C. BACKER.

SHIFTING RACK BED MOVEMENT.

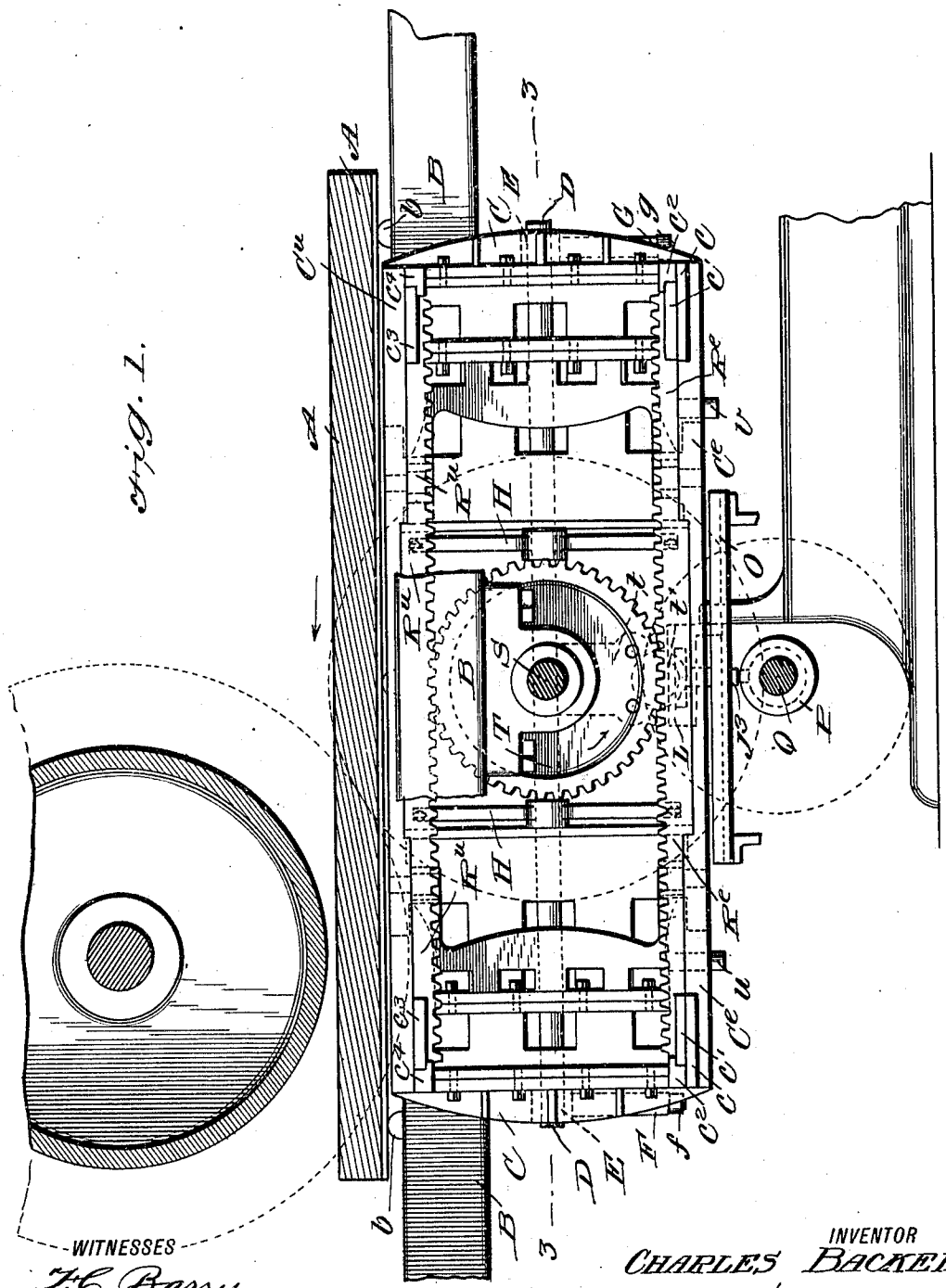
APPLICATION FILED MAY 26, 1909.

