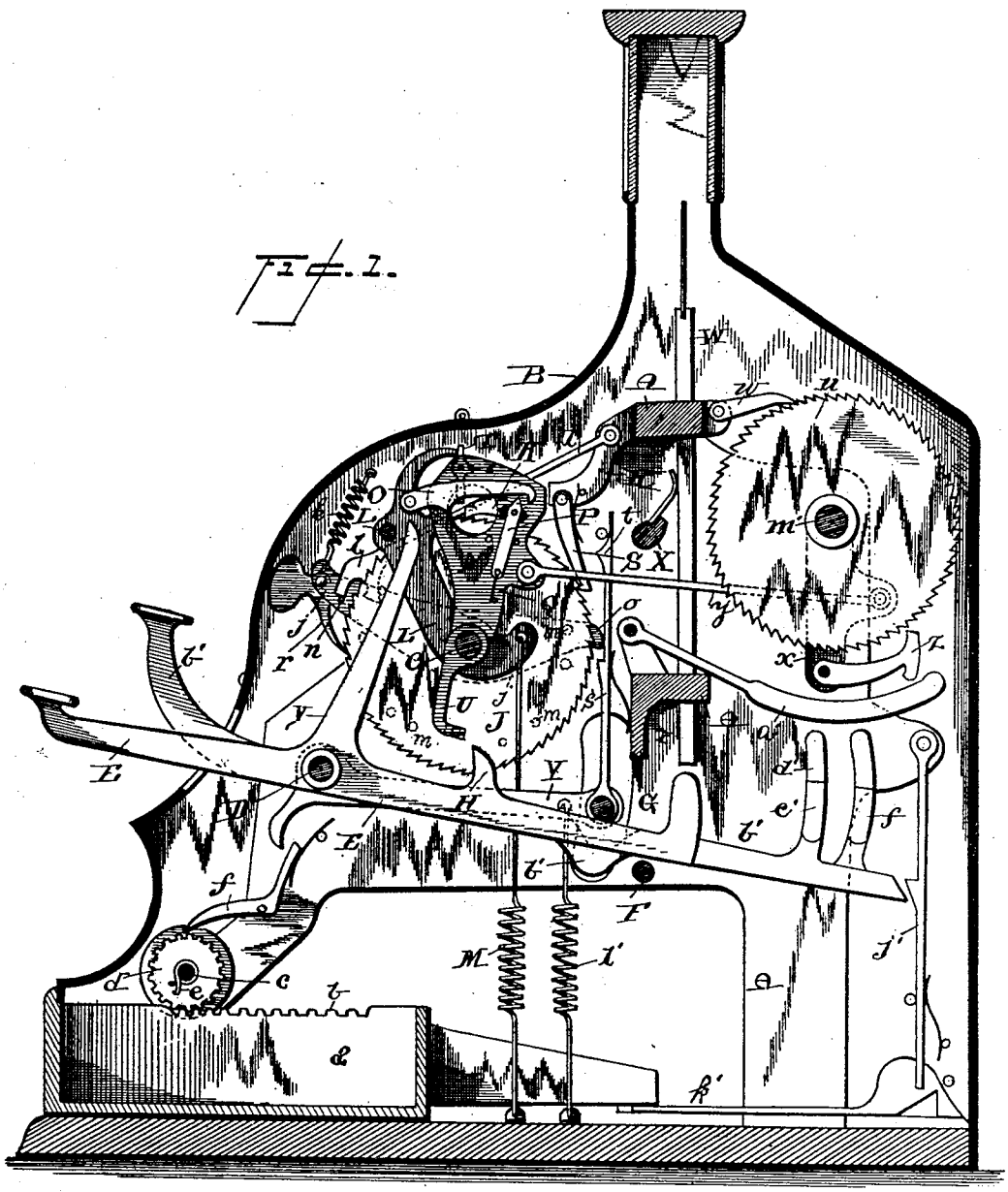
(No Model.) 3 Sheets—Sheet 1.

E. F. ROBERTS.

CASH REGISTER.

No. 487,683 Patented Dec. 6, 1892.



