

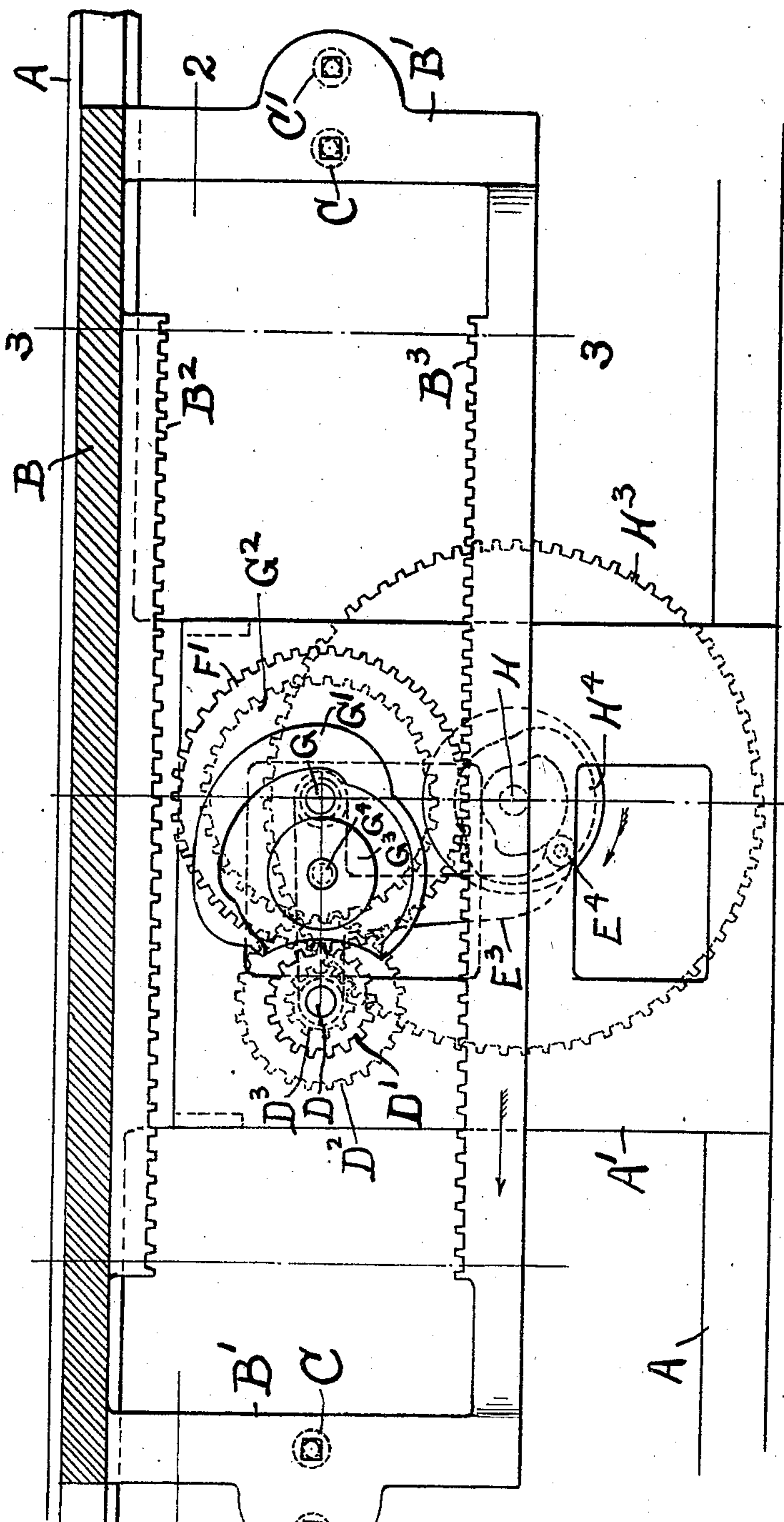
H. HARTT.  
BED MOTION FOR PRINTING PRESSES.

(Application filed Jan. 25, 1901.)

(No Model.)

5 Sheets—Sheet 1.

Fig. 1.



Witnesses.