952,973.

Patented Mar. 22, 1910.

6 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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6 SHEETS—SHEET 2.

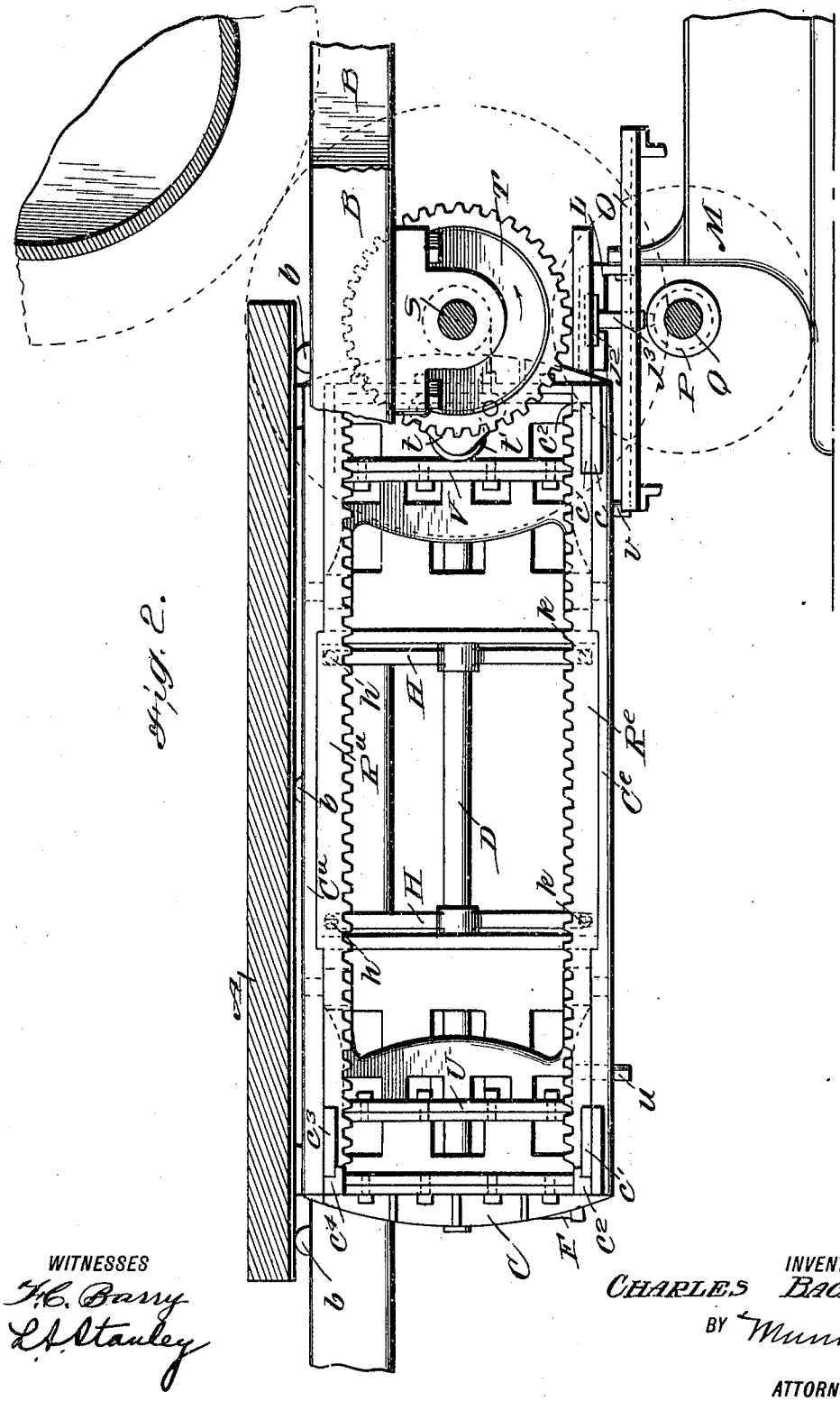

Fig. 2.

