

(No Model.)

3 Sheets—Sheet 1.

R. RIGBY.  
LOOM.

No. 507,328.

Patented Oct. 24, 1893.

Fig. 2.

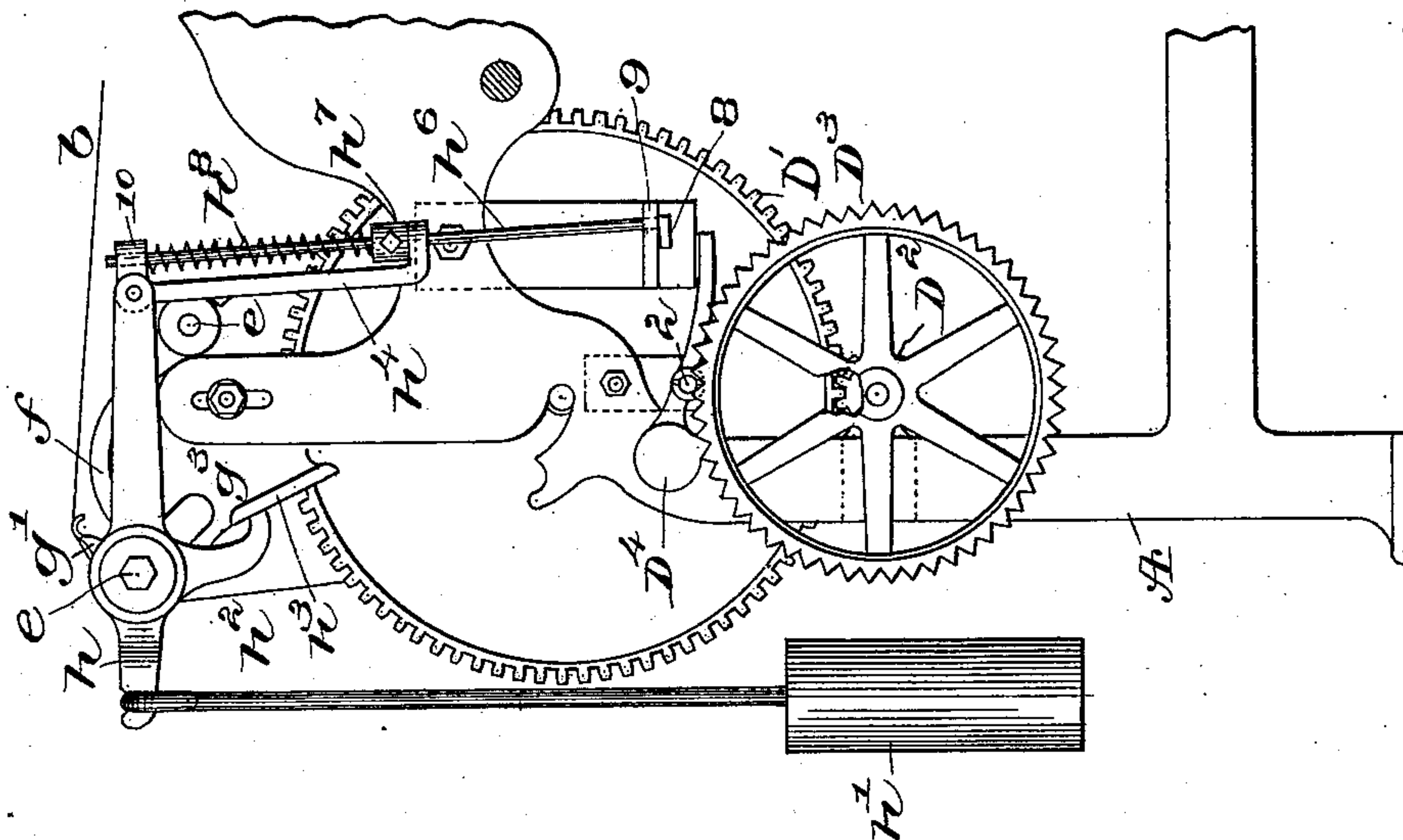
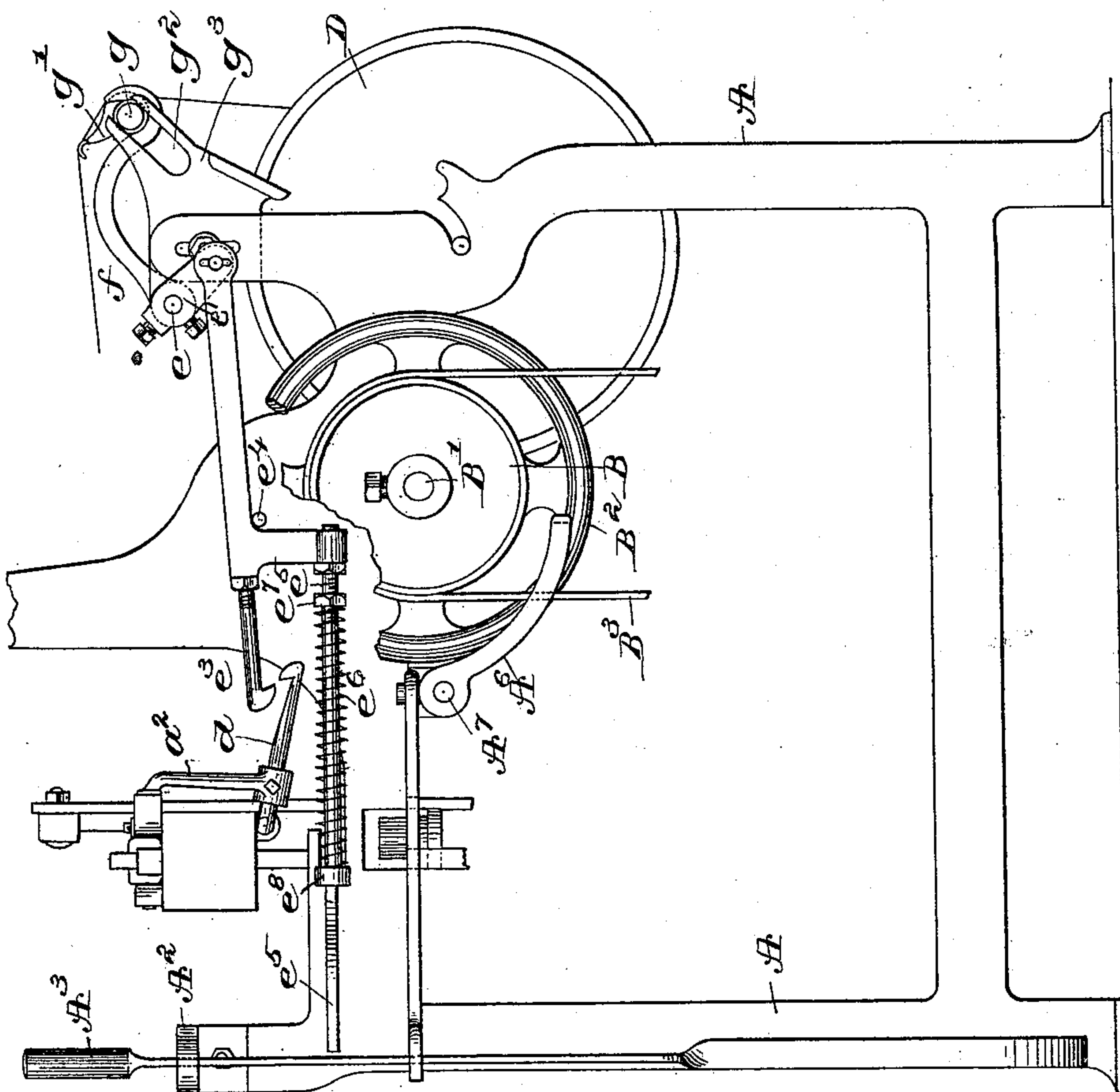


