

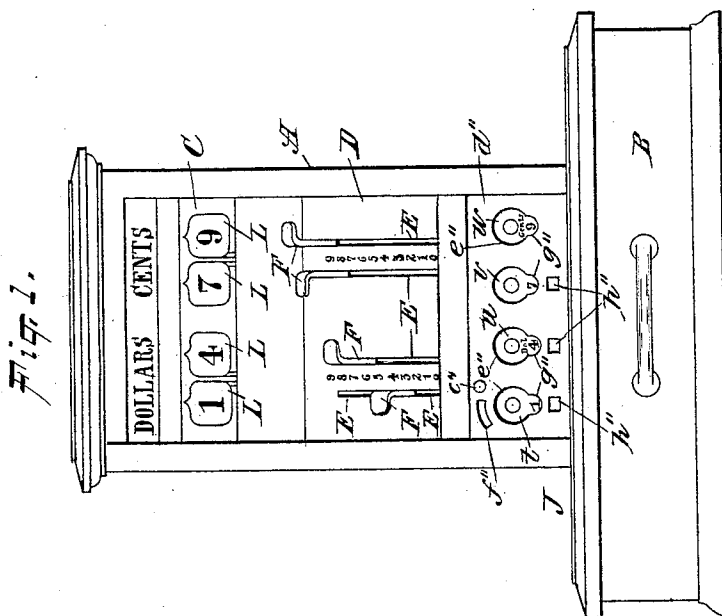
(No Model.)

6 Sheets—Sheet 1.

E. F. SPAULDING.
CASH REGISTER.

No. 573,046.

Patented Dec. 15, 1896.



WITNESSES:

WITNESSES:
Herman Gustow.
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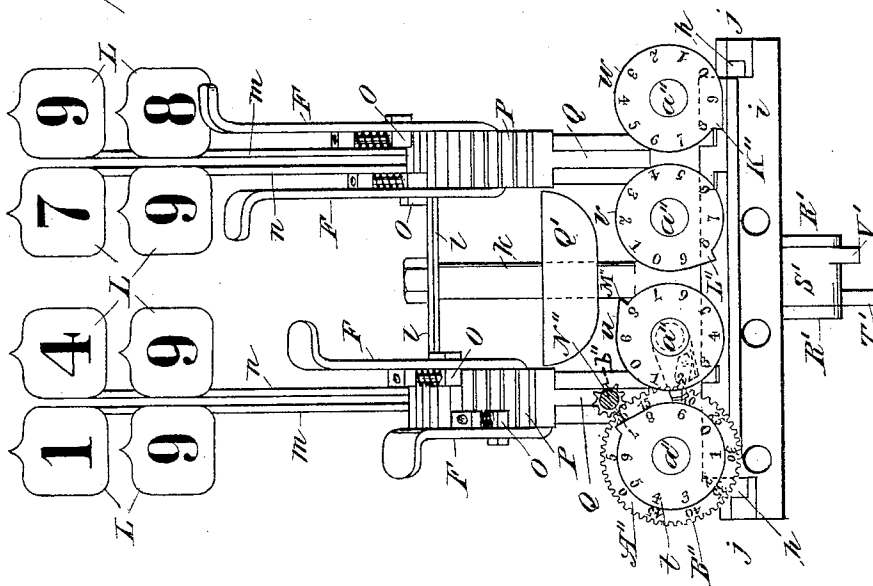
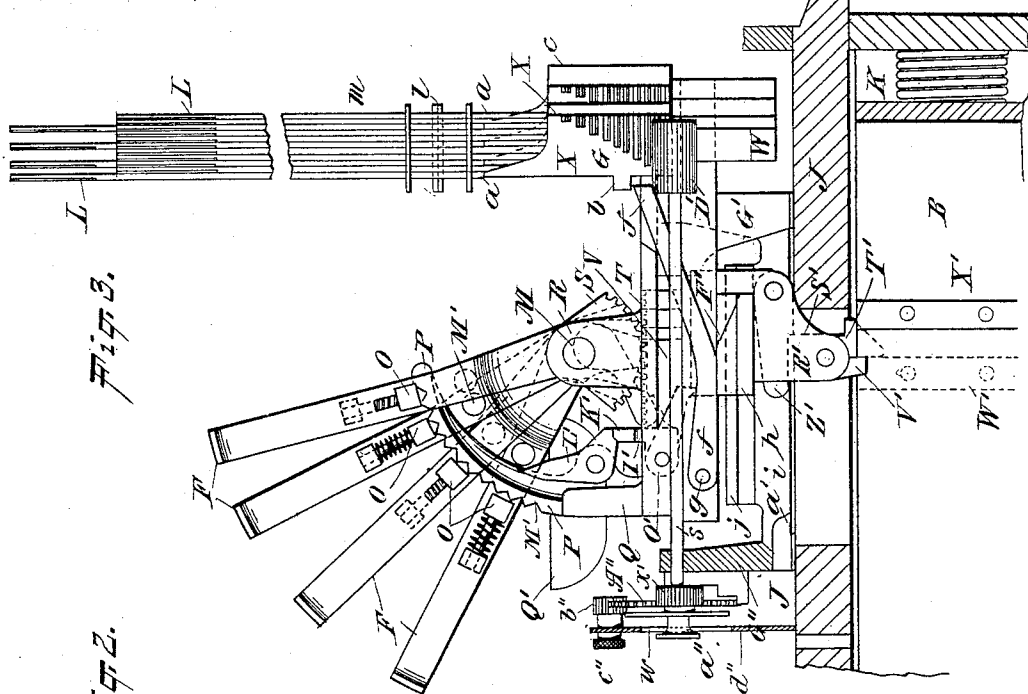
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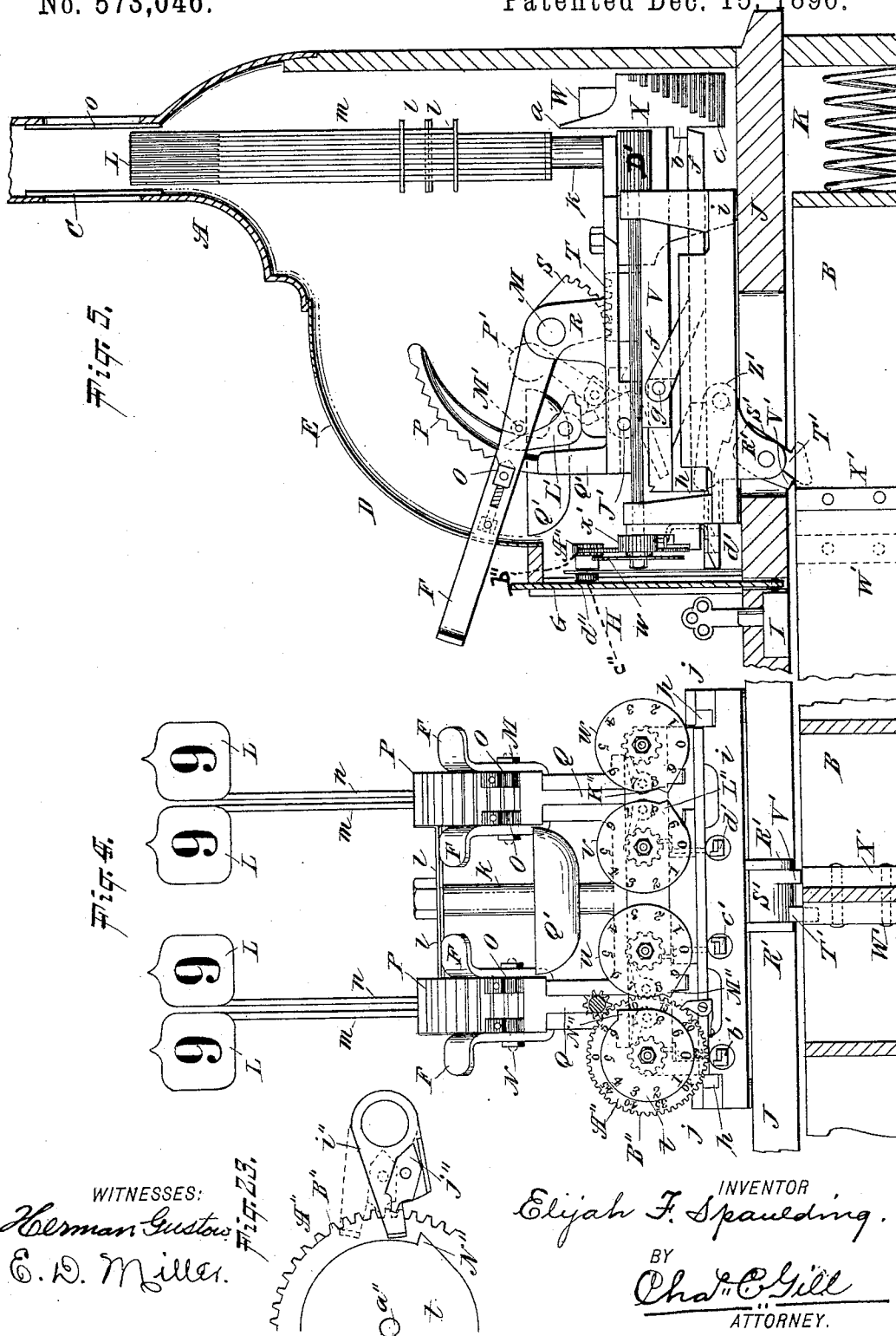
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6 Sheets—Sheet 3.

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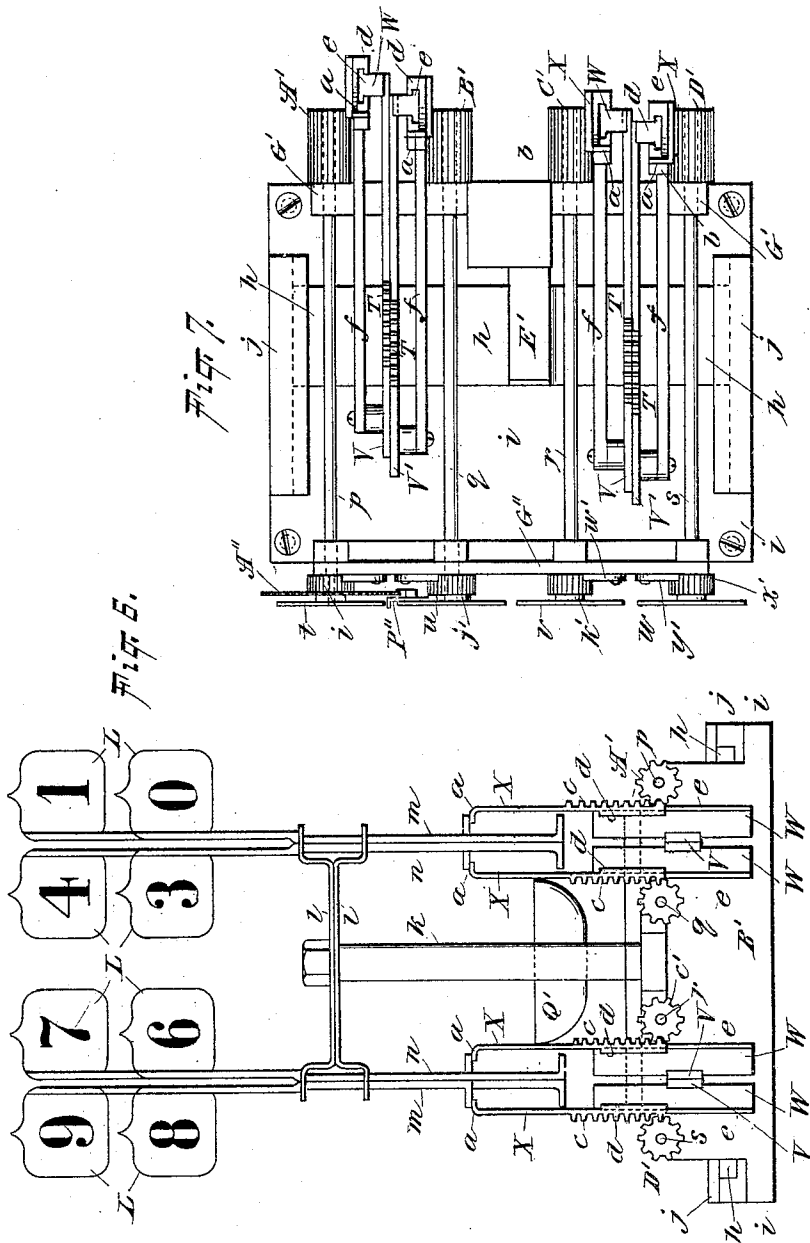
(No Model.)