Witnesses
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(No Model.)

3 Sheets—Sheet 2.

E. F. ROBERTS.

CASH REGISTER.

No. 487,683. Patented Dec. 6, 1892.

Fig. 2.

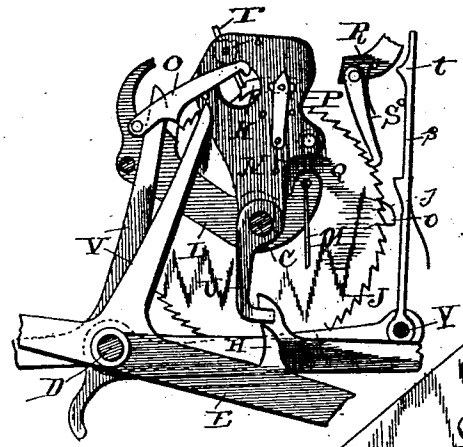

Fig. 3

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(No Model.) 3 Sheets—Sheet 3.

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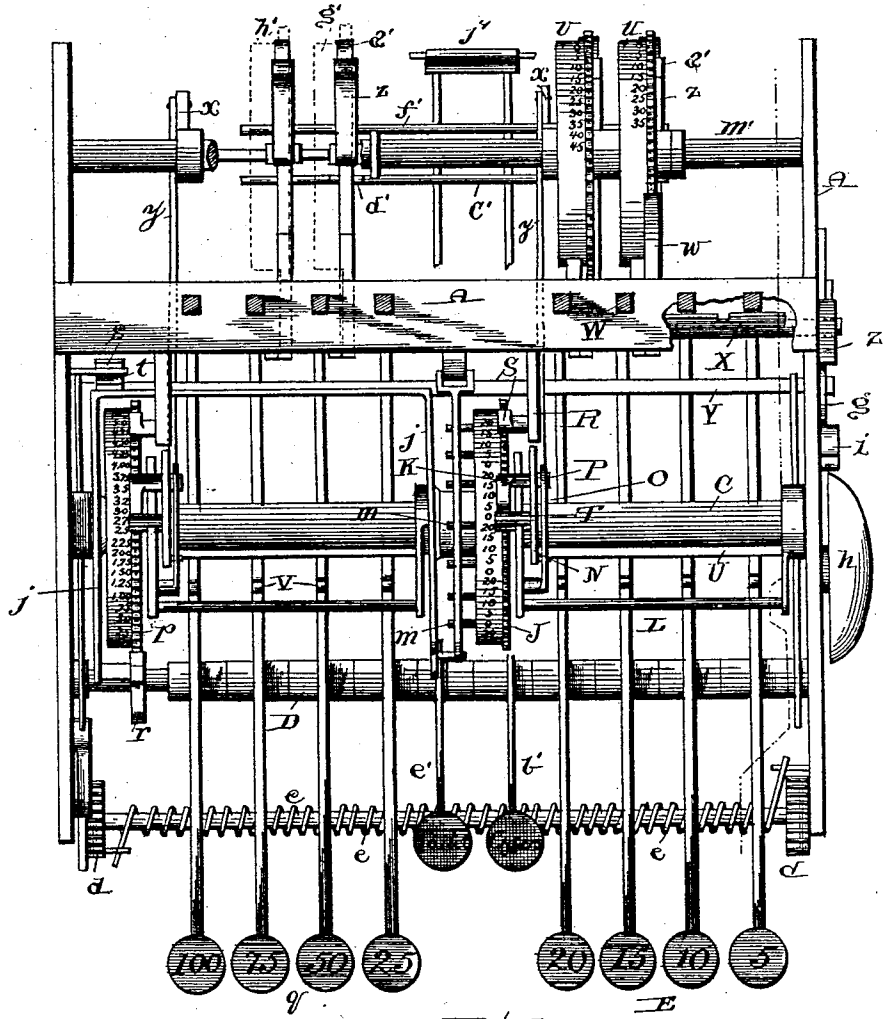

Fig. 4.

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UNITED STATES PATENT OFFICE.

