

No. 673,116.

Patented Apr. 30, 1901.

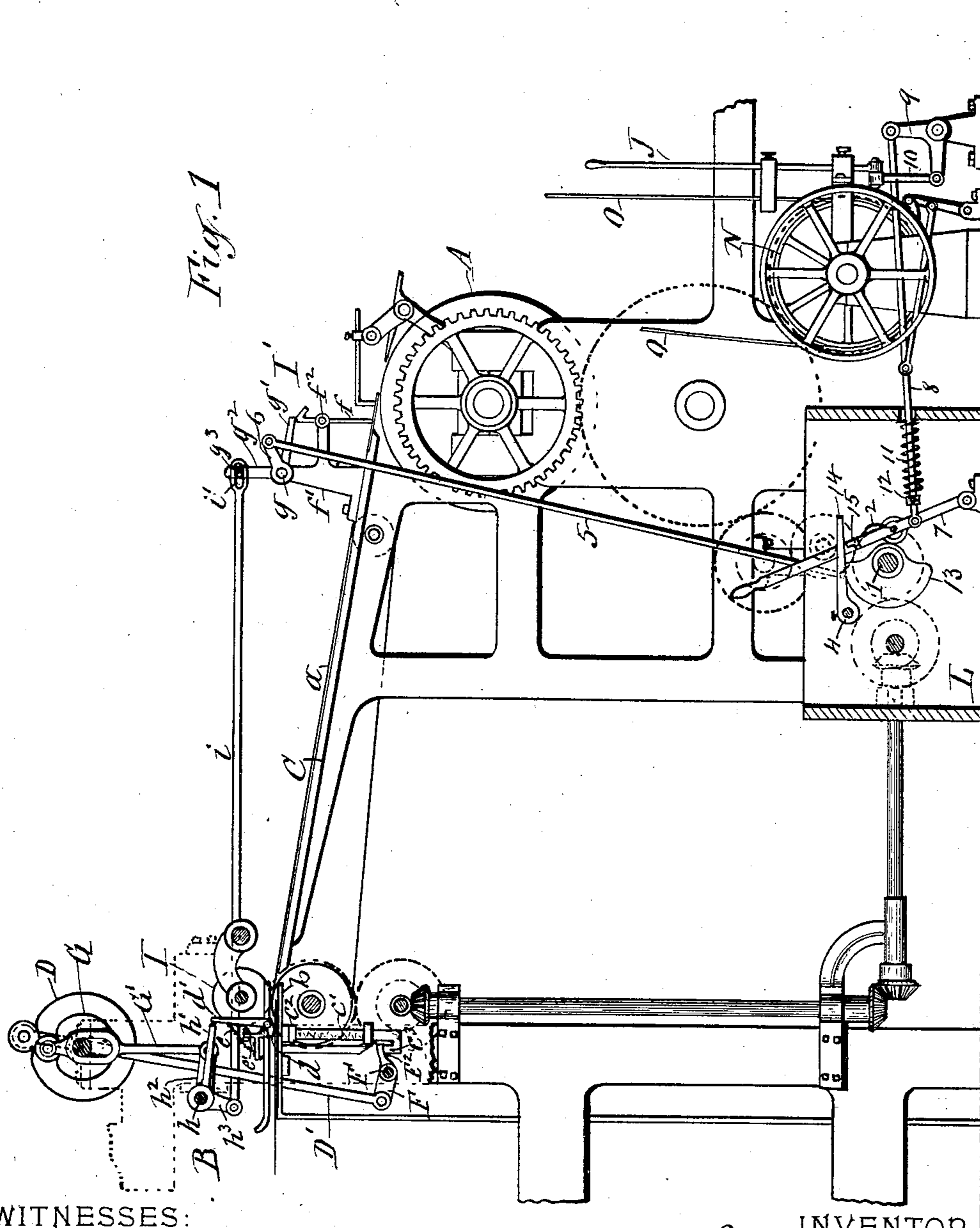
T. C. DEXTER.

MEANS FOR PROTECTING PRINTING PRESSES.