Fig. 1.



witnesses.

Louis McGowell  
Edward F. Allen

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by Crosby & Gregory Attys.

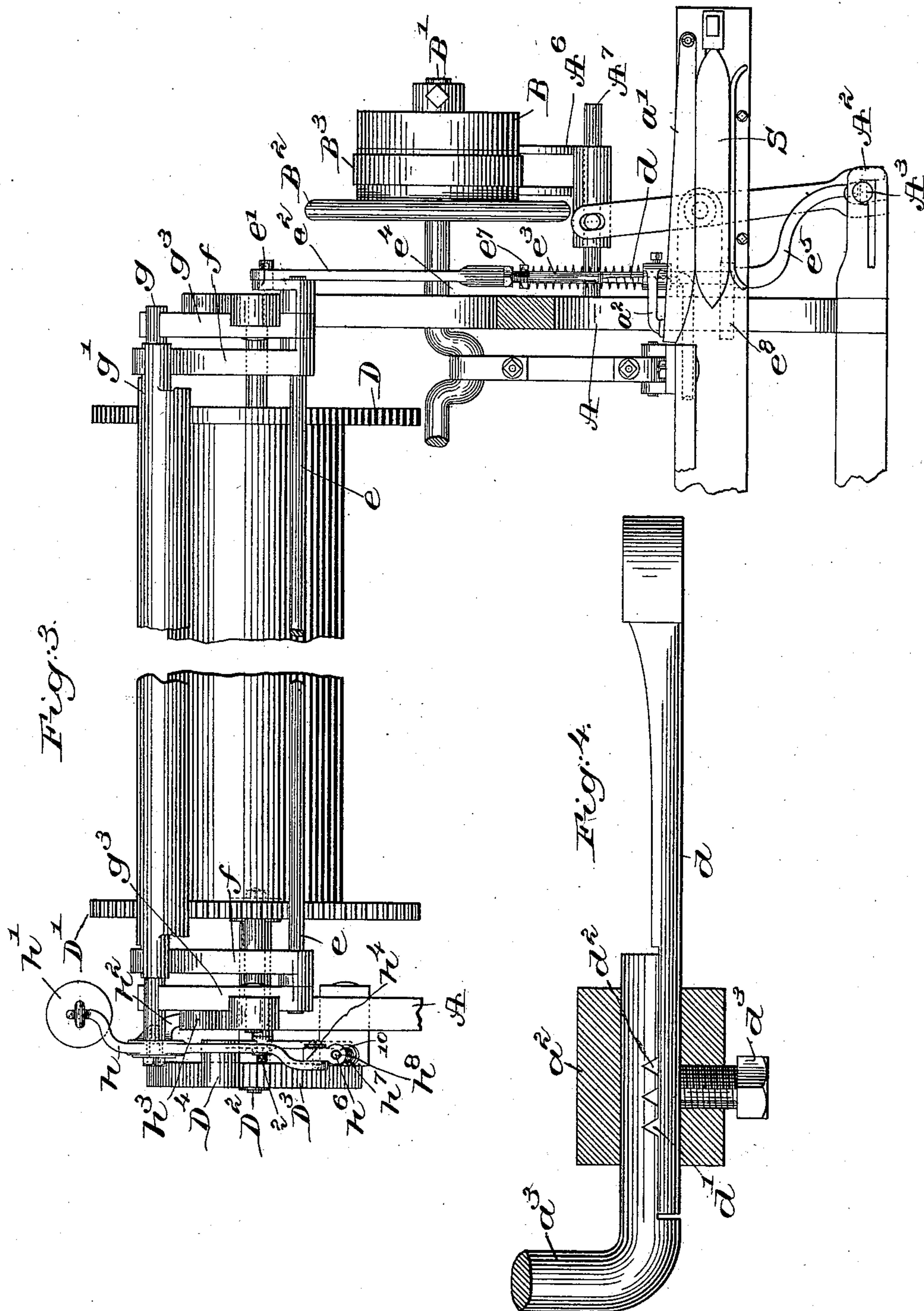
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Edward F. Allen.  
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