(No Model.)

4 Sheets—Sheet 1.

T. CARROLL.

CASH REGISTER.

No. 509,071. Patented Nov. 21, 1893.

Fig. 1

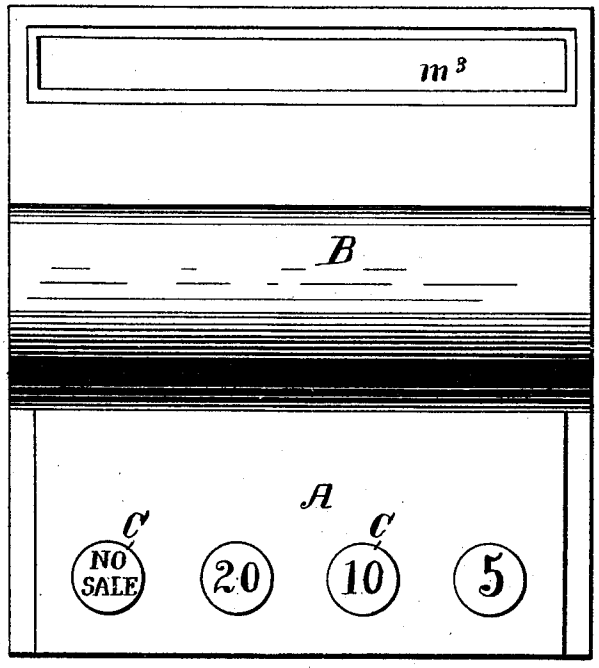

Fig. 2

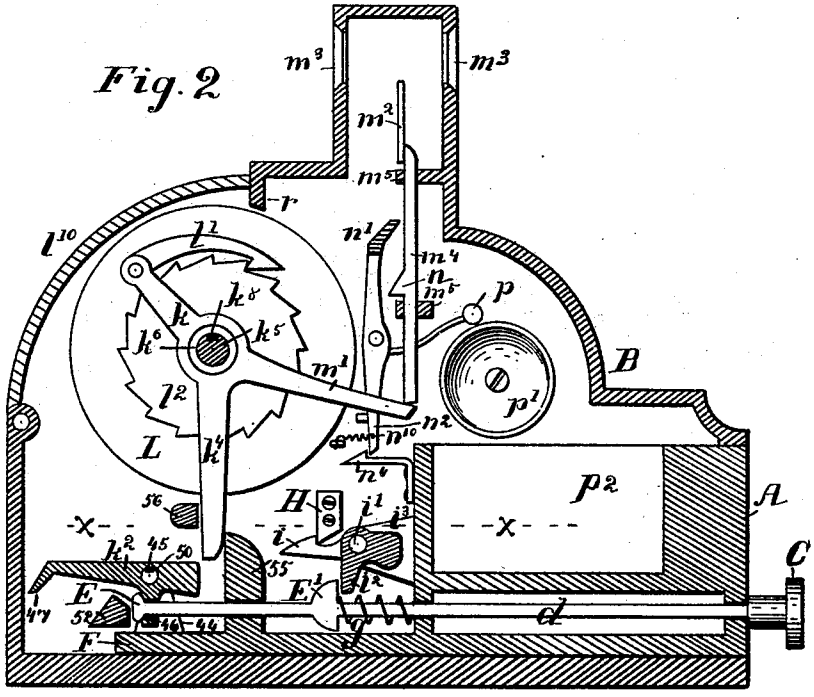

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Fig. 4

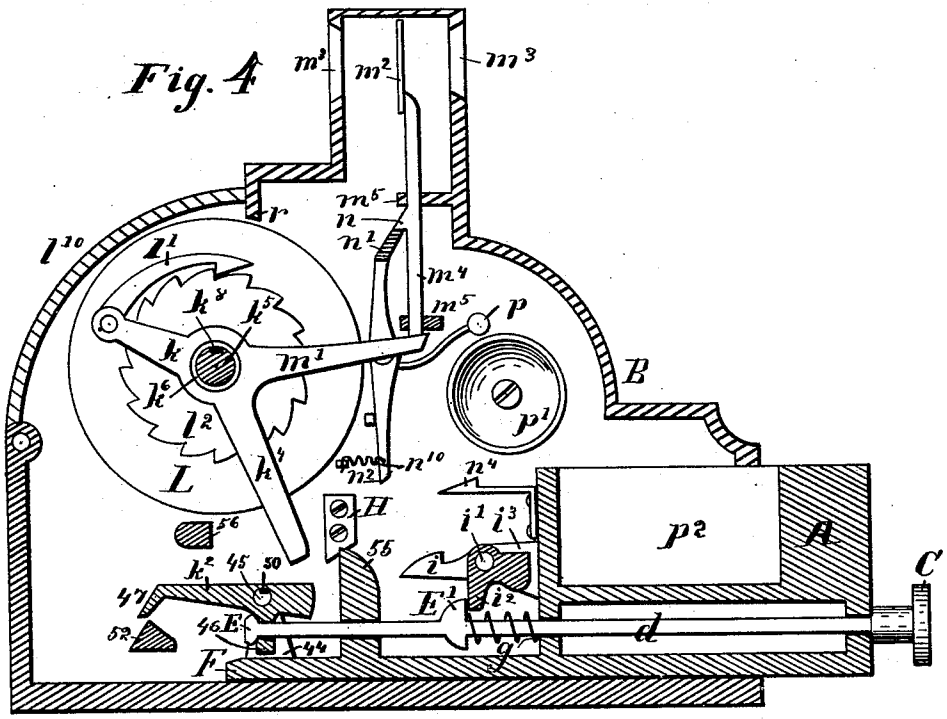

Fig. 3

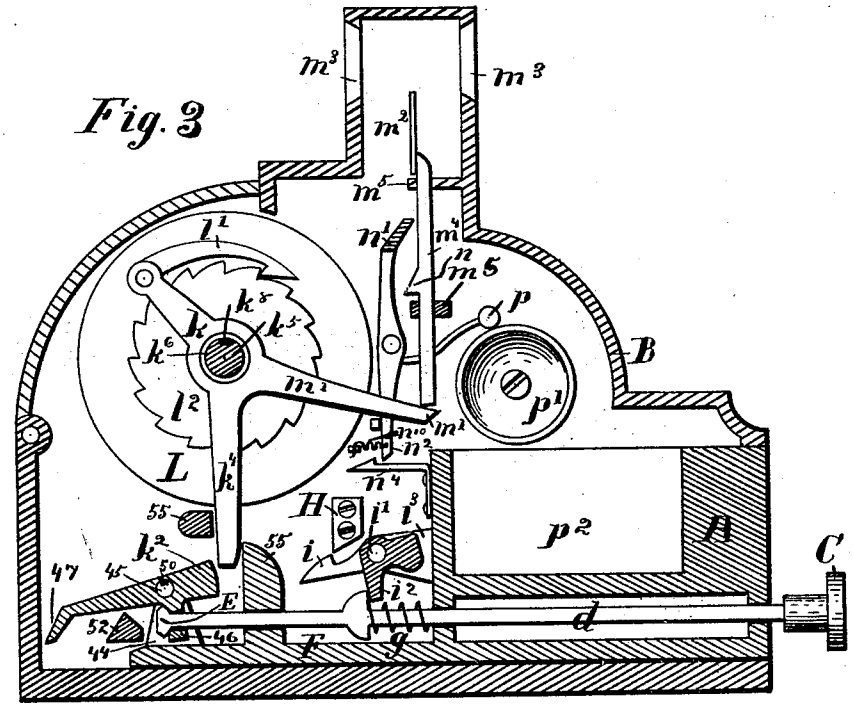

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Fig. 5

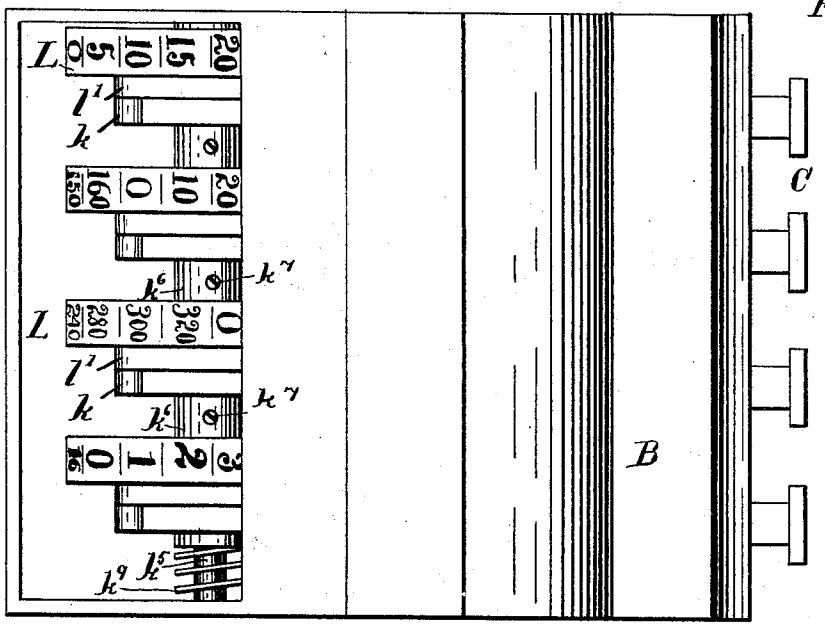

Fig. 6

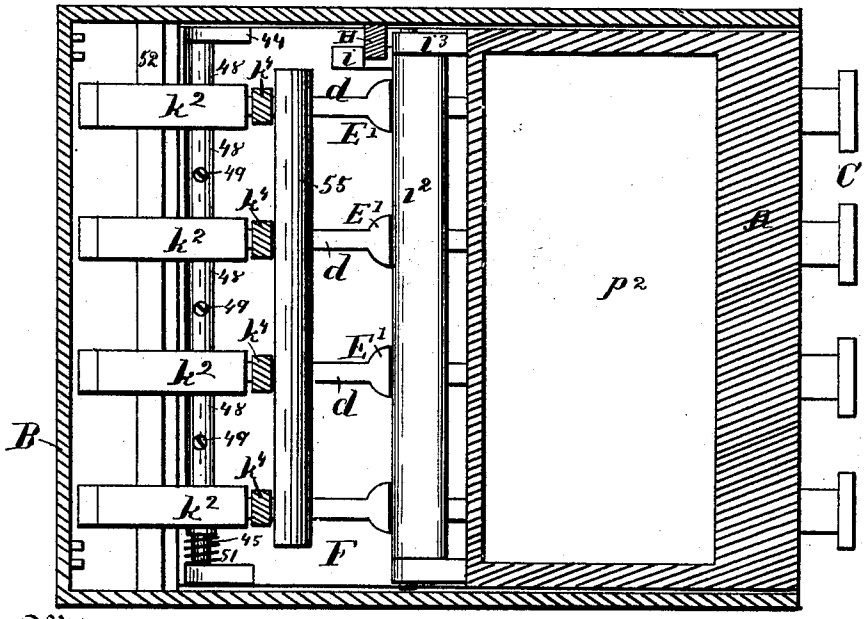

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Fig. 7

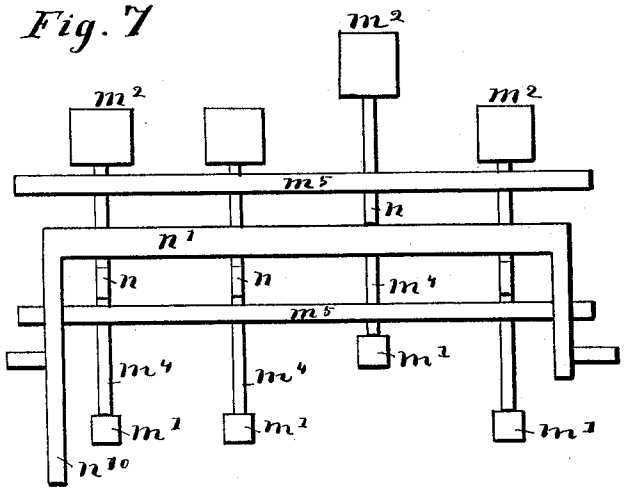


Fig. 8

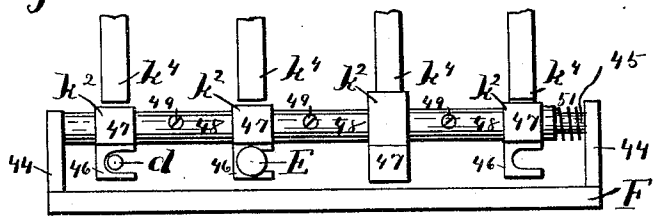


Fig. 9

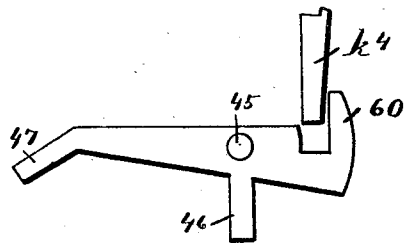
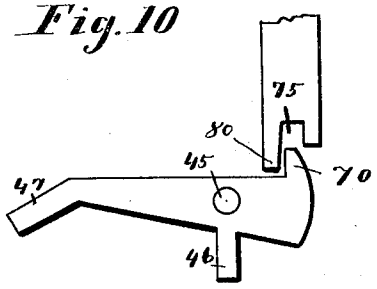


Fig. 10



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UNITED STATES PATENT OFFICE.

THOMAS CARROLL, OF NEW HAVEN, CONNECTICUT.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 509,071, dated November 21, 1893.

