J. J. SWITZER.

Loom Weft Stop Mechanisms.

No. 150,987. Patented May 19, 1874.

Fig. 7.

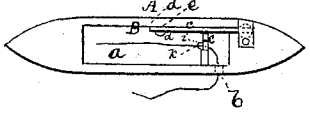


Fig. 8.

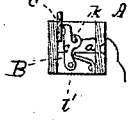


Fig. 9.

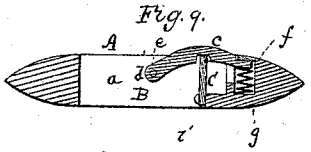


Fig. 1.

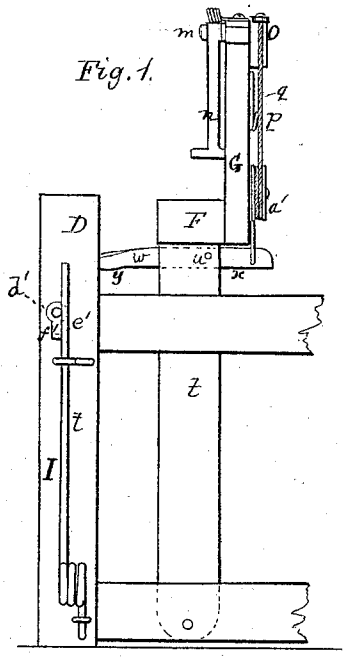


Fig. 2.

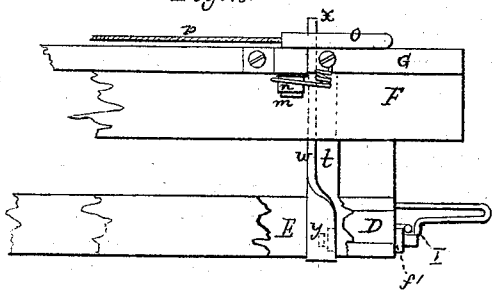


Fig. 5.
Enlarged.

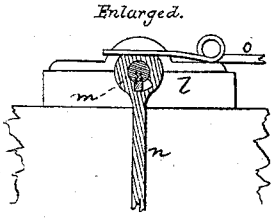


Fig. 4.

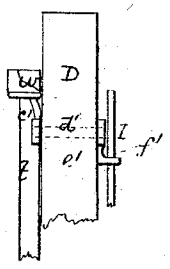


Fig. 3.

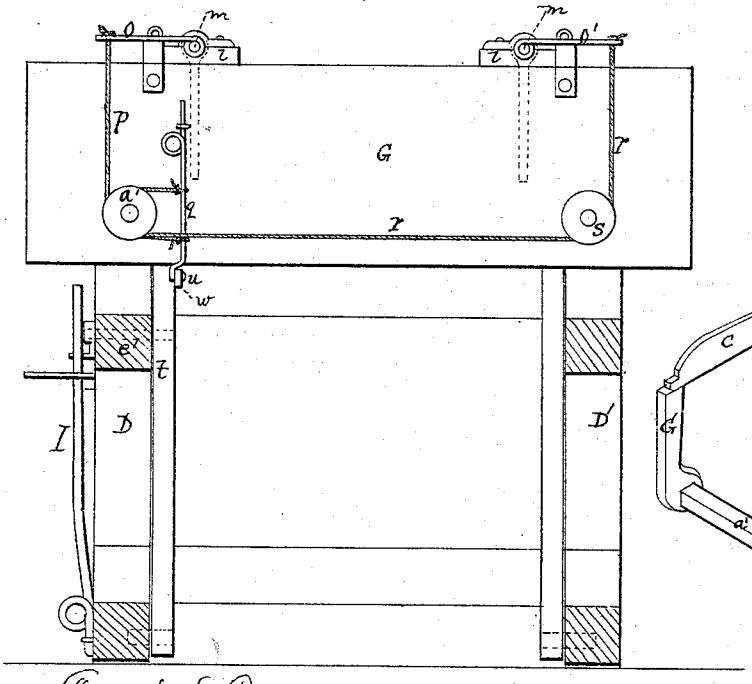
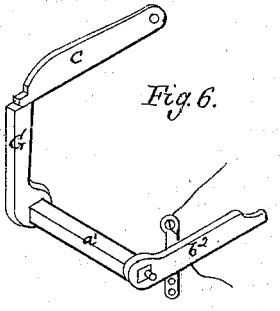


Fig. 6.



