(No Model.) 3 Sheets—Sheet 1.

W. C. McGILL.

CASH INDICATOR AND REGISTER.

No. 415,120. Patented Nov. 12, 1889.

Fig. 1.

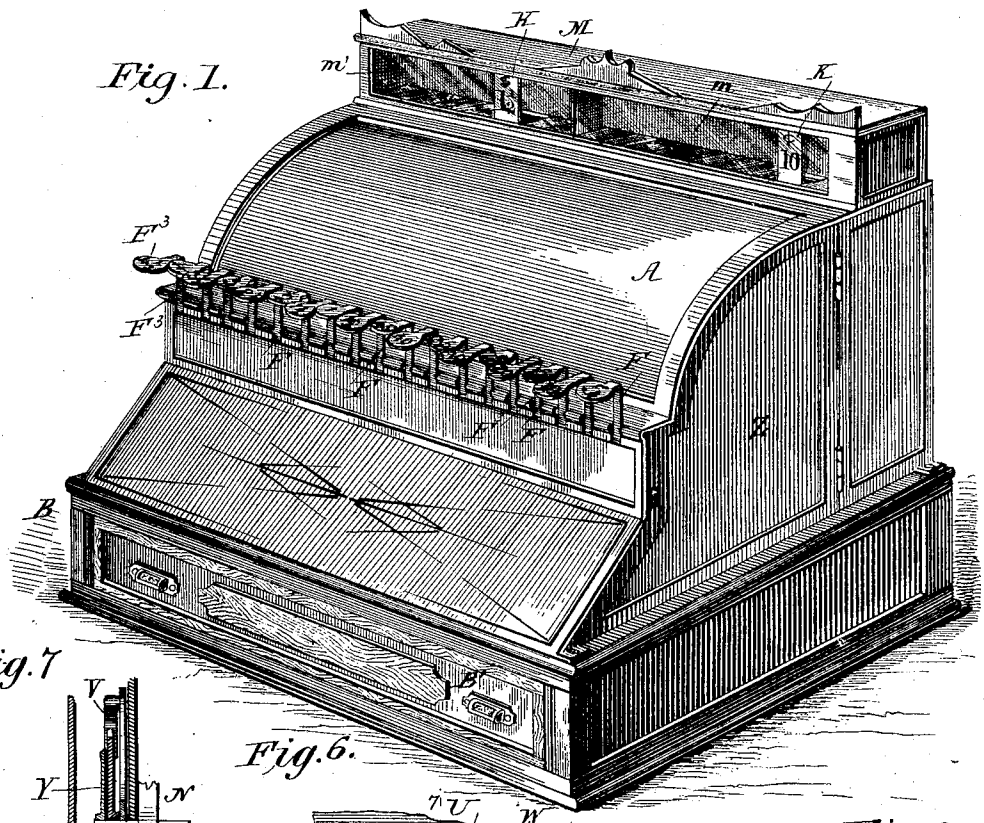


Fig. 7

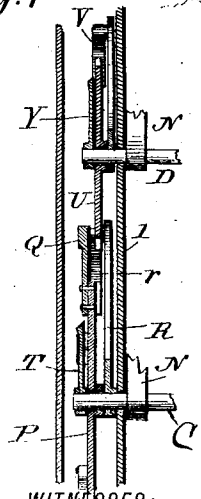


Fig. 6.

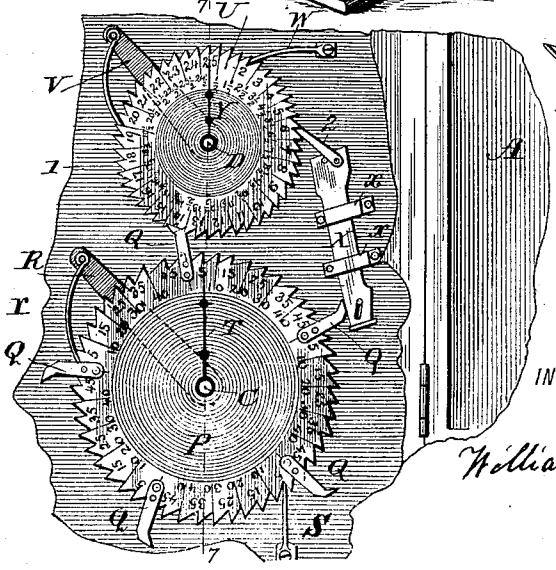
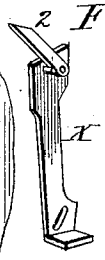


Fig. 8



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(No Model.) 3 Sheets—Sheet 2.

