(No Model.) 2 Sheets—Sheet 1.

J. E. DOYLE.

PRINTING PRESS.

No. 563,754. Patented July 14, 1896.

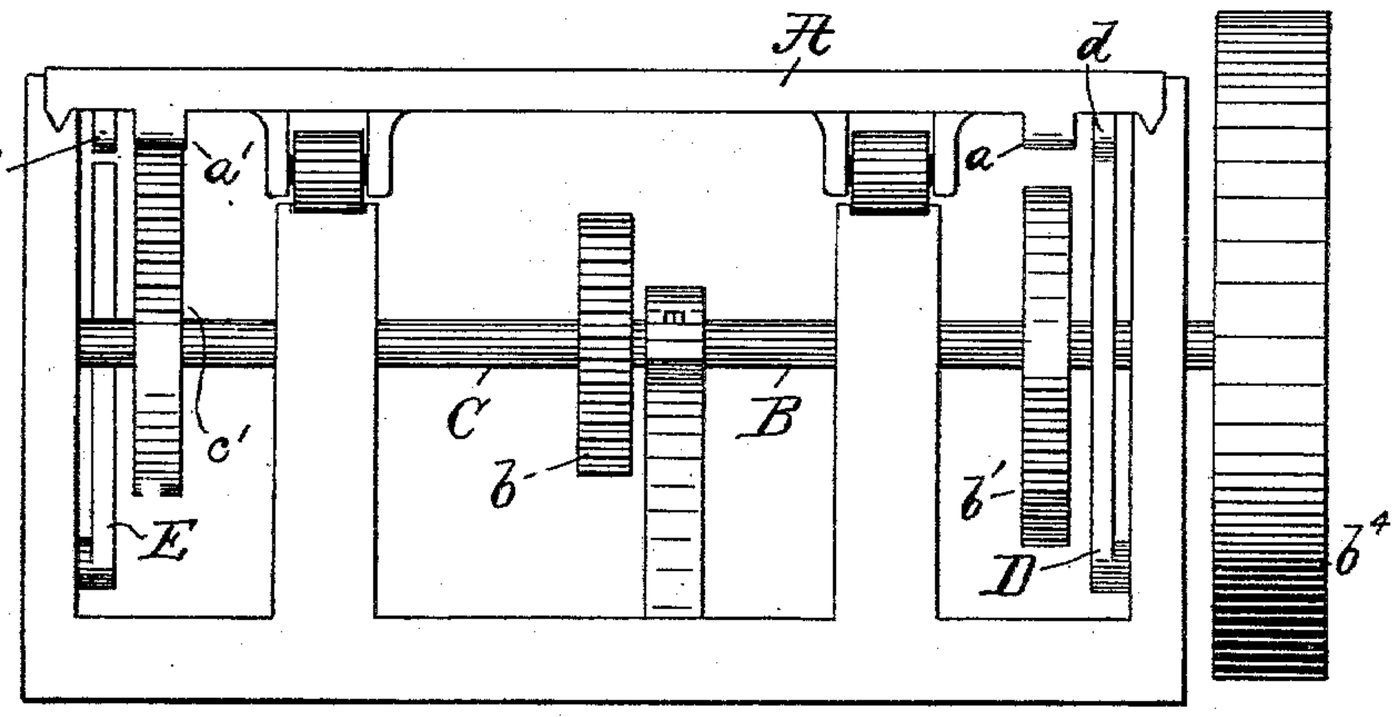

Fig. 1

