

No. 681,954.

Patented Sept. 3, 1901.

T. C. DEXTER.

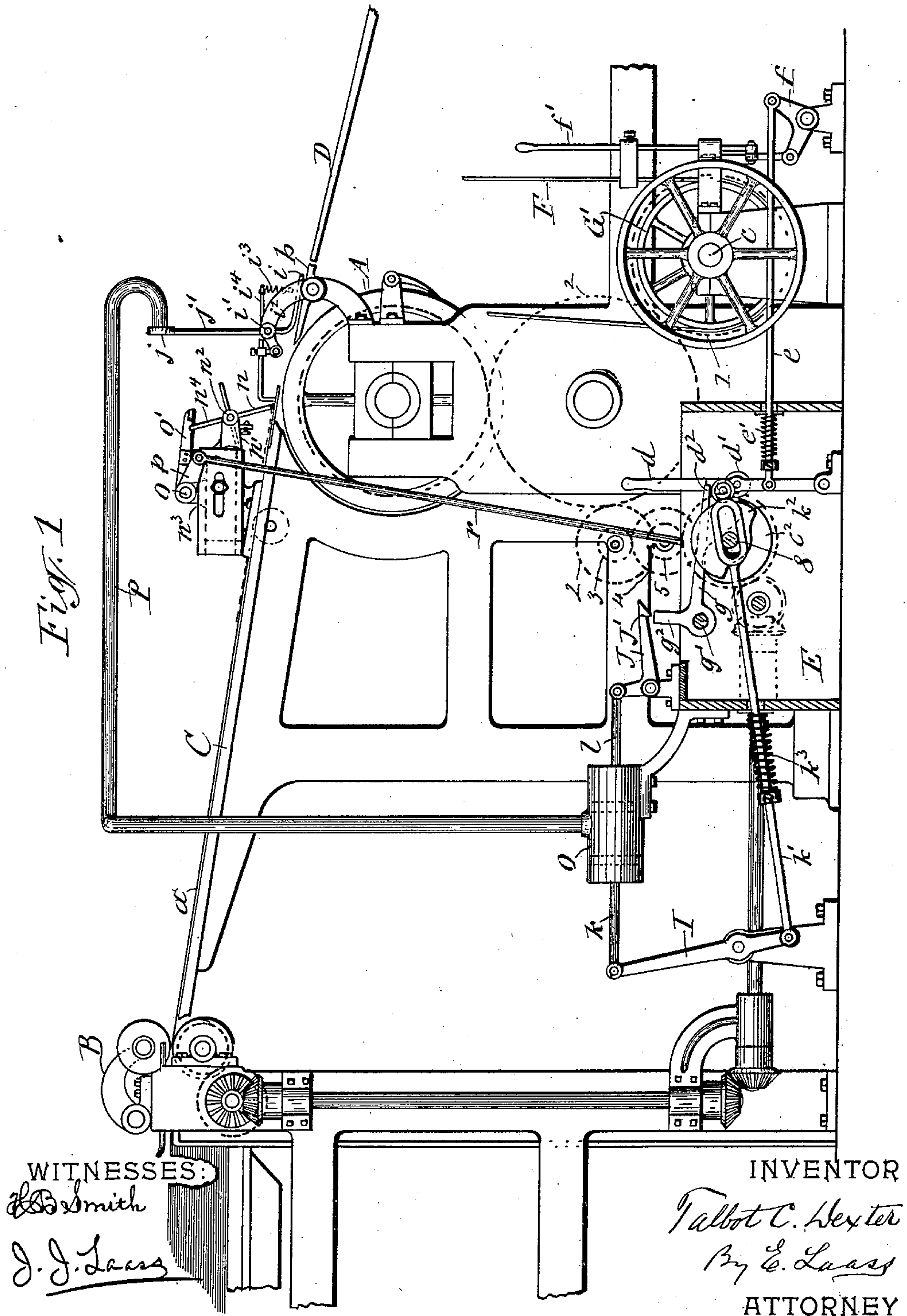
AUTOMATIC GUARD FOR PRINTING PRESSES.

(Application filed Oct. 8, 1900.)

(No Model.)