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CASH INDICATOR AND REGISTER.

No. 415,120. Patented Nov. 12, 1889.

Fig. 2

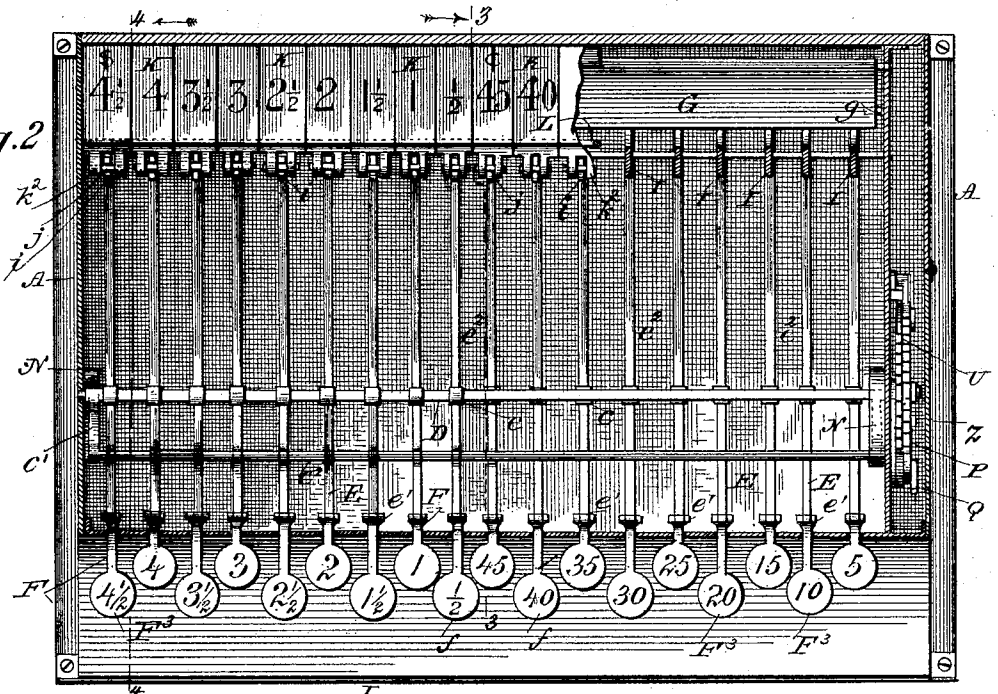
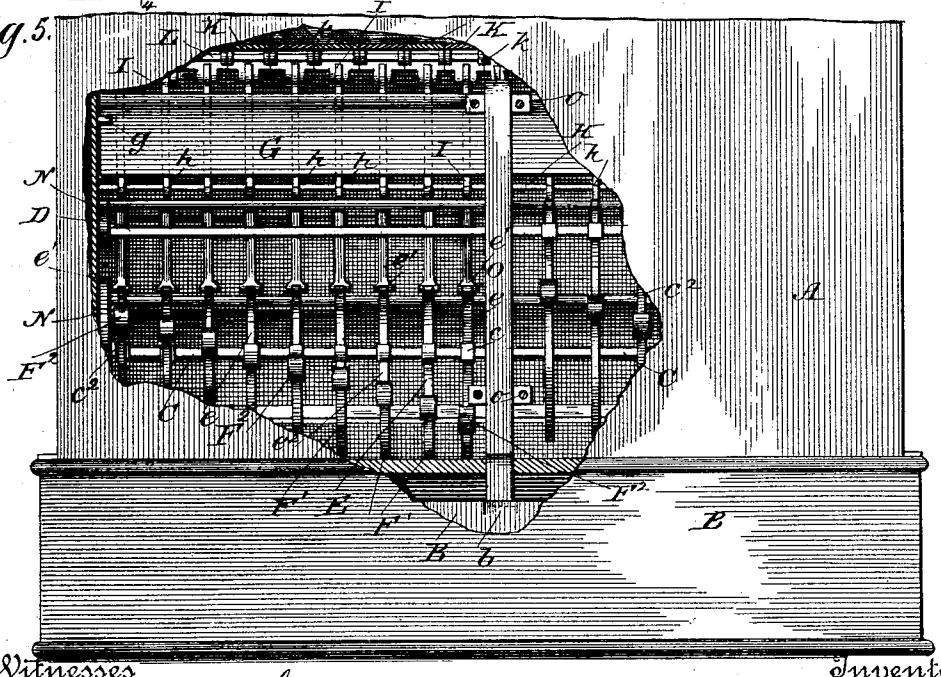


Fig. 5.



