

(No Model.)

2 Sheets—Sheet 1.

H. E. HAMILTON, N. BOISVERT & G. CHAMPOUX.

STOPPING MECHANISM FOR LOOMS.

No. 498,881.

Patented June 6, 1893.

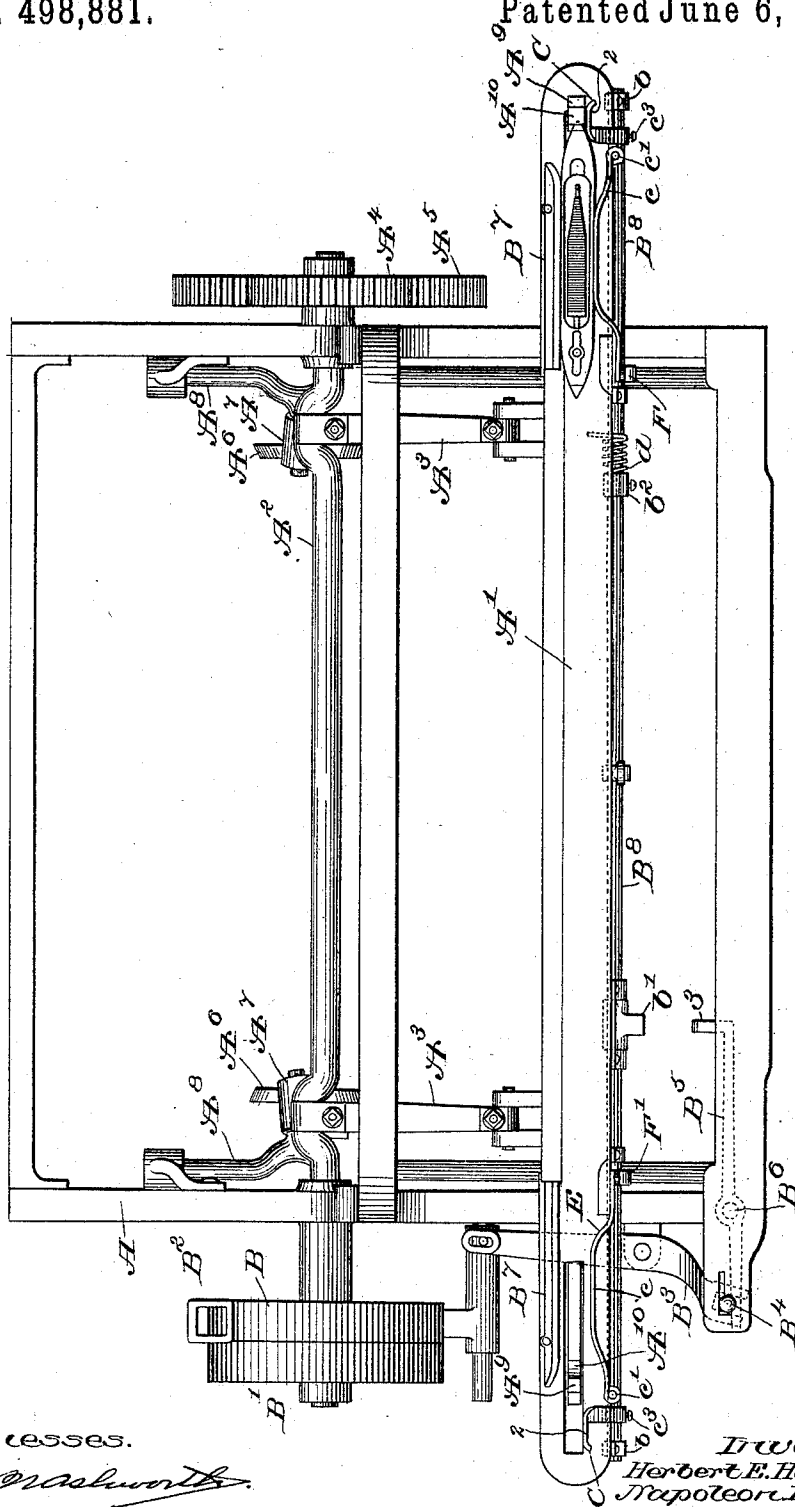


Fig. 1.

