

No. 773,054.

PATENTED OCT. 25, 1904.

T. CARROLL.
CASH REGISTER.

APPLICATION FILED AUG. 10, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

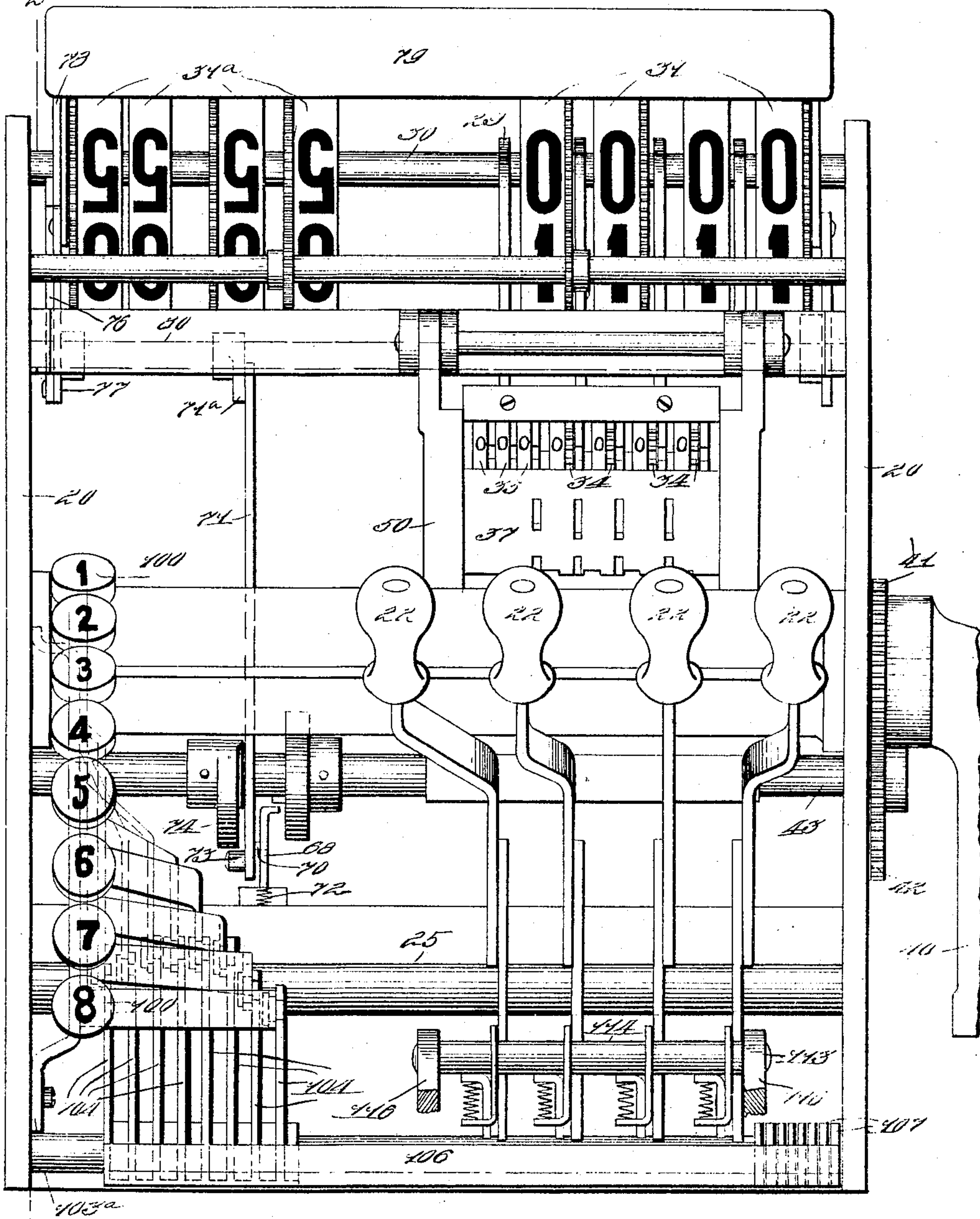


Fig. 1.

