

(No Model.)

3 Sheets—Sheet 1.

G. CROMPTON & H. WYMAN.

M. C. CROMPTON, Administratrix of G. CROMPTON, deceased.

STOP MECHANISM FOR LOOMS.

No. 402,001.

Patented Apr. 23, 1889.

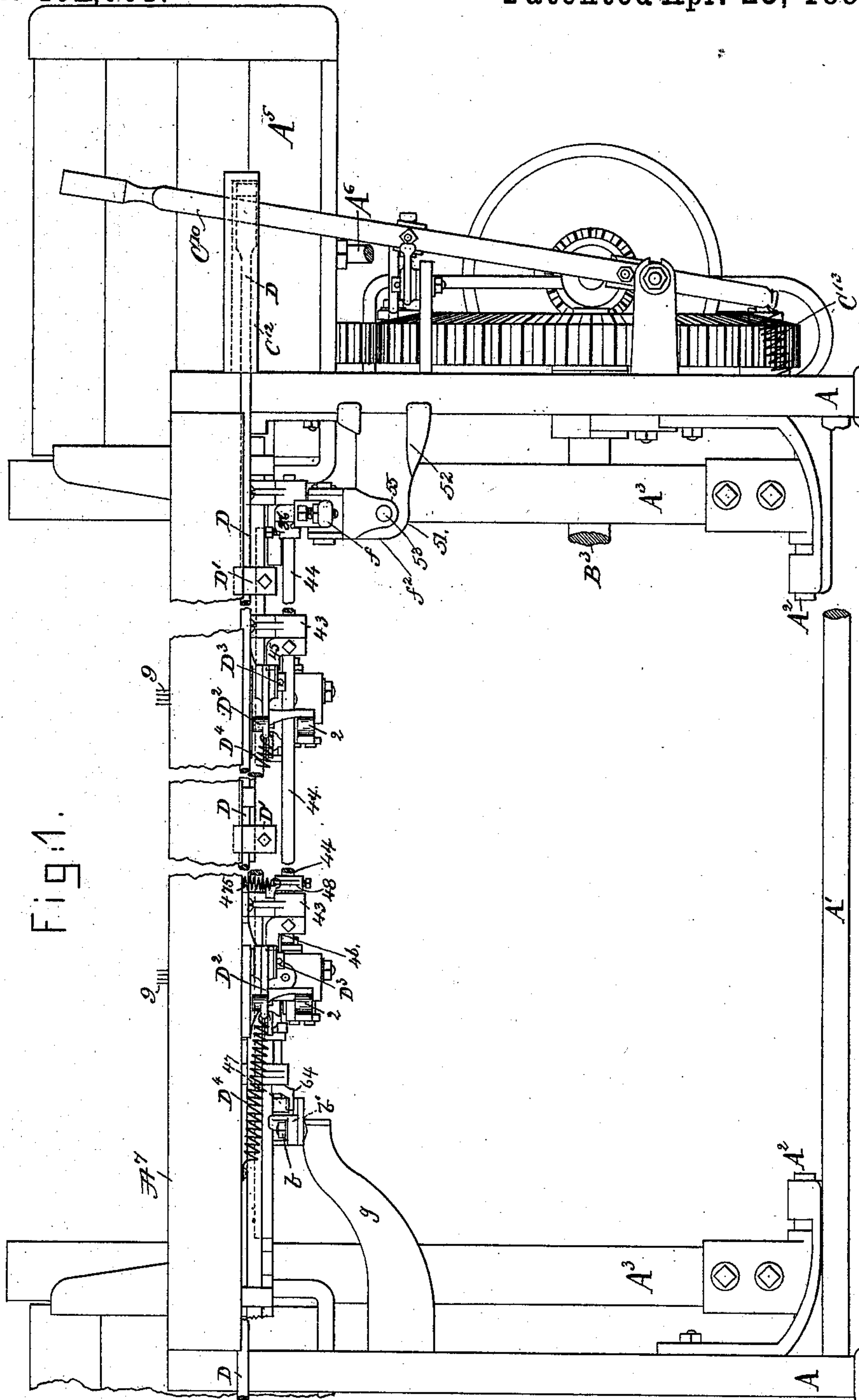


Fig. 1.

Witnesses.

Arthur Zipperlin  
John F. C. Brinkley

Inventors.

George Crompton  
Horace Wyman  
Clydeby & Gregory attys

(No Model.)