EDWARD F. ROBERTS, OF COLUMBUS, OHIO, ASSIGNOR TO THE ROBERTS MANUFACTURING COMPANY, OF SAME PLACE.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 487,683, dated December 6, 1892.

Application filed May 25, 1892. Serial No. 434,282. (No model.)

To all whom it may concern:

Be it known that I, EDWARD F. ROBERTS, of Columbus, Franklin county, Ohio, have invented certain new and useful Improvements in Cash-Registers, (Case B,) of which the following is a specification.

United States Letters Patent No. 483,946, granted to me October 4, 1892, for cash-registers, on my application filed April 9, 1892, Serial No. 428,523, sets forth a cash-register provided with count-wheels and finger-keys. There was a lowest-value key and a group of keys to which it belonged, the keys increasing in value by the unit represented by that lowest-value key, and that unit was the unit of count of the count-wheel belonging to the group. The count-wheel bore successive series of readings corresponding with the keys of the group, with a zero between each series. Another count-wheel and group of keys pertained to higher values, the unit of the second group being equal to the highest and lowest value of the group below, when the lower count-wheel exceeded its maximum of reading value it went to zero, and proper mechanism transferred one of the high units to the higher count-wheel, and this system was carried forward, a third count-wheel taking its unit by transfer from the second group. All the keys of a group actuated a drag-rocker uniformly for each key-stroke. A count-rocker carried a pawl engaging the count-wheel and doing the counting, the degree of count corresponding with the number of teeth advance made by the count-pawl. The drag-rocker pulled the count-rocker and tended to pull it the full stroke of the drag-rocker; but release took place, as admeasured by the keys, and the count-pawl therefore made only the stroke pertinent to a given key, while the drag-rocker went on and made full stroke. The count-wheel at the end of its forward stroke became locked.

My present invention pertains to improvements in registers of the class set forth in my earlier patent referred to. I improve the connections between the keys and the drag-rocker, and also improve the connections between the drag-rockers and the count-rockers. I provide an improved bell-ringing device and improved tablet-holder and improved drawer-locking mechanism. I improve the mechanism of transfer from a lower count-wheel to a higher one. I furthermore improve cash-registers by providing that they shall count grand totals as usual, grand totals of all the amounts fingered into the register, and in addition provide for showing upon additional count-wheels what values pertain to several departments of the business. Thus, for instance, assume the register in use in a drug-store and that it is desirable to know the total amount of sales, the amount due to cigars, the amount due to toilet articles, and the amount due to drugs or any such similar division.

As many of the details of the present register follow closely after those set forth in my earlier patent referred to, reference is hereby made to that earlier patent for a clear understanding of the general principles of construction and of the working of the various details.

My present invention will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a vertical transverse section of a cash-register exemplifying my present invention; Fig. 2, a similar view of the drag and count rockers showing the parts at the time a key has been depressed and is ready for return; Fig. 3, an end elevation of the main parts of the machine, showing the bell-ringing and target-releasing devices; and Fig. 4 a plan of the register minus the case, &c., the tablet-rods appearing in horizontal section.

In exemplifying my present invention I show but two count-wheels with their rockers and groups of keys, and I show the register arranged for keeping tally for three separate departments.

In the drawings, referring to Fig. 1 as far as possible, A indicates fixed frame parts of the register; B, the usual inclosing case; C, a shaft for the count-wheels and their rockers; D, a pivot-shaft for the finger-keys; E, a group of four finger-keys appropriated to the values of five, ten, fifteen, and twenty cents, respectively; F, a stop-bar across under the rear of all the finger-keys to determine their normal position; G, a stop-bar over the rear portion

