

July 30, 1940.

E. BREITLING

2,209,763

CASH REGISTER

Filed Feb. 25, 1937

3 Sheets-Sheet 1

FIG. 2

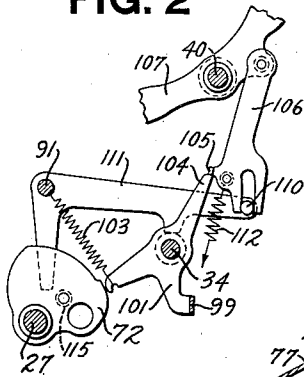


FIG. 1

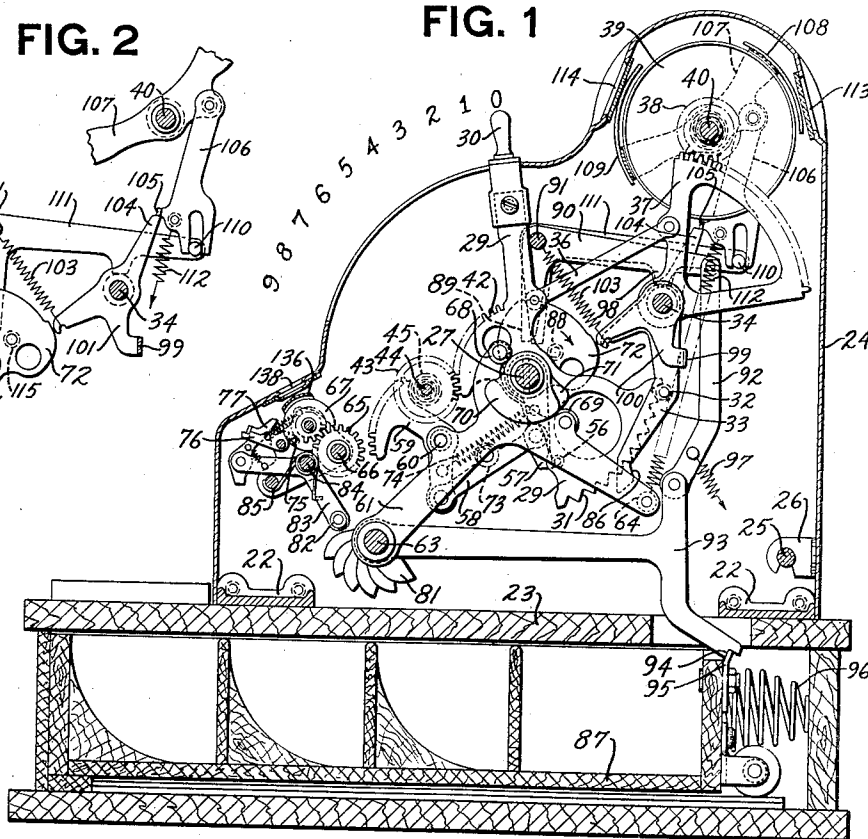


FIG. 3

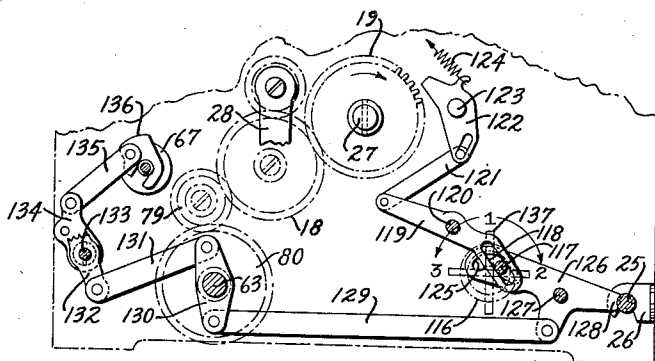
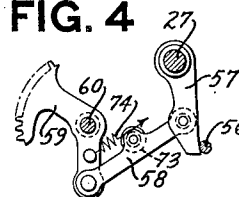