(Application filed Sept. 6, 1900.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:

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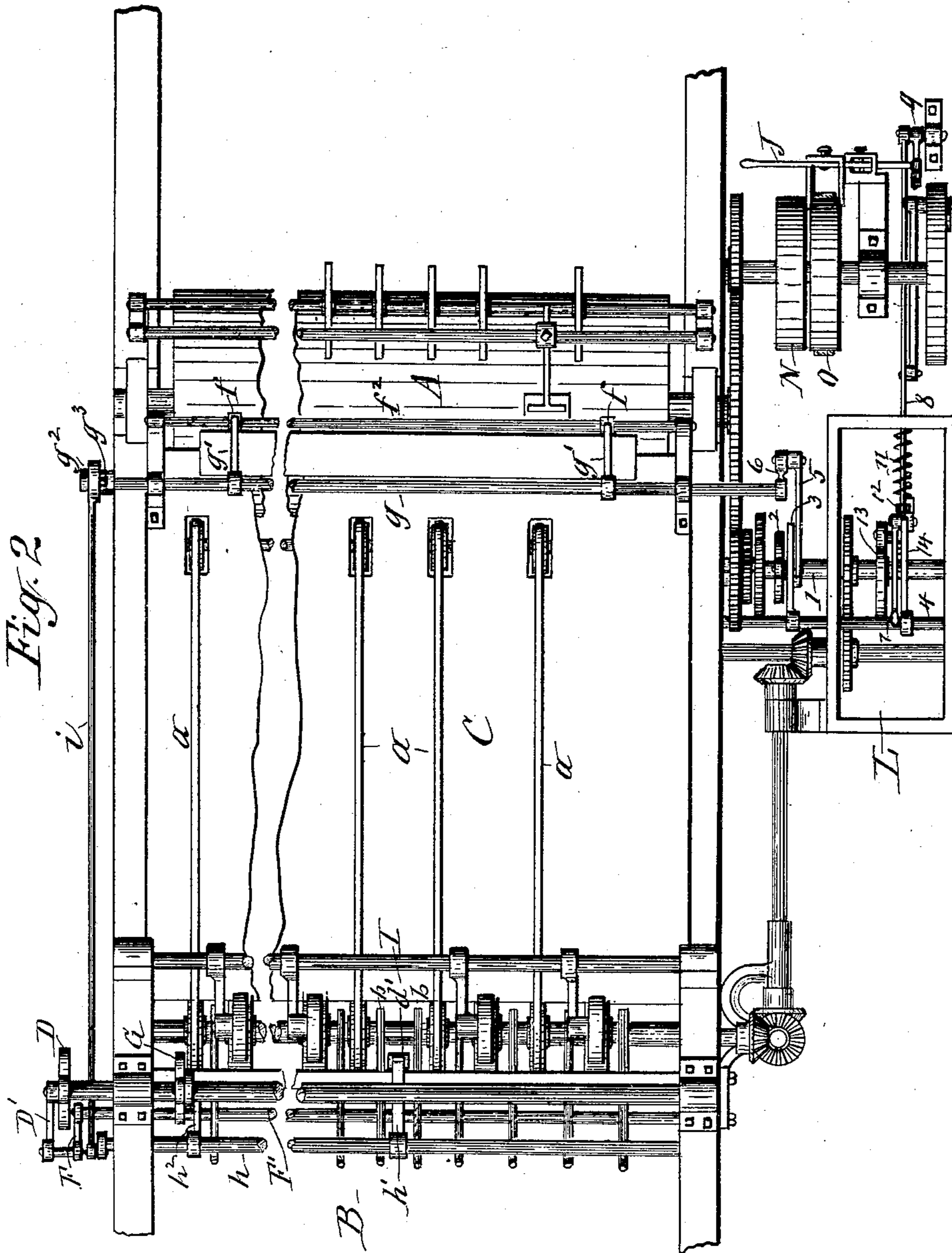
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(Application filed Sept. 6, 1900.)

(No Model.)

3 Sheets—Sheet 2.



WITNESSES:

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No. 673,116.