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C. L. Letts

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Henry Hartt.  
By Casper L. Redfield  
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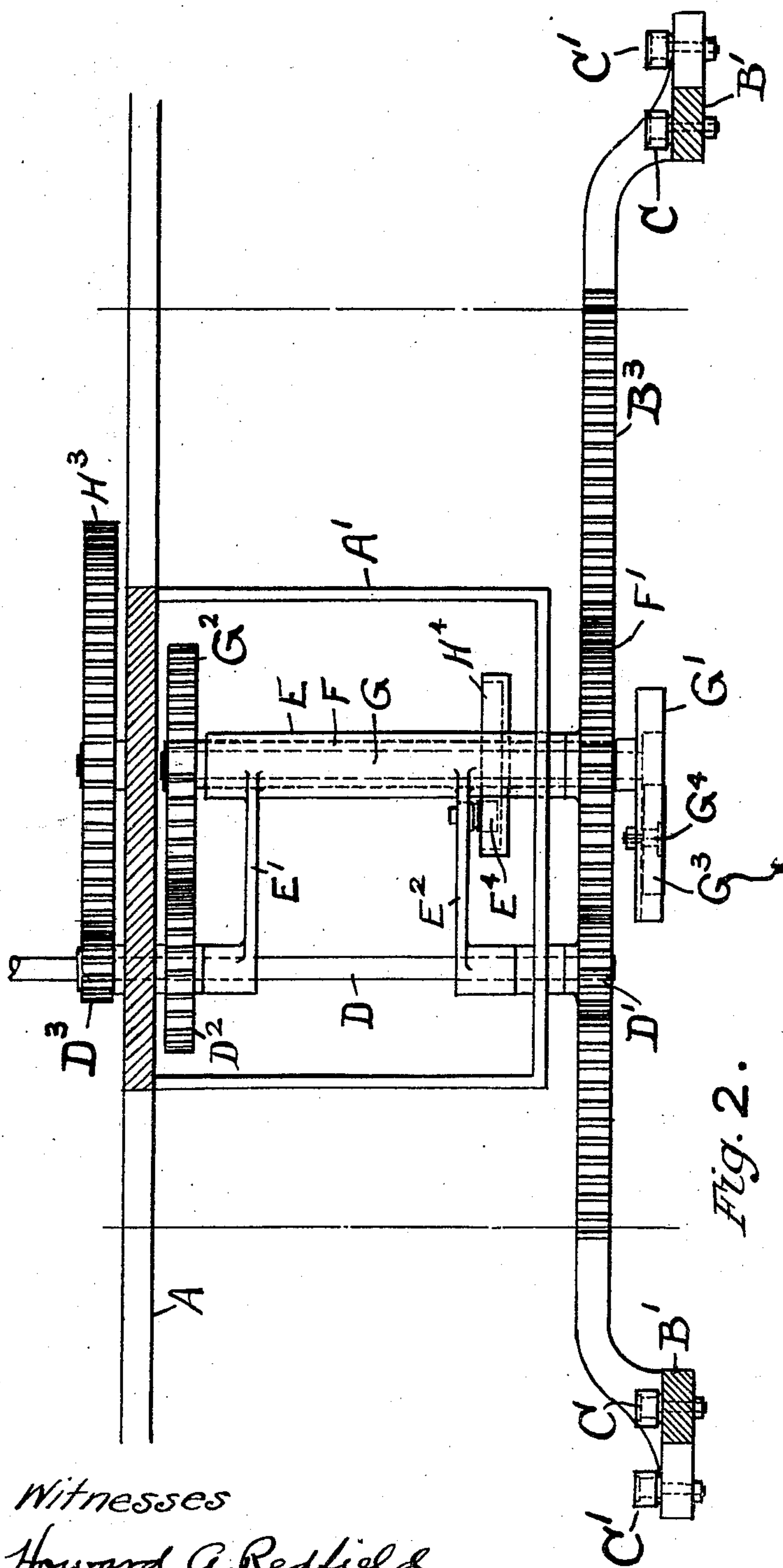


Fig. 2.