Application filed June 13, 1893. Serial No. 477,411. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CARROLL, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Cash Registers and Indicators, of which the following is a specification.

My invention relates to an improvement in that class of cash registers and indicators in which the simple operation of drawing open the cash drawer by means of a knob or drawer pull or combination of knobs or drawer pulls representing different values and having operating rods and connections individually guided and adapted to a limited independent movement in the drawer, is adapted to accomplish the announcement, indication and registration of sales, the operation of the registering and indicating mechanism being effected by corresponding motive devices carried by the drawer, subject to control by the initial action of the drawer pulls, which action also is adapted to release the locking mechanism of the drawer. The number, combination, and values of the drawer-pulls or knobs may vary indefinitely in this class of register, according to the requirement of different machines, each knob however, having its own corresponding registering, indicating, and drawer releasing mechanism and motive devices.

The invention involves certain improvements in the invention for which Letters Patent of the United States No. 499,192 were granted to Thomas Carroll under date of June 6, 1893, and it consists in the novel motive devices for actuating the registering mechanism, and in the improved locking and releasing mechanism of the drawer and construction of parts as hereinafter more fully described and claimed.

In the accompanying drawings forming a part of this specification, Figure 1 is a front elevation of a small sized cash register and indicator embodying my improvements and having four knobs adapted respectively for registering "No sale" or "Change," and five cents, ten cents, and twenty cents, and also amounts which are sums of those numbers, by the manipulation of combinations of the knobs, such register being adapted for use in connection with a soda fountain or cigar stand. Fig. 2 is a vertical cross section through Fig. 1, showing the cash drawer closed and locked. Fig. 3 is a cross sectional view similar to Fig. 2, but showing the cash drawer unlocked, and the motive device set or engaged to operate the registering and indicating mechanism. Fig. 4 is a similar cross sectional view but showing the cash drawer partly opened, the registering mechanism in the position assumed immediately after operation and before being retracted by the closing movement of the drawer, the indicating mechanism in the elevated or exposed position, and the motive mechanism restored to normal position. Fig. 5 is a plan view of the machine with the cover removed. Fig. 6 is a horizontal section on the line $x\ x$ of Fig. 2. Fig. 7 is an elevation of the indicator mechanism, one of the tablets being shown in exposed position. Fig. 8 is an elevation of the motive mechanism, one of the actuating dogs being shown in position to engage the registering lever. Figs. 9 and 10 show modifications of the actuating dogs and registering lever.