5 Sheets—Sheet 1.

Fig. 1



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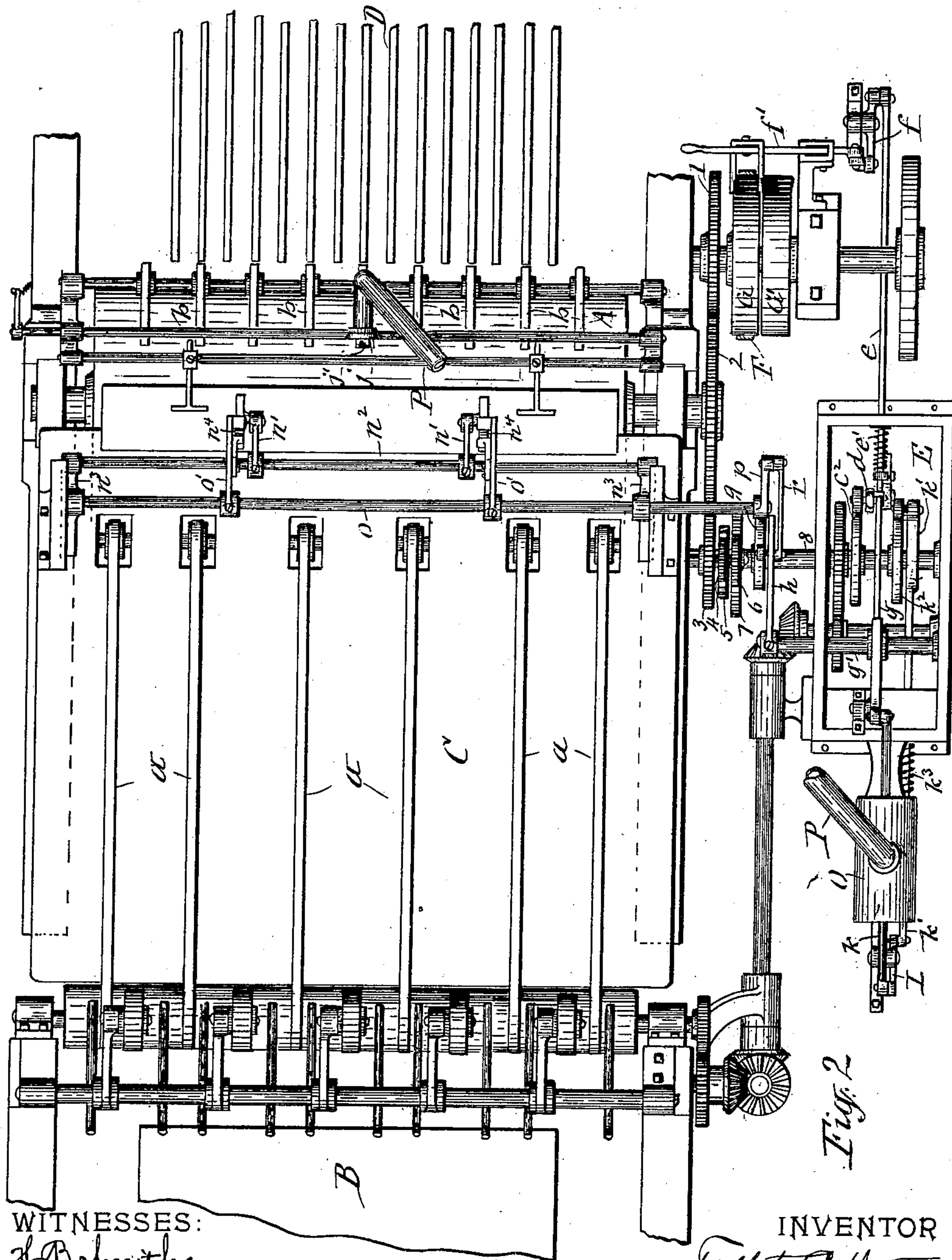
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(Application filed Oct. 8, 1900.)

(No Model.)

**5 Sheets—Sheet 2.**



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**No. 681,954.**

**Patented Sept. 3, 1901.**

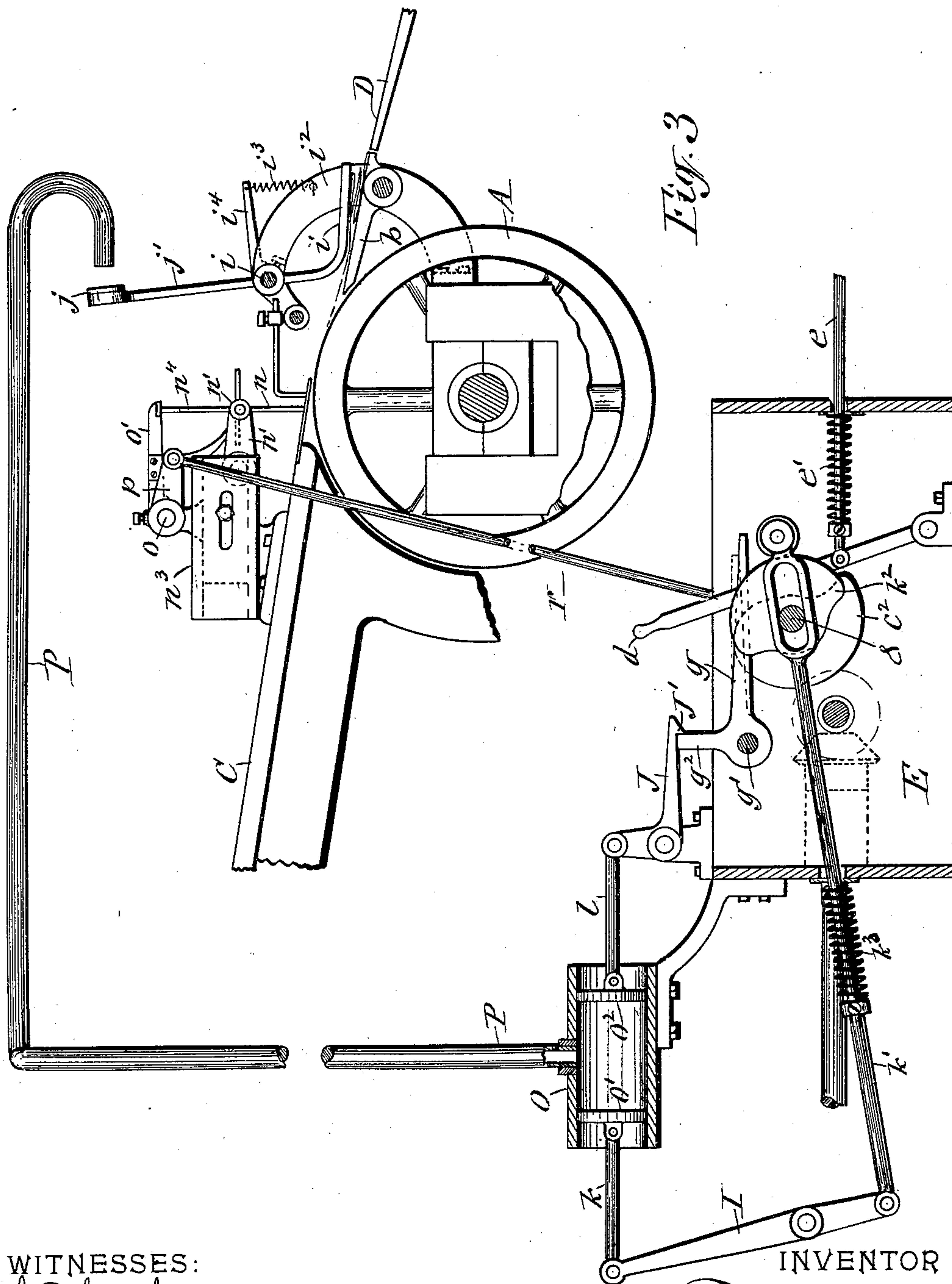
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## AUTOMATIC GUARD FOR PRINTING PRESSES.

