

(No Model.)

J. L. COX.  
TYPE BED OPERATING MECHANISM.

No. 433,396.

Patented July 29, 1890.

Fig. 1.

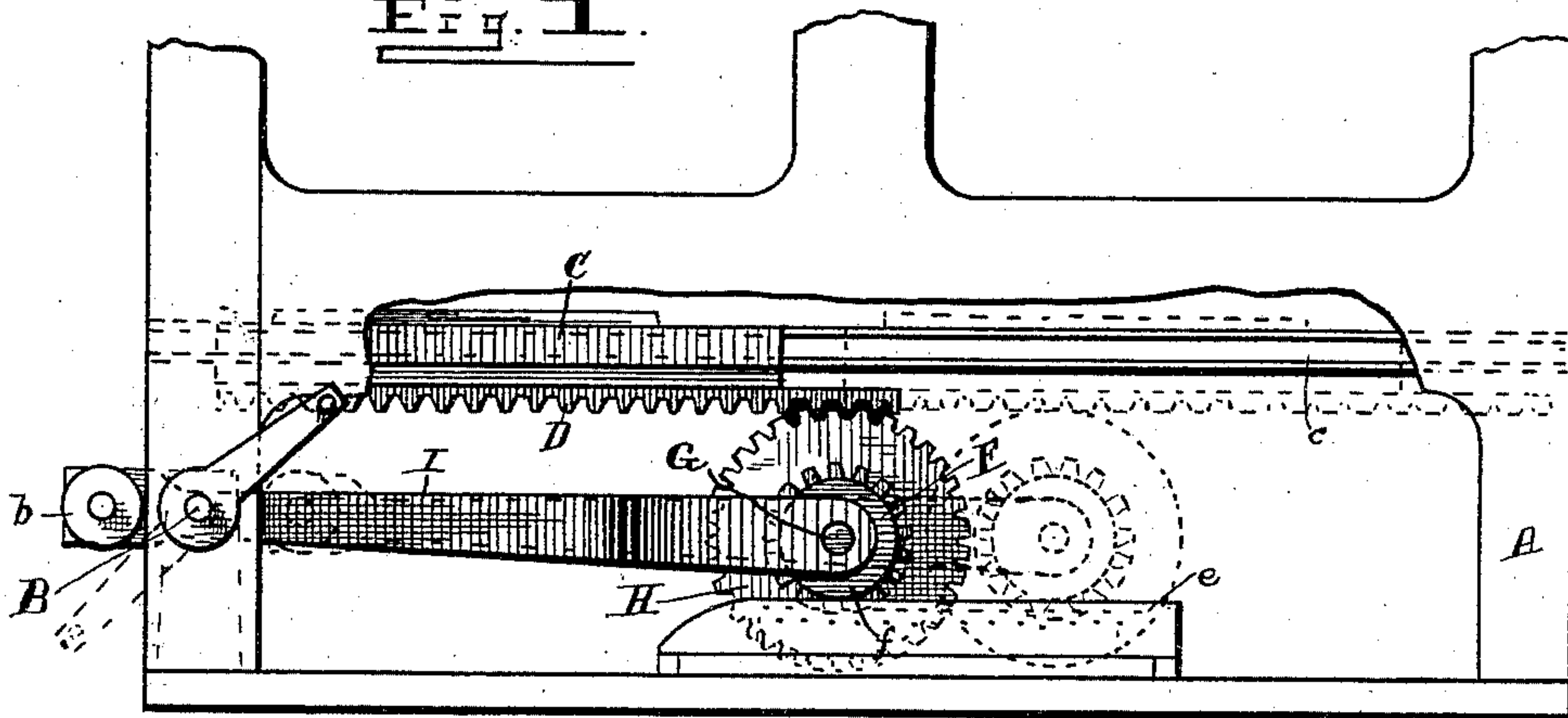


Fig. 2.