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(No Model.) 3 Sheets—Sheet 3.

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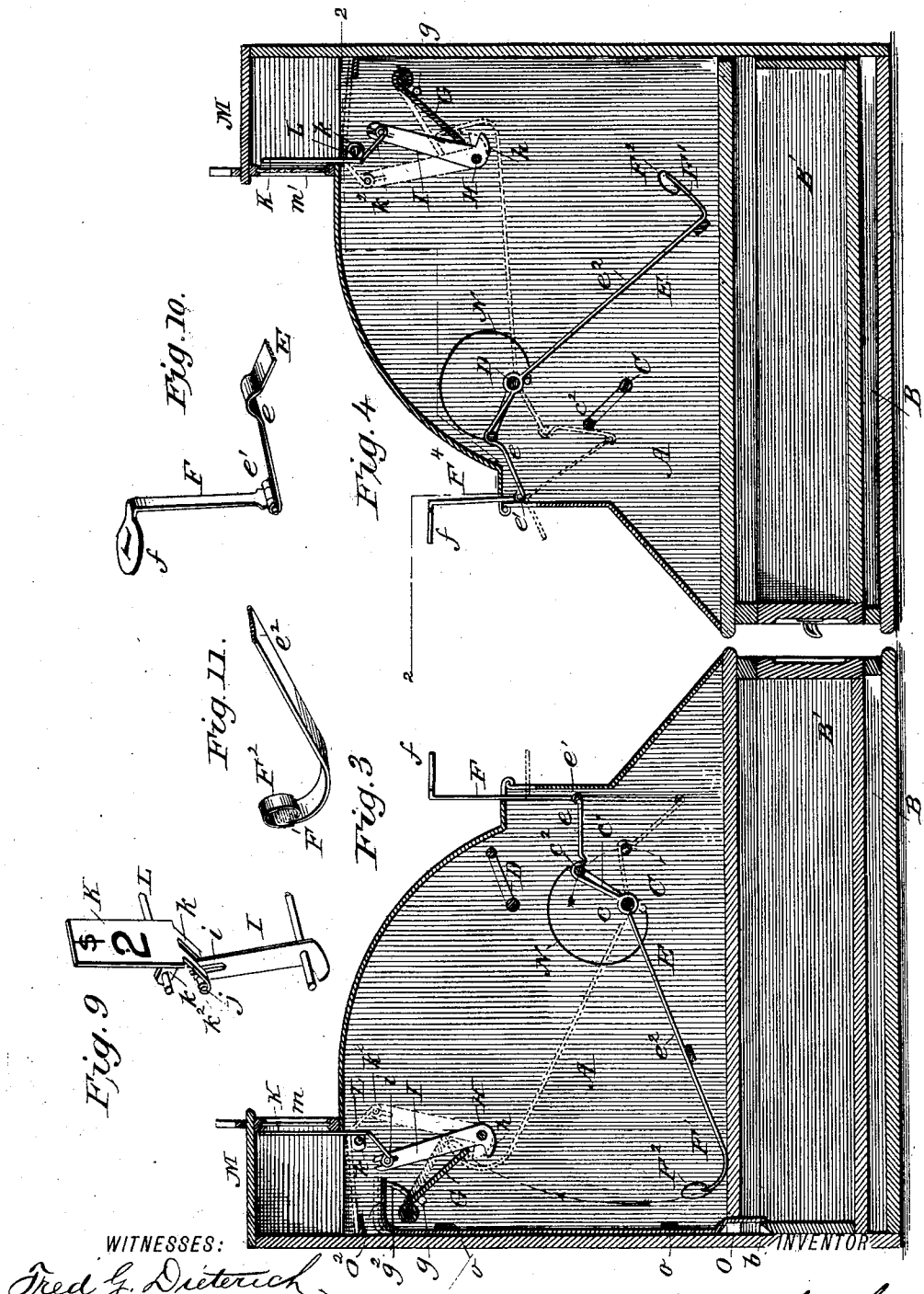
CASH INDICATOR AND REGISTER.