Witnesses

Fred Baker
W. M. Carthy

Inventor
Thomas Carroll
Charles Peter Davis
J. B. Hayward Attorneys

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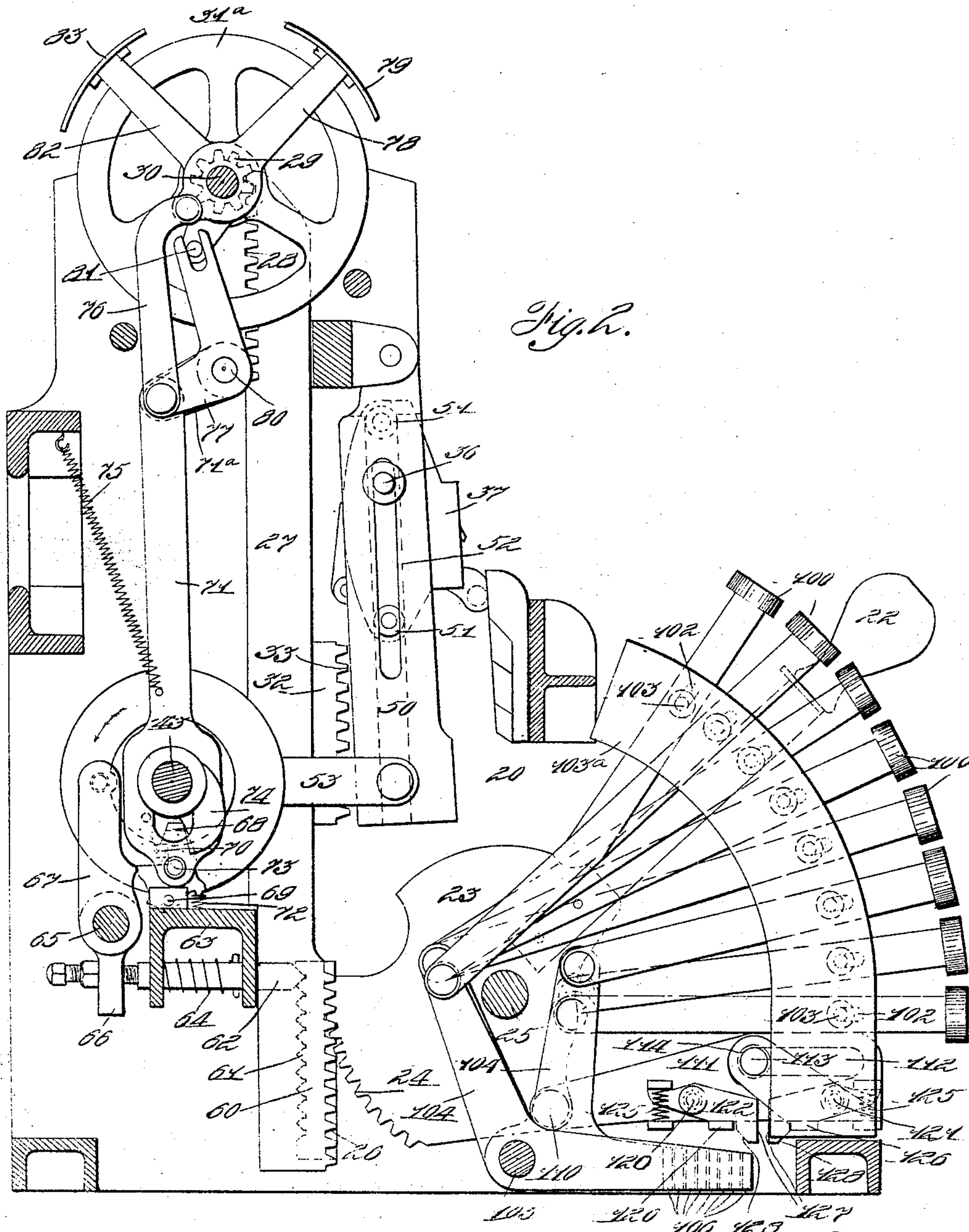
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2 SHEETS—SHEET 2.