FIG. 4



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FIG. 6

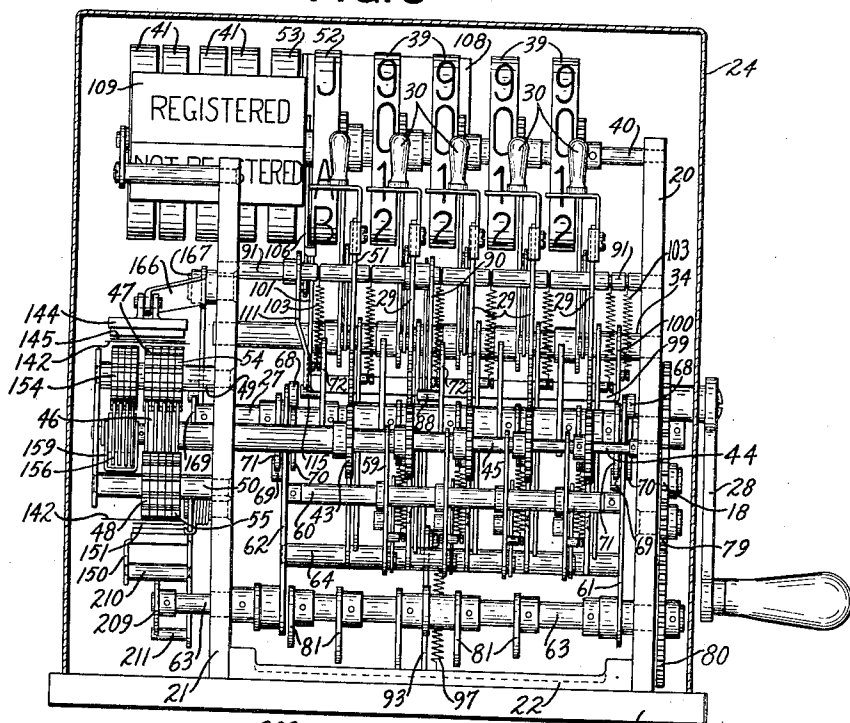


FIG. 7

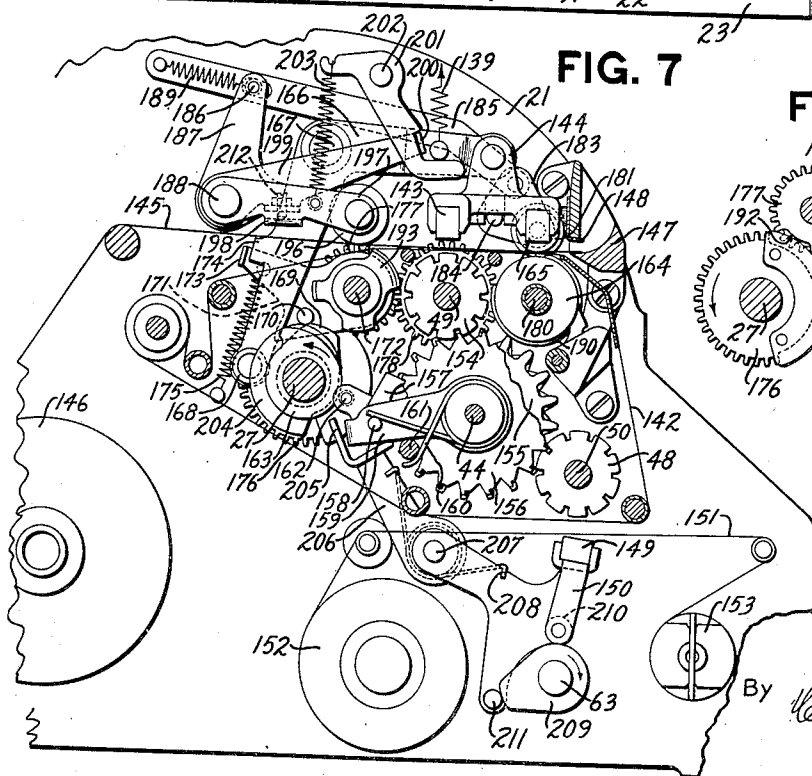
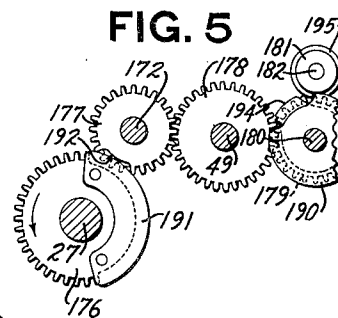


FIG. 5



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FIG. 8

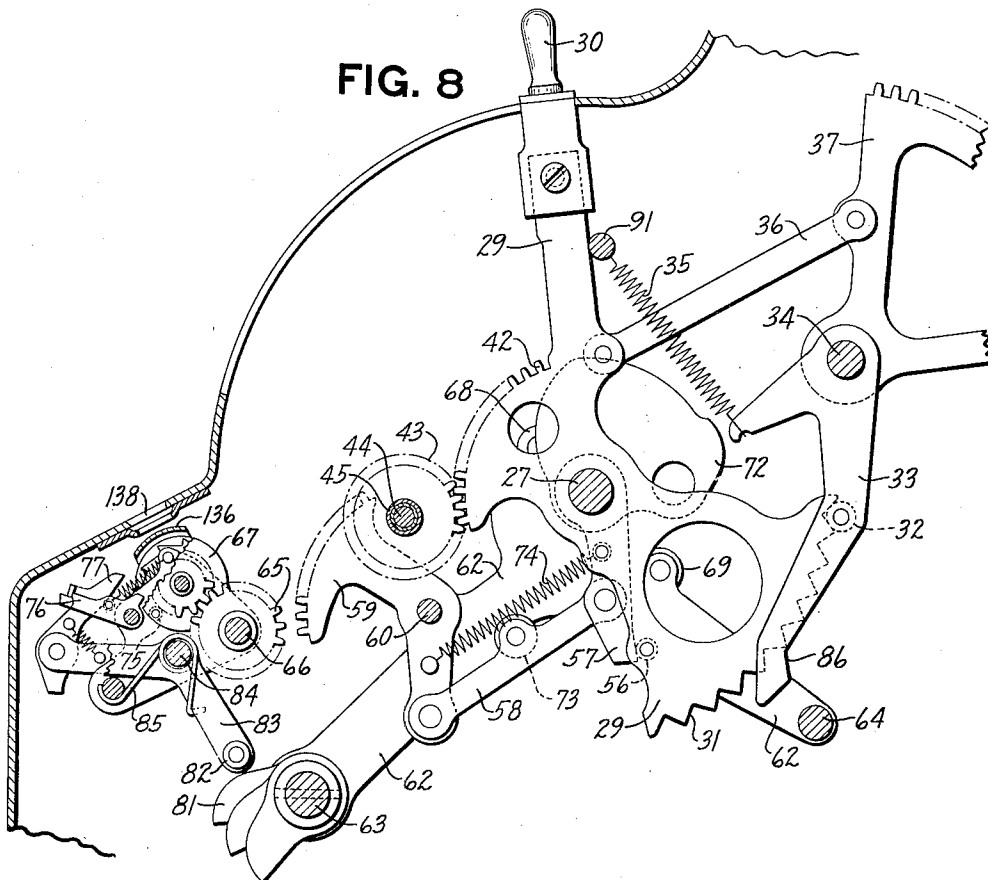
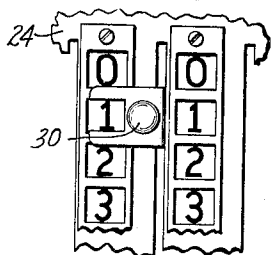


FIG. 9



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UNITED STATES PATENT OFFICE

2,209,763

CASH REGISTER

Ernst Breitling, Berlin-Tempelhof, Germany, assignor to The National Cash Register Company, Dayton, Ohio, a corporation of Maryland

Application February 25, 1937, Serial No. 127,614
In Italy October 20, 1936

5 Claims. (Cl. 235—8)

This invention relates to cash registers and like machines, and is particularly directed to the type of cash registers in which levers are used to set up amounts to be entered in the machine totalizer and to simultaneously position the indicators and the type wheels to said amounts.