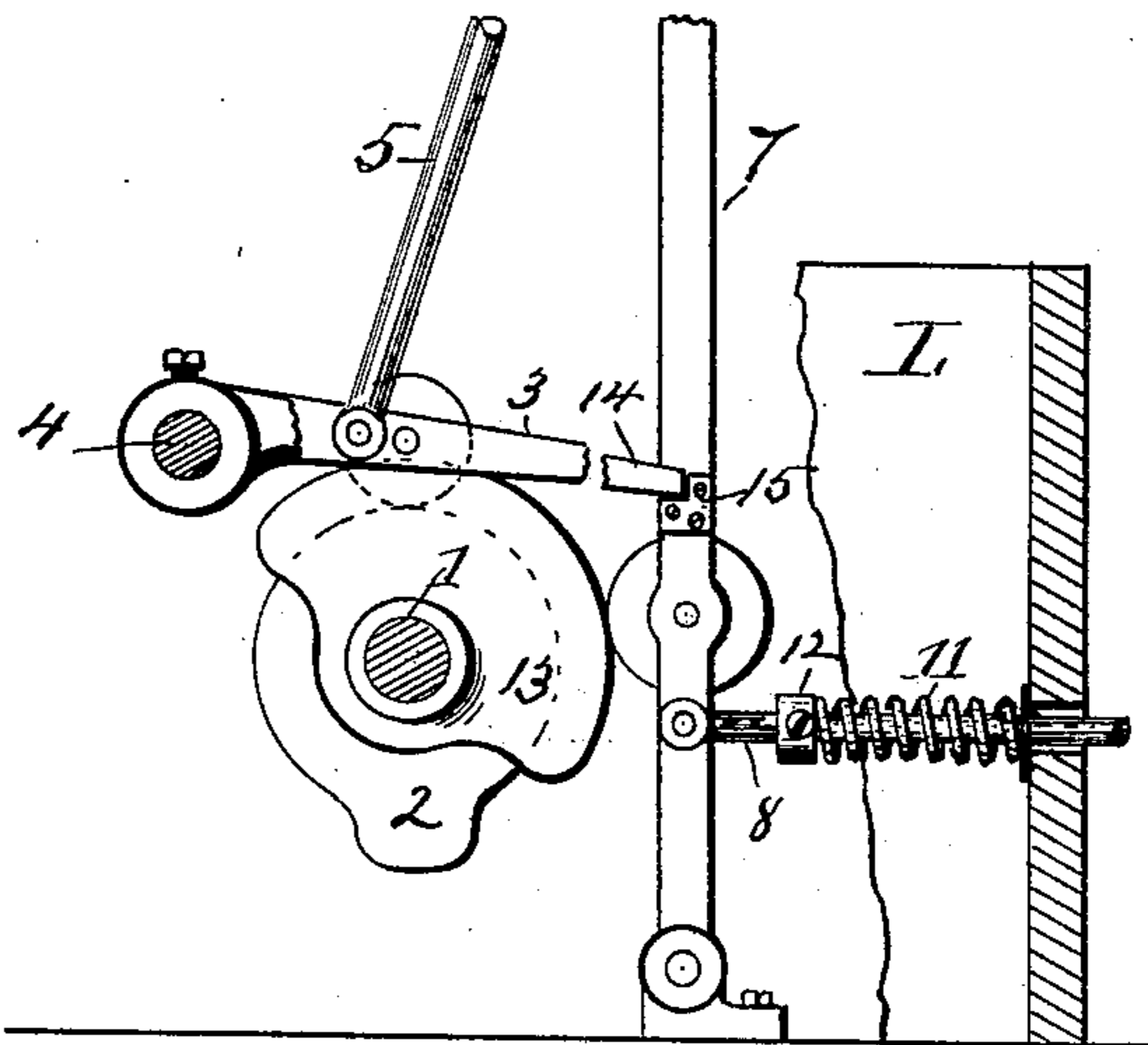
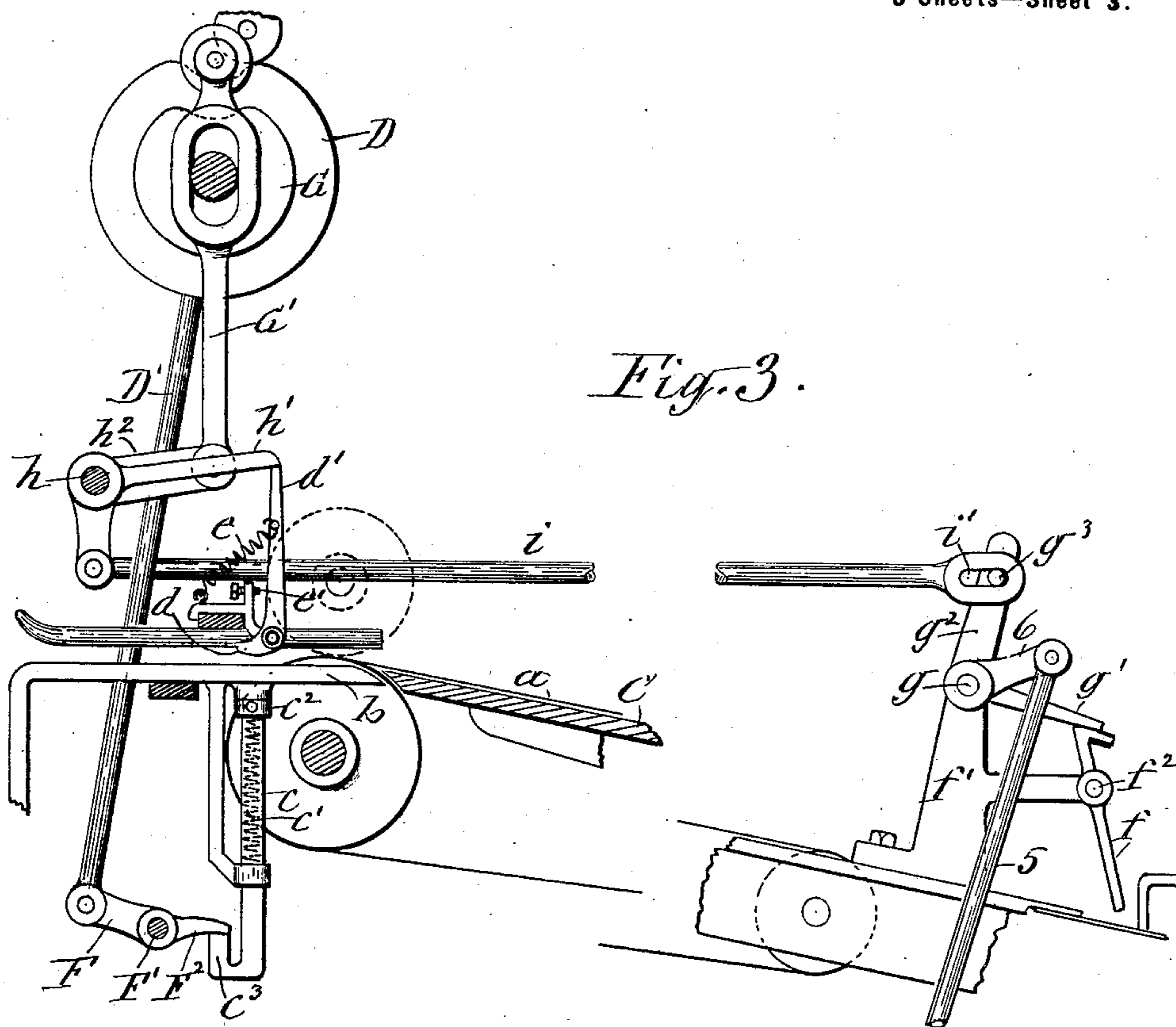
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MEANS FOR PROTECTING PRINTING PRESSES.