Witnesses
Fred Baker.
W. M. McCarthy

Inventor
T. Carroll
J. B. Hayward
J. B. Hayward Attorneys.

UNITED STATES PATENT OFFICE.

THOMAS CARROLL, OF DAYTON, OHIO, ASSIGNOR TO NATIONAL CASH REGISTER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 773,054, dated October 25, 1904.

Application filed August 10, 1903. Serial No. 169,001. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CARROLL, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Cash-Registers, of which I declare the following to be a full, clear, and exact description.

My invention relates to that class of registers in which a series of adjustable setting elements, such as hand-levers, are arranged to be moved along denominational scales, and thereby set certain parts ready for operation, and wherein the subsequent operation of the machine is effected by means of a separate operating member—such as, for example, a revolvable crank-handle—the operation of which effects the registration and recording and produces such other results as is common in this class of machines. In such machines the setting of these adjustable levers by hand has been attended with the necessity on the part of the clerk operating the machine of closely observing the denominational scale in order to make sure that the lever is in each case set to its proper position, whereby quickness and facility in setting these levers is impossible, and in many cases the lever may be inadvertently set beyond the desired position. To obviate these difficulties, I have provided a series of keys bearing designations corresponding to the various setting positions of the levers, together with mechanism such that upon the depression of any one of these keys any one of said levers may be moved by the clerk and will automatically stop at the desired position corresponding to the designation of the key previously depressed.

Another object of my invention is to provide an improved flash mechanism for concealing the indicators at the front and the back of the machine until the proper time for their exposure.

I have herein shown my invention as applied to the form of machine set forth in my copending application, Serial No. 72,018, filed August 14, 1901; but it is of course perfectly obvious that it is equally applicable to any

other machine of this character in which the setting of parts is accomplished by such adjustable setting elements.

In the accompanying drawings, forming part of this specification, Figure 1 represents a front elevation of the machine containing my improvement, showing the setting-levers and the separate bank of keys. Fig. 2 represents a vertical section on the line 2 2 of Fig. 1.

In the drawings, 20 represents the frame of the machine, and 22 the setting-levers, each of which is made fast to a segment rack-plate 23, which rack-plates are formed on their rearward portions with rack-teeth 24 and are pivoted upon a transverse shaft 25. The teeth 24 mesh with teeth 26, formed on the lower end of vertical rack-bars 27. There is one of these rack-bars for each setting-lever, and they have formed upon their rearward upper ends rack-teeth 28, which mesh with pinions 29, journaled upon a transverse shaft 30 and fast to the respective indicators 31. By means of suitable gearing the movement of these indicators 31 is transferred to a similar set of indicators 31^a at the left-hand side of the machine, Fig. 1, which latter indicators are displayed at the rear of the machine, and the mechanism for accomplishing this purpose is not herein described in detail, since it forms no part of my present invention. At the middle portion of said rack-bars 27 and on the forward side thereof are made fast rack-plates 32, having teeth 33, which are adapted to engage the gears 34 of the registering-wheels 35, which are mounted on a shaft 36 in a movable counter-frame 37. The operating mechanism comprises a crank-handle 40, which is provided with a gear-wheel 41, which, by means of an intermediate gear-wheel, (not shown,) meshes with another gear-wheel, 42, fast upon the main operating-shaft 43, which is suitably journaled in the main frame. The aforesaid counter-frame 35 is mounted to be reciprocated vertically in a rock-frame 50, being guided in said rock-frame by means of antifriction-rollers 51, which slide in slots 52, and the frame 50 is rocked at each operation

of the machine by means of a suitable link connection 53 between said frame and the main operating-shaft, so as to bring the register into engagement with the rack-teeth 32.

5 However, this register mechanism constitutes no part of my present invention, and I shall not describe the same in detail, any suitable form of similar register mechanism being available.