of the finger-keys to limit their stroke; H, a prong projecting up from each key under the count-wheel shaft C; J, a count-wheel pertinent to the group of finger-keys E, each notch of this wheel representing five cents and the readings of the wheel consisting of successive series reading "0," "5," "10," "15," "20;" K, the count-pawl engaging this count-wheel and adapted to advance the wheel one, two, three, or four teeth, according to the key operated; L, the drag-rocker loose on shaft C and rocking a maximum distance under the influence of any of its keys; M, a spring tending to hold this drag-rocker in its extreme back position; N, the count-rocker rocking, with the drag-rocker, a peculiar distance for each key; O, a drag-pawl attached to the drag-rocker and hooking over a pawl-carrier on the count-rocker and causing the drag-rocker as it rocks to pull the count-rocker and count-pawl along until the drag-pawl lets go; P, the count-pawl carrier pivoted to the count-rocker and having the count-pawl K pivoted to it, the drag-pawl hooking onto the upper end of this pawl-carrier; Q, a spring tending to press the pawl-carrier and count-pawl to normal backward position with reference to the count-rocker; R, a fixed back-stop to limit the backward motion of the count-rocker; S, a stop-pawl engaging the count-wheel and preventing its turning backward under the drag of the count-pawl; T, a spring-dog pivoted to the count-rocker and tending to stand with its lower end over the end of the count-pawl, the rearward projection of the drag-rocker engaging this dog and holding it normally out of engagement with the count-pawl; U, the count-ward plate, formed with the count-rocker, the wards of this plate engaging the prongs H of the keys as the keys rise, the wards being of such respective depth that the prong of the five-cent key when raised would limit the count-rocker to an advance corresponding with one tooth of the count-wheel, the ten-cent key two teeth, &c.; V, an arm projecting upwardly from each of the keys E and engaging to the rear of the cross-bar of the drag-rocker, so that as any key is depressed it will rock the drag-rocker backwardly, these arms standing somewhat forward of the cross-bar, so as to produce an amount of lost motion equal at least to one tooth of the count-wheel; W, the usual tablet-stems—one for each key—sliding freely vertically in suitable bearings and being without shoulders; X, a friction-wing extending along across all of the tablet-stems and bearing frictionally against them, the wing being slitted and thin, so that the frictional bearing against each stem may be somewhat independent, and thus compensate for variations in the alignment of the stems; Y, a rocker pivoted on shaft D and having a cross-bar engaging over the rear of all of the keys of the register, so that the operation of any key except department-keys will rock this rocker; Z, Fig. 3, an arm on the friction-wing X, provided with a spring n', tending to hold the friction-wings in forcible contact with the tablet-stems; a, the money drawer or till; b, a rack at each edge of the till; c, a shaft mounted across the frame over the till; d, a pinion fast at each end of the shaft and engaging the racks of the till, so that as the till moves out and in the shaft will be turned and the till be compelled to move squarely with its two sides moving at equal velocity; e, a spring coiled upon the shaft c, one end of this spring being fastened to one of the pinions, while the other end is fastened to the framing, the direction of the coiling being such that the pushing in of the till will, as it turns the shaft, wind up the spring, whereby the spring tends to unwind and force the drawer out; f, a till-pawl pivoted to the frame and engaging a notch at one of the pinions and serving to prevent the spring from turning the shaft and opening the till, a projection at the heel of rocker Y engaging and releasing this pawl each time the rocker Y rocks, whereby the operation of any key releases the pawl and permits the spring to force the till open; g, Fig. 3, a bar attached to rocker Y and reciprocating as that rocker moves, this bar having a cam-guide o', which gives it a lateral motion as it reciprocates; h, the usual bell; i, the usual bell-lever making its striking motion by a spring, the bell-lever being retracted by a prong p' on the bar g as the bar rises, the prong clearing the engagement at proper time to allow the bell to strike; j, (see, also, Fig. 4,) the transfer-rocker pivoted on shaft C near the count-wheel J and reaching away from that count-wheel along in the direction of the shaft to a higher-value count-wheel; k, a spring tending to pull the transfer-rocker backwardly; l, a transfer lock-hook lying near the count-wheel J and pivoted at one end and having its other end engaging a projection on the transfer-rocker and holding the transfer-rocker in forward position against the urgency of spring k, this hook presenting an incline inwardly at the rear face of the count-wheel J; m, a series of pins projecting from the rear face of the count-wheel J, in position to successively engage the incline of the hook l and lift that hook free of engagement of the projection of the transfer-rocker, so that the spring can pull the transfer-rocker to its position of extreme back stroke, such back motion of the transfer-rocker being equal to one tooth of the count-wheel; n, the projection on the transfer-rocker engaged by the hook l; o, that portion of the transfer-rocker through which it is to be actuated and moved on its forward stroke; p, a second count-wheel, each tooth or its unit of reading representing twenty-five cents in the exemplification, that being the sum of the values of the highest and lowest key of group E, the readings on this wheel in the exemplification forming a continuous series, each reading being a unit—twenty-five cents—in advance of the reading below it; q, a group of finger-keys representing, re-

