(No Model.) 2 Sheets—Sheet 1.

I. D. BOYER & J. D. RIGGS.

CASH REGISTER AND INDICATOR.

No. 422,287. Patented Feb. 25, 1890.

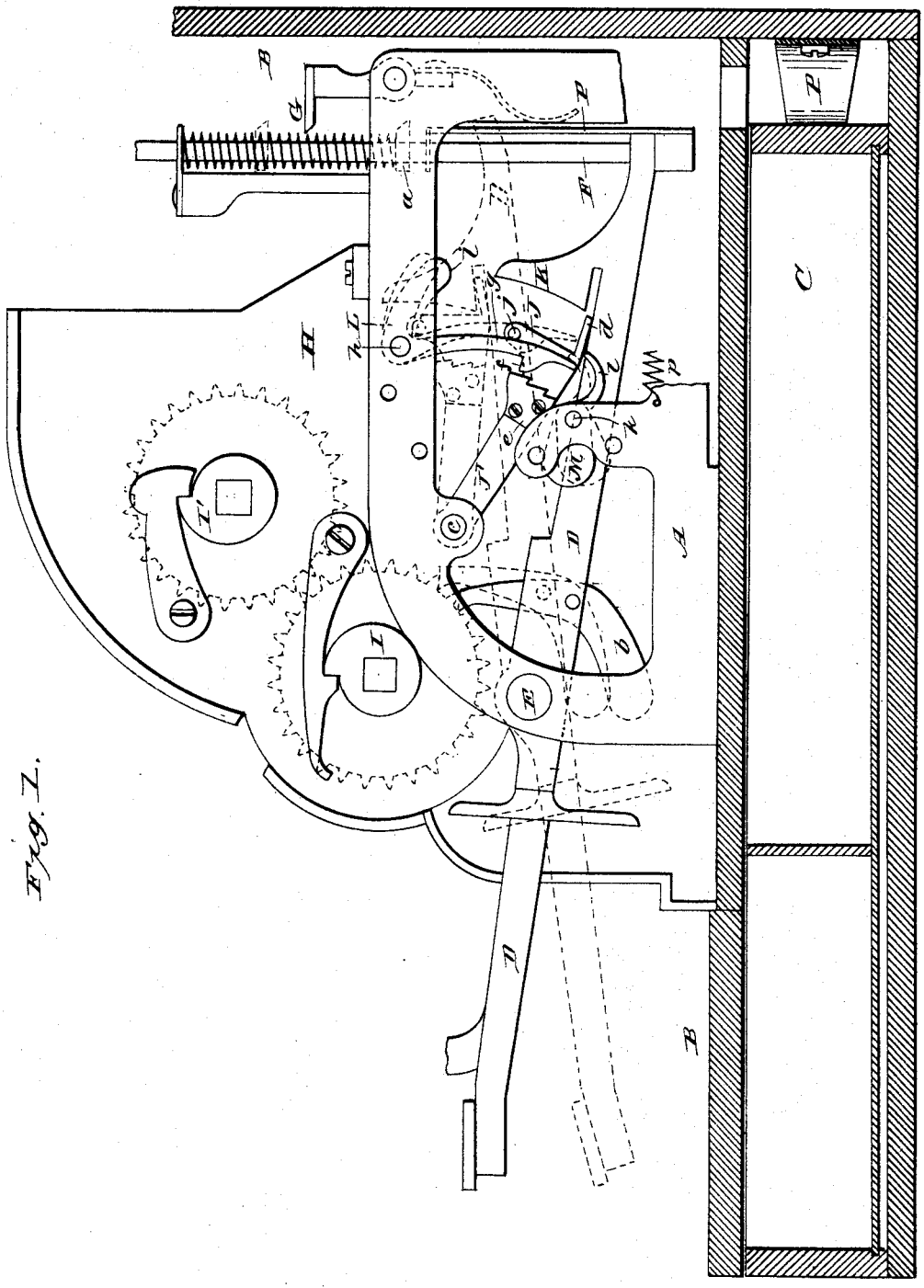