WITNESSES. Francis E. Dayan.
W. E. Boardman

J. J. Switzer.
by A. Curtis. Atty.

UNITED STATES PATENT OFFICE.

JOHN J. SWITZER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF, WILLIAM A. BASSETT, AND ELISHA STONE, OF SAME PLACE.

IMPROVEMENT IN LOOM WEFT-STOP MECHANISMS.

Specification forming part of Letters Patent No. **150,987**, dated May 19, 1874; application filed April 1, 1874.

To all whom it may concern:

Be it known that I, JOHN J. SWITZER, of Boston, Suffolk county, Massachusetts, have invented certain Improvements in Weft-Stop Motions, of which the following is a specification:

The purpose of this improvement is to effect an instantaneous stoppage of a loom in the event of breakage or giving out of the weft thread or yarn; and consists in the arrangement of devices, substantially as hereinafter explained.

As my improvement embraces devices applied both to the shuttle and the loom, I shall describe first the appliances of the shuttle.

The drawings accompanying this specification represent in Figure 1 an end view, and in Fig. 2 a plan, of a portion of a loom containing my improvements. Fig. 3 is a rear elevation of a loom, also embodying my improvements; and Fig. 4, an elevation of the mechanism for releasing the shipper and stopping the loom. Fig. 5 is an enlarged view of one of the swinging arms or trippers, to be hereinafter explained. Fig. 6 is a perspective view of a modification of my invention. Fig. 7 is a plan, Fig. 8 a transverse section, and Fig. 9 a vertical and longitudinal section, of the shuttle containing my improvements.

In these drawings, A represents the shuttle, the bobbin-chamber of such shuttle being shown at *a*, and the thread-eduction passage at *b*. To the rear inner side or wall B of the chamber *b*, I dispose a crowning or arch-shaped plate, *c*, the inner end *d* of which is pivoted to the wall B, as shown at *e*, while the free end of this plate rests upon the top of a spiral spring, *f*, deposited in a cell, *g*, in the nose of the shuttle, the plate being so arranged that when in its highest position its convex back or upper surface rises a short distance above the top of the shuttle, and when depressed to its lowest position, by means hereinafter stated, falls to about a level with such shuttle-top, its highest position being such, when locked therein, as to release, by suitable intervening agents, the shipper-rod I, which governs the loom stop mechanism. C in the accompanying drawings represents an upright bar or dog disposed below the plate *c*, and pivoted to the adjacent end wall of the bobbin-chamber by a pin, *i*, in such manner as to vibrate to and fro at right angles with respect to the said plate, an eye or thread-guide, *k*, being formed upon the upper part of such bar, through which the weft thread or yarn passes in its passage to and through the educt *b*, the bar being impelled toward the wall B of the shuttle by a suitable spring, or by being placed in a sloping position, in which its own gravity would impel it in such direction. The plate *c* and bar or dog C, with their adjuncts, constitute the mechanical appliances which I have added to the ordinary shuttle of a loom. The end standards of the loom-frame are shown at D D′, the breast-beam thereof at E, and the race-beam or lay at F. Upon the top of the plate G, which represents the reed-frame, and at each end thereof, I mount in suitable boxes *l* a horizontal transverse rocker-shaft, *m*, while to the inner end of each shaft, and immediately in front of the reed-frame, I swivel a pendulous arm or tripper, *n*, the swivel between each arm and shaft being such that the former are permitted to swing upon the shaft inward to the center of the loom, but are rigid in the opposite direction. To the rear extremity of each rock-shaft *m* I affix the inner end of a horizontal lever, *o* or *o′*, while to the outer and free end of the former lever I secure one end of a cord or chain, *p*, which passes below and against a guide-roller, a^1, the opposite end of such chain being secured to the lower and free end of a spring-latch, *q*, which is applied to the rear side of the reed-frame G, and below one rock-shaft, *m*. To the free end of the opposite lever *o′* I secure one end of a second cord or chain, *r*, which passes below and against a second guide-roller, *s*, which, like the roller a^1, is pivoted to the rear side of the reed-frame, the opposite end of the second cord *r* being conducted to and below and partially about the roller a^1, and thence to and secured to the spring-latch *q*, as shown in Fig. 3 of the drawings. To the inner part of the lay-sword *f* nearest the latch *q* I mount by a pivot, *u*, a horizontal pawl, *w*, the rear and shorter arm *x* of such pawl extending below and engaging with the latch *q*, while its outer and heavier arm *y* extends forward be-