spectively, twenty-five cents and multiples thereof, this group of keys operating upon the count-wheel p precisely as group E operates upon count-wheel J, the group q and count-wheel p being provided, also, with a count-rocker, drag-rocker, &c.; r, the transfer-pawl attached to the transfer-rocker and engaging the higher count-wheel p; s, a pawl attached to the rocker Y for operating the transfer-rocker j when rocker Y moves upwardly under the influence of any key, a shoulder on this pawl engaging under point o of the transfer-rocker; t, a cam on pawl s, causing the pawl to release from the transfer-rocker when the upward movement of the pawl has moved the transfer-rocker a distance equal to one tooth of the count-wheel which it moves, it being understood that the upward movement of this pawl will not move the transfer-rocker at all so long as the transfer-rocker is locked by the hook l in its forward position of stroke, which position is the normal position of the transfer-rocker; u, a department counting-wheel to record the amount of sales pertinent to a certain department—say, cigars—it being the duty of this wheel to make note of all cigar-sales counted into the register by means of any of the keys E, this department count-wheel containing a series of graduations increasing in value by five cents as a unit, represented by one tooth of the wheel, this department-wheel being hereinafter termed the "low-group cigar-wheel;" v, a precisely-similar department count-wheel pertaining to, say, toilet articles, and hereinafter termed the "low-group toilet-wheel;" w, a stop-pawl for each of the department-wheels; and here it is to be explained that the department-wheels u and v are duplicated for the higher group of keys, as will be referred to later; x, a pawl-carrying rocker at the department-wheels u and v, a precisely-similar rocker being provided, also, at the duplication of these wheels; y, a link connecting the appropriate one of these rockers x with the count-rocker N, a similar link connecting the other one of the rockers x with the count-rocker pertaining to the higher group q of keys; z, a pair of pawls carried by each of the carriers x, there thus being an independent pawl for each of the department-wheels, these pawls being normally out of engagement with their wheels; a', an independent pawl-guide under each of the pawls z; b', a department-key pertinent to the cigar-department in the exemplification; c', a bar carried by this key and extending under the department count-wheels; d', prongs projecting from this bar up under each of the pawl-guides a', which is under a cigar-wheel, it being understood that there are two cigar-wheels, one pertinent to the lower group of keys and the other pertinent to the higher group, so that if this cigar-key be operated it will lift the pawl-guides under the two cigar-wheels and bring their pawls into engagement; e', a department-key pertinent to the toilet-wheels; f', a prong-bar carried by this key, this bar carrying prongs located under the pawl-guides of the toilet-wheels; g', the high-group cigar-wheel; h', the high-group toilet-wheel, it being understood that wheels g' and h' are precisely like the wheels u and v, except that their unit of graduation will be twenty-five cents instead of five cents; j', a spring-hook adapted to engage under the end of any department-key that is put into operative position, and thus serve in supporting that key and supporting the pawl-guides a pertinent to that key in such position that the pawls above them will be held in engagement with their wheels; k', a trip-piece attached to the till and adapted, when the till is pushed in, to move the hook j' out of engagement with any department-key which it may be holding up, thus permitting the key to come down again; l', a spring tending to draw the rocker Y down to normal position; m', the shaft on which the department-wheels are mounted, the department-wheels being shown as disposed to the rear of the main portions of the register; n', the spring which holds the friction-wing X into engagement with the tablet-stems; o', the cam upon the bar g, which gives it its lateral motion as it moves endwise, the cam being a zigzag slot in the bar, engaging a pin in the framing, whereby endwise motion of the bar results in transverse motion at its upper end; p', the prong of this bar which operates the bell-lever as the bar rises; q', a fly upon the bar g to engage arm Z of the friction-wing as the bar g rises and to yield and clear that arm as the bar descends; r', a similar fly upon the bell-lever to operate in conjunction with the prong p'.