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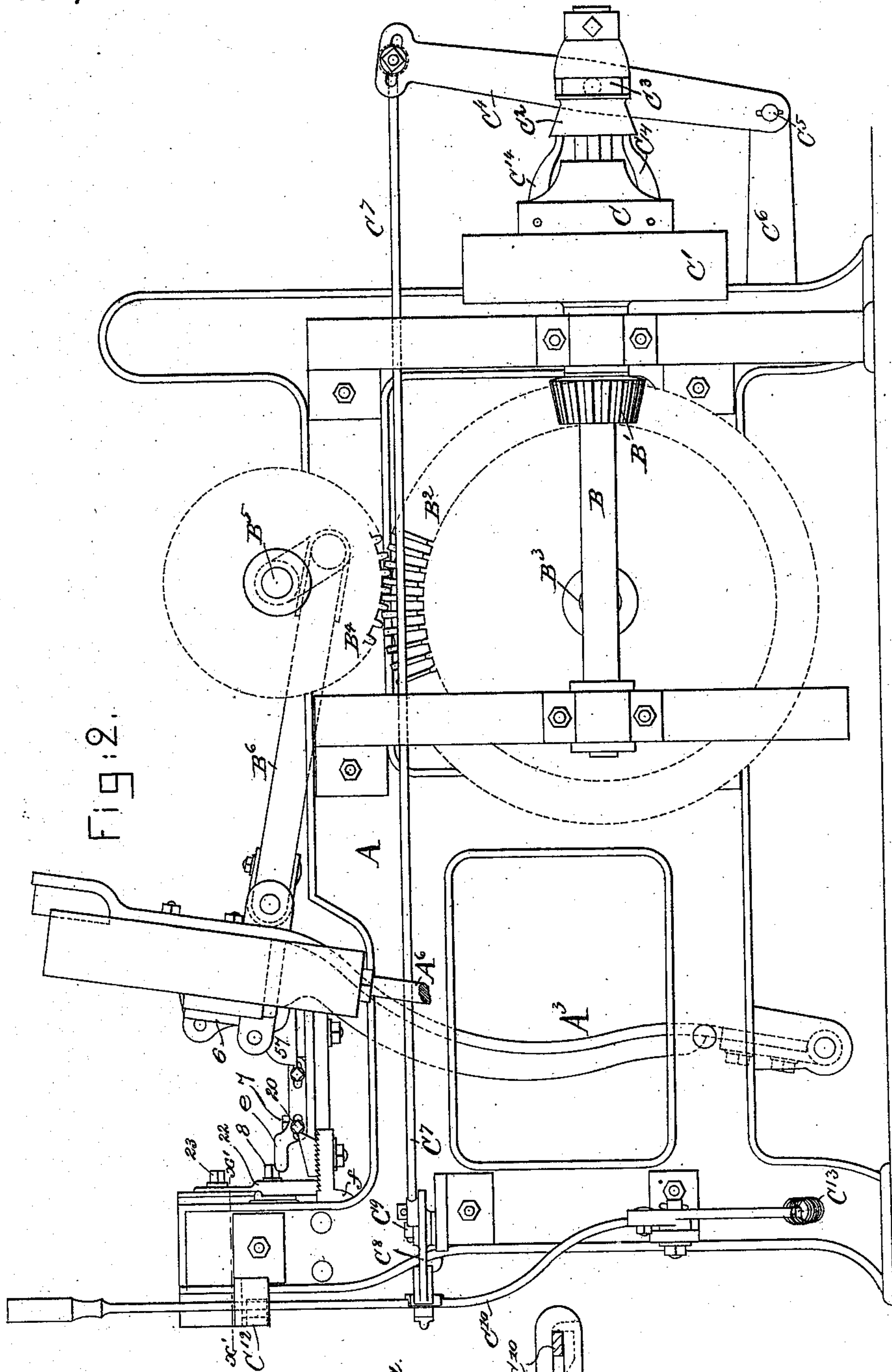
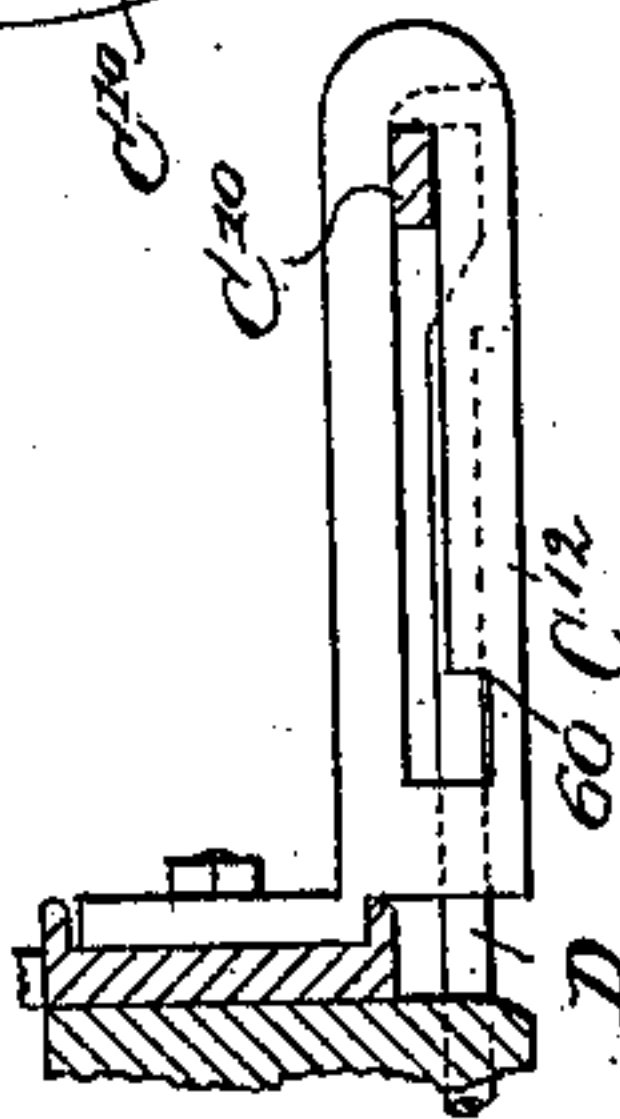


Fig:2.

Fig:2. a.



Witnesses.

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(No Model.)

3 Sheets—Sheet 3.

G. CROMPTON & H. WYMAN.

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STOP MECHANISM FOR LOOMS.

