

No. 884,302.

PATENTED APR. 7, 1908.

J. H. STONEMETZ.
PRINTING PRESS.

APPLICATION FILED JULY 27, 1907.

2 SHEETS—SHEET 1.

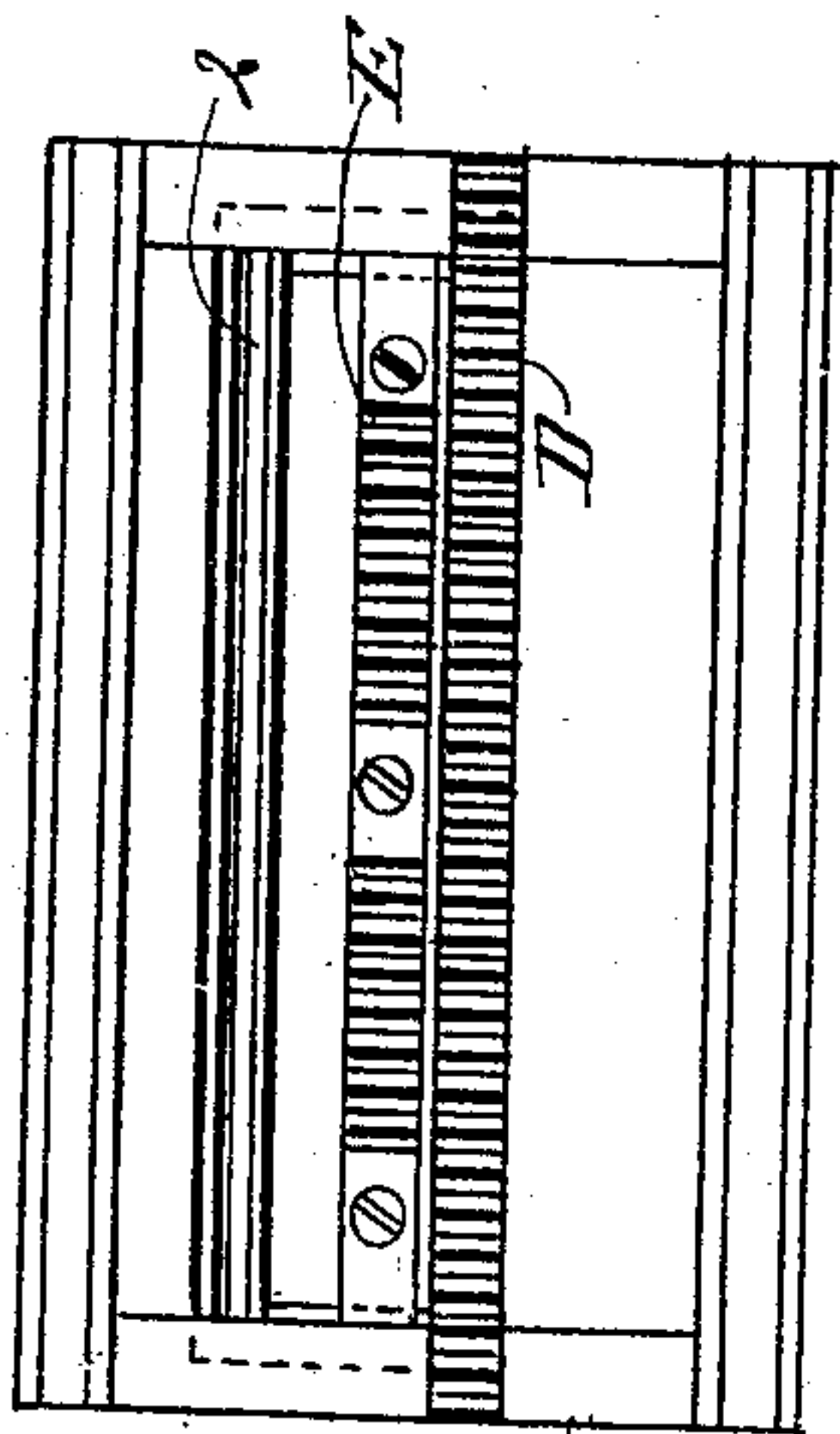


Fig. 2.