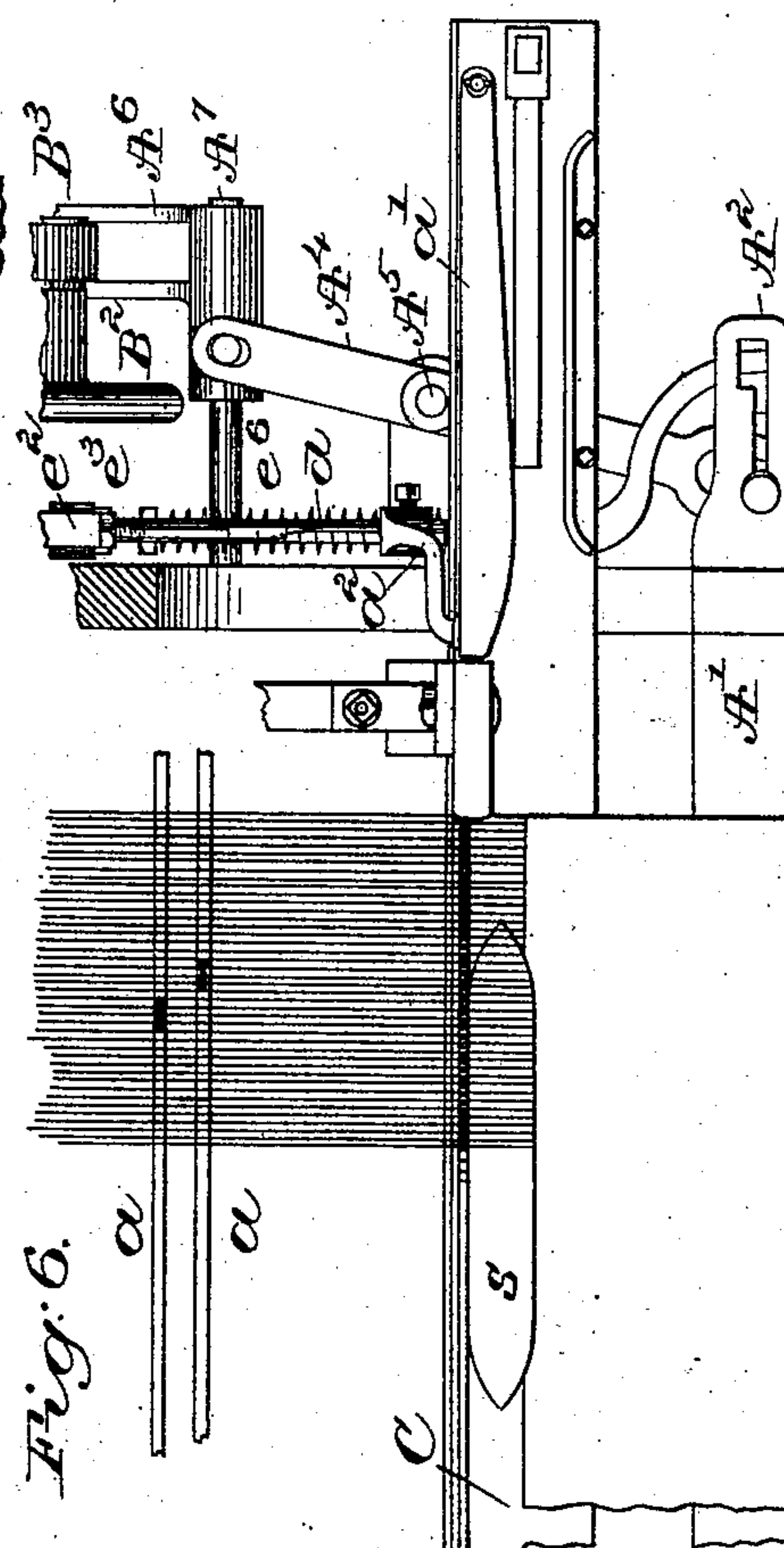
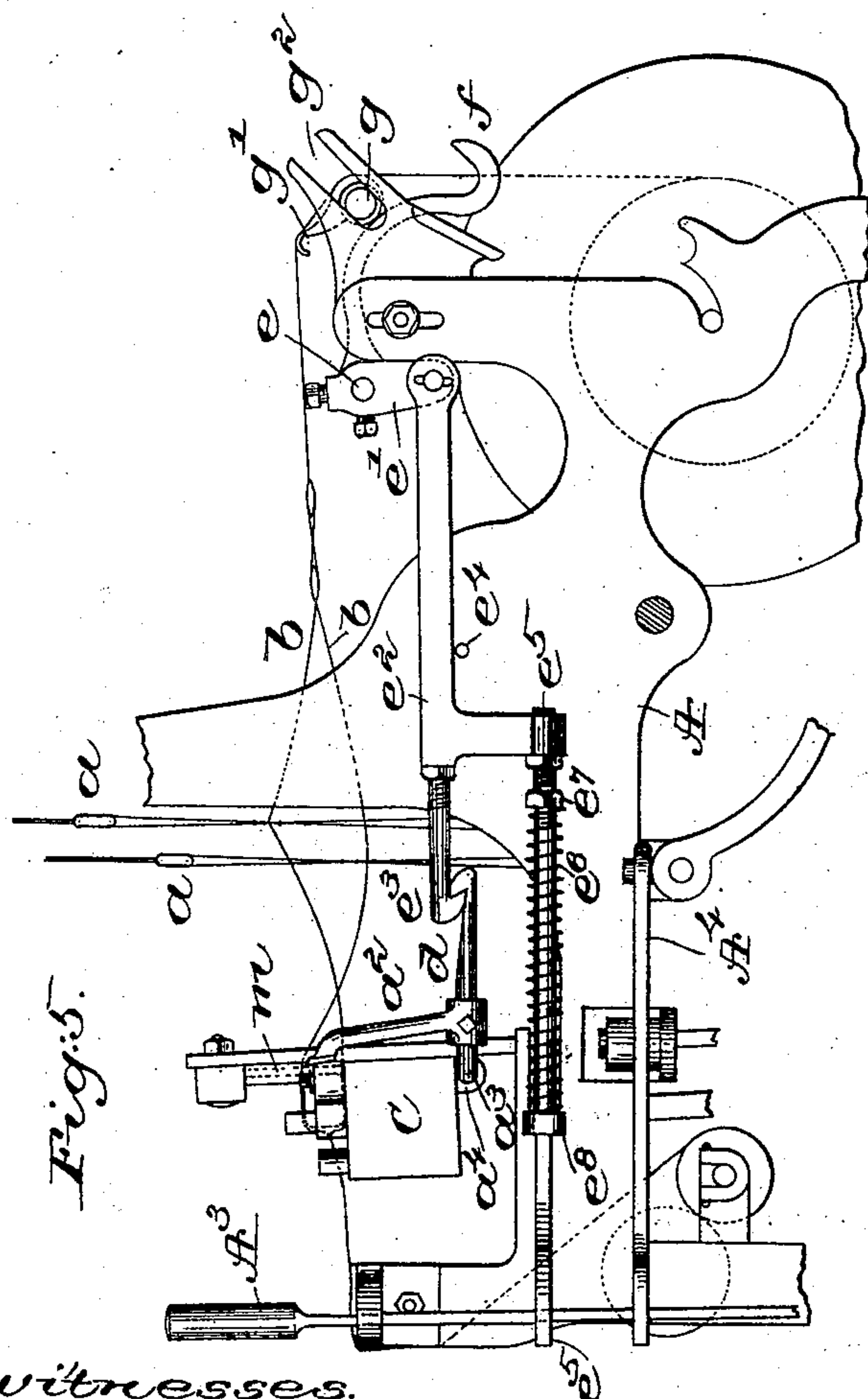
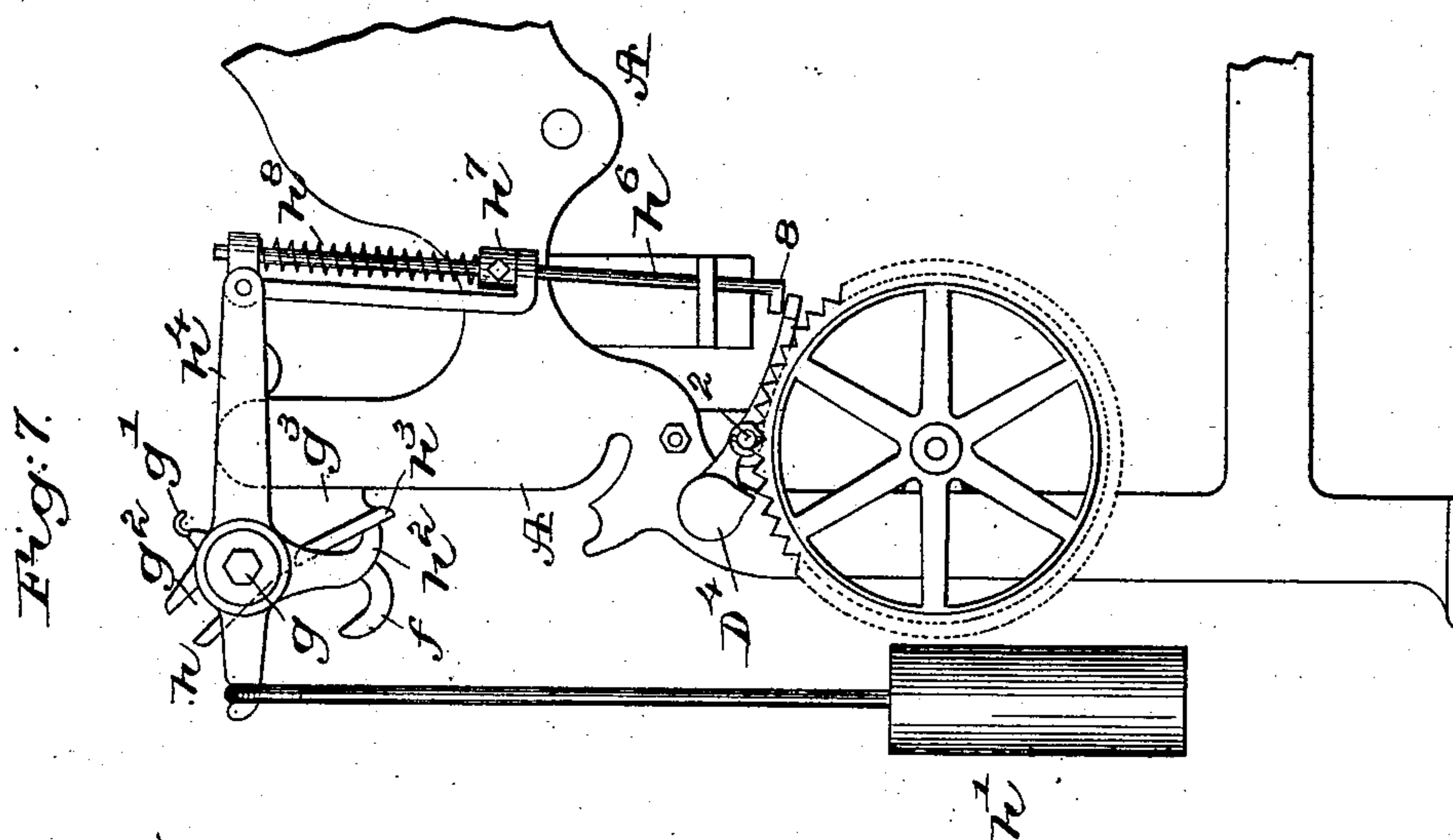
(No Model.)