6 Sheets—Sheet 4.

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No. 573,046.

Patented Dec. 15, 1896.



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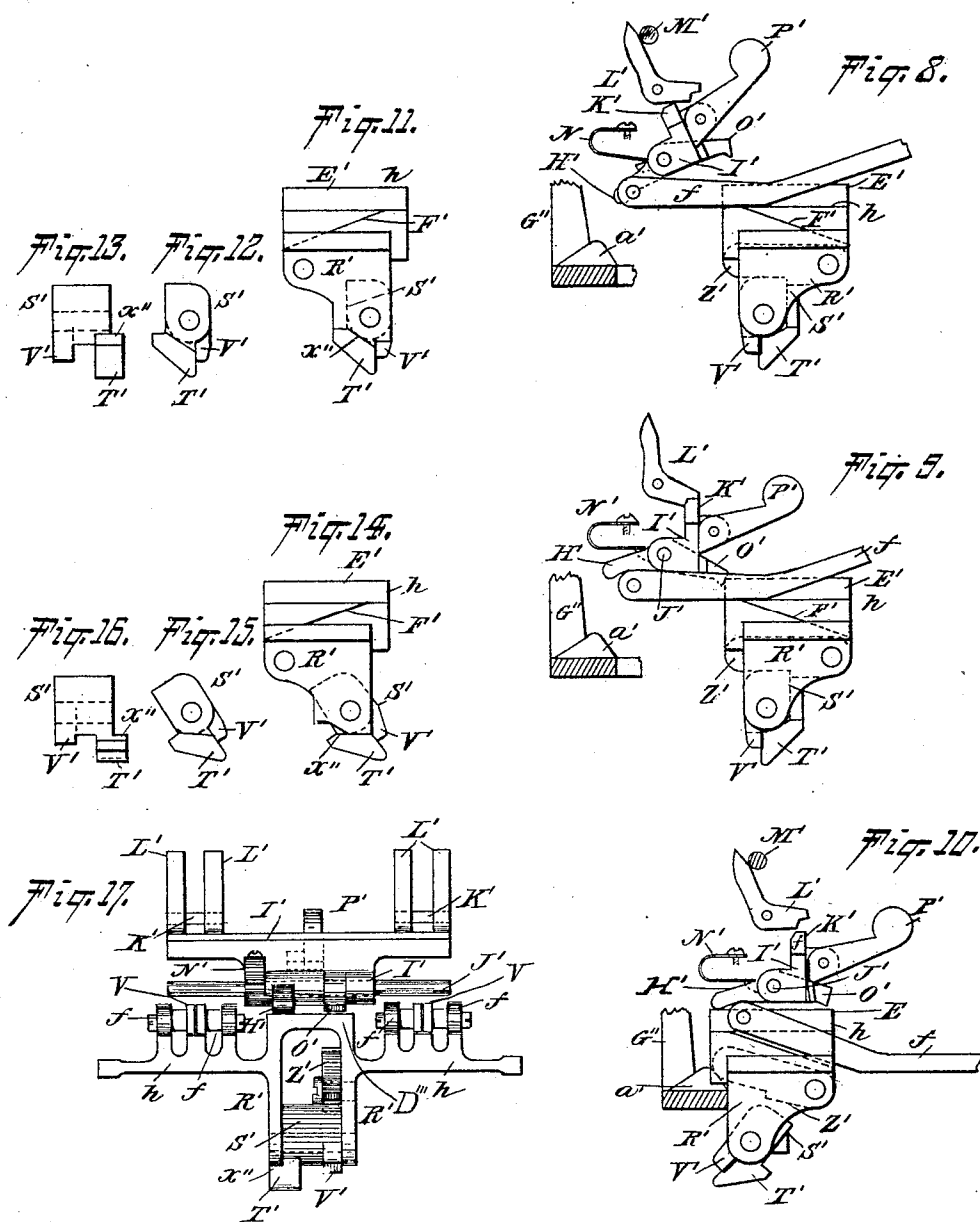
(No Model.)

6 Sheets—Sheet 5.

E. F. SPAULDING.
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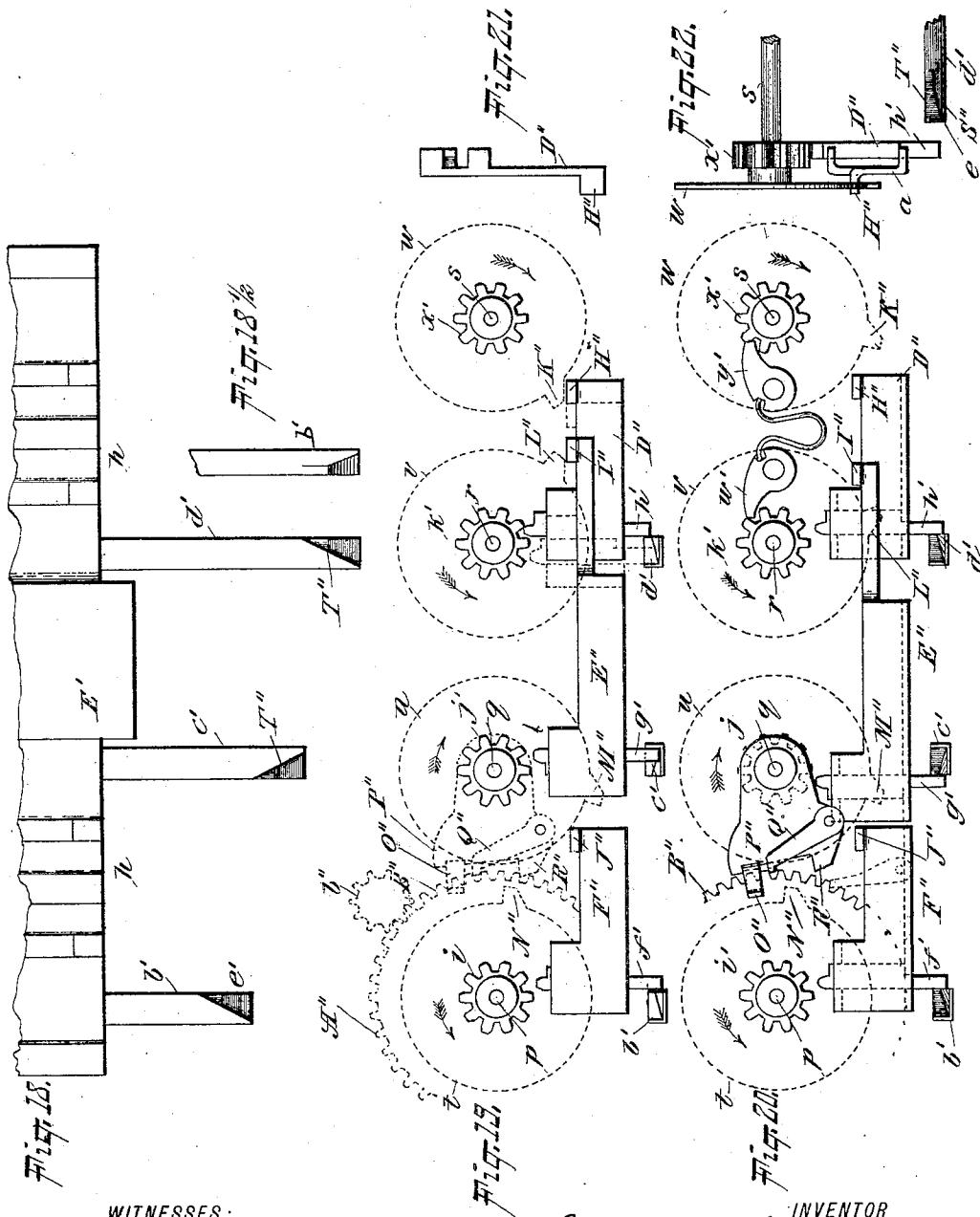
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UNITED STATES PATENT OFFICE.

ELIJAH F. SPAULDING, OF BOUND BROOK, NEW JERSEY.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 573,046, dated December 15, 1896.

Application filed July 1, 1896. Serial No. 597,710. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH F. SPAULDING, a citizen of the United States, and a resident of Bound Brook, in the county of Somerset and State of New Jersey, have invented certain new and useful Improvements in Cash-Registers, of which the following is a specification.

The invention relates to improvements in cash-registers; and it consists in the novel features, structure, and combinations of parts hereinafter described and claimed.

In accordance with my invention the operator moves the exposed actuating-levers to their initial position for the purpose of permitting the cash-drawer to open, and then by means of said levers moves certain interior devices in line with the vertical rods carrying the tablets which are to be exposed to the view of the purchaser. The full downward movement by the attendant of the actuating-levers results in the cash-drawer being automatically opened, and the upward movement of said levers along the exposed column or columns of numerals on the front plate of the machine operates to move the tablet-elevating devices into position immediately below those tablets bearing the numerals corresponding with those at which the actuating-levers were stopped on their upward movement. The elevation of the tablets to the view of the purchaser is then effected by the closing of the cash-drawer, which upon reaching its inward movement becomes automatically locked and so remains until the actuating-levers are again depressed. During the inward movement of the cash-drawer the mechanism elevating the tablets also revolves the registering-dials, each dial being wholly independent of the others and operated by independent mechanism. The carrying of the amount from one of the registering-dials to another is accomplished during the automatic opening of the cash-drawer and by means which are independent of the means for elevating the tablets and turning the registering-dials. The cash-drawer while being closed and opened engages a carriage forming a part of the operative mechanism of the register, and this carriage is driven inward during the closing of the cash-drawer to elevate against the tablet-rods those devices

which by the elevation of the main actuating-levers were set in operative position, and the elevation of said devices results in the tablets being exposed and registering-dials rotated. When the carriage reaches its extreme inward position, it is automatically locked and retains the exposed tablets in their upward position. The unlocking of the drawer and the lowering of the tablets are accomplished by the moving downward of all of the main actuating-levers, and when said levers are moved downward the said carriage and cash-drawer become free to be moved outward by a spring acting upon the inner end of the cash-drawer. During the outward movement of said carriage it thrusts forward certain cam bars or rods carried by it into contact with certain vertically-arranged pawls, which have an upward and also a lateral movement imparted to them by the said cam bars or rods, and their operation is to ascend for the purpose of engaging the pinions connected with the registering-dials and then to move laterally in the proper direction for the purpose of rotating the said pinions and their connecting-dials. The vertically-movable pawls are not necessarily all acted upon by all of the cam rods or bars carried by said carriage with every forward movement of the latter, but are only acted upon when it is desired to carry from one registering-dial to another, and hence the register is provided with means for shifting the position of the said vertically-movable pawls and bringing them into alignment with the cam bars or rods connected with the carriage only when the carrying from one dial to another is to be performed.

