

(No Model.)

2 Sheets—Sheet 1.

L. E. ALLEN.
REGISTERING MACHINE.

No. 543,417.

Patented July 23, 1895.

Fig. 1.

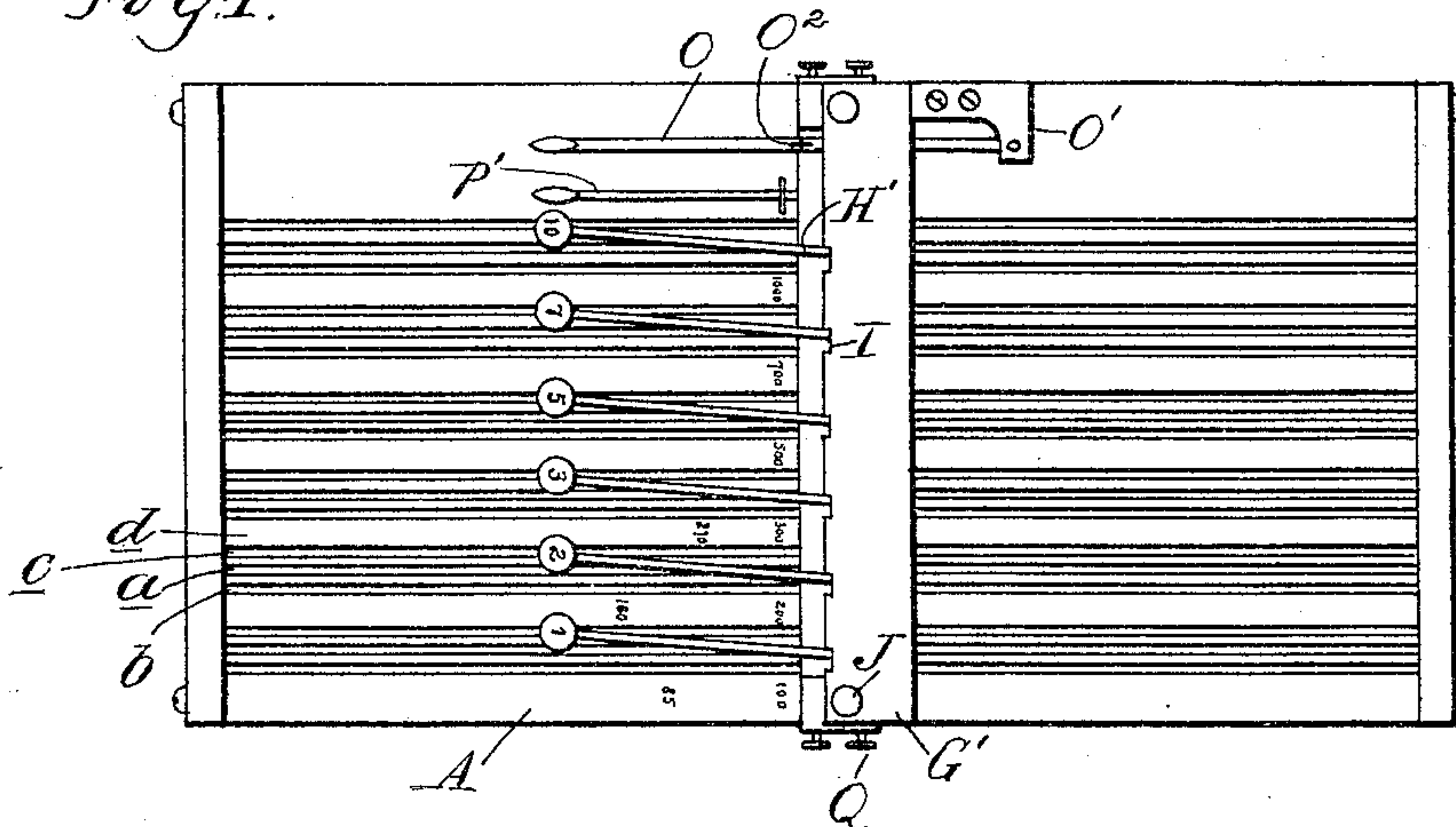


Fig. 2.