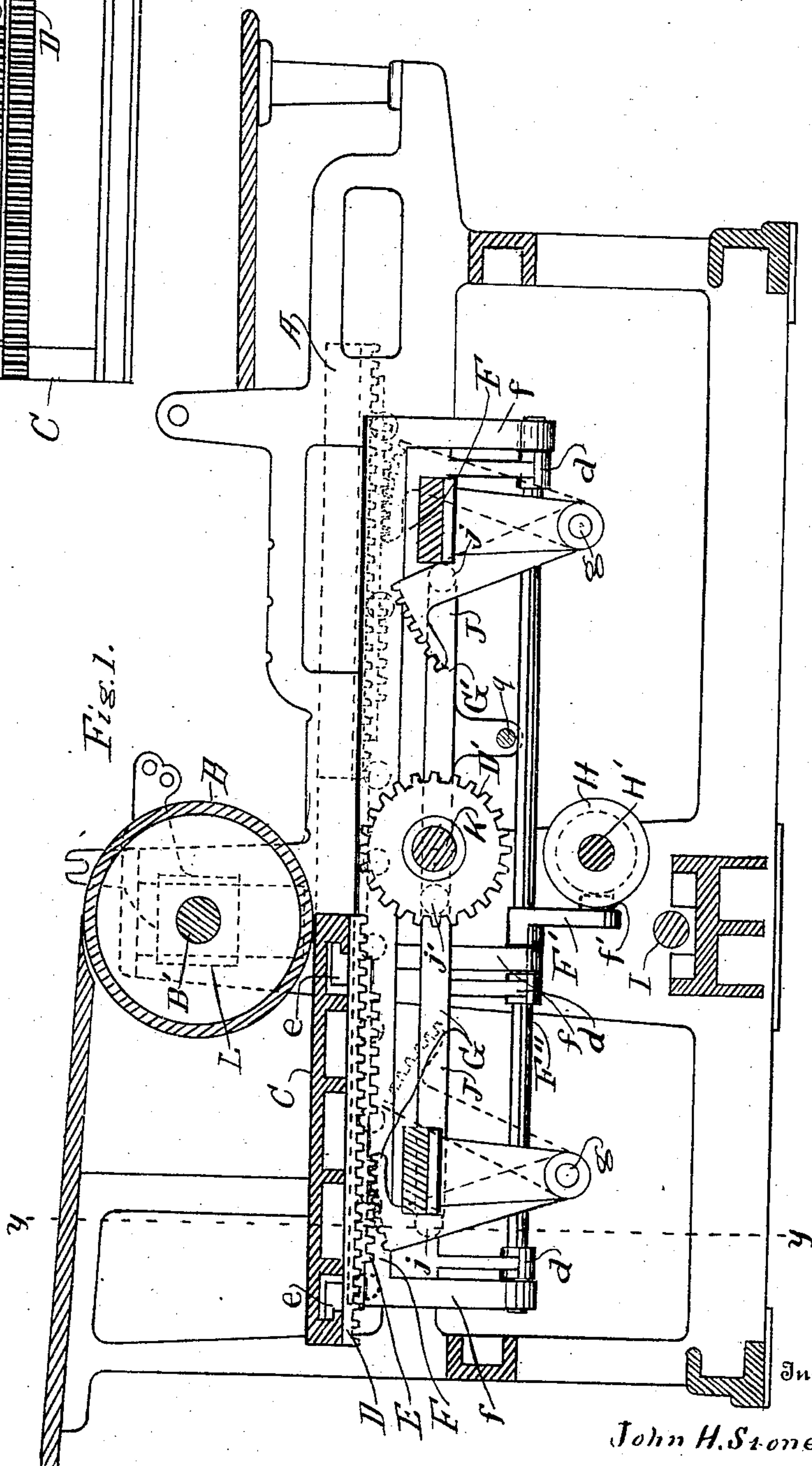


Fig. 1.