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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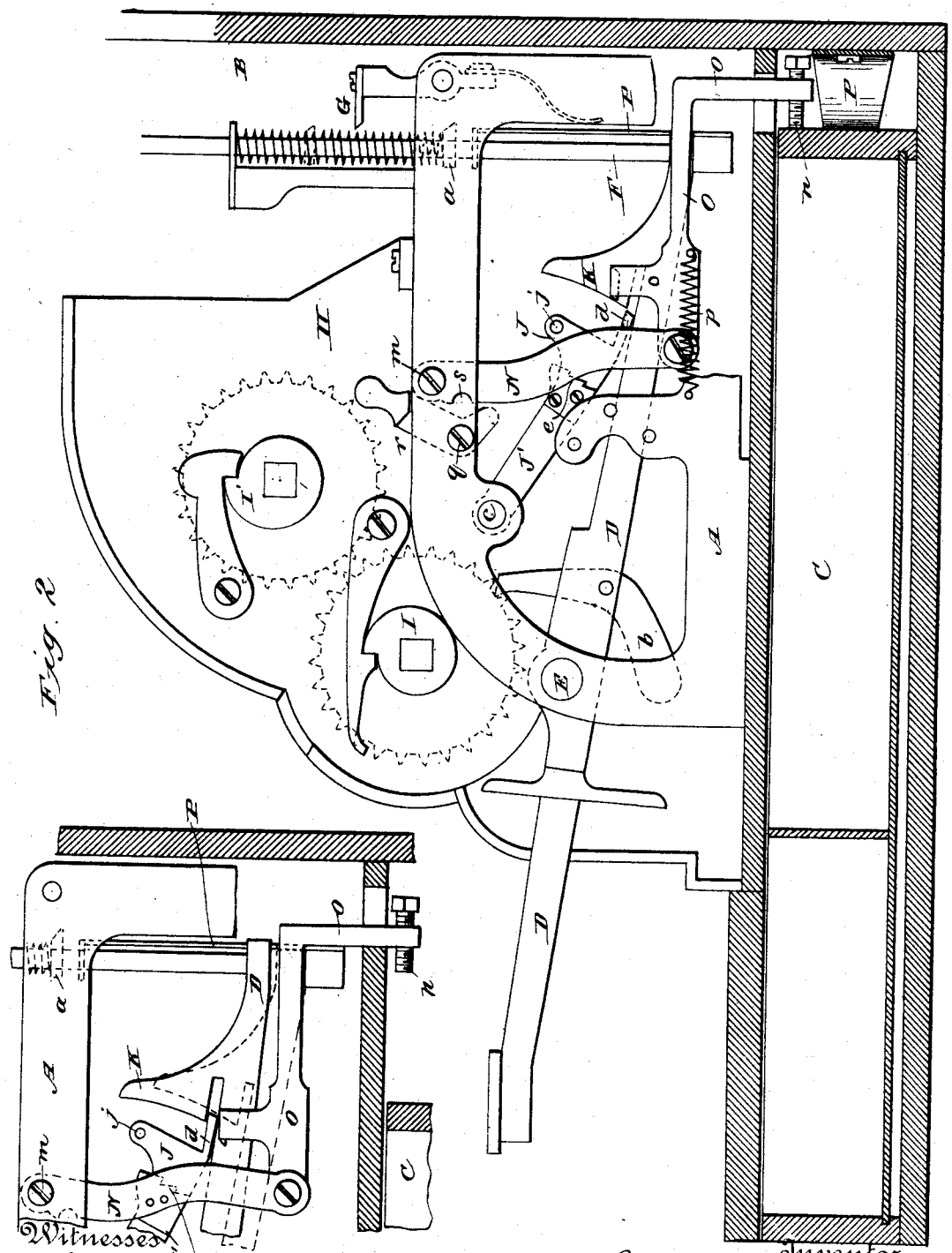