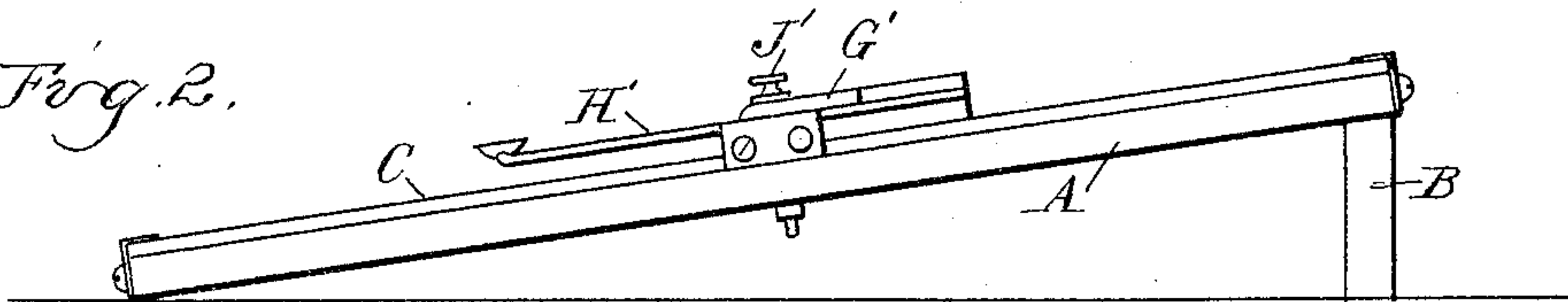


Fig. 6.

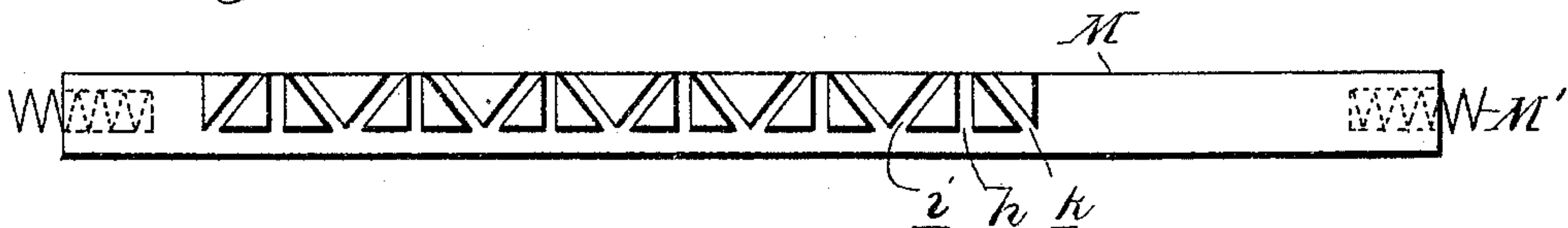


Fig. 5.

