

J. P. CLEAL.
CASH REGISTER.

(Application filed July 23, 1897.)

(No Model.)

2 Sheets—Sheet 1.

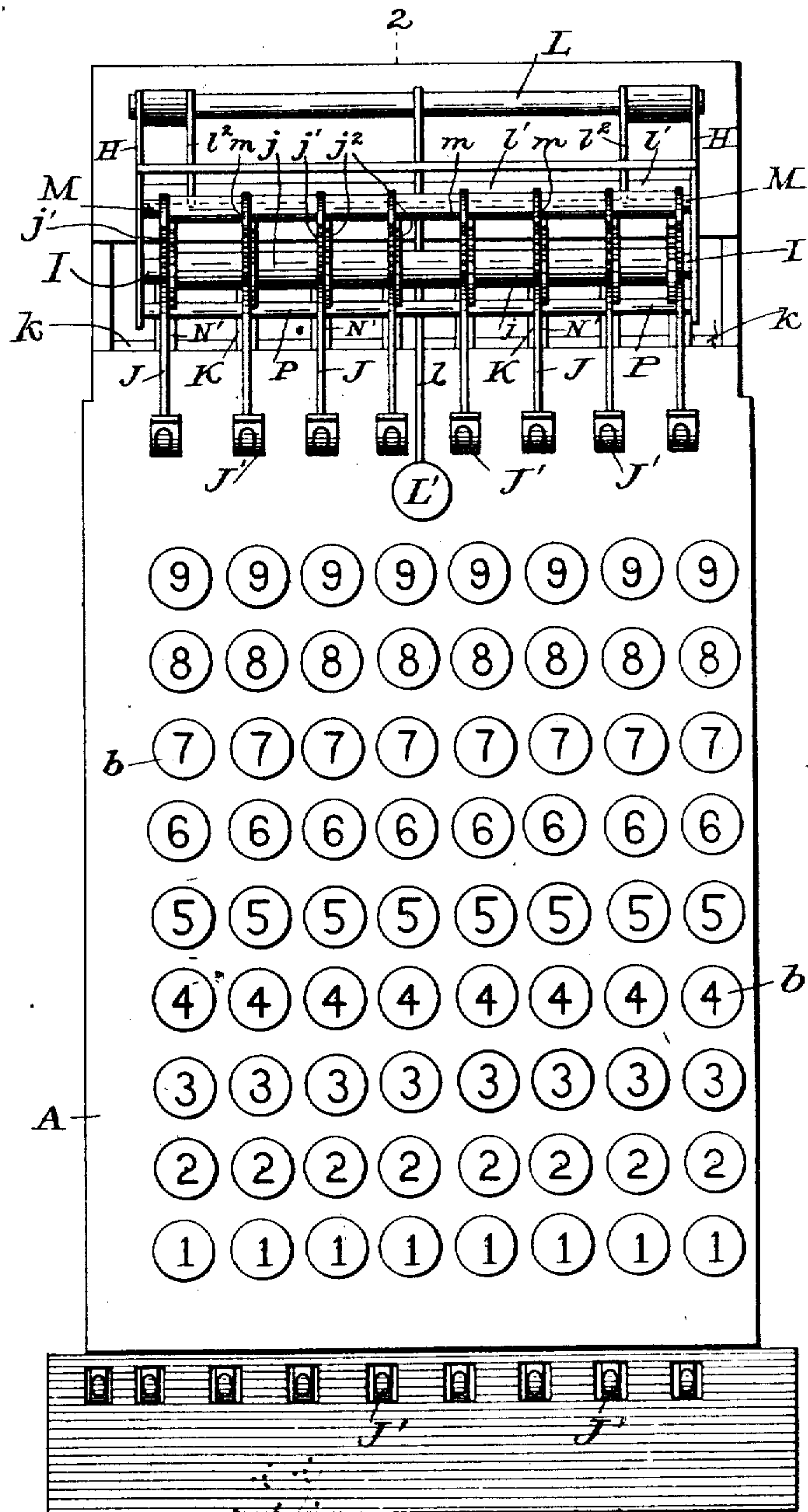


Fig. 1.

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No. 622,445.