3 Sheets—Sheet 3.

R. RIGBY.  
LOOM.

No. 507,328.

Patented Oct. 24, 1893.



*witnesses.*

Louis W. Sewell  
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# UNITED STATES PATENT OFFICE.

RICHARD RIGBY, OF FALL RIVER, MASSACHUSETTS.

## LOOM.

SPECIFICATION forming part of Letters Patent No. 507,328, dated October 24, 1893.

Application filed October 8, 1892. Serial No. 448,180. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD RIGBY, of Fall River, county of Bristol, State of Massachusetts, have invented an Improvement in Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

Very considerable attention has been given to obviate what are called "smashes" or the breakage of the warp in case the shuttle fails to be properly boxed. Most of these improvements have been confined to modifications in the construction of the binder.

In my efforts to obviate smashes I have devised means whereby when the shuttle fails to be properly boxed the tension upon the warps is immediately relieved, so that in case the shuttle is between the warps when the reed and lay move forward toward the fell the warps will not be broken.

As my invention is herein embodied, I have provided the usual protector rod with a suitable catch to engage a frame connected operatively with, not only the whip roll, but also with devices for releasing the shipper handle and as soon as the frame is released the whip roll is automatically restored to its working position.

Figure 1 is a side elevation, partially broken out, of a loom of ordinary construction provided with my invention. Fig. 2 is a partial side elevation of the opposite side of the loom shown in Fig. 1. Fig. 3 is a partial top or plan view, partially broken out to save space upon the drawing, of the loom shown in Fig. 1. Fig. 4 is a very much enlarged detail to be referred to. Fig. 5 is a detail similar to Fig. 1, with the parts in the position they will occupy when the shuttle has been caught in the warp, Fig. 5 showing part of the harness mechanism omitted from Fig. 1. Fig. 6 is a plan view of a part of the loom shown in Fig. 5. Fig. 7 is a partial side elevation of the opposite side of the loom shown in Fig. 5 with the parts in the position indicated in Fig. 5.