Fig. 2

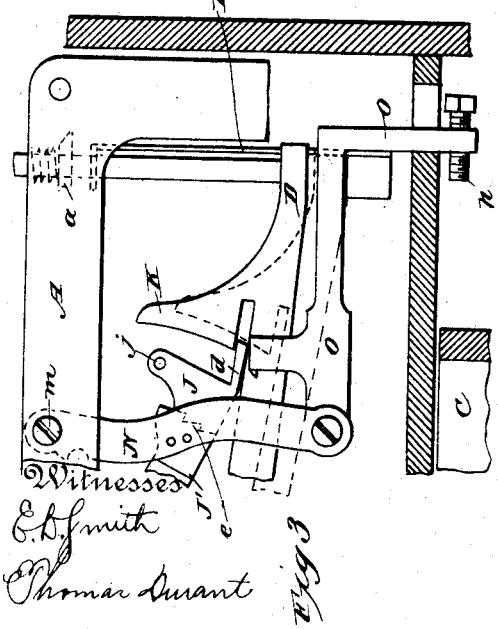

Fig 3

Witnesses
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UNITED STATES PATENT OFFICE.

ISRAEL DONALD BOYER, OF DAYTON, OHIO, AND JOHN D. RIGGS, OF GUELPH, ONTARIO, CANADA, ASSIGNORS TO THE NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 422,287, dated February 25, 1890.

Application filed November 7, 1889. Serial No. 329,595. (No model.)

To all whom it may concern:

Be it known that we, ISRAEL DONALD BOYER and JOHN D. RIGGS, both citizens of the United States, the former residing at Dayton, Montgomery county, Ohio, and the latter at Guelph, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Cash Registers and Indicators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our present invention is an improvement upon that covered by the pending application of Israel D. Boyer, Serial No. 316,751, filed July 8, 1889, and is designed to simplify the construction illustrated in that application. Its novelty will be herein set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of so much of a cash register and indicator as is necessary to illustrate one feature of our invention, with a portion of the frame-work broken away and the case or cabinet in section. Fig. 2 is a corresponding view illustrating another feature of our invention. Fig. 3 is a detail of some of the parts shown in Fig. 2.

The same letters of reference are used to indicate identical parts in all the figures.

The frame-work A, which supports the working parts of the machine, is inclosed in the usual case or cabinet B, having in its lower portion a drawer-compartment, in which is fitted a money drawer or till C, which is automatically released upon the operation of any key, and partially propelled from the case by a spring at its rear side in the usual well-known manner.

D are the operating-keys pivoted on the shaft E, their front ends projecting through slots in the front of the case B and provided with numbered finger-buttons, while on their rear ends rest the usual tablet-rods F, carrying numbered indicating-tablets at their upper ends and provided with shoulders *a*, which are engaged by the supporting-wing G to hold up an elevated tablet-rod in the usual manner.

The registering mechanism may be of any suitable character; but in the machine illustrated in the drawings it is of one of the well-known forms employed in such machines, consisting of two banks of individual registering-wheels (shown in dotted lines) carried on longitudinal shafts supported in a supplemental frame H, carried by the frame A, the squared ends I I′ of which shafts are shown in Fig. 1. The wheels of the lower bank are actuated by the weighted dogs *b*, pivoted to the keys D, and the wheels of the upper bank are turned by and register the revolutions of those of the lower bank in the well-known manner.

J is a vibrating bar hung by side arms J′ at each end upon a rod *c*, connecting the two side frames of the machine and extending across and resting on the tops of the keys. This bar has a thin flange *d* extending the entire length of its rear lower side and resting on the keys. Immediately in rear of this bar J and its flange *d* the keys D are each provided with a slotted lug K, the mouth of whose slot is adjacent to the rear edge of the flange *d*, as shown. The front sides of the lugs K are shaped to conform to the arc of the circle traversed by the rear edge of the flange *d* as the bar J is vibrated on its pivotal support *c*, and thus as the bar is moved upward by the operation of any key the rear edge of the flange *d* will remain at the same distance from the front sides of the lugs K. As any key is operated and its rear end thereby lifted, the flange *d* enters the mouth of the slot in its lug K, so that that key is free to rise; but as the bar J is lifted with the key the flange *d* moves up the front sides of the lugs K on all the other keys and locks them from operation until the operated key has been completely reset to normal position. It results from the construction thus far described that when any key is substantially displaced from its normal position all the other keys become locked from operation and remain so locked until the first key has been restored to such position; also, that when two or more keys are simultaneously displaced from their normal position all of them be-

come locked by their lugs K to the flange of the bar J, and thereby coupled together, so that the further operation of one moves them all alike.

