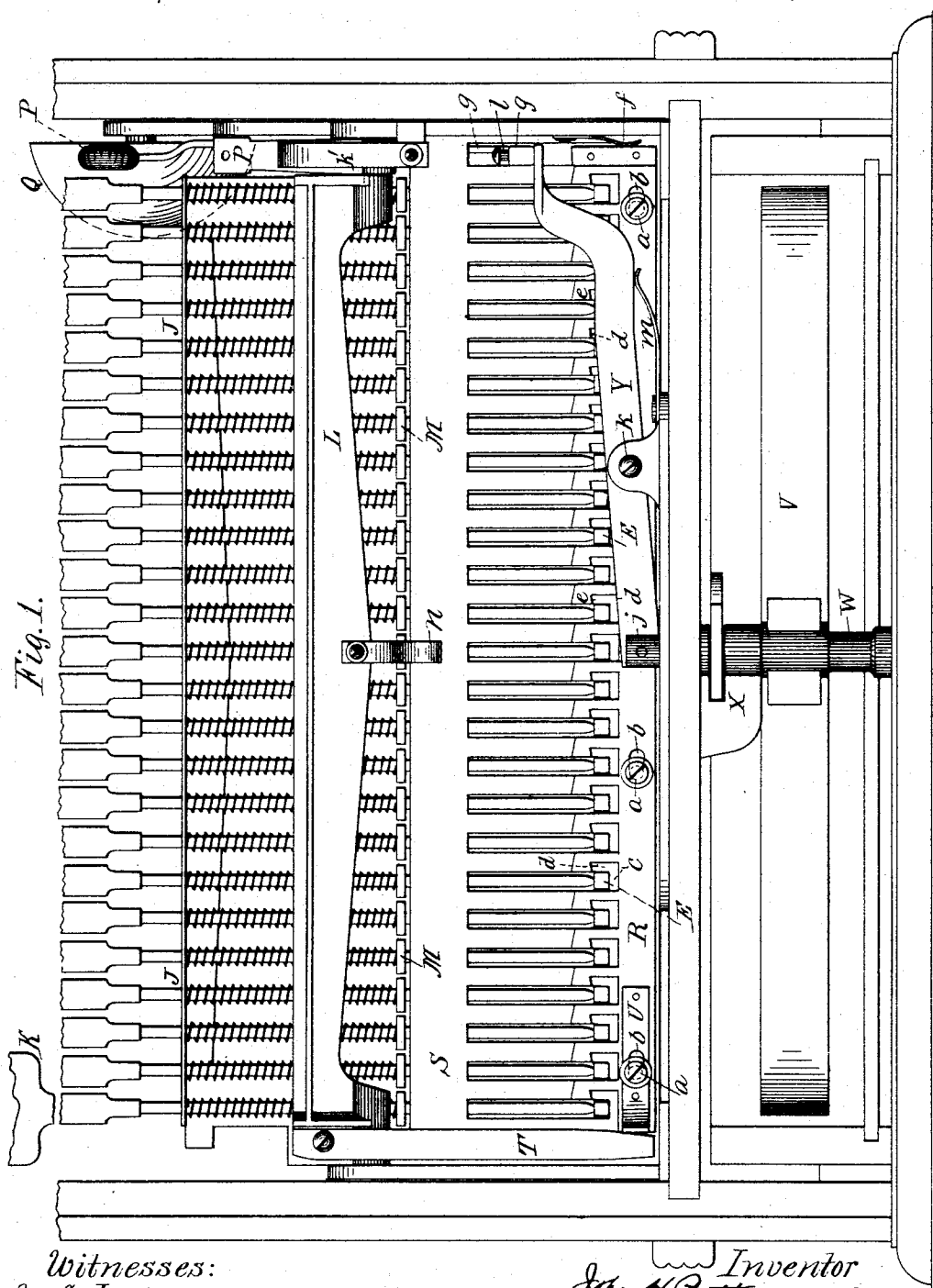


J. H. PATTERSON, C. D. GRIMES & E. RENCH.

CASH INDICATOR AND REGISTER.

No. 414,441.

Patented Nov. 5, 1889.



Witnesses:
W. C. Jirdinston.
Charles Billon.

