

No. 673,115.

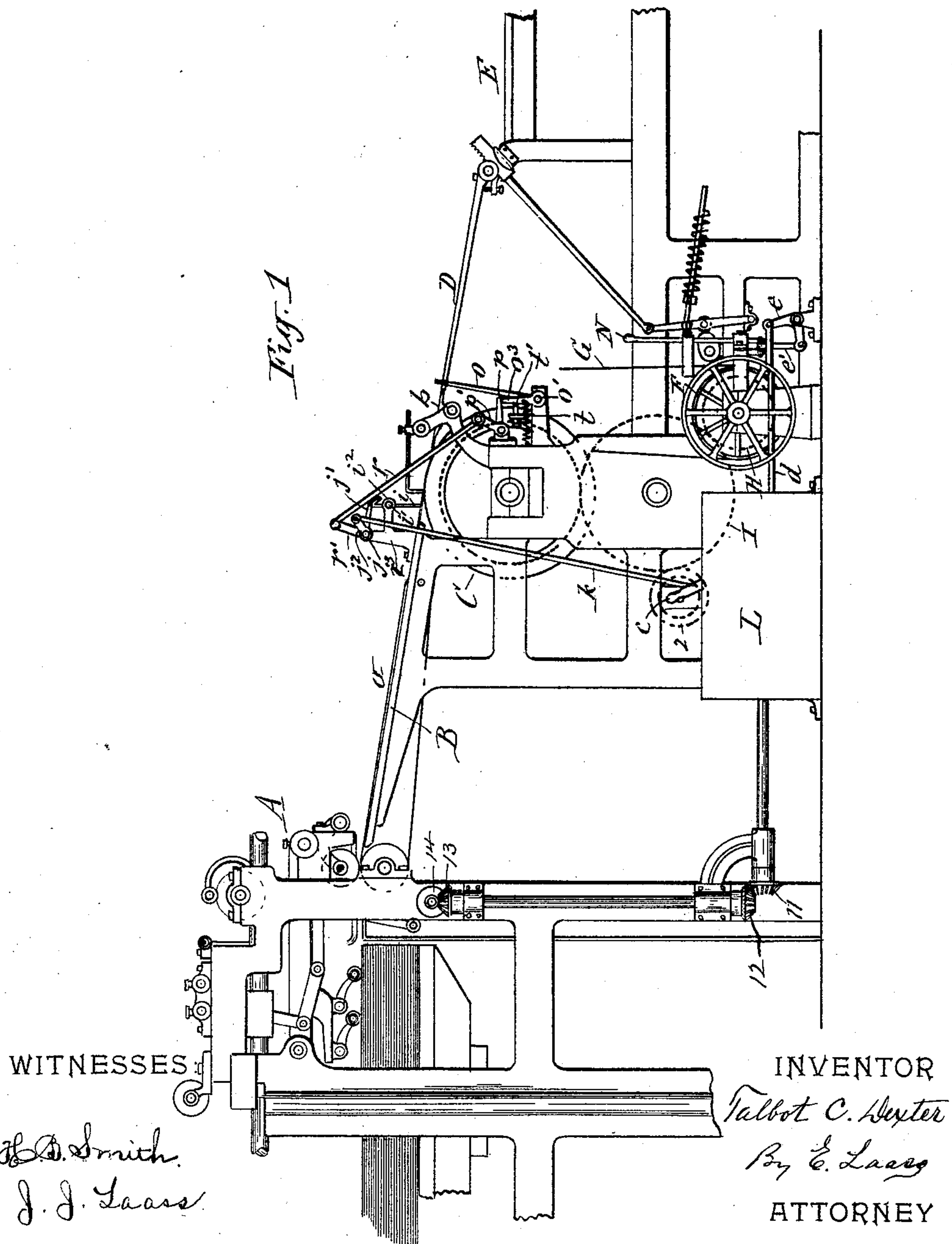
Patented Apr. 30, 1901.