Referring to the drawings, A designates the cash drawer, suitably arranged and fitted to slide in the case or inclosing frame B of the cash register. Exteriorly arranged on the front of the drawer is a series of knobs or drawer pulls C, mounted upon operating shanks or rods d which are extended through the drawer beneath the till p^2 or cash receptacle proper of the drawer, and guided and adapted to a limited travel or free independent movement therein. Each rod or operating shank d has an engaging head E on its inner end, for the purpose hereinafter specified, and an engaging shoulder E′ adjacent to the cash drawer. Spiral springs g, coiled around the rods d, and compressed between the engaging shoulders E′ and the cash drawer serve to normally retain the rods at the rearward limit of their travel.

Directly forward and in the paths of the engaging shoulders E′ is suspended a swing arm i^2 extending transversely across the case B, and having journals i' pivoted in suitable bearings i^3 which are attached to the cash drawer A at the sides thereof. Said swing

arm carries a horizontal latch i attached at one end thereof, the function of which is to engage a catch or hook H fastened upon the side of the case B, thereby being adapted to lock the cash drawer securely in the closed position, as shown in Fig. 2. The swing arm is suitably weighted as shown sufficiently to cause the interlocking of the latch and catch automatically as the drawer is closed. Thus arranged, an outward pull upon either of the drawer pulls C will engage the corresponding shoulder E′ with the swing arm i^2, and oscillate both the arm and latch i, thereby releasing the drawer, which in operation is then free to be opened by continued pulling upon the drawer pull.

Secured upon the rearwardly projecting base F of the cash drawer are bearings 44 which support an arbor 45 rigidly fastened therein. Said arbor supports a series of actuating dogs k^2 loosely hinged thereon and corresponding to the series of drawer pulls C. Said actuating dogs are each provided with a depending arm 46 radial to the axis of oscillation, and an inclined projection 47 at the rear end. The arms 46 are slotted to receive the rods d, with the engaging heads E normally in contact with or adjacent to the rear sides of the arms. When the actuating dogs are in the horizontal position, as shown in Figs. 1 and 2, the dogs are retained in their places on the arbor 45 by collars 48, which are held from turning thereon by pins or screws 49 inserted through the collars with their points received in the slot 50 in the arbor. A spring 51 encircling the arbor at one end thereof, serves to crowd the dogs and sleeves together, thereby imposing sufficient friction upon the dogs to prevent them from accidentally turning on the arbor, the sleeves being held from turning by the screws 49, whereby any of the dogs may be swung upon its center independent of the rest of the series. Thus in operation, if any of the draw pulls C be forced outward, the corresponding actuating dog k^2 will be swung by means of head E from the level position shown in Fig. 2, to the inclined position shown in Fig. 3, and with its forward end elevated. Then upon the release of the drawer pull, the rod d will be thrown back to its normal position by the spring g, leaving the actuating dog retained in the elevated position by the friction against the collars 48, the head E being adapted to act on the dog in the forward direction only.

A restoring bar 52 is arranged transversely of the case under the actuating dogs in such position that the dogs will just pass over it when in the level position shown in Fig. 2. Then when an actuating dog is inclined, to the position shown in Fig. 3, and the cash drawer is drawn outward, the rear projection 47 of the dog will engage the restoring bar 52, as it passes over it, thereby restoring it to the normal position, as shown in Fig. 4. This action of the actuating dogs, and movement of the cash drawer serve to operate the registering and indicating mechanism, as hereinafter described.

