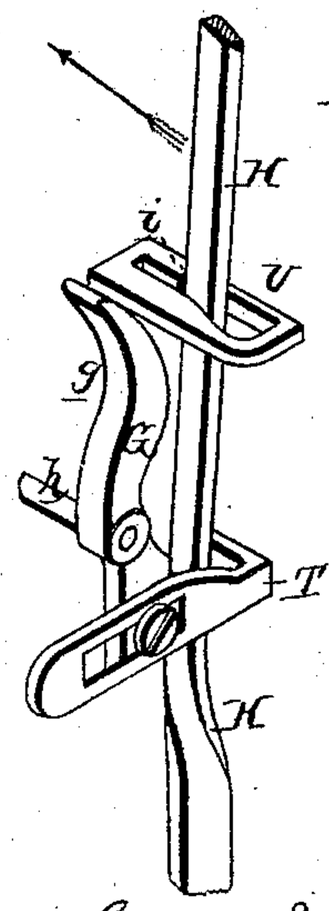



FIG. 3.




WITNESSES

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# UNITED STATES PATENT OFFICE.

GEORGE S. FOLLENSBEE AND THOMAS C. ENTWISTLE, OF LEWISTON, ME.

## IMPROVEMENT IN STOP MECHANISMS FOR WARPING-MACHINES.

Specification forming part of Letters Patent No. **137,605**, dated April 8, 1873; application filed January 24, 1873.

*To all whom it may concern:*

Be it known that we, GEO. S. FOLLENSBEE, of Lewiston, Androscoggin county, Maine, and THOMAS C. ENTWISTLE, formerly of Accrington, England, but now residing in Lewiston, Maine, have invented a Stopping-Motion for Warping-Machines, of which the following is a specification:

Our invention relates to an improvement in the class of preparatory machines known as warping or beaming machines, the object of our invention being to cause, through the medium of simple devices, the instantaneous stoppage of the machine by the breaking of any one of the ends or threads.

This object we accomplish by causing a rod, A, (see Figures 1 and 2 of the accompanying drawing,) to oscillate freely, when the machine is in operation, beneath a bar, B, slotted for the reception of a number of perforated wires, D, suspended from the threads *x*, which extend over the said bar in their passage from the spools to the warp-beam X. Should any one of these threads break its wire drops into the path of and stops the movement of the oscillating rod A, this stoppage causing a bar, F, which previously oscillated, to slide toward and turn a lever, G, which releases a spring shipper-rod, H, thus shifting the driving-belt onto a loose pulley and stopping the movement of the driving-shaft J and warp-beam X.

The construction and operation of the peculiar devices through which the motion of the machine is stopped by the dropping of the wires, in consequence of the breaking of the threads, will be fully understood from the following detailed description.

The suspended warp-beam X rests upon and is turned in the usual manner by a cylinder, K, on the driving-shaft J, and at one end of the latter is an oblong cam, L, into the groove in which extends a pin on an arm, M, hung to the frame of the machine at *a*. To the outer end of this arm is pivoted a rod, P, adapted to and arranged to slide in a fixed bearing, *b*, and upon this rod is an adjustable sleeve, Q, furnished with two curved or inclined arms, *d* and *d'*, projecting outward from the sleeve in opposite directions so as to form between them a recess, *e*, for the reception of a roller at the end of the spring sliding bar F, before alluded to, the latter forming part of a vibrating arm, R, hung to a rock-spindle, S, which extends across the frame of the machine beneath the slotted bar B, and has two or more additional arms, S', which carry the oscillating rod A. The bar F is provided with a spring which maintains its outer end within the recess *e* of the sleeve Q, and the inner end of the said bar bears against the curved arm *g* of the lever G before alluded to, and to the opposite arm of the said lever, which has its fulcrum at *h*, is attached an adjustable plate, T, which embraces or extends partially around the spring shipper-bar H, the latter, when the machine is in operation, resting against a shoulder, *i*, formed within the slotted portion of a fixed plate, U, through which the said bar passes, as best observed in the perspective view, Fig. 3.

When the machine is in operation the threads *x*, in their passage from the spools to the warp-beam X pass over the bar B, as indicated by the arrows, and the cam L, rotating in the direction of its arrow, imparts a reciprocating movement to the bar P and its sleeve Q and arms, the end of the rod being retained between the latter, and transmitting a vibrating or oscillating movement to the arms R and S' and the rod A, the motion of the latter being unobstructed so long as the suspended wires D are held up by the threads. Should one of the latter break, however, as represented at *x'*, in Fig. 2, its wire D will drop into the path of, and stop the movement of, the oscillating-rod A. This will also prevent the movement of the arms S', rock-shaft S, arm R, and bar F, so that the latter, as the bar P rises or falls, will be pushed out of the recess *e* and be moved longitudinally in the direction of the arrow, Fig. 1, by the pressure against the outer end of the same of one of the arms *d* or *d'*, thus causing the inner end of the said bar to press against and turn the lever G sufficiently to draw the plate T against the shipper-bar, and to disengage the latter from the shoulder *i* of the plate U, the shipper, when thus released, springing in the direction of the arrow, Fig. 3, which will shift the driving belt onto the loose pulley and thus stop the machine. As the bar F can be forced against the lever G by either of

the arms *d* or *d'*, according as the bar P is rising or falling, the machine can be stopped by the dropping of a wire, whether the rod A be oscillating in one direction or the other. This enables the machine to be stopped almost instantaneously, an advantage which our invention possesses over other stopping motions.

We claim as our invention—

1. The combination, with the lever G and shipper-bar, of the vibrating and sliding bar F and operating-arms *d d'*, or their equivalents.

2. The combination, substantially as described, of the reciprocating bar P and its arms *d d'* having between them a recess, *e*, with the sliding bar F, arm R, and rod A.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEO. S. FOLLENSBEE.
THOMAS C. ENTWISTLE.

Witnesses:
JAMES L. CROWELL,
FRED. KELLEY.