No. 415,120. Patented Nov. 12, 1889.



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UNITED STATES PATENT OFFICE.

WILLIAM C. McGILL, OF WASHINGTON, DISTRICT OF COLUMBIA.

CASH INDICATOR AND REGISTER.

SPECIFICATION forming part of Letters Patent No. 415,120, dated November 12, 1889.

Application filed August 17, 1889. Serial No. 321,069. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. McGILL, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Cash-Registers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to cash-registers, and it refers more particularly to that class of machines in which a series of keys or levers are pivotally adjusted on a shaft or shafts by operating any one of which the drawer is unlocked, the plate indicating the previous sale is dropped out of sight, and the plate indicating the last sale is placed in sight. In machines of this type which are in practical use the operating keys or levers are usually pivoted on a supporting-shaft, and are each arranged to operate one of a series of registering-wheels which are disconnected from each other.

It is well understood by those skilled in the art and by those who use this class of machines that when it is desired to ascertain the amount of the sales that it is necessary to add up the amounts indicated on the series of registering-wheels. This is very objectionable, because it necessitates the use of valuable time and frequently leads to inaccuracies in summing up the amount of the sales. It will also be seen that by arranging intermediate gearing or tripping devices between the key-levers and the indicator-plates the action of the machine is not always positive, the parts being liable at any time to become disconnected or broken, thus putting the machine temporarily out of use; and, finally, the construction of machines of this character in the manner described, where a series of registering-wheels and actuating-pawls are required, necessarily produces machines of very costly construction.

To overcome the aforesaid objections and to provide a machine which will be positive in operation, easy to manipulate, and cheap as to cost is the object of my present invention, which consists in the peculiar combination and novel arrangement of parts, all of which will hereinafter be more fully described in the annexed specification, and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved cash-register. Fig. 2 is a horizontal section taken on the line 2 2 of Fig. 4, portions being broken away to more clearly illustrate the several parts. Fig. 3 is a transverse vertical section taken on the line 3 3 of Fig. 2, looking in the direction indicated by the arrow. Fig. 4 is a similar view taken on the line 4 4, Fig. 2, looking in the direction of the arrow. Fig. 5 is a partial rear view, parts being broken away to more clearly illustrate the interior construction. Fig. 6 is a side view of a portion of the machine, showing the registering-wheels and their operative connection. Fig. 7 is a vertical detail section taken on the line 7 7, Fig. 6. Fig. 8 is a detail view hereinafter specifically referred to. Fig. 9 is a detail view of one of the indicator-plates and its tripping-arm; Fig. 10, a detail view showing the connection of the key with one end of the key-lever, and Fig. 11 is a detail view of the lower end of one of the key-levers.

To more clearly define my invention, I will at first generally outline the construction and operation, and then specifically point out the arrangement and construction of the several parts in detail.

In the practical construction of my machine I provide a suitable casing or body made of wood or metal, or a combination of wood and metal, said casing being of any suitable ornamental shape, preferably as shown in drawings, being mounted upon a base portion provided with a cash-drawer of the usual construction.

In the case or body of the machine I journal two shafts arranged one above the other. One (the lower) I will term the "cents-shaft," while the upper one I will term the "dollar-shaft." These shafts are so journaled as to be capable of rotating in their bearings, and have each loosely journaled thereon a series of levers, which I will term the "key-levers," to each of which is secured an operating-key, which projects to the outside of the casing, and which are arranged to indicate the various amounts of cents and dollars in a manner hereinafter described. The rear ends of the

key-levers are extended and provided with upwardly-extended portions, which are arranged, when the keys are depressed, to engage a swinging plate hung near the upper rear part of the machine, which in turn will operate against tripping-arms journaled at their lower ends on a longitudinal rod, their upper ends engaging a series of indicator-plates suitably arranged in the indicator-chamber or extension of the machine. Each of said arms is provided with a rearwardly-extending lip, which, when the said tripping-arms are thrown forward by the upward movement of the key-levers, will project in the path of the inner end of said lever when said lever is on its downward movement and be brought back again to a rearward position, bringing by said movement of the tripping-arm the desired indicator-plate in view. The several levers are so adjusted and of such a construction that each key-lever will require a greater or less throw before it will operate the indicator-plates, and it is in this particular construction that one of the features of my invention appears.