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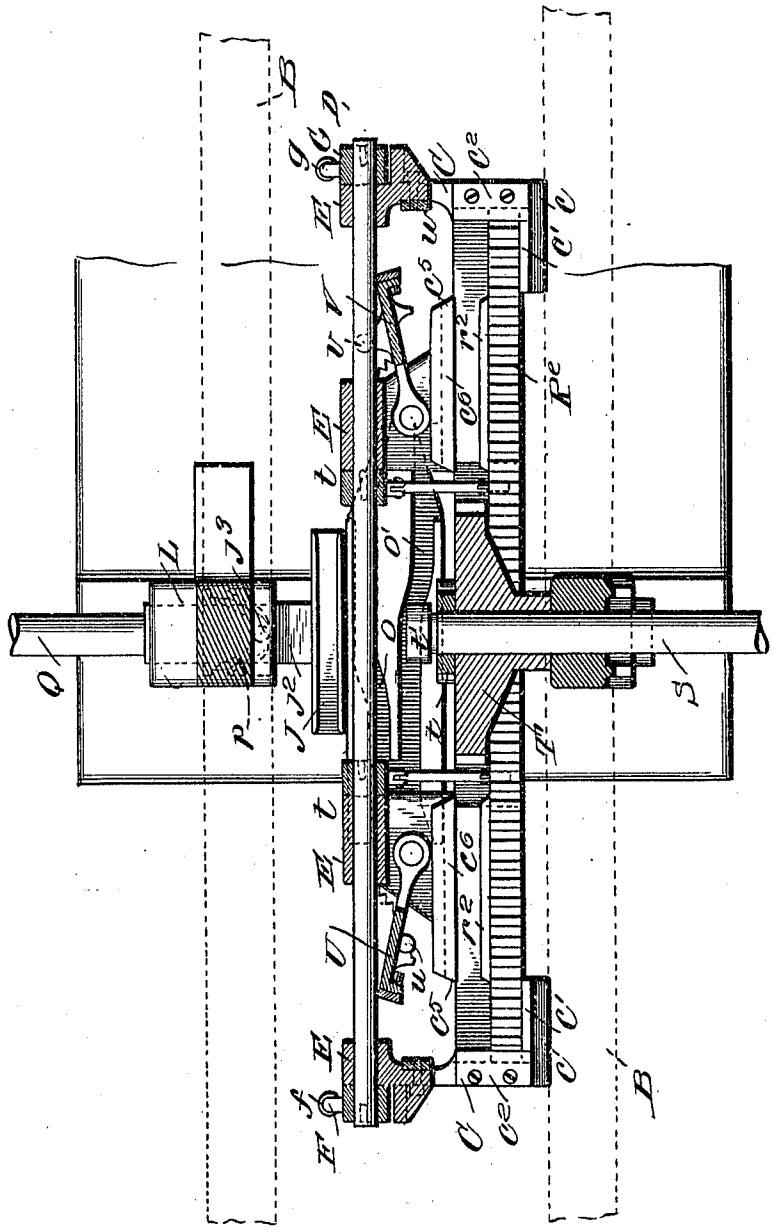
6 SHEETS—SHEET 3.

Fig. 3.