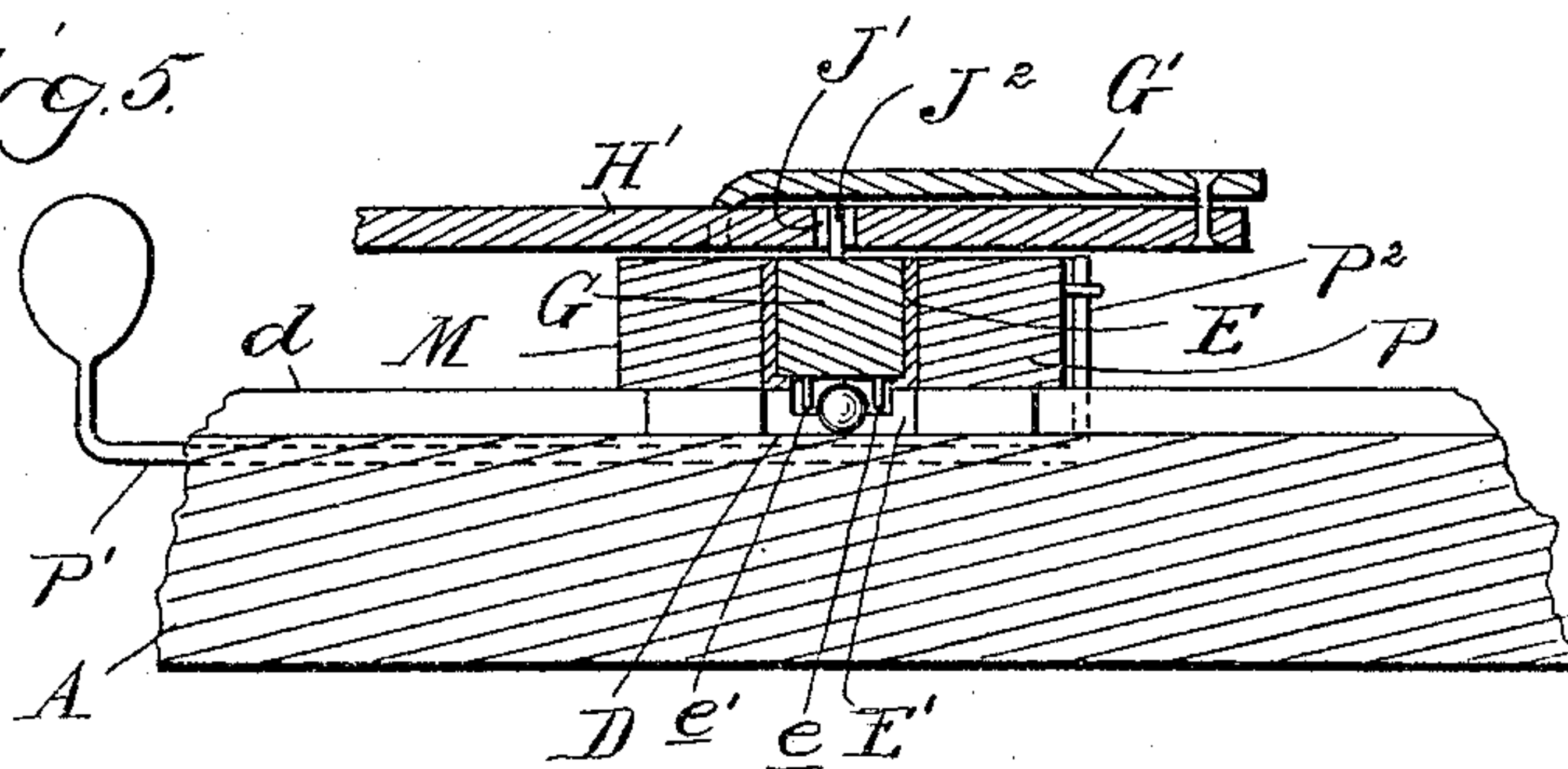
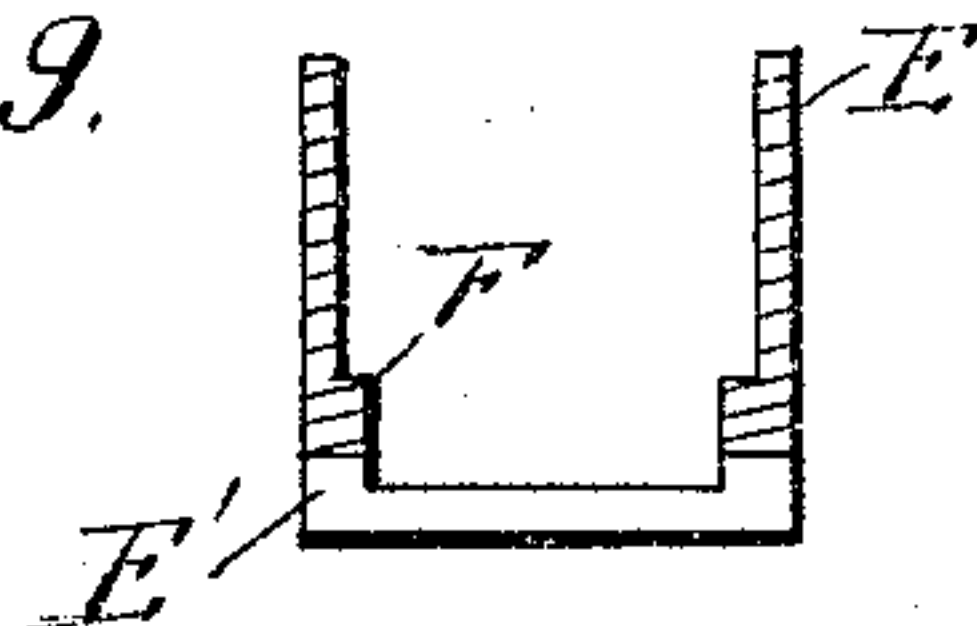