One object of this invention is to provide a lever-set cash register with a novel actuator mechanism comprising an actuator for each denominational unit, said actuators adapted to be differentially positioned upon setting of the levers. During machine operations the actuators are engaged with the wheels of the totalizer and are thereafter returned to zero independently of the setting levers to enter the amount in the totalizer. Prior to the end of machine operation the actuators are disengaged from the totalizer and are returned to set positions.

Another object is the provision of a novel indicating device, automatic in its operation, to visibly indicate when amounts set up on the settable levers, are or are not registered.

With these and incidental objects in view, the invention includes certain novel features of construction and combinations of parts, the essential elements of which are set forth in appended claims and a preferred form or embodiment of which is hereinafter described with reference to the drawings which accompany and form a part of this specification.

In the drawings:

Fig. 1 is a cross-sectional view of the entire machine, taken just to the right of the units of cents denominational order.

Fig. 2 is a detail view of the mechanism that operates and controls a device that indicates when amounts are or are not registered.

Fig. 3 is a detail view of the machine lock and its associated parts.

Fig. 4 is a detail view of the actuator and its associated positioning arm for one denominational order.

Fig. 5 is a detail view of the gears that drive the receipt feed disk.

Fig. 6 is a front elevation of the machine with the totalizer and certain parts of the printing mechanism omitted.

Fig. 7 is a side elevation as observed from the left of the machine, illustrating the receipt and the detail strip printing mechanism.

Fig. 8 is a side elevation of the differential mechanism for the tens of dollars order with the connections to the indicating mechanism shown in part.

Fig. 9 is a detail view of one of the setting levers and a part of the adjacent indices.

GENERAL DESCRIPTION

The machine embodying the instant invention has a settable lever for each denominational order. These levers may be positioned from zero to nine, to set up amounts to be entered in the totalizer. A retaining and alining device retains the levers in their set positions.

Each settable lever is connected to a corresponding roller type of indicator, and each lever is geared to a type wheel for printing data upon an issuing receipt and a corresponding type wheel for printing data upon a detail strip. It is therefore evident that positioning the levers also positions their corresponding indicators and type wheels.

Each amount lever controls a related actuator which actuates a corresponding wheel on the totalizer line. Positioning the amount levers positions their actuators in proportion thereto, and upon operation of the machine the actuators are engaged with the totalizer wheels, after which said actuators are returned from set positions to zero position and, in being so returned, rotate the wheels of the totalizer to enter therein the amount set up on the levers. After the actuators have been returned to zero they are disengaged from the totalizer wheels and during the latter part of a machine operation are returned to set positions.

Mechanism, rendered effective upon engagement of the actuators with the totalizer, in cooperation with the amount lever retaining means, locks the levers and connected mechanism in set positions while the actuators are engaged with the totalizer. The totalizer of the instant machine has a well known type of carrying mechanism for transferring amounts from lower to higher denominations.

The present machine is provided with an indicator for indicating when an amount is or is not registered. The settable amount levers remain in set positions after termination of machine operation and may be moved from their old position directly to a new position. Moving any one of the amount levers from one position to another releases a latch mechanism that frees the registration indicator to the action of a spring, which immediately shifts said indicator from "registered" position to "non-registered" position, which indicates that the amount being set up has not as yet been registered. Upon operation of the machine, mechanism becomes effective.

tive to return the registration indicator from "non-registered" to "registered" position, whereupon the latch mechanism becomes effective to retain said indicator in "registered" position.

- 5 Near the end of a machine operation, mechanism becomes effective to release the latch mechanism which retains the cash drawer in closed position, thus freeing said cash drawer to the action of a spring, which immediately opens said cash drawer.

- 10 Conveniently located on the right-hand side of the machine cabinet is a cashier's lock, which controls the operation of the machine, the reading of the totalizer and the removal of the machine cabinet. The possessor of the key to the cashier's lock may position the lock to any one of its three positions. When the lock is in its #1 or normal position, the machine cabinet is locked against removal, a shielding mechanism obstructs the view of the totalizer wheels and the machine operating mechanism is unlocked. When the cashier's lock is in its #2 position, the cabinet is unlocked for removal, the totalizer shield is moved to ineffective position, so that the wheels of the totalizer may be viewed, and the machine operating mechanism is unlocked. Moving the cashier's lock to #3 position locks the cabinet against removal, moves the shield to effective position to obstruct view of the totalizer wheels and locks the operating mechanism.

- 30 The machine embodying the instant invention has two lines of type wheels, one of which prints upon an issuing receipt and the other upon a detail strip, which is retained in the machine and may be removed at the end of a certain business period. Each of the type wheel lines has an amount type wheel for each of the amount levers, which wheels are connected to and positioned by said levers as explained earlier herein.

- 40 In addition to the amount type wheels, the receipt type wheel line has a plurality of consecutive number type wheels, which are automatically advanced one step each machine operation. The consecutive number wheels and the wheels of the totalizer may be reset to zero position at will by any authorized person having possession of the reset wrench for these wheels.

- 45 A settable lever, similar to the amount levers, located on the left-hand side of the keyboard, positions a clerk's indicator and two clerks' type wheels, one on each of the type wheel lines, to indicate and record a letter identifying the clerk making the transaction. A plurality of manually positionable date wheels are provided for printing the date upon the issuing receipt.

- 55 An electro printing device is provided for printing various data of a descriptive or advertising nature upon the face of the issuing receipt. The type wheels are inked by an endless ribbon supported by a removable frame, which may be easily and quickly removed from the machine when it is desired to change or adjust the inking ribbon. The electro printing and the receipt feeding mechanism may be disabled when desired by means of a manipulative device located on the left-hand side of the machine.

The mechanism pertinent to the present invention will now be described in detail.

DETAILED DESCRIPTION

Framework

- 70 The mechanism of the present machine is supported by a right frame 20 (Fig. 6) and a left frame 21, connected by various cross-rods, shafts and frames, and by a base plate 22, secured to

the top of a drawer cabinet 23. The mechanism of the machine is enclosed by a suitable cabinet 24 secured to the machine framework by means of screws (not shown) and by means of a rod 25 (Fig. 1), in cooperation with notches in two lugs 26 attached to the cabinet 24.