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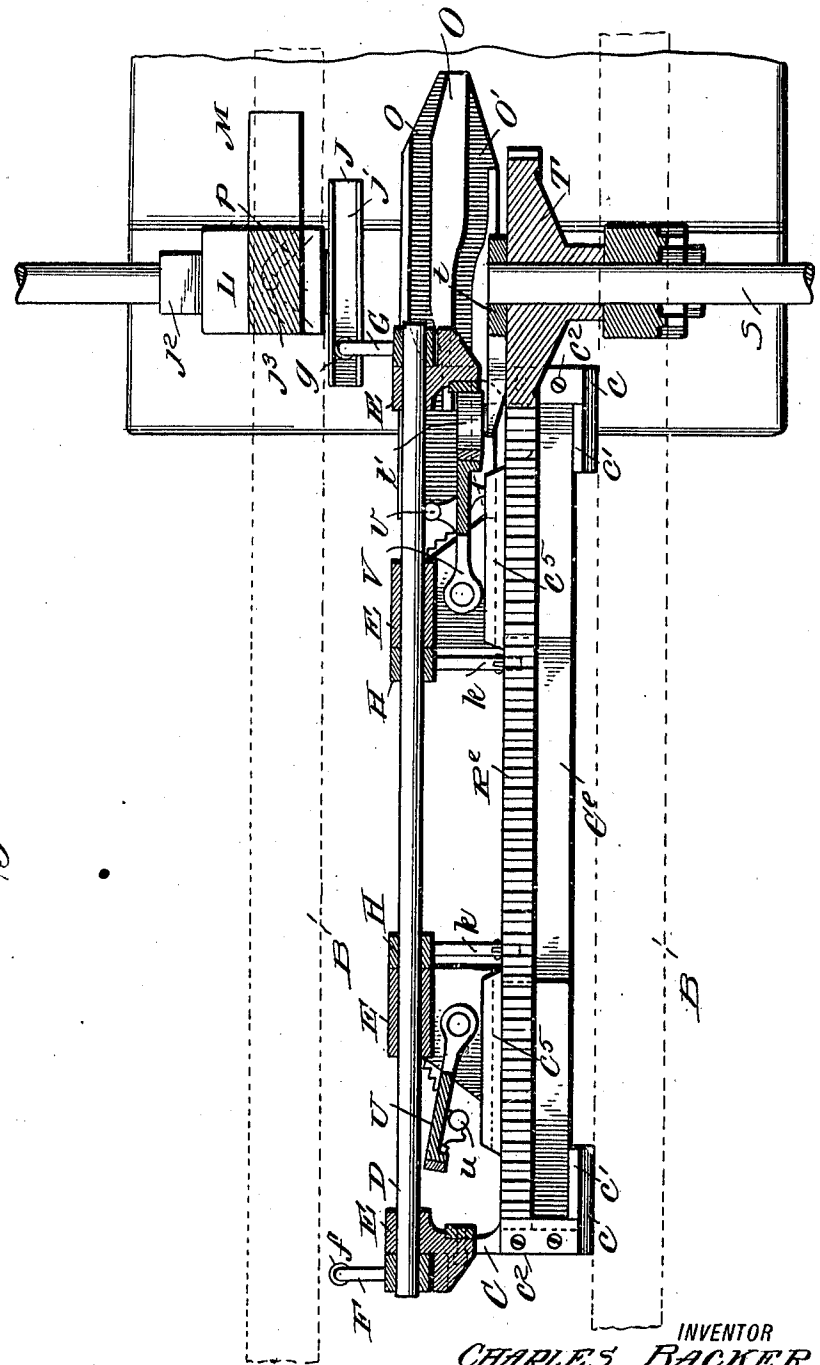

Fig. 4.