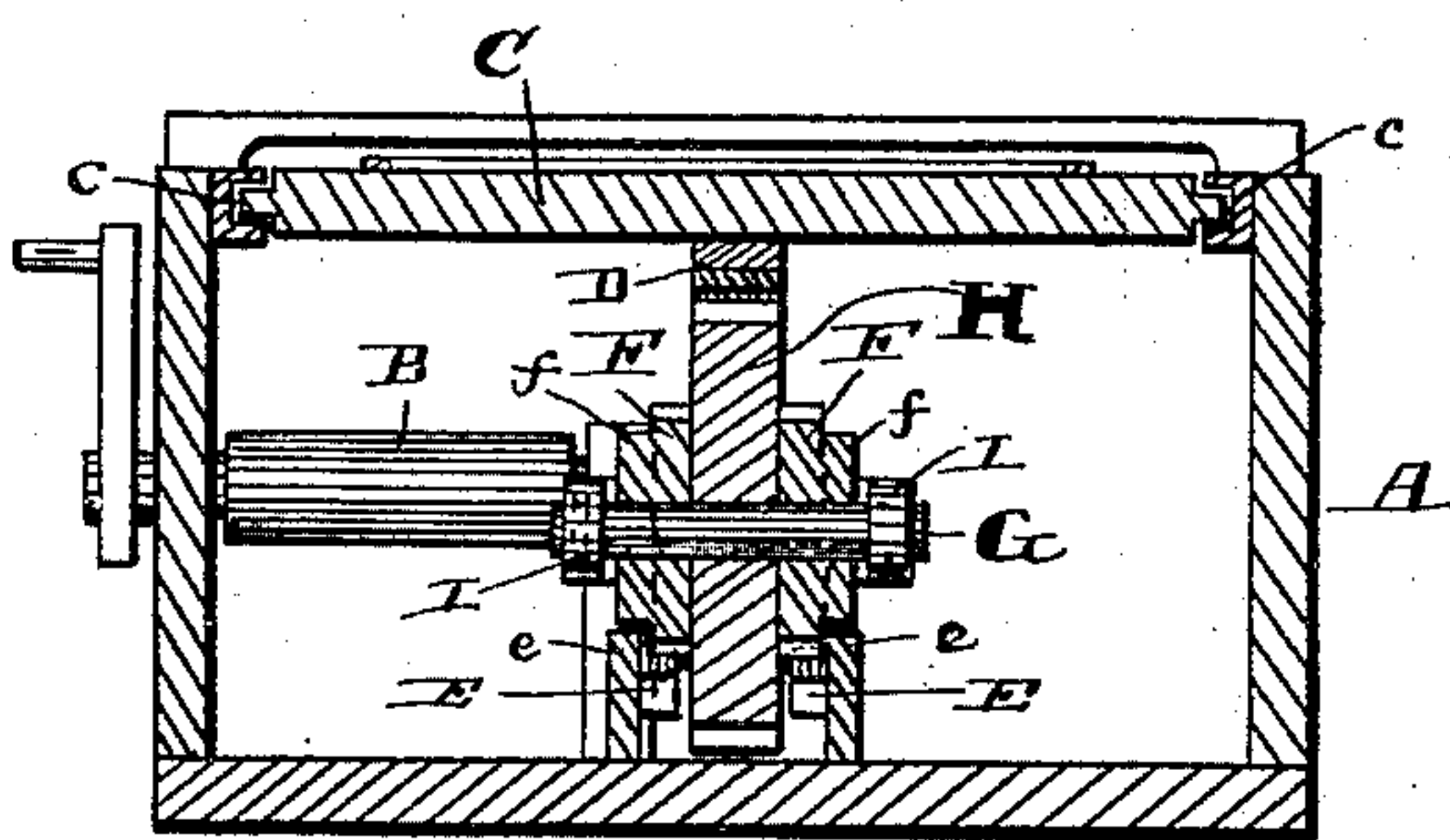
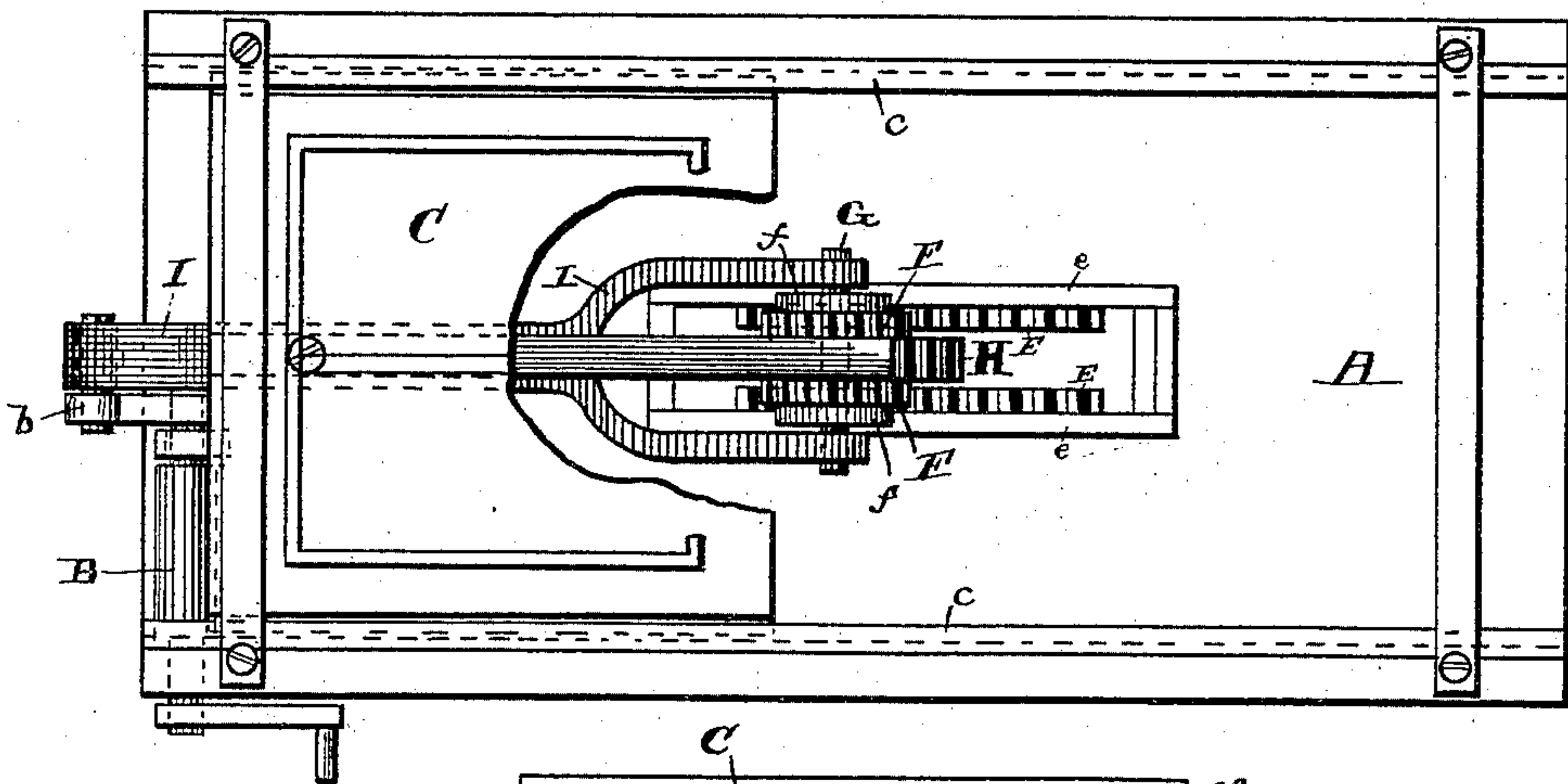