Witnesses.

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George Champoux.
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Attys.

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Fig. 2.

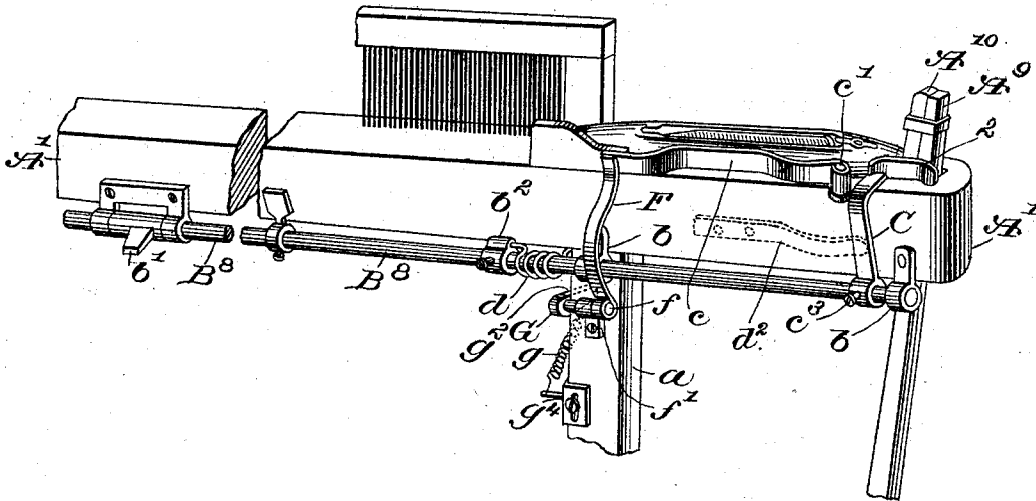


Fig. 3.

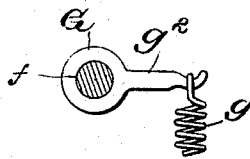


Fig. 5.

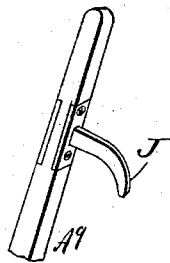
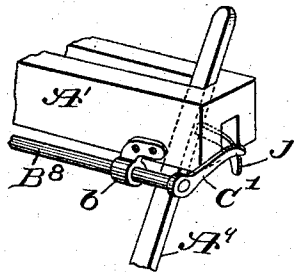


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

HERBERT E. HAMILTON, NAPOLEON BOISVERT, AND GEORGE CHAMPOUX,
OF SALMON FALLS, NEW HAMPSHIRE.

STOPPING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 498,881, dated June 6, 1893.

Application filed August 8, 1892. Serial No. 442,394. (No model.)

To all whom it may concern:

Be it known that we, HERBERT E. HAMILTON, NAPOLEON BOISVERT, and GEORGE CHAMPOUX, of Salmon Falls, county of Strafford, State of New Hampshire, have invented an Improvement in Stopping Mechanism for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

In looms as ordinarily constructed the binder acts upon the shuttle in the shuttle box, and is moved outwardly causing the binder to act on a finger or arm of a protector rod provided with a dagger, and if the shuttle is properly in the box the dagger is lifted, but in case the shuttle fails to enter the box the dagger is left down and is made to stop the loom. This binder besides serving as a part of a stop-motion has also to serve the extra purpose of holding the shuttle with sufficient friction to prevent it rebounding from the shuttle-box. The binder may be easily adjusted for either of these purposes, but to adjust it properly to effect both purposes is at times a very difficult matter, and the lack of proper adjustment hampers the operation of the loom. In ordinary looms wherein the inward pressure of the binders is gained in part by the action against them of two fingers on one protector-rod, the adjustment of the parts to cause the fingers to exert more or less pressure on the binders effects both binders alike, but as herein shown, the pressure on the binders may be regulated independently one of the other, this being of advantage in keeping the parts in proper working relation to other parts.

