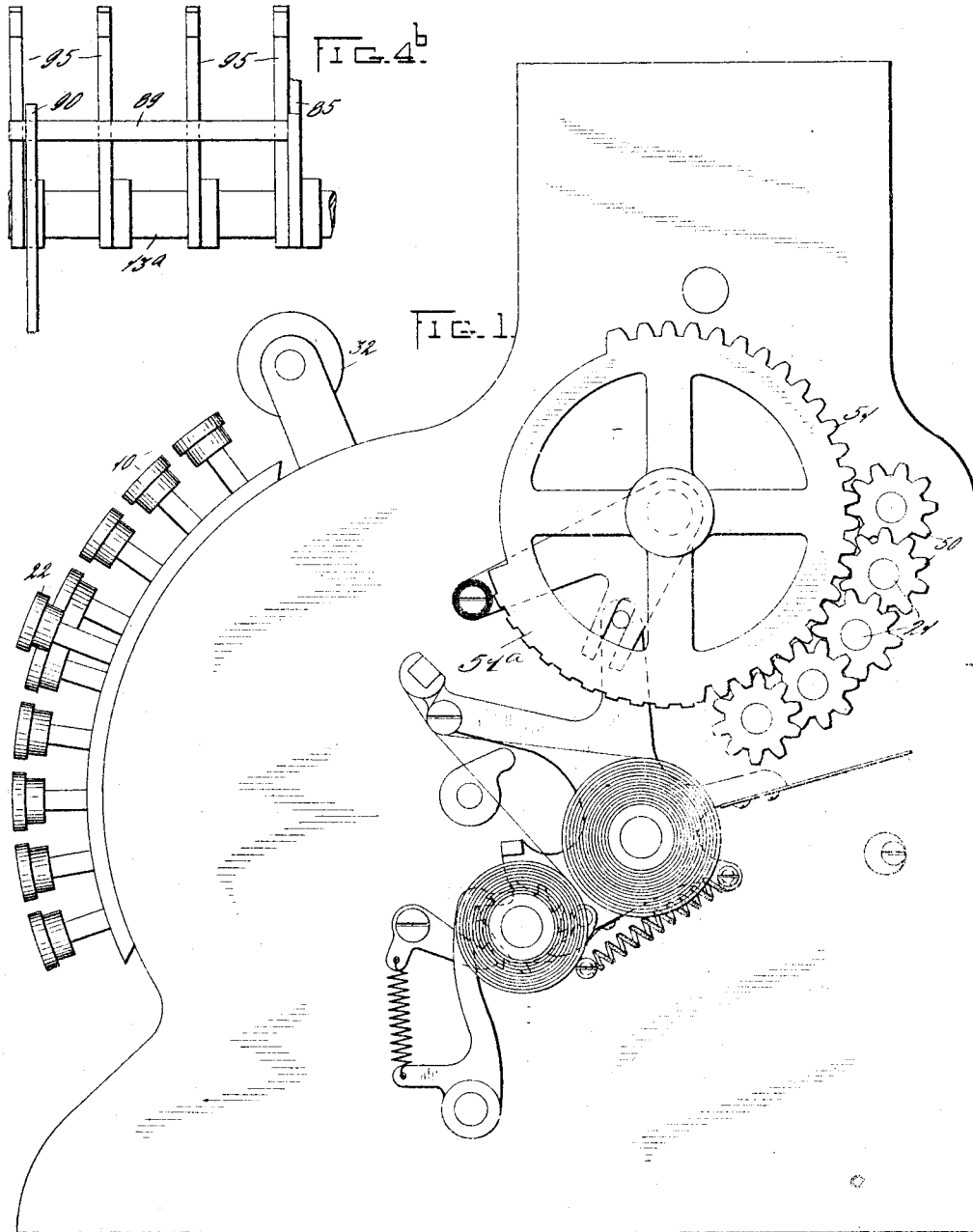


W. M. McCARTHY.
CASH REGISTER.
APPLICATION FILED OCT. 20, 1906.

Patented Feb. 4, 1913.