(Application filed Oct. 8, 1900.)

(No Model.)

**5 Sheets—Sheet 3.**



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5 Sheets—Sheet 4.

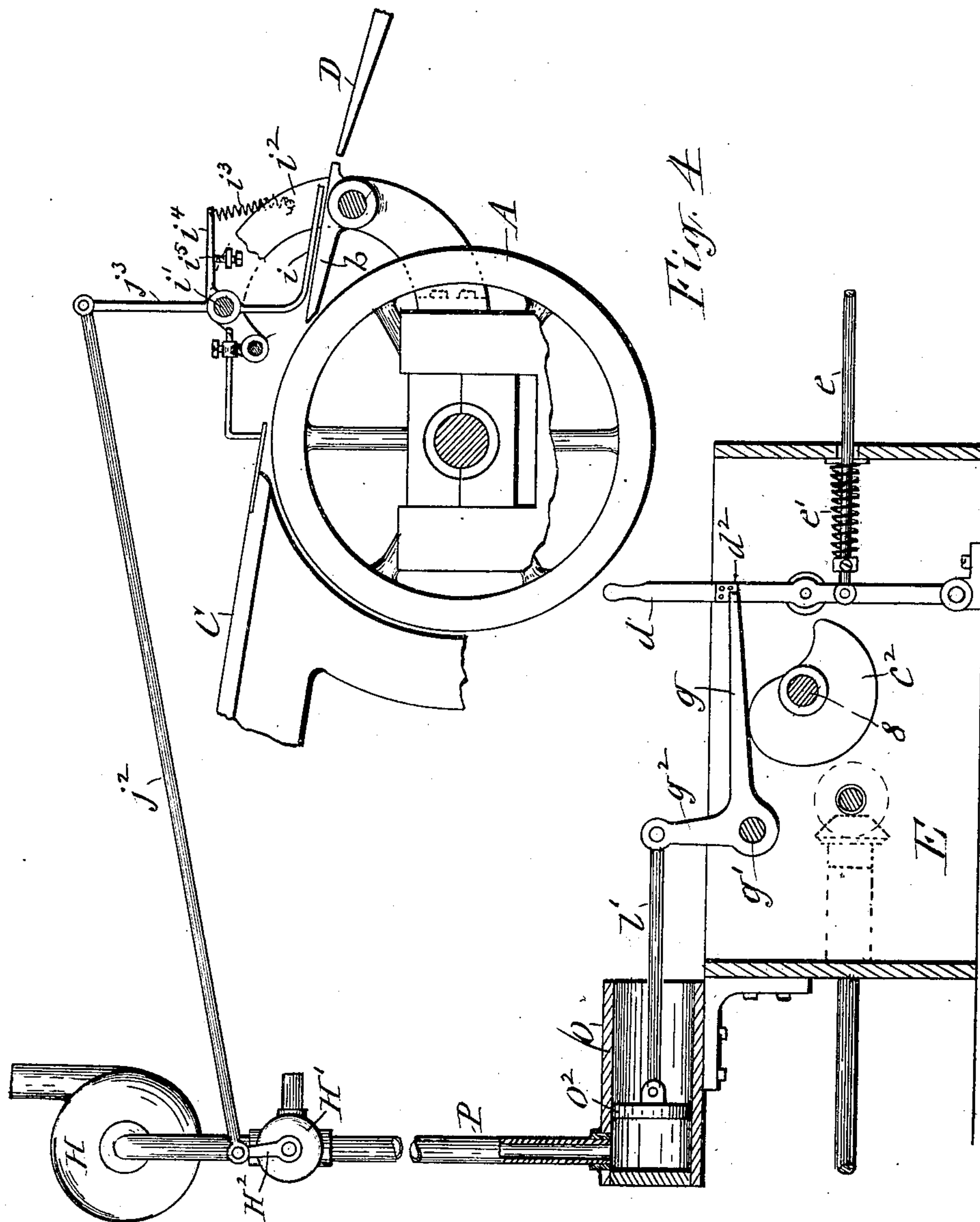


