(No Model.) 2 Sheets—Sheet 1.

G. S. FOLLANSBEE.

STOP MECHANISM FOR WARPING MACHINES.

No. 343,119. Patented June 1, 1886.

Fig: 1.

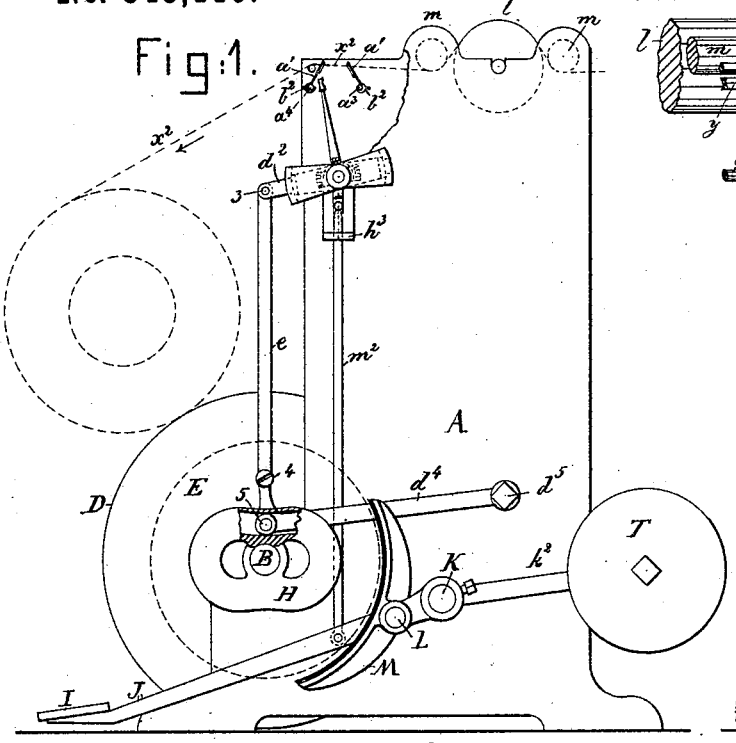


Fig: 3.

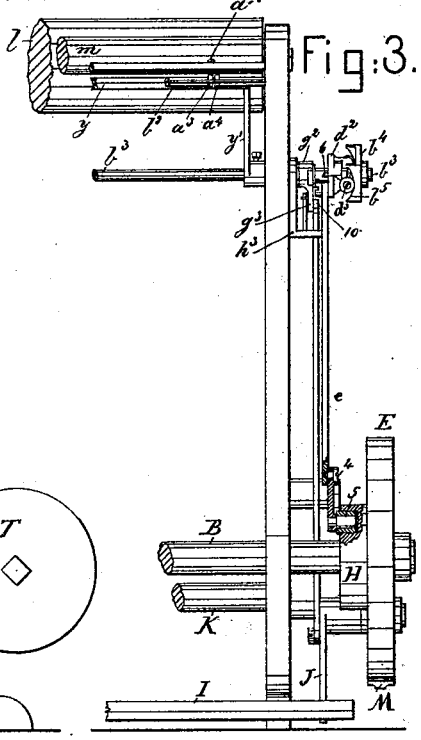


Fig: 2.

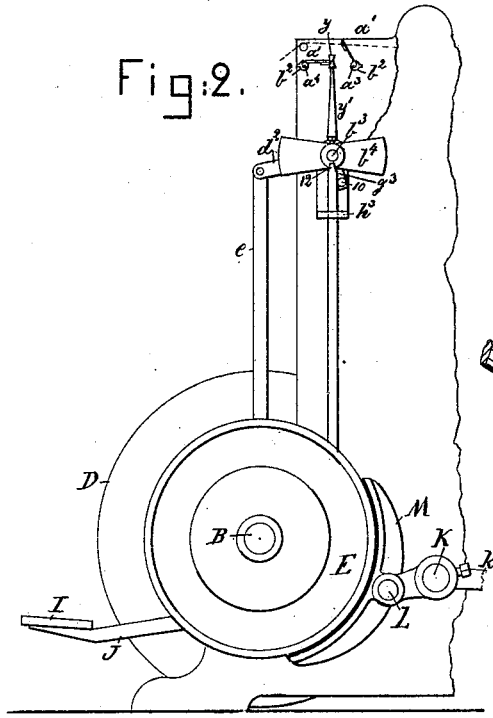
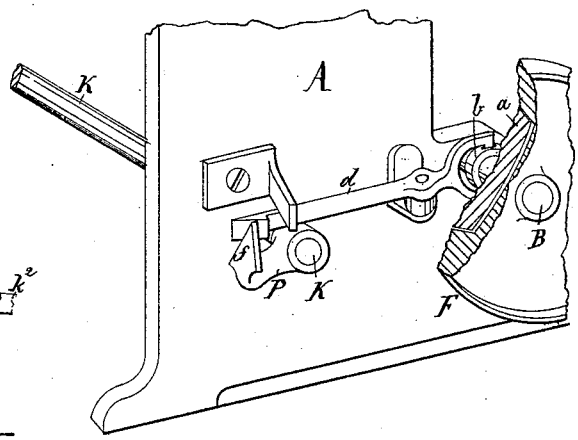