Any suitable system of registering mechanism which is adapted to be operated by a pawl and ratchet or analogous mechanical movement may be employed in my improved cash register, according to the registering limit desired. The simplest form of registering apparatus, and which is here sufficient for purposes of explanation is a single dial, designated by the reference letter L in the drawings, provided with a ratchet l^2 integral therewith and actuated by a pawl l' pivoted to the arm k of the operating lever k^4, said wheel having its periphery graduated and numbered to conform to the teeth of the ratchet l^2. The said parts are multiplied to correspond to the series of drawer pulls, and arranged on an arbor k^5 which is secured transversely of the case, with suitable collars k^6 interposed between the respective wheels, which collars are prevented from turning on the arbor by screws or pins k^7 the points of which are received in a suitable spline k^8 in the arbor. A spring k^9 on the arbor presses the parts together and imposes sufficient friction thereon to hold the registering wheels securely in any position, and in order that the operating levers k^4 may not be subjected to friction they are journaled upon the collars k^6 as shown in the figures.

The operating levers k^4 depend vertically from their center of oscillation, reaching to the plane of and adapted to just clear the upper sides of the actuating dogs, k^2 when said dogs are in the position shown in Fig. 2, also normally standing just forward of the front ends of said dogs. Then in operation, if one of the dogs is elevated by the initial action of the drawer pull and its operating shank or rod d and head E as shown in Fig. 3, the forward end of the dog will be projected into the path of, or engagement with the corresponding operating lever k^4, whereby in the outward or opening movement of the drawer the actuating dog will swing the operating lever forward to the position shown in Fig. 4, thus operating the pawl l' and advancing the ratchet l^2 and its registering wheel through the space of one tooth. At that point, or just before the parts reach the positions shown in Fig. 4, the inclined projection 47 at the rear end of the actuating dog will have engaged the stationary restoring bar 52, whereby the restoration of the dog to the normal position as shown in Fig. 4 and its disengagement from the operating lever will be effected. If suitably proportioned, the raising of the end of the operating lever from a horizontal plane by its travel in a circular path, will also disengage the dog from contact with the lever, but in such case the restoring bar will be needed to restore the dog to normal position. On the return travel of the cash drawer, in being closed, the operating lever will be swung back-

ward to its original position, by means of a retracting abutment 55 secured on the base F of the cash drawer transversely thereof. If desired, a stop 56 may be arranged transversely of the case to arrest the movement of the levers rearwardly. The forward side of the restoring bar should be beveled, as shown, in order to raise the rear ends of the actuating dogs as they pass over it rearwardly in the closing movement of the drawer, should any of them by any cause become thrown out of the normal horizontal position after first passing the restoring bar on their outward travel.

The registering wheels each bear a series of numbers in arithmetical progression having the number or representative value of the corresponding drawer pull for the lowest terms and also the common difference of the series, the drawer pulls being numbered 5, 10, 20, and "No sale," as hereinbefore described. The "No sale" wheel is numbered 1, 2, 3, 4, 5, 6, &c., the five cent wheel 5, 10, 15, 20, &c., the ten cent wheel 10, 20, 30, 40, &c., and the twenty cent wheel 20, 40, 60, 80, &c. When any wheel has reached its full registering limit, all the wheels may be reset to zero, by turning them ahead on their arbor, until the zero mark is brought contiguous to the reading bar r on the side toward the cover of the case.

The manipulation of any individual drawer pull, and the opening of the drawer thereby, thus will accomplish the registration of the action by advance of the corresponding registering wheel, the numbers of which may be read from a position just rearward of the reading bar, r, when the cover l^{10} is removed, as shown in Fig. 5. The registering wheels and actuating dogs corresponding to the remaining drawer pulls which are not manipulated, will not be disturbed by the aforesaid opening movement of the drawer. But if two or more drawer pulls are operated in combination, as for instance the five cent and ten cent knobs, then corresponding registration of two or more wheels will take place, the same as if operated in successive movements of the drawer, the sum of the amounts registered being the value of the sale. It is immaterial in such operation, which of the knobs of the combination is first pulled, or whether they are drawn singly or together, provided that the drawer is not opened before the withdrawal of the last knob.