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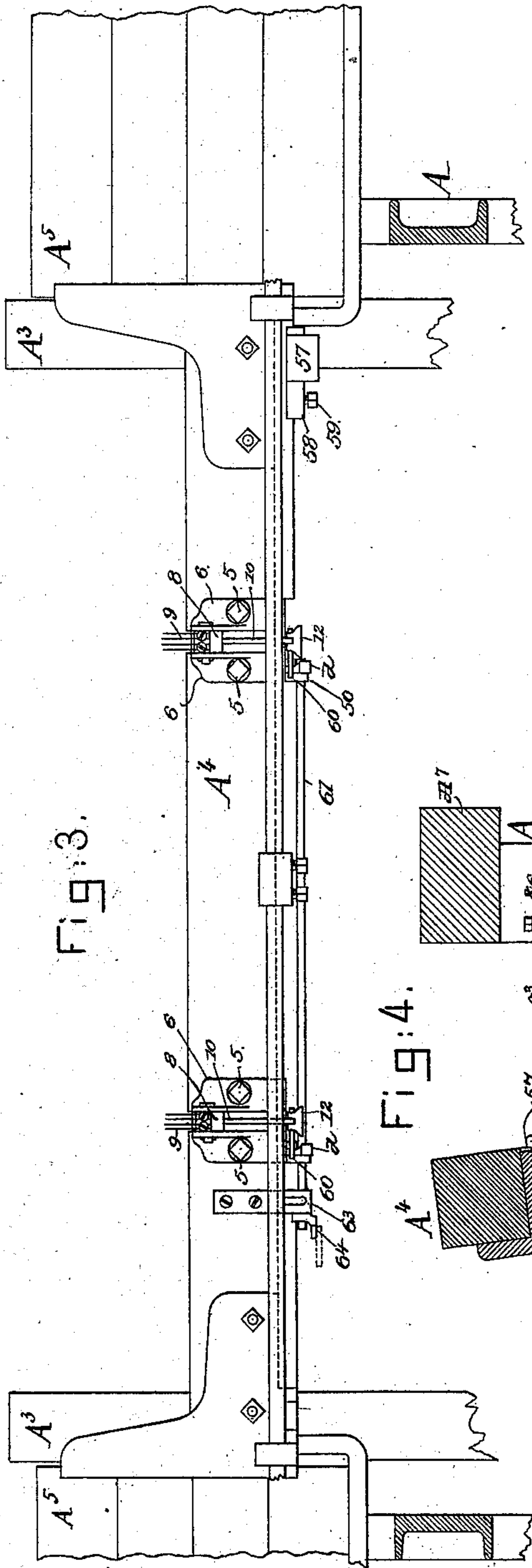


Fig. 3.

Fig. 4.

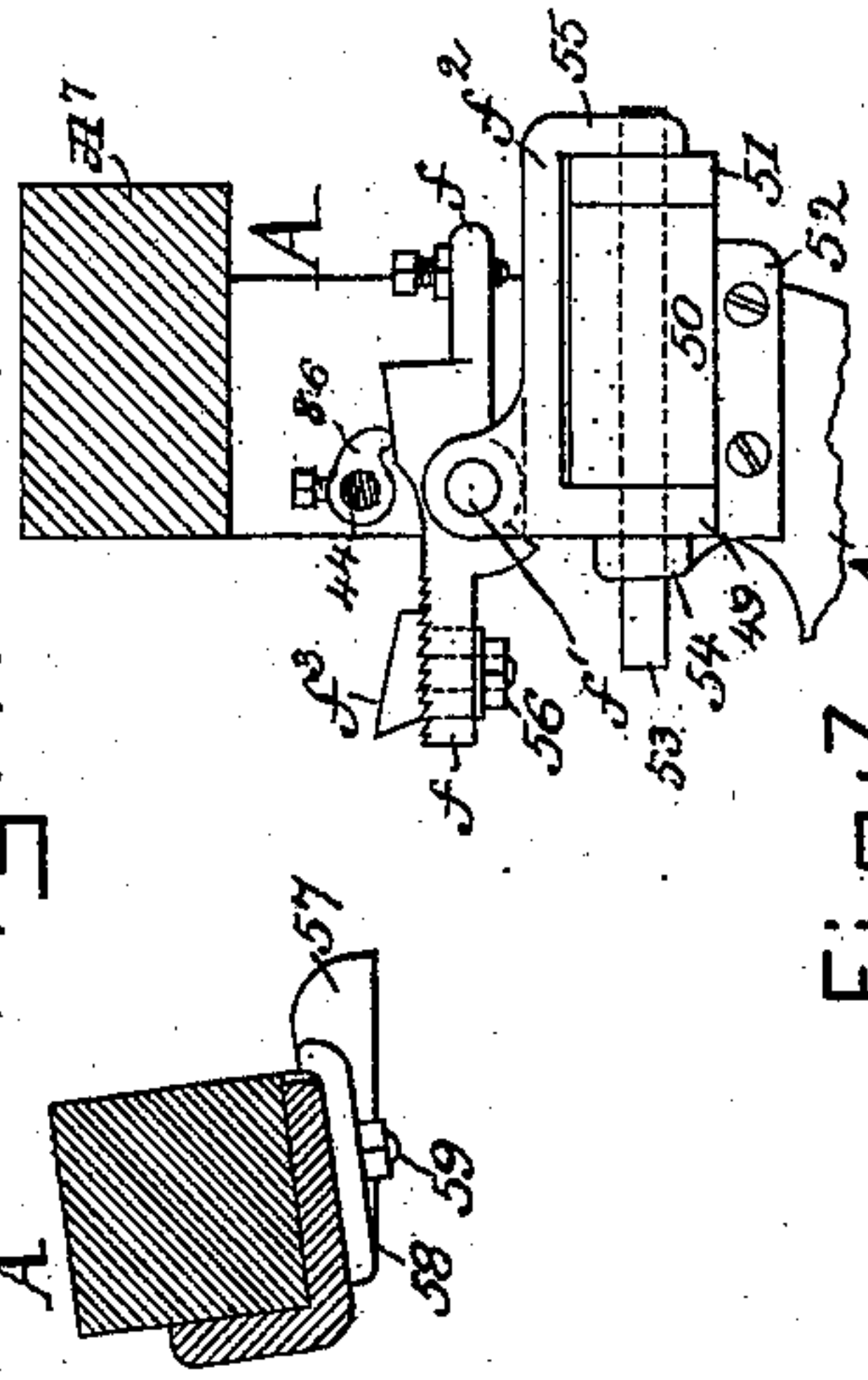


Fig. 5.