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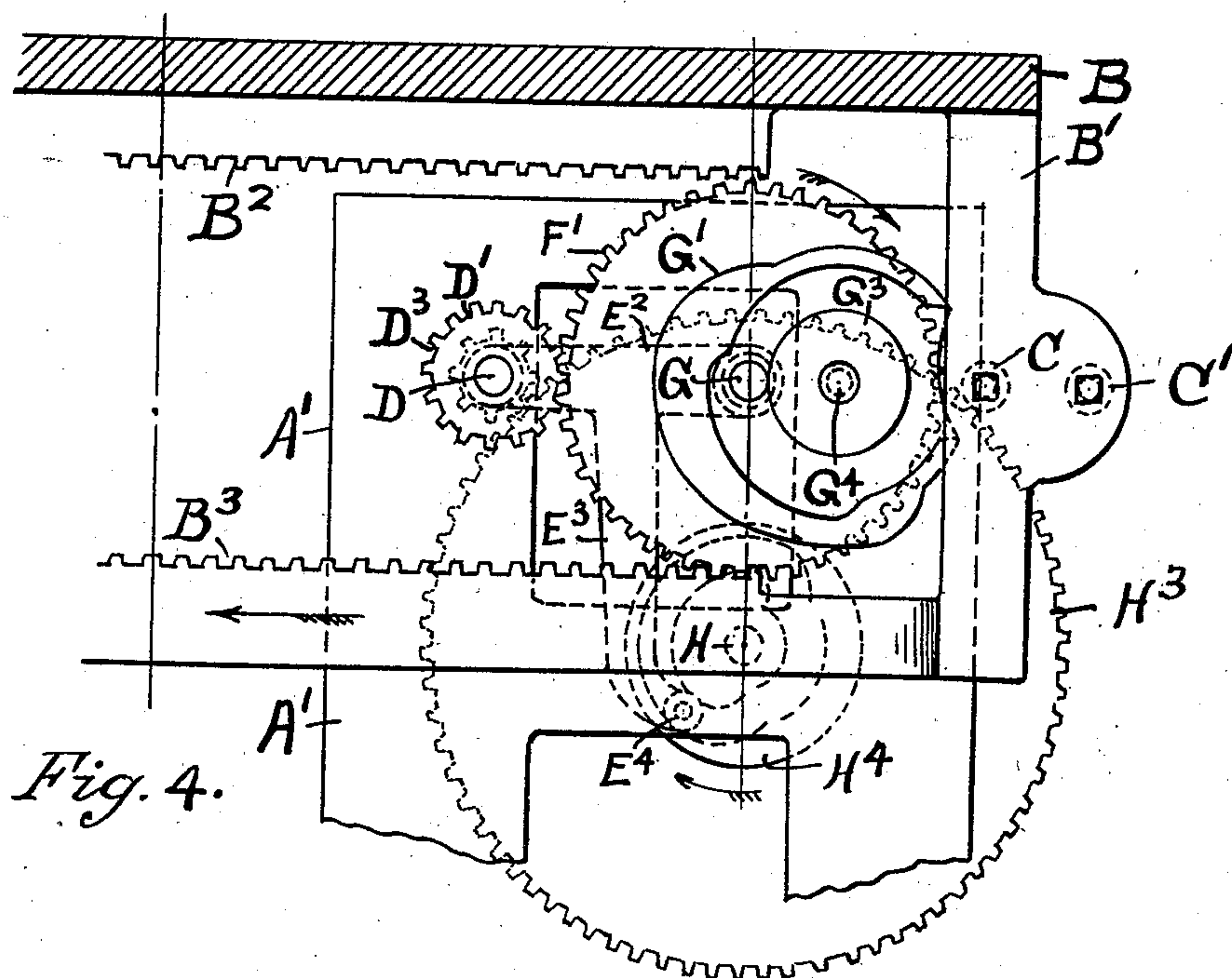


Fig. 4.