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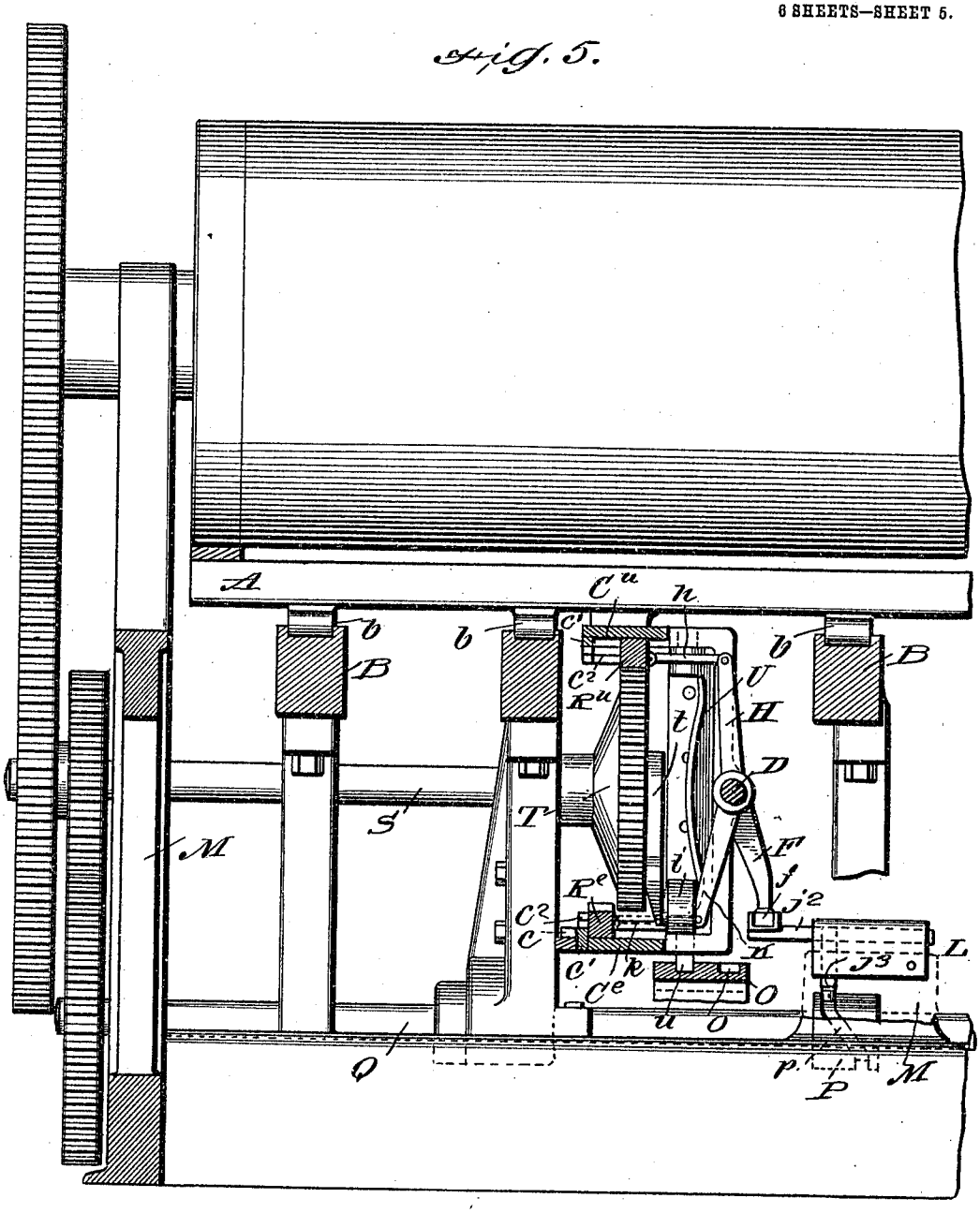
6 SHEETS—SHEET 5.

Fig. 5.



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6 SHEETS—SHEET 6.