The general plan of counting, transferring, &c., is the same as in my earlier patent, hereinbefore referred to. When one of the finger-keys E is depressed, its arm V pulls the drag-rocker back. The first movement of the drag-rocker clears it from dog T and allows the dog to lock the count-pawl to its wheel. Further movement of the drag-rocker causes the drag-pawl O to engage the pawl-carrier P, and then the drag-rocker pulls the count-pawl positively forward to make the count. This movement of the count-rocker continues until the prong H, which has risen, engages a count-ward and prevents further advance of the count-rocker. Then the cam or incline on the drag-pawl engages the pin on the count-rocker and the drag-pawl is lifted from the pawl-carrier P and the drag-rocker goes on and completes its stroke, leaving the count-rocker in whatever position the count may have called for. On the return of the drag-rocker the dog T will be released from the count-pawl and all the parts will go back to normal position. Normally the stroke of pawl s gives no motion to the transfer-rocker j, that rocker being retained at its forward position of stroke by the hook l. When a pin m of count-wheel J releases the hook, the transfer-pawl instantly moves to extreme back posi-

tion. Then when any key of the register, regardless of group, is operated the rising of pawl *s* will advance the transfer-rocker and cause pawl *r* to advance the higher-value count-wheel one tooth, and the transfer-rocker will again be locked in forward position and remain so till the next pin releases it. The transfer-count will always be given before arms V produce any counting motion of the drag-rocker. Each key raises its appropriate target, as usual, and when raised the target will be held up by the friction-wing. At the next actuation of any key the first rising of a key, acting through rocker Y and bar *g*, releases the friction-wing and permits the dropping of any target or targets which may be up. The operation of any key rings the bell and also releases till-pawl *f* and allows the till to spring open.

It is obvious that department-rocker *x*, pertinent to low-group department-wheels, will have movement corresponding with the movement of low-group count-rocker N; but that movement of the department-rocker will have no effect on department count-wheels so long as pawls *z* are free. If a cigar-sale is made, the cigar-key is first depressed. This lifts the cigar-pawls into action. Assume the sale to be a fifteen-cent one. The fifteen-cent key being depressed counts fifteen cents upon count-wheel J, and simultaneously fifteen cents is counted on cigar-wheel *u*. Had the sale been a fifty-cent one the fifty-cent key would have caused the main count to be made on count-wheel *p* and the department count to be made on cigar-wheel *g'*. When the till is pushed in after the counting, such department key as is in action will be released and go to normal position. Thus the main count-wheels of the register receive the counting of total sales and the department-wheels show the sales for the several departments. There may be as many department-wheels as desired and a key for each department. In taking the readings of the department-wheels it is necessary of course to add together the readings of the several wheels pertaining to a given department. The department counting arrangements should be made extensive enough to carry the full day's sales of the department—a mere question of large wheels or of transfers—as is usual in register-wheels.

While in the exemplification I show department-wheels for but two departments, it will be obvious that three departments are provided for. Thus having in the business three departments—viz., cigars, toilet articles, and drugs—the main count-wheels carry the total of everything and the department-wheels the sales pertinent to cigars and toilet articles. Therefore if the sum of cigar and toilet sales be subtracted from the total the remainder will be due to drugs. Any number of departments may thus be provided for by means of special department keys and wheels for all the departments but one. Credit-sales may be considered as a department, in which case the usual charge-ticket should go into the drawer when a credit-sale is made or else the proper charge should be made on the books. In such case the main portions of the register show total sales, including cash and credit, and the credit-department wheel or wheels will show the amount of credit-sales for which the drawer need not account in cash.

I claim as my invention—

1. The combination, substantially as set forth, with a ratchet-wheel, a drag-rocker arranged for uniform strokes, and a count-rocker arranged for variable strokes, of a pawl-carrier pivoted to the count-rocker, a count-pawl pivoted to the pawl-carrier, and a drag-pawl pivoted to the drag-rocker and engaging the pawl-carrier.