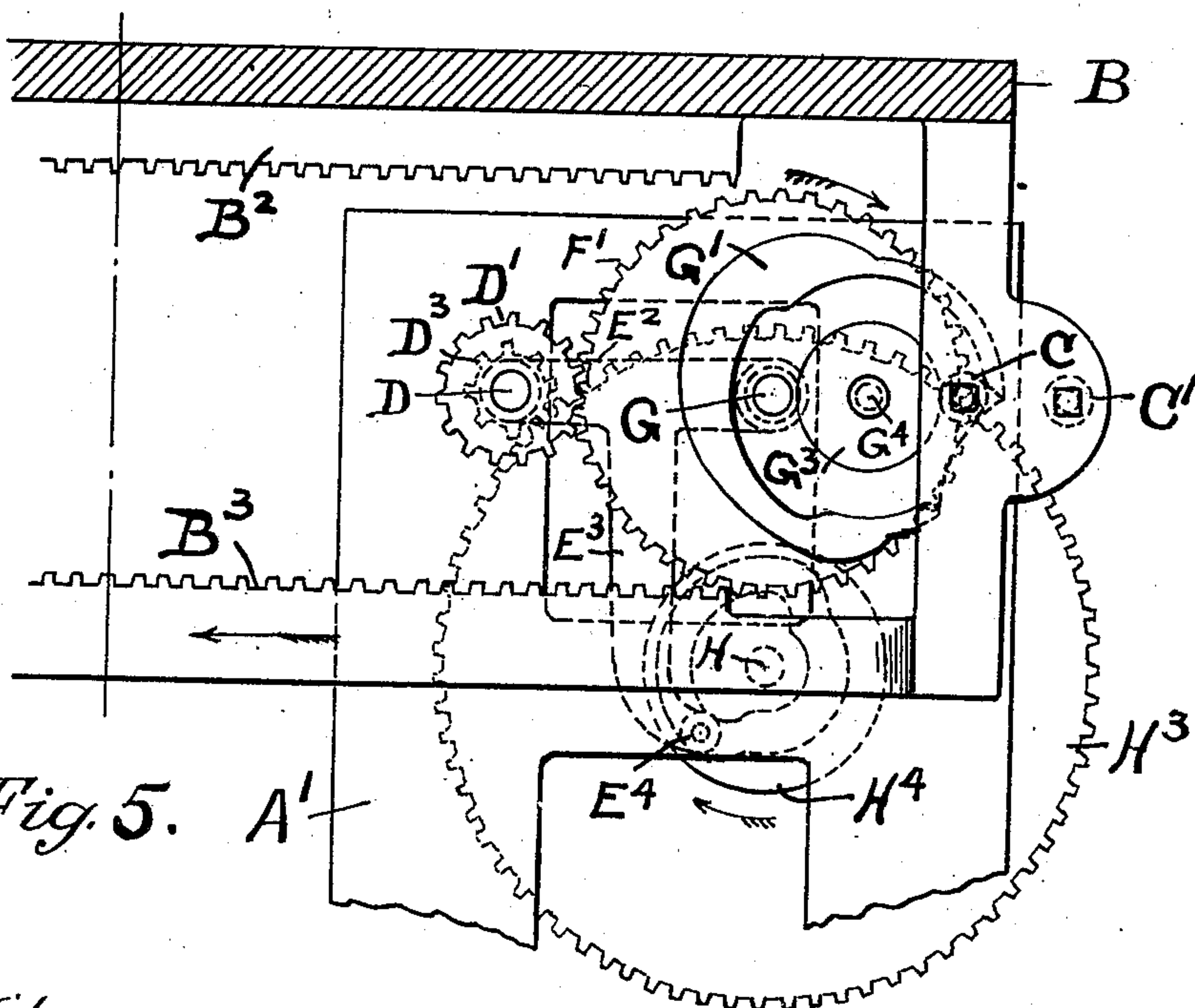


Fig. 5.