In every class of loom, especially those run at high speed, it is very essential that the duty performed by the binder shall be simply that of a check for the shuttle, and that the binder be relieved from its duty as part of the stop-motion. To this end we have, by experiment, devised a loom where the binder has the single duty of checking the shuttle to perform, and another member or device moved in unison with the lay and deriving its motion by or from the movement of the picker stick into the outer end of the usual slot in the shuttle-box is made to effect the up and down move-

ment of the dagger to stop the loom on the failure of the shuttle to enter the shuttle-box.

In our invention we have made the continued operation of the loom to depend upon the movement of the picker stick into the outer end of the shuttle-box.

One part of our invention consists in the combination with a protector rod having a dagger, of a feeler or arm rigidly secured on said protector rod and projecting into the path of movement of the picker stick, whereby the said stick is adapted to strike the said arm and prevent the stopping of the loom, substantially as and for the purpose set forth.

Other features of our invention will be hereinafter described and designated in the claims.

In the form of our invention shown, we have placed the device which operates the dagger so as to operate after the binder has checked the shuttle, and the shuttle, therefore, has to travel farther before protecting than with the ordinary binder. This is of great advantage, as it enables us to shorten the lay considerably, and thereby takes less floor space to run the loom in, and requires less time in which to throw the shuttle.

Figure 1, is a top or plan view of so much of a loom as is necessary to a proper understanding of our invention. Fig. 2, is a perspective view looking at one end of the lay beam, the lay and reed being partially broken out. Fig. 3, is an enlarged side view showing the collar G, and its spring; and Figs. 4 and 5, illustrate a modification of our invention.

A, represents the loom frame; A' the lay; a, one of its swords; A² the crank or lay shaft; A³ the connecting rods to move the lay; A⁴ a gear on the crank shaft, it engaging a gear A⁵ on a lower or cam shaft having picking cams A⁶ to act on picking rolls A⁷ on picker shafts A⁸ which in practice will be connected by strap and link with the picker sticks A⁹ having pickers A¹⁰.

B designates a pulley fast on the crank shaft; B' a pulley loose on said shaft; B² a belt shipper; B³ an intermediate lever; B⁴ a shipper lever or handle; B⁵ a lever pivoted at the under side of the breast beam at B⁶. B⁷ represents the rear side of the shuttle-box;

and B⁸ a protector-rod journaled in bearings *b* on the lay.

The parts so far referred to by letter are and may be common to looms.

5 The shuttle boxes at the ends of the lay have each a binder *c* pivoted at *c'* near the outer end of the shuttle-box.

In most looms it is customary to secure the two fingers which bear upon the binders of
10 each shuttle box to keep the binders in place to exert friction upon the incoming shuttle, to one protector-rod extended across the lay from shuttle-box to shuttle-box, said rod being acted upon by a suitable spring, the ad-
15 justment of which causes both binder fingers to act alike upon both binders. In practice it is at times found impossible to throw the shuttle from each box with equal force, and hence it becomes especially desirable to be
20 able to independently control the extent of pressure of each of the binder fingers on the binder, and consequently on the shuttle in the shuttle-box. This result is herein accomplished by the employment of two fingers *F*,
25 *F'*, one for each box, the said fingers being entirely independent each of the other, each finger being connected, as herein shown, to a like rock-shaft *f*, journaled in a suitable bearing as *f'*, secured to or carried by the lay.
30 The rock-shafts carrying the said binder fingers have each an attached collar *G* provided with a finger *g*² to which is connected a spring *g*, said spring being made adjustable as to its effective strength by suitable devices, such
35 adjustment being herein shown as effected through or by adjustment of a plate *g*⁴, see Fig. 2, to which the said spring is attached. As the shuttle enters the shuttle-box and acts
40 wardly against the finger *F* or *F'*, said fingers being turned in the same direction as the binder against the stress of the spring *g*. The protector-rod B⁸ has a dagger *b'* secured to it at or about the middle thereof.