Witnesses

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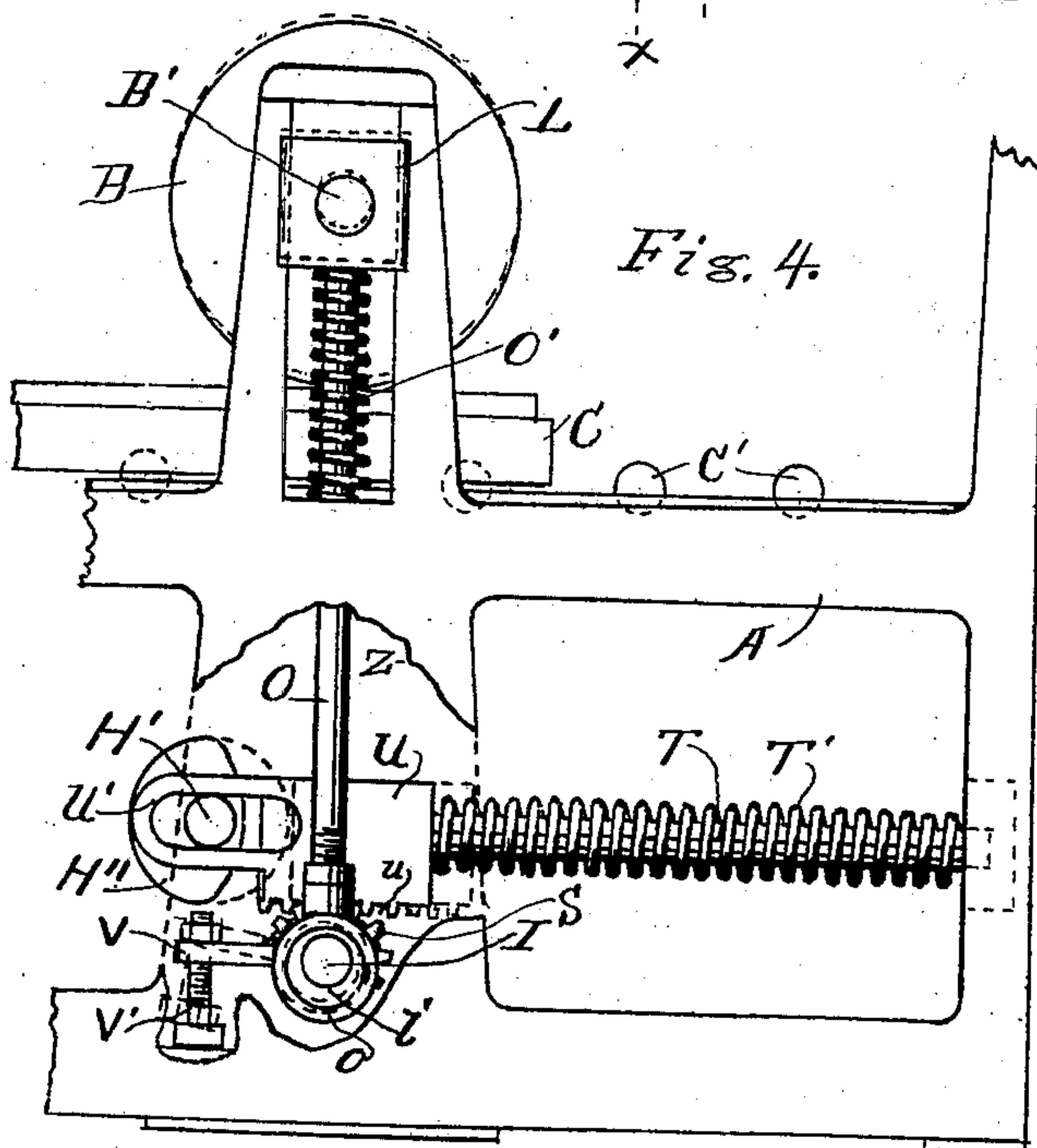