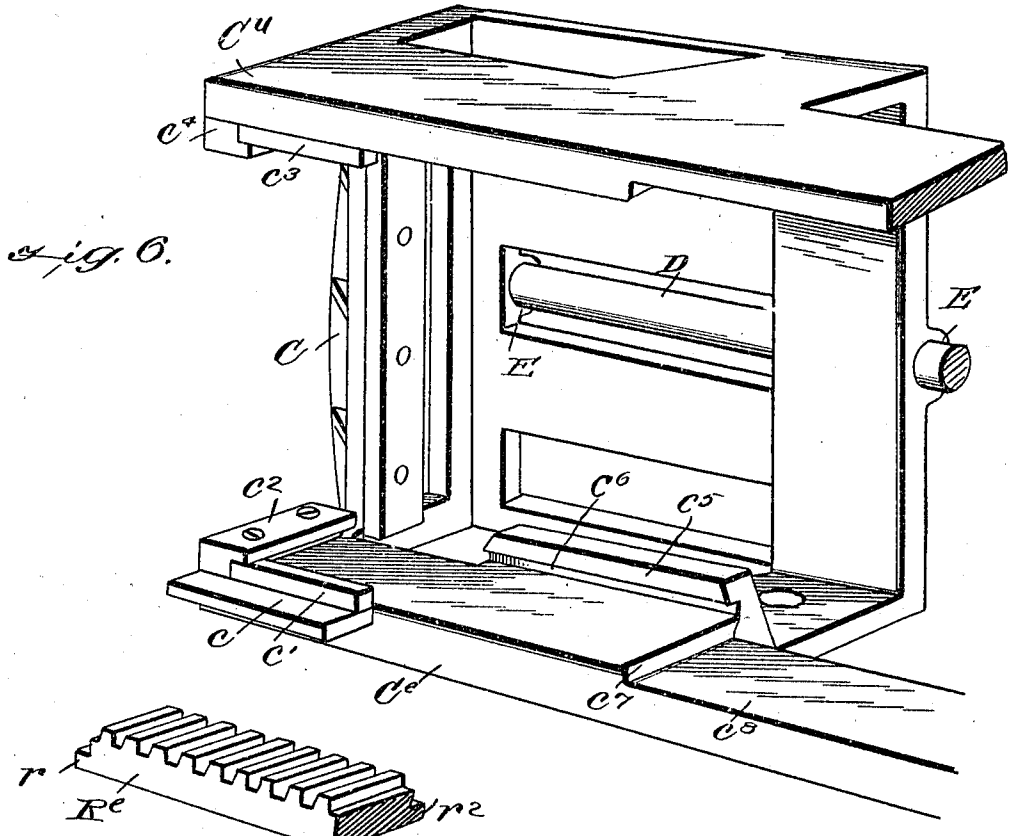

Fig. 6.

Fig. 7.

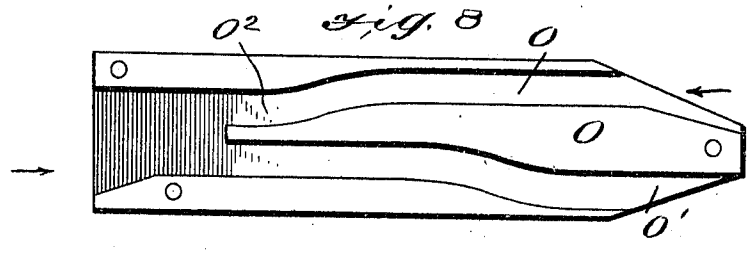

Fig. 8

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UNITED STATES PATENT OFFICE.

CHARLES BACKER, OF PLAINFIELD, NEW JERSEY.

SHIFTING-RACK BED MOVEMENT.

952,973. Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed May 26, 1909. Serial No. 498,402.

To all whom it may concern:

Be it known that I, CHARLES BACKER, a citizen of the United States, and a resident of Plainfield, in the county of Union and State of New Jersey, have made certain new and useful Improvements in Shifting-Rack Bed Movements, of which the following is a specification.

My invention relates to an improved means by which the bed of a printing press may be reciprocated, and it consists in the constructions, combinations and arrangements herein described and claimed.

An object of my invention is to provide a device in which the reciprocatory movement is effected by a driving gear which is located on a stationary shaft and which is rigidly secured thereto, the mechanism thus described having far greater durability than in similar devices in which the driving gears are shifted with respect to the shaft.

A further object of my invention is to provide movable racks for engagement with the driving gear and means for shifting the racks when they are out of engagement with said gear.

A further object of my invention is to provide means for positively actuating the shifting means so as to shift the racks at a predetermined time to effect the reverse movement of the bed plate.

Other objects and advantages will appear in the following specification and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings in which similar reference characters indicate like parts in the several views and in which—

Figure 1 shows a section through a portion of a printing press showing my improvement in side elevation; Fig. 2 is a similar view showing the opposite side and the bed plate in its shifted position; Fig. 3 is a horizontal section through the device along the line 3—3 of Fig. 1 showing the gates in their opened position; Fig. 4 is a similar view showing the frame in its shifted position and the gates closed; Fig. 5 is a vertical transverse section of a portion of the printing press showing my improvement in end elevation; Fig. 6 is a detail view in perspective showing the construction of the rack frame; Fig. 7 is a detail view of a portion of the rack and Fig. 8 is a detail plan view of the run ways for the gate operating cam rollers.