4 SHEETS—SHEET 1.

1,051,904.



Witnesses
A. Herbig
Carl Brust

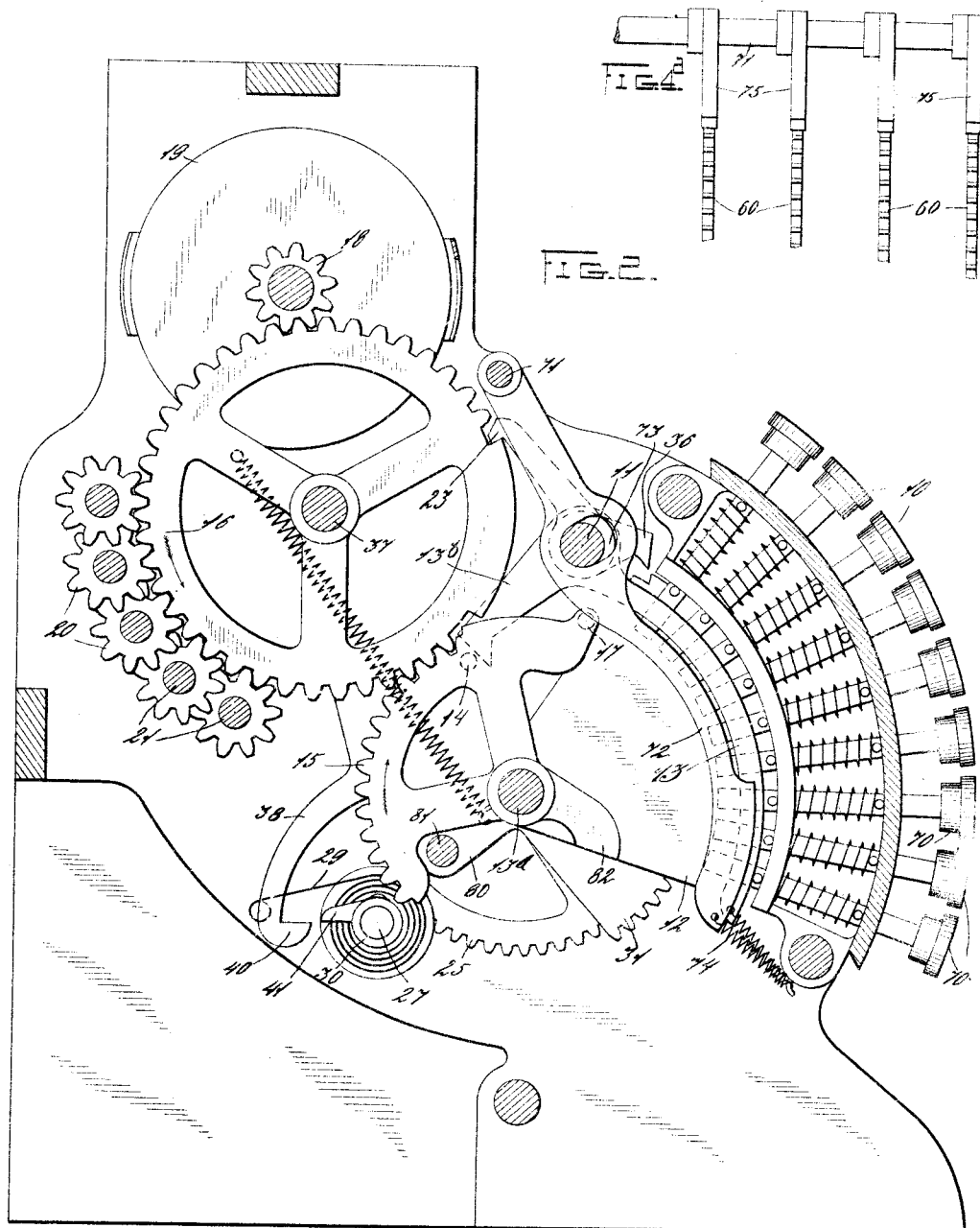
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4 SHEETS-SHEET 2.