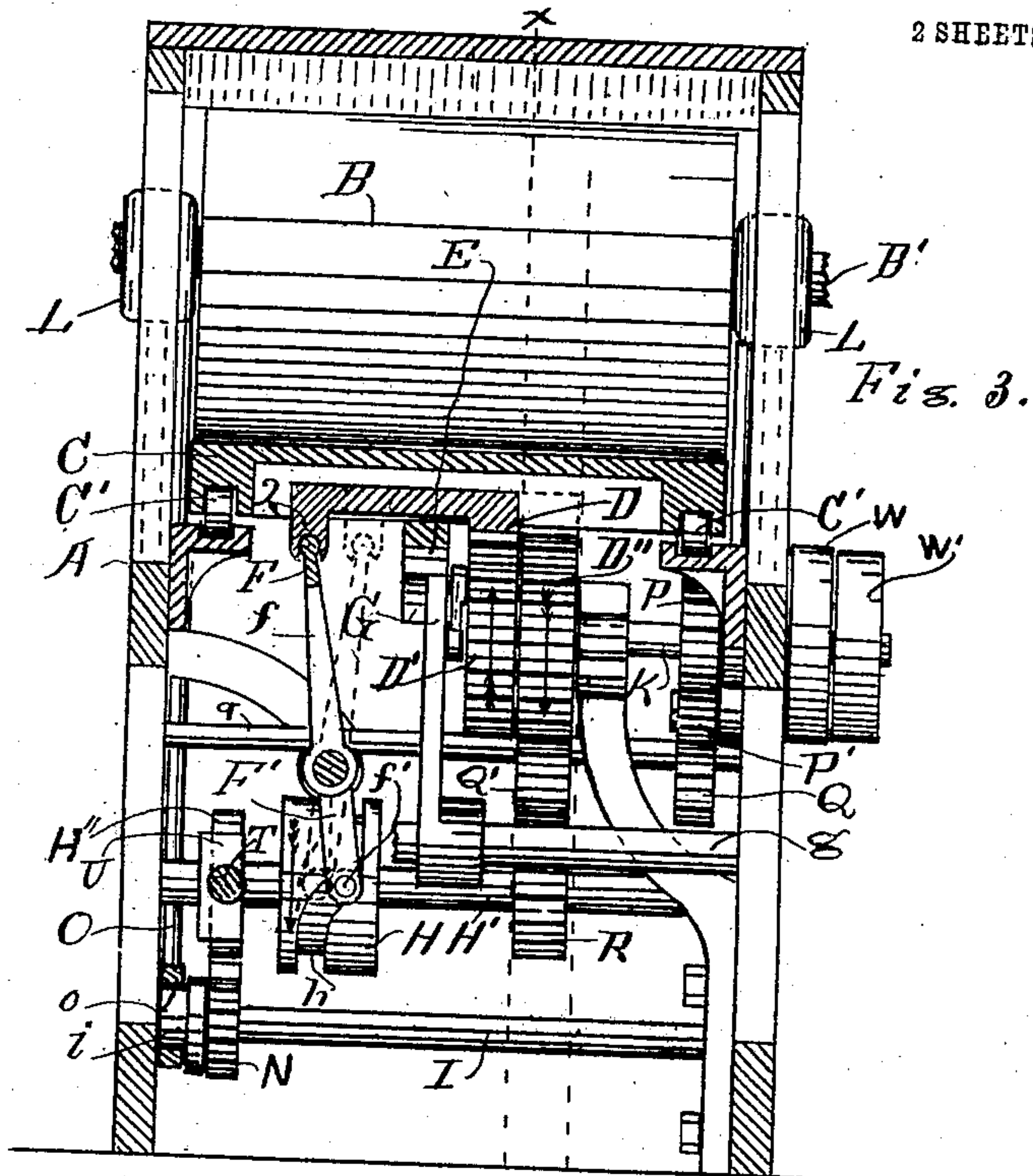
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2 SHEETS—SHEET 2.