A main shaft 27 (Figs. 1, 3 and 6) journaled in the frames 20 and 21, is operated by means of a crank 28, loose on a stud in the frame 20, and geared to said shaft by means of an idler gear 18 loose on a stud in the frame 20 and a co-acting gear 19 fast on the right end of the shaft 27. Two clockwise revolutions of the crank 28 drive the shaft 27 one revolution in a clockwise direction to effect an operation of the machine. A 15 stop device (not shown) obstructs movement of said main shaft 27 after it has completed one revolution of movement and before the shaft can again be rotated it is necessary to back up the crank 28 and the shaft 27 a slight distance to release the stop mechanism. As this type of stop mechanism is well known in the art it is thought unnecessary to illustrate and further describe such mechanism.

Amount differential mechanism

25 Loose on the shaft 27 (Figs. 1, 6, 8 and 9) is an amount lever 29, for each denominational order, an upward extension of which terminates in a fingerpiece 30, which protrudes through a corresponding arcuate opening in the cabinet 24. Numbers from zero to nine, corresponding to the different positions of the levers 29, are engraved upon the cabinet 24, opposite the openings for the finger pieces 30. A bent-over portion of the finger piece 30 (Fig. 9) has an aperture therein through which the numbers are visible when the levers 29 are moved from one position to another position corresponding to this particular number.

Each of the levers 29 has a plurality of V-shaped notches 31 cut in a segmental portion thereof. Said notches correspond to the different positions of the levers and are adapted to cooperate with their respective rollers 32, each of which is mounted upon a corresponding lever 33, loose on a shaft 34 supported by the frames 20 and 21. A spring 35 urges the levers 33 clockwise to maintain the rollers 32 in engagement with the notches 31 thereby providing a means for locating and retaining the amount levers 29 in set positions. Each of the levers 29 is connected by a link 36 to a corresponding gear sector 37, loose on the rod 34 and having teeth which mesh with the teeth of a corresponding gear 38 integral with a front roller type indicator 39 supported by a shaft 40 journaled in the frames 20 and 21. The lowest order front indicator 39 (Figs. 1 and 6) is secured on the shaft 40, as also is the lowest order rear indicator 41, while the higher order front indicators are connected by nested tubes to their corresponding higher order rear indicators, said nested tubes being rotatably supported upon the shaft 40.

Each of the settable levers 29 has a segmental portion of gear teeth 42, which mesh with a corresponding drive gear 43. The lowest order drive gear 43 (Figs. 1 and 6) is secured on a shaft 44, journaled in the frames 20 and 21, as also is a corresponding type wheel drive gear 46, while the higher order drive gears 43 are connected by corresponding nested tubes 45, supported by the shaft 44, to their corresponding type wheel drive gears 46. The type wheel drive gears 46 mesh with corresponding amount type wheels 47 of an

upper or receipt type wheel line and with corresponding amount type wheels 48 of a lower or detail strip type wheel line. The receipt type wheels 47 are rotatably mounted upon a stud 49 secured in the frame 21 and the detail type wheels 43 are rotatably mounted on a stud 50 also secured in the frame 21.

It is therefore obvious from the foregoing description that positioning the amount lever 29 also positions the corresponding front and back indicators 33 and 41 and the corresponding type wheels 47 and 43 in proportion to the position of said levers.

A clerk's lever 51 (Fig. 6), similar in every respect to the amount levers 29, positions clerks' front and back indicators 52 and 53 and clerks' type wheels 54 and 55 to letters of the alphabet used to identify the clerk making the transaction.

Each of the amount levers 29 (Figs. 1 and 4) carries a stud 56 which cooperates with a corresponding arm 57 loose on the shaft 27, which arm 57 is connected by a link 58 to an arm of a segmental gear or totalizer driving member 59 loose on a rod 60 supported by similar plates 61 and 62 loose on a shaft 63, journaled in the frames 20 and 21. The plates 61 and 62 are held in rigid relation to each other by the rod 60 and by a similar rod 64 extending between rearward extensions of said plates, the entire assembly forming a rockable frame adapted to rock the teeth of the segments 59 into engagement with similar teeth of a corresponding totalizer gear 65 loose on a shaft 66 supported by the frames 20 and 21. The gears 65 mesh with pinions integral with corresponding totalizer wheels 67 free on a shaft supported by the frames 20 and 21. A spring 74 tensioned between each of the segments 59 and the levers 29 urges said segments and the arms 57 counter-clockwise as viewed in Fig. 1 to normally maintain said arms 57 in contact with the studs 56. It is therefore evident from the foregoing description that positioning the levers 29 also positions the corresponding segments 59 to similar positions.

Each of the plates 61 and 62 (Figs. 1, 6, and 8) carries rollers 68 and 69, adapted to cooperate with their respective companion plate cams 70 and 71 fast on the main shaft 27. As previously explained, rotating the main shaft 27 one clockwise revolution, by means of the crank 23, completes an operation of the machine. Initial movement of the shaft 27 causes the cams 70 and 71, in cooperation with the rollers 68 and 69, to rock the framework composed of the plates 61 and 62 counterclockwise to engage the teeth of the segments 59 with their corresponding totalizer gears 65. After the segments 59 have been engaged with the gears 65, continued movement of the main shaft 27 causes a cam 72 for each denominational order, secured on said main shaft 27, to engage corresponding rollers 73 mounted on the links 58 and return the segments 59 from set positions clockwise to zero or normal position. This rotates the totalizer wheels 67 proportionate to the amount set up on the amount levers 29 to enter said amount in said totalizer wheels. A dwelling portion on the peripheries of the cams 72 causes the segments 59 to remain in zero position until further rotation of the shaft 27 causes the cams 70 and 71 to rock the segment frame clockwise to disengage the segments 59 from the totalizer gears 65, whereupon the declining surfaces on the cams 72 permit the springs 74 to return the segments 59 and their associated links 58 and arms 57 counter-clock-

wise to their set positions, which positions are determined by the arms 57 contacting the studs 56.