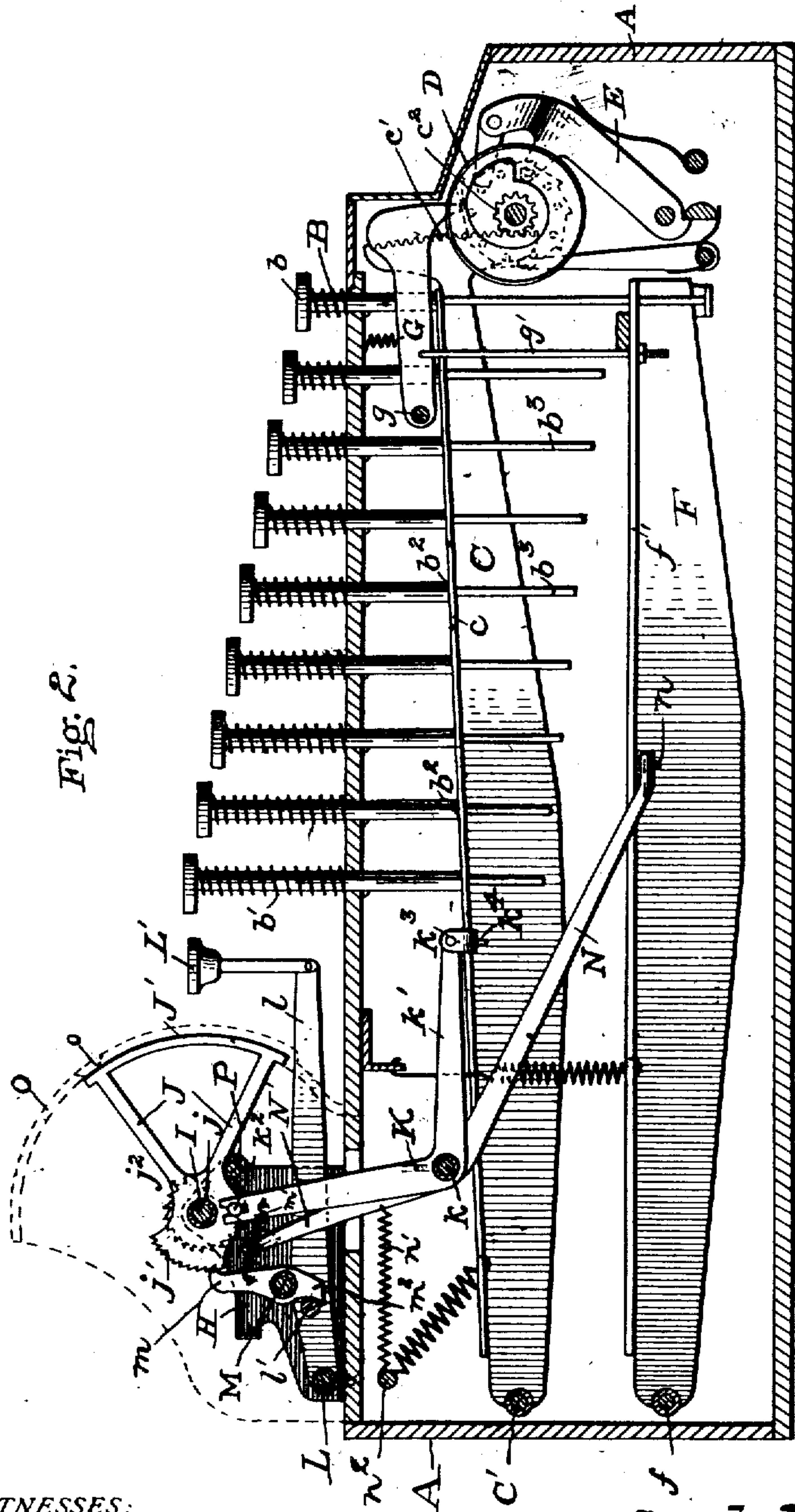
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J. P. CLEAL.
CASH REGISTER.

(Application filed July 28, 1897.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOSEPH P. CLEAL, OF DAYTON, OHIO, ASSIGNOR TO THE NATIONAL CASH REGISTER COMPANY, OF SAME PLACE.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 622,445, dated April 4, 1899.

Application filed July 23, 1897. Serial No. 645,748. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH P. CLEAL, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Cash-Registers; and I do hereby declare the following to be a full, clear, and exact description of the invention.

My invention relates to an improvement in cash-registers or adding-machines, and in the drawings I have shown it as applied to an adding-machine like that patented to D. E. Felt, No. 371,496, dated October 11, 1887; but although my invention is so shown its application is of course not restricted to any particular form of machine.