The several key-levers being arranged so as to be capable of various degrees of movement, and as they are so secured to their shafts as to cause said shafts to rotate, it will be seen that the varied movements of said levers will cause the shafts to partially rotate to various limits. These partial movements or rotations of the shafts I utilize to operate the registering-wheels, of which there is but one to each shaft. These wheels I locate at one end of the machine in a supplemental compartment, to which access may be readily obtained through a hinged door. These disks are loosely mounted upon their respective shafts, and are rotated thereon by means of pawls fixedly secured to the said shafts.

In my drawings I have shown the cents-wheel mounted on the lower shaft and the dollar-wheel on the upper shaft. These wheels I divide off in a suitable series of numbers in a manner presently fully described, each number registering with a tooth on said wheels. It will thus be seen that if, for instance, the key-lever which has the least movement is depressed the shaft will be rotated to turn its registering-wheel to the degree of a single tooth, and if the key-lever which has the greatest throw is depressed the registering-wheel will be rotated to a degree of a predetermined number of teeth, and a retaining-pawl engaging the registering-wheel will hold it in its turned position, while the shaft and the key-levers, which are spring-actuated, will return to their normal position.

Suitable connections, hereinafter described, between the cents and dollar wheels allow the amount of sales of the cents-wheels being transmitted to the dollar-wheels, so that when it is desired to ascertain the amount of the sales it will only be necessary to open the door of the supplemental compartment and note the amount registered on the dollar-wheel and add the amount registered on the cents-wheel, and the sum total will at once be obtained. Thus by a single shaft and a series of key-levers and a single register-wheel I am enabled to indicate the amount of sale, remove the indication of the previous sale, register the amount, and also unlock the drawer, as the drawer-locking bar is connected in such a manner as to be operated by the movement of the key-lever, said operations being all accomplished by a direct movement of the key-lever without intermediate gearing or connections between said levers and the indicator devices.

Having thus generally outlined the construction and operation of my machine, I will now specifically point out the construction, arrangement, and operation of the same, referring to the accompanying drawings by letters and numbers, the same letters and numbers in the various figures of the drawings indicating like parts.

In the drawings, A indicates the casing or body portion, which is mounted upon a drawer-case B, provided with the usual cash-drawer B′. In the forward part of the case I journal two longitudinal shafts C D, arranged one above the other, as most clearly shown in Figs. 3 and 4 of the drawings. Upon the lower or cents shaft C is secured a series of levers E, preferably by forming the same with hubs *c*, having a circular aperture fitting loosely on the shaft C. Projecting forwardly from each end of said shaft is an arm c' c', said arms being connected by a longitudinal arm c^2, the upper face of which forms a bearing for extensions *e* of the levers, which rest on said arm c^2, as shown, said extensions *e* having each a hinged connection e' at their outer ends with the operating-keys F, which project upward to the outside of the case, said keys being provided with suitable horizontally and forwardly disposed finger-tabs *f*, as shown.

By providing each of the shafts with the forward bail-like projections c' c' c^2 it will be seen that if any one of the keys F is depressed its corresponding lever will depress the bar c^2, and with it partially revolve the shaft without disturbing any of the other key-levers, said shafts turning loosely in the hubs *c* of the same.

In the arrangement of the key-levers I provide for each shaft nine levers, which represent amounts on the cents-shaft, ranging from five cents to forty-five cents, and on the dollar-shaft ranging from one-half dollar to four and one-half dollars, and for convenience and compactness I arrange the alternate keys F^3 to project slightly forward of the other keys, as shown in Figs. 1 and 2. The rear ends of the key-levers E form long arms e^2, the rear ends of which are turned upward, as at F′.

It will be observed by reference to Fig. 5 of the drawings that the extensions F′ vary in their lengths, (the five-cent lever having the shortest and the forty-five cent having the

longest extension,) said lengths being governed by the arrangement of the teeth on the registering-wheels—*i. e.*, that the difference between the five-cent lever and the ten-cent lever is of a degree equal to the space of one tooth on the registering-wheel, the purport of said variations of the levers E′ being presently described.

As the construction and operation of the levers on the dollar-shaft is precisely similar to those on the cents-shaft, a general reference thereto herein is only deemed necessary.