For the purpose of arresting a partially-operated key if released, and preventing it being restored to normal position until it has been first operated to its full extent, there is an arrester applied to the bar J to arrest and hold it and the key or keys, which may be locked to it in any position to which it may be moved less than the full limit of movement given it by the complete operation of the key. As shown in Fig. 1, this arrester consists of a rack *e*, secured to one of the side arms J′ of the bar and co-operating with a pawl which engages the rack as the bar J is lifted and becomes disengaged therefrom when the key and bar have reached their limit of upward movement. This pawl *f* is a shoulder or projection on the front side of the lower vertical arm *g* of a bell-crank L, pivoted to the frame-work at *h*, and the weight of whose other arm *i* normally presses the pawl *f* against the rack *e*. As a key is operated and the bar J lifted, the pawl *f* slips over the teeth of the rack *e* and engages therewith if the bar and key are released. Just as the key reaches its limit of upward movement a pin *j* on the side of the bar J strikes the arm *i* of the bell-crank L and throws its arm *g* and pawl *f* away from the rack *e*, as shown by the dotted lines in Fig. 1. To hold the rack and pawl out of engagement while the key and bar J are returned to normal position, there is a latch M, pivoted to the frame work at *k*, and having a forward weighted end and an upwardly-curved nose *l* at its rear end. The nose of this latch is of such width that its inner edge extends beneath the edge of the bar J or its flange *d*, so that when the bar J is in its normal position it presses it down and holds it in the position shown in Fig. 1. As any key is operated, the bar J is lifted off the nose of the latch, which is thereupon thrown upward by the gravity of its weighted forward end, which drops against a pin projecting from the frame-work, as shown by the dotted lines. The latch having assumed the position shown by the dotted lines, when the key and bar J reach their limit of upward play, and the pin *j* strikes the arm *i* of the bell-crank L, the lower end of the arm *g*, in assuming the position shown by the dotted lines, flips over the nose of the latch, and is prevented by the latter from falling back into engagement with the rack *e* as the key and bar J are returned to normal position. Just as they reach that position, however, the bar J again engages and presses down the nose of the latch to the position shown by the solid lines, whereupon the arm *g* and pawl *f* fall back against the rack *e*, ready for the operation of another key.