The type of printing press to which my invention applies is, as has been stated, that in which a reciprocatory movement is imparted to a bed plate and the particular kind of press to which it is especially adapted is that having the "Miehle" movement.

In the following specification I have described only such parts as are necessary for a clear understanding of my invention.

Referring now to Figs. 1, and 2, A denotes the bed plate of a printing press of the Miehle type, which is slidingly supported upon a frame B, by means of the rollers b, see Fig. 5. Secured to the central part of the bed plate is a frame C, the construction of which is shown best in Figs. 5 and 6. In the latter figure it will be seen that the lower frame member C^e is provided with a laterally extending plate c having an upwardly extending flange c', and at the end of the lower frame member there is an inverted L-shaped block c^2. The upper frame member C^u is provided with similar retaining flanges c^3 and c^4 respectively. On the opposite side of the lower frame member C^e is an upwardly extending flange c^5 having a slot c^6 running longitudinally thereof. The upper frame member C^u is provided with a similar downwardly extending flange having a slot which is not shown in the perspective view in Fig. 6, being hidden by the upper frame member itself, but which is similar to the flange c^5.

Referring now to Figs. 1 and 2 it will be seen that the frame C bears two racks, a lower rack R^e and an upper rack R^u. The end of the rack R^e has a flange r, see Fig. 7, arranged to extend underneath the flange c^2 at each end of the frame, the body of the rack resting upon the lower member C^e. The rack is intended to be shifted transversely of the frame member C^e and is guided in its movement by a shoulder c^7 on the frame member formed by a recess c^8 in the latter, into which the enlarged portion or main body of the rack R^e is located. The upper frame member is similarly arranged and the rack R^u is held for sliding movement in a similar manner to that of the lower rack R^e. The means by which the racks are shifted is shown in Figs. 3, 4 and 5.

Referring now to Figs. 3 and 4 it will

be seen that there is a rock shaft D which is journaled in the bearings E on extensions of the frame C. Secured to the rock shaft D are the arms F and G, see Figs. 3 and 4 which are provided with the rollers f and g respectively. Also secured to the rock shaft are upwardly and downwardly extending arms H and K which are pivotally connected by means of the links h and k to the upper and lower racks respectively.

It will be seen by inspecting Fig. 5 that the movement of the rock shaft will cause a corresponding movement of both racks in their frames, one rack moving in one direction while the other moves in the opposite direction. This movement is accomplished by means of the rollers f and g on the arms F and G. These rollers are arranged to enter a run way j in a guide J, see Figs. 3 and 4, which has a laterally projecting arm j^2, see Fig. 5, slidingly supported in a slotted bracket L which is secured to the frame M of the machine in the manner shown in Fig. 2. The arm j^2 has a downwardly extending pin j^3 whose lower end is arranged to enter the groove p of a cam cylinder P on the shaft Q. It will thus be seen that as the shaft Q is turned the guide J is reciprocated in a direction transverse to the line of movement of the bed plate.

The construction thus far described relates to the principal part of my invention. In order to show the complete working of the device, it will be necessary to understand the relation of certain working parts and I will therefore describe briefly the construction in order that a clear understanding of the invention may be had although some of these parts are old and their operations are well understood by those versed in the art.