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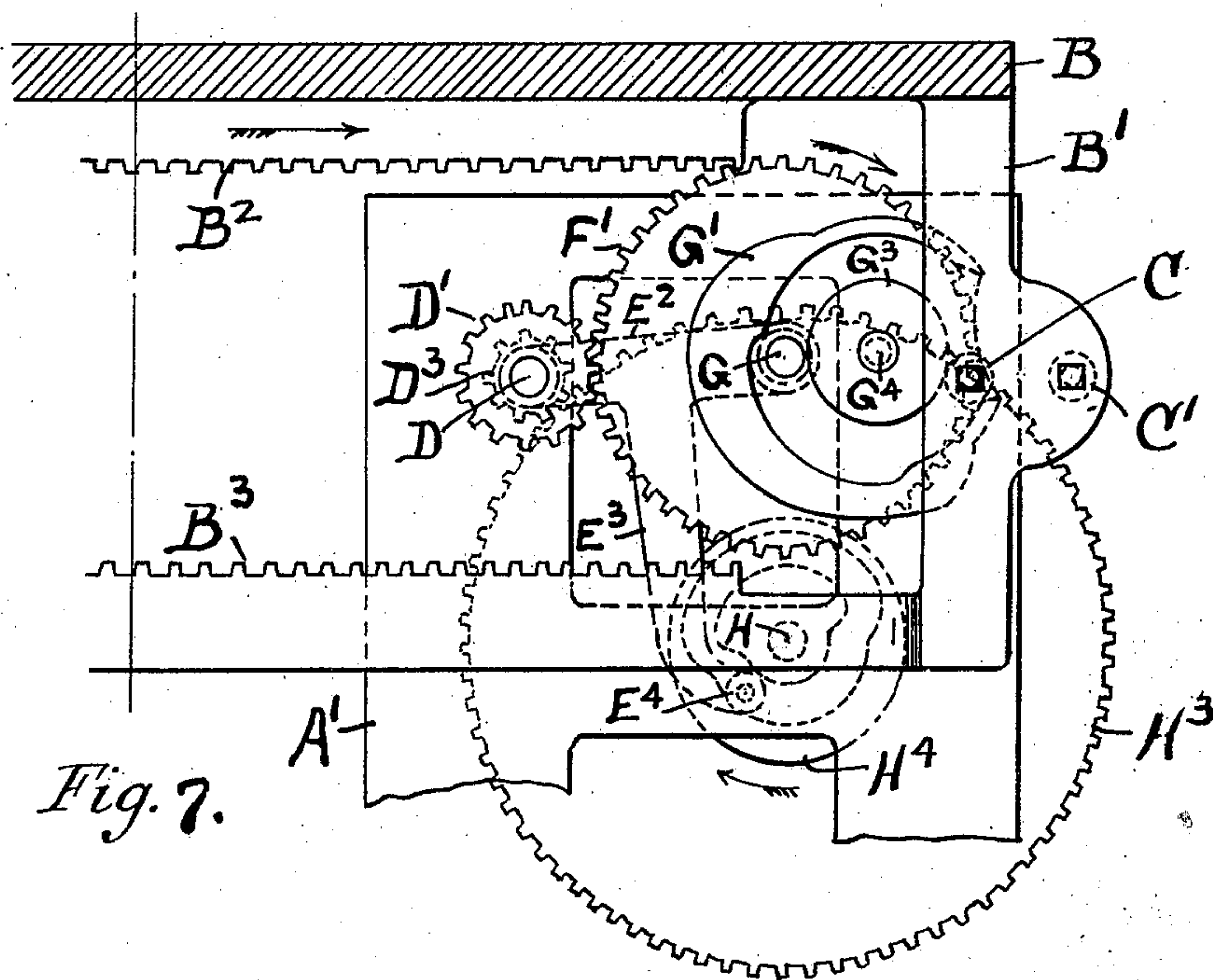


Fig. 7.

