

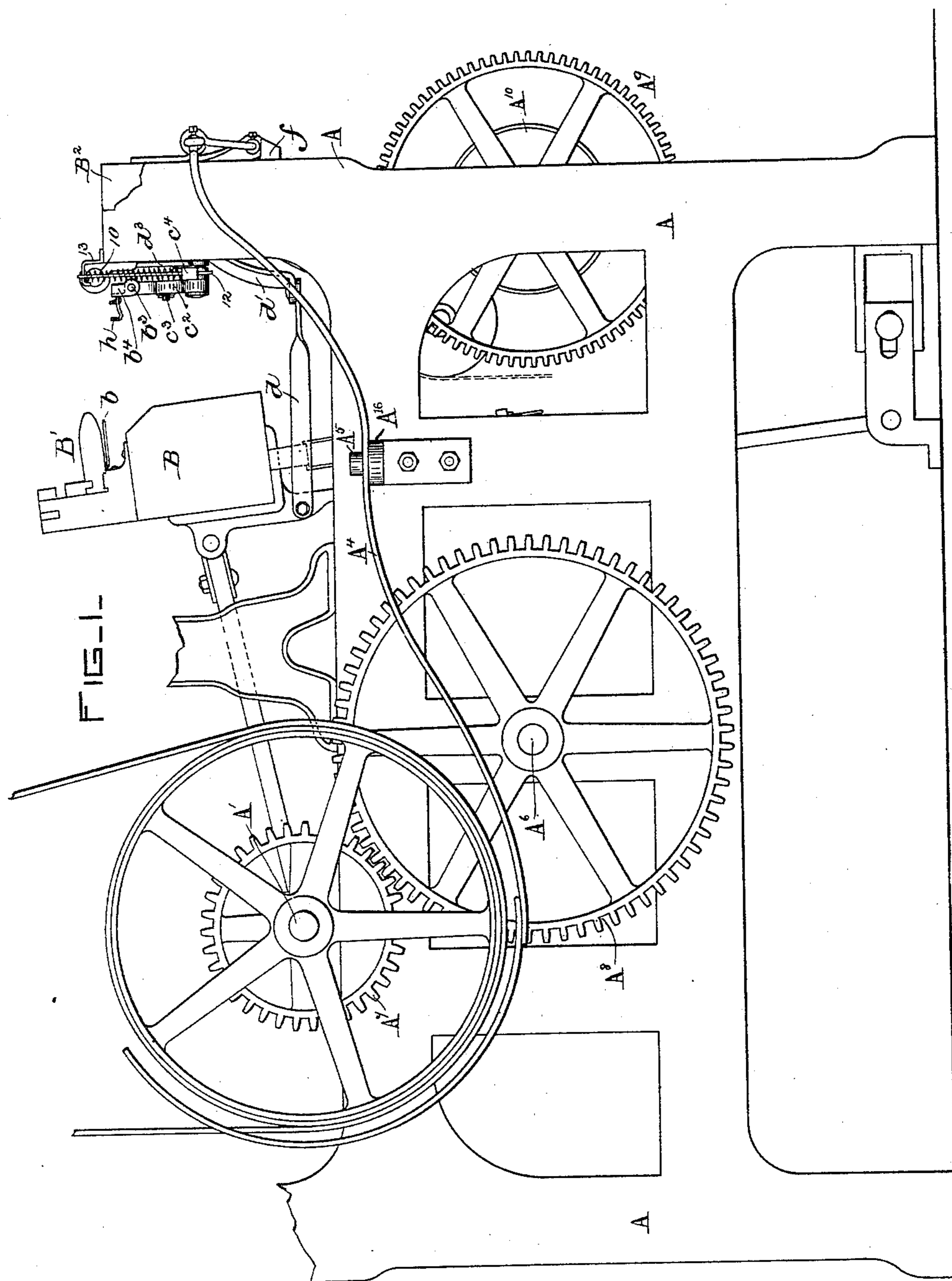
(No Model.)

