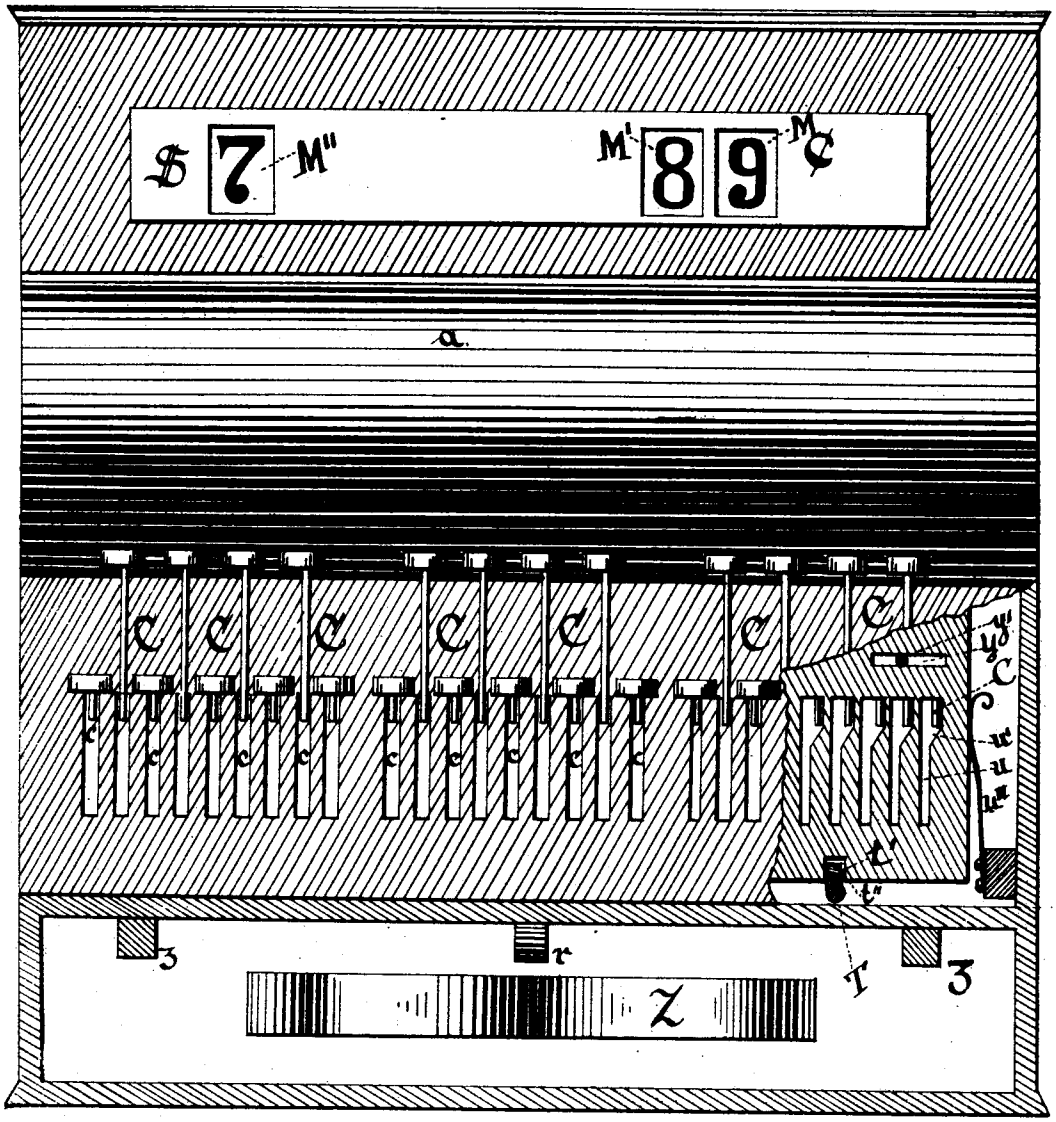
(No Model.) 5 Sheets—Sheet 1.

C. J. RYBERG.

CASH REGISTER AND INDICATOR.

No. 513,443. Patented Jan. 23, 1894.

FIG 1.



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(No Model.) 5 Sheets—Sheet 2.