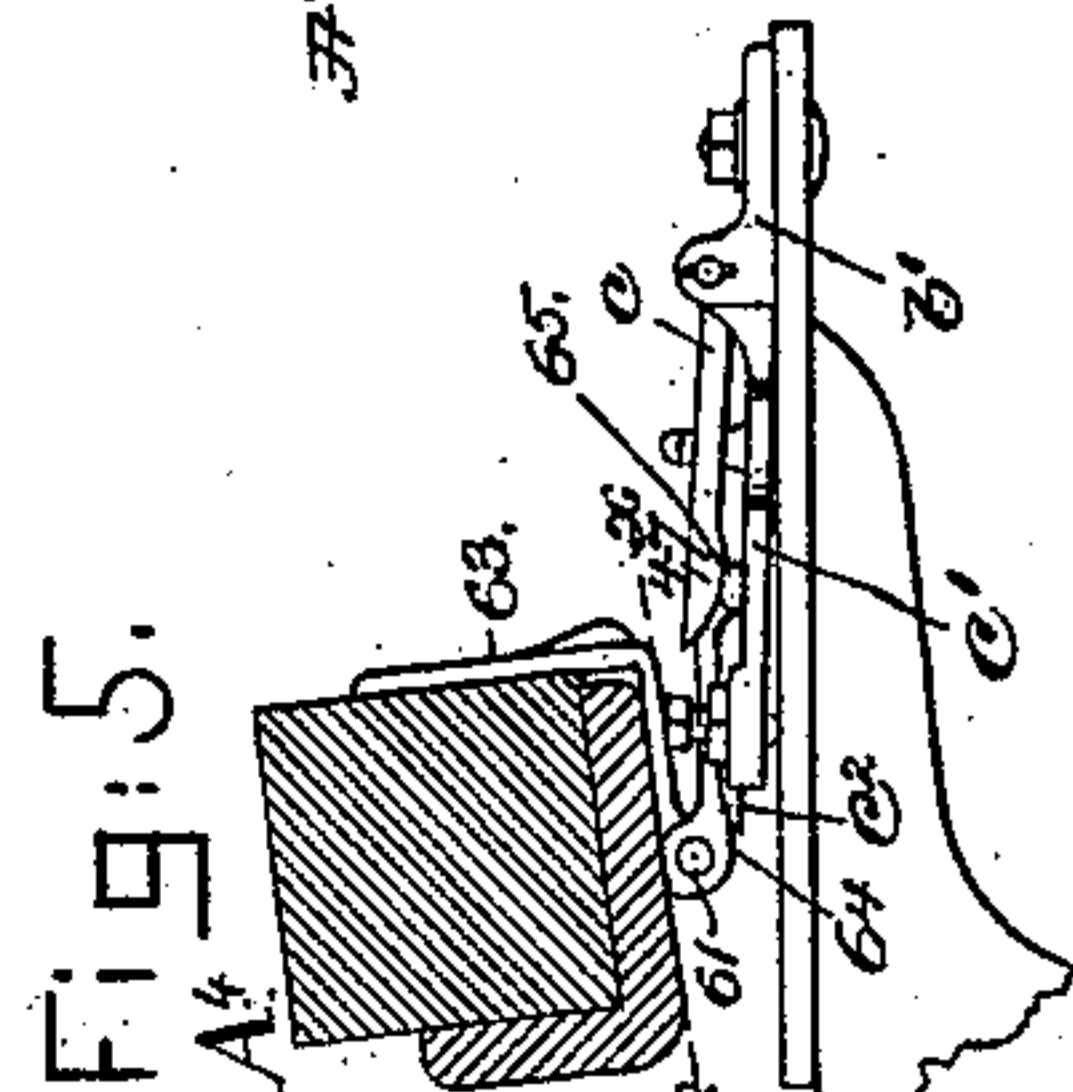


Fig. 7.