10 *Flash mechanism.*—In order to operate the flash to conceal the indicators upon the initial movement of any of said levers and subsequently to expose the indicators upon the operation of the machine, I provide the following mechanism: Fast upon the lower end of
15 the vertical rack-plate 27 is a plate 60, formed with teeth 61 on its rearward side, which teeth are engaged by a plunger 62, suitably seated in a transverse stationary frame 63 and spring-
20 pressed toward said teeth by means of a spring 64. There is one of these plungers for each of the setting-levers. Mounted fast upon a transverse shaft 65 is a swinging frame 66, which hangs down in the rear of all of the
25 plungers and engages said plungers when the latter are in their normal forward position. Also fast to this same shaft 65 is an upwardly-extending arm 67, the forward surface of which engages the rearward side of a latch
30 68, which is pivoted at 69 upon the upper side of the said transverse frame 63. The latch 68 engages a lug 70, formed upon the lower end of a bar 71, which bar is slotted at its lower portion to straddle the main operating-
35 shaft 43. The latch is spring-pressed into engagement with the aforesaid lug 70 by means of a spring 72. Also formed on the lower end of said bar 71 is an antifriction-roller 73, which is adapted to be engaged by a cam pro-
40 jection 74, fast to the operating-shaft 43. The bar 71 is normally drawn upward by means of a spring 75. The upper end of the bar 71 is connected, by means of a lever 71^a, to a rock-shaft 80, and at the left-hand end of said
45 shaft is made fast a bell-crank lever 77, the upper end of which is formed with a slot engaging a pin 81, formed on the lower end of a bell-crank flash-arm 82, which is journaled about the shaft 30 and carries at its outer end
50 a screen-plate 83, which conceals the back indicators 31^a, and the rearward arm of said bell-crank lever 77 is pivoted to a link 76, which is pivoted to the rearward end of a flash-arm 78, journaled about the shaft 30 and
55 carrying at its outer end a screen-plate 79. From this construction it will be obvious that when the parts are in the position shown in Fig. 2 the operation of any one of the setting-levers will raise its respective rack-bar 27, and
60 thereby force the plunger 62 rearward, thus rocking the frame 66, and thereby carrying the arm 67 forward, which forward movement will force the latch 68 out of engagement with the lug 70 and will allow the spring
65 75 to pull the bar 71 upward, thereby actuat-

ing the link 76 and the bell-crank lever 77, so that both screen-plates will be lowered to a position to conceal the indicators. Upon the subsequent operation of the crank 40 and the consequent revolution of the main operating-
70 shaft 43 in the direction shown by the arrow in Fig. 2 the cam projection 74 will contact with the antifriction-roller 73 and will carry the bar 71 downward against its spring tension until the lug 70 is again engaged by the
75 latch 68, and the bar is thereby retained in its lower position, with the screen-plates raised to expose the indicators.

Lever-setting device.—I will now describe the device for automatically setting the le-
80 vers by means of the auxiliary bank of keys. This bank of keys comprises a series of push-keys 100, arranged at the left-hand side of the machine and provided with designations corresponding to the various positions to which
85 the setting-levers are to be moved. The stem 101 of each key is formed with an elongated slot 102, engaged by a pin 103, projecting outwardly from a stationary supporting-frame 103^a and serving to guide the keys
90 during their depression. Each key-stem has pivoted to it at its inner end a bell-crank lever 104, which is pivoted about a transverse shaft 105 and extends forward and has attached at its forward end a stop-bar 106, which
95 bar extends transversely across the machine below all of the setting-levers, and is supported at its other end by a lever 107, (see Fig. 1,) which is also pivoted about the shaft 105 and
100 serves to support this other end of the stop-bar 106. There is one of these bell-crank levers 104 for each key, and therefore a corresponding stop-bar 106 for each key, and these stop-bars are arranged at graded dis-
105 tances one within the other, so as to produce a differential stop movement, as later described. In order to connect each key-stem with its corresponding lever 104, which levers are arranged side by side on the same
110 shaft, it is apparent that the key-stems are necessarily bent laterally at suitable places below the guide-pins 103, so that each key may be connected with its proper lever and stop-bar and the outer portions of the keys
115 may still be in lateral alinement. Pivoted at 110 on the lower side of each segment rack-plate 23 is an arm 111, formed with a slot 112, through which slot extends a shaft 113 for guid-
120 ing said arm 111 in its reciprocatory motion, as hereinafter explained. Said shaft is mounted in stationary side brackets 116, which extend upward from the main frame, and surrounding said shaft 113 and between each of
125 the two arms 111 are collars 114, which fill up intervals between each two adjacent arms 111 and hold the same from lateral displacement. Pivoted at 120 and 121 upon the side of each of said arms 111 are two latch-pawls 122 and 123. The outermost end of each of
130 these pawls is normally held in downward po-