4 Sheets—Sheet 1.

W. LAPWORTH.
WEFT STOP MOTION FOR LOOMS.

No. 445,147.

Patented Jan. 20, 1891.



WITNESSES

Edgar A. Goddard
Frederick L. Emery -

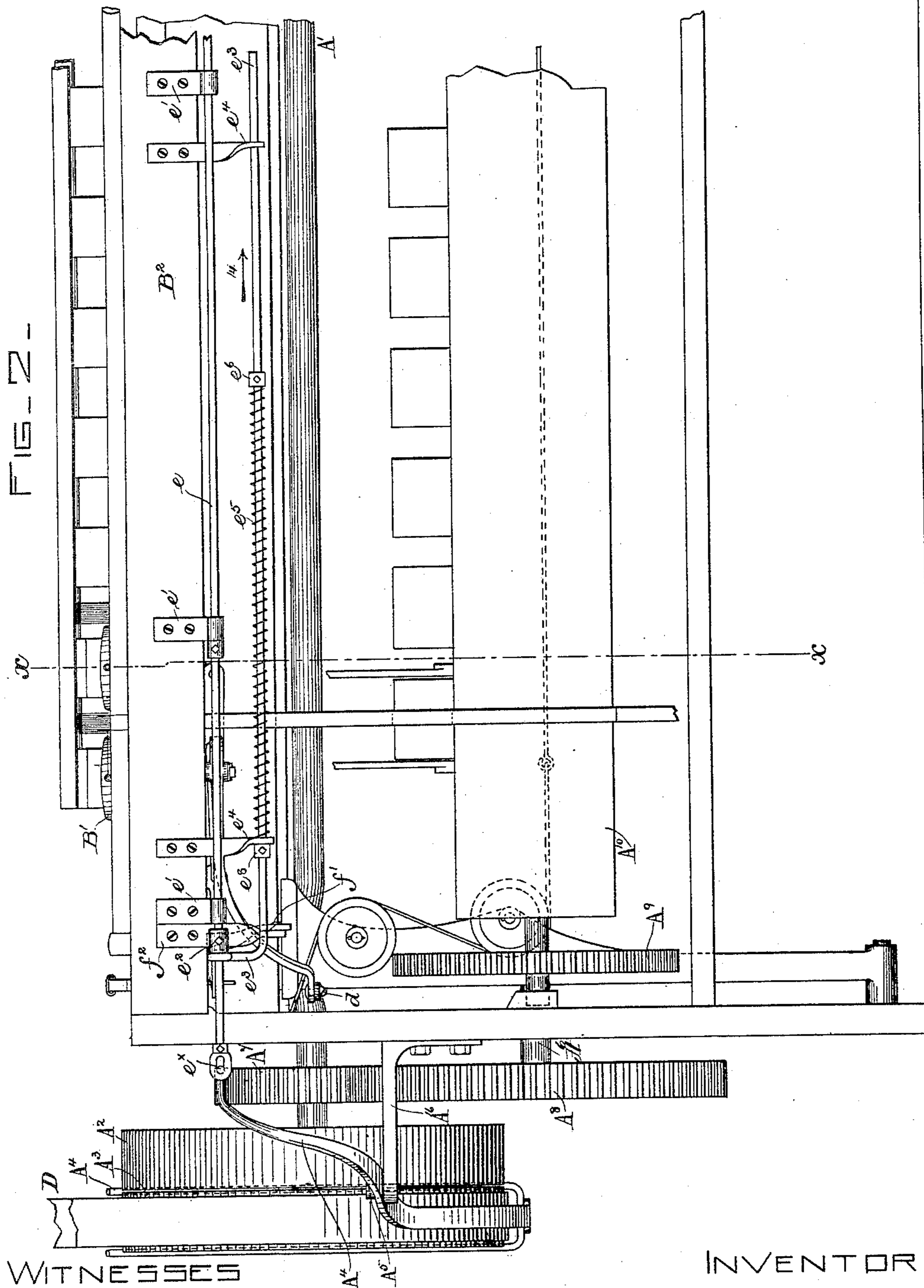
INVENTOR

William Lapworth,
by Crosby & Gregory attys.