The features constituting the present invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a front view of a cash-register constructed in accordance with and embodying the invention, the plate concealing the registering-dials being omitted. Fig. 2 is an enlarged front elevation of the interior mechanism of the register, the exterior casing and the cash-drawer being omitted and the actuating-levers being elevated to varying degrees corresponding with the positions of said levers shown in Fig. 1. Fig. 3 is a side ele-

vation, partly in longitudinal section, of same, the exterior casing being omitted and the cash-drawer being shown in its closed position, the actuating-levers in this figure corresponding with the position of said levers illustrated in Fig. 2. Fig. 4 is a front elevation of the register, the tablet-actuating levers being shown in their lower position and exterior casing being removed and the drawer being shown in vertical transverse section. Fig. 5 is a vertical longitudinal section through the casing and drawer of the register, the latter being in its open position and the interior mechanism being shown in side elevation. Fig. 6 is a rear elevation of the register, the casing and drawer being omitted and a set of the disclosing-tablets being shown in their elevated exposed position. Fig. 7 is a detached top view of the reciprocating carriage to be actuated by the drawer during its closing movement to throw up the tablets, the slides which are actuated by the hand-levers, and the registering and adding devices. Fig. 8 is a detached side elevation, partly in section, of the carriage operated by the cash-drawer and some of the features controlled or actuated by the movement of said carriage, the position of the parts being that they will momentarily have when the drawer is closed but has been freed and is just about to be opened by its actuating-spring. Fig. 9 is a like view of the parts shown in Fig. 8, but illustrating the same in the position they occupy when the drawer is closed and locked and one or more of the levers are up and in condition to be moved down to its or their lowest position, in order that the drawer may thereby be released and spring open. Fig. 10 is a view corresponding with Figs. 8 and 9, but illustrating the position the parts will have after the levers have been drawn downward to their lowest position and the drawer has sprung open. Fig. 11 is a detached side elevation of the carriage actuated by the drawer and its means of connection with the drawer and shows the opposite side of said carriage from that illustrated in Fig. 8. Fig. 12 is a detached side elevation of the pivoted dog carried at the lower end of said carriage for engagement with the cash-drawer. Fig. 13 is a detached front elevation of same. Fig. 14 is a view corresponding with Fig. 11, but illustrating the dog connected with the carriage in the position it occupies when the drawer is open and it is free of the drawer and its engaging devices. Figs. 15 and 16 are respectively detached side and front elevations of the said locking-dog shown in the positions it has when the drawer is open. Fig. 17 is a detached front elevation of the carriage actuated by the drawer and its connected parts, the main portions of the mechanism being for clearness of illustration omitted from this figure. Fig. 18 is an enlarged top view, partly broken away, of the carriage actuated by the cash-drawer and the cam-rods by which the registering and

carrying dials are actuated during the opening of the drawer and the outward movement of said carriage. Fig. 18½ is a detached edge view of one of said cam-rods. Fig. 19 is an enlarged front elevation of the registering and carrying mechanism, the dials being for clearness of illustration indicated by dotted lines. Fig. 20 is a like view of same, but illustrating the parts in a different position. Fig. 21 is a detached top edge view of one of the horizontally-movable slides connected with the registering and carrying mechanism. Fig. 22 is a detached edge view of one of the registering-dials and the parts connected therewith; and Fig. 23, Sheet 3, is a detached view showing a slightly-modified mechanism for carrying from one dial to another.

In the drawings, A designates the exterior casing as a whole, which casing is provided with the cash-drawer B and the transparent face-plate C, the latter being adjacent to the upper end of the casing and directly below a plate preferably bearing the words "Dollars" and "Cents," as shown in Fig. 1. The transparent face-plate C is in line with the upper position of the tablets hereinafter referred to in order that a customer may see exposed through said face-plate the amount of the purchase he may make, this amount being indicated upon the said tablets to be thrown upward in line with said face-plate. Below the face-plate C the exterior casing is provided with the segmental sheet-metal front plate D, having the slots E, through which the actuating-levers F will project in convenient position to be raised and lowered by hand, and between the pairs of slots E will be applied on said plate D the columns of numerals shown in Fig. 1, running from "0" to "9," inclusive. Below the sheet-metal front D of the register may be provided a concealing-plate G, which will preferably be held in guiding-grooves H and be capable of being secured in position by a lock I (see Fig. 5) whose bolt will engage the lower edge of said plate. The purpose of the plate G is simply to conceal the registering and adding dials, except from the person holding the key to the lock I. When the plate G is unlocked, it may be drawn upward and from the casing A, and the registering and adding dials will then be exposed to view. The plate G is not claimed herein and may be used or omitted, as desired.

The interior mechanism of the register is supported upon the base J, which constitutes a part of the box-frame receiving the drawer B and also the spring K, Figs. 3 and 5, which is held at the inner end of said box-frame in order that it may exert its tension against the drawer B when the latter is pushed inward to its closed position. When the devices holding the drawer B at its inward position have been released from the drawer, the spring K immediately shoots the drawer outward to its open position, and it may here be stated that the drawer is to be in its open position before any of the actuating-levers F are moved

upward in their slots E. The drawer, by means hereinafter specified, is permitted to be opened by the spring K only when all of the levers F are in their lower position, and hence when it is desired to register a purchase the levers F will be moved to their lower position in order that the drawer B may be sprung open by the spring K, and thereupon any one or more of the levers F may be moved upward until they arrive at the proper numerals along the slots E to indicate the amount of the purchase. The levers F upon arriving at such position will be allowed to there remain and the drawer will be immediately closed. The effect of the closing of the drawer is to set in motion certain features hereinafter described which will cause the ascent of the proper tablets L to a position directly in line with the transparent face C of the register, and said tablets, indicating the amount of the purchase, will remain in line with said transparent face during all of the time the cash-drawer remains closed and until it is desired to register a further purchase, at which time the attendant will draw the levers F back to their lower position in order that the spring K may shoot the drawer open and the said tablets L return to their lower position. The tablets L having descended out of view and the levers F being in their lower position and the drawer B open, the apparatus is in proper position to permit the immediate indicating of the subsequent purchase.

The hand-levers F are mounted in pairs upon the short shafts or bolts M N, respectively, as clearly indicated in Figs. 4 and 5, and carry the spring-pawls O, of usual or suitable construction, to engage the teeth or serrations in the segmental frames P, two of the latter being employed, as shown in Fig. 4, and being of sufficient width to receive at their opposite edges the pawls O, carried by the four independent actuating-levers F. The springs of the pawls O afford sufficient tension to create a friction between the serrations of the frames P and the points of the pawls O and to retain the levers F in any position in which they may be placed; but said springs will not be of such strength as to any great extent resist the upward and downward movements of said levers under the pressure of the hand. The serrated frames P are formed on the cast-metal frame Q, which is provided with the standards or bearings R to receive the short shafts or bolts M N for the levers F.

The lower end of each lever F carries as an integral part thereof the toothed segment S, which is in constant engagement with the toothed rack T, rising from the longitudinal sliding bar V, which carries upon its inner or rear end the vertical block or bar W, as probably more clearly indicated in Figs. 5, 6, and 7. The block W, carried upon the inner end of the sliding bar V, operates as a vertical guide for the plate X, which is provided

with the laterally-turned finger *a* at its upper end, the forwardly-projecting stud *b* at its lower end, and the ratchet-teeth *c* upon its outer face, the said teeth varying in length, and as to their length tapering from the upper tooth downward and forward, as shown in Fig. 5. The opposite vertical edges of the plate X are furnished with the inwardly-turned flanges *d*, which encompass the ribs *e*, formed on the block W, Figs. 6 and 7, and thereby said plate X is held in position against said block and guided in its vertical movement. The plate X is of special importance in that it is utilized to throw up the proper tablet L and also to actuate the registering-dials, as hereinafter described. The plate X has a forward-and-backward movement with the block W and also a vertical movement on said block. The forward-and-backward movement of the block W and plate X is caused solely by the hand-lever F and its segment S acting upon the rack T of the sliding bar V, to the latter of which the block W is a fixture. The plate X receives its vertical motion by the pressure of the inner or rear end of the lever *f* acting upon the stud *b*, formed on said plate, and the said lever *f* is hinged to and carried by the sliding bar V, being thereto connected by the pivot *g*. The lever *f* is cam-shaped, and it is acted upon to force the plate X upward by means of the carriage *h* when the latter is driven inward by the closing of the cash-drawer. The movement of the lever F brings the plate X into proper position below the indicating-tablets L, but does not in itself effect the movement of said tablets. The upward movement of the plate X effects the movement of the indicating-tablets and also the operation of the registering and adding mechanism, and this upward movement of the plate X is caused by the cam-shaped lever *f* when pressed upward by the contact therewith of the carriage *h* while the latter is being driven inward during the closing of the cash-drawer B. There are four of the actuating-levers F, and each lever carries a toothed segment S for coöperation with an independent rack T, carried by an independent sliding bar V, and each bar V is provided with a guiding block or head W, carrying a plate X, and also with a cam-shaped lever *f*, whose inner end engages the lug *b* of said plate X during the closing of the drawer for the purpose of elevating the said plate X. The parts connected with and operated from one lever F are simply duplicated for each of the levers F, and hence it will be unnecessary to describe in detail the said parts for each of the levers F. The carriage *h*, however, extends transversely across the lower frame-plate *i*, supporting the interior mechanism upon the base J, and has its ends retained in guides *j j*, as more clearly illustrated in Fig. 7.

The carriage *h* answers for all of the cam-shaped levers *f*, connected with their respective sliding bars V, and hence, whether one

or more of the levers *F* are elevated to bring the plate or plates *X* into proper position for operating the tablets and registering mechanism, the one carriage *h* may be relied upon to operate the cam-shaped levers *f*. When the carriage *h* is moved inward by the closing of the cash-drawer *B*, it will act upon all of the levers *f*, but since only those plates *X* which are moved forward by the levers *F* act upon the tablets *L* the carriage *h* will produce no operative effect upon those plates *X* not moved forward by the levers *F*. The plates *X* which are left at the extreme inner or rear end of the machine will be elevated by the inward movement of the carriage *h*, but since they are in rear of the tablet-rods they will simply idly rise and fall and produce no effect upon the said rods.

It will be observed upon reference to Fig. 7 that the racks *T* of the two right-hand levers *F* are in close relation to one another and that the two racks *T* for the two levers *F* at the left-hand side of the machine are also in close relation to one another; but it is a fact that said racks are each independent of the other and each is formed on its own bar *V*, carrying the independent head *W* and plate *X*. The operation of the plates *X* in effecting the elevation of the tablets *L* and the movement of the registering and adding devices will be hereinafter fully explained.