Pivotally supported at its upper rear end in the upper rear portion of the case A is a gravity-plate G, which normally drops to a position shown in full lines, Figs. 3 and 4 of the drawings, being held in such position by a stop-pin *g*, said plate G extending entirely across the interior of the machine, as shown. Arranged forward of the plate G, which I will term the "tripping-plate," and just below the lower end thereof, is a longitudinal rod H, on which is mounted a series of arms I, which I will term the "tripping-arms," one of said arms being arranged for and in alignment with each of the key-levers. The construction of said arms I is most clearly shown in Fig. 9 of the drawings, in which it will be seen that the upper end of the arm is slotted, as at *i*, and engages a cross-pin *j*, held in the lower end of the forked arms of an indicator-plate K. The indicator-plates K, one of which is provided for each key-lever, consist each of a narrow plate provided with downwardly-extending ears *k*, which are pivoted on a longitudinal rod L, arranged at the base and front edge of the indicator-chamber M, which is preferably divided into two sections *m m′*, representing the cents and dollar sections, respectively. The front ends of the plates K are each provided with forked extensions k^2, projecting forwardly and downwardly, as shown, and which engage the upper ends of the tripping-arms I, as before described.

On the upper end of the extensions F′ of the levers E, I form spring-catches F^2, which consist of spring-plates secured at one end to the rear upper edge of said extensions, their forward ends extending over the said front edge of said extensions, as most clearly shown in Fig. 11 of the drawings.

N denotes leaf-springs, which are secured at one end to the casing, while the opposite end is secured to the arm *c′*, said springs tending to bring the levers and shaft to their normal position.

In operation it will be seen that if a sale is made, say, for forty-five cents, and the previous sale having been five cents, which would still appear on the indicator-plate last elevated, the operator by pressing on the five-cent key F will force it down to its limit, which is indicated by the extension F′ of the lever, raising the gravity-plate G to its full extent, as shown in dotted lines, Figs. 3 and 4, (which in its outward movement will engage the arm I, which was pulled back at the movement for the preceding sale, and which, as stated, was the five-cent sale,) and force said arm outward and cause it to pull the indicator-plate 5 down in horizontal position. It will be observed that the arrangement of the rear ends of the key-levers is such that the spring-catches F^2 will on the upward movement of the lever strike against the rounded edge *n* of a rearwardly-projecting lip *h* of the arm I, and, owing to its elasticity, will pass by said lip *h*. The construction of said catch, however, is such that as the lever descends the catch will engage the lip *h* and pull the aligning-arm I backward, as shown, before it will pass said lip, and by moving said arm backward it (the arm) will pull the desired indicator-plate (forty-five cent) to an upright position and in view.

The drawer-lock consists of a vertical bar O, guided in bails *o o*, arranged at any convenient point on the inner side of the back of the machine, the lower end O′ of which engages the bevel-notch *b* of the drawer, while the upper end projects upward above and to the rear of the plate G, and has its upper end extended horizontally forward over said plate, as at O^2, and is supported on a vertical projection g^2, formed on the upper face of said plate G, as shown. It will thus be seen that as the plate G is raised by any of the key-levers the projection g^2 will raise the bar O and release the drawer, and when said plate is dropped the bar will drop back by gravity in position to be engaged by the beveled end of the drawer when it is pushed in closed position, and, rising over said edge, will again drop and lock it in place.

From the foregoing the operation of the indicating portion of my invention will be clearly understood. As before stated, the movement of each key-lever is of a varied degree, and such movement is transmitted to the shafts, which movements operate the register-wheels.

By reference to Figs. 6 and 7 the construction of my registering devices will readily appear. In said figures, P indicates the cents register-wheel, which is loosely mounted upon the shaft C, and which is provided with fifty teeth, said teeth being divided in five series of ten teeth each, nine teeth of each series being numbered 5 to 45 in rotation, while the tenth or dividing tooth of each series is indicated by a projecting finger or pawl Q, secured to the face of the wheel, and which project beyond the periphery thereof, as shown. It will be understood that the relative arrangement of the teeth in relation to the movement of the shaft is such that a movement of the five-cent lever will tend to cause the shaft and its operating-pawl R to move the wheel P to the extent of one tooth, and a movement of the forty-five-cent lever causes the wheel to be moved to the distance of nine teeth. It will thus be seen that the farthest movement of rotation of the shaft is nine-fiftieths of a complete re-

tation, thereby affording by a simple movement of the keys on the shaft a practical manner of transmitting the amount of the sale to the registering-wheel.