4 Sheets—Sheet 2.

No. 445,147.

Patented Jan. 20, 1891.



WITNESSES

Edgar A. Godkin

Fredrick L. Emery -

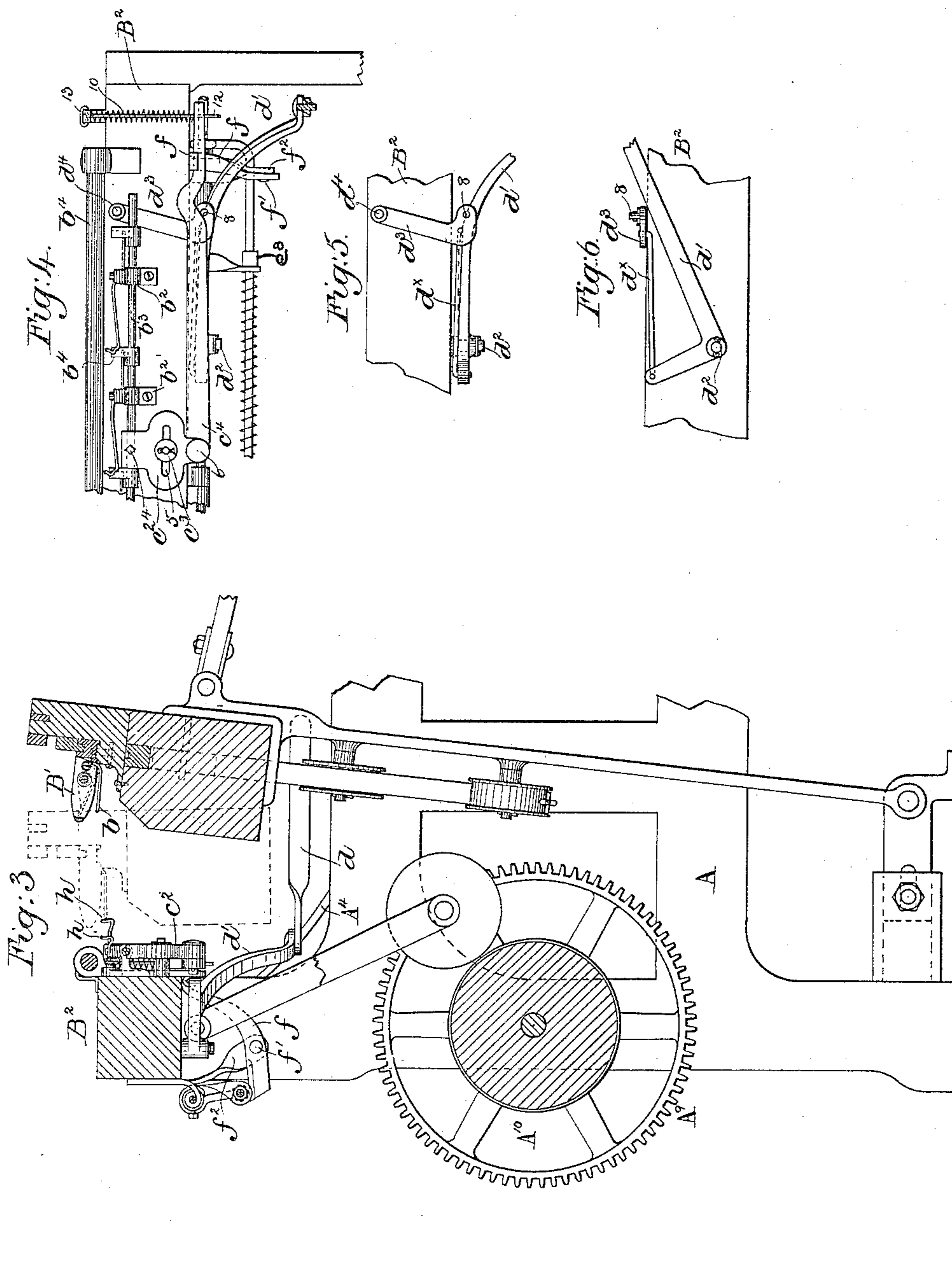
INVENTOR

William Lapworth,
by Crosby & Gregory Attys

4 Sheets—Sheet 3.

No. 445,147.