Transfer mechanism

The transfer mechanism used in the totalizer is of the well known type shown in the United States patent to Marr, No. 570,178, which issued on October 27, 1896. Inasmuch as this type of transfer mechanism is old and well known, only a brief description will be given herein. Each totalizer wheel 67 is provided with a pin 75, which, when the wheel is rotated through zero, engages a projection of a latch 76 to rock said latch counter-clockwise against the action of a spring to disengage a shoulder on the forward end thereof from a projection on a transfer pawl 77 for the next higher order totalizer wheel 67. This permits the tooth of the pawl 77 to engage the teeth of a ratchet wheel integral with the corresponding totalizer wheel 67. The main shaft 27 (Figs. 3 and 6) is operatively connected to the shaft 63 by means of an idler gear 78, loose on a stud in the frame 20, which meshes with the gear 48 and a gear 80 secured on the right end of said shaft 63. Through the gearing just described, one clockwise revolution of the main shaft 27 drives the shaft 63 (Fig. 1) one revolution in a counter-clockwise direction causing a plurality of helically arranged transfer cams 81, integral with said shaft, in cooperation with rollers 82 on their respective levers 83, loose on a shaft 84 supported by the frames 20 and 21, to rock said levers 83 clockwise against the action of their respective torsion springs 85.

There is a lever 83 for each denominational order except the lowest order, and secured on the forward end of each of these levers is the corresponding transfer pawl 77. It is therefore apparent that clockwise movement of the levers 83 carry the transfer pawls 77 in unison therewith, causing all tripped transfer pawls to engage the ratchets of their corresponding totalizer wheels 67 to advance said wheels one position to transfer thereto amounts from the lower orders. The camming action of the ratchets on the totalizer wheels 67 causes the bent-over ears on the pawls 77 to be raised above the shoulder on the transfer latches 76, thereby permitting said latches to be spring-returned into engagement with said ears to restore the transfer mechanism to untripped position before the end of a machine operation.

When any of the transfer latches 76 are not tripped, they move clockwise in unison with their respective transfer pawls 77 and hold the teeth of said pawls above the ratchets on their corresponding totalizer wheels to prevent the advancing of said totalizer wheels. The helical arrangement of the cams 81 (Fig. 1) causes the transfer mechanism for each denomination to be operated progressively from the lowest to highest denomination, thereby making for ease of operation and less strain upon the mechanism.

Initial movement counter-clockwise of the frame, composed of the plates 61 and 62 (Figs. 1 and 6), to engage the segments 59 with their corresponding gears 65, moves the rod 64 into the path of a foot-shaped projection 86 on the levers 83 to lock the settable levers 29 and connected mechanism against displacement while the totalizer is being actuated by the segments 59. Return movement clockwise of the segment frame moves the rod 64 out of the path of the projections 86 of the levers 83.

Drawer opening mechanism

The drawer cabinet 23 encloses a cash drawer 87, which is opened near the end of machine operations in the following manner: The cam 72 (Figs. 1 and 6) for the units of dollars denomination carries a stud 88, which, near the end of machine operations, engages a downward extension 89 of a lever 90 loose on a rod 91 extending between the frames 20 and 21, to rock said lever counter-clockwise as viewed in Fig. 1. Counter-clockwise movement of the lever 90 by means of a link 92, connecting said lever to a drawer latch 93 loose on the shaft 63, lifts a shoulder 94 of said latch out of engagement with a latch plate 95 secured to the drawer 87. This releases the drawer 87 to the action of a cone shaped spiral spring 96, which immediately opens said drawer.

When the stud 88 moves beyond the extension 89 a spring 97, one end of which is connected to the link 92, immediately returns said link, the lever 90 and the latch 93 clockwise to normal position, which position is determined by a downward projection 98 on the lever 90, in cooperation with a collar on the rod 34. Return of the drawer latch 93 to normal position moves the shoulder 94 into the path of the locking plate 95 and closing the drawer 87 causes said plate 95 to by-pass the shoulder 94, which immediately moves into the path of said plate to latch the drawer 87 in closed position.

Signal device

The present machine is provided with a signal device for visibly indicating when an amount, set up on the levers 29, has been registered or has not been registered.

A bail 99 (Figs. 1, 2 and 6) of a yoke composed of said bail and supporting arms 100 and 101, loose on the shaft 34, transverses all the alining levers 33, and is retained in resilient engagement with said levers by springs 103, extending between extensions of the arms 100 and 101 and the rod 91. Moving any of the levers 29 causes the notches 31, in cooperation with the roller 32, to rock the corresponding lever 33 first counter-clockwise as viewed in Fig. 1. This counter-clockwise movement of the lever 33 imparts similar counter-clockwise movement to the bail 99 and the arms 100 and 101. Counter-clockwise movement of the arm 101 moves a projecting tooth 104 thereon out of engagement with a bent-over ear 105 on a bar 106, the upper end of which is pivotally connected to an arm 107 journaled on the shaft 40, and adapted to support a rear indicator 108 and a front indicator 109. The lower end of the bar 106 is bifurcated to straddle a stud 110 in one arm of a bell crank 111 rotatably mounted on the rod 91. Disengaging the tooth 104 from the ear 105 releases the bar 106 and connected parts to the action of a spring 112 which urges said bar downwardly to turn the arm 107 and the indicators 108 and 109 in a clockwise direction, as viewed in Fig. 1. The indicators 108 and 109 have printed thereon the legends "Registered" and "Not registered," which are visible through windows 113 and 114 in the cabinet 24, and clockwise movement of said indicators causes the legend, "Not registered," to become alined with the windows 113 and 114.