Fig. 4

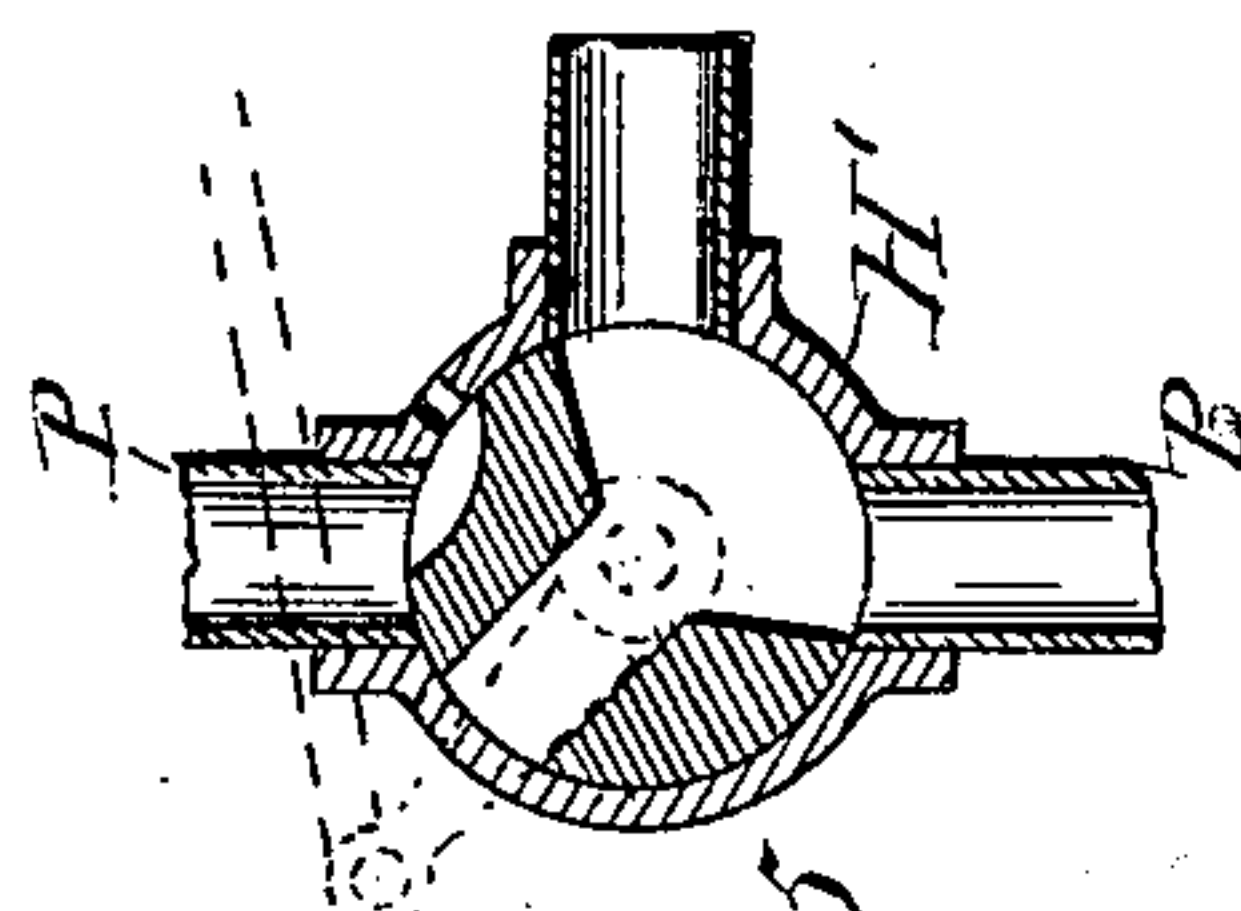


Fig. 5

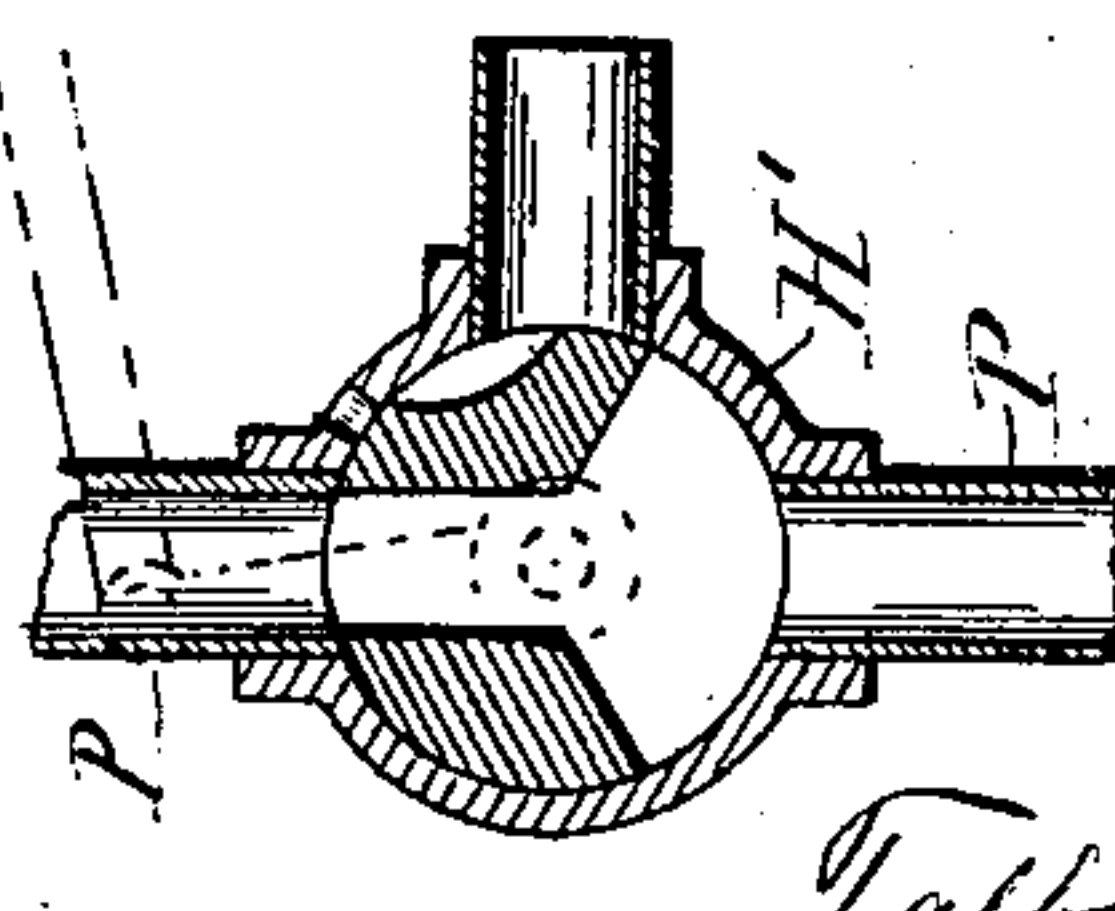


Fig. 6

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