Patented Jan. 20, 1891.



Witnesses
Edgar A. Godkin
Frederick L. Emery -

Inventor.
William Lapworth,
by Crosby & Gregory
Attys.

(No Model.)

4 Sheets—Sheet 4.

W. LAPWORTH.
WEFT STOP MOTION FOR LOOMS.

No. 445,147.

Patented Jan. 20, 1891.

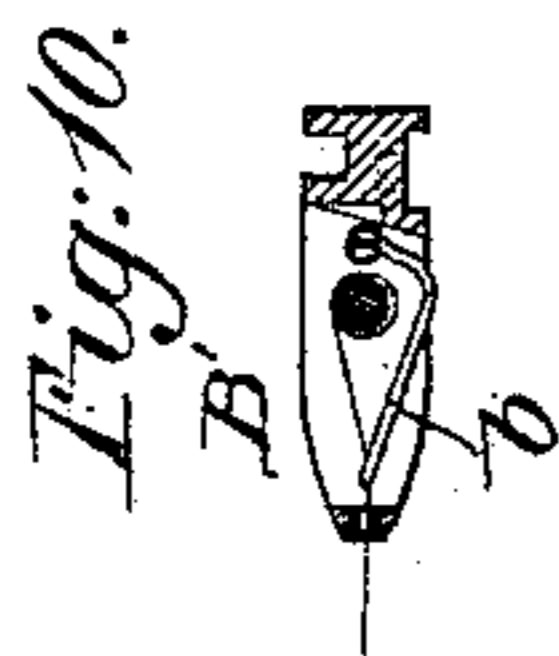


Fig. 8.