T. C. DEXTER.
DUPLEX GUARD FOR PRINTING PRESSES.

(Application filed Sept. 4, 1900.)

(No Model.)

4 Sheets—Sheet 1.



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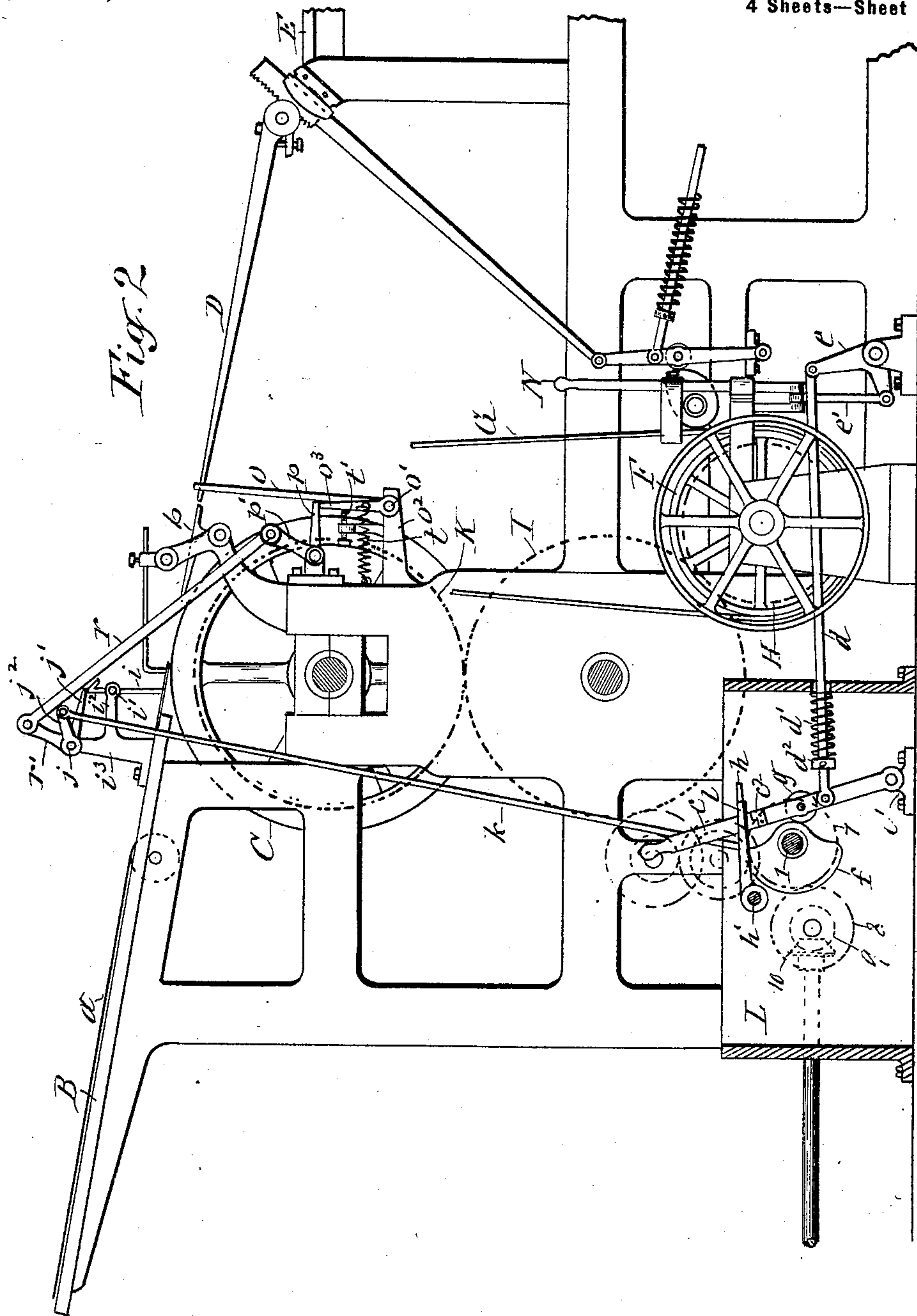
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WITNESSES:

H. B. Smith.
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INVENTOR

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By E. Laess

ATTORNEY

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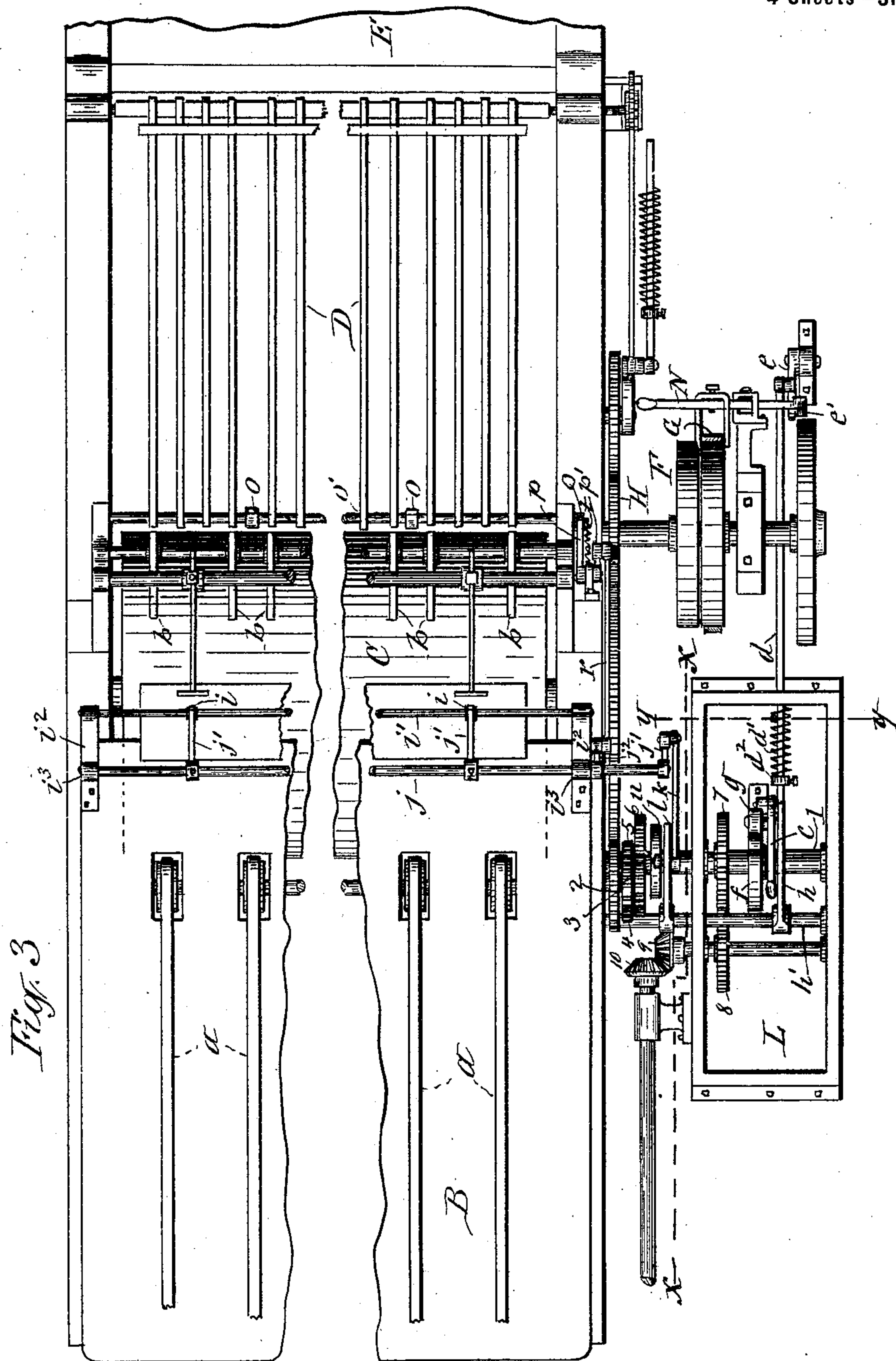
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