The indication of the sales is performed as follows: Each of the operating levers k^4 is provided with an arm m' which normally supports a rod m^4 arranged to slide vertically in the guides m^5 in the case, said rods bearing indicator tablets m^3 at their upper ends, which are raised and exposed to view through the slots m^8 in the case, by means of the oscillation of the arms m' and operating lever k^4 by the opening movement of the drawer, the tablets being numbered to conform to the values of the corresponding drawer pulls, and adapted to indicate sales as determined by the manipulation of any particular knob. The rods m^4 are provided with projecting shoulders n, beveled on their upper sides to form catches, adapted in their upward movement to push aside and swing the pawl n' hinged in the case, which then slides under the said projections, actuated by a suitable spring n^{10} fastened to the case, thereby holding the indicator tablets and their rods in the elevated position shown in Fig. 4 after the restoration of the operating levers to their original position. In this position the particular tablet unraised by opening the drawer will remain until the next succeeding movement of the drawer, when the pushing aside of the pawl n' by the shoulder n then being raised will liberate the shoulder and rod previously raised, and the first tablet will drop out of sight to its original position. But in order to provide sufficient swing of the pawl n to insure inevitable release of all the indicator tablets even when some of the shoulders n are slightly longer than the others, the cash drawer carries a spring hook n^4 which in the opening movement of the drawer is adapted to engage, swing and release from the end of a lever n^2 depending from and integral with the pawl n', thus amply oscillating said pawl about the time that the beveled side of the shoulder n operates upon it, and insuring plenty of clearance to liberate the tablet and rod. Said lever n^2 carries a bell hammer p which in the said movement of the pawl is adapted to strike a bell p' attached on the case, thus announcing the act of opening the drawer.

In Fig. 9 is shown a modification in which the actuating dog is provided with a forward extension and vertical stud 60 thereon, adapted to engage the operating lever on the return movement of the drawer, to restore the lever to its normal position, said extension serving in lieu of the retracting abutment 55 of the preceding figures. Fig. 10 shows the actuating dog with a short vertical projection 70 adapted to enter a slot 75 in the end of the operating lever to carry the lever forward, and to engage a depending spur 80 on the rear side of the lever, to restore it to normal position on the return or inward motion of the drawer.

I claim as my invention—

1. In a cash register the combination of an inclosing case, a cash drawer therein, a series of exterior knobs or drawer pulls having operating rods guided and adapted to a limited independent movement in the drawer, means for locking the drawer in the case, comprising a fixed hook and a vibratory latch relatively mounted upon the drawer and case, a swing arm connected to vibrate conjointly with the latch, engaging shoulders carried upon said operating rods and adapted to individually operate the swing arm and latch

to release the drawer by initial movement of the drawer pulls, a series of registering mechanisms corresponding to the series of drawer pulls, operating means for operating the same corresponding to the series of drawer pulls, and a series of actuating dogs mounted upon and carried by the cash drawer normally independent of the registering mechanism, and adapted to be projected into engagement therewith by initial action of the drawer pulls, substantially as specified.

2. In a cash register the combination of an inclosing case, a cash drawer therein, a series of exterior knobs or drawer pulls having operating rods guided and adapted to a limited independent movement in the drawer, means for locking the drawer in the case, comprising a fixed hook and a vibratory latch relatively mounted upon the drawer and case, a swing arm connected to vibrate conjointly with the latch, engaging shoulders carried upon said operating rods and adapted to individually operate the swing arm and latch to release the drawer by initial movement of the drawer pulls, a series of registering mechanisms corresponding to the series of drawer pulls, operating levers and pawl and ratchet mechanisms for operating the registering mechanisms, a series of actuating dogs mounted upon and carried by the cash drawer, normally clear and independent of the registering levers, but adapted to be projected into the path of and operatively engaged with said levers, and engaging means carried by the operating rods and adapted to swing or project the actuating dogs into engagement with the operating levers by initial action of the drawer pulls, substantially as specified.