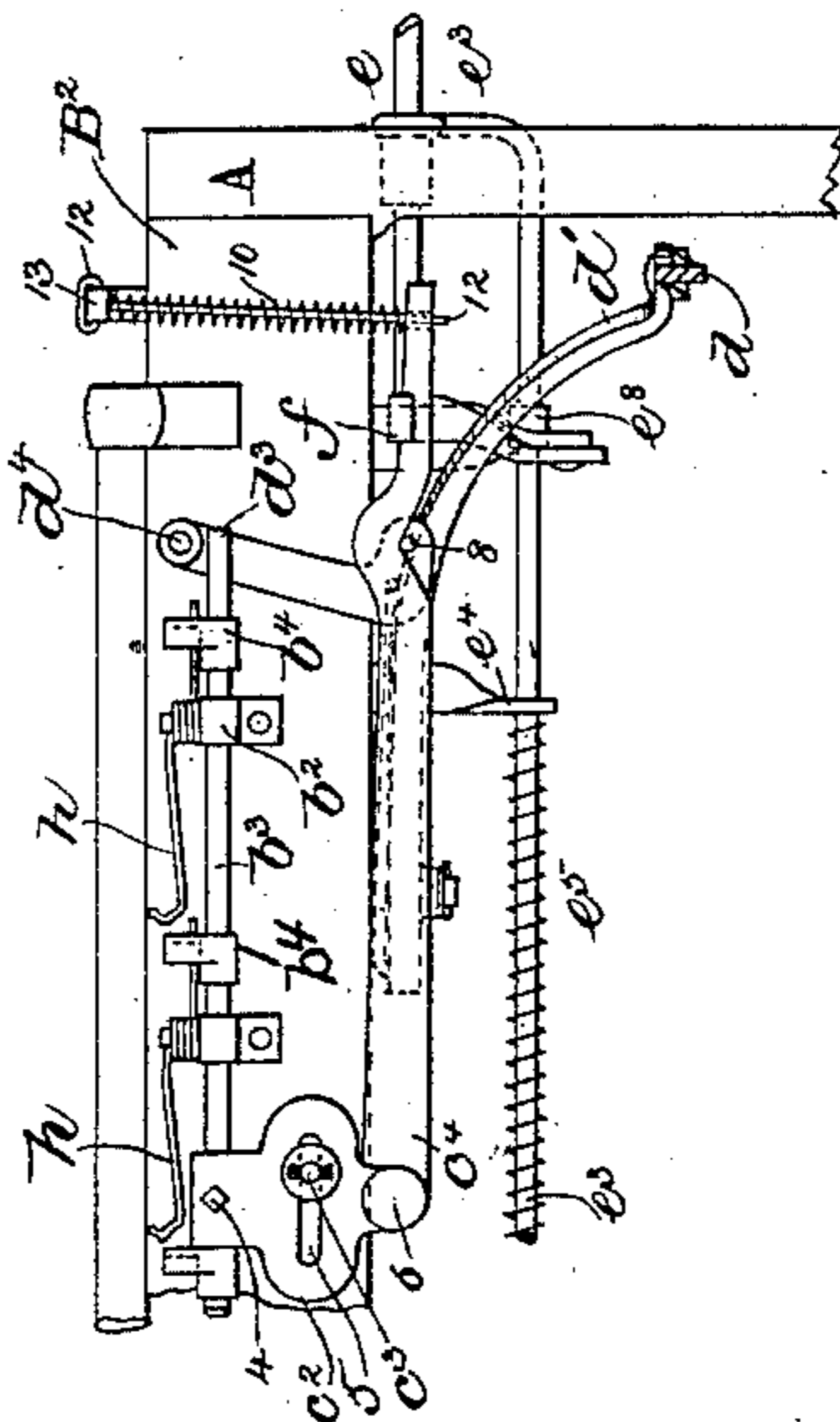


Fig. 9.