Fig. 9.



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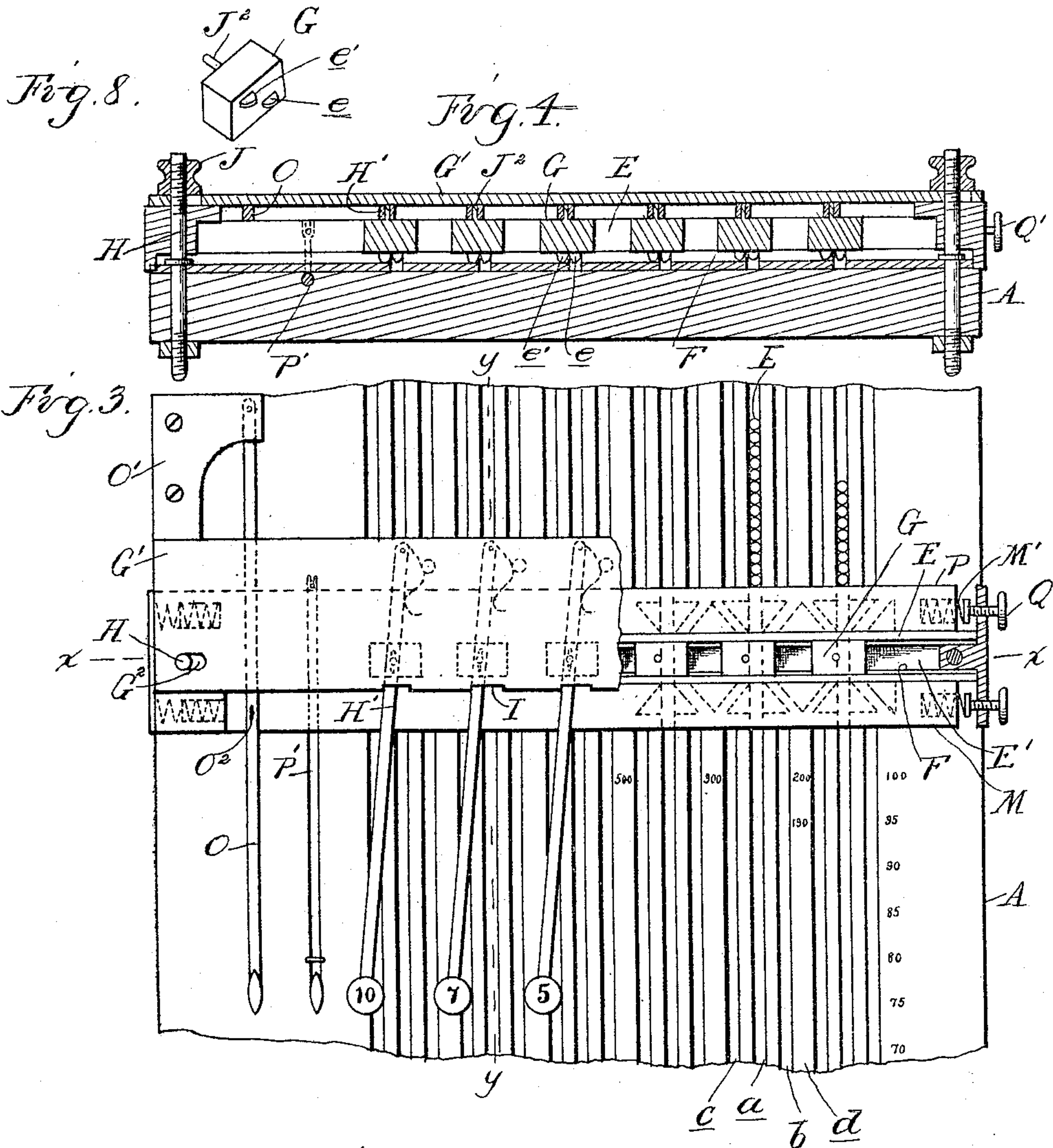
(No Model.)