Inventor
John H. Patterson,
Charles D. Grimes
by Edwin Rench
Attorneys.

(No Model.)

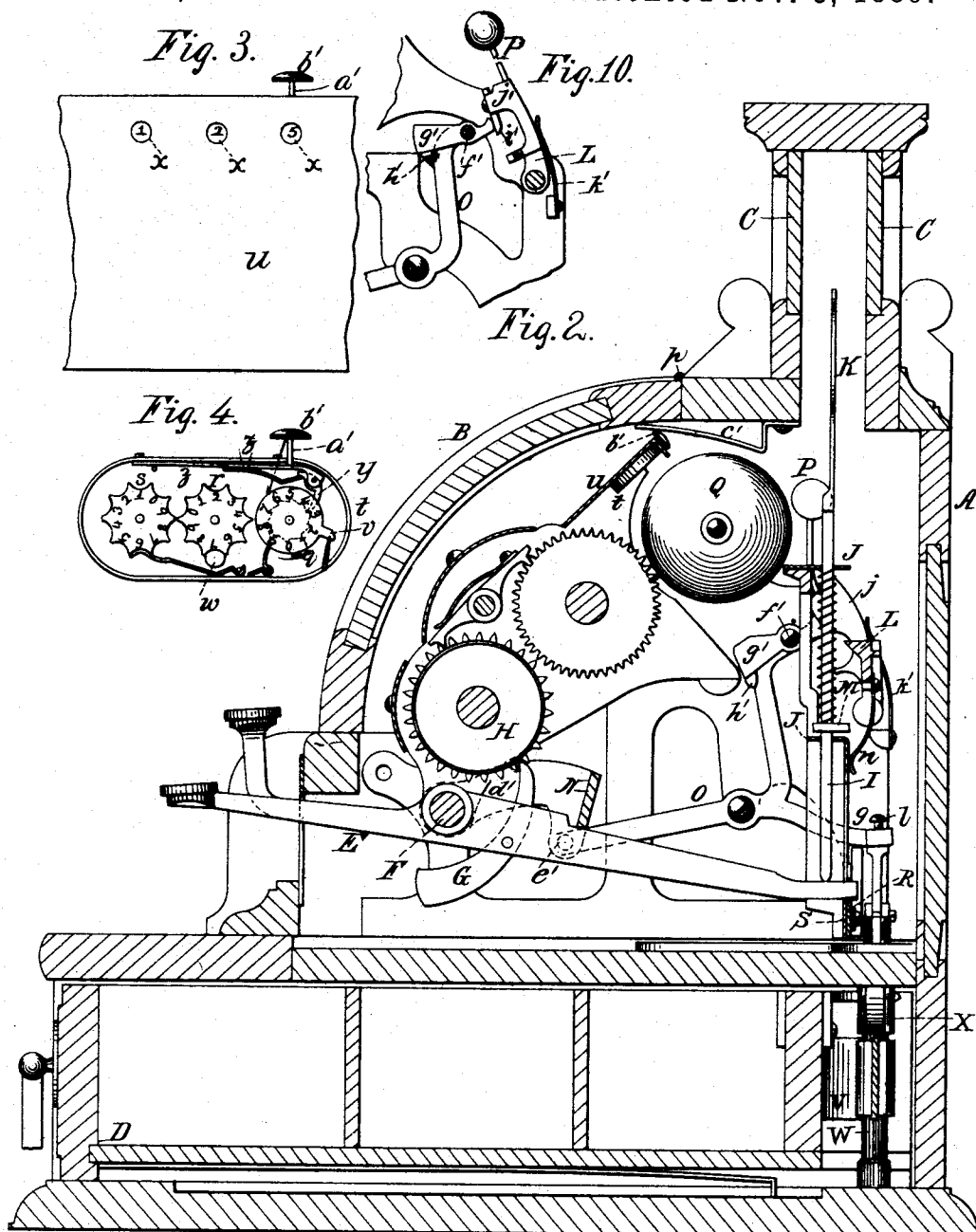
3 Sheets—Sheet 2.

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3 Sheets—Sheet 3.