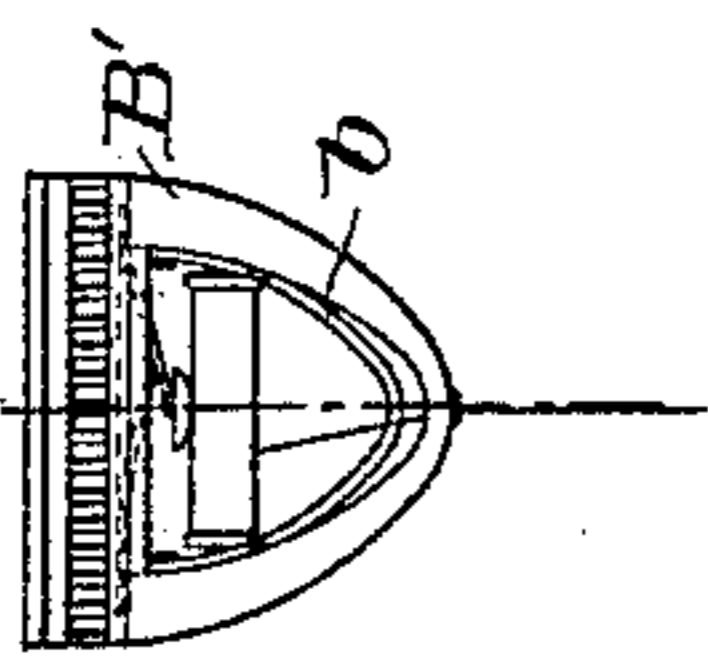
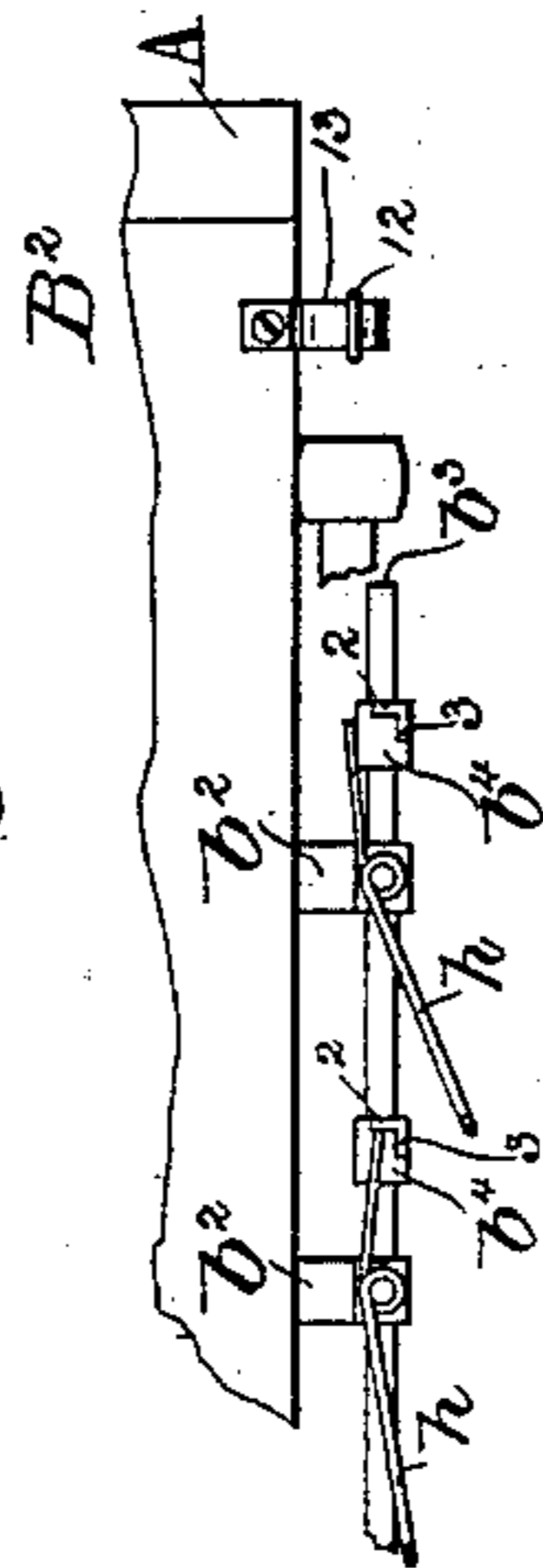


Fig. 7.



Witnesses:
Edgar A. Goddin
Frederick L. Emery -

Inventor:
William Lapworth,
by Leroy Gregory atty

UNITED STATES PATENT OFFICE.

WILLIAM LAPWORTH, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO THE
HOPEDALE ELASTIC FABRIC COMPANY, OF SAME PLACE.

WEFT STOP-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 445,147, dated January 20, 1891.

Application filed March 18, 1890. Serial No. 344,348. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM LAPWORTH, residing at Hopedale, county of Worcester, State of Massachusetts, but a subject of the Queen of Great Britain, have invented an Improvement in Weft Stop-Motions for 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.

This invention has for its object to provide a narrow-ware loom with means whereby the loom may be stopped quickly whenever the thread in any shuttle breaks or runs out or when the weft fails to be supplied from any shuttle.

In accordance with my invention each shuttle, actuated in any usual manner, has a drop-wire made as a loop, which is normally held up by the weft being drawn out from the shuttle and delivered in the shed; but when the weft fails the drop-wire strikes a feeler pivoted at or near the breast-beam, one feeler for each shuttle, and moves the same into position to be engaged by one of a series of lugs on a reciprocating slide forming part of a controlling mechanism to be described, the stopping of the said rod effecting the movement of a releasing device, which frees a spring-actuated shipper-bar, which, through intermediate devices, actuates the usual belt-shipper rod and lever to pass the usual driving-belt from the usual fast upon the usual loose pulley on the main shaft of the machine.