It results from this construction and arrangement of the parts that whenever any key is substantially displaced from normal position it cannot be returned thereto until it has been operated to its full extent, and that until it is so operated and returned to normal position all the other keys remain locked. In the construction shown and described in the application before referred to there was provided, for the purpose of locking the unoperated keys, a separate locking-bar extending across the rear ends of the keys and actuated from the bar J to move over the unoperated keys and lock them whenever any key was operated, and it has heretofore been necessary to employ such separate locking-bar; but by providing the keys with the slotted lugs having the curved forward sides adjacent to the bar J the lugs which before served merely to lock the operated keys to the bar now serve the double purpose of locking the operated keys to the bar and locking the unoperated keys from operation until the operated key or keys have been returned to normal position. It is also desirable in this class of machines to prevent the operation of the keys while the cash-drawer is open, and we have devised novel and simple means for this purpose. (Shown in Figs. 2 and 3.) Loosely pivoted to the frame-work at *m* is a pendent arm N, whose lower end is connected to the forward end of a rod O, extending rearwardly through a guide in the slotted guide-plate P. The rear end of this rod is bent at right angles to the horizontal portion and extends downward through a slot in the base upon which the frame-work rests into the drawer-compartment. Its lower end carries a set-screw *n*, whose front end bears against the rear side of the drawer C when the latter is closed. Projecting from the upper side of the rod O, in rear of its connection to the arm N, is a plate *o*, whose upper end is bent inwardly and extends through the path of the end of the flange *d*, so that when the rod O is moved forward the upper bent end of the plate *o* will move over the edge of the flange *d* and lock it and the bar J down, if in their normal position; or, if they are elevated, it will move beneath the flange *d* and prevent the resetting of the bar J and the key or keys which may be locked to its flange *d*. A coiled spring *p*, secured at its forward end to the frame-work and at its rear end to the rod O, tends to pull the latter forward. When the drawer C is closed, its rear side, bearing against the end of the screw *n*, holds the rod O against the pull of the spring *p* in the position shown in Fig. 1, so that the bent plate *o* is in the rear of the flange *d*, and the latter is free to be lifted by the operation of a key. When any key is operated and the drawer thereby released and propelled from its compartment by the spring P at its rear end, the spring *p* immediately pulls the rod O forward to the position shown in Fig. 3, so that when the key is released its descent is arrested by the flange *d*, to which it is locked, striking the bent plate *o*. In this position of the parts not only is the operated key held from returning to normal position, but the flange *d*,

extending across the front faces of the lugs K of all the unoperated keys, locks them from operation. The machine is therefore rendered inoperative until the cash-drawer is closed, whereupon its rear side, striking the front end of the screw *n*, throws back the rod O to the position shown in Fig. 2, thereby moving the plate *o* from under the flange *d* and permitting the latter and the operated key to be reset and unlocking all the unoperated keys.

For the purpose of throwing out of operation the mechanism just described, whenever it is desired to permit the machine to be operated while the cash-drawer is open, we pivot to the frame-work at *q* a bent lever *r*, whose lower end bears against the arm N, and takes into a notch *s* whenever its upper end is pulled forward, and thereby holds the arm N and rod O in the position shown in Fig. 2, so that they cannot be pulled forward by the spring *p* when the cash-drawer is released and propelled from its compartment.

Having thus fully described our invention, we claim—

1. In a cash register and indicator, the combination of a series of operating-keys, each provided with a slotted lug having a curved forward side and a vibrating bar extending across said keys immediately in front of their slotted lugs, and its rear edge moving in the arc of a circle, to which the curved faces of the slotted lugs conform, whereby upon operating any key it becomes locked to the vibrating bar, and the latter locks all the unoperated keys from operation, substantially as and for the purpose described.

2. In a cash register and indicator, the combination of a series of pivoted operating-keys, each provided on its upper side with a slotted lug having a curved forward side and a vibrating bar extending across said keys, and having a flange on its lower rear side immediately in front of the slotted lugs, the rear edge of said flange moving in the arc of a circle to which the forward curved faces of the slotted lugs conform, whereby upon operating any key it becomes locked to the vibrating bar, and the latter locks all the unoperated keys from operation, substantially as and for the purpose described.

3. The combination of the operating-keys D, provided with the slotted lugs K, having the curved forward faces, the vibrating bar J, having the flange *d* moving in the arc of a circle conforming to the curve of the forward faces of the lugs K, and an arrester applied to said bar to prevent it being reset after being moved by the partial operation of a key until it is given its full movement by the full operation of a key, whereby upon operating any key it becomes locked to the bar J and cannot be reset until operated to its full extent, and whereby all the unoperated keys are held locked from operation by the bar J until the operated key has been returned to normal position, substantially as and for the purpose described.

4. The combination of the keys D, having the slotted lugs K, the vibrating bar J, having the flange *d*, the arm N, the rod O, having the bent plate *o*, and the drawer C, substantially as and for the purpose described.

5. The combination of the keys D, having the slotted lugs K, the vibrating bar J, having the flange *d*, the arm N, the rod O, having the bent plate *o*, the drawer C, and the lever *r*, substantially as and for the purpose described.

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