sition by means of springs 125, such downward position being limited by stop-lugs 126. The pawls are situated with their outermost stopping-surfaces 127 opposite to each other 5 and at such distance apart as to admit between them any one of said transverse stop-bars 106, and each pawl is also beveled at 128 to permit the pawl to be raised against its spring tension. The operation of this mechanism is as follows: If the operator desires 10 to set any lever at "6," he first presses the key 100, marked "6" in this auxiliary bank, whereupon the upper end of the bell-crank lever 104, attached to the stem of said key, is 15 forced rearward, and thereby the stop-bar 106 connected therewith is raised slightly. Then upon pulling down any lever the rack-plate 23 attached thereto is rocked upon the shaft 25 and the arm 111 is drawn rearward, 20 provided the lever is moving from its uppermost position, in which case the pawl 122 comes in contact with the raised stop-bar 106, and by means of the beveled surface 128 this pawl is raised to permit the arm 111 to be 25 moved until said stop-bar brings up against the stopping-surface 127 of the pawl 123, at which point the pawl 122 snaps down into normal position, thereby leaving the stop-bar 106 in between said two pawls 122 and 123, 30 and thus latching the arm 111 and its corresponding lever 22 in set position until the stop-bar 106 is dropped by the release of the key 100. If the setting-lever 22 had been moving in the opposite direction toward set- 35 ting position, it is apparent that a similar result would be accomplished—that is, the stop-bar 106 would first contact with the beveled surface of the pawl 123 and raise the same, and the bar 111 would then be brought to 40 stopping position by the contact of said stop-bar 106 with the pawl 122, and the bar 111 would in such case similarly be latched into position until the release of said stop-bar.

Since in this machine the lowest position of 45 the setting-lever 22 may be determined by contact of the lever with the main frame, it is not necessary to provide a key in this case for thus determining the setting position of the lever—as, for example, in case these le- 50 vers are all "amount-levers" they may be set to "9" position by simply moving the lever to its full downward extent, and similarly for "0" position they may be moved to full upward extent. I have shown the auxiliary 55 bank of keys with numeral designations which are adapted for setting the levers to various graded values of amounts; but as is well known in machines of this type certain of the levers may be used to designate clerks or de- 60 partments, and it is apparent that this auxiliary bank of keys may equally as well bear designations corresponding to the clerks' initials or to the various departments of trans- actions in addition to bearing value amounts. 65 All that is necessary for the clerk to do in set-

ting any lever to proper position is first to depress the corresponding key in the auxiliary bank and then move the setting-lever toward its setting position—that is, in one direc- 70 tion or the other—and upon reaching this position the lever will be automatically locked in set position until the auxiliary key is released. In this manner the various levers may be set with great rapidity and the clerk need only concentrate his attention upon the designa- 75 tions in the single bank of auxiliary keys.

It is also to be understood that my invention is equally applicable to machines in which the levers are not moved by hand, but are moved automatically, such as by spring ten- 80 sion.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cash-register, the combination with 85 a plurality of adjustable setting elements, of a single series of keys, and means controlled by said keys for determining the proper stopping-point of said adjustable elements when the latter are moved in either direction to 90 their final set position.