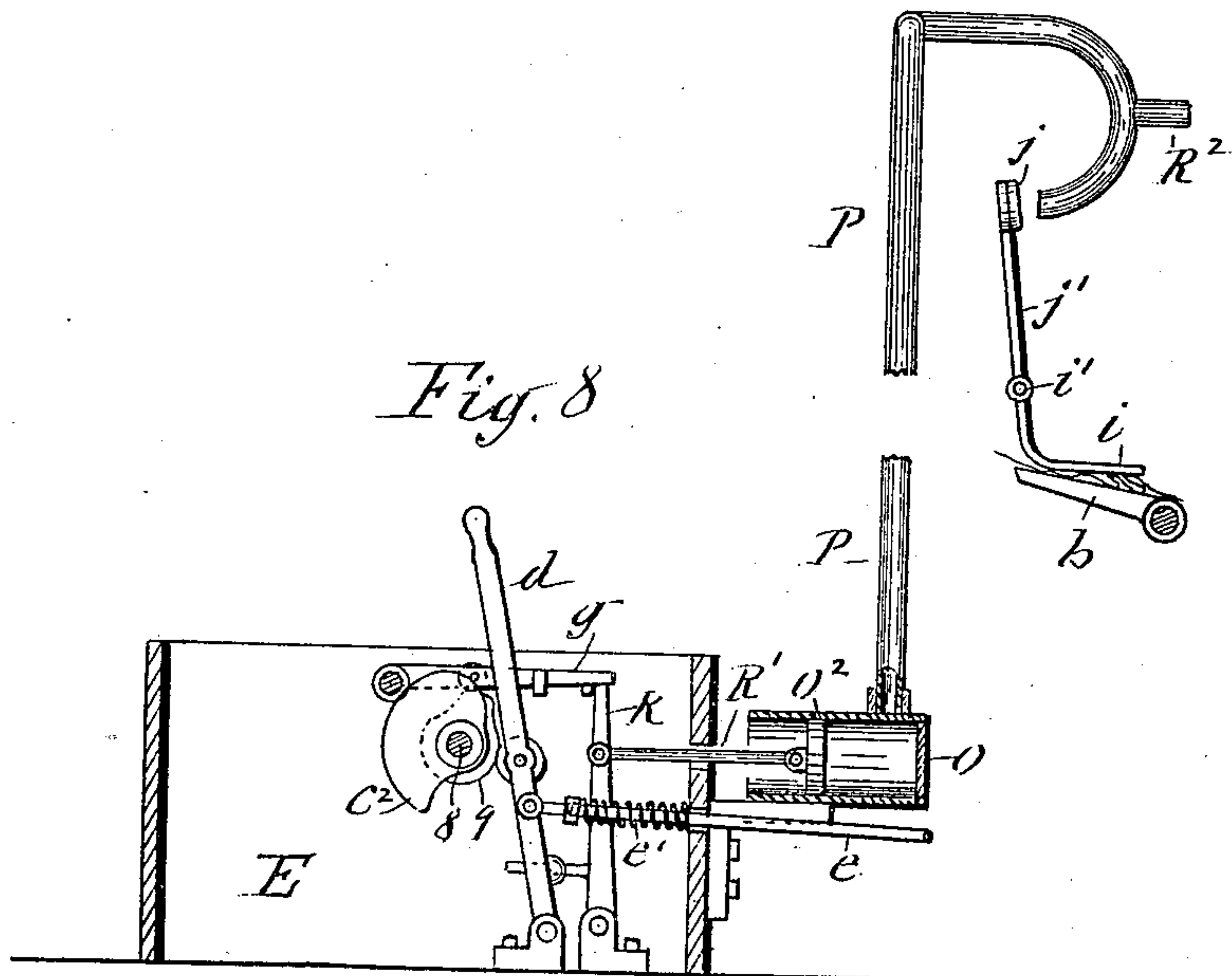
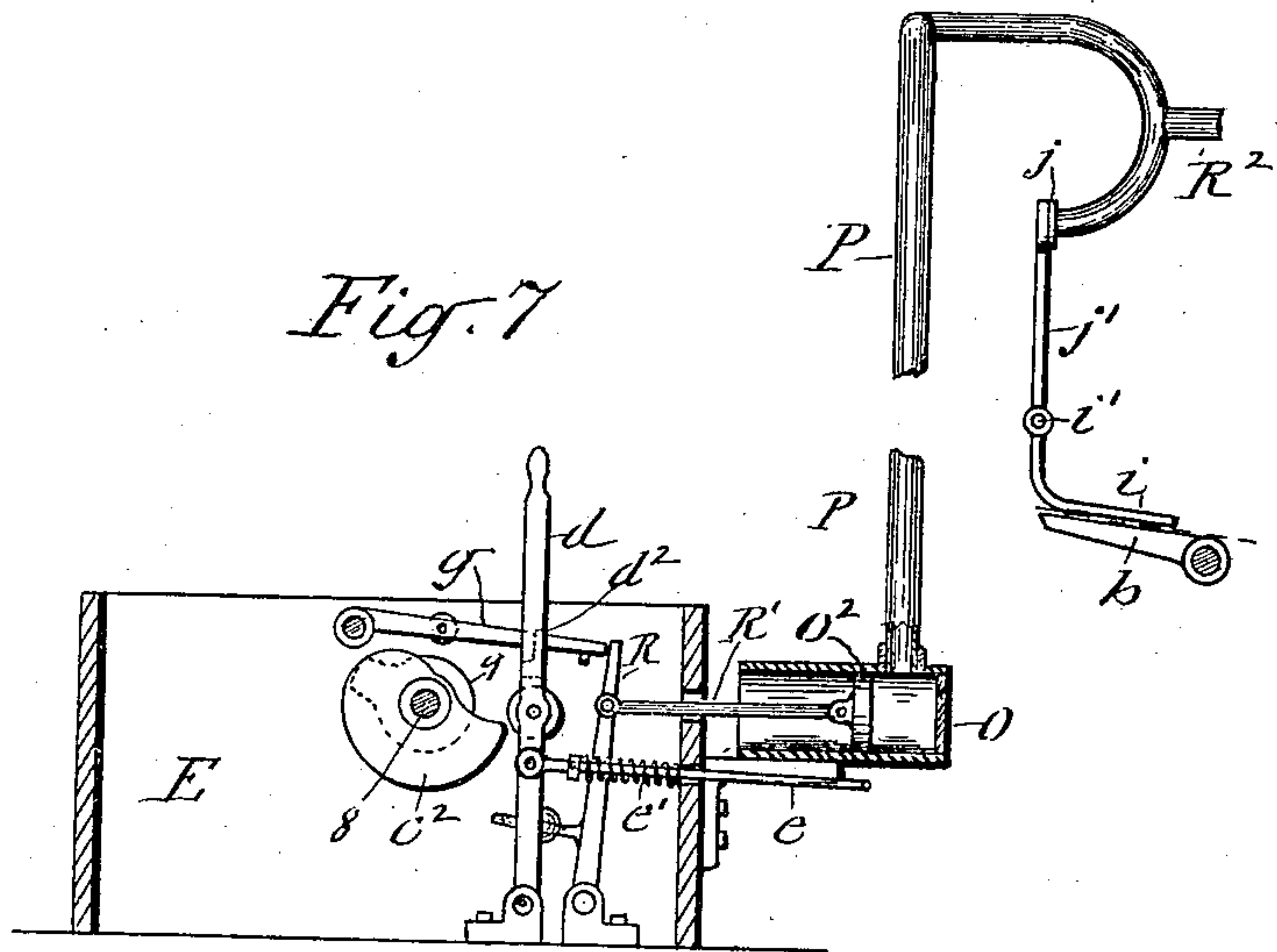
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(Application filed Oct. 8, 1900.)