Referring to the drawings, A represents the side frames of the loom, A' the breast beam, A<sup>2</sup> the usual-notched-shipper holding plate, A<sup>3</sup> the shipper-hammer, A<sup>4</sup> the lever pivoted at A<sup>5</sup> and connected at its rear end with a belt fork A<sup>6</sup>, sliding on the stud A<sup>7</sup>.

B represents one of the usual belt pulleys of the loom, it being attached to the usual crank shaft B', provided with a fly wheel B<sup>2</sup>, the driving belt B<sup>3</sup> being controlled by the fork A<sup>6</sup>; and *a* represents harness frames having the usual heddles, through the eyes of which are extended the warps *b*.

C represents the usual lay, in practice provided with a shuttle box, having a binder *a'*, which is acted upon by a binder finger *a''*, connected and carried by the protector rod *a'''* having suitable bearings *a''''* at the under side of the lay.

The warp beam D has fast upon it at one end a gear D', which is engaged by a pinion D<sup>2</sup> on the hub of a ratchet wheel D<sup>3</sup>, the said ratchet wheel being engaged normally by a pawl D<sup>4</sup> pivoted at 2, the pawl when in engagement with the ratchet wheel preventing the delivery of the warp *d*.

The parts so far described are not of my invention and are commonly used.

Referring to Figs. 4 and 5, it will be seen that the hub of the binder finger *a''* besides being mounted upon a projecting portion of the protector rod is also made to surround part of a catch *d*, the shank of the catch having in this instance a projection as *d'*, see Fig. 4, to enter one of several notches *d''* in a part of the protector rod, the screw *d'''*, which confines the binder finger upon the protector rod, being also in this instance employed to effect the rigid coupling together of the catch and the protector rod.

The loom is provided at a point above the warp beam with a cross-shaft *e*, having at its right hand end, see Figs. 1 and 5, an arm *e'* to which is jointed a slide frame *e''* having a suitable hook or catch *e'''* to co-operate with the catch *d*, the weight of the arm normally resting upon a guide *e''''*, shown as a pin or projection on the frame. This slide frame is represented as having a depending leg to which is adjustably attached a rod *e''''''* surrounded by a spring *e''''''''*, one end of which is acted upon by a nut *e''''''''''*, the opposite end of the spring resting against an abutment *e''''''''''''*, said rod constituting a stop motion device. The outer or free end of the rod *e''''''''''* when moved forward with the frame *e''* strikes the shipper-handle and effects its release to stop the loom.



The rod  $e$  extended across the loom and supported in suitable bearings has connected to it near each end, but inside the loom frame, two like whip-roll supports  $f$ , which normally occupy, when the loom is weaving regularly, the position shown in Figs. 1 and 2, said supports holding up the shaft  $g$  of the whip-roll  $g'$ , said shaft riding at its ends in, as herein shown, diagonally arranged slots  $g^2$  of stands  $g^3$ , attached to the loom side.