At the extreme inner or rear end of the machine and within the casing *A* is provided a suitable standard *k*, supporting the cross-bars *ll*, whose outer ends, as shown in Fig. 6, form guides to receive and direct the tablet-rods *m n*, respectively, which rods are placed side by side and form banks of rods, as shown in Figs. 5 and 6, carrying at their upper ends the tablets *L*, which are numbered in order from "0" to "9," inclusive, and being when in their normal position below the transparent face-plate *C* of the machine. The lower ends of the tablet-rods *m n* turn outward from one another, as illustrated in Fig. 6, the ends of the rods *m* coming directly over the first blocks *W* at the sides of the machine, while the lower ends of the rods *n* are directly over the second or inner blocks *W*, as shown in Fig. 6.

There are four sets of the tablets *L*, each set being composed of ten tablets, consecutively numbered from "0" to "9," and each tablet of each set of tablets is capable of independent movement under the action of the proper actuating-lever *F*. The four sets of tablets will always bear upon their front faces the numerals from "0" to "9," inclusive, and when desired the sets of tablets may also on their reverse faces be likewise numbered from "0" to "9," inclusive, in order that a person looking at the rear end of the machine may be able to read the tablets when elevated to a position in line with the front transparent face *C* of the machine. When the reverse face of the tablets *L* is numbered, the frame of the machine should be provided in its rear

surface with a transparent section *o*, as shown in Fig. 5. The sets of tablet-rods are arranged in pairs, as shown in Figs. 5 and 6, in order that they may appear directly over the blocks *W*, carried by the sliding bars *V*, these blocks and bars being for convenience also arranged in pairs.

The tablets *L*, as above described, derive their vertical movement from the plates *X*, which have at their upper ends the inwardly-turned fingers *a*. The relation of the plates *X* and their fingers *a* to the tablet-rods *m n* is clearly illustrated in Fig. 6, in which all of said plates *X* are shown in their elevated position, supporting upon their fingers *a* the elevated tablet-rods *m n*, bearing the numbers "9," "7," "4," "1," respectively. The plates *X* are carried by the blocks *W*, as above described, and the blocks *W*, being connected with the plates *V*, may be given a longitudinal movement below the sets of tablet-rods by means of the levers *F*, and the object of this sliding movement of the blocks *W* is to carry the fingers *a* of the plates *X* below those tablet-rods whose tablets bear the numbers corresponding with the numbers on the face-plate *D* of the register at which the levers *F* may be stopped by the attendant to indicate the amount of a sale. If, for instance, the right-hand lever *F* should be moved upward in its slot *E* until it reached and was arrested at the numeral "9" on the face-plate *D*, the movement of the lever would pull its block *W* and plate *X* forward until the finger *a* of said plate *X* came to a stop directly below that tablet-rod *m* whose tablet bears the numeral "9," and thereupon, it being remembered that the cash-drawer is always opened before the actuating-lever is moved upward, the cash-drawer will be closed, and on closing will drive the carriage *h* inward against the cam-shaped lever *f*, causing the latter to turn upward and through its engagement with the projection *b* of the plate *X* drive said plate *X* upward against the said tablet-rod *m*, whereby the latter, owing to the pressure against its lower end of said finger *a*, is caused to elevate and display its tablet "9" between the transparent faces *C o* of the main casing *A*. Upon the closing of the cash-drawer the latter is automatically locked at its inward position, as hereinafter described, and while closed maintains its pressure against the carriage *h*, and hence the latter will maintain the plate *X* and the said tablet-rod *m* in their elevated position during all of the time the cash-drawer remains closed. Hence after one purchase has been indicated by the tablets in line with the transparent faces *C o* of the register-casing the tablets elevated will remain in their upward position until it is desired to indicate a further purchase, at which time the actuating-levers *F* will be drawn downward to "0" and free the drawer, and the spring *K* will eject the said drawer *B* forward. The downward motion of the levers *F* and the outward

movement of the drawer B operate through the connections hereinafter described to permit the lowering of the plate X and the inward movement of the said plate X with its block W, this inward movement being toward the rear of the machine and carrying said plate X with its finger *a* in rear of the bank of tablet-rods, as shown in Fig. 5. The rearward movement of the plate X and block W is directed solely by the lever F acting through its segment S upon the rack T of the slide V, while the connections intermediate the carriage *h* and drawer B enable the latter to drive the carriage *h* forward from below the cam-shaped lever *f*, and hence said lever *f* becomes free from the pressure of the carriage *h* and the plate X is permitted to descend from the tablet-rod of its own weight, being guided on the block W.

The vertical movement of the plates X is utilized, as above described, for the purpose of elevating the tablet-rods *m n* and displaying the proper tablets L in line with the transparent portions C of the main casing A, and the vertical movement of said plates X is further utilized for the very important purpose of actuating the registering and adding mechanism. It will be observed upon reference to Figs. 5 and 7 that extending longitudinally of the operative mechanism of the machine are the four longitudinal shafts *p q r s*, upon whose respective front ends are the respective dials *t u v w*, and upon whose rear ends are the pinion-wheels A', B', C', and D', these pinion-wheels being in near relation to the plates X, which, as above mentioned, are provided upon their outer faces with the teeth or racks *c*. When the plates X are at their extreme inward or rear position, as shown in Fig. 5, they are in rear of the pinions A' B' C' D', but when they are pulled or moved inward by the elevation of the actuating-levers F they pass into contact with the said pinions, as illustrated in Figs. 3, 6, and 7, which show the respective positions the said plates will assume with relation to said pinions when the actuating-levers F are thrown into the position illustrated in Figs. 2 and 3 for the purpose of registering "\$14.79." Looking at Fig. 5, the front or left-hand tablet L will bear the numeral "9" and the rear or right-hand tablet L will bear the figure "0," and hence if the lever F is moved upward to stop at the numeral "9" on the front plate D of the machine, as shown in Figs. 2 and 3, the plate X will be carried forward until its finger *a* is below the front tablet-rod, whose tablet bears the numeral "9," and at this time, if the drawer B is closed for the purpose of moving the carriage *h* against the cam-shaped lever *f*, the plate X will move upward and elevate the said front tablet-rod until its tablet bearing the numeral "9" is in its elevated position, and the forward movement of the plate X to reach the said front tablet-rod, whose tablet bears the numeral "9," will be of such extent that the upper end of the se-

ries of teeth *c* on said plate X will, before the plate starts to ascend, be thrown into engagement with the pinion D' of the shaft *s*, and hence when the said plate X is driven up to cause the display of the tablet "9" the rack *c* of said plate will, through its engagement with the pinion D', rotate the shaft *s* and its registering-dial *w* a distance equal to nine points on the dial. Thus the plate X will perform two operations, the first being to display the proper tablet and the second being to rotate the registering-dial *w* a distance corresponding with the number indicated on the elevated tablet and on the front plate of the machine at the point where the actuating-lever F was stopped.

When, for instance, it is desired to throw to its upward position the tablet bearing the numeral "2," the actuating-lever F is moved upward until it reaches the numeral "2" on the face-plate D of the machine, and this movement of the lever F is just sufficient to cause the finger *a* of the plate X to pass to and stop directly below the tablet-rod whose tablet bears the numeral "2," and, as will be observed from Fig. 5, such forward movement of the plate X would not be sufficient in itself to cause the engagement of any of the teeth of the rack *c* with the teeth of the pinion D'. Hence during the upward movement of the said plate X its rack *c* will not engage the pinion D' until the said plate has moved upward a sufficient distance for its longer lower teeth to reach and turn said pinion-wheel D'. During the latter portion of the upward movement of the plate X its lower teeth will engage the pinion D' and turn the shaft *s* and the registering-dial *w* a distance equal to two of its points. Thus when the actuating-lever F is only moved upward a short distance to register a small number the plate X is only moved forward a short distance and the contact of its rack *c* with the pinion D' is graduated accordingly, the upward movement of the plate X being free of the pinion D' until the proper moment arrives for the said pinion-wheel D' to rotate.

Various positions of the plates X for the different actuating-levers F are shown in Fig. 7, and when the said plates X are in the position shown in Fig. 7 and the carriage *h* is pushed inward to the position in which it is illustrated in Fig. 7 the said plates X will cause the exposure of the tablets "1," "4," "7," "9," as shown in Fig. 2, and will, during their upward movement to expose said tablets, rotate, respectively, the shafts *p q r s* and their dials *t u v w* a distance equal to nine points for the dial *w*, seven points for the dial *v*, four points for the dial *u*, and one point for the dial *t*.

All of the actuating-levers F may be moved upward at one time or one after another, and each lever is independent of all of the other levers and each is provided with its own sliding bar V, cam-shaped lever *f*, block W, and plate X, and each plate X coöperates with its

own independent pinion-wheel to communicate motion to the registering-dials.

The carriage *h*, as above described, travels in guides *j*, located at opposite sides of the lower plate *i* of the casting which supports the interior mechanism of the register. The carriage *h* extends transversely across the machine and is provided or formed with the central elevation *E'* and the inclines *F'*, one of the latter being provided for each of the cam-shaped levers *f*, in order that during the inward movement of the carriage *h* all of the said levers *f* may be acted upon at one time to elevate the plates *X*. Those of the plates *X* which during the inward movement of the carriage *h* are in rear of the tablet-rods and pinion-wheels *A' B' C' D'* will ascend without performing any function, while those plates *X* which have been drawn forward by the movement of the levers *F* will expose the proper tablets and operate the registering-dials. The purpose of having the carriage *h* act upon all of the tablet-rods *f* at one time is to enable said carriage at one movement to expose the four tablets and operate the four registering-dials whenever it is found necessary in registering a purchase to use all of the levers *F*.

The upper surface of the carriage *h*, with the exception of its elevation *E'*, is used simply for operating upon the cam-shaped levers *f* and affording a support for the outer ends of the sliding bars *V*, the outer ends of all of which rest upon the carriage *h*, while their inner ends move in recesses formed in the inner vertical portion *G'* of the frame *Q*, supporting the interior mechanism of the machine, as shown in Fig. 7. The purpose of the elevation *E'* of the carriage *h* is to operate as a cam upon and to elevate the arm *H'*, which is integral with the tilting cross-head or frame *I'*, mounted upon the rod *J'* and extending transversely across the machine, its upper portion at its ends forming the transverse bars or pawls *K'*, whose upper edges are used as dogs to engage the lower arms of the bell-crank levers *L'*, one of the latter being provided for each of the actuating-levers *F* and having its upper arm directly in line with a stud *M'*, carried by the actuating-lever. The various positions of the cross-head or frame *I'* are illustrated in Figs. 8, 9, and 10. When the carriage *h* is at its inward position, it passes inward beyond the arm *II'*, and at such time (the levers *F* being up) the dogs *K'* of the frame *I'* will be in engagement with the bell-crank levers *L'*, which will retain the said frame *I'* in its upright position (shown in Fig. 9) and prevent the spring *N'*, which is flexed against said frame *I'*, from turning the front portion of the said frame downward until the proper time has arrived for such operation. While the drawer *B* is at its inward position and at rest, the frame *I'* will be in the vertical position in which it is shown in Fig. 9, and a pawl *O'*, pivoted upon said frame, will be in the position in which it is

shown in Fig. 9, in which it will be observed that the point of the pawl *O'* is in front of the carriage *h* and prevents the tension of the spring *K*, acting through the drawer *B*, from moving said carriage outward toward the front of the machine. The pawl *O'* operates to lock the carriage *h* at its inward position and hence to lock the drawer *B* in its closed position. When the parts are in the position in which they are illustrated in Fig. 9, it is evident that one at least of the levers *F* has been elevated to expose its proper tablet and the drawer forced to its closed position for the purpose of registering the amount exposed on said tablet. The parts will remain in the position in which they are illustrated in Fig. 9 until the lever *F* which had been elevated is moved downward to its normal or lower position, during which operation the stud *M'*, carried by said lever, will be drawn downward against the upper end of the bell-crank lever *L'*, as shown in Fig. 10, and cause the lower arm of said bell-crank lever to elevate from the dog *K'*, the result of which is that the spring *N'* will at once tilt the front portion of the frame *I'* downward, as shown in Fig. 8, and thereby cause the pawl *O'* to be thrown upward from the carriage *h*, thus freeing the carriage and enabling the spring *K* to throw the drawer *B* open and move thereby the said carriage *h* to its frontward position.