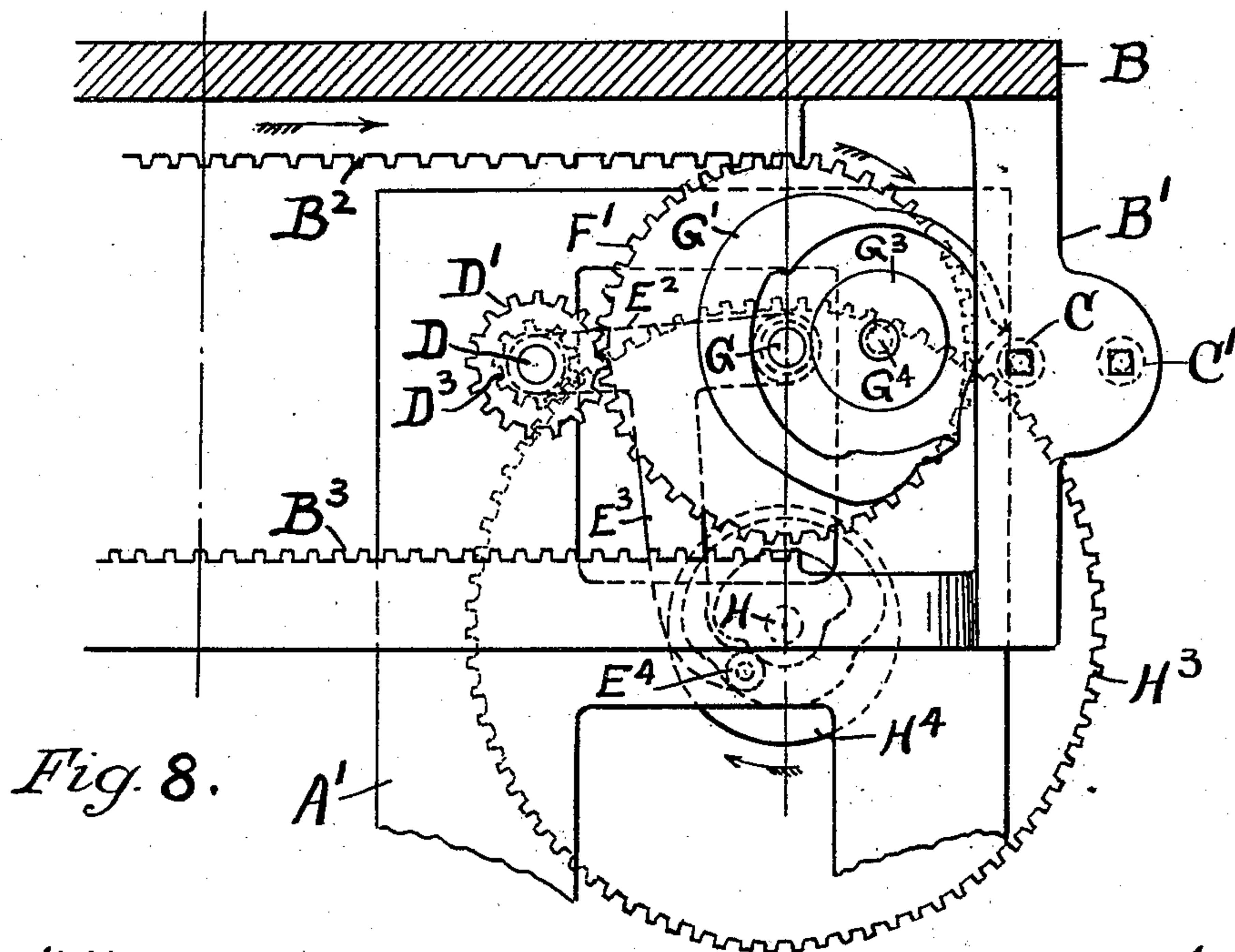


Fig. 8.

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# UNITED STATES PATENT OFFICE.

HENRY HARTT, OF CHICAGO, ILLINOIS.

## BED-MOTION FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 711,625, dated October 21, 1902.

Application filed January 25, 1901. Serial No. 44,694. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY HARTT, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Bed-Motions for Printing-Presses, of which the following is a specification.

My invention relates to the bed-motion for printing-presses, and has for its object certain improvements in the driving mechanism therefor, and more particularly in the devices for reversing the motion of the bed at the end of the stroke.

In the accompanying drawings, Figure 1 is a front elevation of the mechanism; the bed being shown in section. Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is a section on line 3 3 of Fig. 1. Figs. 4, 5, 6, 7, and 8 are elevations showing successive stages of reversing the bed movement at the end of the stroke.

In the said drawings, A represents the framework of a printing-press, and A' a secondary framework for supporting the bed-moving devices. The bed B has secured to it an upper rack B<sup>2</sup> and a lower rack B<sup>3</sup>, which are supported from the bed B by the arms B'. Secured to each arm B' are two rollers C and C', which rollers are acted upon by a cam for reversing the motion of the bed. Suitably supported in the frame A and in the secondary frame A' is a driving-shaft D, on which are gears D', D<sup>2</sup>, and D<sup>3</sup>. Adjacent to and parallel with the shaft D is a long bearing E, which is pivoted to the shaft D by two arms E' and E<sup>2</sup>. Extending downward from the arm E<sup>2</sup> is another arm E<sup>3</sup>, the lower end of which is provided with a roller E<sup>4</sup>, which is engaged by a cam H<sup>4</sup> on a shaft H; also, on the shaft H is a gear H<sup>3</sup>, which is driven by the gear D<sup>3</sup> on the shaft D. Inside of the bearing E is a sleeve F, on the outer end of which is a gear F', located in the plane of the racks B<sup>2</sup> and B<sup>3</sup>. The gear F' is driven by the gear D' and is of such size that the cam H<sup>4</sup>, acting upon the roller E<sup>4</sup>, will move the bearing E, so as to shift the gear F' from rack B<sup>2</sup> to rack B<sup>3</sup>, or vice versa. Inside of the sleeve F is a shaft G, on the front end of which is a cam G' and on the other end of which is a gear G<sup>2</sup>, driven by the gear D<sup>2</sup> on

the shaft D. The cam G' is in the form of a lip projecting from its face, as shown in Figs. 1 and 3 to 8. Inside of the cam G' is a loose roller G<sup>3</sup>, mounted upon a pivot G<sup>4</sup>.