Fig. 3.

Witnesses

*P. L. Brooks.*

*A. E. Towill*

Inventor

*Jos. L. Cox*

By his Attorney

*T. H. Alexander*



# UNITED STATES PATENT OFFICE.

JOSEPH L. COX, OF BATTLE CREEK, MICHIGAN, ASSIGNOR TO THE DUPLEX  
PRINTING PRESS COMPANY, OF SAME PLACE.

## TYPE-BED-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 433,396, dated July 29, 1890.

Application filed November 5, 1888. Serial No. 289,948. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH L. COX, of Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Type-Bed-Operating Mechanisms; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is a detail sectional view of a printing-press, showing a side elevation of my improved bed-operating mechanism. Fig. 2 is a plan view of the bed-operating mechanism, with the bed partly broken away to show the gearing; and Fig. 3 is a cross-sectional view of the same through the gears.

This invention is an improvement in bed-operating mechanisms for printing-presses, which mechanism will convert a rotary-crank movement into a reciprocating movement and at the same time increase the length of the reciprocating movement, and this is effected by the novel construction and combination of parts, hereinafter described and claimed.

In the accompanying drawings, the letter A designates the lower portion of a printing-press frame, in one end of which is journaled a shaft B, provided with a crank *b* at its inner end, which is adapted to rotate in a plane corresponding with a line drawn centrally, longitudinally, and vertically through the press. Said shaft may be driven by belting, gearing, or in other proper manner.