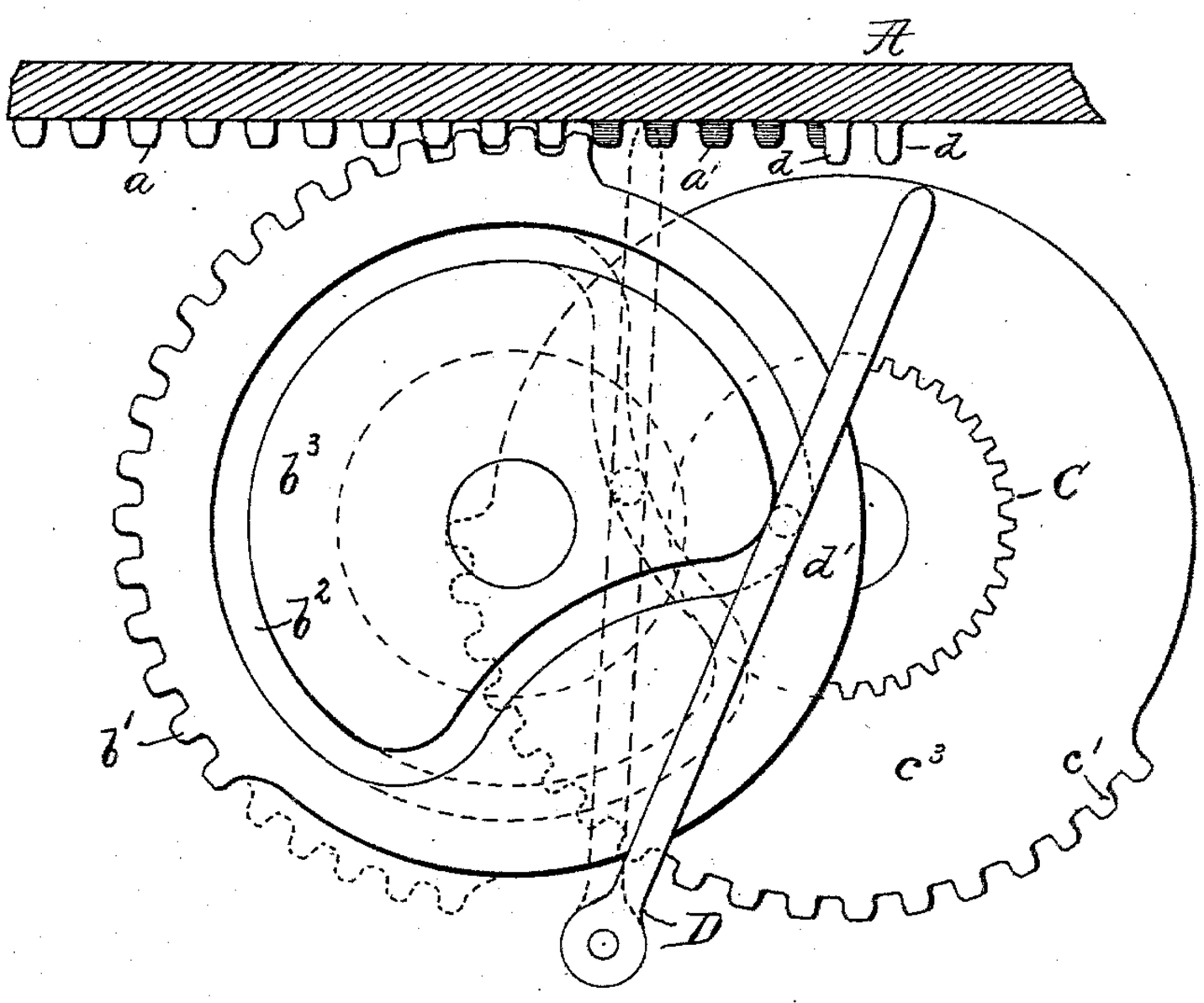

Fig. 2

Witnesses.
H. Griswold.
J. E. Erf

Inventor.
James E. Doyle
By E. L. Thurston
his atty.

(No Model.)