My invention consists in applying indicators to this class of machine, so that the operator can always tell if he has made a mistake by an inspection of the indicators. In use the operator presses the keys, and the indicators show instantly what amount he has registered; and if a mistake has been made he can detect it immediately. Afterward by the pressure of the release-key the indicators are all returned to zero position preparatory to a new registration.

Referring to the drawings, Figure 1 shows a top plan view of an adding-machine with my indicators applied thereto. Fig. 2 is a vertical longitudinal section on the line 2-2 of Fig. 1.

The same letters of reference designate identical parts in both figures of the drawings.

Referring to the drawings, the letter A designates various fixed parts of the frame or case of the machine. The keys B, which are arranged in eight banks of nine keys each, pierce the top of the case A, and the finger-buttons *b* are, as usual, secured upon the upper ends of the keys, which are held in normal position, as shown in Fig. 2, by the coiled springs *b'*, which intervene between the finger-buttons and the top of the case. The lower ends *b''* of the keys are of reduced diameter and pierce the registering-levers C, only one of which is shown, although the machine comprises eight, of which one cooperates with each of the eight banks of keys. At the upper end of the reduced portion of the key is formed a shoulder *b''*, which rests

upon the laterally-extending flange *c* of the levers C, which are suitably pivoted at their rear ends upon a transverse shaft C'. The forward end of each lever carries a segment-rack *c'*, which meshes with the series of pinions *c''*, (shown in broken lines in Fig. 2,) one of which is carried by each of the registering-wheels D. The pivoted carrying-levers E cooperate with the registering-wheels to transfer amounts from the lower registering-wheels to those of higher denomination in the usual manner. The stop-levers F are pivoted upon the transverse shaft *f* near the rear end of the machine, and each has a lateral flange *f'*. The stop-motion detents G, one of which cooperates with each registering-wheel, are likewise pivoted upon a transverse shaft-*g*, and a link *g'* connects the stop-motion detent and the stop-lever F, as shown in Fig. 2. The lower ends of the keys are graduated in length, as shown, for a purpose to be presently described. If one of the keys be pressed, it moves its lever C downward and directly actuates the registering-wheel. As the key nears the limit of its downward movement its lower end *b''* contacts with the stop-lever F and depresses it, the motion being transmitted through the link *g'* to the stop-motion detent G, which thereupon engages and locks the registering-wheel against further movement for the purpose of preventing over-registration.

The parts and their cooperation as I have thus far referred to them are old and well known, and for a more detailed description reference may be had to the Felt patent, before referred to. My invention consists, as before stated, only in applying indicating devices to such a mechanism.

Secured upon the top of the case A are side frames H, supported in and extending between which is a transverse shaft I, mounted to turn upon which are the indicator-frames J, supporting the segmental indicators J'. A segment-ratchet J' is formed upon the rear end of each indicator-frame. Turning upon the shaft I and rigidly secured to the indicator-frames upon the left-hand side thereof are the hubs *j*. Secured to each indicator-frame, upon the right-hand side thereof, and also turning upon the shaft I are the ratchet-

wheels j^2 , for a purpose to be presently described. Cooperating with each indicator-frame J is one of the series of bell-crank levers K, which are pivoted upon the transverse shaft k within the case A. To the end of the horizontal arm k' of the bell-crank lever is pivoted a depending member k^3 , carrying a pin k^4 , which has a bearing against the under side of the lateral flange c of one of the levers C. The vertical arm of the bell-crank lever is slotted, and in this slot works a pin or stud k^2 , which is fixed to the indicator-frame. Pivoted upon a transverse shaft L, which is supported at its end in and near the ends of the side frames H, is the forwardly-extending release-lever l , upon the front end of which is a finger-button l' . Piercing the release-lever and extending laterally on either side of it is a rod l'' , which is carried by and moves with the release-lever for a purpose to be presently explained. The braces l^2 turn upon the shaft L and at their forward ends are secured to the transversely-extending rod l' to hold the latter rigid with respect to the release-lever, the release-lever, the rod l' , and the said braces thus forming a rigid frame which turns upon the shaft L. Pivoted above and slightly in front of the rod l' , upon the shaft M, are a series of detents m , the upper ends of which are held in engagement with the segment-ratchets j' by the coiled springs m' , only one of which is shown.