low and to the front of the breast-beam E. Below the said outer arm *y* of the pawl *w*, and against the inner face of the loom-standard, I dispose an upright arm, *c'*, the lower end of which is mounted upon a horizontal rod or rock-shaft, *d'* which passes through the standard or the front post *e'* of the same, while to the opposite end of such shaft *d'*, as it protrudes through the post, I affix the upper end of a second arm, *f'*, this latter arm, when the two are in the same vertical plane, abutting against the upper end of the shipper-rod I of the loom. While the shuttle is in flight, and its thread is intact, the latter exerts an outward drag or pressure upon the dog C, sufficient to hold the latter away from below the plate *c*, and the latter rises and falls as it passes below each arm or tripper *n*, without exerting any action upon the levers *o* or *o'*. Should the shuttle or weft thread break or give out, the dog C instantly moves inward below the plate *c*, and prevents the latter from dropping, the result of which is, that as the shuttle completes its inward flight the said plate *c* wipes against the lower end of one of the trippers *n*, and, through the agency of the lever *o* or *o'* and cord *p* or *r*, as the case may be, removes the latch *q* from over the pawl *w*, and allows the outer or forward end of the latter to drop into a horizontal plane coincident with that of the upper end of the arm *c'*, the result of which is, that as the lay completes its beat the pawl *w* strikes the arm *c'*, and moves it outward, while the arm *f'* is moved inward and releases the shipper-rod I, and the loom is stopped.

To restore the parts to their normal position, or to set the stop mechanism, the rear arm of the pawl *w* is placed below the latch *q*, and the shipper-rod returned to its position behind its catch, the two arms *c'* and *f'* being in alignment.

Various modifications may be made in the principle which governs my invention in this stop-motion without departing from the character of such principle, and I do not confine myself to precise details, so long as I confine myself within the scope and spirit of my invention. For instance, in Fig. 6 of the accompanying drawings, I have shown a slight departure from the arrangement of parts hereinbefore explained. In this instance I mount the dog C upon a rock-shaft, a^2, which extends transversely through the lower part of the shuttle, and dispose this dog below the free end of the plate *c*, and upon the opposite end of this rock-shaft I mount one end of a horizontal arm, b^2, whose free end extends inward into the bobbin-chamber and below the weft-thread, the result of which is, that as long as the weft-thread is intact the dog is drawn away from coincidence with the plate; but, upon breaking or failure of the thread, the arm b^2 drops and throws the dog inward below the end of the plate *c*, and the latter is upheld at such a height as to wipe against one of the trippers *n*, as before explained.

I claim—

1. In combination with a loom-shuttle, the spring-plate *c* and the pivoted dog C, controlled by the weft-thread, all operating together and in connection with the loom stop mechanism as set forth.

2. In combination with a shuttle provided with the spring-plate *c* and dog C, the trippers *n* and mechanism by which they stop the loom, substantially as and for the purposes described.

3. In combination with a shuttle provided with the plate *c* and dog C, the trippers *n* upon the batten, mounted on their shafts in such manner as to swing freely therefrom in one direction, and to act rigidly upon such shafts in the opposite direction, whereby the stop mechanism may be put in action, substantially as described.

4. In combination with the lay of a loom, the trippers *n*, levers *o o'*, cords *p* and *r*, latch *q*, and pawl *w*, arranged and operating substantially as and for the purposes set forth.

5. The combination, with the shipper-rod I, the rock-shaft *d'*, and the shuttle provided with plate *c* and dog C, of the trippers *n* and levers *o o'*, operating in connection with the latch *q* and pawl *w*, substantially as and for the purposes set forth.

6. In combination with the lay of a loom, the levers *o o'*, cords *p r*, pulleys a^1 *s*, latch *q*, and pawl *w*, substantially as shown and set forth.

JOHN J. SWITZER.

Witnesses:

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W. E. BOARDMAN.