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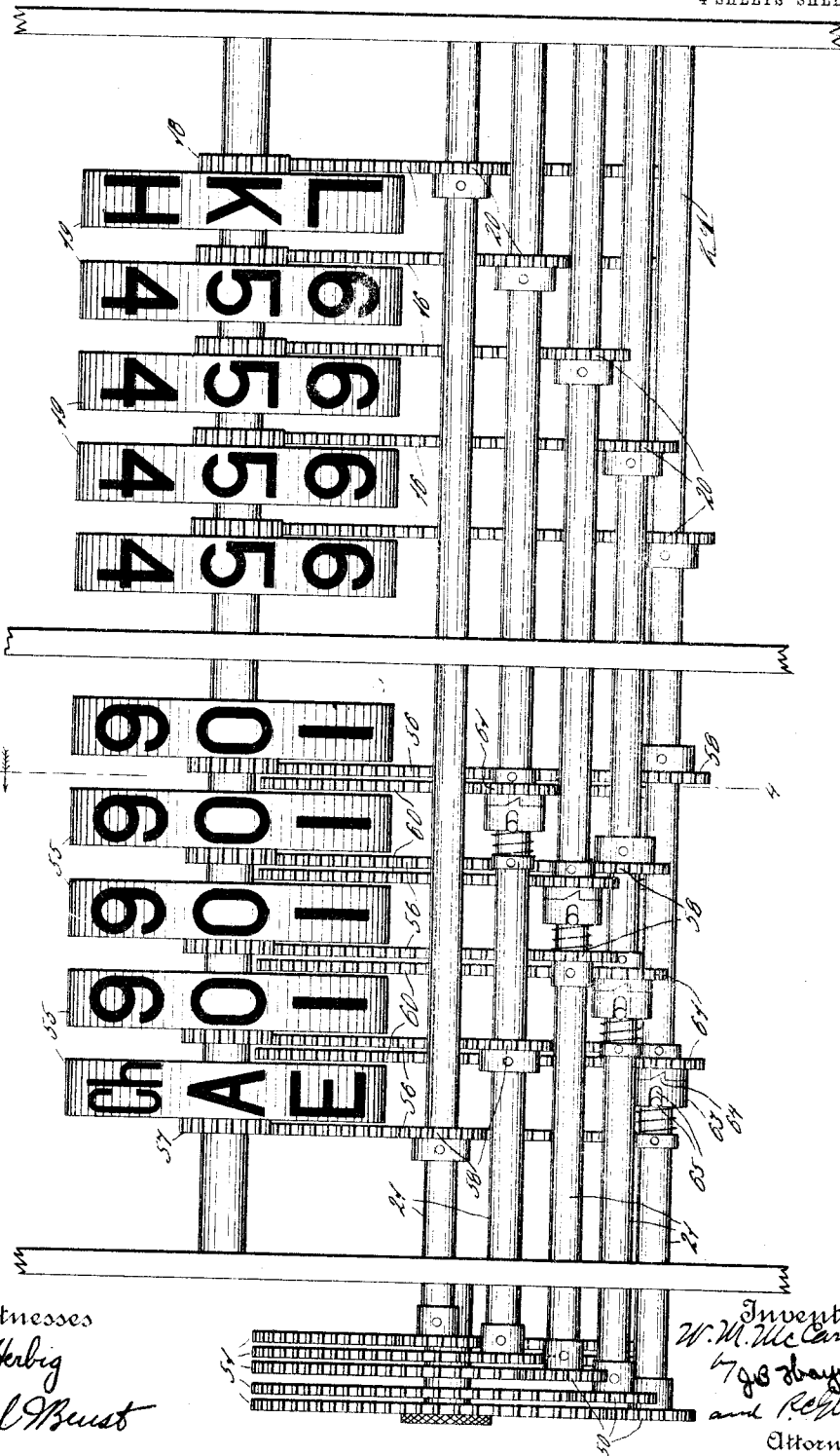
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4 SHEETS—SHEET 3.