Fig: 4.



Witnesses.

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(No Model.) 2 Sheets—Sheet 2.

G. S. FOLLANSBEE.

STOP MECHANISM FOR WARPING MACHINES.

No. 343,119. Patented June 1, 1886.

Fig: 6.

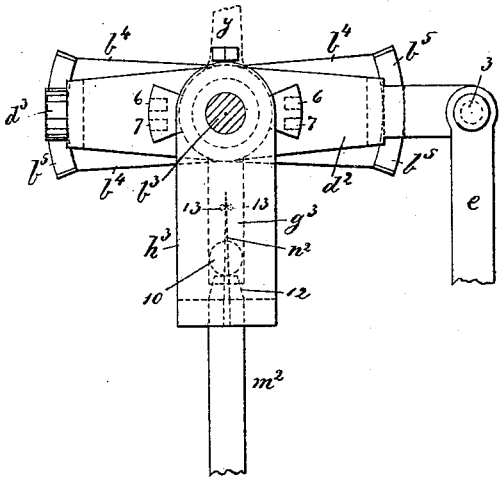


Fig: 5.

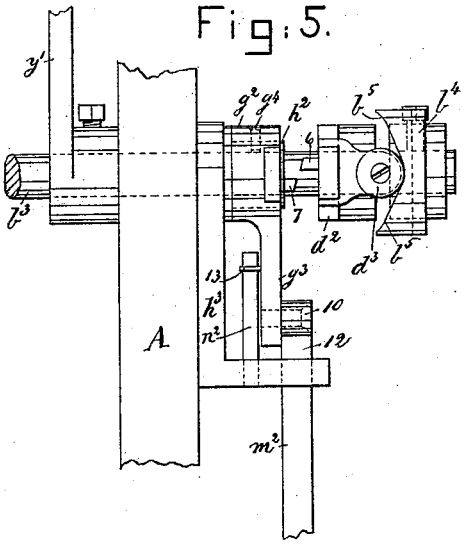


Fig: 7.

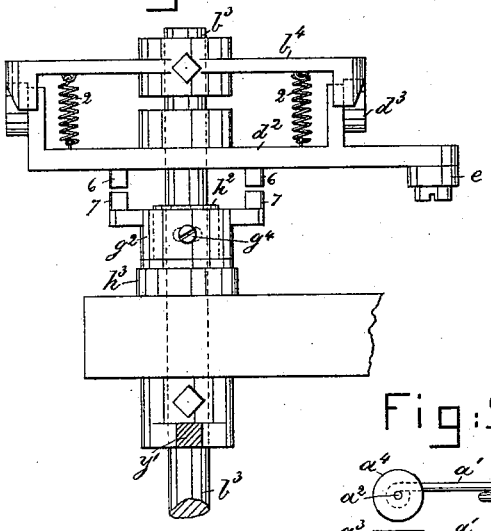


Fig: 8.

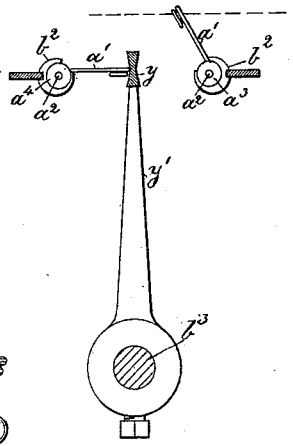
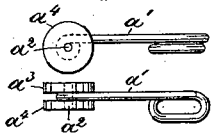


Fig: 9.



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Inventor.
George S. Follansbee
by Crosby & Gregory attys.

UNITED STATES PATENT OFFICE.

GEORGE S. FOLLANSBEE, OF CHARLESTOWN, ASSIGNOR TO THE HOPEDALE MACHINE COMPANY, OF HOPEDALE, MASSACHUSETTS.

STOP MECHANISM FOR WARPING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 343,119, dated June 1, 1886.