(Application filed Sept. 6, 1900.)

(No Model.)

3 Sheets—Sheet 3.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF PEARL RIVER, NEW YORK.

## MEANS FOR PROTECTING PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 673,116, dated April 30, 1901.

Application filed September 6, 1900. Serial No. 29,120. (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 Means for Protecting Printing-Presses, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to printing-presses and paper-feeding machines connected thereto to automatically supply the paper to be printed.

The invention has special reference to the guarding of the press from injury incident to a failure of the feeding-machine to properly deliver the paper one sheet at a time in the requisite successive order to the printing-press. Such guarding is usually effected by means of paper-calipering devices normally in position to allow a single sheet to freely pass between them and to be moved from their normal position by the excessive thickness of two or more sheets accidentally advanced simultaneously from the pile of paper in the feeding-machine, and said guarding is also accomplished by means of mechanical feelers normally opposed to the passage of the paper to the impression-cylinder of the printing-press and disturbed from their normal position by the sheet in transit. Said guarding devices are operatively connected with a stop mechanism, which controls the actuating mechanism of the press and feeder, so as to arrest said actuating mechanism in cases of two or more sheets starting simultaneously from the feeder or no sheet being delivered from the feeder.

The object of my present invention is to couple the said two guarding devices together in such a manner as to require only one of them to be connected to the stop mechanism for controlling the actuating mechanism of the press and feeder; and to that end the invention consists in the combination, with the printing-press, feeder, stop mechanism controlling said press and feeder, guarding devices actuated by excessive thickness of paper advanced by the feeder and entering said devices, and guarding devices disposed to be actuated by the paper in transit to the im-

pression-cylinder, of a mechanism actuated to trip the stop mechanism and controlled by both guarding devices independently of each other, as hereinafter more definitely described.

In the accompanying drawings, Figure 1 is a side elevation of a printing-press equipped with an automatic paper-feeder and embodying my present invention, portions being broken away and minor details omitted to more prominently show the invention. Fig. 2 is a plan view of the same; and Fig. 3 is an enlarged fragmentary side view of my invention, showing it in its position when the feeding-machine is in perfect operating condition.

Similar characters of reference indicate corresponding parts.

A denotes the impression-cylinder of a printing-press, the detail construction of which is immaterial to my present invention.

B represents a paper-feeding machine, which is organized to deliver in regular successive order one sheet at a time from a pile of paper placed in said machine. The means for accomplishing said delivery of the paper may be of any suitable and well-known construction.

C represents the feed-board, over which the paper is carried from the feeder to the impression-cylinder by means of traveling tapes *a a*.

Experience has proven that the most delicate part of the operation of paper-feeding machines is the separation of the top sheet from the pile of paper deposited in said machine. It occasionally happens that either two sheets are started simultaneously from the pile or the top sheet fails to be advanced from the pile. Such accidents tend to incur injury either to the form on the bed of the press or to the facing of the impression-cylinder.

To prevent a plurality of sheets from passing simultaneously from the feeding-machine, I employ two guarding devices I and I', one of which is actuated by excessive thickness of paper advanced from the feeding-machine B and the other is arranged to be actuated by the paper in transit to the impression-cylinder. The guarding devices represented at I consist of paper-calipering mechanism, preferably of the form shown to some extent in my Letters Patent No. 623,770, dated April 25, 1899, said calipering mechanism con-

sisting of a plate *b*, which is disposed horizontally in the center of the delivery end of the feeding-machine and with its top even with the plane of feeding. Through this plate passes the upper end of a vertical calipering-belt *c*, which, by means of a spring *c'*, is forced upward to protrude at the top of the plate, its upward movement being limited by a collar *c<sup>2</sup>* attached to the bolt and coming in contact with the under side of the plate *b*. Said protrusion of the calipering-bolt is allowed only momentarily at predetermined intervals through the action of a rotary cam *D* imparting an intermittent reciprocating motion to a rod *D'*, which is connected to a lever *F*, attached to a shaft *F'*, to which is also attached an arm *F<sup>2</sup>*, engaging a shoulder *c<sup>3</sup>* on the lower end of the calipering-bolt and depressing said bolt in time to allow the paper to pass from the pile over the top of the bolt. Directly over the top of the said bolt is the calipering-nose *d*, which is pivoted to a suitable stationary support and has an upwardly-extending prop *d'* affixed to it at the pivot thereof. A spring *e*, holding the prop *d'* against a stop *e'*, serves to sustain said prop and calipering-nose in their normal position, which allows only one sheet at a time to pass between the calipering-nose and the calipering-bolt *c* when the latter is in its protruding position. If by accident two sheets enter simultaneously between the calipering-nose and calipering-bolt, then the excessive thickness of paper causes the calipering-nose, with the prop *d'*, to be thrown out of their normal position by the upward movement of the calipering-bolt to its protruding position. This disturbance of the prop *d'* from its normal position is utilized to arrest the action of the feeder and printing-press, as hereinafter described.