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5 Sheets—Sheet 5.



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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC GUARD FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 681,954, dated September 3, 1901.

Application filed October 8, 1900. Serial No. 32,340. (No model.)

*To all whom it may concern:*

Be it known that I, TALBOT C. DEXTER, a citizen of the United States, and a resident of Pearl River, in the county of Rockland, in the State of New York, have invented new and useful Improvements in Automatic Guards for Printing-Presses, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to devices employed for automatically protecting the impression-cylinder of an operating printing-press from injury incident to the clogging of the impression-cylinder by hindrance in the delivery of the paper from said cylinder.

The object of the invention is to provide a more sensitive and reliable guard for quickly arresting the motion of the printing-press in case of a defect in the delivery of the paper from the impression-cylinder; and to that end the invention consists in the combination, with the impression-cylinder and its actuating mechanism, of a pneumatic tripper controlling said mechanism, a guard disposed to be actuated by paper retarded in its passage from the impression-cylinder, and means actuated by said guard and controlling the aforesaid tripper; and the invention also consists in certain novel details of the construction and combination of parts, as hereinafter described, and set forth in the claims.

In the annexed drawings, Figure 1 is a side elevation of a printing-press equipped with my present invention. Fig. 2 is a plan view of the same. Fig. 3 is an enlarged side view of my invention shown in position for automatically stopping the printing-press. Fig. 4 illustrates a modification of the pneumatic tripper. Figs. 5 and 6 are transverse sections of the "two-way" cock employed in the aforesaid modification, and Figs. 7 and 8 are side views of other modifications in the arrangement of the pneumatic tripper shown in different operative positions.

A represents the impression-cylinder of a two-revolution printing-press or other front-delivery press.

B denotes the paper-feeding machine, which may be of any suitable and well-known construction.

C is the feed-board, and *a* the tapes which

convey the paper from the feeding-machine to the impression-cylinder.

*b* represents the fingers which strip the printed paper from the impression-cylinder and conduct said paper to the usual "fly" D.

The impression-cylinder and feeding-machine are actuated in common by suitable mechanism, preferably consisting of a gear 1, mounted on the driving-shaft *c*, and a train of gears 2, 3, 4, 5, 6, and 7, the last of which is attached to a horizontal shaft 8, mounted in bearings in the side walls of a stationary case E. Another train of gears transmits motion from the shaft 8 to the feeding-machine.

An upright lever *d* is pivoted at its lower end to a stationary block and is connected by a rod *e* to one of the arms of a bell-crank *f*, whose other arm is suitably connected to the usual hand-lever *f'*, by means of which the driving-belt F is shifted on the driving-pulley G and loose pulley G' in the usual manner for starting and stopping the press. A spiral spring *e'*, surrounding the portion of the rod *e* inside the case E, forces the lever *d* toward the shaft 8, and thereby causes said lever to move the lever *f'* in a direction which shifts the belt F from the driving-pulley onto the loose pulley.

To the shaft 8 is fastened a cam *e*<sup>2</sup>, which during the rotation of said shaft intermittently presses on a roller *d'*, pivoted to the side of the lever *d*, and forces said lever in opposition to the spring *e'* and to a position which causes the lever *f'* to shift the belt onto the driving-pulley. To confine the lever *d* in its cam-forced position while said cam is turned from said lever, a detaining-arm *g* is secured at one end to a rock-shaft *g'*, by means of which said arm is carried at properly-timed intervals to a position to engage a shoulder *d*<sup>2</sup> on the lever *d*. The rock-shaft *g'* receives motion by means of another arm *h*, attached to said shaft and having pivoted to its free end a roller which rides on a cam 9, attached to the shaft 8, as shown in Fig. 2 of the drawings.