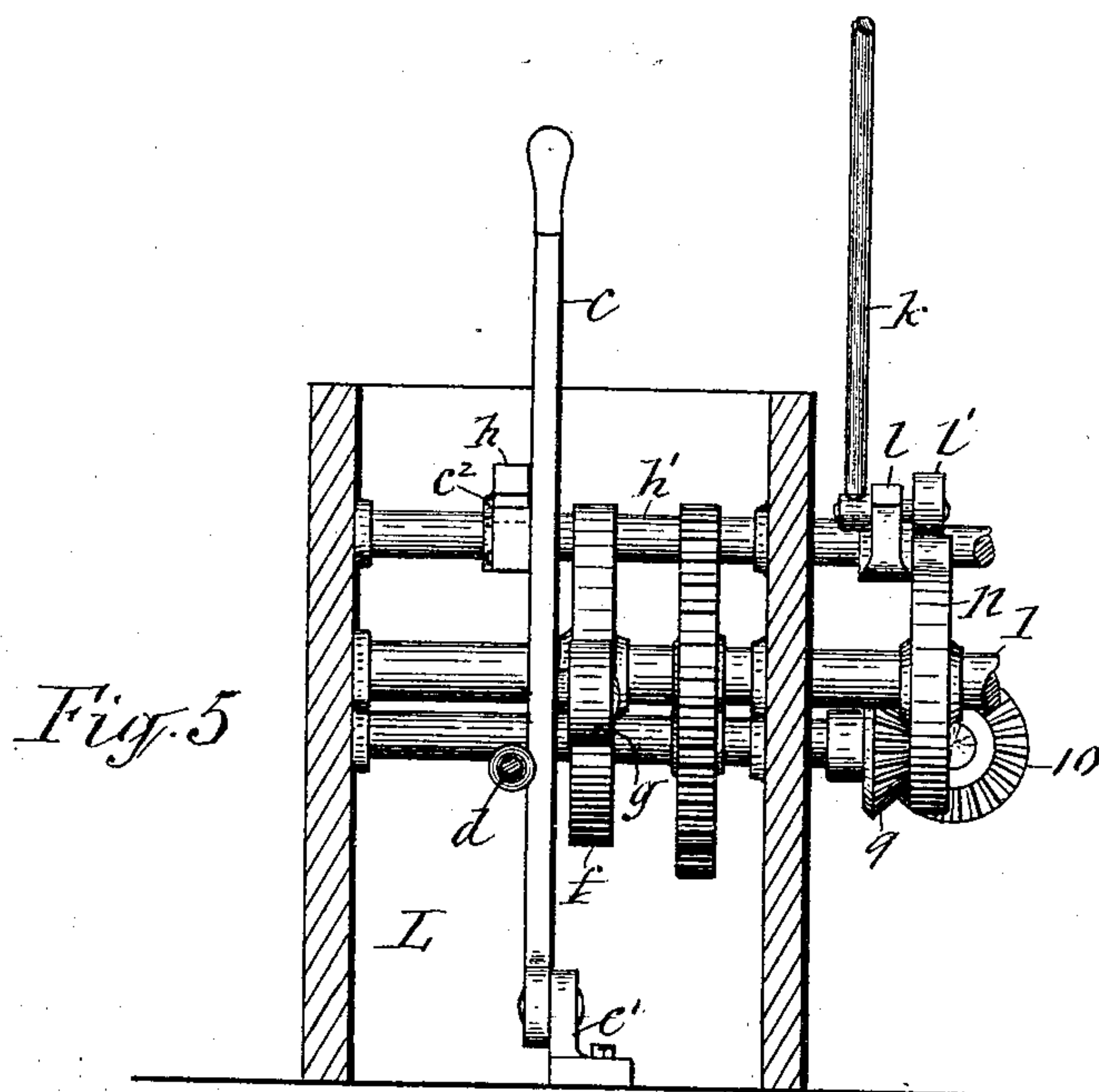
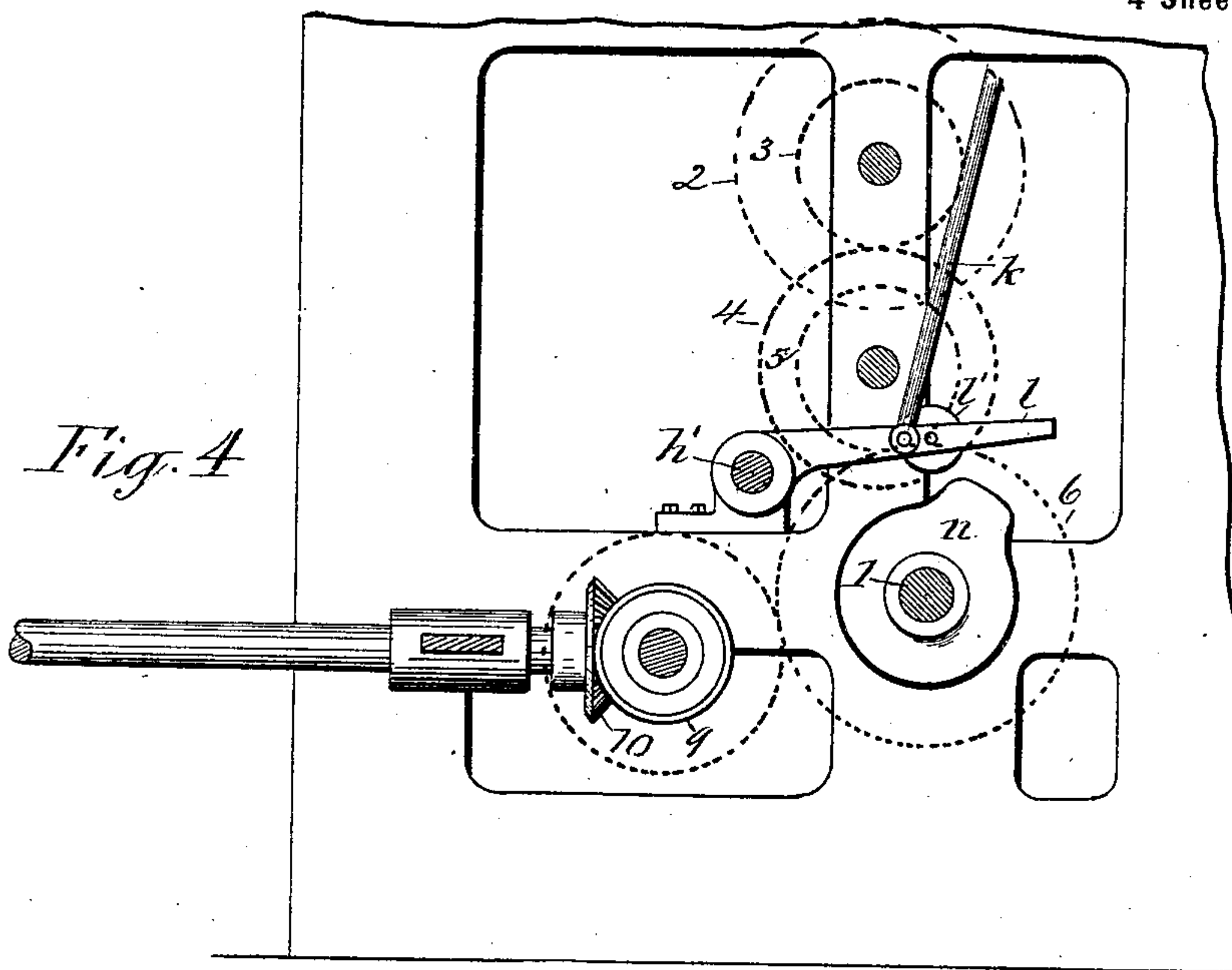
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UNITED STATES PATENT OFFICE.