Figure 1 shows a left-hand end elevation of a loom embodying my invention; Fig. 2, a partial front elevation of the loom shown in Fig. 1; Fig. 3, a section on the line xx , Fig. 2, looking to the left; Fig. 4, a detail looking at the inner side of the breast-beam near the left-hand end of the machine, the said figure showing the loom as stopped; Figs. 5 and 6, details to be referred to. Figs. 7 and 8 are details showing the parts as when the loom is operating regularly and the weft is being properly supplied. Fig. 9 shows the under side of a shuttle and an attached drop-wire, and Fig. 10 a cross-section of the shuttle.

The frame A of the loom, the crank-shaft A' , the fast and loose pulleys A^2 A^3 thereon, the belt-shipper lever A^4 , pivoted at A^5 , the

cross-shaft A^6 , the gears A^7 A^8 , connecting the crank-shaft and shaft A^6 , the take-up gear A^9 , the beam A^{10} , the lay B , the shuttles B' therein, and the means for operating them are and may be all as in ordinary narrow-ware looms. Each shuttle B' , of which there may be any desired number, has pivoted upon it a drop-wire b . (See Figs. 9 and 10.) At the inner side of the breast-beam B^2 , I have mounted loosely in suitable bearings b^2 a reciprocating slide b^3 , having a series of lugs b^4 , the shape of the said lugs being best shown in Figs. 4, 7, and 8, the said lugs (see Fig. 7) having shoulders 2 3. The slide b^3 has a plate c^2 secured to it by a screw 4, the said plate being shown as slotted at 5 for the reception of a stud c^3 , extended outwardly from the inner side of the breast-beam. This plate has jointed to it at 6 a cam-link c^4 , having a notch at its under side to receive a stud or projection 8, to be described, the said link being acted upon at its outer or free end by a suitable spring 10 or equivalent, herein shown as surrounding a pin 12, the lower end of which enters a hole in the said link, (See Figs. 1, 4, and 8,) the upper end of the said wire being connected to a stand 13, (see Fig. 1,) secured to the breast-beam. The rod b^3 , lugs b^4 , plate c^2 , and link c^4 constitute one form of controlling mechanism. The lay has jointed to it a link d , jointed in turn to one arm of an elbow-lever d' , pivoted on a stud d^2 at the under side of the breast-beam, (see Figs. 4, 5, and 6,) the short arm of the lever d' being connected by link d^x to a lever d^3 , (shown as pivoted at d^4 to the inner side of the breast-beam,) the said lever d^3 having the stud 8, before mentioned. The lever d^3 , the link d^x , and lever d' constitute actuating mechanism for the controlling mechanism.

The releasing device consists of an arm or lever f , having its fulcrum at f' on a stand f^2 , secured to the outside of the breast-beam.

The shipper-rod e , free to slide in bearings e' , has at one end an eye-block e^x , which is entered, as at the left of Fig. 2, by one end of the shipper-lever A^4 , pivoted at A^5 on a stand A^{16} , the lever having an attached belt-fork of usual construction. The rod e has a shoulder or collar e^2 , which is acted upon by one end of a shipper-bar e^3 , having a shoulder

or collar e^8 and adapted to slide in bearings e^4 , depending from the breast-beam, a spiral spring e^5 , surrounding the said bar e^3 between one of the bearings e^4 , and an adjustable collar e^6 on the said rod normally acting to pull the bar e^3 in the direction of the arrow 14, Fig. 2, and as the bar e^3 is so moved acts on the collar e^2 and moves the shipper-rod in the direction to pass the belt upon the loose pulley and stop the loom.

That end of the releasing device f nearest the lay crosses over and bears upon the cam-link c^4 , while the opposite end serves to act against the right-hand side of the collar e^8 on the bar e^3 , as in Fig. 8, and hold the said bar with the spring e^5 compressed, the shipper-rod being then in position to cause the shipper-lever to keep the belt on the fast pulley.