The lever *d*, with its described actuating devices and detaining-arm *g*, constitutes the stop mechanism. The chief purpose of this invention is to control said mechanism by a suitable pneumatic tripper, a guard disposed



to be actuated by paper retarded in its passage from the impression-cylinder, and means actuated by said guard and controlling said tripper. The guard consists of a finger  $i$ , attached to a transverse shaft  $i'$ , disposed above the fingers  $b$  and mounted in bearings on the brackets  $i^2$ , extending from the press-frame. The lower or main portion of said guard-finger is bent to extend from the impression-cylinder lengthwise over one of the paper-conducting fingers  $b$  and normally parallel therewith, as represented in Fig. 1 of the drawings. The said main portion of the guard-finger is in sufficient proximity to the top of the conducting-finger  $b$  to cause said guard-finger to be swung on its pivot and yield to the upward pressure of the paper when accidentally buckled by contact of the advance edge of the paper with the ends of the fly-fingers or other hindrance in the passage of the paper over the fingers  $b$ , as represented in Fig. 3 of the drawings. This movement of the guard-finger I utilize to control the valve  $j$  of an air-pipe  $P$ , which may be connected either to an air-exhaust cylinder  $O$  or to an exhaust-fan  $H$  or to some suitable exhaust-chamber. I preferably attach the valve  $j$  to a lever  $j'$ , extending from the rear end of the guard-finger, as shown in Fig. 1 of the drawings, said valve facing the mouth of the pipe  $P$  and closing said mouth when the guard-finger  $i$  is in its normal position. A spring  $i^3$  is connected at one end to the bracket  $i^2$  and at the opposite end to an arm  $i^4$  on the end of the shaft  $i'$ , said spring drawing arm  $i^4$  down onto an adjustable stop  $i^5$ , serving to sustain the guard-finger  $i$  in its normal position. In the cylinder  $O$  are the two pistons  $O'$  and  $O^2$ , one of which is connected by a rod  $k$  to one end of a lever  $I$ , which is pivoted intermediate its ends to a stationary support and has connected to its opposite end a rod  $k'$ , receiving reciprocating motion from a cam  $k^2$ , attached to the shaft 8, and forcing said rod in one direction, and a spring  $k^3$ , forcing it in the opposite direction. The piston  $O'$  is thus reciprocated in the cylinder  $O$ . The other piston  $O^2$  is connected by a rod  $l$  to the tripper  $J$ , which in this case is of the form of a bell-crank having one of its arms connected to the rod  $l$  and its other arm provided with a hook  $J'$ , adapted to engage the free end of an upward extension  $g^2$  of the detaining-arm  $g$ .

The operation of the automatic tripper thus far described is as follows: When the paper passes in proper order from the impression-cylinder  $A$  to the fingers  $b$  and thence to the fly  $D$ , the guard-finger  $i$  remains in its normal position, as shown in Fig. 1 of the drawings, and when in this position the valve  $j$  closes the mouth of the pipe  $P$ , and thus cuts off the air from the cylinder  $O$ . The piston  $O'$  being in the meantime drawn back from the piston  $O^2$  causes a suction between the pistons and compels the piston  $O^2$  to move with the piston  $O'$ . This movement causes the tripper  $J$  to be thrown into a position to

release the upward extension  $g^2$  of the detaining-arm  $g$ , which is thereby allowed to drop, with its free end, into engagement with the shoulder  $d^2$  on the lever  $d$  in time to prevent said lever from being actuated by the spring  $e'$  while the cam  $c^2$  is turned from said lever, and thus the actuating mechanism of the press and feeder are maintained in motion. If, however, the paper issuing from the impression-cylinder becomes buckled on the conveying-fingers  $b$  by accidental interference with the travel of the paper, as hereinbefore mentioned, the buckling of the paper causes the guard-finger  $i$  to be thrown out of its normal position, as represented in Fig. 3 of the drawings. This action of the guard-finger  $i$  carries the valve  $j$  away from the mouth of the pipe  $P$  and allows the air to enter said pipe and pass to the cylinder  $O$ , and thus destroy the vacuum therein. This allows the piston  $O'$  to move without effecting either the piston  $O^2$  or the valve  $j$ . The result is that the piston  $O^2$  is free to be moved by gravity of the tripper  $J$ , which drops into engagement with the extension  $g^2$  of the detaining-arm  $g$ , which is thus retained in its elevated position, to which it is carried by the action of the cam 9, hereinbefore described. Said retention of the arm  $g$  allows the lever  $d$  to be actuated by the spring  $e'$  while the cam  $c^2$  is turned from said lever. This movement of the lever  $d$  causes the driving-belt to be shifted onto the loose pulley, and thus the motion of the press and feeder is arrested.

The piston  $O'$  and its actuating mechanism may be dispensed with by closing the end of the cylinder thereat and connecting the pipe  $P$  either to an exhaust-fan  $H$  or to a suitable exhaust-chamber, as hereinbefore stated and as illustrated in Fig. 4 of the drawings, in which case a two-way cock  $H'$  is to be attached to the pipe  $P$ , and a lever  $H^2$ , attached to said cock, is to be connected by a rod  $j^2$  to a lever  $j^3$ , attached either to the shaft  $i'$  or to the end of the guard-finger  $i$ , attached to said shaft. When said guard-finger is in its normal position, as shown in Fig. 4 of the drawings, the two-way cock  $H'$  is turned into the position shown in Fig. 6 of the drawings, which causes the air to be drawn out of the cylinder  $O$ , and by the suction of said air the piston  $O^2$  is drawn toward the closed end of the cylinder. Said piston is connected by a rod  $l'$  directly to the upward extension  $g^2$  of the detaining-arm  $g$ , which is thus carried by the aforesaid movement of the piston  $O^2$  to a position to engage the shoulder  $d^2$  on the lever  $d$  and retain said lever in a position to maintain the belt  $F$  on the driving-pulley. When the guard-finger  $i$  is actuated by the paper being buckled on the fingers  $b$ , the lever  $j^3$  turns the two-way cock into a position (shown in Fig. 5 of the drawings) which admits air to the cylinder  $O$  and allows the piston  $O^2$  to move toward the open end of the cylinder, and thus cause the detaining-arm



*g* to drop out of its aforesaid engaging position. The lever *d* thus released is then actuated by the spring *e'* and caused to shift the belt onto the loose pulley. Hence the motion of the press is arrested whenever the guard-finger *i* is thrown out of its normal position.