45 At or near each end of the protector-rod B⁸ and rigidly secured thereon by a set-screw *c*³ is a feeler or arm C, shown as an arm having at its upper end a laterally inclined extension 2 which normally occupies such a position with relation to the shuttle-box that it
50 will be acted upon and moved as the picker stick is moved into the outer end of the shuttle-box. The inclined extension 2 of the feeler or arm C is herein shown as so arranged that
55 the picker-stick A⁹, which may be of any usual or suitable construction, as it flies back into the outer end of the usual slot in the shuttle-box, or is moved into the outer end of the shuttle-box by the incoming shuttle, will strike
60 the inclined extension 2, force said feeler or arm outwardly, turn the protector-rod, and lower the dagger *b'*, as in Fig. 2, so as to pass under the end 3 of the lever B⁵. One end of a spring *d* preferably surrounding the protector-rod as shown in Fig. 1, and connected
65 to the lay and to a stop collar *b*² fast on the said rod, acts normally to cause the feeler or

arm C of the protector-rod to stand in the plane of movement of the shuttle and picker, and at the same time a projection on this col-
70 lar, by acting against the lay determines the height to which the dagger may rise, or the end 2 of the arm C cross the path of the picker.

The spring *d* may be dispensed with, and in its place a spring as *d*², shown by dotted lines
75 Fig. 2, may be employed, it bearing directly against the feeler or arm C.

The depression of the dagger following the movement of the picker stick into the outer end of the shuttle-box enables the loom to
80 run; but in case the shuttle fails to enter the box so as to put the picker stick into the outer end of the shuttle-box and rock the protector-rod, then in such case the dagger remaining up will strike the projection 3 of the lever B⁵
85 and effect the release of the shipper-handle in usual manner, and stop the loom.

It will be understood that the stopping mechanism actuated by the dagger may be of any
90 usual form.

The adjustment of the stop collar *b*² prevents the dagger from rising too high.

The belt-pulley, shipper-handle, and co-operating devices supported upon the breast
95 beam and loom side near the breast beam to effect the change of the usual belt to stop the loom, may be of any usual construction, as for instance, such as found in ordinary looms for weaving cotton fabrics or in fancy looms.

It will be noticed that the movement of the
100 binder in no way affects the protector-rod, and that the sole purpose of the binders is to exert pressure upon the shuttle to check its velocity when entering the shuttle-box, and that the amount of pressure which each binder
105 exerts on the shuttle may be controlled and adjusted without in any way disturbing the protector-rod, and that the pressure of each binder may be controlled independently of
110 the other. It will also be understood that the protector-rod is disconnected or divorced entirely from the binder, and derives its movement by devices outside the binder, devices deriving their movement by or through the
115 picker stick actuated by the incoming shuttle.

The form and the shape of the feeler or arm C and its arrangement on the protector-rod
120 relatively to the picker stick are immaterial provided the said feeler or arm normally occupies a position in the path of movement of the said stick.

We have shown in Figs. 4 and 5, a modified form of invention wherein the feeler or
125 arm marked C' is made to occupy a position beyond the end of the shuttle-box where it may be engaged and lifted by a projection, as J, connected to and moving with the picker-stick, the said projection, as the picker-stick enters the end of the shuttle-box, striking the
130 said arm, raising it, and turning the protector-rod so as to depress the dagger.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination in a loom, of a protector rod having a dagger, a picker stick, a feeler or arm rigidly secured to said protector rod and projecting into the path of movement
5 of the picker stick, and a stop for said protector rod to limit the upward movement of the dagger, substantially as and for the purpose described.

2. The combination with a protector-rod
10 having a dagger, means, substantially as described, for oscillating said rod to operate the dagger, and a stop rigid on the protector-rod

and adapted to engage with the lay-beam to limit the upward movement of the dagger, as and for the purpose set forth.

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

HERBERT E. HAMILTON.
NAPOLEON BOISVERT.
GEORGE CHAMPOUX.

Witnesses:

JAMES P. WILLEY,
JOHN Q. A. WENTWORTH.