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

DUPLEX GUARD FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 673,115, dated April 30, 1901.

Application filed September 4, 1900. Serial No. 28,866. (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 Duplex Guards for Printing-Presses, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The object of this invention is to provide simple and efficient means for automatically stopping the action of a printing-press in case of defects either in the supply of the paper to the press or in the delivery of the printed paper from the press, thus guarding against besmearing the face of the impression-cylinder incident to bringing said face in contact with the inked form on the press-bed and also preventing clogging of the paper in its passage through the press. Hence my said invention effectually protects the printing-press in its operation.

The invention consists in the combination, with a printing-press, of a duplex guard consisting of detecting devices sustained normally in the paths of the paper to and from the impression-cylinder and movable by the paper in transit, mechanism coupling together said detecting devices, and stop mechanisms controlled by the normal position of the detecting devices to automatically arrest the action of the press, all as hereinafter fully described.

The invention is fully illustrated in the annexed drawings, in which—

Figure 1 is a side elevation of a printing-press with a feeding-machine connected thereto and equipped with my improved devices for automatically controlling the operation of the press. Fig. 2 is an enlarged side view of the printing-press, showing the stop mechanism with the means for controlling the same. Fig. 3 is a plan view of the same. Fig. 4 is an enlarged vertical longitudinal section on line X X in Fig. 3, and Fig. 5 is an enlarged vertical transverse section on line Y Y in Fig. 3.

C represents the impression-cylinder of a front-delivery printing-press, which may be of any well-known form.

A denotes the automatic paper-feeding ma-

chine, which may also be of any suitable construction and is only partly shown.

B represents the feed-board, over which travel the tapes *a*, which convey the paper from the feeding-machine to the impression-cylinder.

b represents the usual fingers which strip the printed paper from the impression-cylinder, and D represents the fly, which receives the paper from the fingers *b* and carries it to the fly-board or piling-board E in the usual and well-known manner.

F designates the main driving-pulley, and G the driving-belt. A gear H, attached to the shaft of the driving-pulley, engages a gear I on the printing-press, and a gear K, secured to the shaft of the impression-cylinder, meshes with the gear I.

In a case L, firmly secured to the floor in proximity to the press-frame, is a horizontal shaft 1, supported in bearings in the sides of said case and projecting from the exterior of one side thereof, as shown in Figs. 3 and 5 of the drawings. The shaft 1 receives rotary motion from the gear I by means of a train of gears 2, 3, 4, 5, and 6, the last of which is secured to the shaft 1.

In the case L is the trip-lever *c*, pivoted at its lower end to a block *c'*, firmly secured in its position. This trip-lever is connected by a rod *d* to one of the arms of a bell-crank *e*, whose other arm is connected by a rod *e'* to a horizontal extension of the foot of the belt-shifting lever N. A spiral spring *d'*, surrounding the rod *d*, adjacent to the trip-lever *c*, and abutting with one end against the inner side of the case L and with the opposite end against a collar *d''*, adjustably attached to the rod *d*, serves to force the said trip-lever in a direction to cause it, by means of the rod *d*, bell-crank *e*, and rod *e'*, to throw the belt-shifting lever N into a position to carry the driving-belt G from the driving-pulley onto the loose pulley, and thus stop the operation of the press and feeding-machine, which is operated in common with the press, as hereinafter described.

The automatic stop mechanism used in combination with the spring *d'* is similar to that shown in my prior application for Letters Patent, Serial No. 22,957, filed July 9, 1900, and consists of a cam *f*, mounted on the

rotary shaft 1 and in position to engage a roller *g*, pivoted to the trip-lever *c*. Said cam is shaped to force the trip-lever at regularly-timed intervals in opposition to the spring *d'* and to a position to cause the belt-shifting lever *N* to carry the driving-belt *G* on the driving-pulley.