The cam 72 (Figs. 2 and 6) for the hundred dollar order, carries a stud 115, which near the end of machine operations engages a downwardly extending arm of the bell crank 111 to rock said bell crank counter-clockwise. Counter-clockwise

movement of the bell crank 111 restores the bar 106 upwardly, causing the ear 105 to move beyond the tooth 104, whereupon said tooth is spring-retained into the path of said ear to retain the bar 106 and associated parts in restored position. Restoring the bar 106 upwardly returns the arm 107 and the indicators 108 and 109 counter-clockwise to cause the legend "Registered" to be visible through the windows 113 and 114.

The amount indicators 41 (Fig. 6) and the clerk's indicator 53 are visible through the rear window 113 and the amount indicators 39 and the clerk's indicator 52 are visible through the front window 114.

Control lock

The machine of the instant invention is provided with a control lock, which controls the operation of the machine, the reading of the totalizer wheels, and the removal of the cabinet. The control lock has three positions. When in its #1 position, as shown in Fig. 3, the cabinet is locked against removal and a shielding device obscures the totalizer wheels from view. When the control lock is in its #2 position the machine is locked against operation, the cabinet locking mechanism is moved to ineffective position, and the totalizer wheels are uncovered for reading. When the control lock is in its #3 position the machine is locked against operation, the cabinet is locked against removal, and the shielding device obscures the wheels of the totalizer against reading.

The control lock is mounted on the right frame 20 (Fig. 3) and the rotatable barrel thereof has integral therewith a disk 116, carrying a stud 117 which extends through an angular slot 118 in a lever 119 fulcrumed on a stud 120 in the frame 20. The lever 119 is connected by a link 121 to a locking pawl 122 pivoted on a stud 123 in the frame 20 and is urged counter-clockwise by a spring 124. The stud 117 also extends through an irregular slot 125 in a cabinet locking lever 126 pivoted on a stud 127 in the frame 20. A locking projection 128 of the lever 126 cooperates with an annular groove in the rod 25, which, it will be recalled, in cooperation with the cabinet lugs 26, secures the cabinet 24 against removal. The lever 126 is connected by a link 129 to an arm 130, loose on the shaft 63, and the arm 130 is in turn connected by a link 131 to a crank 132 secured on a short shaft 133 journaled in the frame 20. Also secured on the shaft 133 is an arm 134 connected by a link 135 to a totalizer wheel obscuring shield 136, rotatably mounted upon the shaft that supports the totalizer wheels 67.

The position of the barrel of the control lock may be changed by the possessor of a key 137. When the key 137 is in a vertical or #1 position, the stud 117 is positioned as here shown and positions the lever 119 to retain the tooth of the pawl 122 out of engagement with the gear 19 on the main shaft 27. The stud 117 also positions the lever 126 to retain the locking projection 128 in the groove in the rod 25 to prevent the shifting of said rod, and thereby locking the cabinet 24 against removal. In this case the lever 126, by means of the link 129 and associated parts, positions the shield 136 (Figs. 1 and 3) between the totalizer wheels and a reading aperture 138 in the cabinet 24 to prevent the reading of said totalizer wheels. The shield 136 when in position to prevent reading of the totalizer also, by means of an extension thereof (not shown), obstructs the opening for the totalizer reset wrench and there-

by prevents turning the totalizer wheels to zero at this time.

Turning the key 137 ninety degrees clockwise from vertical or #1 position to #2 position rocks the lever 119 clockwise to permit the spring 124 to engage the tooth of the pawl 122 with the teeth of the gear 19 to lock the main shaft 27 against rotation. Turning the key 137 to #2 position also rocks the lever 126 counter-clockwise to remove the locking projection 128 from engagement with the annular groove in the rod 25 and the lever 126, by means of the link 129 and associated parts, rocks the shield 136 clockwise to a position where it will not obstruct view of the totalizer wheels 67 through the aperture 138.

Turning the key 137 ninety degrees counter-clockwise, from its vertical position to position #3, causes the stud 117 in cooperation with the slot in the lever 119 to rock said lever clockwise to permit the tooth of the pawl 122 to engage the gear 19 to lock the machine against operation. Turning the key 137 to #3 position causes the stud 117 to ride in the arcuate portion of the slot 125 in the lever 126 thus imparting no movement to said lever 126, which remains in the position shown in Fig. 3 to lock the cabinet against removal. In this case the link 129 and associated parts retain the shield 136 in the position shown in Figs. 1 and 3, to obstruct view of the totalizer wheels through the aperture 138.

Printer mechanism

The upper amount type wheels 47 (Figs. 6 and 7) and the clerk's wheel 54, in cooperation with an inking ribbon 142 and a platen block 143 of an upper printing hammer 144, are adapted to make imprints on an issuing receipt, the web 145 of which is unwound from a supply roll 146, supported on a stud in the frame 21, is threaded around various studs and between the type wheels 47, 54, and 154 and the platen 143, and then is guided into the opening of a chute 147 secured to the frame 21. After imprinting is completed, a receipt feeding mechanism, later to be described, advances the web 145 of the receipt material to feed the printed portion of said receipt web through the opening in the chute 147 so that said printed receipt may be severed from the web by means of a knife 143 secured to the chute 147.

The lower amount type wheels 48 and the clerk's wheel 55, in cooperation with the inking ribbon 142 and a platen block 149 of a lower printing hammer 150, are adapted to make imprints upon a detail strip 151, which is unwound from a supply roll 152 supported on a stud in the frame 21, threaded around various rolls which guide the detail strip between the type wheels and the impression hammer 150, and said detail strip is finally wound onto a receiving roll 153. The receiving roll 153 is automatically rotated each machine operation to line-space the detail strip 151. The inking ribbon 142 is of the endless variety and is supported by a framework which may be easily and quickly removed from the machine when it is desired to change or adjust the ribbon.