If any one of the levers *F* is in an elevated position, its bell-crank lever *L'* will retain the frame *I'* in its upright position, (shown in Fig. 9,) and hence all of the levers *F* must be in their lowest position in order to completely free the bell-crank levers *L'* from the frame *I'* and permit the spring *N'* to tilt the said frame *I'* forward for the purpose of freeing the pawl *O'* from the carriage *h*. In view of the fact that the drawer remains normally closed and that the levers *F* must be moved to their lower position when it is desired to open the cash-drawer previous to registering, it is apparent that every time the cash-drawer is to be opened the levers *F* must be lowered and will act through the bell-crank levers *L'* to free the pawl *O'* from the carriage *h* and free the cash-drawer. The forward-tilting movement of the frame *I'* under the action of the spring *N'* also operates to throw upward a hammer *P'* against a gong *Q'*. Thus every time the cash-drawer *B* is opened the gong *Q'* will sound and attention will be directed to the cash-register.

The elevation *E'* on the carriage *h* during the forward or outward movement of the carriage while the cash-drawer is moving to its open position passes below the arm *II'* of the frame *I'* and moves said arm upward against the tension of the spring *N'* and restores the said frame *I'* to a vertical position, as shown in Fig. 9, in order that its dogs *K'* may engage the lever-arms of the bell-crank levers *L'* and the latter be allowed to assume the proper position to be met by the studs *M'* upon the lowering of the levers *F*. The bell-

crank levers L' are heavier in their lower arms and hence of their own weight will turn downward toward the dogs K' as soon as the studs M' , carried by the levers F , are freed from the upper arms of said bell-crank levers L' by the upward movement of said levers F .

It may be seen upon reference to Fig. 10 that when the carriage h moves outward (or toward the left, looking at said figure) its elevation D''' will elevate the arm H' and restore the frame I' to its vertical position, (shown in Fig. 9,) thereby restoring the dogs K' to a position to engage the levers L' and also lowering the pawl O' to a position in which it may fall behind said elevation E' , as shown in Fig. 9, when the carriage h and cash-drawer B are moved inward. The pawl O' is pivoted so that it may rise when the carriage h , while on its inward movement, comes into contact with it. After the carriage h on its inward movement passes beyond the pawl O' the latter, being pivotally secured, will fall into the path of said carriage and prevent the outward movement of the same until by the lowering of the levers F the bell-crank levers L' are freed from the dogs K' and the spring N' tilts the front portion of the cross-head I' downward, and thereby throws the pawl O' upward free of the said carriage h , as shown in Fig. 8.

The lower surface of the carriage h is constructed with the frames R' , in which is journaled the sleeve S' , carrying the arms $T' V'$, which project downward into the path of the drawer B , and are arranged to contact at the proper time with the vertical projections or brackets $W' X'$, rigidly secured within the central portion of the said drawer, and preferably to one of the usual partitions at the central portion thereof. The projections $W' X'$ are separated from one another, and the projection W' is in advance of the projection X' , as illustrated in Figs. 4 and 5. The projection W' is engaged at its rear edge by the arm T' , and the projection X' is engaged at its front edge by the arm V' . When the drawer B is pressed inward by hand, the projection X' will pass below the arm V' , (the sleeve S' being at such time in the position shown in Figs. 5 and 14,) and the rear edge of the projection W' will pass into direct contact with the lower end of the arm T' , and acting on said arm turn the same to the position shown in Figs. 8 and 9 and move the carriage h inward to its extreme inward position beyond the pawl O' , for the purpose of having said carriage move against the cam-shaped levers f and operating the plates X , as above described. The closing action of the drawer thus operates to move the carriage h inward and through the carriage h and its connections to effect the display of the tablets L and the actuation of the registering mechanism. The inward movement of the carriage h is derived solely by the contact of the projection W' against the arm T' , and the latter while pressed upon by the projection

W' maintains a rigid upright position by reason of its lateral shoulder x'' coming into firm contact with the lower end of the adjoining frame R' , as shown in Fig. 11. The contact of the projection W' against the arm T' has the effect of turning the sleeve S' until the rear edge of the arm V' thereof comes into contact with the front edge of the projection X' on the cash-drawer, and when the levers F are moved to their downward position, so as to release the carriage h from the pawl O' and permit the spring K to shoot the drawer B outward, the projection X' will act against the arm V' and move the carriage h to its outward position. The upper inward portion of the sleeve S' is squared along one edge, as indicated by dotted lines in Figs. 5, 8, 9, and 10, in order that when it is in a vertical position with its arms $T' V'$ substantially engaging the rear face of the projection W' and front face of the projection X' it may be firmly locked in that position against outward pressure by the dog Z' , (shown by dotted lines in Figs. 5, 8, 9, and 10,) and which when the drawer B is moved inward will engage the upper inner edge of said sleeve S' and prevent, during the opening of the drawer B , the spring K' , acting through the drawer B , projection X' , and arm V' , from turning the lower part of the sleeve frontward on its axis. The dog Z' firmly maintains the sleeve S' and enables the projection X' , acting against the arm V' , to move the carriage h and its connected parts to their outward or frontward position during the opening of the cash-drawer B by the spring K .

The dog Z' is pivotally supported in the central part of the carriage h , and it is freed from the sleeve S' during the extreme forward part of the movement of the carriage h , when its front end passes into contact with an incline a' , as shown in Fig. 10, which elevates the front end of said dog Z' and thus lifts the said dog from the said sleeve S' , the effect of which is to permit the said sleeve S' to turn to the position shown in Fig. 10 and the drawer B to be drawn outward to any further extent desired. The dog Z' , having been elevated by its contact with the incline a' from the sleeve S' , leaves the drawer B free to be again pressed inward and the projection X' thereof to move inward below and beyond the arm V' of the said sleeve and the projection W' to contact with the arm T' . Thus the arms $V' T'$ may automatically assume their former position with relation to the projections $W' X'$, and when the carriage h starts inward the dog Z' will leave the incline a' and at once engage the sleeve S' , as before.

The carriage h has rigidly connected with its front edge the rods $b' c' d'$, whose front ends are cut to form inclines or cams e' , as clearly illustrated in Figs. 18, 19, and 20. The rods $b' c' d'$ are used for the purpose of engaging and moving upward the pawl-arms $f' g' h'$, (shown more clearly in Figs. 19 and

20,) and which at their upper ends are pawl-shaped and adapted to engage the pinion-wheels i' , j' , and k' , mounted upon the front ends of the shafts p q r , located in rear of the dials t u v .

The pinion-wheels i' j' k' will preferably be furnished with spring-pawls similar to that illustrated in Fig. 20 and lettered w' , for the purpose of preventing any reverse movement of said pinion-wheels and the shafts p q r , upon which they are located. Upon the shaft s is also provided a pinion-wheel x' , which is engaged by the spring-pawl y' , the latter preventing any reverse movement of the said pinion-wheel x' and the shaft s . The pawls w' y' also create a proper spring-tension upon the pinion-wheels and prevent the dials from having a too free revolution.

The dials t u v w are each numbered from "0" to "9," inclusive, and the dial w being for "cents," the dial v for "tens of cents," the dial u for "dollars," and the dial t for "tens of dollars." The said dials t u v w are rigid upon their respective shafts p q r s and only rotate with the shafts. Upon the shaft p and in rear of the dial t is loosely mounted the dial A' , upon whose edge are formed the teeth B' , and which is the registering-dial for "hundreds of dollars." The revolving of the dials t u v w , for the purpose of indicating the amount of any purchase, is accomplished solely by the revolution of the shafts p q r s under the action of the hand-levers F , plates X , and pinions A' B' C' D' , but the carrying from one dial to another is effected through the medium of the sliding cam-bars b' c' d' and the vertical pawls f' g' h' , Figs. 18, 19, and 20, which are actuated by said cam-bars during the outward movement of the carriage h upon the opening of the cash-drawer B . There is no cam-bar and vertical pawl for the first dial w , since the carrying is started from this dial to the subsequent dials in the series.

The cam-bars b' c' d' are rigid with the carriage h and have an invariable movement and position; but since it may not be necessary or desirable to actuate the carrying mechanism with every forward movement of the carriage h the vertical pawls f' g' h' are variable in their position and are only brought into alinement with the said cam-bars when during the registering operations it becomes necessary to carry from one dial to another. In Fig. 19 the cam-bars b' d' are not in alinement with the vertical pawls f' h' , but the cam-bar c' is in alinement with the vertical pawl g' , and hence upon the forward movement of the carriage h the cam-bar c' will alone act to effect the adding from the dial v to the dial u . The position of the vertical pawls f' g' h' is controlled automatically and wholly by the revolving motion of the dials, Figs. 19, 20, and 21, and the said vertical pawls are housed within the upper and lower notched horizontal flanges formed on the upper and lower edges of the horizontal sliding

plates D'' E'' F'' , which are guided upon the front vertical edge G'' , Fig. 7, of the main casting i , supporting the interior mechanism of the machine. The slides D'' E'' F'' are enabled to move laterally and carry with them the vertical pawls f' g' h' , and hence the said vertical pawls may be moved laterally at will, so as to bring them or any of them into or out of alinement with the cam-bars b' c' d' , and the said slides D'' E'' F'' are provided, respectively, with the lugs I'' , J'' , and K'' , which are adapted to be acted upon by the projecting fingers formed on the dials u v w and lettered, respectively, K'' , L'' , and M'' . The finger K'' acts solely upon the projection I'' of the slide D'' , and in Fig. 20 the dial u is illustrated with its finger K'' approaching the said projection I'' , while in Fig. 19 the dial u is shown in position with its finger K'' beyond the said projection I'' , in passing which the said finger K'' moves the slide D'' to the left and with it the vertical pawl h' , causing the latter to pass into direct alinement with the cam-bar d' , as illustrated by dotted lines in Fig. 19. The projection L'' on the dial v acts solely upon the projection J'' , formed on the slide E'' , and when the said projection L'' passes to the right against the said projection J'' it will move the said projection and the slide E'' to the right a sufficient distance to cause the vertical pawl g' to pass from the position in which it is shown in Fig. 20 to the position in which it is illustrated in Fig. 19, in which position it will be in alinement with the cam-bar c' , and the latter will be enabled upon the opening of the cash-drawer and the forward movement of the carriage h to act upon the said vertical pawl g' . The finger M'' on the dial w acts upon the projection J'' , formed on the slide F'' , and moves said slide to the left sufficiently to throw the vertical pawl f' into alinement with the cam-bar b' for the purpose of enabling the latter to act upon the said vertical pawl f' and cause it to ascend and act upon the pinion-wheel i' , located upon the shaft p . The dial t is also provided with a finger N'' , as shown in Figs. 19 and 20, and this finger acts solely upon the projecting finger O'' , formed on the dog P'' , which is loosely mounted upon the shaft q in rear of the dial u . The dog P'' carries the pawl Q'' and detent R'' , and when the finger N'' of the dial t ascends it will at the proper time contact with the finger O'' and thereby elevate the same and the outer end of the dog P'' , whereby the pawl Q'' , engaging the teeth B'' of the dial A'' , will rotate the latter dial a distance equal to the movement imparted by the said finger N'' to the said dog P'' . After the finger N'' has elevated the dog P'' to a proper distance it will pass beyond the said finger O'' of the dog P'' and the latter will fall back to its lower position preparatory to being again elevated by the finger N'' when the dial t completes another revolution. The dog P'' is furnished with the detent R'' sim-

ply for the purpose of preventing any momentum of the parts from carrying the dial A'' beyond the required point when said dial is actuated by the contact of the finger N'' with the dog P''.