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FIG 2

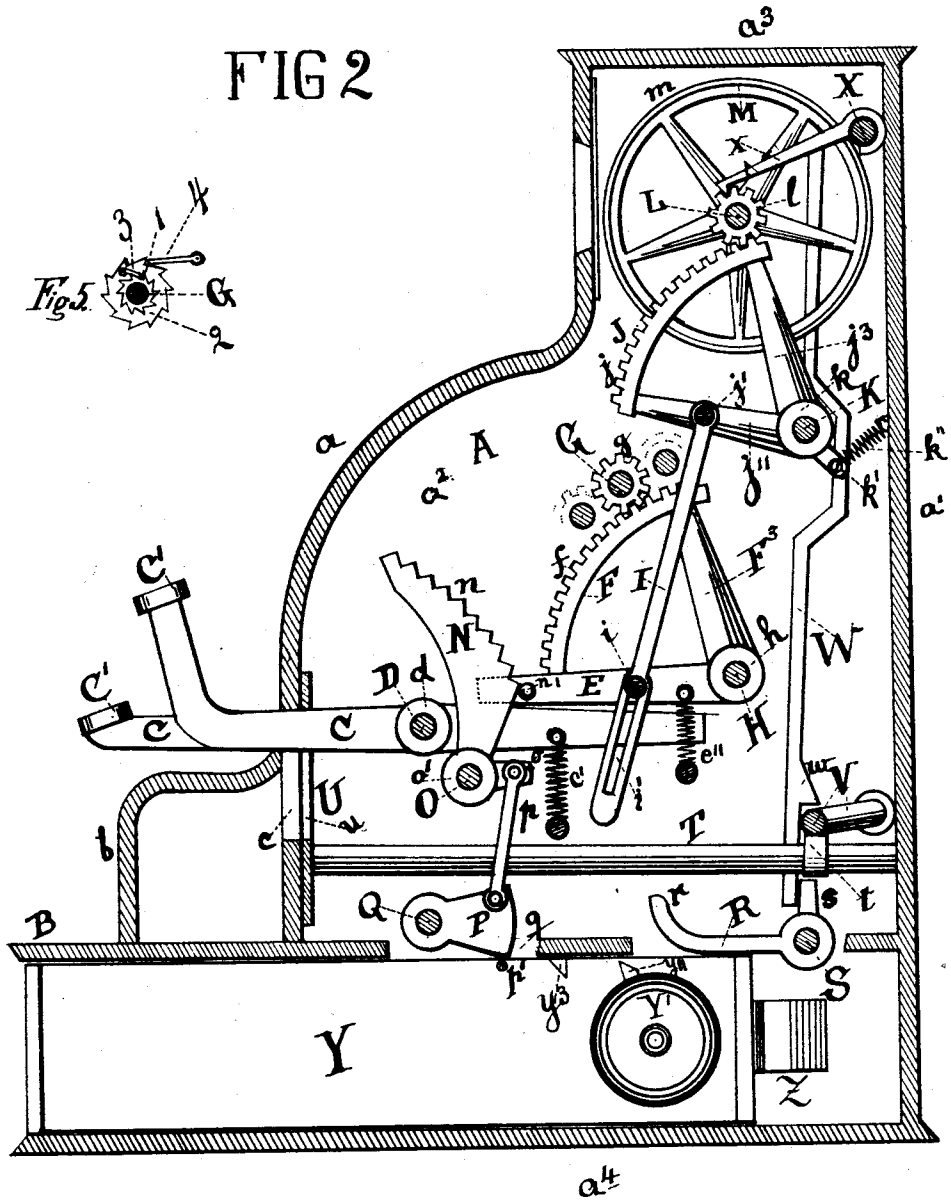

Fig 5.

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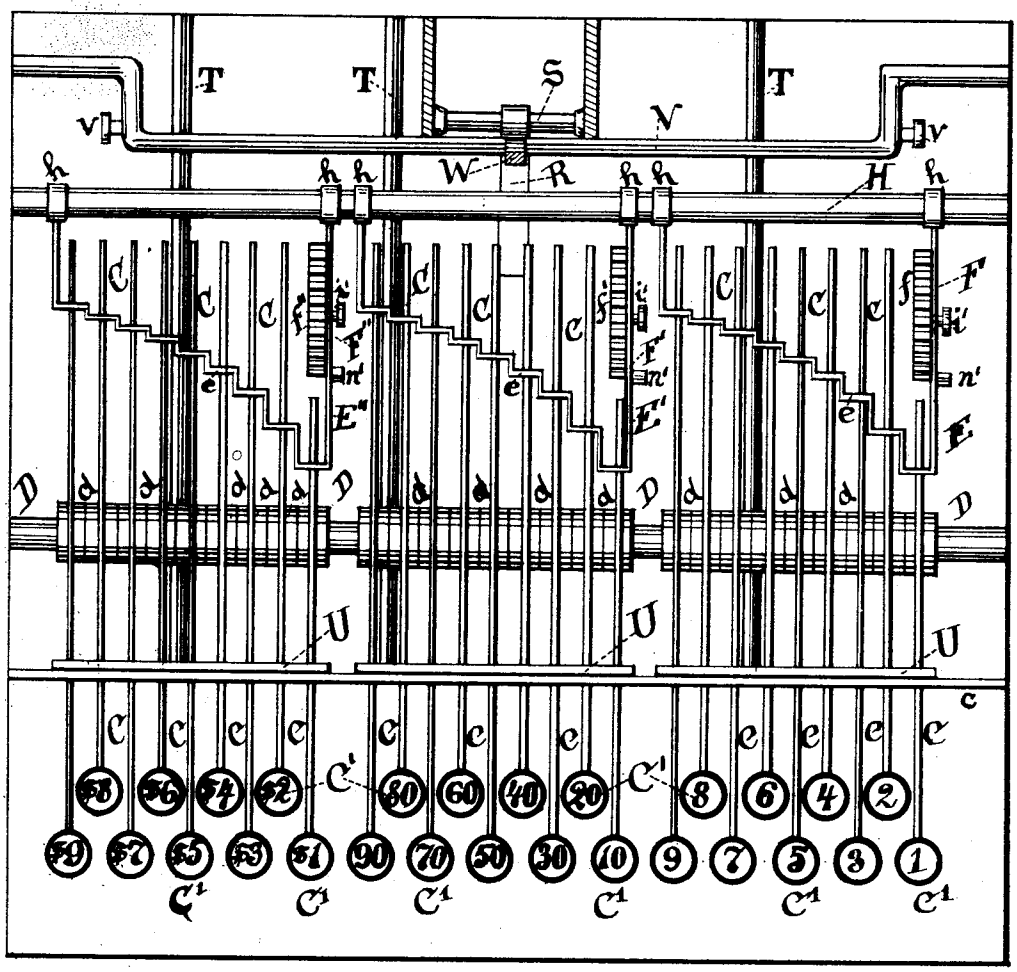
FIG 3.