In addition to the amount type wheels 47 and the clerk's wheel 54, the stud 49 supports a plurality of consecutive number type wheels 154 (Figs. 6 and 7) having teeth therein which cooperate with similar teeth in drive gears 155, integral with ratchets 156 turnably mounted upon rod 44. The teeth of the ratchets 156 cooperate with the graduated tines of a feed pawl 157 pivoted on a stud 158 carried by a yoke 159, the

arms of which straddle the ratchets 156 and gears 155, and are rotatably supported by the rod 44. A spring 160 urges the yoke 159 counter-clockwise into contact with a stationary stud 161 in the frame 21. An extension of the yoke 159 carries a stud 162 which cooperates with the periphery of a cam 163 secured on the main shaft 27. Counter-clockwise rotation of the main shaft 27, as here viewed, causes the high point of the periphery of the cam 163 to engage the stud 162 to rock the yoke 159 clockwise to advance the consecutive number type wheels 154 one step each machine operation. The feeding of the consecutive number type wheels 154 occurs after the hammer 144 has completed its printing stroke. A plurality of manually set date wheels 164, in cooperation with a platen block 165 carried by the hammer 144, record the date on the web 145 of the receipt, at the same time the amount and consecutive number are being recorded. The hammer 144 is pivoted on the forward arm of a bell crank 166 loose on a stud 167 in the left frame 21, and said bell crank 166 is urged counter-clockwise by a spring 169 to normally maintain a roller 168 mounted on a downward arm thereof in contact with the periphery of a cam 169 secured to the shaft 27.

When the machine is at rest, the high portion of the periphery of the cam 169, in cooperation with a stud 170 in an arm 171, loose on a stud 172 in the frame 21, maintains a bent-over ear 173 of said arm in the path of a projection 174 on the bell crank 166. This obstructs clockwise or printing movement of the bell crank 166 and the hammer 144, thereby preventing the platen blocks 143 and 165 from being inadvertently moved into contact with the receipt material with the resulting erroneous entry or smudging of said receipt material.

Initial movement counter-clockwise of the main shaft 27 moves the high portion of the cam 169 out of the path of the stud 170 to permit a spring 175 to rock the arm 171 counter-clockwise to move the ear 173 out of the path of the projection 174. Continued counter-clockwise movement of the shaft 27 and cam 169 causes the high portion of said cam, in cooperation with the roller 168, to rock the bell crank 166 and the hammer 144 clockwise to imprint the amount, the clerk's letter, the consecutive number and the date upon the receipt material.

Receipt feeding and electromechanisms

After the impression has been completed, the receipt web is fed forwardly through the opening in the chute 147, and while said receipt web is being fed, an electro device prints various data of a descriptive or advertising nature on the face of the succeeding receipt. The receipt feeding and electromechanism will now be described.

Referring to Figs. 5 and 7, secured on the shaft 27 is a partial gear 176, the teeth of which cooperate with the teeth in a gear 177 loose on the stud 172, and said gear 177 meshes with a gear 178 loose on the stud 49. The gear 178 meshes with a gear 179 rotatably supported by a stud 180, secured in the frame 21, said stud also supporting the date wheels 154. Integral with the gear 179 is a receipt feeding disk 190, which, in cooperation with a pressure roller 181, is adapted to feed the receipt material. The pressure roller 181 is rotatably supported by a stud 182 in an arm 193, pivoted on a stud 184 in the frame 21. Said stud 184, in cooperation with a vertical slot in the hammer 144, also maintains the platen 75

blocks 143 and 165 in alinement with their respective type wheels. The forward end of a pitman 185 is pivotally connected to the arm 183, while the rearward end of said pitman is slotted to receive a stud 186 in an arm 187 loose on a stud 188 in the frame 21. A spring 189, tensioned between the pitman 185 and the stud 186, urges the arm 183 and the pressure roller 181 clockwise to normally maintain said pressure roller in resilient engagement with the periphery of the feed disk 190. The periphery of a segment 191 secured to the gear 176 (Fig. 5), in cooperation with a cutaway portion 192 of the gear 177, maintains the gears in proper relationship when the toothless portion of the gear 176 is opposite the gear 177. The cutaway portion of the gear 176 causes the gear 177 and associated gears to remain stationary during initial movement of said gear 176 and the shaft 27.

Thus it is apparent that an electroprinting segment 193, integral with the gear 177, and the receipt feeding disk 190 remain stationary during initial movement of the shaft 27 and until the hammer 144 has completed its printing stroke. Continued rotation of the shaft 27 causes the toothed portion of the gear 176 to engage the gear 177 to rotate the disk 190, which in cooperation with the pressure roller 181 feeds the web 145 of the receipt material, which is gripped between said pressure roller 181 and said feeding disk 190, through the opening of the chute 147. The receipt may then be grasped by the operator and severed from the web by means of the knife 148.

Inasmuch as one revolution of the feeding disk 190 (Fig. 5) is more than is necessary to feed the desired length of receipt material, an undercut portion of the disk 190 suspends feeding of the receipt material at the beginning of rotation of said disk in order to obtain the desired length of receipt. In addition to the cutaway portion of the feeding disk 190, a cam 194, integral with said disk and the gear 179, in cooperation with a flange 195 of the pressure roller 181, lifts said pressure roller out of contact with the periphery of the feeding disk 190 when the cutaway portion of said disk is opposite said pressure roller.

During the feeding of the receipt, the gear 177 (Figs. 5 and 7) and the electro 193 make one clockwise revolution, and during this revolution the electro 193, in cooperation with a pressure roller 196 supported between an extension of the arm 187 and an arm 197, connected by a yoke 198 to said arm 187, prints various data upon the web 145 of the receipt material. The electro printing mechanism works after the amount, clerk's letter, consecutive number and date printing mechanism has functioned. Consequently, the data being recorded by the electro printing mechanism is not for the receipt being issued in this particular operation but is for the receipt of the succeeding operation.