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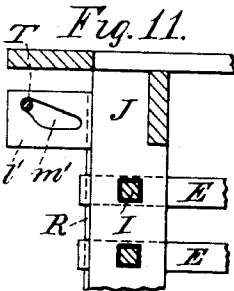
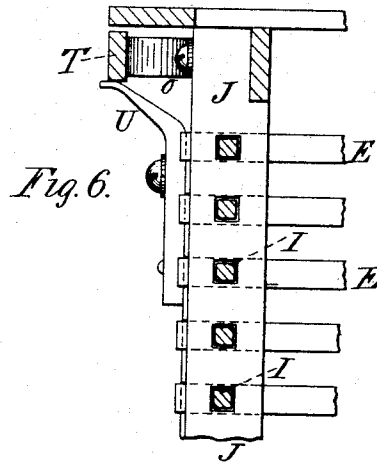
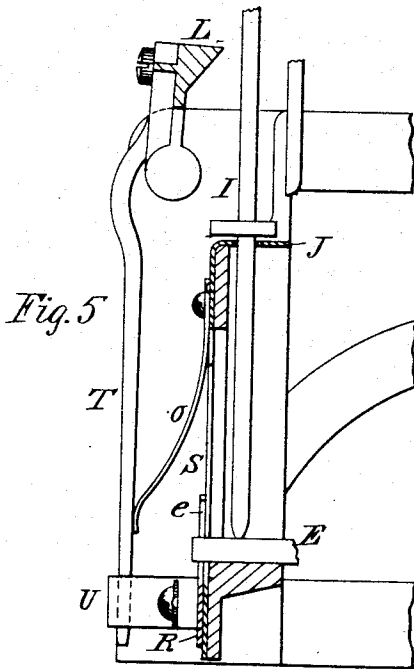


Fig. 7.

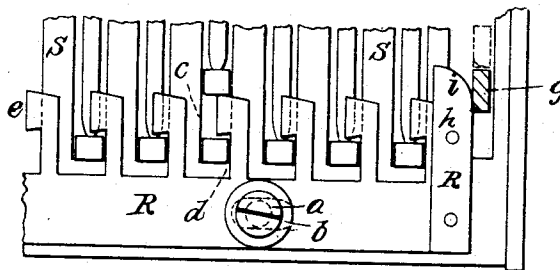


Fig. 8.

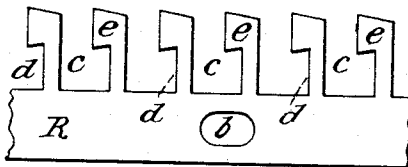
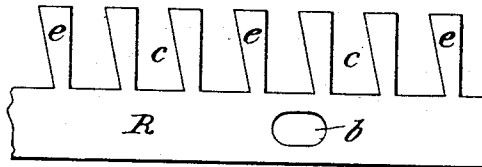


Fig. 9.



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UNITED STATES PATENT OFFICE.

JOHN H. PATTERSON, CHARLES D. GRIMES, AND EDWIN RENCH, OF DAYTON, OHIO, ASSIGNORS TO THE NATIONAL CASH REGISTER COMPANY, OF SAME PLACE.

CASH INDICATOR AND REGISTER.

SPECIFICATION forming part of Letters Patent No. 414,441, dated November 5, 1889.

Application filed May 23, 1888. Serial No. 274,824. (No model.)

To all whom it may concern:

Be it known that we, JOHN H. PATTERSON, CHARLES D. GRIMES, and EDWIN RENCH, citizens of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have jointly 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 invention has for its object an improvement in the construction of this class of machines, and its novelty will be herein set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a rear elevation of the lower part of the machine with the back of the case removed. Fig. 2 is a sectional end elevation of the machine. Fig. 3 is an enlarged detail of the lid-register. Fig. 4 is a front elevation of the lid-registering mechanism. Figs. 5, 6, 7, 8, 9, 10, and 11 are enlarged details, to be referred to hereinafter.

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

Our invention in its first feature relates to that class of registers and indicators in which each key actuates its individual registering-wheel, while at the same time its tablet is brought into view and the gong is sounded.