Application filed December 8, 1882. Serial No. 78,808. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. FOLLANSBEE, of Charlestown, county of Suffolk, State of Massachusetts, have invented an Improvement in Stop Mechanism for Warping-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention has for its object to simplify the construction of the mechanism which stops the machine on the breakage of a thread and enables the shipper to be released with less power.

The particular features in which my invention consist will be hereinafter described, and fully specified in the claims at the end of the specification.

Figure 1 represents in elevation a sufficient portion of the right-hand end of a warping-machine, viewing it from the front, to illustrate my improvements; Fig. 2, a similar view showing the parts in a different position, a drop-wire having fallen and the machine having been stopped. Fig. 3 is a partial side elevation of Fig. 1, looking at it from the left. Fig. 4 is a detail of a portion of the end of the machine omitted from Fig. 3. Fig. 5 is an enlarged detail of part of the vibrator rock-shaft, its arm *y*, and devices arranged on and about the said shaft to release the shipper, a part of the frame-work being shown; Fig. 6, a left-hand end view of Fig. 5, viewing it from the front, the side frame, A, partially shown in Fig. 5, being omitted. Fig. 7 is a top view of Fig. 5. Fig. 8 is an enlarged detail of the vibrator, showing its recessed or notched face; and Fig. 9, details of the carriage for supporting the drop-wire.

The frame-work A, driving-shaft B, carrying-cylinder D, brake-pulley E thereon, loose or friction pulley F, to which the power is applied, friction-clutch *a*, its sleeve *b*, forked lever *d*, to move it, shaft K, its arm P, having the inclined projection *f*, treadle I, arms J, to support it and connected with shaft K, arm L, brake-shoe M, attached to it, cam H and rod *e*, reciprocated by it, measuring-roller *l*, and drop-rolls *m*, arranged each side of it, are all substantially as in United States Patent No. 171,788, where they are marked by the same letters, and need not be herein specifically described. Each drop-wire *a'* is pivoted upon a pivot, a^2, which joins together two washers, a^3 a^4, thus forming a cheap, strong, and durable carriage for the drop-wire. These carriages for the drop-wires are placed side by side in a chambered holder, b^2, suitably secured to the frame of the machine.

The vibrator *y*, carried by arms *y'*, connected with the rock-shaft b^3, suitably supported in each side frame, A, has it face or faces, which come in contact with the drop-wires, grooved or recessed, as shown clearly in Fig. 8, to thereby enable the said vibrator, if it touches a wire, to retain its hold upon it and cause the drop-wire which has fallen to be effective to stop the machine. In some machines, where the face of the vibrator is flat, it sometimes happens that a drop-wire rebounds and is caught by only the upper edge of the vibrator, and the latter, moving in the arc of a circle, fails by its straight face to retain its hold upon the drop-wire, and consequently the drop-wire springs over the top of the vibrator, and the latter fails to be arrested. This cannot happen when the face of the vibrator is grooved or recessed toward its center from bottom to top, as shown in the drawings, Fig. 8. The shaft b^3 has fast upon one end of it a cross-bar, b^4, the flanges or parts b^5 of which are made as cams or beveled or curved. The rock-shaft b^3 has loose upon it a lever, d^2, provided each side the said shaft with a projection or tappet, d^3, preferably made as a roller held on a stud, and these roller-tappets are normally held in place against the lowest parts of the cam or curved or beveled faces of the flanges b^5 of the cross-bar b^4 by springs 2. (Shown clearly in Fig. 7.) The hub of the lever d^2 is free to both slide and turn on the shaft b^3. One end of the lever d^2 is connected at 3 by a pin with the rod *e*, the lower end of which is connected by pin 4 with an ear of a lever, d^4, pivoted at d^5, the said lever carrying a stud or roll which enters the groove of the cam H on the shaft B, and the lever d^2 thus has two vibrations to each rotation of shaft B. The pressure of the tappets d^3 against the lowest parts of the cam-faces of the flanges b^5 produced by the springs 2 is sufficient to cause the lever d^2 to move the cross-bar b^4 in