Manual means is provided for disabling the electro printing mechanism and the receipt feeding mechanism and such mechanism will now be described. An arm 199 (Fig. 7) loose on the stud 188, has a bent-over portion which supports a set screw 212, which in cooperation with the yoke 198 adjusts the pressure roller 196 in relation to the electro 193. A bent-over ear 209 of the arm 199 cooperates with a shoulder on a latch 201 fulcrumed on a stud 202 in the frame 21. A spring 203, tensioned between the latch 201 and the arm 197, urges the shoulder of the latch 201 into contact with the bent-over ear 209 and urges the pressure roller 196 away from the electro

193. When the shoulder of the latch 201, in cooperation with the ear 209, retains the arm 198 in the position here shown, the roller 196 is held in printing relationship with the electro 193. Manipulating the latch 201 disengages the shoulder thereof from the ear 209, to release the arm 199 and the yoke formed by the arms 187 and 197 to the action of the spring 203, which immediately rocks the pressure roller 196 out of printing relationship with the electro 193. Counter-clockwise movement of the arm 187, upon disengagement of the latch 201, causes the stud 186, in cooperation with the slot in the pitman 185, to shift said pitman rearwardly to rock the arm 183 counter-clockwise to move the pressure roller 181 for the receipt out of cooperative relationship with the feeding disk 190. It is therefore obvious that this disables the electro printing and the receipt feeding mechanisms.

Amount type wheel aliner mechanism

Before the hammer 144 makes its printing stroke, a cam 204 fast on the main shaft 27, in cooperation with an upturned extension 205 of an aliner 206 loose on a stud 207 in the frame 21, rocks said aliner clockwise against the action of a torsion spring 208 and engages said aliner with the teeth of the gears 46 which drive the amount type wheels, to lock said type wheels against movement during printing movement of the hammer 144. After the impression has been completed, the contour of the cam 204 permits the spring 208 to disengage the aliner 206 from the gears 46.

Detail strip mechanism

At approximately the same time that the hammer 144 is functioning, clockwise movement of the shaft 27 (Fig. 7) causes a cam 209 secured thereon, in cooperation with a stud 210 carried by the hammer 150, to rock said hammer counter-clockwise upon its pivot 207 against the action of the spring 208. Counter-clockwise movement of the hammer causes the platen 149 carried thereby to carry the web of the detail strip 151 and the inking ribbon 142 into contact with the lower amount type wheels 48 and the clerk's wheel 55 to record the amount and the clerk's letter upon the detail strip. After the impression has been completed, the receiving reel 153, for the detail strip, is rotated counter-clockwise by mechanism not shown, to line space the detail strip. When the machine is at rest the high portion of the cam 209, in cooperation with a stud 211 in a downward extension of the hammer 150, retains the hammer 150 in ineffective position to prevent said hammer from being inadvertently or accidentally moved to printing position and thereby making an erroneous entry or smudging the detail strip 151.

It is believed that an understanding of the operation of the machine will have been obtained from the foregoing specification, and for this reason no explanation of the mode of operation will be included herein.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form or embodiment herein disclosed, for it is susceptible of embodiment in various forms, all coming within the scope of the claims which follow.

What is claimed is:

1. In a machine of the class described having a plurality of levers differentially settable to

represent an amount prior to a machine operation, a non-shiftable totalizer, and actuators for said totalizer, the combination of a rotatable drive shaft upon which said levers are loosely mounted; 5 a rockable frame; means for supporting the actuators in said frame for movement into and out of engagement with the totalizer when the frame is rocked; yieldable means for coupling the actuators to the levers so that the actuators will be set 10 various distances from a zero or normal position under control of the levers; means carried by said drive shaft to be rotated thereby and cooperating with the rockable frame to rock the frame; and means carried by said drive shaft and operable 15 thereby to engage a part of said coupling means and move the actuators from said set positions to said normal position; said yieldable coupling means allowing the actuators to be moved to normal position independently of the levers and returning the actuators to their set positions after 20 they have been moved to normal position and said rocking means coordinating the rocking of the frame with the movement of the actuators so that the actuators engage the totalizer only when they are moved to normal position by the moving means on the shaft.

2. In a machine of the class described having a totalizer, an actuator therefor, and a lever differentially settable to control the differential setting of the actuator prior to a machine operation, the combination of a projection on said lever, movable with its lever to differential positions; a linkage; means connecting said linkage to said actuator; yieldable means for causing a 35 part of said linkage to engage the projection so that the actuator will be set according to the position of the lever; means cooperating with another part of said linkage to move the actuator from its set position to said normal position; means supporting said actuator for movement into engagement with said totalizer; and means for shifting said supporting means so that the actuator will be in engagement with the totalizer during the time the actuator moving means is 40 moving the actuator to normal position.

3. In a machine of the class described having a drive shaft, a lever loosely carried by said shaft and differentially settable, prior to a machine operation, to control the entry of amounts in the machine, a totalizer, and an actuator for the 50 totalizer, the combination of an arm loosely carried

adjacent said lever by said shaft; a stud on said lever; a link connecting said arm to said actuator; a spring connecting the actuator to the lever and, by means of the link, urging said arm into contact with the stud so that the lever and actuator will be coupled for joint differential 5 movement when the lever is set to different positions; a rockable frame in which the actuator is mounted to be moved into and out of engagement with the totalizer; means on said drive shaft 10 to rock said frame during the machine operation; and additional means on said shaft cooperable with said link to move the link and therewith the actuator and arm to predetermined positions independently of the lever and against the tension 15 of said spring to cause the actuator to transfer its differential setting to the totalizer during the time the actuator engages the totalizer, said additional means allowing the spring to return the actuator to its differentially set position after 20 the actuator is disengaged from the totalizer.

4. In a machine of the class described having a non-shiftable totalizer and differential actuators therefor, the combination of a plurality of levers settable to different positions to control 25 the differential operation of the actuators; a frame carrying said actuators, said frame being rockable to move the actuators into engagement with the totalizers; means to rock the frame; means to lock the levers against displacement; 30 and means carried by the frame and effective when the frame is rocked to engage the actuators with the totalizer to render the locking means effective to prevent displacement of the levers at this time. 35

5. In a machine of the class described having a totalizer, and differential actuators therefor movable into engagement with the totalizer, the combination of a plurality of levers settable to different positions prior to a machine operation to control 40 the differential operation of the actuators; detents cooperating with said levers to releasably retain the levers in set positions; a rockable frame carrying said actuators; means to rock the frame to move the actuators into engagement with the 45 totalizer; and means carried by said frame and engaging said detents, when the frame is rocked, to lock the levers against any movement while the actuators engage the totalizer. 50

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