This class of machines is well known, and in referring to the drawings it is only necessary to say that A is the case of the machine, with its locked hinged lid B, glass-covered openings C for the exposure of the tablets, and till or money-drawer D. The usual keys E, pivoted upon the shaft F and each provided with a pivoted actuating-dog G for engagement with its corresponding registering-wheel H, carry upon their rear ends the vertical tablet-rods I, confined in guides J and carrying upon their upper ends the tablets K.

L is the usual pivoted wing for engaging with the shoulders M of the tablet-rods to hold the tablets exposed to view.

N is the vibrating frame, hung by its side

arms *l'* on the shaft F and resting on the tops of the keys in rear of said shaft, as shown, and to a lower extension *e'* of one of its side arms is pivoted the lower forward end of the bell-crank lever O, forming a combined wing and gong-hammer trip for causing the wing to be pressed back and the gong-hammer to strike the gong whenever any key is operated. This tripping mechanism, which may be of the usual or any suitable construction, is shown more particularly in Fig. 10, where the upper end of the bell-crank O has pivoted to it, as at *f'*, a weighted tripping-dog *g'*, held normally in working position by a stop *h'* upon the lever O. The nose of this dog engages with an adjustable wiper-block *i'*, secured to the extension *j'* of the wing L, to which extension is also attached the gong-hammer P. The parts are so adjusted that by the depression of any key and the raising of the vibrating frame N thereby the dog *g'* presses back the wing and gong-hammer against the resistance of the spring *k'*, as well as the usual spring *n* at the center of the wing, until, the key having reached its limit of depression, the nose of the dog *g'* slips past the wiper-block *i'* and the springs cause the hammer to strike the gong and the wing to be reset, as will be readily understood.

In the operation of machines of this character the finger of the operator will sometimes slip off of the button of the key before the latter had been sufficiently depressed to sound the gong and throw the tablet-rod into engagement with the wing, but not before the dog G has turned its wheel H one notch and effected the proper registration. As the machines have heretofore been constructed, the slipping of the finger from the button would at once permit the key to be reset and the tablet-rod to drop back, and if the operator then attempted to work this same key properly by depressing it to its full extent to sound the gong and expose the tablet a second registration would take place, and he would be required to account twice for one sale by reason of his carelessness or the accident, whichever it might be. This defect in construction might in theory be partially

remedied by so adjusting and timing the operation of the various parts of the machine that the gong would be sounded, the elevated tablet-rod caught by the wing, and the registration effected at exactly the same moment; but it is difficult, if not impossible, to attain such exact adjustment and operation, and unless such adjustment were perfect there would be danger of a dishonest operator so manipulating a key as to expose its tablet and sound the gong without registering its value. The machines are therefore generally so constructed and adjusted that the registering operation takes place slightly in advance of the sounding of the gong and complete exposure of the tablet, and, while this is necessary for the protection of the proprietor, it is also desirable that there be some means of protecting the operator from the result of accidents or slight carelessness, such as above referred to.

To this end the first feature of our invention consists in the provision of what we term a "key-arrester," by which, should any key be only partially depressed and the finger of the operator slip therefrom, the key and tablet-rod would be caught and held up, thereby preventing the dog G from effecting a fresh engagement with its wheel H, so that upon completing the stroke of this key to sound the gong and completely expose its tablet only the one registration would be made. For this purpose we provide the sliding bar R, Fig. 1, suitably carried in guides on the frame of the machine, in this instance on the rear side of the vertically-slotted guide-plate S, being attached thereto by means of screws *a*, passed through horizontal slots *b* in the bar, by which the latter is permitted to have a lateral reciprocal motion across the machine. Vertical slots *c*, Fig. 8, are cut in the upper part of the bar R coincident with the slots in the guide-plate S. The rear ends of the keys E project through these slots in the bar R, and the walls *e* between the slots are cut out or formed with offsets *d* on one side to permit lateral movement of the bar R. The upper edges of the walls *e* and, if desired, the lower sides of the ends of the keys may be beveled to cause a more positive engagement between them. A spring *f*, suitably secured to the frame of the machine at one side, bears against the end of the bar R, as seen in Fig. 1. At the opposite side of the machine an arm T, secured to and extending down from the end of the wing L, bears against a beveled or cam plate U, secured to or integral with the bar R, in such manner that when the wing L is in its normal position of rest the bar R is held against the pressure of the spring *f* with its slots coincident with the slots in the guide-plate S, so that any key may be operated and its rear end raised out of its slot in the bar R. As the key is depressed and the wing L pushed backward through the medium of the vibrating frame N, bell-crank O, and dog *g'*, as before described, the lower end of the arm