C designates the ordinary bed of the press moving horizontally in guides *cc* on the frame A. To the under side of this bed and in the central longitudinal line thereof is attached a rack-bar D. Below this rack-bar and secured fixedly to the floor or bottom of the frame are two racks *E E'*, which are parallel to but below and on opposite sides of bar D. These racks, preferably, have slightly-upstanding flanges *ee* at their outer edges, which prevent the lateral disengagement of the hereinafter-described pinions *F F* therefrom and support the latter also. Pinions *F F* are fixed on a movable shaft G, upon which is also fixed a gear H, the latter being intermediate between pinions *F F* and projecting between racks *E E*. Pinions *F F* are formed with an-

nular shoulders or rollers *f f*, that run upon flanges *ee*, while the teeth of the pinions are engaged by racks *E E*. The rollers *f f*, it will be observed, sustain the weight of shaft G and the gear and pinions thereon by running upon the flanges *ee*, thereby relieving the racks *E* and pinions *F* from much of the strain and wear ordinarily incident thereto, since the pinions do not bear upon the racks, but simply mesh therewith. This construction further upholds gear H in proper mesh with rack D, so that the movement of the bed is less affected by wear of the teeth of the racks and gears than any heretofore produced. The teeth of gear H mesh with rack D, as shown.

I is a connecting-rod attached to the wrist-pin of crank *b* at one end and having its inner end bifurcated and embracing the pinions. The ends of shaft G are journaled in the arms of the bifurcations thereof.

The operation is as follows: Motion being imparted to rod I from shaft B, the rod draws shaft G back and forth over racks *E E*, and the teeth of pinions *F F*, engaging said rack, cause shaft G to turn and with it gear H. The teeth of the latter engaging rack D cause it to move the bed forward or backward, according to the motion of shaft G, and as gear H is of greater diameter than pinions *F F*, but rotates therewith, it has a greater amount of peripheral movement than it has reciprocating movement, and the rack D and bed are consequently moved forward or backward to an extent corresponding to the peripheral movement of gear H. The pinions *F* have a peripheral movement equal in extent to the diameter of the circle described by the crank-pin, plus one-half their diameter; or, in other words, if rack D engaged pinions *F*, as in the so-called "English stop-cylinder movement," at each forward or backward movement the bed would travel a distance equal to the diameter described by the crank-pin, plus one-half the diameter of the pinion; but by employing the gear H, as described, which is about twice the diameter of the pinion *F*, a movement is imparted to the bed twice as great in extent, or equal to three times the diameter of the circle described by the wrist-pin. From this it will be seen that in order to give a predetermined amount of movement to the bed I can, by the employment of the compound



gearing, as described, greatly shorten the length of the crank, the movement of the pinions, and consequently the length of the fixed racks engaging the same, without shortening  
5 or retarding the movement of the bed, and another advantage is that I can place the bed lower. For instance, suppose the bed must move forty-five inches. If the machine was built on the English stop-cylinder-movement  
10 plan the crank would have to describe about a thirty-inch circle, and it would be necessary to have thirty inches space between the bed-plate rack and the fixed rack, making an ungainly machine, as it is desirable to have the  
15 bed as low as possible, both for convenience and cheapness. If my gearing is employed the crank will only have to describe about a fifteen-inch circle and the bed-plate can run within about fifteen inches of the floor, and  
20 the length of stroke of the crank and gearing being so much lessened, I can shorten the machine that much. I am thus enabled to build a lighter, more compact, and equally as efficient machine as those now in use.  
25 Of course by varying the relative sizes of the gears the movement of the bed can be varied while using the same stroke of the

connecting-rod, or by having an adjustable connection between the wrist-pin and crank I can vary the stroke of the bed.

Having described my invention, I claim—

In a printing-press, the combination of a reciprocating type-bed plate and a rack D, secured to the under surface thereof, with a pair of racks E E, fixed below the bed-plate  
35 and parallel with rack D, and the portions or flanges *e e* outside of and rising above said racks, the shaft G, carrying a central gear H, meshing with rack D, two pinions F F, respectively, meshing with racks E E, and two  
40 rollers *f f*, running upon the flanges *e e* and sustaining the weight of the shaft with its gear and pinions upon said flanges, and the pitman connected to said shaft for shifting it back and forth over racks E E, all substan-  
45 tially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOSEPH L. COX.

Witnesses:

JAMES BOUGHTON,  
FRED WELLS.