It will be observed upon reference to Fig. 18 that the cam-shaped ends e' of the bars b' c' d' have inclined edges and also an inclined base, the purpose of the inclined base S'' being to elevate the vertical pawls f' g' h' , while that of the inclined edges T'' is at the same time to impart a lateral movement to the said vertical pawls and the slides carrying them. As an illustration of this feature of the operation, attention is invited to Fig. 19, in which the vertical pawl h' is by dotted lines shown in alinement with the cam-bar d' , and upon a consideration of this figure it will be observed that upon a forward movement of the cam-bar d' its upwardly-inclined lower surface S'' will elevate the pawl h' upward in contact with the teeth of the pinion-wheel k' , and that upon the continued forward movement of the said cam-bar d' its inclined edge T'' will operate as a cam against the lower end of the vertical pawl h' and cause the latter to travel outward toward the right to the position shown in Fig. 20 and by full lines in Fig. 19. During this outward movement to the right of the vertical pawl h' under the action of the inclined edge T'' of the cam-bar d' the slide D'' is moved toward the right to its initial position and the projection H'' on said slide is restored to a position in which it may be acted upon by the finger K'' of the dial w during the revolving motion of the latter. The vertical pawls f' g' are acted upon by the cam-bars b' c' in the same manner and for the same purpose as the cam-bar d' acts upon the vertical pawl h' above referred to. During the lateral movement of the pawls f' g' h' under the action of the cam-bars b' c' d' the upper ends of said pawls contact with the pinion-wheels i' j' k' and revolve said wheels in the direction of the said lateral movement a distance equal to one tooth of each wheel and at the same time, as above described, the said pawls during their lateral movement restore the projections H'', I'', and J'' to their initial position ready to be acted upon by the succeeding revolutions of the registering-dials.

When during the use of the machine the dial w , denoting "cents," makes a complete revolution and it becomes necessary to transfer or carry the "tens of cents" to the dial v , the finger K'' of the said dial w will contact with the projection H'' and move the slide D'' to a position in which its vertical pawl h' will be in direct alinement with the cam-bar d' , and thereupon upon the carriage h moving outward the said cam-bar d' will elevate the vertical pawl h' and move it laterally, and thereby turn the wheel k' a distance equal to one of its teeth and also move the slide D'' back toward the right to its initial position. The movement of the wheel k' a distance

equal to one of its teeth causes a like movement in the shaft r and dial v , and hence the dial v will be revolved a distance equal to one of its numerals, and thereby indicate that the "tens of cents" has been carried to it from the dial w . The carrying from the dial w to the dial v , as just described, continues with every revolution of the dial w . After the dial v has had a complete revolution, either from the motion imparted to it from the cam-bar d' or from the second lever F at the right, indicating "tens of cents," it will carry to the dial u . Every revolution of the dial v denotes a dollar, and this "dollar" is carried to the dial u by the contact of the cam-bar c' with the vertical pawl g' , the latter being brought into position in alinement with the said cam-bar c' by the contact of the finger L'' on the dial v with the projection I'' on the slide E'', which carries the said pawl g' . The contact of the cam-bar c' with the vertical pawl g' results in the elevation of said vertical pawl g' , and the lateral movement toward the left of said pawl and the slide E''. The lateral movement to the left of the said pawl g' turns the pinion-wheel j' and with it the dial u a distance equal to one tooth of the said wheel and one numeral on said dial, thus carrying the dollar from the dial v to the dial u . The carrying of the "tens of dollars" from the dial u to the dial t is effected by the cam-bar b' and vertical pawl f' , when during the revolution of the dial u its finger M'' contacts with and moves the slide F'' a sufficient distance to throw the vertical pawl f' into alinement with the said cam-bar b' , and this occurs at each revolution of the said dial u . As indicated above, the dials are all enabled to be moved for the purpose of registering the amount of any purchase from the hand-levers F, but the carrying from one dial to another is accomplished by the cam-bars b' c' d' engaging the vertical pawls f' g' h' and the latter moving the gear-wheels i' j' k' , located on the shafts which carry the dials. The "tens of dollars" alone are denoted on the dial t and the "hundreds of dollars" are alone denoted on the additional dial A'', which is rotated a distance equal to one numeral on the dial t every time the latter causes its finger N'' to contact with the dog P'' and enable the pawl Q'' to move upward against the teeth of the said dial A''.

The outer ends of the dial-shafts p q r s will preferably be provided with small knobs a'' , as shown in Figs. 2 and 3, by which, when desired, the shafts may be rotated by hand to "set" the dials t u v w . The dial A'' may be set by the pressure of the finger on the teeth B'' of said dial, or, if preferred, a small pinion-wheel b'' (shown in Figs. 2, 3, and 19) may be provided for adjusting or setting the said dial A''. The pinion b'' , when used, will preferably be provided with a knob c'' , Fig. 3, to facilitate its being turned for the purpose of moving the dial A''. The invention is not, however, limited to the knobs a'' or to the

pinion-wheel b' , but they will be found convenient of use for the purposes mentioned.

The cam-bars $b' c' d'$, connected with the carriage h , differ from one another in length, as illustrated in Fig. 18, in order that the said bars will not all at one time reach the vertical pawls $f' g' h'$, but will act one after another in succession.

It has been described above that, if desired, the main casing A may be provided with the concealing-plate G, (shown in Fig. 5,) and as a further convenience the casing A may also, if desired, be provided directly in the rear of said plate G with an inner plate d'' , as shown in Figs. 1, 3, and 5, which will be directly in front of the dials $t u v w$ and be provided, as shown in Fig. 1, with the openings e'' directly in front of the numerals on said dials. The plate d'' may also be provided with the opening f'' directly in line with the upper portion of the dial A'' . The openings e'' in the plate d'' will at their lower portions be provided with the recesses g'' , which will be directly in line with the lines of numerals on said dials $t u v w$. The openings e'' are smaller than the dials $t u v w$ and conceal all of the numerals on said dials except those which are at the recesses g'' . The purpose of the opening f'' and recesses g'' is to enable the attendant after the removal of the plate G to "read" the register at a glance, the "hundreds of dollars" registered appearing at the opening f'' and the "tens of dollars," "dollars," "tens of cents," and "cents" appearing at the recesses g'' . The plates G and d'' may be used or not, as desired, and I recommend their use. When the plate d'' is used, it will, unless it is somewhat in advance of the dials, be provided with the openings h'' , Fig. 1, to permit the passage through them of the cam-bars $b' c' d'$ when the latter are projected forward by the carriage h . The openings h'' in the plate d'' are merely to prevent the cam-bars $b' c' d'$ from striking the said plate.

In Fig. 23 is illustrated a slight modification of the means for rotating the dial A'' from the dial t , and this modification consists simply in the form and arrangement of the dog and pawl, (lettered, respectively, $P'' Q''$ in Figs. 19 and 20 and $i'' j''$ in Fig. 23.) The finger N'' , formed on the dial t , contacts with and elevates the outer end of the dog i'' and thereby elevates the pawl j'' , whose point engages the teeth B'' of said dial A'' , and when elevated comes into a position which will rotate the dial A'' a distance equal to the throw of the finger N'' . After the finger N'' of Fig. 23 passes the end of the dog i'' the pawl j'' , being pivoted, will turn and release itself under the weight of the dog i'' , and said dog and pawl will fall to their lower position. The devices shown in Fig. 23 are not materially different from the devices shown in Figs. 19 and 20, for the purpose of carrying from the dial t to the dial A'' .

From the foregoing description it will be understood that each actuating-lever F is in-

dependent of the other actuating-levers and is used for the purpose of moving its slide V for the purpose of carrying the plate X to a position below that tablet L bearing the numeral which corresponds with the numeral on the front plate D at which the lever F may be stopped, and that this movement of the lever F, with its slide V and plate X, is performed when the cash-drawer B is open and the carriage h is at its front position. The closing of the cash-drawer B operates through the contact of its projection W' with the arm T' to drive the carriage h inward to its rear position, and the said carriage h when moving to its inward position comes into contact with and elevates the cam-lever f , which during its ascent moves the plate X upward and causes its finger a to elevate that tablet L, above mentioned, whose numeral corresponds with the numeral on the plate D at which the lever F was stopped. The upward movement of the plate X thus elevates to an exposed position the proper tablet, and by reason of the teeth c on the plate X the upward movement of said plate performs the further office of revolving the pinion-wheel D' and shaft s a distance equal to the numeral indicated on the exposed tablet L, resulting in the dial w being turned from "0" to the numeral displayed on the said exposed tablet. The numeral at which the lever F is stopped on the plate D is thus exposed by the tablet L and is registered on the dial w , and both the display of the tablet and the registering on the dial w are accomplished by the closing of the cash-drawer B, which effects the inward movement of the carriage h with the result above pointed out. While the cash-drawer B remains open, neither the tablet will be exposed nor the dial register, and in accordance with the construction presented the tablet cannot be exposed without the proper registration on the dial w . Each of the levers F is provided with its slide V and plate X and is accompanied with a separate bank of the tablets L. The machine may be provided with as many of the levers F as desired, and whether the number of levers F used be greater or less than four each of them will be provided with said slide V, plate E, and bank of tablets L. The carriage h will be provided with an incline F'' for each of the cam-levers f , and hence when four actuating-levers F are employed, each having a cam-lever f , the carriage h should be provided with four inclines F'' , one being for each of said levers f . A very substantial and useful machine may be produced having simply the first two levers F, and hence the invention is not limited to the employment of any special number of said levers. When but two levers F are made use of in one machine, it will be necessary to provide but two banks of tablets L and two dials $v w$.

The connection of the cash-drawer B with the carriage h has been fully described above. The contact of the projection W' against the

arm T'' during the closing of the drawer forms the connection between the cash-drawer and the carriage *h*, by which the latter is driven inward by the closing action of the drawer, and when the carriage is released by the dog O' from its inward position the spring K is permitted to eject the drawer B, and the projection X' of the latter then presses against the arm V' of said carriage and drives the same outward to its front position. During the outward or forward movement of the carriage *h* during the opening of the drawer the dog Z' of said carriage locks the sleeve S', carrying the said arm V', and hence the connection between the drawer B and the carriage *h* is rendered firm and positive during the opening of the drawer. The drawer B should naturally have a greater outer movement than the carriage *h*, and hence at the proper time the front end of the dog Z' rides up the incline *a'* and releases said dog from the sleeve S', thereby permitting the latter to turn and the cash-drawer to pass onward without the carriage *h*, the latter being thus brought to a stop, while the drawer may be pulled entirely from its casing, if desired.