T will be moved inward away from the cam-plate U on the bar R, thereby permitting said bar to be moved laterally by the pressure of the spring *f*. This lateral movement of the bar R brings the walls of its slots in line with the slots in the guide-plate S, as seen in Fig. 7. One of said walls will be beneath the rear end of the operated key, so that if said key be only partially operated and then released, as by the finger of the operator accidentally slipping off the key-button, the rear end of the key in descending will be arrested by and caught upon the upper edge of the wall *e* beneath it, as seen more particularly in Fig. 7, and thus, while the key may have been actuated to a sufficient extent to turn its registering-wheel and register its value, it cannot drop back far enough to allow its dog to engage with a new notch on said wheel, so that upon now properly operating said key and depressing its front end to its full extent to sound the gong and cause its tablet-rod and tablet to be caught and held up by the wing no further registration is made on the registering-wheel. Upon, however, operating it to its full extent and causing the gong-hammer to strike the gong and the wing to be reset the lower end of the arm T will be thrown outward by the resetting of the wing, and, bearing against the cam-plate U on the bar R, will press the latter sidewise against the resistance of the spring *f* to its normal position, with its slots *c* in line with the slots in the guide-plate S, whereupon the operated key will be free to drop back to its position of rest in its slot.

It should perhaps be stated that each registering-wheel is only turned one full notch by a full actuation of its key. Therefore if a key be operated so as to cause the wheel to be turned less than its maximum distance during the upward movement of the key and then be allowed to drop back the lug *e* will not let said key fall far enough to permit its dog to engage a new notch on the registering-wheel, and the wheel will either remain stationary at the point to which it has been moved or else, owing to the presence of the spring-pressed holding-dogs, will drop back till its same notch is re-engaged with the dog. Then upon the key being operated to its full extent its dog, thus engaging the same tooth, will advance the wheel to the limit of its throw, but not sufficiently, of course, to cause another registration. Both the partial and complete operations of the key thus only cause the turning of the wheel one number.

Upon the usual and proper operation of any key as it is depressed the gong-hammer and wing are pushed backward, the lower end of the arm T moved inward, the bar R pushed laterally by the spring *f*, and the walls of its slots brought in line with the slots in the guide-plate S, and as the key reaches its limit of operation the gong-hammer and wing are released, the gong-hammer strikes the gong, the wing is reset, the lower end of the arm T

thrown outward, and the bar R pressed back to its normal position, and the key, being released, drops back to its position of rest, as will be readily understood.

5 Under the construction thus far described and shown in Figs. 1 and 7 it will be seen that, while two or more keys may be operated simultaneously, if any key or keys be operated only partially and then released not
10 only will such key or keys be arrested and held by the bar R, but all the unoperated keys will be locked by the offsets *d* in the walls of the slots in said bar, as seen in Fig. 7, so that the partially-operated key or
15 keys must be depressed to their full extent before any other key or keys can be operated. While this locking feature of the bar R is desirable in some instances, our invention is not limited to such construction, for
20 the slots *c* in said bar R, instead of having the offsets *d*, may be cut out in any suitable way to permit the lateral movement of the bar. For instance, as seen in Fig. 9, one side
25 of each of the slots *c* may be inclined outward from top to bottom, in which case any key which had been partially operated and arrested by the bar R would be released by the operation of another key. In addition to and
30 to assist the usual resetting-spring *n* and *k'* for the wing, we have shown in Figs. 5 and 6 another spring *o*, which bears against the lower end of the arm T and aids in pressing said arm
35 outward to reset both the wing and the bar R. In place of or to aid the spring *f*, that end of the bar R against which said spring bears may, as seen in Fig. 7, be provided with an
40 upward extension *h*, having a beveled corner *i*, to form a cam with which the rear extension *g* of the bell-crank O engages whenever
45 any key is depressed and pushes aside the bar R. Again, to operate the bar R positively by cam motion from the arm T alone, the construction shown in Fig. 11 may be employed, where, in place of the cam-plate U, a
50 horizontal plate *V*, secured to or formed integral with the bar R, is provided with a cam-slot *m'*, in which works the lower end of the arm T, suitably shaped for that purpose. Upon partially depressing any key, and
55 thereby pushing backward the wing L, the lower end of the arm T will be moved inward, and, bearing against the outer wall of the cam-slot *m'*, will draw the bar R laterally to cause the walls *e* of its slots to come in line
60 with the slots in the guide-plate S, so that if the key is released it will be arrested and caught upon the upper edge of the wall *e* beneath it. Upon depressing the key to its full extent, however, to cause the gong-hammer to strike the gong and the wing to be
65 completely reset, the lower end of the arm T will be thrown outward to its normal position by the resetting of the wing, and, bearing against the inner wall of the cam-slot *m'*, will return the bar R to its normal position to permit the operated key to reset itself in its