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Witnesses

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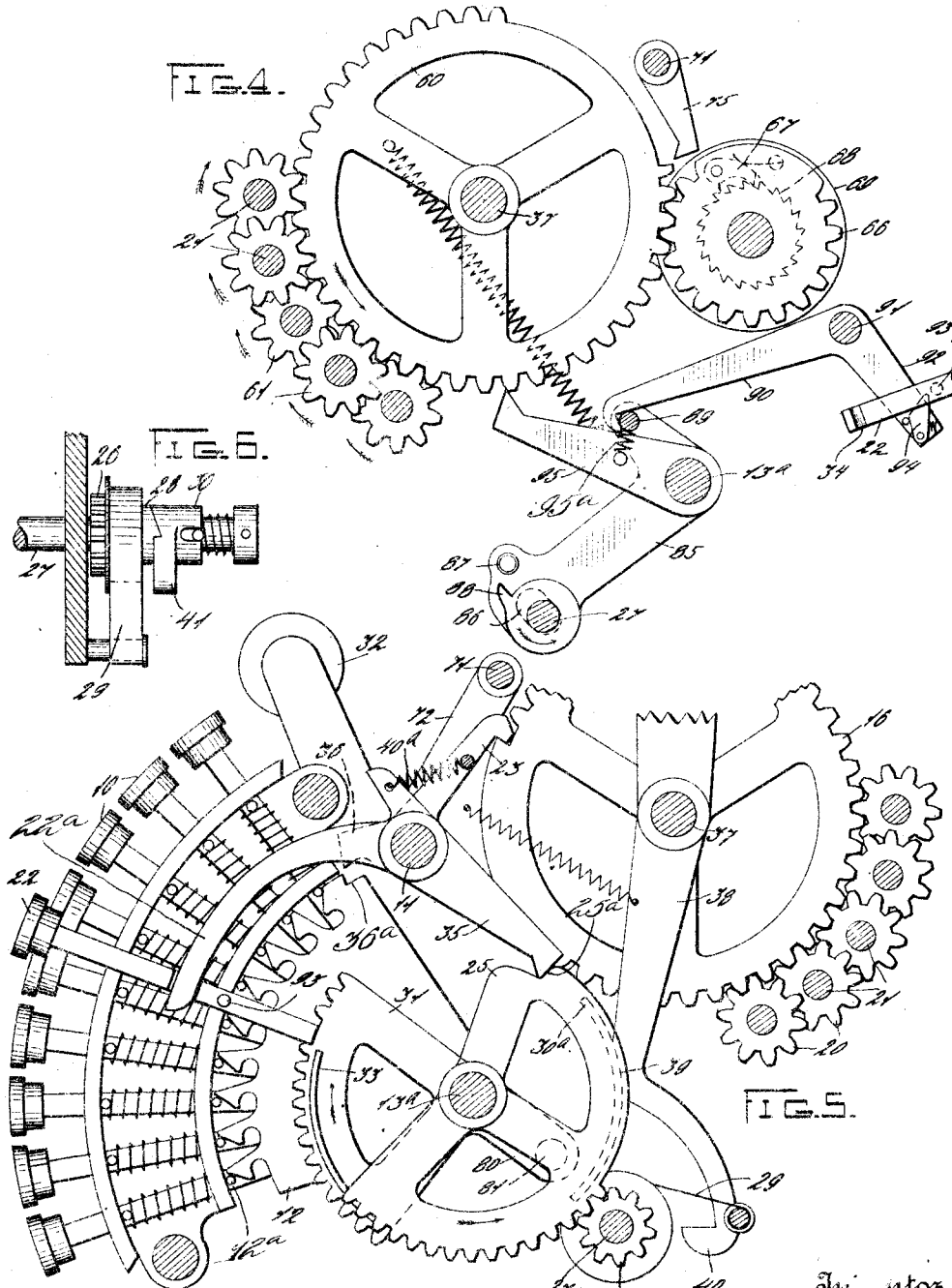
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4 SHEETS—SHEET 4.