2 Sheets—Sheet 2.

L. E. ALLEN.
REGISTERING MACHINE.

No. 543,417.

Patented July 23, 1895.



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UNITED STATES PATENT OFFICE.

LUTHER E. ALLEN, OF DETROIT, MICHIGAN.

REGISTERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 543,417, dated July 23, 1895.

Application filed August 6, 1894. Serial No. 519,548. (No model.)

To all whom it may concern:

Be it known that I, LUTHER E. ALLEN, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Registering - Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention consists in the peculiar construction of a registering device, in which balls or blocks are used to effect the registration, the balls or blocks moving in ways or ball-races having suitable controlling devices or keys and a switch for controlling the movement of the ball in one of a multiple of ways.

The invention further consists in the peculiar construction, arrangement, and combination of the various parts, all as more fully hereinafter described.

In the drawings, Figure 1 is a plan view of my improvement as embodied in a cash-register. Fig. 2 is a side elevation thereof. Fig. 3 is an enlarged plan of the middle of the device partly broken away. Fig. 4 is a cross-section on line *x x*, Fig. 3. Fig. 5 is a longitudinal section on line *y y*, Fig. 3. Fig. 6 is a bottom plan view of the switch-block. Fig. 7 is a sectional perspective view of the under side of the key-supporting bar. Fig. 8 is a detached perspective view of one of the gates. Fig. 9 is a cross-section of the gate-block guide.

In the previous state of the art registering-machines have been made in which balls were used to register, the balls being controlled by keys, and while I have shown a grooved board forming the support and guideway for the balls I do not desire to be limited to such construction, as other suitable form of ball-races or ball-guides may be used.

A is a board forming the body of the machine. At one end this machine is provided with a leg or support B, by means of which it may be inclined. This leg is detachable and may be used either end, so as to make the bed or body incline in either direction. This detachable feature and the vertical feature, however, are not necessary elements in my invention. Upon the upper face of this board are a series of groups of grooves, each group consisting of a central or main groove *a* and

the side or auxiliary grooves *b c*. These groups are preferably separated by means of the separating-strip *d*, and also preferably the entire length of the board, and are covered by a suitable transparent top C.

Centrally of the board is a transverse groove D, in which is secured the gate-guide E, preferably of the construction shown in Fig. 9, and provided on its bottom with a series of slots E' corresponding with the central series *a* in the board.

The gate-guide is provided with suitable shoulders F, upon which are supported the gates G. Each gate on its under side is provided with lugs *e e'*, arranged as shown in Fig. 8. I employ one of these gates for each group of ball-races, the gates sliding freely in their guide-bar, with the lugs *e e'* extending down below the bottom of the gates and across the upper part of the slot E' in the gate guide-bar.

G' is a plate having slots G² near the ends, through which pass the pins H extending up from the bed. This plate on its under side is provided with a series of keys H', which are journaled at their ends on the under side of the plate and have a limited movement in the notches I at the opposite edge of the plate. I' are springs for actuating these keys in the opposite direction. The key-plate is secured in position by means of the nuts J engaging the top of the bolts H. The keys are provided with slots J', with which pins J² on the top of the gate-lugs engage.