slot; also, while in the construction which we have shown the arm T is rigidly secured to the wing L, it might be independent of the wing and be pivoted on any suitable support
70 of its own and be directly actuated by the vibrating frame N through the medium of a bell-crank lever and tripping-dog corresponding to those on the opposite side of the machine.

75 The next feature of our invention relates to the drawer-propelling spring V. (Illustrated in Figs. 1 and 2.) Heretofore this spring, which is semi-elliptic in shape, has usually been fastened at its middle to the back of the
80 case, and unless great care was taken in its application one arm might bear against the drawer with greater force than the other, thereby causing the drawer to bind in its compartment. To remedy this and to cause
85 the spring to bear uniformly on both sides of the drawer at its rear, we have secured the spring to a pivoted post W, pivoted in this instance at its lower end in the bottom of
90 the case and at its upper end in the bolt-socket piece X. The bolt-operating lever Y is pivoted, as at *k*, transversely of the keys at their rear, and is engaged by a set-screw *l*, extending through the enlarged rear end of
95 the extension *g* of the bell-crank O, so that whenever the bell-crank is actuated by the operation of a key the bolt is lifted and the drawer unlocked. By means of the set-screw
100 *l* the action of the bolt may be timed with reference to the other parts as desired. The usual resetting spring *m* may be employed to reset the bolt-lever Y.

The remaining feature of our invention relates to a lid-register.

105 The cabinets or cases of machines of this class are provided with a locked lid, the key of which is kept by the proprietor, so that the attendant or operator is supposed to have no access to the interior of the case. If he
110 had, and were dishonest, he might manipulate the registering-wheels to correspond with any amount he should abstract. To prevent the lid being opened at any time without the proprietor finding it out, we have provided a
115 supplemental registering mechanism so constructed and applied that every time the lid is opened and closed by any one such fact is registered on said mechanism, and in this way the proprietor is enabled to know whether
120 the lid has been opened by any person other than himself, and, if so, just the number of times. For instance, at the close of a day's business he opens the lid to take off the amount registered by the sales-registering
125 wheels and notes the number indicated by the lid-registering mechanism. He resets all the sales-registering wheels to zero and closes and locks the lid preparatory to the next day's business. At the close of the next
130 day's business he again opens the lid to take off the amounts registered that day upon the sales-registering wheels and again notes the