To maintain the belt on the driving-pulley while the feeding-machine and printing-press, with the delivery of the paper from said press, are in perfect working order, I employ the detaining-arm *h*, fastened to a shaft *h'*, which is parallel with the shaft 1, and supported in bearings in opposite sides of the case *L*. Said detaining-arm is adapted to engage a shoulder *c*² on the trip-lever *c*, and thus lock said lever when forced by the cam *f* into the position to maintain the belt on the driving-pulley, as hereinbefore described. To automatically control the action of said detaining-arm by the paper in transit to the impression-cylinder *C*, I place over the feed-board *B*, in proximity to the impression-cylinder, suitable detecting devices or feelers *i*, consisting of light metal strips attached intermediate their ends to a rod *i'*, which extends across the feed-board and is pivoted to arms *i*², extending from posts *i*³, mounted on opposite sides of the feed-board. The feelers *i* stand slightly inclined toward the impression-cylinder and with their lower ends normally in the path of the paper, so as to be actuated by the paper in transit to the impression-cylinder, and thereby maintain the press and feeder in motion, as hereinafter described. To the posts *i*³ are pivoted the ends of a shaft *j*, and from this shaft project arms *j'*, the free ends of which are directly over the upper ends of the feelers *i* when in their normal position. The shaft *j* receives an intermittent rocking motion by means of an arm *j*², attached to the end of said shaft and connected at its free end by a rod *k* to an arm *l*, fastened to the shaft *h'*, to which is also secured the detaining-arm *h*, as hereinbefore described. To the arm *l* is pivoted a roller *l'*, which is directly over a cam *n*, fastened to the shaft 1, as best seen in Fig. 4 of the drawings. This cam is shaped to lift at regularly-timed intervals the arm *l*, which transmits a corresponding motion to the arms *j'* by means of the rod *k* and arm *j*² rocking the shaft *j*, to which the arms *j'* are attached.

In case the feeding-machine fails to deliver paper to the paper-conveying tapes *a* the feelers *i* remain undisturbed from their normal position, in which their upper ends are directly under the free ends of the arms *j'*, so as to prevent said arms from descending from their lifted position. The movement of the rock-shaft *j* is thus arrested in a position which causes the arm *j*² on said shaft to retain the arm *l* in its elevated position, as represented in Fig. 4 of the drawings. The detaining-arm *h* being fastened to the same shaft *h'* to which the arm *l* is fastened compels said detaining-arm to be likewise retained

in its elevated position, and thus prevented from engaging the shoulder *c*² on the trip-lever *c*, as shown in Fig. 2 of the drawings. This release of the trip-lever from the detaining-arm *h* and simultaneous release from the cam *f* allows said lever to be actuated by the spring *d'*, which causes the belt-shifting lever to throw the driving-belt from the tight pulley onto the loose pulley, and consequently stops the printing-press and also the feeding-machine, which operates in unison with the printing-press and receives motion from the shaft 1 by means of a train of gears 7, 8, 9, 10, 11, 12, 13, and 14, arranged as shown in Fig. 1 of the drawings and in the same manner as illustrated in my prior application for Letters Patent, Serial No. 22,957, filed July 9, 1900.

The described automatic stop mechanism serves to prevent the bare facing of the impression-cylinder from being brought into contact with the inked form on the press-bed.