The lock-lever is pivoted about centrally upon the transverse shaft k and its lower arm N carries a pin n , the upper end of which bears against the under side of the flange f' of the stop-lever F. The pin n is held in contact with the said flange by the coiled spring n' , which is secured at one end to a transverse bar n^2 and to the upper arm N' at the other. The upper end of the arm N' is tooth-shaped, and when the stop-lever F is moved downward the upper end of the arm N' is thrown forward into engagement with the ratchet-wheel J^2 to lock or stop the indicator J', as will be readily understood.

The practical operation of the machine with my invention applied thereto is as follows: If one of the keys be pressed, the swinging end of the lever C will be moved downward and its segment-rack c' will actuate the counter. As the key nears the lower extremity of its movement its lower end b^2 will contact with a flange f' and move the lever F downward, the motion being transmitted to the stop-motion detent G, which is thereby thrown into engagement with the registering-wheels to lock the latter against further movement. As the lever C moves downward it throws the vertical arm of the bell-crank lever K forward and the segmental indicator J' will be swung upward. A series of numbers from "0" to "9," inclusive, are imprinted upon the convex surface of the indicators, and as the latter is swung upward the numbers successively pass the sight-opening o of the casing O (shown in broken lines in Fig. 2) until

the figure corresponding with the operated key is brought in position to show through the sight-opening, and at this time the indicator-frame J will be automatically stopped by mechanism which I shall now describe. When the stop-lever F is moved downward by the operated key, as above explained, the tooth carried by the upper end N' of the lock-lever is thrown into engagement with the teeth of the ratchet j^2 , thereby bringing the indicator-frame, and consequently the indicator, to rest and preventing the possibility of its being moved too far. At the same time the detent m will spring into engagement with the ratchet j' to prevent the indicator from returning toward normal position.

When a key is pressed, the devices that have thus far described operate to move the indicator so that its proper number will show through the sight-opening o and to then stop and lock the indicator in this position. To return the indicator to zero, it is only necessary to press the button l' , which will depress the release-lever l , whereby the rod l' will be moved downward against the rearwardly-curved lower end m^2 of the detent, whereby the detents will be thrown and held out of engagement. The springs m' will instantly return the frame J, the bell-crank lever K, and the indicator J' to normal position. The transverse stop-rod P is to prevent the indicator from going past normal position on its return movement.

In practical use the operator presses the keys B to register the desired amount. He can then glance at the indicators, and he can tell instantly if he has registered the correct amount. If so, he presses the release-key, and the indicators will then be returned to zero position, ready for the next actuation of the keys. In banks, for example, where my invention finds a large field of usefulness, it is often necessary to add the amounts of a large number of checks or notes. If a single mistake is made, it may lead to serious consequences, so that my invention will be of great utility as enabling the operator to check himself after each registration, thus insuring accuracy of his work.

Having thus described my invention I claim as new and desire to secure by Letters Patent of the United States—

1. In a device of the class described, a combination with a series of operating-keys of an operating-lever engaged by the same, a pivoted indicator having a projecting segmental rack and a pivoted bell-crank lever connected at one end to the operating-lever and having the opposite end slotted to receive the said segmental rack.

2. In a device of the class described, a combination with a counter-operating lever of a series of keys arranged to normally engage said lever and project below the same, a stop-lever arranged below the operating-lever so as to be engaged by the projecting ends of said keys near the ends of their stroke, and an indicator, means connecting the indic-

to the operating-lever, and stop means connected to the stop-lever and arranged to engage the indicator to prevent its overthrow.

3. In a device of the class described, the combination with a counter-operating lever, a series of keys arranged to operate said lever, an indicator, means connecting the operating-lever and indicator, a pivoted pawl arranged to engage said indicator and hold it in its set positions, and a pivoted key-lever having a projection which engages and operates said pawl to release the indicator without operating any of the other portions of the machine.

4. In a device of the class described, the combination with the registering-wheels and the keys, of an indicator cooperating with the

keys, the lever arranged to actuate the registering-wheels, the stop-lever, the bell-crank lever connected to the indicator at one end and to the register-actuating lever at the other, the ratchet-wheel carried by the indicator, the lock-lever connected to the stop-lever at one end, and bearing a tooth at the other which coöperates with the said ratchet-wheel to lock the indicator against excessive movement.

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

JOSEPH P. CLEAL.

Witnesses:

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IRA BERKSTRESSER.