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(No Model.) 5 Sheets—Sheet 4.

C. J. RYBERG.

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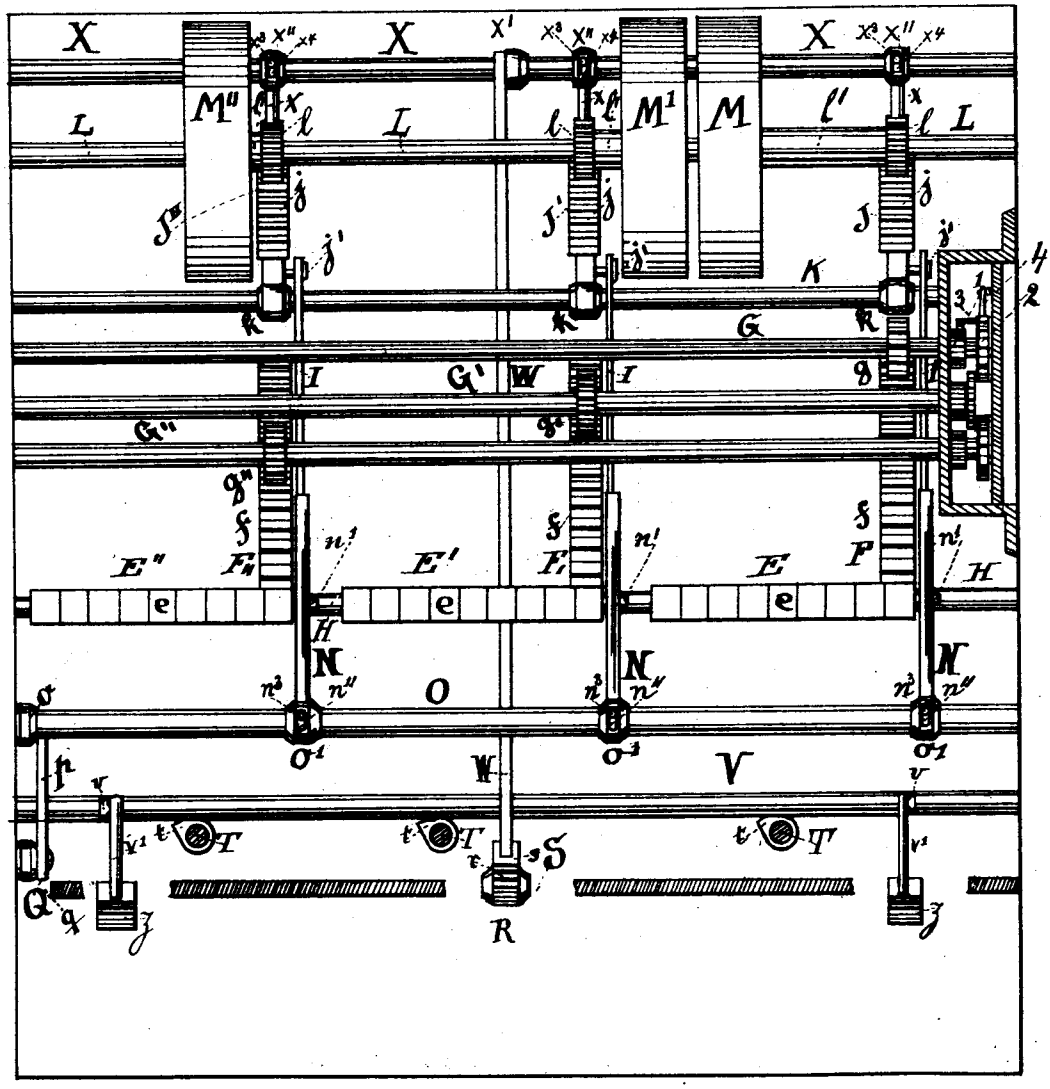
Fig 4.



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(No Model.) 5 Sheets—Sheet 5.

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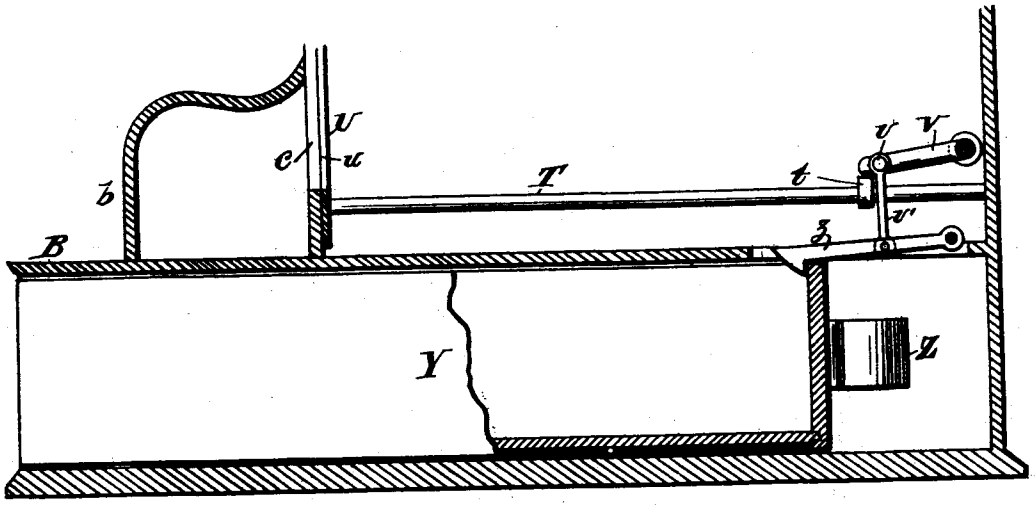
Fig. 6.