unison with it, turn the rock-shaft b^3 and its arms y', and move the vibrator y backward and forward between the holders for the carriages which contain drop-wires, the vibrator moving from one to nearly the other holder when the drop-wires are properly held up by their threads x^2, as in Fig. 1; but should a thread break and a drop-wire fall, as in Fig. 2, the vibrator, striking against it, will be arrested, and the lever d^2, continuing its movement under the action of the cam H, will cause the tappets d^3 to travel over the cam-faces or the beveled or curved faces of the flanges of the cross-bar b^4, which movement causes the lever d^2 to be moved longitudinally on the shaft b^3 far enough to engage its pins or teeth 6 with other pins or teeth 7 on arms of a sleeve, g^2, placed on a stationary hub or bearing, h^2, (see Fig. 7,) extended forward from a bracket, h^3, attached to the end frame, A, of the machine, the said hub forming one of the bearings for the rock-shaft b^3. The pins 6 7 co-operate together to form a clutch. The sleeve g^2 is prevented from endwise movement on the hub h^2 by the screw g^4, the point of which enters a suitable slot (shown in dotted lines, Fig. 7) in the hub h^2, and the said sleeve has a downwardly-extended arm, g^3, provided with a roller, 10, which rests normally upon the end of the rod m^2, guided in the bracket h^3, and connected at its lower end with the arms J of the treadle mechanism I J, fast on the shaft K, the said shaft having a backwardly-extended arm, k^2, provided with the adjustable weight T, to normally keep the upper end of the rod m^2 pressed closely against the roller 10, referred to. When the lever d^2 is moved longitudinally, as described, on the shaft b^3 of the vibrator, the clutch pins or projections 6 on the said lever by their engagement with the clutch pins or projections 7 on the sleeve g^2, referred to, cause the said sleeve to be partially rotated, by which movement the roll 10 is rolled off the end of the rod m^2, permitting the weight T to act and lift the rod m^2, causing the shaft K to be turned sufficiently in its bearings to withdraw the inclined face f of the arm P from contact with the end of the lever d, permitting it to turn and release the pressure of the friction-clutch a against the rotating pulley F, thus releasing the driving-power from the shaft B, and at the same time the turning of the shaft K, by raising the arm J of the treadle mechanism, causes the brake M to be pressed against the brake-wheel E to stop the shaft B. The upper ends of the rod m^2 is beveled at each side, as shown at 12, Figs. 2 and 6, so that as the said rod rises and passes above the roller 10, as in Fig. 2, the sleeve g^2 and its arm g^3 are turned far enough to disengage the sides of the pins or projections 6 7, so that they will not exert any friction against each other when it is desired to move the lever d^2 back again into its normal position, with its roller-tappets d^3 on the depressed surface of the flanges or parts b^5 of the cross-bar b^4.

The enlarged drawing, Fig. 5, shows the roll d^3 in nearly the position Fig. 3.

The rolls m l will be supported in the end frame, A, shown in Fig. 4, just as in the end frame, A, in Figs. 1 and 3.

I have shown the bar b^4 as having two cam-faces and the lever d^2 as having two tappet-rollers, d^3; but I might dispense with one cam-face and one tappet-roller, but I do not prefer to do so, and instead of the tappet-roller d^3, which reduces friction, I might employ a stationary tappet to rub over the cam-surface opposed to it.

The arm g^3, at its near side, is provided with two pins, 13, (shown in Fig. 6,) between which rests a spring, n^2, which at its lower end is attached to the bracket h^3, the said spring acting normally to keep the arm g^3 in upright position, so that when the rod m^2 is depressed by the treadle to start the machine, as usual, the said spring will move the sleeve to place the roller 10 over the end of the rod m^2.

I claim—

1. The vibrator, the carrying-shaft with which it is connected, the cross-bar b^4, attached to the said shaft, and having one or more cam-faces, as described, and the lever d^2, having one or more tappets to travel over the said cam-faces, means to press the said lever toward the said cross-bar, and means to move the said lever, and the sleeve g^2, having arm g^3, and pins 6 7, carried by the said lever and sleeve, and the roll 10, combined with the rod m^2, against the end of which the said roll bears, and with a guide for the rod, and with means to force the rod against the said roll, substantially as described.

2. The sleeve g^2, having pins or projections 7, and an arm, g^3, provided with a roll, 10, and hub to hold the said sleeve, the lever d^2, having pins or projections 6, the cross-bar b, and means to move the said lever and keep it pressed toward the said cross-bar, combined with the bracket h^3, the rod m^2, having its upper end beveled, as described, and held by the said bracket, and with means to move the said rod m^2, whereby its upper beveled end is enabled to turn the said sleeve and disengage the said pins 6 7, as and for the purpose set forth.

3. A drop-wire and the carriage, composed of two independent washers united by a rivet, which serves as a fulcrum for the drop-wire, combined with a holder to receive a series of the said carriages side by side, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEO. S. FOLLANSBEE.

Witnesses:
FRED A. POWELL,
BERNICE J. NOYES.