2. In a cash-register, the combination with a plurality of adjustable setting elements, of a series of keys, and means controlled by said keys for determining the stopping position 95 of said adjustable elements and for latching the same in such position until said keys have been released.

3. In a cash-register, the combination with a plurality of adjustable setting elements, of 100 a series of keys, and means controlled by said keys for determining the stopping position of said elements and for temporarily automatically latching the latter in such position.

4. In a cash-register, the combination with 105 an adjustable setting element, of a series of keys, and means controlled by said keys for determining the stopping position of said element and for temporarily automatically latching the latter in such position. 110

5. In a cash-register, the combination with a series of setting-levers and register-actuating devices arranged to be set thereby, of a series of keys bearing designations corre- 115 sponding to the various setting positions of said levers, and means controlled by said keys for predetermining the setting position of said levers with provisions for automatically latching the latter in such position upon the movement of said levers thereto. 120

6. In a cash-register, the combination with a series of setting-levers and register-actuating devices arranged to be set thereby, of a series of keys, stop-bars arranged to be moved 125 by said keys and differentially spaced with reference to said setting-levers, and automatic latching means connected with said levers for engaging said stop-bars.

7. In a cash-register, the combination with a series of setting-levers and register-actuat- 130

ing devices arranged to be set thereby, of a series of keys, stop-bars arranged to be moved by said keys and differentially spaced with reference to said setting-levers, and means
5 connected with said levers for engaging said stop-bars and arresting said levers in set position corresponding to whichever of said keys is depressed, regardless of the direction of the movement of said levers.

10 8. In a cash-register, the combination with a series of setting-levers and register-actuating devices arranged to be moved thereby, of a series of keys for predetermining the setting positions of said levers, stop-bars con-
15 nected with said keys and differentially positioned with reference to said setting-levers, and means connected with said levers for engaging said stop-bars and temporarily latching the levers in their proper set position
20 upon the movement of said levers in either direction.

9. In a cash-register, the combination with a series of setting-levers and register-actuating devices arranged to be set thereby, of a
25 single series of keys arranged to cooperate with all of said levers, a stop-bar connected with each of said keys, a reciprocating arm connected with each lever, and latch-pawls carried by said arm and arranged to allow
30 said stop-bars to enter the space between said pawls and thereby latch said arm to said stop-bar.

10. In a cash-register, the combination with a register-actuating mechanism, setting de-
35 vices therefor, and an operating mechanism, of indicators cooperating with said setting devices concentrically journaled upon a common shaft and arranged to indicate at the front and the back of the machine, screen-
40 plates for said indicators independently jour-

naled on said shaft, and means connected with said operating mechanism for oscillating said screen-plates in opposite directions with reference to each other.

11. In a cash-register, the combination with 45 a register-actuating mechanism, setting devices therefor, and an operating mechanism, of indicators cooperating with said setting devices concentrically journaled upon a com-
50 mon shaft and arranged to indicate at the front and the back of the machine, screen-plates for said indicators independently journaled on said shaft, means connected with said operating mechanism for oscillating said
55 screen-plates in opposite directions with reference to each other, means for latching said screen-plates in position to expose said indicators, and means controlled by said setting devices for releasing said latching means.

12. In a cash-register, the combination with 60 a series of setting-levers, of segment-racks connected therewith, rack-bars moved by said segment-racks, indicators arranged to be set by said rack-bars and to indicate at the front
65 and the back of the machine, independent screen-plates journaled concentric with said indicators for concealing said indication at the front and the back, levers for operating said screen-plates, a bar for operating said
70 levers, an operating-shaft formed with a cam for actuating said bar, a latch for said bar, spring-pressed plungers cooperating with said rack-bars, and oscillating frames operated by said plungers for tripping said latch.

In testimony whereof I affix my signature in 75 the presence of two witnesses.

THOMAS CARROLL.

Witnesses:

PAUL N. SIGLER,
J. B. HAYWARD.