The parts thus far described being assembled as shown, a series of balls L being arranged in the central ball-race of each group and above the gate, it is evident that if one of the lugs *e e'* be normally in the path of the ball the lateral shifting of the gate locked by the key will permit one ball to pass down beyond the gate and into the lower end of the ball-race.

The lower end of the ball-race may be marked in any suitable manner to indicate the number or value of the balls which pass therein, and the keys may be likewise marked.

The side or auxiliary ball-race I use by means of a switch of any desired construction which will deliver the balls from the gates into these side races instead of into the main one. The switch which I prefer I have shown

in the drawings as consisting of a switch-bar M held in a given position by means of the springs M' at each end, and provided with a central groove *h* normally registering with the slot E' and the main ball-race *a* in the gate guide and board A, respectively, so that when the switch is not thrown movement of the gates by the keys will permit the ball to pass through this slot in the switch-bar and into the main or central ball-race.

Now, if it is desired to switch the ball from this central ball-race to one side, it may be done by shifting the switch-bar M so as to register either one of the side or inclined grooves *i* or *k* with the slot E' in the gate-guide, which will cause the ball delivered therefrom to be switched out of its direct course and into either of the side or auxiliary ball-races. Thus in a cash-register I may use the main guideways or ball-races for cash sales, one side of the side ball-races for credit sales, and the other side for sums paid in, and thus in a single set of keys accurately register the various accounts, and at the same time separate them, as above described.

The means which I have shown for actuating the switch-bar consists of the lever O, pivoted at one end in a bracket O', and having a slot O² engaging with a pin or shoulder on the switch-bar. In the drawings, I have shown two switch-bars, one arranged on each side of the gates, so that the device may be used with the balls running to either end.

I have shown for the second switch-bar P an operating device comprising a rock-shaft P', passing beneath the gates, and having a rock-arm P² engaging with the switch-bar.

The spring controlling the switch-bar at each end may be a suitable adjusting device, such as the adjusting-screws Q. If it is desired to return the balls from one end to the other and start account, the board being suitably inclined, all the gates may be simultaneously moved by loosening the nuts J, shifting the plate, thus shifting the controlling-lugs *e e'* out of the path of the balls and permitting them to roll freely to the other end of the ball-races.

What I claim as my invention is—

1. In a registering machine, the combination of a receptacle, a series of balls therein, a series of races connecting at their upper

ends with the receptacle, a gate controlling the passage of the balls from the receptacle, and a switch for controlling the movement of the ball into any of the ball races, substantially as described.

2. In a registering machine, the combination of the bed having ball races therein, a transverse gate guide, having grooves registering with the ball races, key actuated laterally movable gates in said guide, balls in the ball races controlled by said gates and a movable switch for conducting the balls laterally to the gates, substantially as described.

3. In a registering machine, the combination with a series of ball races, the balls therein, switches controlling the movement of the balls through the races and a movable common bar to which all the switches are secured, substantially as and for the purpose described.

4. In a registering machine, the combination of the ball races, the transverse guideway across the ball races, gate blocks sliding in the guideway, the lugs *e e'* on the blocks and means for actuating the blocks, substantially as described.

5. In a registering machine, the combination with the ball races, of the balls therein, the transverse guideway across the ball races, the gate blocks G sliding in the guideway, the lugs *e e'* on the under side of said blocks, the pin J² on the upper face thereof and the spring actuated key engaging said pin and forming means of actuating the same substantially as described.

6. In a registering machine, the combination of the ball races and balls therein, the gates controlling the balls and a switch on either side of the gates to shift the balls, substantially as and for the purpose described.

7. In a registering machine, the combination of the ball races and the balls therein, the gates controlling the balls, of a switch bar having a multiple of ways therein for each gate and a lever for controlling said switch bar, substantially as described.

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

LUTHER E. ALLEN.

Witnesses:

M. B. O'DOHERTY,
L. J. WHITTEMORE.