The whip-roll shaft  $g$ , as herein shown at the left hand side of the loom, has fastened upon it a lever  $h$ , upon one end of which is hung in usual manner a weight  $h'$ , the said weight keeping the whip-roll up firmly against the warp, the whip-roll rising and falling under the varying strains of the warp in weaving. The lever  $h$  has a toe  $h^2$  which co-operates with a suitable flange or projection  $h^3$  of one of the stands  $g^3$  so as to limit the upward movement of the whip-roll, the opposite end of the lever  $h$  having jointed to it a leg  $h^4$  provided with a foot through which is extended a rod  $h^6$  provided with a collar  $h^7$  fast thereto and acted upon by a spring  $h^8$ , the latter serving to keep the collar seated upon the foot of the leg. The lower end of the rod  $h^6$  has its end bent or headed as at 8 and the said rod is guided in suitable guides 9, 10, the lower end of the rod when the loom is weaving correctly, see Fig. 2, resting near, but above and out of contact with one end of the pawl  $D^4$ . If the shuttle  $F$  fails to properly enter the shuttle-box the binder is not thrown out and consequently the protector rod is turned by the usual spring, which spring serves normally to keep the finger  $a^2$  pressed against the binder and such movement of the protector rod causes the catch  $d$  to be lifted from its position, Fig. 1, into the position Fig. 5, so that as the lay moves forward the catch  $d$  engages the hook or latch  $e^3$  and drawing upon the frame  $e^2$  turns the shaft  $e$  to lower the whip-roll supports  $f$ , so that the whip-roll is immediately dropped from the said supports into the slots  $g^2$  of the stands  $g^3$ , such movement of the whip-roll affording very considerable slack to the warp between the warp-beam and the usual harness frame and the reed, so that in case the shuttle occupies a position more or less within the shed, the usual reed  $m$  of the lay as it is moved forward toward the breast-beam may act against the shuttle and yet not strain or break the warp threads. As the whip-roll is dropped, as described, from its position Fig. 2 into the position Fig. 7 the lower end of the rod  $h^6$  strikes one end of the detent  $D^4$ , releases the ratchet wheel  $D^3$ , and lets the warp off freely. It will be understood that the lever  $h$  in the ordinary depressions of the whip-roll when in its working position Figs. 1 and 2, will, owing to the strain of the warp upon the whip-roll, cause the rod  $h^6$  to be lowered upon the detent  $D^4$  whenever the warp should be let off for proper weaving. As the sliding frame  $e^2$  is drawn

forward, as described, in unison with the lay, the rod  $e^5$  is moved forward until it strikes the shipper-handle  $A^3$  and releases it from the usual notch in the holder plate  $A^2$ , thus permitting said shipper-handle, made as a spring, to act upon the belt fork  $A^6$  and shift the belt from the usual fast to the usual loose pulley. The spring  $e^6$  besides acting to keep the whip roll up in working position, also acts automatically, as soon as the frame  $e^2$  has been released, to restore the whip roll into its working position.

I have herein shown one practical mechanical embodiment of my invention and have illustrated it in connection with one well known form of loom, but it will be obvious to those skilled in the art that my invention may readily be applied to any ordinary loom having a projector rod and a binder finger, so that the absence of the shuttle from the shuttle box will cause a catch as  $d$ , or its equivalent, to engage another suitable catch or latch of a frame, normally instrumental in keeping a whip-roll, or other suitable warp support, up into its normal working position, the movement of such frame on the absence of the shuttle from the shuttle-box dropping the whip-roll or warp support so as to effect quickly the slacking of the warp threads so that the same will not be broken by the forward motion of the lay and reed, notwithstanding the shuttle is in the lay more or less between the reed and fell of the cloth.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a loom the following instrumentalities, viz: a lay having a binder; a whip-roll; devices to support it; and intermediate connections between said binder and whip-roll to move the latter and cause the warp threads to be left slack on the failure of the shuttle to properly enter the shuttle-box, and devices to automatically restore the whip roll into its working position, substantially as described.

2. The lay having a shuttle box provided with a binder; a binder finger having a protector rod; a whip-roll; supporting devices therefor; and a frame  $e^2$  connected with said supporting devices and having a hook; combined with a hook carried by said protector rod to engage the hook on said frame, the engagement of the said hooks effecting the lowering of the whip-roll to thus afford slack in the warp in case the shuttle is not correctly boxed, and a spring co-operating with said frame to move it in the opposite direction to automatically restore the whip roll into its operative position, substantially as described.

3. The lay having a shuttle box provided with a binder; a binder finger having a protector rod; a whip roll; supporting devices therefor; and a frame  $e^2$  connected with supporting devices and having a hook; combined with a hook carried by said protector rod to engage the hook on said frame, the engage-



ment of the said hooks effecting the lowering  
of the whip roll to thus afford slack in the  
warp in case the shuttle is not correctly boxed,  
a spring co-operating with said frame to move  
5 it in the opposite direction to automatically  
restore the whip roll into its operative posi-  
tion, and with devices operatively connected  
with said whip-roll to release the warp-beam  
so that it may deliver its warp freely when

the warp roll is dropped, substantially as de- ro  
scribed.

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

RICHARD RIGBY.

Witnesses:

FRANK B. CAMPBELL,

HENRY H. EARL.