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Witnesses
Al. Herbig
Earl Brust

In witness whereof
W. M. McCarthy
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Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM M. McCARTHY, OF DAYTON, OHIO, ASSIGNOR TO THE NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO, (INCORPORATED IN 1906.)

CASH-REGISTER.

1,051,904.

Specification of Letters Patent.

Patented Feb. 4, 1913.

Application filed October 20, 1906. Serial No. 339,793.

To all whom it may concern:

Be it known that I, WILLIAM M. McCARTHY, 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.

10 This invention relates to cash registers and has among its objects to provide an improved construction of a so-called "throw out counter device".

15 A further object is to provide a throw out counter mechanism in which the register operating devices are locked from operation when the counter is to be thrown out, in contradistinction to that type of machine in which the operating devices are prevented from engaging the counter.

20 Another object is to provide means for preventing manipulation of the machine by furnishing devices to lock the register operating elements except at such times as they should be operative.

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

30 Of said drawings: Figure 1 is an end elevation of the right hand side of the machine showing the printing mechanism. Fig. 2 is a vertical transverse section through the machine. Fig. 3 is a rear elevation of the indicators and their connecting mechanism. Fig. 4 is a detail section on line 4—4 of Fig. 3, looking in the direction of the arrow crossing said line. Fig. 4^a is a detail front elevation of the registering gears and their locking arms. Fig. 4^b is a detail plan view of pawls 95, the latching arm 90 and latch pin 89. Fig. 5 is a detail section through the machine, showing in particular the release key; and Fig. 6 is a detail view of the power spring and clutch for same.

50 This invention is shown as applied to that class of machine known as the Union cash register, but it can be said that the

particular arrangement and design of the parts shown is not essential to the correct 55 working of the mechanism, it being understood that it is intended to show in these drawings and specifications a principle which may be applied to any one of several different types of machines now well known 60 in the art.

A brief description of the general operation of the machine will be given, which, with reference to British Letters Patent No. 22535 of 1904 to Fuller, will enable any 65 one well versed in the art to fully understand my invention as being well adapted to fulfil the objects as stated above.

Referring to Fig. 5, it will be seen that when any one of the keys 10 is depressed it 70 is latched in its operated position by one of a series of hook fingers, formed upon a detent plate 12, engaging a laterally extending pin 12^a on said key. The pin of each key extends through to the opposite side 75 (Fig. 2) and contacts a spring drawn curved arm 13, which is loosely mounted upon a transverse shaft 11, thereby withdrawing a rearwardly extending portion 13^b of said arm out of the path of a pin 14 80 mounted upon a rack segment 15. This segment is operated by a spring drawn gear wheel 16, and is limited in its movement by a pin 17 mounted thereon which contacts with the lower end of a depressed key. 85 Therefore it will be plainly seen that (providing the gear 16 is free to revolve) when a key is depressed and latched in its depressed position by the detent 12, the segment 15 will be released and rocked in the 90 direction of the arrow a distance depending upon the key depressed. The gears 16, of which there is one for each denomination, are geared through pinions 18 to the front indicators 19, and through pinions 20 and 95 shafts 21 to the registering and back indicating operating mechanisms, as will be hereinafter more fully described.