The carriage *h* on its inward or rearward movement throws the plate X and tablets L upward, as above described, and on its outward or forward movement during the opening of the cash-drawer the said carriage *h*, through the cam bars or rods *b' c' d'* and their coöperative devices, effects the carrying from one dial to another, and this part of the operation has been so fully hereinbefore described that further explanation thereof is deemed unnecessary. The carriage *h* coöperates with the tilting cross-head I', which has the forwardly-projecting tongue or bar H' and the rearwardly-projecting pivoted dog O'. The cross-head I' has a downward tension imparted to its front edge by means of the spring N' and carries at its opposite ends the pawl-shaped bars K'. When the carriage *h* moves to its front position, its elevation E' passes below the forwardly-projecting tongue or arm H' of the cross-head I' and turns said cross-head upward upon its pivot until the pawl-shaped bars K' thereof are in substantially their vertical position, (shown in Figs. 9 and 10,) in which position they are engaged by the bell-crank levers L' the moment any of the levers F are elevated to free their pins M' from the upper arms of said bell-crank levers, the latter being weighted at their lower ends and falling into position in engagement with said bars K' the moment they are released by the upward movement of said levers F. The levers F are moved upward while the carriage *h* is at its forward position, and hence when the levers F are moved up the bell-crank levers L will engage the said bars K' and retain said cross-head I' in its upward position after the carriage *h* passes rearward from below the forwardly-projecting tongue or arm H' of said cross-head. When the carriage *h* does pass inward with the closing of

the cash-drawer, the pawl or dog O' of said cross-head I' will fall below the front edge of said carriage, as shown in Fig. 1, and lock it in its inward position.

When the levers F are moved downward in their slots E for the purpose of returning the previously-exposed tablets to their lower position, the pins M' come into contact with the bell-crank levers L' and free the same from the bars K' of the cross-head I', and at such time the spring N' is free to act and immediately depresses the front edge of said cross-head and thereby throws the rear edge of same upward and forward, as shown in Fig. 8, thus freeing the dog O' from the carriage *h* and sounding the gong Q'. The cross-head I' will remain in the position in which it is illustrated in Fig. 8 until the carriage *h* has moved outward with the cash-drawer and its elevation E' has passed below and elevated the forwardly-projecting tongue or bar H' of said cross-head, as illustrated in Fig. 10.

It is not intended to limit this application to the details of construction further than they may be specifically pointed out in the claims, and these details in their form and arrangement in the broader scope of this invention will be varied at will in accordance with the size of the register to be produced and the will of the manufacturer.

The invention and claims are not to be understood as limited in every instance to a bank of tablets each of which is in a separate piece of material and provided with a wholly independent elongated tablet-rod, since the mechanism intermediate the tablets and the actuating-levers F is new and the mechanism intermediate the tablets and cash-drawer is new, and said mechanism will be operative whether the tablets are made as shown or are on a cylinder or roll. Neither is the invention limited in every instance to the exposure of the tablet by the closing of the cash-drawer, since these conditions might be reversed without departing from operative parts of my invention or by the use of equivalents. Neither is the invention limited in every instance to the use of the cash-drawer, as such, for exposing the tablets and operating the dials, since the mechanism, whether operated from the cash-drawer or other slide, constitutes a definite part of my invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a cash-register, the actuating-lever F, and the plate X connected to be moved by said lever and having the rack, combined with means for actuating said plate by the movement of the cash-drawer, the registering-dial bearing numerals, and gearing intermediate said dial and said rack whereby the movement of the latter from the cash-drawer is caused to effect the revolution of said dial; substantially as set forth.

2. In a cash-register, an actuating-lever having an exposed end, and a support bear-

ing an exposed column of numerals in convenient relation to said lever, combined with a bank of tablets bearing numerals corresponding with said exposed column of numerals, a set of independent tablet-rods connected with said tablets, a device connected with and adapted to be moved by said actuating-lever to a proper position below said tablet-rods, and a carriage or slide adapted to be moved inward upon the closing of the cash-drawer and to elevate said device for moving upward the proper tablet to be exposed; substantially as set forth.

3. In a cash-register, the actuating-lever, a support bearing an exposed column of numerals in convenient relation to said actuating-lever, a bank of tablets bearing numerals corresponding with the numerals on the said exposed column, and tablet-rods connected with said tablets, combined with a device connected with and adapted to be moved below said rods by said actuating-lever, a carriage adapted to be moved inward to engage and elevate said device, means for locking said carriage at its inward position while the cash-drawer is closed, and means for freeing said carriage when the actuating-lever is returned to its normal position; substantially as set forth.

4. In a cash-register, the actuating-lever, and the movable plate connected to be moved by said lever and having the rack, combined with the bank of tablets bearing numerals, a cam arranged to be actuated from the cash-drawer for elevating said plate to expose the proper tablet, the registering-dial bearing numerals corresponding with the numerals on said tablets, and gearing intermediate said dial and said rack whereby the latter from the cash-drawer is caused to effect the revolution of said dial; substantially as set forth.

5. In a cash-register, a bank of tablets bearing numerals, the actuating-lever having an exposed end, and the support bearing the exposed column of numerals adjacent to said actuating-lever, combined with the sliding plate connected with and adapted to be moved by said actuating-lever to a proper position below said tablets, and a cam arranged to be actuated by the movement of the cash-drawer for elevating said plate to expose the proper tablet; substantially as set forth.

6. In a cash-register, the actuating-lever, and a support bearing the exposed column of numerals in convenient relation to said lever, combined with a slide having a guiding head or block connected with and adapted to be moved by said actuating-lever, the set of tablets bearing numerals corresponding with the said exposed column of numerals, tablet-rods connected with said tablets, a plate guided on said block or head and adapted to be thereby moved below said tablet-rods, a lever connected with said slide and adapted to contact with said plate, and a slide or carriage adapted to be moved inward by the closing of the cash-drawer and elevate said plate and the

tablet directly above the same; substantially as set forth.

7. In a cash-register, the actuating-lever, and a support bearing the exposed column of numerals adjacent to said lever, combined with the slide having a block or head and connected with and adapted to be moved by said actuating-lever, the vertically-movable plate guided on said block or head and adapted to be thereby carried to the desired position, the set of tablets bearing numerals corresponding with the said exposed numerals, the set of tablet-rods connected with said tablets and arranged to be engaged by said plate, a cam-shaped lever connected with said slide and freely engaging a projection on said plate, and a sliding carriage adapted to be moved against said cam-shaped lever for compelling the latter to elevate said plate and the tablet above it; substantially as set forth.

8. In a cash-register, the actuating-lever, and a support bearing the exposed column of numerals adjacent to said lever, combined with the slide connected with and adapted to be moved by said lever, the vertically-movable plate carried by said slide, the bank of tablets bearing numerals corresponding with the said exposed numerals, the tablet-rods connected with said tablets and arranged to be engaged by said plate, and means substantially as described for elevating said plate and the tablet above it and locking the same in their upward position; substantially as set forth.

9. In a cash-register, the series of banks of tablets bearing numerals, the actuating hand-levers, and the support bearing the exposed numerals corresponding with the numerals on said tablets, combined with the sliding plates connected with and adapted to be moved by said actuating-levers to proper positions below said tablets, the pivoted or hinged arms having their free ends adapted to engage said plates, the series of cams arranged to move said hinged arms against said plates for elevating the latter and exposing the proper tablets, and means for actuating said cams; substantially as set forth.

10. In a cash-register, the series of actuating hand-levers, and the support bearing the exposed numerals in convenient relation thereto, combined with the independent sliding plates connected with said levers, the pivoted or hinged arms having their free ends adapted to engage said plates, the series of cams arranged to move said arms against said plates for elevating the latter, the series of registering-dials, mechanism substantially as described intermediate said plates and dials for revolving the latter from the former when said plates are actuated by said cams, and means for actuating said cams from the cash-drawer; substantially as set forth.

11. In a cash-register, a series of actuating-levers, and the independent sets of tablets bearing numerals, one set being provided for

each of said actuating-levers, combined with independent devices connected with said levers and adapted to be given position thereby with relation to said tablets, and means intermediate said devices and the cash-drawer whereby upon the movement of the latter the said devices will be elevated to move upward those tablets bearing numerals corresponding with the positions at which said actuating-levers are arrested; substantially as set forth.

12. In a cash-register, the actuating-lever having the toothed segment, and a support bearing the exposed column of numerals in convenient relation to said actuating-lever, combined with the slide having the rack in engagement with the said segment and having at its inner end the guiding block or head, the series of tablets bearing numerals corresponding with the numerals of said exposed column, the tablet-rods connected with said tablets, a plate on said guiding-head, the register-dial bearing numerals corresponding with the numerals on said tablets, and graduated gearing intermediate said plate and dial for imparting the requisite degree of movement from the former to the latter; substantially as set forth.

13. In a cash-register, the actuating-lever, and a support bearing the exposed column of numerals, combined with the set of tablets bearing numerals corresponding with the numerals of the said exposed column, a movable plate connected with and adapted to be moved below said tablets by means of said actuating-lever, means actuated by the cash-drawer for moving said plate upward to expose said tablets, means for locking the tablets in their exposed position, the registering-dial, and means connected with said plate for imparting motion to said dial; substantially as set forth.

14. In a cash-register, the actuating-lever, and a support bearing the exposed column of numerals, combined with the set of tablets bearing numerals corresponding with the numerals on said exposed column, the tablet-rods connected with said tablets, the plate connected with and adapted to be moved below said tablet-rods by said actuating-lever and having a rack, means for elevating said plate against said rods, the registering-dial, the shaft therefor, and the pinion-wheel upon the said shaft to be engaged by said rack upon the upward movement of said plate, whereby said plate is enabled to both expose the proper tablet and register the numeral thereon on said dial; substantially as set forth.

15. In a cash-register, the actuating-lever, and a support bearing the exposed column of numerals in convenient relation to said lever, combined with the bank of tablets bearing numerals corresponding with the numerals of said exposed column, the tablet-rods connected with said tablets, a movable plate connected with said actuating-lever and adapted to be thereby moved to a proper position be-

low said tablet-rods, means for elevating said plate and the tablet above it during the closing of the cash-drawer, means for locking said tablet in its exposed position while the said actuating-lever is in its elevated position and the cash-drawer is closed, and means for freeing said tablet and said cash-drawer when said actuating-lever is returned to its lower position; substantially as set forth.

16. In a cash-register, the actuating-lever, and a support bearing the exposed column of numerals in convenient relation to said lever, combined with the bank of tablets bearing numerals corresponding with the numerals on said exposed column, the tablet-rods connected with said tablets, the plate connected with the actuating-lever and adapted to be moved thereby below the proper tablet to be exposed, means connected with the cash-drawer for moving said plate and tablet upward upon the closing of the cash-drawer, the registering-dial, and means intermediate said plate and said dial for imparting movement from the former to the latter during the ascent of the plate; substantially as set forth.