2 Sheets—Sheet 2.

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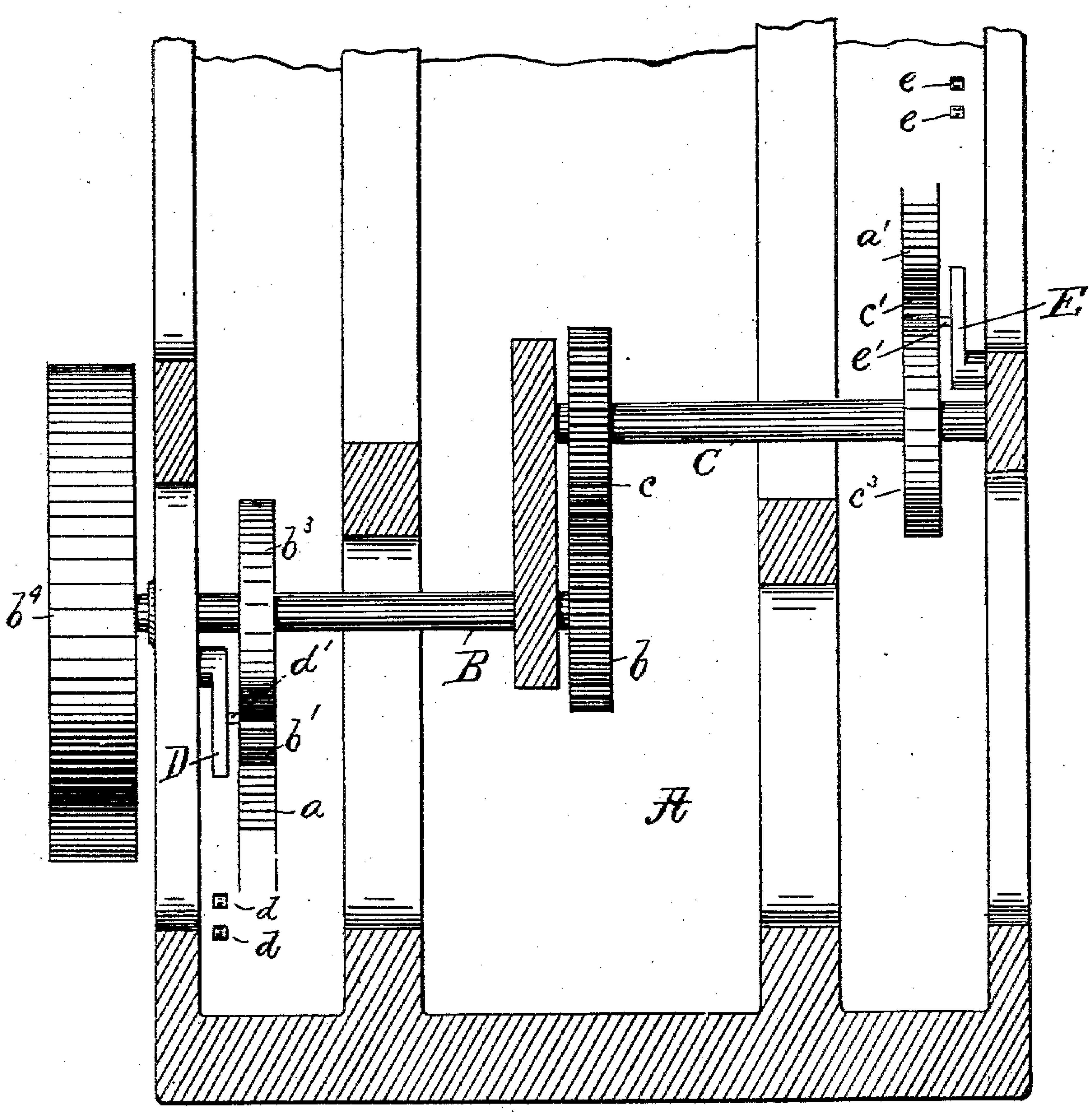

Fig. 3

Witnesses.
L. T. Griswold
Geo. Lazski

Inventor.
James E. Doyle
By E. L. Thurston
his attorney

UNITED STATES PATENT OFFICE.

JAMES E. DOYLE, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF TO CHARLES S. BRITTON, OF SAME PLACE.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 563,754, dated July 14, 1896.

Application filed August 26, 1895. Serial No. 560,489. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. DOYLE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Printing-Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain novel mechanism particularly adapted for operating the reciprocating bed of a printing-press.

The object of the invention is to provide simple mechanism which will move the bed backward and forward in a fixed path at regular intervals, and which will check the momentum of said bed without any shock or jar, and will start it on its return movement at the exact time and in the exact relation to the cylinder.

The invention consists in the construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is an end view of a portion of a press with my improvement applied thereto. Fig. 2 is an enlarged sectional view of the invention as shown in Fig. 1, looking to the left, not showing the bed and guides. Fig. 3 is an under-side view of a portion of a press with my improvement applied thereto.

Referring to the parts by letters, A represents the bed of a printing-press, which bed is mounted in the usual manner on the frame, and is adapted to slide backward and forward.

On the under part of the bed, near the sides thereof, are secured the two longitudinal racks a and a'.

B represents a transverse shaft, mounted in suitable bearings and extending from one side of the machine to a point at or near the middle of the bed. This shaft may be driven by any suitable means, as, for example, by a belt upon the pulley b^4, which is secured to the said shaft.

C represents another transverse shaft, which is mounted in suitable bearings beneath the bed and extends from the opposite side of the machine to a point at or near the middle of the bed.