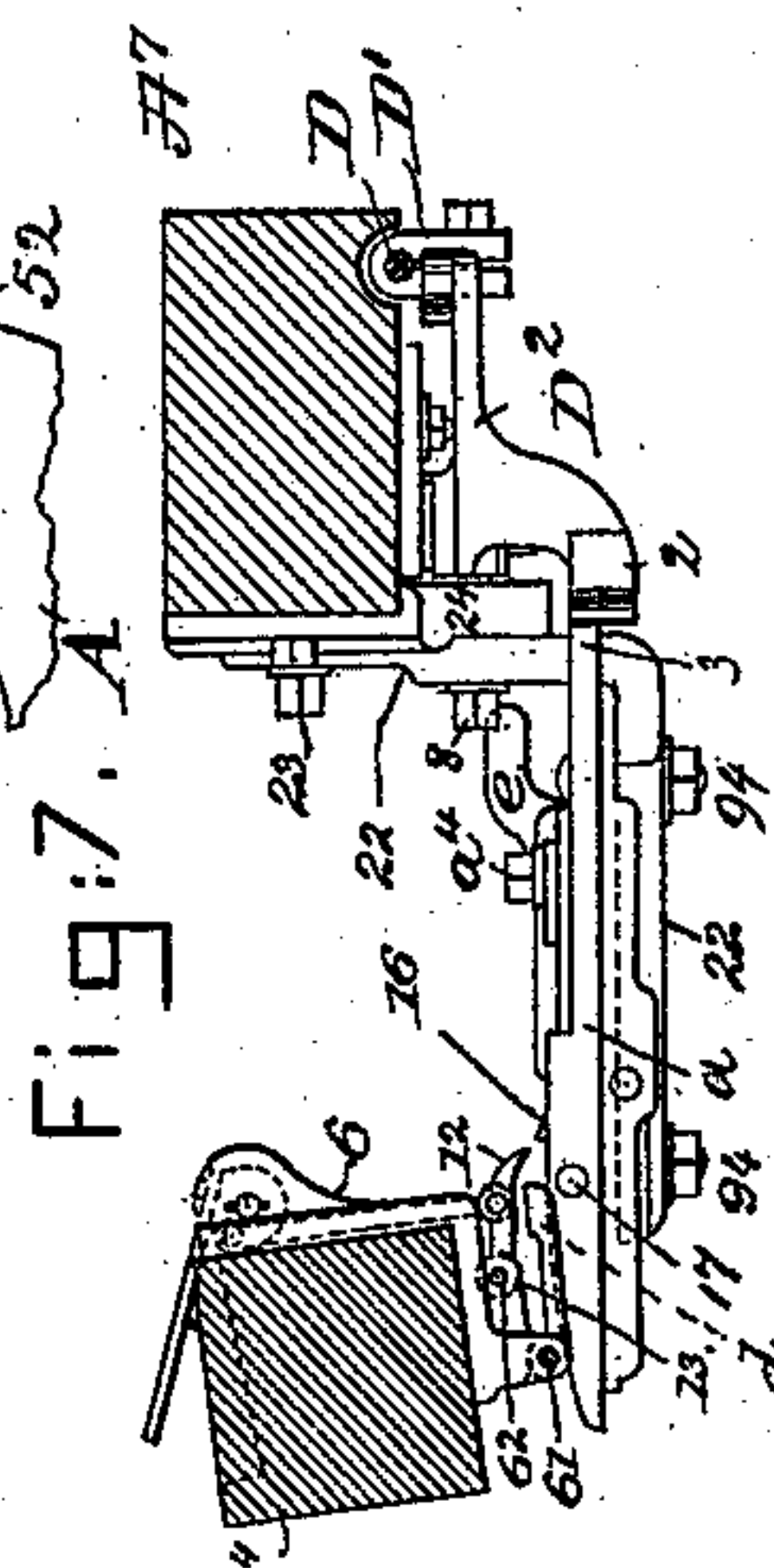


Fig. 10.

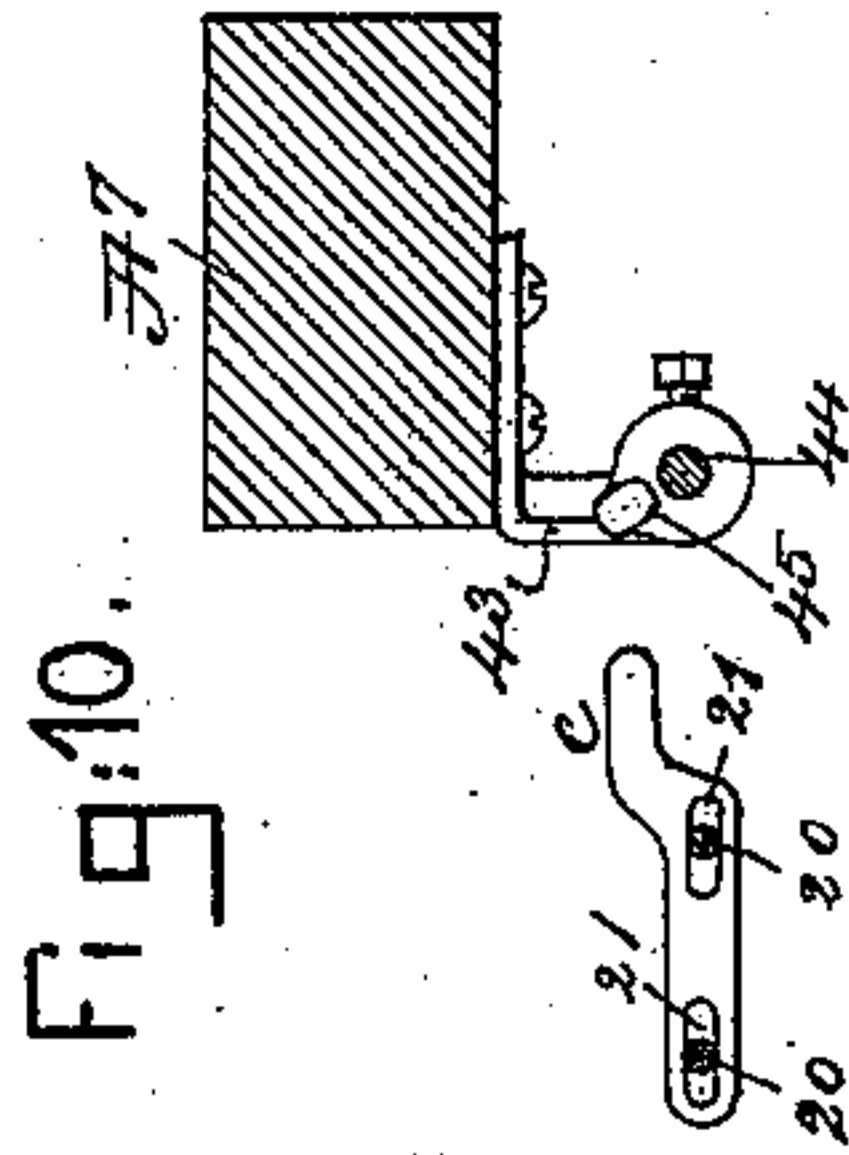


Fig. 11.

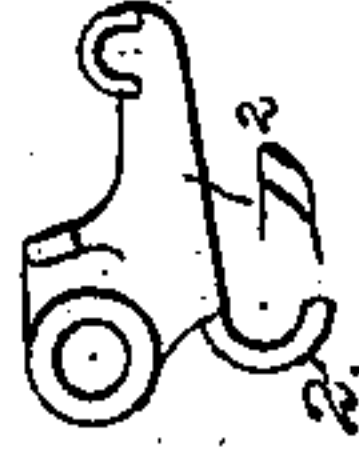


Fig. 8.