Inventor

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UNITED STATES PATENT OFFICE.

JOHN H. STONEMETZ, OF BOSTON, MASSACHUSETTS.

PRINTING-PRESS.

No. 884,302.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed July 27, 1907. Serial No. 385,923.

To all whom it may concern:

Be it known that I, JOHN H. STONEMETZ, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification.

My invention relates to improvements in the class of printing presses known as reciprocal bed, cylinder presses, and its objects are: first; to provide an improved means for stopping, reversing and returning the bed of the machine at each end of the stroke. Second, to provide a means whereby the motion of the bed will be uniform when an impression is being taken from the type. Third, to provide a means whereby the gear wheels that actuate the bed will always revolve in the same direction and without varying the speed, and whereby the stopping, reversing and restarting of the bed will be done by mechanism independent of the actuating gear wheels, and, fourth, to provide an improved means for raising and lowering the impression cylinder as the bed advances or recedes in the process of printing. I attain these objects by the mechanism illustrated in the accompanying drawing in which

Figure 1 is a sectional elevation of a printing press on the line *x x* of Fig. 3. Fig. 2 is a bottom plan of the bed showing the arrangement of the actuating gears. Fig. 3 is a vertical section of the printing press on the line *y y* of Fig. 1. Fig. 4 is an elevation of one end of the press with the side of the frame cut away at *Z* to expose the cam and gear that actuates the impression cylinder to remove its weight from the bed when the bed is returning after an impression has been taken.

Similar letters refer to similar parts throughout the several views.

A represents the frame of the press; B represents the impression cylinder and C represents the bed which is made to travel upon the rollers or wheels *C'* in the usual manner. For actuating the bed C I provide two gear wheels, *D'* and *D''*. The gear wheel *D'* is driven directly from the driving pulley W, on the shaft K, while the gear wheel *D''* is driven from the gear wheel P, on the shaft K, through the medium of the intermediate gear wheel P' meshing with the gear wheel Q on the shaft *q*, driving the gear wheel Q', which meshes with and drives the gear wheel *D''* in the opposite direction from the motion

of the gear wheel *D'*, as indicated by the arrows on said gear wheels. These gear wheels, *D'* and *D''*, are made to act alternately upon the rack D, as follows: The rack D is slidingly supported in the carriage C by means of slides *e*, as more plainly shown in Fig. 1, so that they may be made to slide or reciprocate freely by means of the lever F, as follows: This lever is supported upon arms *f* that are mounted upon the shaft F'', which extends nearly the entire length of the press frame and is supported to oscillate in the hangers *d*, and I form a bearing 2 longitudinal of the bed and secured to the slides *e* so that any motion of the lever F will be transmitted to the rack D thus: The arm F' is secured to the shaft F'' and extends downward therefrom and has an antifriction roller *f'* revolvably secured to the lower end in position to engage the groove *h* in the cam wheel H, which latter is mounted on the shaft H' and stands at right angles with the shaft F''; and the groove *h* in said cam wheel H is so formed, as in Fig. 3, that it will carry the arm F' sideways, at the desired time, as the cam wheel revolves, thus causing the lever F to move accordingly, as indicated by the solid and the dotted lines in Fig. 3, and thus place the rack D in contact, alternately, with the gear wheel *D'*, as indicated by the solid lines, and the gear wheel *D''*, as indicated by the dotted lines in Fig. 3, thus causing the bed C to travel first in one direction, and then in the other, in the usual manner.

It will be readily seen that as the gear wheels *D'* and *D''* revolve constantly at a uniform speed, the bed C must, also, travel at the same uniform speed while being actuated by the gear wheels *D'* and *D''*, and that it would be impossible to reverse the motion of the bed while either of the gear wheels, *D'* and *D''*, is engaged with the rack D, and, further, that it would be impossible to reverse the motion of the bed without first bringing it gradually to a full stop, and for these purposes I have provided a second set of racks, E, which are securely attached to the under side of the bed C, parallel with the rack D, and have provided a swinging segment or rack G or G', mounted upon a shaft *g*, or otherwise adjustably mounted in the frame A in position, and so timed as to engage its respective rack E, after the gear wheel has reached very nearly the end of the rack D, and to carry the bed beyond the line

of contact with the gear wheels D' or D'' , gradually lessening the motion of the bed until it comes to a full stop at the end of the stroke, and as gradually starting and increasing the motion of the bed until it is again engaged by the gear wheel D' or D'' and carried at a full uniform motion until it is engaged by the segment G at the opposite end of the frame A , which repeats the action of the former segment, as hereinbefore described.