The automatic stop mechanism may be further modified and simplified by employing a prop *R*, pivoted at its lower end to a stationary support and connected at its upper end by a rod *R'* to the piston *O*<sup>2</sup> of the cylinder *O*, as represented in Figs. 7 and 8 of the drawings, in which *R*<sup>2</sup> denotes a branch pipe leading to a suitable exhaust apparatus. (Not shown.) In this instance the normal position of the guard-finger *i* causes the prop *R* to be drawn into a position to release the detaining-arm *g* and allow said arm to hold the lever *d* in position to retain the driving-belt on the driving-pulley, as represented in Fig. 7 of the drawings. When the guard-finger is disturbed from its normal position, as shown in Fig. 8 of the drawings, the prop *R* is allowed to move into a position to arrest the detaining-arm *g* in its elevated position, and thus allow the lever *d* to be actuated by the spring *e'*, which causes the belt to be shifted onto the loose pulley.

On printing-presses equipped with a feeding-machine for automatically supplying the paper to the impression-cylinder it is preferred to employ in addition to the described guard-finger *i* suitable feelers disposed on the feed-board and normally in the path of the paper to the impression-cylinder, so as to be actuated by the paper in transit, and by suitable connection with the detaining-arm *g* cause said arm to hold the lever *d* in position to maintain the driving-belt on the driving-pulley so long as the said feelers are actuated by the paper passing to the impression-cylinder. Such devices are shown in Figs. 1, 2, and 3 of the drawings and are similar to those shown in my prior application for Letters Patent, Serial No. 9,201, filed March 19, 1900, and consist of feelers *n*, pivoted to arms *n'*, fastened to a transverse shaft *n*<sup>2</sup>, which is supported at its ends in brackets *n*<sup>3</sup>, mounted on the feed-board. In the brackets *n*<sup>3</sup> are pivoted the ends of a rock-shaft *o*, from which extend the arms *o'*, which during their rocking motion are adapted to come in contact with the tops of props *n*<sup>4</sup>, extending from the feelers *n*, said contact taking place when the feelers are undisturbed from their normal position, which position they assume when the paper fails to pass under said feelers. To the end of the rock-shaft *o* is fastened an arm *p*, which by means of a rod *r* is connected to the arm *h*, hereinbefore described. The aforesaid contact of the arms *o'* with the tops of the props *n*<sup>4</sup> arrests the movement of the rock-shaft *o* and causes the arm *p* to retain the arm *h* in its elevated position, to which it has been lifted by the cam 9. Said retention of the arm *h* confines the detaining-arm *g* in a corresponding position and prevents the same

from engaging the shoulder *d*<sup>2</sup> on the lever *d*, which is thereby free to be actuated by the spring *e'*, which causes said lever to shift the driving-belt onto the loose pulley. This result is prevented so long as the paper passes to the impression-cylinder, said paper tilting the feelers *n* with their props *n*<sup>4</sup>, so as to prevent the arms *o'* from coming in contact with the tops of said props.

What I claim as my invention is—

1. The combination, with the impression-cylinder and its actuating mechanism, of a pneumatic tripper controlling said mechanism, a guard disposed to be actuated by paper retarded in its passage from the impression-cylinder, and means actuated by said guard and controlling the aforesaid tripper.

2. The combination, with the impression-cylinder and its actuating mechanism, of a pneumatic tripper controlling said mechanism, a guard disposed to be actuated by paper retarded in its passage from the impression-cylinder, and a valve actuated by said guard, and controlling the aforesaid tripper as set forth.

3. The combination with the impression-cylinder, its actuating mechanism and fingers conducting the paper from said cylinder, of a vertically-yielding guard-finger sustained normally in proximity to and parallel with one of the conducting-fingers, and a pneumatic tripper adapted to arrest the actuating mechanism and controlled by the guard-finger.

4. The combination, with the impression-cylinder, its actuating mechanism and fingers conducting the paper from said cylinder, of a pneumatic tripper adapted to arrest the actuating mechanism, a valve controlling said tripper, and a vertically-yielding guard-finger sustained normally in proximity to and parallel with one of the conducting-fingers and actuating the valve as set forth.

5. The combination, with the impression-cylinder, its actuating mechanism and fingers conducting the paper from the impression-cylinder, of a guard-finger extending lengthwise of and normally parallel over one of the conducting-fingers and pivoted to be actuated by paper buckled upon said conducting-finger, a pneumatic tripper adapted to arrest the actuating mechanism, and a lever actuated by the guard-finger and controlling the tripper.

6. The combination, with the impression-cylinder, its actuating mechanism and fingers conducting the paper from said cylinder, of a guard-finger extending lengthwise of and normally parallel over one of the conducting-fingers and pivoted to be actuated by paper buckled upon said conducting-finger, a pneumatic tripper adapted to arrest the actuating mechanism, a valve controlling said tripper, and a lever actuated by the guard-finger and moving said valve.

7. The combination with the impression-cylinder, its actuating mechanism and fingers conducting the paper from said cylinder, of



a stop mechanism controlling said actuating mechanism, a guard-finger extending lengthwise over one of the conducting-fingers and pivoted to be actuated by paper buckled upon  
5 said conducting-finger, a lever extending from the guard-finger, a pneumatic tripper controlling the actuating mechanism, and a valve connected to the aforesaid lever and controlling the tripper as set forth.

10 8. The combination with the impression-cylinder, automatic paper-supplier, feed-table, the finger conducting the paper from the impression-cylinder and mechanism actuating said impression-cylinder and paper-supplier in common, of a spring-actuated lever  
15 stopping the actuating mechanism, a cam forcing said lever in opposition to its actuating-spring, a detaining-arm movable to and from a position to confine said lever in its cam-forced position, a feeler disposed to be  
20 actuated by the paper in transit to the impression-cylinder and controlling the aforesaid detaining-arm, a guard-finger extending lengthwise over one of the aforesaid conducting-fingers and pivoted to be actuated by paper  
25 per buckled upon the conducting-finger, a pneumatic tripper controlling the detaining-arm independently of the aforesaid feeler, and a valve controlling said tripper and actuated by the guard-finger as set forth.

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Witnesses:

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