number indicated upon the lid-registering mechanism. This number should be a single unit greater than indicated the evening before, provided the lid has not been opened during the day. If the mechanism indicates a number several units greater than that last noted, the proprietor will know that the lid has been opened and closed several times since he last opened it himself. By this mechanism he can always assure himself that no one has improper access to the registering mechanism. It will of course be understood that this lid-registering mechanism is so arranged that the operator or attendant cannot possibly tamper with it to change the registry to a less number, and it is not necessary that the proprietor himself should have access to it except to read off the numbers indicated by it. One form of mechanism for this purpose is illustrated in Figs. 2, 3, and 4, where a train of three wheels q r s is employed, suitably journaled side by side in a case t , attached to the rear or under side of the upper guard-plate u . These wheels are provided upon their face with the numbers 0, 1, 2, 3, up to 9, and the wheel q is provided with a ten-toothed ratchet (shown in dotted lines in Fig. 4) and with a projection v , for engaging one of the ten notches in the wheel r , so as to turn the latter one number for each complete revolution of the wheel q . The wheel r is likewise provided with a projection w , for engaging one of the ten notches of the wheel s for a like purpose. One number on each wheel will show through the openings x in the plate u , and the number on the wheel s represents hundreds, that on the wheel r tens, and that on the wheel q units. The wheel q is turned by the spring-pawl y upon the spring-arm z within the case t , and from the arm z a stud a' , carrying a button b' , projects, as shown. This registering mechanism, which in itself is old and may be of any other suitable construction, is so secured within the case that when the lid is closed the button b' is pressed down, either directly by the lid or by the interposed spring c' , and the wheel q turned one notch. Upon lifting the lid again the button b' will be released and the pawl y will slip back and effect a fresh engagement with the ratchet upon the wheel q , so that upon again closing the lid the wheel q will be turned another number, which operation will be repeated at every opening and closing of the lid, as will be readily understood.

The openings x in the plate u are covered by a glass secured beneath said plate to prevent the insertion of any instrument to turn the registering-wheels, and, as additional security, the wheels r and s may, if desired, be each provided with a ratchet and a spring engaging therewith similar to wheel q to prevent said wheels being turned in the wrong direction by any instrument inserted through

the openings x in event the glass is omitted or should become broken.

In the present instance the case t , inclosing the registering mechanism, has a solid back and is permanently secured to the under rear side of the guard-plate u , as by being soldered or riveted thereto, so that not only has the attendant or operator no access to it to change the registry to a less number, but the proprietor himself cannot so change or reset it. The mechanism will continue to register the total number of openings and closings of the lid up to nine hundred and ninety-nine, and upon opening and closing the lid the one-thousandth time the registering-wheels will all reset themselves to zero. It will thus be seen that in the ordinary use of the machine, where the lid is opened only once each day to take off the amount of sales registered, the lid-registering mechanism will continue to register the total number of operations of the lid for several years and will automatically reset itself to 0 to begin over again.

While we have thus shown and described one form of registering mechanism arranged to be actuated by the lid for the purpose described, we do not wish it understood that our invention is limited to this particular form nor to its location in the machine. Under the construction we have illustrated the registering mechanism is actuated by the closing of the lid; but it could easily be arranged to be actuated by the opening of the lid, in either event registering one number for each opening and closing of said lid.

Having thus fully described our invention, we claim—

1. In a cash register and indicator having a series of operating-keys and registering and indicating mechanisms actuated thereby, an endwise-moving horizontal bar extending transversely of the keys and arranged when a key is partially operated to move into a position to lock the unoperated keys and to be moved out of such position upon the full operation and release of said key, substantially as and for the purpose specified.

2. In a cash register and indicator having a series of operating-keys and registering and indicating mechanisms actuated thereby, an endwise-moving horizontal bar extending transversely of the keys and arranged when a key is partially operated to move into a position to support said key if released and to lock the unoperated keys and upon the full operation and release of said key to move out of such position to release the unoperated keys and permit the operated key to be reset, substantially as and for the purpose specified.

3. In a cash register and indicator having the series of keys and registering and indicating mechanisms operated thereby, a horizontal reciprocating bar extending across and carried in guides upon the machine and provided with slots, through which the rear ends

of the keys project, and mechanism for automatically returning said bar to normal position, said bar being arranged when a key is partially operated to be moved laterally on its guides to bring the wall of one of its slots beneath said key to support the same, if released, and upon a full operation of such key to be returned to its normal position to permit said key to reset itself in its slot.

4. In a cash register and indicator having a series of keys and registering and indicating mechanisms operated thereby, a horizontally-reciprocating key-arresting bar extending across and carried in guides upon the machine and provided with slots having offsets, which form locking-shoulders in the walls of said slots, and through which slots the rear ends of the keys project, said bar being arranged when the key is partially operated to be moved laterally on its guides to bring the wall of one of its slots beneath said key and the locking-shoulders of its other slots over the unoperated keys and upon a full operation of said key to be returned to its normal position to permit said key to reset itself in its slot.