The driving mechanism, as stated before, consists of a centrally disposed gear T on the end of a stationary shaft S which is carried by the main frame M and is driven in any suitable manner. The gear T is provided with a plate t at the outer end of which is a roller t'. At the end of the carriage frame are the two pivoted gates U and V respectively, see Figs. 3 and 4, whose rollers u and v are adapted to enter the slots o and o' of the cam plate O. This cam plate is shown in detail in Fig. 8. The guide gates, the cam plate and the roller t' on the gear T as well as the manner of operation of these parts are such as are found in the Miehle movement and form no part of my invention.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. Power is applied to the driving shaft S. Assuming now that the gear is in the position shown in Fig. 5, in engagement with the upper rack, there will be a movement of the bed plate in the direction in which the gear is turning. Thus in Fig. 1, if the gear is in mesh with the upper rack, the bed plate will be moved in the direction indicated by the arrow. As the roller t' revolves it will pass underneath the gate V whose roller v has entered the slot o of the cam plate O. When the roller is in the run way w, shown in Fig. 3, the gate V is closed since its roller v has passed the portion o^2 of the slot o, being now in the position shown in Fig. 2. The carriage bearing the bed plate is carried on so that the gear T is disengaged from the rack, as shown in Fig. 2. The operation thus far described is the ordinary operation of this type of press. As the gear is about to leave the end of the rack, the roller g of the arm G enters the run way j of the guide J, see Fig. 4. The groove p on the cam cylinder P is so arranged that when the roller g is in the run way there will be a movement of the guide J into the slotted bracket L, see Fig. 5. This will cause a lateral shifting of both racks R^u and R^e, the former being moved out of the plane of the gear T and the latter being moved into the plane of the gear.

Referring now to Fig. 7, it will be seen that the rack is provided with a tongue r^2 which is arranged to enter the groove c^6 of the flange c^5, see Fig. 6, this construction preventing any possible movement of the rack away from its supporting frame. As the roller t' continues to revolve, the carriage frame is moved in the opposite direction in the well known manner and the gear being in line with the lower rack teeth now meshes with the latter and causes the reverse movement of the carriage and the bed plate which it bears. The operation of the opposite gate U at the end of the stroke is similar to that of the gate V, the roller u of the gate U entering the lower slot o' of the cam plate O and causing the operation of the latter. Thus it will be seen that the backward and forward movement of the bed plate is accomplished by the shifting of the upper and lower racks simultaneously in opposite directions.

The driving gear is on a stationary shaft, these parts being of the most simple and most durable construction, and maintaining a constant driving position.

I claim:

1. The combination with the main frame of a printing press, of a slidable bed plate carried thereby, a rack frame secured to said bed plate, upper and lower racks carried by said rack frame and slidable transversely thereof, a stationary shaft provided with a gear, a rock shaft, connections between said rock shaft and each of said racks, an arm carried by said rock shaft and a reciprocating guide member carried by said main frame and adapted to engage said arm to

cause a shifting of the racks and their alternate engagement with said gear.

2. The combination with the bed plate of a printing press, of a rack frame secured thereto, a rock shaft carried by said frame, slidable racks disposed on said frame and arranged to be moved transversely thereof, a cam shaft provided with a cam member, a movable guide adapted to be shifted longitudinally of said cam shaft, an arm on said rock shaft adapted to enter said guide and connections between said rock shaft and said movable racks for shifting the latter.

3. In a bed movement, a frame, a slotted bracket carried thereby, a movable guide supported in said bracket, a cam shaft provided with a slotted cam member, a pin on said guide arranged to enter said slot, a rock shaft provided with an arm having a roller adapted to enter said guide, a bed plate, a rack frame carried thereby, movable racks, and connections between said rock shaft and said racks for shifting the latter.

4. The combination with the main frame of a printing press, of a bed plate slidably mounted thereon, a rack frame secured to said bed plate, upper and lower racks slidably mounted on said frame, a rock shaft carried by said frame, arms at each end of said rock shaft, certain of said arms each being provided with a roller, links connecting each of said racks with other of said arms, a slotted bracket secured to said main frame, a guide member slidingly supported in said slotted bracket and provided with a run way arranged to receive said rollers, said guide member being provided with a pin, a cam shaft provided with a slotted cam member arranged to receive said pin and a stationary shaft mounted in said frame and having a gear adapted to be engaged by each of said movable racks.

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Witnesses:
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PHILIP JAHN.