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Inventor.
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UNITED STATES PATENT OFFICE.

CHARLES J. RYBERG, OF CHICAGO, ILLINOIS.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 513,443, dated January 23, 1894.

Application filed December 12, 1892. Serial No. 454,940. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. RYBERG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cash-Registers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, forming a part hereof, in which—

Figure 1 is a front elevation, partly in section. Fig. 2, is a cross-section. Fig. 3, is a top or plan view of the operating mechanism, and Fig. 4 is a front elevation of the operating mechanism. Fig. 5 is a detail of the total register mechanism and Fig. 6 is a detail sectional view to more clearly show the catches for engaging and holding the money drawer in its closed position.

It is desirable for an operative cash register that the unlocking of the cash drawer, the throwing of the cash drawer open, the ringing of the alarm bell, the dropping of the preceding indication, the adding up of the amount of the sale, the registering of the amount of the sale, and the locking of the register after each sale, should all be accomplished by the movement of the operating key, and the objects of this invention are to enable the several operations depending on the movement of the key to be accurately and positively performed; to simplify the construction and operation of the register mechanism; to improve the construction and relation between the registering keys and the registering mechanism, and have the movement of each key to its limit positively operate the display numeral for each key; to improve the mechanism for exhibiting the numeral; to insure a positive lock of the numerals against any return; to insure a stop of the enumeration in case of any slipping of any key, and have the complete enumeration on the full throw of the key; to enable the display numeral to be held in view after each registration and until the next registration, and to improve generally the construction and operation of the register as a whole; and its nature consists in the several parts and combination of parts hereinafter described and pointed out in the claims as new.

A represents the inclosing case, formed of a front, a, and back, a', side pieces a^2 and top a^3, and a bottom a^4, arranged to form a casing, as shown, or of any other suitable form to receive the registering mechanism and secure such mechanism against being tampered with.

B is a division plate, between which and the bottom a^4 is the space for the money drawer, and extending from the front a to the division plate B, at each end, is a guard or end piece b, which can be omitted, if desired.

C, are the key levers, each lever having a head or finger piece C′ with a numeral thereon, and these key levers, as shown are arranged in three series, each series having nine key levers, with numerals for the levers from 1 to 9 inclusive, and one series of levers registers units, another series tens, and the other series hundreds, or such other enumeration as may be desired. The key levers C extend inside of the casing A, and the finger pieces or heads C′, lie outside of the casing and the body of the levers C passes through slots c in the front a, which slots limit the throw of the levers, in the arrangement shown.

D is a rod, extending from end to end of the case A, and supported in the end walls a^2 of such case, or in any other suitable manner, and upon this rod D are mounted the key levers C, each key lever having a hub or bearing d on each side so as to give a firm bearing for the levers on the rod.

E, E′, E², are the counting frames or arms co-acting with the key levers, a counting frame or arm being provided for each series of keys. Each counting frame is formed of end bars and a front bar, and the front bar e is arranged in a series of steps, such steps being nine in number and decreasing in distance as they approach the mounted end of the frame or arm, and the longest step is the one which co-acts with the key lever having the numeral 1 thereon, by which means the movement of this lever moves the number frame or arm the least distance, and the distance in the movement of the number frame or arm is proportionately increased for each increase in the numeral.

F, F′, and F² are the racks for the number frames or arms E, E′, E², a rack being provided for each frame or arm. Each rack has a series of cogs or teeth f, and, as shown, one end of the rack is formed with or secured to the frame or arm end bar, and the other end is formed with or secured to an arm F³ extend-

ing down to the carrying shaft H, and the parts E, F, and F^3 can be cast or formed in a single piece, or be made of separate pieces united one to the other.

G, G′ and G^2 are shafts, each shaft having a pinion or cog-wheel *g* which meshes with the cogs or teeth of the rack F, a wheel *g* being provided for each rack, so that with the movement of the rack its shaft will be rotated. These shafts G, G′, G^3 operate a total register, by means of which the complete sales can be told.

H is a shaft, extending from end to end across the casing A and mounted in the end walls a^2 of such casing, or supported in some other suitable manner, and on this shaft is mounted the numbering frames or arms and their racks, and as shown, each frame or arm has its mounted end hub or bearing *h* mounted on the shaft H, so that each frame or arm is free to turn on the supporting shaft H.

I is a connecting rod or bar, one for each frame or arm E, and each bar I has a slot *i′* which receives a pin *i* on the end bar of the frame E, and connects the rod or bar I with its frame so as to allow of lost motion and a dropping of the frame E without carrying with it the connecting bar or rod I.

J, J′, J^2, are racks, each having on its connecting face cogs or teeth *j*, and these racks J, J′, J^2, are connected with the frames or arms E, E′, E^2, by the bar or rod I through a pin *i* on the arm *j′* of the rack frame, so that with the upward throw of either arm or frame E, E′, or E^2, its companion rack J, J′, J^2, will be raised. The racks are each supported by a frame formed of arms j^2, j^3, which arms are joined at a common center and are supported on the shaft so as to be free in rising and falling.