The cam H is driven, as by the gear wheel R , in the direction of the arrow on its periphery, and the offset in the groove h is so timed that the arm F' is actuated to throw the lever F over and transfer the rack D from one gear wheel, as D' , to the other, as D'' , and vice versa, after the rack D has left the gear wheel D' or D'' , and while the bed is being actuated by one or the other of the segments G , so that there is no possible danger of the rack D engaging both of the gear wheels, D' and D'' at the same time.

The segments G G' are actuated by the gear wheel D' by means of the connecting bars J , pivotally secured at one end, j , to the segments and at the other end, as j' , to the gear wheel, so that the revoluble motion of the gear wheel is transformed into a reciprocal motion of the segments, and so timed that each segment will engage its respective rack at the exact instant that the motion of the gear wheel and of the segment are uniform.

My appliance for raising the impression cylinder B to relieve its pressure on the bed when the bed is returning after having made an impression, consists of a cam, as H'' , mounted on the shaft H' in position to actuate the head U , which is provided with a stem or bolt T surrounded with a spring T' bearing at one end upon the frame A and at the other end upon the head U to force the head U against the cam H'' . The head U is provided with gear teeth u arranged to mesh with corresponding gear teeth S , on a wheel secured to the shaft I , so that any movement of the head U , longitudinally, will cause the shaft I to revolve correspondingly. I place an eccentric i upon the end of the shaft I and an eccentric strap o upon this. The eccentric strap is connected with the vertical shaft O , one at each end of the shaft I , which extend up to, and engage the boxes L that receive the shaft B' that supports the cylinder B , so that when the shaft I is made to revolve slightly the eccentric i will cause the cylinder to rise or fall as desired; and as indicated by the solid and dotted lines in Fig. 4. The downward motion of the cylinder is governed by the stop bolt V' , at the end of the arm V , which latter is secured to the shaft I . The spring O' is simply to ease the

movement of the cylinder as it is raised or lowered.

W' represents a loose pulley for the driving belt to run upon when the press is not in operation, and U' represents a yoke integral with the head U , and designed to slide over the shaft H' to support the head and cause it to move in a direct line when actuated by the spring T' and the cam H'' .

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

1. In combination with a printing press and a type bed, two driving gears revolving at uniform motion in opposite directions, a rack slidably attached to the bed in position to be made to mesh with each of the gear wheels alternately, a lever pivoted near its longitudinal center to the frame and engaging the rack at one end and a cam wheel engaging the lever at the other end causing the lever to oscillate and move the rack alternately from one gear wheel to the other, racks secured to the bottom of the bed, and segments arranged to engage said racks and actuate the bed as it approaches and starts to return from the ends of its travel and alternately with the gear wheels.

2. In combination with a printing press, a reciprocating bed, a reciprocating rack movable laterally under the bed, a lever mounted on a shaft, a cam engaging one end of the lever and the other end of the lever engaging the reciprocating rack, two driving gear wheels revolving in opposite directions at uniform speed, and in position to alternately engage the reciprocating rack, a rack secured to the bed, segments in position to engage said rack and stop and reverse the motion of the bed alternately with the gear wheels, a cylinder, and means for raising and lowering the cylinder with the alternate movement of the bed.

3. In combination with a printing press, a reciprocating bed, a reciprocating rack under the bed, gear wheels revolving in opposite directions and in position to be engaged alternately by the reciprocating rack, means for stopping and reversing the bed independent of the gear wheels, a cylinder, a rack, a spring actuating said rack in one direction, a cam device actuating the rack in the opposite direction, a shaft, a gear wheel on said shaft in position to be actuated by the rack, an eccentric and eccentric rod connecting the shaft with the cylinder to raise and lower the cylinder with the alternate motions of the bed.

Signed at Grand Rapids, Michigan, July 20, 1907.

JOHN H. STONEMETZ.

In presence of—

I. J. CILLEY,
A. ALLGIER.