The guarding devices *I'* are located in proximity to the delivery end of the feed-board *C* and consist of mechanical fingers or feelers *f*, pivoted at a point a short distance above the center of their lengths to a rod which extends across the feed-board and is supported at its ends on arms *f<sup>2</sup>*, extending from posts *f'*, mounted on the side rails of the feed-board. Said fingers are slightly inclined toward the impression-cylinder *A*. The posts *f'* extend above the arms *f<sup>2</sup>* and are provided at their upper ends with bearings in which are mounted the ends of a rock-shaft *g*, to which are firmly secured the arms *g'*, the free ends of which are in position to rest upon the top of the fingers *f* when in their normal position, as shown in Fig. 1 of the drawings, said position being assumed by the fingers *f* when no paper passes under them. The rock-shaft *g* controls the actuating mechanism of the press and feeder, as hereinafter described, and in order to control said rock-shaft by both of the guarding devices *I* and *I'* independently of each other *I* attach to the rock-shaft *g* an upwardly-extending arm *g<sup>2</sup>*, from the side of the free end of which projects a pin *g<sup>3</sup>*.

At the guarding devices *I* is a rock-shaft *h*, which extends across the feeding-machine *B* and mounted at its ends in bearings on the side frames of said machine. To the rock-shaft *h* is fastened an arm *h'*, the free end of which is directly over the top of the prop *d'* when in its normal position. The said rock-shaft is intermittently actuated by a rotary cam *G*, which at regular intervals imparts a reciprocating motion to a rod *G'*, connected to an arm *h<sup>2</sup>*, fastened to the end of the rock-shaft *h*. The motion of the rock-shaft is arrested when the arm *h'* comes in contact with the top of the prop *d'*, standing in its normal position. To one of the ends of the rock-shaft *h* is fastened a dependent arm *h<sup>3</sup>*, to which is connected a rod *i*, which is extended to the arm *g<sup>2</sup>* and is provided thereat with a longitudinal slot *i'*, by which it is connected to the pin *g<sup>3</sup>*, projecting from the side of the arm *g<sup>2</sup>*. The slot *i'* is of a length to allow the arm *g<sup>2</sup>* to freely rock, while the rod *i* is held stationary by the arm *h'* of the rock-shaft *h* coming in contact with the top of the normally-disposed prop *d'*; but when this prop is thrown out of its normal position the shaft *h* is allowed to rock and impart reciprocating movement to the rod *i*, and when this rod is in its rearmost position the forward end of the slot *i'* engages the pin *g<sup>3</sup>*, and thereby holds the arm *g<sup>2</sup>* so as to arrest the movement of the rock-shaft *g*, which controls the actuating mechanism of the press and feeder through the medium of suitable stop mechanisms. This stop mechanism may be of any suitable construction, preferably of the form illustrated in my prior application for Letters Patent, Serial No. 9,201, filed March 19, 1900, and consisting, mainly, of a horizontal shaft 1, receiving rotary motion from the main driving-shaft by means of a train of gears or other suitable driving mechanism. On the shaft 1 is mounted a cam 2, and directly over this cam is an arm 3, which is fastened at one end to a shaft 4, disposed parallel with the shaft 1 and mounted in bearings in the sides of a case *L*, surrounding the main portions of the stop mechanism. The arm 3 receives intermittent rocking motion from the cam 2 and is connected by a rod 5 to an arm 6, attached to the end of the rock-shaft *g*, which thus partakes motion from the cam 2. A lever 7 is pivoted at its lower end to a stationary support and is connected by a rod 8 to a bell-crank 9, one arm of which is connected by a rod 10 to a horizontal extension of the usual belt-shifting lever *J*, employed for throwing the driving-belt *O* on and off the driving-pulley *N* of the actuating mechanism of the press and feeder. By means of a spiral spring 11, surrounding the rod 8 inside of the case *L* and abutting with one of its ends on the inner side of said case and with the opposite end on a collar 12, adjustably secured to the rod adjacent to the lever 7, serves to force said lever in a direction which causes it to throw the belt *O* from the driving-pulley

N onto the loose pulley by the hereinbefore-described connection of the lever 7 with the belt-shifting lever J. A cam 13, attached to the rotary shaft 1 and bearing on a roller piv-  
 5 oted to the lever 7, forces said lever in opposition to the spring 11 and to a position to cause the belt O to be shifted onto the driving-pulley N.

In order to maintain the belt on the driving-pulley while the cam 13 is turned from the lever 7, a detaining-arm 14 is fastened at one end to the shaft 4, to which is also attached the arm 3, as hereinbefore described.