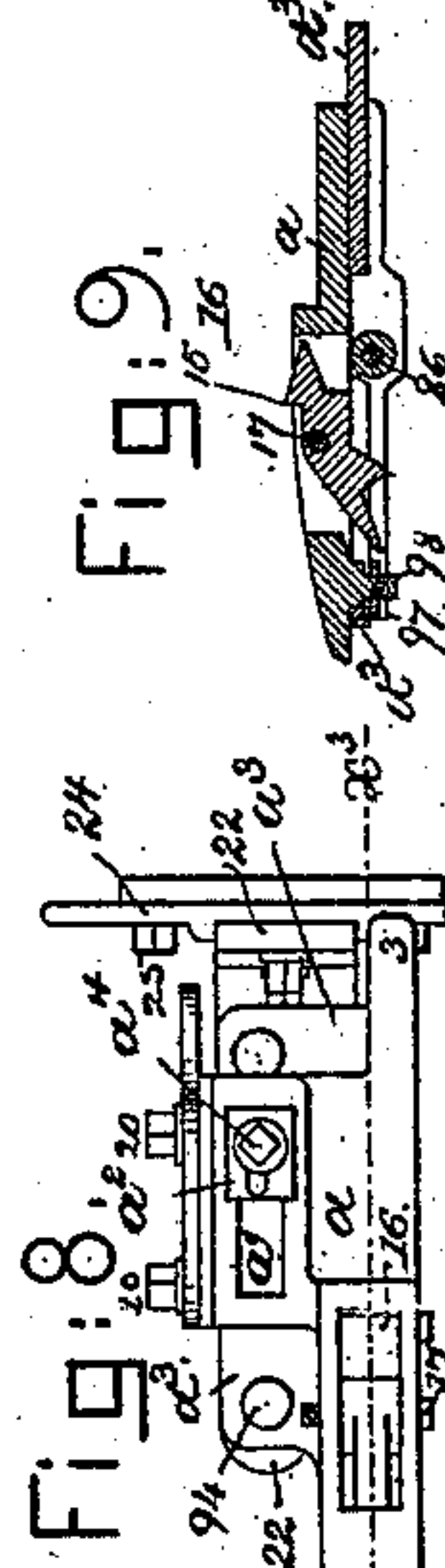
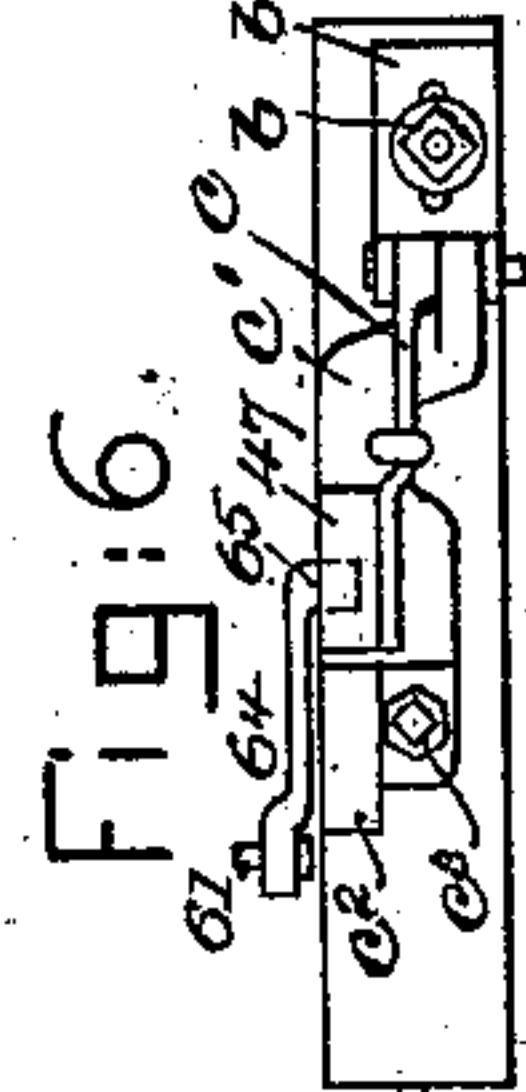


Fig. 9.



Fig. 6.



Witnesses.

Arthur Zippert.  
John F. C. Printz.

Inventors.

George Crompton  
Horace Wyman  
by Crosby & Gregory attys



# UNITED STATES PATENT OFFICE.

GEORGE CROMPTON AND HORACE WYMAN, OF WORCESTER, MASSACHUSETTS; MARY C. CROMPTON ADMINISTRATRIX OF SAID GEORGE CROMPTON, DECEASED; SAID MARY C. CROMPTON AND HORACE WYMAN ASSIGNORS TO THE CROMPTON LOOM WORKS, OF SAME PLACE.

## STOP MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 402,001, dated April 23, 1889.

Application filed February 19, 1886. Serial No. 192,519. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE CROMPTON and HORACE WYMAN, both of Worcester, county of Worcester, and State of Massachusetts, have invented an Improvement in Stop 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.

10 This invention has for its object to improve the construction of that class of weft stop mechanism wherein the weft-feeler is connected with and pivoted at the front end of the lay between the selvages of the warp.

15 In the present embodiment of our invention we have shown two weft-feelers located between the selvages.

In accordance with our invention the dagger controlled by the weft-feeler drops, and 20 through mechanism engaged and operated by it effects the release of the shipper-handle, which latter, through intermediate mechanism operated by it, unclutches from the power-shaft a clutch-pulley actuated by the usual 25 driving-belt, the unclutching of the pulley being done in case of absence of the weft about as the lay completes from two-thirds to three-fourths of its forward stroke, and at about the same time or immediately after- 30 ward, and while the lay is moving forward, a finger operated by the weft stop mechanism raises a bunter, placing it in position to be struck by a lug, thereby stopping the movement of the lay, and consequently all the 35 other parts of the loom.

The particular features in which our invention consists will be herein described, and designated specifically in the claims at the end of this specification.

40 Figure 1 in front elevation, partially broken out to save space on the drawings, represents a sufficient portion of a loom to enable our invention to be understood; Fig. 2, a right-hand end elevation thereof; Fig. 2<sup>a</sup>, a sectional detail 45 in the line  $x' x'$ , Fig. 2; Fig. 3, a detail, chiefly to show the front of the lay, the attached feel-

ers, daggers, and means to lift the two daggers simultaneously from one side of the loom, the usual protection-rod being but partially shown. Fig. 4 is a detail showing part of the 50 breast-beam and frame of the loom with the bunter attached to it and the lay with its attached lug for hitting the bunter. Fig. 5 is a sectional detail near the left-hand side of the loom, chiefly to show the parts, to be de- 55 scribed, which are instrumental in simultaneously lifting from one side of the loom the two daggers which are directly connected to the weft-feelers and while the lay is near its backward position. Fig. 6 is a section below 60 the line  $xx$ , Fig. 5. Fig. 7 is a sectional detail taken through the lay and breast-beam at one side of one of the stands upon which is pivoted one of the feelers. Fig. 8 is a plan view of Fig. 7, the lay, the breast-beam, and the parts 65 attached directly to the under side of the lay, and the lever  $D^2$  being omitted. Fig. 9 is a sectional detail of Fig. 8 in the line  $x^3$ , it showing only the plate  $a^3$ , the slide-plate, and its attached dog; Fig. 10, a detail showing 70 the position of the adjustable dog to turn the rock-shaft, having the finger to operate the bunter; and Fig. 11, a separate view of the bell-crank lever.