K is the shaft, on which is mounted the racks J, J′, J^2, and, as shown, each rack has a hub or bearing *k*, by means of which the racks are mounted so as to be free to rise and fall, and extending out from each hub *k* is an arm *k′* having a pin or other attachment for one end of the coil spring *k″*, the other end of which is attached to the back *a′* of the case A, or otherwise, which spring is for the purpose of returning the rack after each upward throw.

L is a shaft on which is mounted pinions or cog-wheels *l*, one for each rack J, and meshing with the cogs or levers *j* of its rack.

M is the registering or indicating wheel for the units series of keys; M′ the registering or indicating wheel for the tens series of keys.

M″ is the registering or indicating wheel for the hundreds series of keys. Each wheel is mounted on a sleeve or collar *l′*, which turns on a shaft L, and each sleeve or collar has secured thereto a pinion or cog-wheel *l* to engage with the racks J, J′, J^2, for the respective registering wheels M, M′, M″. Each registering wheel has on its face *m* a series of numbers running from 0 to 9, and these numbers are brought into view by the depression of the registering key having a corresponding numeral to the numeral brought into view on the registering wheel.

N are stops, one for each numbering frame or arm E, each stop having on its engaging edge a series of steps *n* which engage with the stop pin *n′* on the registering frame and prevent any backward drop of such frame in the event of an incomplete operation of the key, or from other cause, by which a full registration is not completed.

O is a shaft extending across the casing A from end to end, and suitably supported in the end walls a^2 or otherwise, and on this shaft is secured by hubs n^2, the stops N, and secured to this shaft by a hub *o′*, is an arm *o*, which arm moves with the shaft O.

P is a stop or arm connected with the arm *o* of the shaft O, by a link *p*, pivoted at its ends to the arm *o* and the arm P, and this arm P drops through an opening *q* in the division plate B, and is engaged by a rod or pin *p′* carried by the money drawer.

Q is a pin, on which the arm P is secured or mounted, which pin is fastened to one end wall, a^2, and lies above and clear of the drawer, or otherwise.

R is an arm having an upward turned end *r* and located for the arm to lie over the rear end of the money drawer, when closed.

S is a shaft, on which is mounted or secured the arm R, which shaft has its bearings in suitable supports extending up from the bottom a^4 of the case, or otherwise, and the hub or center by which the arm R is mounted on the shaft S has an extension or projection *s*.

T are shafts extending fore and aft of the casing, a shaft being provided for each series of keys S, and which shaft has thereon a cam or eccentric *t*.

U are sliding plates, one for each series of keys C, each plate having a series of slots *u* for the passage of the body of the key, and each slot *u* has an inclined portion *u′* against which the body of the key strikes to move the plate U endwise, and the plate U is returned to its normal position on the return of a key by the spring *u″*. Each plate has slots *y* to receive a pin *y′* projecting out from the front *a* of the casting for holding the plate in position, and allow each plate to have a free movement endwise through the action of the key levers C. Each plate U has an opening or recess *t″* to receive the pin *t′* on the shaft T, so as to partly rotate the shaft T by the end movement of the plate U.

V, is a rod or shaft, having at each end a crank and supported at the ends in the side walls a^2 of the casing, or in any other suitable manner, and each crank portion has projecting out therefrom a pin *v* in the arrangement shown. This rod V lies above the cams or eccentrics *t* of the rods T, so that with the turning of either rod T its eccentric *t* will be raised, raising the main or body portion of the rod V.

W is a bar pivoted at its upper end to an

arm x', and having its lower end provided with a projection w which lies directly over the rod V, so that with the raising of the rod V the bar W will be lifted.

X is a shaft, supported at its inner ends in the end walls of the casing A, and having secured thereto by a hub the arm x', and this rod or shaft X also has secured thereto by suitable hubs, dogs or catches x, one for each pinion l, each dog engaging with its pinion and holding the pinion against turning except as the rod or shaft X, is rocked by lifting the bar W.

Y is the money drawer, located in the space between the bottom a^4 and the division plate B, and at the rear end of the money drawer Y is a bell Y' the hammer of which is operated by the engagement of a catch y'' with a catch y^3 on the division plate B, as shown in Fig. 2.

Z is a spring for throwing the money drawer open, with the operation of the registering mechanism, by the depression of a key, and the drawer is held closed by hooks z engaging with the rear edge of the drawer and operated by the lifting of the rod V, through the connecting links v' running from the pins v to the hooks z, as shown in Figs. 4 and 6. Each key C, after a depression of its outer end which lifts or raises its inner end, is returned to its normal position by a spring c', one end of the spring being attached to a rod extending across the casing A, and the other end of the spring c' being attached to a pin on the key lever, and each number frame or arm E is returned to its normal position, after being raised through the action of a lever key by a spring e'', one end of which is attached to a rod extending across the keys and the other end is attached to a pin on the frame or arm E.

Each rod G, G', and G^2 has at one end a total register formed of a ratchet 1, rigidly affixed to the shaft and having ten teeth, and on each shaft outside of the ratchet 1 is a larger ratchet 2, mounted loosely on the shaft with the teeth running in the opposite direction from the teeth of the ratchet 1, and this ratchet 2, is operated from the ratchet 1 by a pawl 3, pivoted to the ratchet 2 and engaging the ratchet 1, and the ratchet 2 is held against return with the shaft G by a pawl or catch 4, pivoted to the side wall of the casing A. The location of the total register formed by the ratchets 1, and 2, is shown in Fig. 4, and the construction of the ratchet, is shown in Fig. 5, and the same arrangement of ratchet is provided for the shafts G', G^2. On the outer face of each ratchet 2 are numbers from 0 to 9, and on the other side is a pin which engages with the next larger ratchet, so that every time the first operated ratchet makes one complete revolution it will move the next ratchet forward one tooth, thereby making a total register for all sales corresponding with the amount registered by the numbering wheels during the several operations of such wheels.