It will be apparent from the description just given that the cam G' rotates upon a center G, which is the shaft which drives it. The lip of the cam G' is cut away at one face, so that the roller C may enter the groove between the lip and the interior roller G<sup>3</sup>. Fig. 1 shows the bed at the middle of its stroke with the gear F' in engagement with the lower rack B<sup>3</sup>, the direction of movement being that shown by the arrow on the rack B<sup>3</sup>. As this motion continues the bed will be moved to the left, and the rollers C and C' at the right end of the bed will be moved toward the cam G'. As the bed moves toward the left the cam G' will rotate on its center G. By the time the end of the rack reaches the center of the shaft G the cam H<sup>4</sup> reaches a position just prior to the time when it begins to shift the gear F' from its lower to its upper position. Two successive stages of the cam H<sup>4</sup> are shown in Figs. 4 and 5. Also as the left end of the bed approaches the cam G' the corresponding successive stages of said cam G' are also shown in Figs. 4 and 5, the latter figure showing when the lip begins to enter the space between the rollers C and C'. As the motion continues the cam will engage first the roller C between the lip and the inner roller G<sup>3</sup>, but subsequently will engage the outer roller C'. Fig. 6 shows the position when the cam G' has completed a half-revolution from the position shown in Fig. 4. In Fig. 7 the position of the cam G' is advanced to the point where it begins to leave the roller C and the cam H<sup>4</sup> is at the position which has shifted the gear F' from its lower to its upper position. In this position the gear F' engages the rack B<sup>2</sup> and is moving the bed rapidly toward the right, so that by the time the cam G' has moved to the position shown in Fig. 8 the roller C' is clear of the forward lip of said cam. In arranging the movements here described I have made the devices so that the length of the rack B<sup>2</sup> or the rack B<sup>3</sup> is equal to the circumference of the gear F', and consequently one revolution of the gear F' will make a complete reciprocation of said bed minus that part of the



motion which is used in stopping and starting. For the purpose of reducing the time of stopping and starting to a period occupied by one-half of the revolution of the gear F', I  
5 arrange the drive for the gear F' and the cam G' so that the said cam makes two revolutions to one of the gear. By this means a complete revolution of the said cam is occupied in stopping, reversing, and starting the  
10 bed-motion. It will be noticed that the bearing E is long and substantial, the sleeve F, which carries the gear F', is also long and extends within the bearing, and, further, that the shaft G is also within the sleeve. I thus  
15 have a movable bearing, a sleeve within the bearing, and a shaft within the sleeve, all of which makes a condensed and convenient construction. It will also be noticed that the cam revolves in the same direction as the gear  
20 and upon the same center.

What I claim is—

1. In the bed-motion of a printing-press, a bearing and means for moving it, a sleeve within said bearing, a bed-moving gear mounted  
25 on the end of said sleeve, a shaft within said sleeve, a bed-reversing cam on said shaft, and means for driving said shaft.

2. In the bed-moving devices of a printing-press, a movable bearing, a sleeve within said  
30 bearing, a shaft within said sleeve, bed-driving and bed-reversing devices on said sleeve and shaft respectively, and means for driving said sleeve and said shaft.

3. In a printing-press, a movable bed, upper and lower racks secured to said bed, a gear and means for moving it from one rack to the other, a bed-reversing cam adjacent to said gear and rotating on a center coincident with the center of said gear, and means for driving said cam at a speed greater than the  
40 speed of said gear.

4. In a printing-press, a movable bed, upper and lower racks secured to said bed, a bearing, a sleeve within said bearing, a shaft within said sleeve, a gear secured to said  
45 sleeve, a bed-reversing cam secured to said shaft, separate driving devices for said gear and said cam, one or more rollers secured to each end of said bed and arranged to be engaged by said cam, and means for moving  
50 said bearing so as to shift said gear from one rack to the other.

5. In the bed-reversing devices of a printing-press, a revolving shaft, a grooved cam driven to said shaft, said cam having one of  
55 its operating-faces rigidly secured to said shaft and another operating-face loosely carried by said shaft so that it is movable thereon, and rollers acted upon by the rigid and loose faces of said cam.  
60

Signed at Chicago, Illinois, this 23d day of January, 1901.

HENRY HARTT.

Witnesses:

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C. L. REDFIELD.