While I deem it most practical to divide the wheel P into five sections, so as to admit of approximately one-fifth revolution of the shaft C, it is manifest that the said wheel might be divided into a greater or less number of series and the shaft turned to a greater or less degree, if desired, without departing from the broad ideas of my invention.

The operating-pawl R, before referred to, consists of a lateral arm fixedly secured to the shaft C, provided with a spring pawl or finger *r*, which projects over and engages the teeth of the wheel P. In operation, when the shaft is rotated, the pawl will move the wheel P to the desired degree, and when the shaft turns back to its normal position the arm R also turns back the pawl *r*, slipping over the teeth on its return movement.

S denotes a spring-pawl, which, while permitting the wheel P to pass by it in its forward direction, holds it from reverse movement.

T indicates a pointer or indicator-hand secured upon the outer end of the shaft C, and which normally indicates the cents amount of sales on the said registering-wheel P.

From the foregoing the operation of the manner of registering the various amounts from five to forty-five cents will readily appear.

U denotes a registering-wheel mounted on the upper or dollar shaft D, which is also provided with fifty teeth, each one of which indicates fifty cents, said wheel being graduated in half-dollars from one-half to twenty-five dollars. This wheel is loosely journaled on the upper shaft, is operated by a pawl V, secured to said shaft, and has an indicator-hand Y over its face secured to the shaft, is engaged by a retaining spring-pawl W, and is operated in a manner precisely similar to the wheel P, its shaft being connected with the dollar and half-dollar key-levers, as shown. The wheel U is also arranged to take up the amounts registered on the cents-wheel whenever said amount reaches fifty cents on each fifth revolution of the wheel P. This is accomplished in the following manner: Supposing the last amount registered on the cents-wheel had moved said wheel so the indicator-hand registered forty-five cents, this would bring one of the series of projecting pawls Q in position against the lower end of a lifting-bar X, (shown in detail in Fig. 8,) held to slide in boxes *x x*, secured to the side 1 of the frame A. This bar has pivoted at its upper end a gravity-pawl 2, which engages the teeth of the wheel U, as clearly shown in the drawings.

By following the relation of the several parts, as described, it will be seen that should the next sale be five cents the wheel P will be rotated forward the extent of one tooth, and during said movement the projecting pawl Q would engage and lift the bar X, causing its pawl 2 to move the wheel U one tooth, thus taking the amount (fifty cents) registered by the wheel P and transferring it to the wheel U, this operation being repeated at each time the indicator-hand T points to the tenth tooth on the wheel P.

It will be understood that the relation of the sliding bar and the projecting pawl is such that said pawl will pass and release the bar X at the moment it has raised it enough to move the wheel U one tooth.

When it is desired to register and indicate a combination sale—*i. e.*, when a sale is made which is of an amount not specifically indicated on the keys—such as, for instance, one dollar and sixty cents—the operator first with one hand pushes down the ten-cent key and holds same down, while with the other hand he pushes down the one-and-one-half-dollar key. The movement of the cents-key throws down the standing indicator-plate, said movements of the two keys registering the amounts, as before described. As the operator releases the keys they in their downward movement will bring the ten-cent and one and one-half dollar plates to view, thus indicating the amount of the sale. It will also be understood that, if desired, multiple gears may be employed to be operated by the wheel U, so the amounts may be registered into hundreds or thousands of dollars; or, if desired, the cents-wheel may be divided into series ranging from one cent to ten cents, and the dollar-wheels divided into dimes to represent amounts from ten cents to five dollars.

Z indicates the hinged door, which is provided with a suitable lock.

My improved register may also be provided with a gong of any approved construction, which can be operated by the movement of the drawer or otherwise.

From the foregoing description, taken in connection with the drawings, the advantages of my improvement will readily appear.

My cash-register can be constructed at a cost of at least one-half the cost of other machines of this character. Its operation is positive, while the manner of operating it will be understood at a glance.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a series of levers pivotally supported within the casing, connected at one end with a series of operating-keys and provided with rearwardly-extending angular arms, of a series of indicator-plates pivoted in the upper part of the casing, a series of tripping-arms journaled in the case and connected with the indicator-plates, and a swinging tripping-plate arranged adjacent to said arms, said levers adapted to engage said tripping-plate on its upper movement, whereby said plate will engage the

tripping-arms and throw the indicator-plates down, said levers engaging said arms on their downward movement and throwing the desired indicator-plate in view, substantially as and for the purpose described.