The key levers C of each series have their main or body portion lying within the casing A in the same plane, but their acting ends are arranged to have one set of the heads or finger pieces lie one above the other, as shown in Figs. 1 and 2, by which arrangement economy of space is had. The number frames or arms E, when in their normal position rest on the key levers, as shown in Fig. 2, and the steps for the several numbers are in contact with the corresponding number key lever, so that the forcing down of a key lever operates on the proper space of the number frame or arm. The rack operated from the number frame or arm is set to correspond with the number frame or arm, so that the raising of the frame or arm will raise the rack to an extent corresponding to the lift of the frame or arm, and such raising is had through the connecting bar 1.

The rod T for each series of key levers is mounted at one end in the sliding plates U, so that with the depression of the key lever the sliding plate U will be moved, and through the engagement of the projection t' rock the shaft T and through the cam t lift the rod V, which raises the rod W and rocks the shaft X to lift the pawl x, and the lifting of the rod V also lifts the hooks z releasing the drawer Y for the spring Z to throw the drawer open The opening of the drawer rings the bell Y' through the engagement of the projection y'' and y^3 and with the opening of the drawer the arm P drops releasing the stop N for the steps n to engage the pin n'.

The operation will be readily understood from the foregoing description and briefly is as follows:—The operator pressing on any one of the heads or finger pieces C' throws down the outer end of the key lever for such finger piece, raising the inner end of the key lever, and by the engagement of the lever with its step of the frame or arm E, raises such arm and with it the rack F, which rack through the mesh of its cogs f with the cogs of the pinion g turns the shaft G to a corresponding number of cogs equal to the number on the key lever C which has been pressed down and the turning of the shaft G operates the total register at the end of such shaft. The lifting or raising of the frame or arm E through the engagement of the pin i with the end of the slot i' raises the rod or bar I, which raises the rack J a distance equal to the distance traveled by the rack F, and such raising of the rack J through the engaging of its cogs j with the pinion l turns the sleeve l' on the shaft L, and turns the numbering wheel M correspondingly bringing into view at the sight opening the number on the key lever which was depressed. The release of the key lever allows the spring c' to act and return the lever to its normal position, and at the same time the spring e'' acts and returns the frame or arm E to its normal position, but such return of the frame or arm with the rack F does not return the rack J as the pin i is

free to descend in the slot i' without affecting the bar l, so that the rack J remains in its raised position, being retained by the register wheel M with its display numeral in position until the next operation, and with the depression of another key lever C, the sliding plate U operates the shaft T lifting the arm V which lifts the bar W, rocking the shaft X and raising the dog or pawl x from engagement with the pinion l, when the rack J falls by gravity displacing the number which was displayed on the register wheel M, after the display of the new number registered by the depression of the next key lever C, and in order to insure a return of the rack J the spring k'' is attached to the arm k, by which means a positive return of the rack J is assured, and such return is had with the operation of the key lever for the next number registered. The depression of a key lever and raising of an arm E raises the pin n' so that the catch or stop N is free to tip forward for its step n to engage with the pin n' to lock the key levers, so that if a key lever is not fully depressed, a false registration is not likely to be made, because the operator can observe, before closing the money drawer, if a mistake has been made by insufficient depression of a key lever, and if so the latter can be fully depressed by the operator. The main purpose of these devices is to give the operator an opportunity to notice and correct mistakes before closing the money drawer. The depression of a key lever through the lifting of the rod V, releases the drawer, as already described. The projection w on the bar W normally lies over the rod V and is in position to be engaged by that bar when it is raised by the cam t, which cam is operated by the depression of any of the register keys. The result is that when a register key is operated the rod V is lifted, lifting the bar W and releasing the pinion l. When the drawer is opened the rod R falls and the lug s moves into contact with the lower end of the rod W, moving it laterally sufficiently to move the projection w out of line with the rod V. If now the register keys are operated, the rod V will be moved upward but will not engage the projection w, and consequently will not lift the pawl x and release the pinion l. The register wheel or purchase indicator M will therefore remain locked as long as the drawer is open. When the drawer is closed its rear edge engages the arm R and lifts such arm, which is dropped by the withdrawal of the drawer, and with the lifting of the arm R the stop s which holds the rod or bar W out of engagement with the rod V, is withdrawn, allowing the bar W to return to its normal position for the pawl x to lock the registering wheel or purchase indicator M until the operation of the next key lever, and with the return of the drawer the arm P is lifted by the pin p' raising the arm o through the link p, which lifts the stop N clear of the pin n' so that the arm E and rack F are free to be returned with the return of the key lever C, and these movements will be had with the operation of each key lever, so that a registration is made and the drawer is locked and remains locked until the next operation, the whole being dependent on the movement of each key lever. The pressing down of one of the heads or finger pieces C' carries down the outer end of the key lever for such finger piece, and the first or initial movement forces the sliding plate U sidewise turning or rocking shaft T through the pin t' and cam or eccentric t and with this movement of the sliding plate U and shaft T the crank rod V is raised by the cam which raises the bar W by the catch w, rocking the shaft X and raising the dog or pawl x from engagement with the pinion l, releasing the rack J which falls by gravity and the action of the spring k'', turning all the indicating wheels M, M', M'', to zero. The lifting of the crank rod V by the cam or eccentric t, through the links v' raises the hooks Z, releasing the drawer for the spring Z to force or throw the drawer open. When the drawer is thrown open, arm R falls by gravity, or a spring may be employed, carrying with it the pin s which throws the bar W out of connection with rod V, thereby making it impossible to release the indicators, or destroy the indication, until the drawer is closed. By this arrangement an effectual guard against any false registration is had, as it is impossible to throw out one indication without returning all indicating wheels to zero. By the opening of the drawer the arm P is released from pin or rod p' and falls by gravity or by a spring, so that stop N is free to tip forward for its steps to engage with pin n' as hereinbefore explained. The depression of a key lever to the end of a slot c raises the inner end of the key lever and by the engagement of the lever with the frame or arm E raises such arm and with it the rack F which rack through the mesh of its cogs f with the cogs of pinion g, turns the shaft G a corresponding number of cogs equal to the number on the key lever C which is being pressed and the turning of shaft G operates the total register at the end of such rod. The lifting or raising of the frame or arm E through the engagement of the pin i with the end of the slot i' raises the rod or bar I which raises the rack J a distance equal to the distance traveled by the rack F and such raising of the rack J, through the engagement of its cogs j with the pinion l turns the sleeve l' on the shaft L, and turns the indicating wheel M correspondingly bringing into view at the front opening Fig. 1, the number of the key lever depressed. The release of the key lever allows the spring c' to act and return the lever to its normal position. The closing of the drawer raises the arm P, by the pin p' which through the connecting rod or link p, lifts the arm o of the shaft O, removing the stop N from pin n' which allows the spring e'' to act and return the frame E to its nor-