The shuttle B' , which may be of any usual construction, has an attached drop-wire b jointed or hinged at its inner ends to the shuttle, the drop-wire by the action of gravity bearing on the weft between the shuttle and woven web, so that the said drop-wire, so long as the weft is unbroken, as in Fig. 10, will not strike the feelers h , of which there are as many as there are shuttles. These feelers h are herein shown as pieces of wire pivoted on pins at the upper end of the bearings b^2 —one for each shuttle.

From the foregoing it will be understood that the lay in its movements through the connections described causes the lever d^3 to be vibrated. As the lever d^3 is vibrated, the pin or projection 8 thereon lying in the notch of the link c^4 causes the said link to be moved back and forth, the said link by its connection with the plate c^2 reciprocating the slide b^3 . When a weft breaks, the drop-wire previously held up by it, as shown by full lines in Fig. 10, drops into the full-line position, Fig. 3, and as the lay goes forward meets the upturned end of a feeler h and turns the latter on its pivot or fulcrum, as designated, by the feeler at the left in Fig. 7 and the first feeler in Fig. 3, so that the slide b^3 in its movement to the left, viewing Figs. 4 and 7, causes the lug b^4 to strike against the said feeler, thus stopping the longitudinal movement of the said slide. Stopping the slide b^3 , as described, while the lever d^3 continues to move causes the pin or projection 8 in the notch of the then stationary link c^4 to lift the said link, and in so doing the link by its action against one end of the releasing device f causes the latter to be turned on its pivot until the other end of the said lever is moved out from engagement with the collar e^8 , after which the spring e^5 is free to move the shipper-bar e^3 in the direction to effect the movement of the shipper-rod in the same direction.

Having described my invention, I desire it

to be understood that I do not wish to limit my invention to the exact form of shipper rod and lever, nor to the exact form of controlling mechanism, nor to the actuating mechanism therefor, nor to the exact form of feelers.

Referring to Fig. 3, the lay as it went forward with the drop-wire down struck the feeler opposite it (the first one in said figure) and pushed it back.

The lay in Fig. 3 is supposed to have been stopped.

I claim—

1. The lay, a series of shuttles having drop-wires to drop when the weft breaks or becomes exhausted, combined with the slide having lugs and the series of feelers against which the drop-wires act, substantially as described.

2. The lay, its series of shuttles having drop-wires adapted to drop when a weft breaks or becomes exhausted, a controlling mechanism including a slide having lugs and a link c^4 , and the feelers to arrest the movement of the said slide, combined with the lever d^3 , having a stud or projection to act upon and lift the said link when the slide is arrested by a feeler, means to actuate said lever, the shipper-bar, means to actuate it, a releasing device f between the said link and shipper-bar, and with the shipper-rod and belt-shipper, to operate substantially as described.

3. In a loom, the following instrumentalities, viz: a lay, a series of shuttles provided with drop-wires, a series of feelers, a belt-shipper rod, a belt-shipper, controlling mechanism adapted to be arrested by the said feelers, actuating mechanism for the said controlling mechanism, a releasing device, and a shipper-bar and means to actuate it, to operate substantially as described.

4. The breast-beam, the lever d^3 , having a pin or projection 8, the lay, means between the lay and lever to vibrate the said lever, combined with a link having a notch to be engaged by the said pin or projection, the plate, and the slide, to operate substantially as described.

5. A lay, a series of shuttles provided each with a drop-wire and adapted to drop when the weft breaks or is exhausted, a series of feelers adapted to be actuated by the said drop-wires, and a belt-shipper rod, combined with a slide-bar having lugs, means to actuate said slide-bar, and intermediate devices between the said shipper-rod and slide, to operate substantially as described.

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

WILLIAM LAPWORTH.

Witnesses:

GEO. W. GREGORY,
FREDERICK L. EMERY.