A shows the side pieces of the loom-frame 75 joined by a cross-rod,  $A'$ ;  $A^2$ , the lay-pivots;  $A^3$ , the lay-swords;  $A^4$ , the beam of the lay;  $A^5$ , usual shuttle-boxes;  $A^6$ , the shuttle-box rod, which in practice may be moved in any usual manner; and  $A^7$ , the breast-beam. 80

B represents the power-shaft;  $B'$ , a bevel-gear thereon;  $B^2$ , a gear fast on the usual cam or picking shaft,  $B^3$ , and driving the toothed gear  $B^4$ , fast on the crank-shaft  $B^5$ , to which 85 are joined the usual connecting-rods,  $B^6$ , that move the lay. The power-shaft B has fast on it one part, C, of a clutch-pulley substantially such as described in United States Patent No. 202,400, the part  $C'$  of the said clutch-pulley, 90 it receiving on it the usual belt, (not shown,) being free to run loose on the shaft B when desired. The shaft B has splined on it a



wedge-shaped collar,  $C^2$ , having an annular groove,  $C^3$ , which receives a fork connected to a lever,  $C^4$ , pivoted at  $C^5$  on a bracket,  $C^6$ , the lever  $C^4$  having connected to its upper end the link  $C^7$ , attached to the elbow-lever  $C^8$ , pivoted at  $C^9$ , and having a notch to be entered by a part of the shipper-lever  $C^{10}$ , causing the shipper-lever when released from its usual holding-notch in the plate  $C^{12}$  (shown separately in Fig. 2<sup>a</sup> and acted upon by the spring  $C^{13}$ ) to move the said wedge-shaped collar to the right with relation to the levers  $C^{14}$ , they corresponding with the levers  $K$  in the said patent, which effects the release of the pulley  $C'$ , permitting it to run loose on the said shaft  $B$ . When the shipper-lever is in its notch 60 or is pulled to the left from Fig. 1, the wedge-shaped collar so acts on the levers as to secure the pulley  $C'$ , fast with relation to the shaft  $B'$ .

Instead of the particular clutch-pulley shown, we may employ any other well-known clutch-pulley capable of being freed quickly from its engagement with the shaft  $B$ .

The rod  $D$ , for moving the shipper-lever out of its notch, has secured to it two lugs,  $D' D'$ , (see Fig. 1,) one or both of which are struck immediately after a weft is broken by means of a bell-crank lever,  $D^2$ , (shown separately in Fig. 11,) and pivoted by a stud,  $D^3$ , to the under side of the breast-beam, each bell-crank lever being acted upon by a spring,  $D^4$ , to normally keep a pad, 2, connected to the lower end of the said lever pressed against the end 3 of a slide-plate,  $a$ , slotted at  $a'$  to receive a square block,  $a^2$ , extended through the said slot and attached to the plate  $a^3$  by a bolt,  $a^4$ , the said block acting as a guide for the slide-plate  $a$ , which in its movement rests upon the bottom plate,  $a^3$ , bolted to a horizontally-extended shelf of the bracket 22, attached by screws 23 to a stand, 24, the said stand being joined to the breast-beam by screws 25.

The slide-plate  $a$  has a slot which receives a dog, 16, pivoted at 17, and having a notched portion, 15, which normally extends above the curved upper side of the plate  $a$ , as shown in Figs. 7 and 9, to be caught by the point of the dagger 12, pivoted at 13 to a lug on the stand 6, attached to the lay-beam  $A^4$  by bolts 5, the notched upper side of the said dog being normally kept elevated by its heavier lower end, it having (see Fig. 9) an inclined shoulder, which, as the dog engaged by the dagger is carried forward with the plate  $a$  on the plate  $a^3$ , strikes the roll 86 on a stud of the said plate  $a^3$  and causes the upper end of the dog to be thrown down into the said recess or slot far enough to release the dagger, but not until after the end 3 of the slide-plate  $a$ , resting against the pad 2 of one of the bell-crank levers  $D^2$ , has turned it far enough to cause the other end of the said bell-crank lever, it bearing against one of the lugs  $D'$ , to push the rod  $D$  with sufficient force to remove the shipper-lever  $C^{10}$  from its holding-notch in the plate  $C^{12}$ .

Each feeler 9 is connected to a head, 8, pivoted between ears of the stand 6, and each head is connected by a link, 10, to a dagger, 12. 70

Herein we have shown two feelers, one near each selvage of the fabric being woven, both of the said feelers being located between the opposite selvages and pivoted at the front of the lay, both feelers descending upon each weft as it is laid, the employment of two feelers, located as described with relation to the selvages, instead of at the center of the length of the lay or outside the selvages, being of advantage, in that we are thus enabled to detect the absence of any portion of the weft or filling in the shed if it fails to reach either selvage, and, as compared with feelers arranged between the selvages and shuttle-boxes, the feelers are better protected from blows, and are removed from all liability of being caught by the threads of silent shuttles in movable shuttle-boxes. By pivoting the feeler at the front of the lay and extending it backward nearly across the lay we are enabled to drop the feeler on the weft-thread immediately after the passage of the shuttle, the feeler being supported by the weft-thread while the lay is being moved from near its backward to nearly its forward position, thereby insuring the retention of the dagger above the dog, the feeler being long enough in the direction of the width of the race of the lay to find the weft-thread if laid anywhere thereon by the shuttle, or the length of the feeler-fingers across the race of the lay is such as to provide for variations in the position of the weft laid on the raceway of the lay at different picks. 100