mal position, but such return of the frame or arm with the rack F does not return the rack J as the pin i descends in the slot i' so that the rack J remains in its raised position retaining the indicating wheel M, with its display numeral in position until the next operation. The closing of the drawer raises arm R to its normal position and with such return the rod or bar W by gravity or by a spring falls or is brought to rest against and upon rod V so that with the next operation the indication is thrown out by lifting the rod V which raises the rod W and through the arm x' rocks the shaft X thereby lifting pawl x out of engagement with the gear or pinion l and releasing the spring K'' which returns the rack J to its normal position. Each dog or pawl x has a hub or bearing so as to steady it on the shaft and each hub has a slot in which a pin operates so that when the arm x' rocks the shaft it lifts the dog or pawl out of engagement and when the bar W is thrown out of connection with rod V the pawls rest against the cogs of pinion l, thereby allowing each pawl to pass over the cogs without moving shaft X.

The stops N for the counting frames or arms E, E', E'', are secured to the shaft O on which is the arm o which arm moves with the shaft. Each stop has its hub or bearing mounted on the shaft so that each stop is free to turn on the supporting shaft O, and each hub has a slot n'' to receive pin n^3, projecting out from shaft O for raising the stop, and allowing each stop to have a free movement toward the counting bar E when drawer is open.

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

1. The combination in a cash-register, of a series of key levers, a number frame or arm, having a series of engaging faces arranged in steps, one for each key lever, a segmental rack carried by each frame or arm, a pinion operated by the segmental rack, a register-shaft operated by the pinion, a second segmental rack, a purchase indicator, having its shaft provided with a pinion which is operated by the second segmental rack, and a connecting rod or bar pivoted to the latter, and having a loose connection with the segmental rack of the number frame or arm, substantially as described.

2. The combination in a cash-register, of a series of key levers, a number frame or arm, having a series of engaging faces arranged in steps, one for each key lever, a segmental rack carried by each frame or arm, a pinion operated by the segmental rack, a register-shaft operated by the pinion, a second segmental rack, a purchase indicator, having its shaft provided with a pinion, which is operated by the said second segmental rack, a connecting bar or rod pivoted to the latter, and having a pin and slot connection with the segmental rack of the number frame or arm, a dog engaging the pinion on the shaft of the purchase indicator, and devices operated by the key levers for disengaging the dog from the pinion, substantially as described.

3. The combination in a cash register, of a series of key levers, a number frame or arm elevated by the depression of a key lever, and having a series of engaging faces arranged in steps, one for each key lever, a segmental rack carried by and moving with the number frame or arm, a register shaft geared to said segmental rack, a second segmental rack, a connecting bar connecting the number frame or arm and the second segmental rack for elevating the latter in unison with the elevation of the number frame or arm, and means whereby the latter may descend independent of said second rack, substantially as described.

4. The combination in a cash register, of a series of key levers, a number frame or arm elevated by the depression of a key lever, and having a series of engaging faces arranged in steps, one for each key lever, a segmental rack carried by and moving with the number frame or arm, a register shaft geared to said segmental rack, a second segmental rack, a purchase indicator geared to the second segmental rack, a connecting bar pivoted to the second segmental rack and loosely connected with the number frame or arm for elevating the second segmental rack in unison with the elevation of the number arm or frame, and permitting the latter to descend independent of said second segmental rack, substantially as described.