17. In a cash-register, the actuating-lever, and a support bearing the exposed column of numerals, combined with the set of tablets bearing numerals corresponding with the numerals of said exposed column, the tablet-rods for said tablets, a plate connected with and adapted to be moved by said actuating-lever to a proper position below said tablet-rods, a sliding carriage connected with the cash-drawer for elevating said plate and the tablet above it, the rack upon the said plate, the registering-dial, and gearing intermediate said rack and dial for imparting motion from said plate to the dial; substantially as set forth.

18. In a cash-register, the actuating-lever, and a support bearing the exposed column of numerals in convenient relation to said lever, combined with the set of tablets bearing numerals corresponding with the numerals of the said exposed column, the tablet-rods for said tablets, a plate connected with and adapted to be moved by said actuating-lever to a proper position in relation to said tablet-rods, means for imparting to said plate an invariable upward throw against the proper tablet-rod, the register-dial, and means intermediate said plate and said dial for imparting movement from the former to the latter a graduated movement corresponding with the numeral on the tablet exposed; substantially as set forth.

19. In a cash-register, the actuating-lever, and a support bearing the exposed column of numerals in convenient relation to said lever, combined with the set of tablets bearing numerals corresponding with the numerals on the said exposed column, the tablet-rods for said tablets, a plate adapted to be moved below the said rods from the said actuating-lever, means for throwing said plate upward against the proper tablet to expose the latter,

the registering-dial, and means for imparting the motion of said plate to said dial to an extent corresponding with the numeral on the exposed tablet; substantially as set forth.

5 20. In a cash-register, the actuating-lever, and a support bearing exposed column of numerals, combined with the set of tablets bearing numerals corresponding with the numerals in said exposed column, the registering-
10 dial also bearing numerals corresponding with the numerals in said exposed column, a device connected with and adapted to be given a position below the proper tablet by said actuating-lever, means connected with the cash-
15 drawer for moving said device upward to expose the tablet and having an invariable movement, and means intermediate said device and said registering-dial for imparting a variable movement to the latter corresponding with
20 the numeral on the exposed tablet; substantially as set forth.

21. In a cash-register, the actuating-levers, and a support bearing the column of numerals in convenient relation to said actuating-
25 levers, combined with the slides connected with said levers and adapted to be independently operated therefrom and each having upon its inner end a guiding block or head, the independent plates on said guiding blocks
30 or heads, the sets of tablets bearing numerals corresponding with the numerals of the said exposed column, tablet-rods connected with said tablets and arranged to be engaged by said plates, cam-levers connected to said slides
35 and engaging said plates, the movable carriage adapted to contact with said cam-levers and cause the same to elevate said plates and the tablets directly above the same, the registering-dials, and means intermediate said
40 plates and said dials for imparting motion from the former to the latter; substantially as set forth.

22. In a cash-register, the actuating-levers, and a support bearing the exposed column of
45 numerals, combined with the independent sets of tablets bearing numerals corresponding with the numerals on the said exposed column, the independent tablet-rods for the said tablets, the slides adapted to be inde-
50 pendently moved by said actuating-levers and having upon their inner ends guiding blocks or heads, the independent vertically-movable plates on said guiding blocks or heads and arranged to engage said tablet-rods, the cam-
55 shaped levers connected with said slides and engaging said plates, the carriage adapted to be moved inward against said cam-shaped levers to elevate said plates and the tablets above them, the racks upon the outer faces
60 of said plates, the registering-dials, and means intermediate said racks and dials for imparting movement from the former to the latter; substantially as set forth.

23. In a cash-register, the actuating-levers, and a support bearing the column of exposed
65 numerals, combined with the sets of tablets bearing numerals corresponding with the nu-

merals on said exposed column, the slides connected with said levers and adapted to be moved thereby, the guiding blocks or heads
70 upon the inner ends of said slides, the plates guided upon said blocks or heads and arranged to engage the tablet-rods, the cam-shaped levers connected with said slides and engaging said plates, the carriage adapted to
75 be moved inward against said cam-shaped levers to effect the elevation of said plates and the tablets directly above the same, the registering-dials, means intermediate said plates and said dials for imparting motion from the
80 former to the latter, and means for carrying from one to another of said dials; substantially as set forth.

24. In a cash-register, the actuating-levers, and a support bearing the exposed column of
85 numerals, combined with the independent sets of tablets corresponding with the numerals on the said exposed column, the tablet-rods for said tablets, the plates independently connected with said actuating-levers
90 and arranged when moved upward to engage said tablet-rods, means connected with the cash-drawer for simultaneously elevating said plates, the registering-dials, and means intermediate said plates and dials for inde-
95 pendently rotating the latter from the former; substantially as set forth.

25. In a cash-register, the actuating-levers, and a support bearing the exposed column of
100 numerals, combined with the sets of tablets bearing numerals corresponding with the numerals of the said exposed column, the tablet-rods for said tablets, the plates connected with and adapted to be moved by the actuating-levers and arranged to engage said tablet-
105 rods, a carriage connected with the cash-drawer whereby on the closing of the latter the said plates are caused to elevate and expose the tablets, the series of registering-dials, independent means intermediate the
110 respective plates and dials for communicating motion from the former to the latter, and means intermediate said carriage and said dials for effecting the carrying from one to another of said dials; substantially as set
115 forth.

26. In a cash-register the actuating-levers and a support bearing the exposed column of
120 numerals in convenient relation to said levers, combined with the sets of tablets bearing numerals corresponding with the numerals on the exposed face of the register, the independent slides connected with and adapted to be moved independently by said actuating-levers, the plates carried by said slides and
125 adapted to have an independent vertical movement against the tablet-rods, the carriage connected with the cash-drawer and adapted on the closing of the latter to elevate all of said plates and effect the exposure of
130 the tablets directly above the same, means for locking said carriage at its inward position, the series of registering-dials, means intermediate said plates and dials for independ-

ently rotating the latter from the former in accordance with the numerals exposed on said tablets, and means for automatically driving said carriage outward when the said
 5 actuating-levers are returned to their lower position; substantially as set forth.

27. In a cash-register, the actuating-levers, and a support bearing the exposed column of numerals in convenient relation to said levers,
 10 combined with the sets of tablets bearing numerals corresponding with the numerals on said exposed column, the tablet-rods for said tablets, sliding plates connected with said actuating-levers to be moved by the latter
 15 below the particular tablets to be exposed, the sliding carriage connected with the cash-drawer and adapted on the closing of the latter to elevate said plates and said tablets to be exposed, means for locking the carriage
 20 in its inward position, the registering-dials, means intermediate said plates and dials for imparting motion from the former to the latter, means for freeing said carriage by the lowering of the actuating-levers, and means
 25 for ejecting said carriage and drawer when freed by said levers; substantially as set forth.

28. In a cash-register, the actuating-levers, and a support bearing the exposed column
 30 of numerals, combined with the sets of tablets bearing numerals corresponding with the numerals of said exposed column, the tablet-rods for said tablets, the slides connected with said actuating-levers, the plates carried
 35 by said slides and adapted to be thereby moved below the tablets to be exposed, the cam-shaped levers connected with the said slides and engaging said plates, the sliding carriage connected with the cash-drawer and
 40 adapted on the closing of the latter to contact with said cam-shaped levers and elevate said plates and the tablets directly above the same, the cross-head having the pawl to hold said carriage at its inward position, the arm
 45 on said cross-head to be engaged by said carriage when the latter is at its outward position, the pawl-arms formed on the ends of said cross-head, the weighted levers arranged to engage said pawl-arms when said carriage
 50 is at its outward position, the spring acting against said cross-head, and pins connected with said actuating-levers for engaging said bell-crank levers when the carriage is at its inward position and thereby free said cross-head and permit said spring to tilt the same
 55 and elevate said pawl free of said carriage; substantially as set forth.

29. In a cash-register, the actuating-levers, and a support bearing the exposed column of
 60 numerals in convenient relation to said actuating-levers, combined with the sets of tablets bearing numerals corresponding with the numerals of said exposed column, the tablet-rods for said tablets, sliding plates connected
 65 with and adapted to be moved by said actuating-levers to a proper position to engage

said tablet-rods, a carriage connected with the cash-drawer and adapted to be moved inward for the purpose of elevating said plates and the tablets directly above the same, the
 70 registering-dials, means intermediate said plates and said dials for communicating motion from the former to the latter, and means connected with said carriage for effecting the carrying from one dial to another; substan-
 75 tially as set forth.

30. In a cash-register the actuating-levers, and a support bearing the exposed column of numerals in convenient relation to said levers, combined with the sets of tablets bear-
 80 ing numerals corresponding with the numerals of said exposed column, the sliding plates connected with said levers and adapted to be moved by the same to a proper position below said tablet-rods, a sliding carriage con-
 85 nected with the cash-drawer and adapted upon its inward motion to elevate said plates and the tablets directly above the same, the registering-dials, means intermediate said plates and dials for communicating motion
 90 from the former to the latter, the series of cam-bars connected with said carriage, the vertically-acting pawls arranged to be engaged by said cam-bars, and pinions on the dial-shafts to be engaged and rotated by said
 95 vertically-acting pawls when they are acted upon by said cam-bars; substantially as set forth.

31. In a cash-register the actuating-levers, and a support bearing the exposed column of
 100 numerals, combined with the sets of tablets bearing the numerals corresponding with the numerals on the said exposed column, the tablet-rods for said tablets, the sliding plates connected with and adapted to be moved by
 105 said actuating-levers in position to engage said tablet-rods, a sliding carriage connected with the cash-drawer and adapted upon being moved inward to elevate said plates and the tablets directly above the same, the register-
 110 ing-dials, mechanism intermediate said dials and said plates for communicating motion to the former from the latter, the cam-bars connected with said carriage, the vertically-movable pawls arranged in proper relation to said
 115 dials, the sliding plates carrying said vertically-acting pawls, and projections on said dials for moving said plates whereby the said vertically-acting pawls are carried into and out of alinement with the said cam-bars for
 120 operating the registering-dials from the latter; substantially as set forth.

32. In a cash-register, the actuating-lever, and a support bearing the exposed column of
 125 numerals, combined with the set of independent tablets bearing numerals corresponding with the numerals of said exposed column, the registering-dials, means connected with the cash-drawer for exposing the proper tablets and correspondingly operating said dials
 130 on and by the closing of said cash-drawer, and means connected with said cash-drawer for

effecting the carrying from one to the other of said dials on and by the opening of said cash-drawer; substantially as set forth.

33. In a cash-register, the actuating-lever, 5
and a support bearing the exposed column of numerals therefor, combined with the set of independent tablets bearing numerals corresponding with the numerals of said exposed column, means substantially as described for 10
exposing the proper tablet on and by means of the closing of the cash-drawer, and means for freeing said exposed tablet and ejecting the said drawer upon the return movement of said actuating-lever; substantially as set 15
forth.

34. In a cash-register, the actuating-lever, and a support bearing the exposed column of numerals therefor, combined with the set of tablets bearing numerals corresponding with

the numerals of said exposed column, the 20
plate connected with and adapted to be moved with relation to the tablet to be exposed by said actuating-lever, the carriage adapted to move with the drawer and to effect the movement of said plate to expose the tablet, the 25
sleeve having the downwardly - extending arms and carried by the said carriage, the projections on the cash-drawer to be respectively engaged by said arms, and means for freeing said arms from the drawer on the opening of 30
the latter; substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 29th day of June, A. D. 1896.

ELIJAH F. SPAULDING.

Witnesses:

CHAS. C. GILL,
E. JOS. BELKNAP.