3. In a cash register the combination of an inclosing case, a cash drawer therein, a series of exterior knobs or drawer pulls having operating rods guided and adapted to a limited independent movement in the drawers and carrying thrust collars or engaging shoulders, a movable part or swing arm, guided or hinged in bearings mounted upon and carried with the cash drawer the swing arms being in the paths of and subject to engagement by the said engaging heads, a vibrating latch connected to operate with the said swing bar, by the initial movement of the drawer pulls and their operating rods and engaging heads, and a fixed hook or catch mounted on the case or frame, adapted to be engaged by said latch to lock the drawer in closed position, substantially as and for the purpose specified.

4. In a cash register the combination of an inclosing case, a cash drawer therein, a series of exterior knobs or drawer pulls having operating rods guided and adapted to a limited independent movement in the drawer, a swing arm hinged and carried upon the cash drawer, a latch connected to swing therewith, a fixed hook or catch on the case or frame adapted to be engaged by said latch to lock the cash drawer in closed position, engaging heads carried by the said operating rods and individually adapted to engage and operate the swing arm and latch to release the drawer by initial action of the drawer pulls, a series of actuating dogs mounted upon and carried by the cash drawer hinged, guided, or adapted to a vibratory movement thereon, engaging heads carried by the operating rods and adapted to engage and vibrate the said dogs by the initial independent action of the drawer pulls, and restoring means substantially as described for resetting the dogs in their normal position by movement of the cash drawer, as and for the purpose specified.

5. In a cash register the combination of an inclosing case, a cash drawer therein, a series of knobs or drawer pulls having operating rods guided and adapted to a limited independent movement in the drawer, a swing arm hinged and carried upon the cash drawer, a latch connected thereto, a fixed hook or catch on the case or frame adapted to be engaged by the latch to lock the drawer in closed position, engaging heads carried by the said operating rods and individually adapted to engage and operate the swing arm to release the latch by initial action of the drawer pulls, registering mechanisms corresponding to the series of drawer pulls, ratchets connected therewith, pawls for operating the ratchets, operating levers for driving the pawls, a series of actuating dogs mounted upon and carried by the cash drawer, guided or hinged to vibrate into engagement with and operate said levers, by the movement of the drawer, engaging heads carried by the rods and adapted to engage and swing the actuating dogs into operative connection with the said levers, a restoring bar fixed transversely of the case and adapted to engage and trip the actuating dogs out of engagement with the levers at a predetermined point in the opening movement of the drawer, and a retracting abutment carried by the drawer and adapted to restore the operating levers to their normal position by the return movement of the drawer substantially as specified.

6. In a cash register the combination of an inclosing case or cash drawer therein, a series of exterior knobs or drawer pulls having operating rods guided and adapted to a limited independent movement in the drawer, release mechanism substantially as described for unlocking the cash drawer by initial movement of the drawer pulls, the actuating dogs in operative connection with the operating rods of the drawer pulls, the liberating and restoring mechanism for resetting the dogs, a series registering wheels and their ratchets, pawls for driving the ratchets, the operating levers for reciprocating the pawls, retracting means for replacing the levers after operation by the said actuating dogs, oscillating arms carried by said levers, the rods and indicator tablets guided in the case and supported by said arms, the rods being provided with catches

or beveled projections, a pawl adapted to swing under and engage said catches when the tablets are elevated into exposed position, a lever attached to the pawl, a spring for retaining the pawl in position to support the tablets in their exposed position, and a spring hook or elastic catch carried by the drawer and adapted to withdraw the pawl from engagement with the tablet rods to release the same by the movement of the cash drawer, substantially as and for the purpose specified.

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