If the weft-thread is absent, the feeler is permitted to descend into a recess or space at the top of the lay-beam, and in so doing the dagger 12 is lowered sufficiently to meet the dog 16, as stated; but if the weft is present under the descending feeler, as in Fig. 7, the dagger is kept up so that it cannot catch the dog and stop the loom. 110

Each slide-plate  $a$  has attached to it at one side, by screws 20, a striker,  $e$ , slotted at 21 to receive the said screws and permit the striker to be adjusted on the said slide-plate. 115

The breast-beam at its under side has attached to it suitable bearings, 43, in which is placed a rock-shaft, 44, the latter having attached to it an arm, 45, and at one end an arm, 46, the end of the said arms 45 and 46 being normally held by the spring 475, attached to an arm, 48, and to the breast-beam in position to be struck by either of the strikers  $e$ , one for each slide-plate  $a$ , as one of the said slide-plates is moved toward the breast-beam by a lowered dagger, 12. Whenever a striker  $e$  meets an arm, 45 or 46, the rock-shaft 44 is turned, causing a lug, 86, attached thereto (see Figs. 1 and 4) to act upon a cam-shaped portion of the bunter  $f$ , herein shown as a lever pivoted at  $f'$  on a bunter-carrier,  $f^2$ , one ear of which, 49, rests against a spring, 50, herein shown as of india-rubber, one end of the spring resting against an ear, 51, of a 120 125 130



stand, 52, bolted to the side frame, A, a pin or bolt, 53, being extended through the said ears, the said spring, the ear 54 of the stand, and the ear 55 of the said bunter-carrier. As the rock-shaft is turned, as described, it turns the bunter  $f$  sufficiently to place its outer end (herein shown as having attached to it by a nut, 56, an adjustable block,  $f^3$ ) in the range of and so as to be struck by the lug 57, projecting forward from a plate, 58, bolted to the lay-beam by one or more bolts, 59. As the lug 57 meets the end of the bunter, the spring 50 is compressed and the lay is gradually stopped without a severe blow; but the recoil of the spring, compressed as the lay is moving forward, reacts sufficiently to move the lay slightly backward from its most forward position, or far enough to leave the end of the lug 57 out of the notch of the bunter, so that the latter and the rock-shaft 44 may be turned into proper position to enable the loom to be started.

To one side of the loom we have attached a bracket,  $g$ , upon which we have secured by a bolt,  $b$ , a stand,  $b'$ , having pivoted to it a cam-plate,  $c'$ , having a raised portion,  $c^2$ , and to the said stand is also pivoted a latch,  $c$ , having an inclined projection, 47, (see Figs. 1, 5, and 6,) the said plate and latch, with their cam-like or inclined portions, constituting a divided cam, substantially such as referred to in United States application, Serial No. 188,698.

Each dagger, at one side of it, near its front end, has a stud, 60, which is extended laterally over a dagger-lifter, (shown as a finger,  $d$ ,) attached to a rock-shaft, 61, held in bearings 62, forming part of the stands or brackets 6 and 63, the said rock-shaft having fast to it at one end a lever, 64, provided with a lateral projection, 65, to ride over the part  $c^2$  and under the part 47 of the divided cam on the forward movement of the lay, so as to permit the dagger to fall quickly after the passage of the shuttle in the forward movement of the lay, the said projection 65 passing over the parts  $c^2$  and 47 as the lay is moved backward.

The divided cam described to control a dagger-lifter is fully illustrated in the said application, Serial No. 188,698; but herein the dagger-lifters are separate devices and are connected to a rock-shaft.

We have shown herein a dog of peculiar construction to be engaged by the dagger, the dog being pivoted on a sliding plate; but we desire it to be understood that instead of the dog and plate shown we may employ any other usual or well-known dog to be struck by the dagger to effect the release of the shipper-handle. We have also herein described, as we prefer, two weft-feelers; but we do not herein broadly claim two weft-feelers located as described with relation to the selvages.

We desire to have it understood that the

bunter operated through the dagger, or through a plate moved by it and a finger set in motion thereby, may be used to advantage in a loom having but one feeler. When the weft is absent, the feeler drops and causes the dagger and devices actuated by it to release the belt-shipper lever  $C^{10}$ .

We do not desire to limit our invention to the exact form of dagger shown, but instead may employ any well-known equivalent.

The plate  $a^3$  is attached to the shelf of the bracket 22 by bolts 94. The slide-plate has at its under side a pin, 98, (see Fig. 9,) which is extended through a slot in the plate  $a^3$ , where it has applied to it a washer, 97. The feeler, its attached dagger, the dog 16, and the brackets 22, 24, and 6 are substantially as in our application, Serial No. 150,940, and are not therefore herein broadly claimed.

We claim—

1. The lay, means to move it, a stand attached to it between the selvages of the fabric to be woven, a feeler pivoted on the said stand at the front of the lay, a dagger pivoted below the feeler, means to connect the feeler and dagger, a dog acted upon by the dagger, a rock-shaft mounted in bearings at the under side of the breast-beam and having projection 45 and lug 86, and the bunter, and means between the said dog and the said projection 45 to operate the said shaft to place the said bunter in the line of movement of and to arrest the lay as the latter is moved forward after the breaking of the filling, substantially as described.

2. The lay, the two stands thereon, the two weft-feelers, each pivoted, as shown and described, at the front of the lay, the two daggers, and means to connect each feeler with its dagger, and a rock-shaft having attached dagger-lifters, combined with means to actuate the said rock-shaft and move both daggers together, substantially as described.

3. The lay, an attached stand, a weft-feeler pivoted thereon at the front of the lay, a dagger, and means to connect it with the feeler, a rock-shaft, the dagger-lifter thereon, and an arm, 64, attached to the said rock-shaft at a distance from the dagger-lifter, combined with a bracket,  $g$ , at or near one side of the loom and near the line of selvage, and with means, substantially as described, carried by the said bracket, to operate the said arm and turn the said rock-shaft and dagger-lifter, substantially as described.

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

GEO. CROMPTON.  
HORACE WYMAN.

Witnesses:

JUSTIN A. WARE,  
CHARLES M. EDWARDS.