5. The combination in a cash register, of a series of key levers, a number frame or arm elevated by the depression of a key lever, and having a series of engaging faces arranged in steps, one for each key lever, a segmental rack carried by and moving with the number frame or arm, a second segmental rack elevated by the action of and in unison with the number frame or arm as the latter ascends, and means whereby the number frame or arm may descend independent of said second rack, substantially as described.

6. The combination in a cash register, of a series of key levers, a pivoted, swinging number frame or arm having a rack and a series of engaging faces arranged in steps, one for each key lever a pinion engaging the rack of the number frame or arm, and a pivoted swinging stop for engaging the number frame or arm, substantially as described.

7. The combination in a cash register, of a series of key levers, a pivoted, swinging number frame or arm having a rack and a series of engaging faces arranged in steps, one for each key lever, a pin on the frame or arm, a pinion engaging the rack of the number frame or arm, and a pivoted swinging stop having a series of steps for engaging the pin on the frame or arm, substantially as described.

8. The combination in a cash register, of a series of key levers, a number frame or arm having a series of engaging faces arranged in steps, one for each key lever, a stop for engaging the number frame or arm, and a stop

for the cash drawer actuated by the stop of the number frame or arm, substantially as described.

9. The combination in a cash-register, of a series of key levers, a number frame or arm, a segmental rack actuated from the frame or arm, a pinion engaged by the segmental rack, a purchase indicator operated from the pinion, a dog engaging the pinion and locking the purchase indicator after each registration, a rock-shaft carrying the dog, a vertically moving lifting bar for turning the rock-shaft to raise the dog, a rod or shaft for moving the lifting bar upward, and devices actuated by a key lever to operate said rod or shaft, substantially as described.

10. The combination in a cash-register, of a series of key levers, a number frame or arm, a segmental rack actuated from the frame or arm, a pinion engaged by the segmental rack, a purchase indicator operated from the pinion, a dog engaging the pinion and locking the purchase indicator after each registration, a rock-shaft carrying the dog, a vertically moving lifting bar for turning the rock-shaft to raise the dog, an oscillatory rod or shaft for moving the lifting bar upward, a shaft having a cam which acts upon the oscillatory rod or shaft for raising the said lifting bar, and a device operated by the key levers for turning the cam shaft, substantially as described.

11. The combination, in a cash register, of a series of key levers, a number frame or arm, a segmental rack actuated from the frame or arm, a pinion engaged with the segmental rack, a purchase indicator operated by the pinion, a dog engaging the pinion and locking the purchase indicator after each registration, a rock shaft carrying the dog, a lifting bar turning the rock shaft, a crank rod raising the lifting bar, and a cam rod engaging the crank rod and operated by the depression of a key lever, substantially as and for the purposes specified.

12. The combination, in a cash register, of a series of key levers, a purchase indicator operated from the key levers, a dog holding the purchase indicator after each registration, a rock shaft carrying the dog, a lifting bar rocking the shaft, a crank rod raising the lifting rod, a cam rod raising the crank rod, and a sliding plate turning the cam rod, and operated by depressing a key lever, substantially as and for the purposes specified.

13. The combination in a cash register, of a series of key levers, a purchase indicator actuated by the key levers, a retaining pawl or lock for locking the purchase indicator, devices actuated by the depression of a key lever to release the retaining pawl or lock and permit the purchase indicator to operate, a cash drawer, and devices which prevent operation of the pawl or lock when the cash drawer is opened and operated by the closing movement of the cash drawer to set the pawl or lock-actuating devices for releasing the purchase indicator when a key is depressed, substantially as described.

14. The combination, in a cash register, of a series of key levers, a purchase indicator actuated from the key levers, a retaining pawl or lock for the purchase indicator, a lifting bar raising the pawl or lock, a crank rod raising the lifting bar, an arm engaging the lifting bar and swinging it out of engagement with the crank rod, and a shoe engaged by the cash drawer and moving the arm back to normal position, substantially as and for the purposes specified.

15. The combination, in a cash register, of a series of key levers, a counting frame or arm having a series of steps, one for each key lever, a segmental rack carried by the frame or arm, a second segmental rack, and a slotted connecting bar between the frame or arm and the second segmental rack, for operating both racks at the same time, and permitting the frame or arm and its rack to return without returning the second rack, substantially as and for the purposes specified.

16. The combination, in a cash register, of a series of key levers, a counting frame or arm having a series of steps, one for each key lever, a segmental rack carried by the frame or arm, a total register operated from the said rack, a second segmental rack, a slotted connecting bar between the frame or arm and the second segmental rack, and a purchase indicator operated from the second segmental rack, substantially as and for the purposes specified.

17. The combination, in a cash register, of a series of key levers, a counting frame or arm having a series of steps, one for each key lever, a segmental rack carried by the frame or arm, a total register operated by said segmental rack, a second segmental rack, a slotted connecting bar between the frame or arm and the second segmental rack, a purchase indicator operated from the second segmental rack, a retaining pawl or lock for the purchase indicator, and a release for the pawl or lock operated by the opening of the money drawer on the depression of a key lever to register a sale, substantially as and for the purposes specified.

18. The combination in a cash-register, of a series of key levers, a counting frame, having a series of steps, one for each key lever, a stop for each counting frame, a cash-drawer, a hook for engaging the cash-drawer, a rod or shaft connected with the hook, a cam or eccentric for operating the rod or shaft to release the hook from engagement with the drawer, and devices operated by the key levers to turn the cam or eccentric which operates the said rod or shaft, substantially as described.

CHARLES J. RYBERG.

Witnesses:
O. W. BOND,
S. E. HURLBUT.