To further protect the press from injury, I provide means for preventing clogging of the press by the printed paper becoming accidentally caught either on the rear ends of the usual fingers *b*, which pick the paper from the impression-cylinder, or on the rear ends of the fly-fingers. For this purpose I employ the detecting-finger *o*, which has its free end normally in the path of the printed paper to the fly, so as to be actuated by the paper in transit. To permit this detecting-finger to control the press and feeder by simple, inexpensive, and efficient means, I attach said finger at its lower end to a shaft *o'*, which is extended across the front of the press and supported at its ends in brackets *o*² on the press-frame. To one end of this shaft is fastened a prop *o*³, directly over which is one of the arms *p* of a bell-crank pivoted to a suitable support on the press-frame. The other arm *p'* of this bell-crank is coupled by a rod *r* to an arm *r'*, attached to the rock-shaft *j*, hereinbefore described. The detecting-finger is sustained in its normal position by means of a spring *t* drawing the prop *o*³ toward the press and to a suitable stop *t'*, as shown in Fig. 2 of the drawings. When said detecting-finger is in its normal position, the arm *p* of the bell-crank rests upon the top of the prop *o*³, and by preventing said arm from descending the movement of the rock-shaft *j* is arrested in a position which prevents the detaining-arm *h* from engaging the shoulder *c*² on the trip-lever *c*, and consequently the driving-belt *G* remains on the loose pulley in the manner already described.

When the feeder and press are operating in proper order, the paper passing under the feelers *i* and over the detecting-finger *o* tilts said feelers and finger, and thus allows the arms *j'* and *p* free movement. The rock-shaft *j* then being actuated by the cam *n*, which oscillates the arm *l* with the detaining-arm *h*, causes said detaining-arm to catch onto the shoulder *c*² on the trip-lever *c* in time to retain said lever in the position to which it

has been forced by the cam *f*, and consequently the driving-belt *G* is maintained on the fast pulley. If, however, the printed paper issuing from the press should accidentally become entangled either on the fingers *b* or on the rear ends of the fly-fingers, and thus prevented from coming in contact with the detecting-finger *o*, then the normal position of said finger maintains the prop *o*³ in position to prevent the arm *p* from working. The result is that the rock-shaft *j* is locked in a position which holds the detaining-arm *h* above the shoulder *c*² on the trip-lever *c*, which lever is thereby free to be moved by the spring *d'*, while the cam *f* is turned from said lever. Said movement of the trip-lever *c* causes the lever *N* to shift the driving-belt *G* from the tight pulley onto the loose pulley, and consequently the feeding-machine and press are both stopped and the clogging of the press by the entangled paper is obviated.

What I claim as my invention is—

1. A duplex guard for printing-presses, which guard consists of detecting devices sustained normally in the paths of the paper to and from the impression-cylinder and movable by the paper in transit, mechanism coupling together said detecting devices, and stop mechanisms controlled by the normal position of the detecting devices to automatically arrest the action of the press.

2. The combination with a printing-press, automatic paper-feeder, conveyers delivering the paper to the press, and mechanism actuating said press, feeder and conveyers in common, of stop mechanisms controlling said ac-

tuating mechanism, a rock-shaft controlling the stop mechanisms, detecting devices sustained normally in the paths of the paper to and from the impression-cylinder and movable by the paper in transit, an arm attached to the aforesaid rock-shaft and controlled by one of the detecting devices, a bell-crank controlled by the other of said detecting devices, and coupled to the arm of the rock-shaft as set forth.

3. The combination with a printing-press, automatic paper-feeder, conveyers delivering the paper to the press, and mechanism actuating said press, feeder and conveyers in common, of stop mechanisms controlling said actuating mechanism, a rock-shaft controlling the stop mechanisms, a feeler pivoted intermediate its ends and sustained with its lower end normally in the path of the paper to the impression-cylinder, an arm attached to the rock-shaft and resting normally upon the top of the feeler, an additional arm extending from the rock-shaft, a detecting-finger pivoted at its lower end and sustained with its upper end normally in the path of the paper from the impression-cylinder, a prop sustained movably in unison with the detecting-finger, a bell-crank resting with one of its arms normally upon the prop, and a rod connecting the other arm of the bell-crank with the extra arm of the rock-shaft as set forth and shown.

TALBOT C. DEXTER. [L. S.]

Witnesses:

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M. E. MORRISON.