On the inner ends of the shafts B and C are the meshing gears b and c, of the same size, whereby the shaft C is driven by the shaft B, at the same speed, but in the opposite direction.

A gear-segment b' is keyed to the shaft B at a point where it may engage with the rack a. Another gear-segment c' is keyed to the shaft C at a point where it may engage with the rack a', but the two geared segments are secured to opposite sides of their respective shafts, whereby, when one segment is engaging with its rack, the other segment is out of engagement with its rack.

It is evident from the foregoing description that the segments b' and c' revolve in opposite directions, and that when the segment b' is engaging with the rack a the bed is moved in one direction, and when the segment c' is engaging with the rack a' the bed is moved in the other direction. The segments are less than half a circle, wherefore there will be an interval between the time when one segment leaves its rack and the time the other segment engages with its rack. During this interval the momentum of the bed is checked, and the bed is started in the reverse direction by the mechanism substantially as follows:

D represents a lever, which is pivoted on a fixed pivot below the bed. On the under side of the bed are two lugs d d, with which the lever D is adapted to engage. E represents a similar lever pivoted on a fixed pivot, and e e represent two lugs on the under side of the bed, with which the upper end of the lever E is adapted to engage. In the side of a disk b^3, keyed to the shaft B, is formed an endless cam-groove b^2; and a pin d' on the lever D always lies in this groove. For convenience, the gear-segment b' is formed on the edge of this disk. A similar endless cam-groove c^2 is formed in the side of the disk c^3, which for convenience and cheapness has the gear-segment c' upon its edge. A pin e', which is secured to the lever E, lies in the cam-groove c^2. Both cam-grooves for a greater part of their

length are concentric with the shaft, wherefore the levers D and E remain stationary and out of engagement with the lugs *d d* and *e e* so long as the pins are in this part of the grooves; but for a short distance said grooves curve toward the axis of the shaft and out again, wherefore when these parts of the grooves engage with the pins on the levers D and E said levers are rocked backward and then forward to their stationary position.

The inward-curved part of the cam-grooves are arranged with respect to the associated gear-segments so that just as either of said segments is leaving its rack this curved part of the associated groove engages with the pin on the adjacent lever. The result is that the lever is rocked and enters between the lugs on the bed. The engagement of said lugs with the lever checks the movement of the bed, stops it, and then as the lever is swung backward the motion of the bed is reversed, and the bed is moved to the point where the opposite gear-segment engages with its rack and carries the bed to the other end of its path. Just as this gear-segment is leaving its rack the associated lever is in like manner moved so that it engages with the other lugs, checks and stops the bed, and starts it on its return movement. These levers act alternately as described upon the bed to check its movement, start it on its return movement, and bring it to the proper point for the gear-segments respectively to engage with it in the intervals between the time when one segment becomes disengaged from its rack and time the other segment engages with its rack.

The movement of all the parts is positive and therefore absolutely accurate. The bed is not checked and started on its return movement by spring buffers which are commonly used, and which may act unequally at times. A printing-press provided with the described mechanism for actuating its bed will always register with accuracy; and it is believed that the described mechanism is simpler and less expensive than any heretofore produced.

Having described my invention, I claim—

1. The combination of a reciprocating bed, and two racks secured thereto, with two gear-segments revolving in opposite directions and adapted to successively engage with said racks respectively, and mechanism for checking the movement of said bed and starting it in the opposite direction, substantially as and for the purpose specified.

2. The combination of a reciprocating sliding bed, two racks secured thereto, two gear-segments revolving in opposite directions and adapted to engage successively with said racks respectively, and two pivoted levers adapted to engage with said bed and check its movement and start it in the reverse direction, and mechanism for operating said levers, substantially as and for the purpose specified.

3. The combination of a reciprocating sliding bed, two racks secured thereto, and two gear-segments revolving in opposite directions and adapted to successively engage with said racks respectively, with two pivoted levers adapted to engage with said bed, and two cams for operating said levers, substantially as and for the purpose specified.

4. The combination of a reciprocating sliding bed, two racks secured to the under side of said bed, two transverse shafts, meshing gears secured to said shafts respectively, and a gear-segment secured to each of said shafts and adapted to engage with one of said racks, with two pivoted levers adapted to engage with said bed, grooved cams, and pins on said levers entering said grooves, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

JAS. E. DOYLE.

Witnesses:
E. L. THURSTON,
L. F. GRISWOLD.