2. The combination, substantially as set forth, with a ratchet-wheel, a drag-rocker arranged for uniform strokes, and a count-rocker arranged for variable strokes, of a count-pawl carried by the count-rocker, a drag-pawl engaging the drag-rocker and count-rocker and adapted for release under excessive strains, and a locking device carried by the count-rocker and locking said count-pawl to the ratchet-wheel, and a projection on the drag-rocker arranged to hold said locking device out of action when the drag-rocker and count-rocker occupy their closest relation to each other.

3. The combination, substantially as set forth, of a shaft C, a rocker pivoted thereon, a cross-bar rigid with the rocker and disposed parallel with said shaft, a shaft D forward of and below shaft C, and a finger-key pivoted on said shaft D and provided with a rigid arm V, projecting between said cross-bar and the shaft C and directly engaging said cross-bar when the key is depressed.

4. The combination, substantially as set forth, with a count-wheel, finger-keys, and count-pawl mechanism operated by the finger-keys, of a second count-wheel, a transfer-rocker, a transfer-pawl carried thereby and engaging the second count-wheel, a spring tending to draw the transfer-rocker to position of back stroke, a hook holding the transfer-rocker in position of forward stroke, a series of pins upon the first count-wheel to successively release said hook, a rocker Y, arranged to be moved by any or all finger-keys, and a pawl *s*, carried by said rocker Y and arranged to move said transfer-rocker to position of forward stroke.

5. The combination, substantially as set forth, with count mechanism and finger-keys, of tablets having vertically-moving stems arranged to be lifted by their respective keys, a friction-wing bearing against said stems and serving to support them when elevated, and a releasing-bar connected with the keys and friction-wing and arranged to release the friction-wing from the stems at the first movement of any finger-key.

6. The combination, substantially as set forth, with count mechanism, finger-keys,

and a bell, of a bell-lever provided with a striking-spring, a rocker Y, operated by any or all finger-keys, and a bar *g*, reciprocated by said rocker Y, and having a projection *p'*, engaging the bell-lever on the forward stroke of the bar and provided with a zigzag cam engaging a stationary pin and serving to withdraw the projection from the bell-lever.

7. The combination, substantially as set forth, with count mechanism and finger-keys, of a money-drawer provided with racks, a shaft having pinions engaging said racks, a spring coiled upon said shaft and tending by its recoil to turn said shaft and open the drawer, a till-pawl preventing the turning of the shaft when the drawer is shut, and a rocker operated by any or all keys and serving to release said till-pawl when any key is operated.

8. The combination, substantially as set forth, with finger-keys and count mechanism operated thereby, of a department count-wheel, a count-pawl therefor moving in unison with the counting mechanism and normally out of engagement with the department-wheel, and a department-key arranged to throw said pawl temporarily into engagement with the department-wheel.

9. The combination, substantially as set forth, with finger-keys and count mechanism operated thereby, of a series of department-wheels, a rocker moving in unison with the counting mechanism, independent pawls for each department-wheel carried by said rocker and normally out of engagement with their wheels, a pawl-guide for each pawl, and department-keys arranged to move said pawl-guides and lock the pawls to their wheels.

10. The combination, substantially as set forth, with finger-keys and count mechanism operated thereby, of department-wheels, a rocker moving in unison with said count-mechanism, independent pawls for said department-wheels normally out of engagement with their wheels, a pawl-guide for each department-pawl, a department-key for each department, adapted when operated to lock the appropriate pawls to their wheels, a locking device to lock a department-key in active position, and a moving till arranged to release said locking device as the till closes.

11. The combination, substantially as set forth, of a low-group counting mechanism and group of keys therefor, a high-group counting mechanism and group of keys therefor, independent department-wheels pertinent, respectively, to each of said counting mechanisms, pawls for each of said department-wheels, arranged to move in unison with the respective counting mechanisms and normally out of engagement with their wheels, and a department-key arranged to lock said pawls temporarily to their wheels.

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