The arm 14 is thus caused to move in unison with the arm 3. The movement of the arm 14 is timed to carry it into a position to cause its free end to engage a shoulder 15 on the lever 7 when in the position to which it is forced by the cam 13. This alternate engagement of the cam 13 and detaining-arm 14 with the lever 7 continues, and thus maintains the press and feeder in operation as long as the said feeder continues to deliver in regular successive order one sheet at a time to the press,  
 15 the single sheets of paper in transit to the press leaving the calipering devices in their normal position and throwing the feelers *f* out of normal position, and thus allowing free movement of the rock-shaft *g*.

In case the feeder happens to advance two sheets simultaneously from the pile the excessive thickness of said sheets entering between the calipering-bolt *c* and calipering-nose *d* causes the prop *d'* to be tilted, so as to allow the shaft *h* to be rocked by the cam G. This movement of the rock-shaft causes the arm *h*<sup>3</sup> to draw the rod *i* back sufficiently to carry the forward end of the slot *i'* thereof into engagement with the pin *g*<sup>3</sup> on the arm *g*<sup>2</sup>  
 30 of the rock-shaft *g*, which shaft is thereby confined in a position which causes the arm 16 on said shaft to retain the arm 3 in the position to which it has been lifted by the cam 2. The detaining-arm 14 being held in a corresponding lifted position prevents said  
 45 detaining-arm from engaging the shoulder 15 on the lever 7. Said lever is thus free to be actuated by the spring 11, which causes the driving-belt to be shifted onto the loose pulley by the hereinbefore-described connection of the lever 7 with the belt-shifting lever J. In case the feeding-machine B fails to deliver paper to the impression-cylinder of the press the feelers *f* remain in their normal position in the path of the paper, and  
 55 said position causes the arms *g'* to come in contact with the tops of the feelers, and thereby arrest the motion of the rock-shaft *g*, which prevents the detaining-arm 14 from engaging the shoulder 15 on the lever 7, as hereinbefore described.

It will be observed that by the peculiar coupling of the arms *h*<sup>3</sup> and *g*<sup>2</sup> of the two rock-shafts *h* and *g* by the rod *i*, provided with  
 65 the slot *i'*, the two guarding devices I and I'

are enabled to operate independently of each other and control the same rock-shaft *g*, which in turn controls the stop mechanism, so as to protect the press from injury in case the feeding-machine delivers two sheets simultaneously or fails entirely to deliver paper to the impression-cylinder.

The connection of the rod *i* to the two arms *h*<sup>3</sup> and *g*<sup>2</sup> is to be made in such a manner as to allow said rod to be readily detached from  
 75 said arms when the feeding-machine B is to be disconnected from the printing-press.

What I claim as my invention is—

1. The combination, with a printing-press, feeder and stop mechanism controlling said  
 80 press and feeder, of guarding devices actuated by excessive thickness of paper advanced by the feeder, guarding devices, disposed normally in the path of the paper to the press, and mechanisms actuated to trip the stop  
 85 mechanism and controlled by both guarding devices independently of each other as set forth.

2. The combination, with a printing-press, feeder and stop mechanism controlling said  
 90 press and feeder, of feelers disposed normally in the path of the paper to the press and actuated by the paper in transit, a rock-shaft controlled by said feelers and controlling the stop mechanism, an arm attached to said  
 95 rock-shaft, paper-calipering devices actuated by excessive thickness of paper advanced by the feeder, a rock-arm controlled by said calipering devices, and a coupling connecting the two rock-arms with a lost motion between  
 100 them to allow the feelers and calipering devices to control independently of each other the aforesaid rock-shaft.

3. The combination, with a printing-press, feeder and stop mechanism controlling said  
 105 press and feeder, of feelers disposed normally in the path of the paper to the press and actuated by the paper in transit, a rock-shaft having arms extending from it and engaging the tops of the feelers in their normal posi-  
 110 tion, an arm on said rock-shaft controlling the stop mechanism, an arm extending upward from said rock-shaft and having a pin projecting from its side, paper-calipering devices actuated by excessive thickness of paper ad-  
 115 vanced by the feeder, a rock-arm controlled by said calipering devices, and a rod connected at one end to said rock-arm and provided at the opposite end with a longitudinal slot receiving through it the aforesaid pin on the  
 120 arm of the rock-shaft, said slot affording lost motion to the said rock-shaft to be controlled by the feelers and calipering devices independently of each other as set forth and shown.

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Witnesses:

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 M. E. MORRISON.