5. In a cash register and indicator, the combination, with the operating-keys and a vibrating frame actuated by the operation of any one of said keys, of a horizontal key-arresting bar carried on guides on the rear side of the machine and provided with slots through which the rear ends of the keys project, and cam mechanism operated by said vibrating frame and actuating said key-arresting bar, whereby upon partially operating any one of said keys said key-arresting bar is moved laterally to cause the wall of one of its slots to project beneath said key, and whereby upon operating said key to its full extent said key-arresting bar is moved back to its normal position to permit said key to reset itself in its slot in said bar, substantially as described.

6. In a cash register and indicator, the combination, with the operating-keys and a vibrating frame actuated by the operation of any one of said keys, of a horizontal key-arresting bar carried on guides on the rear side of the machine and provided with slots having offsets which form locking-shoulders in the walls of said slots, and through which slots the rear ends of the keys project, and cam mechanism operated by said vibrating frame and actuating said key-arresting bar, whereby upon partially operating any one of said keys said key-arresting bar is moved laterally to cause the wall of one of its slots to project beneath said key, and the locking-shoulders in the walls of the other slots to lock their respective keys from operation, and whereby upon operating said key to its full extent said key-arresting bar is moved back to its normal position to release the unoperated keys and to permit said operated

key to reset itself in its slot in said bar, substantially as described.

7. In a cash register and indicator, the combination, with the operating-keys and a vibrating frame actuated by the operation of any one of said keys, of a horizontal key-arresting bar carried on guides on the rear side of the machine and provided with slots through which the rear ends of the keys project, a cam secured to one end of said bar, and a pivoted arm, actuated by the vibrating frame and engaging with said cam, whereby upon partially operating any one of said keys said key-arresting bar is moved laterally to cause the wall of one of its slots to project beneath said key, and whereby upon operating said key to its full extent said key-arresting bar is moved back to its normal position to permit said key to reset itself in its slot in said bar, substantially as described.

8. In a cash register and indicator, the combination, with the operating-keys and a vibrating frame actuated by the operation of any one of said keys, of a horizontal key-arresting bar carried on guides on the rear side of the machine and provided with slots having offsets which form locking-shoulders in the walls of said slots, and through which slots the rear ends of the keys project, a cam secured to one end of said bar, and a pivoted arm actuated by the vibrating frame and engaging with said cam, whereby upon partially operating any one of said keys said key-arresting bar is moved laterally to cause the wall of one of its slots to project beneath said key and the locking-shoulders in the walls of the other slots to lock their respective keys from operation, and whereby upon operating said key to its full extent said key-arresting bar is moved back to its normal position to release the unoperated keys and to permit said operated key to reset itself in its slot in said bar, substantially as described.

9. In a cash register and indicator, the combination, with the keys E, of the registering-wheels H, actuated thereby, the vibrating frame N, key-arresting bar R, provided with slots c and cam U, the supporting-wing L, carrying the pendent arm T, engaging with said cam, the spring f, bearing against the opposite end of the bar R, and the bell-crank lever O, pivoted to the vibrating frame N and actuating the supporting-wing L through the medium of the dog g', substantially as and for the purpose described.

10. In a cash register and indicator, the combination, with the main registering mechanism and the case or cabinet inclosing the same, of a supplemental sealed registering mechanism actuated at each opening and closing of the lid of said case or cabinet to register the total number of openings and closings of said lid, substantially as described.

11. In a cash register and indicator, the

combination, with the registering and indicating mechanism, the operating-keys E, the till or money-drawer D, and the locking-bolt *j*, actuated by the operation of any one of said
5 keys, of the drawer-propelling spring V, pivoted on a post W and bearing against the rear side of said drawer, substantially as and for the purpose described.

12. In a cash register and indicator, the
10 combination, with the operating-keys E, vibrating frame N, drawer D, and locking-bolt *j*, of the bolt-lever Y, pivoted transversely

across the rear side of the machine and connected to the locking-bolt *j*, and the lever O, connected to the vibrating frame N and provided with the extension *g*, arranged to engage with and actuate the bolt-lever Y, substantially as described. 15

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