2. The combination, with the shaft C, the levers E, secured thereon, as shown, and the keys F, secured to said levers, said levers having upturned inner ends of differential heights and provided with spring-catches F^2 at their ends, of the tripping-plate G, supported as shown, the pivotal tripping-arms I, the indicator-plates connected to said arms, a registering-wheel loosely mounted on the shaft C, a pawl R, fixedly secured to the shaft and engaging the wheel P, and means for bringing the shaft and keys to their normal position after they are operated, all arranged substantially as and for the purpose described.

3. The combination, with the shaft C, mounted as shown, and the key-levers loosely secured thereon, said levers adapted for movements of varied degrees, whereby the shaft is capable of partial rotation, of the registering-wheel P, loosely mounted on said shaft, said wheel provided with a number of teeth arranged in series, a pawl fixedly secured to said shaft, engaging said teeth, and adapted to move said wheel in a continuous revolution about said shaft by the partial rotations of said shaft, and means for bringing the shaft and the pawl back to their normal positions, substantially as shown and described.

4. The combination, with a series of key-levers pivotally supported in the casing, a series of indicator-plates pivoted in said casing, and intermediate tripping-arms pivoted in the casing, of the tripping-plate G, provided with a vertical projection g^2, and the drawer-locking vertical bar O, engaging said projection g^2, said plate adapted to be lifted by the upward movement of the key-levers and engage the tripping-arms I, whereby the indicator-plates are thrown down and the locking-bar O lifted from engagement with the drawer, substantially as shown and described.

5. The combination, with the shafts C D, journaled in the casing, a series of key-levers loosely secured upon each shaft, having movements of varied degrees, whereby said shafts are adapted for partial rotations of various degrees, of the register-wheels P U, loosely mounted on the lower and upper shafts, respectively, the shaft C, provided with a series of radially-projecting pawls Q, pawls R V, fixedly secured to said shafts C D and engaging the wheels P and U, respectively, and adapted to rotate said wheels about said shafts by the partial movements thereof, an intermediate lifting-pawl X, engaging the wheel U, adapted to be engaged by the pawls Q and raised to turn the wheel U one tooth, and means for bringing said shafts back to their normal position after each partial movement, substantially as shown and described.

6. A cash-register consisting of two shafts journaled in the casing, a series of key-levers loosely secured thereon, having inner upturned ends of differential lengths, a series of indicator-plates each independently pivoted on a single cross-rod, a series of tripping-arms journaled independently on a single cross-rod, engaging the indicator-plates at their upper ends, their lower ends provided with inwardly-extending lips projecting in the path of the movement of the rear ends of the key-levers on their downward movement, a swinging tripping-plate extended to the rear of the entire length of the tripping-arms, said plate adapted to engage said arms and throw same outward to drop the indicator-plates when engaged by the upward movement of the key-levers, register wheels P U, loosely mounted on said shafts, pawls fixedly secured to said shafts and engaging said wheels, and an intermediate pawl adapted to engage the register-wheels and transmit at predetermined intervals the amounts from the wheel P to wheel U, and means for holding said wheels in adjusted positions, substantially as shown and described.

7. The shaft C, the bail-like projection c' c' c^2, secured thereto, and the key-levers E, loosely secured on said shafts, said levers each consisting of a long arm e^2, having an upwardly-projecting arm F', an extension e, resting on the bar c^2 of the bail-like projection c' c' c^2, and a key F, hinged at its lower end to said extension e, in combination with the indicator devices consisting of the tripping-plate G, tripping-arms I, and the pivoted indicator-plates K K, all arranged substantially as and for the purpose described.

8. The combination, with an operating-shaft journaled in the casing, a longitudinal rod disposed parallel to said shaft and connected thereto, and a series of key-levers loosely journaled on said shaft and having bearings on said parallel rod, said levers adapted when depressed to move the said rod and thereby revolve the shaft, of a registering-wheel loosely mounted on said shaft, a pawl fixedly secured to the shaft, engaging said wheel to operate it by the movements of the shaft, and means for holding the said wheel in adjusted positions, substantially as shown and described.

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

WILLIAM C. McGILL.

Witnesses:
THOS. E. WOODS,
GEO. F. SCHAYER.