All of the above mentioned parts are normally locked from operation and are only 100 released by the operation of a key 22 (Fig. 5), which rocks shaft 11 by means of a forwardly projecting arm 22^a thereby withdrawing pawls 23, fast to said shaft, from out of engagement with the gears 16. A 105 rearwardly extending portion 35 of the arm

22^a, which engages a shoulder 25^a formed upon a segment 25 and latches the latter from movement, is also withdrawn thus freeing said segment. The keys 10 are
 5 locked from operation, upon depressing the release key, by arms 36 secured to the shaft 11 engaging shoulders 36^a formed upon de-
 dent plates 12.

The segment 25 is loosely mounted upon
 10 the main shaft 13^a, and meshes with a pin-
 ion 26 mounted on a shaft 27 and having
 an extended hub 28 forming one part of a
 toothed clutch (Fig. 6). To the hub 28 is
 15 fastened one end of a spring 29, the other
 end being fastened to the frame work of the
 machine. A collar 30 forming the other
 part of the clutch is connected to the shaft
 27 by a pin and slot connection and is spring
 20 pressed toward the hub 28. Upon depress-
 ing the release key 22 the pawls 23 and the
 arm 35 will be withdrawn from the gears
 16 and the segment 25 respectively, allowing
 the spring 29 to rotate the shaft 27 through
 25 means of the above described clutch. Ex-
 tending from one side of the segment 25 is
 a flange 30^a, against which abuts at 39 a
 spring drawn arm 38 pivoted on a shaft 37.
 The lower end of the arm 38 is provided
 30 with a hook 40 which engages a projection 41
 of the clutch collar 30 after the latter has
 made a complete revolution, just previous
 to which the flange 30^a has been carried
 35 away from the part 39 of the arm 38, allow-
 ing the latter to be drawn forward by its
 spring to arrest the shaft 27. Adjacent to
 the segment 25 is another segment 31 rigidly
 secured to the shaft 13^a, upon the outer end
 40 of which is fastened an operating handle
 32. The upper edge of the segment 31 is
 arranged to contact with the flange 30^a, and
 return the segment 25 and pinion 26 to
 normal position and thereby rewind the
 45 spring 29, upon the oscillation of the handle
 32. When the release key 22 is depressed
 and the handle 32 moved rearwardly, a
 flange 33 formed on the segment 31 enters
 a recess 34 in the release key and prevents
 the withdrawal of the latter until the flange
 50 33 passes out of the recess, by which time
 the shoulder 25^a of the segment 25 presents
 itself to the arm 35, which is drawn into
 engagement therewith and the release key
 thrust forwardly by a spring 40^a. The flange
 55 33 also prevents the operation of the release
 key, if the handle is operated first, by pass-
 ing under the end of said key.

Referring now to Figs. 1 and 3, it will be
 seen that the shafts 21 extend to the out-
 side of the machine and have pinions 50
 60 secured thereto meshing with rack segments
 51 formed upon printing wheels 51^a. As the
 shafts 21 receive different degrees of move-
 ment, depending upon the keys depressed
 (as before explained), it will be clear that
 65 the printing wheels will receive a like move-

ment to bring the correct numerals into
 printing alinement. This printing mecha-
 nism as herein shown is identical with that
 shown and described in the aforementioned
 patent to Fuller, to which patent reference
 70 may be had for a more detailed description.
 As seen in Fig. 3, another set of indicators
 55 is provided to be read from the back of
 the machine. These indicators have fast-
 75 ened to them pinions 57 which mesh with
 gear wheels 56, which in turn mesh with
 pinions 58 secured to the shafts 21. To the
 latter are pinned pinions 20, which are
 80 driven by gear wheels 16 as hereinbefore
 described. Each amount indicator operat-
 ing shaft 21 is provided with a hub 63,
 which rotates with said shaft but has a
 slight lateral movement independent of it,
 which is provided for by a slot and pin con-
 85 nection 65. A tooth 64 of the hub 63 en-
 engages a notch formed in the hub of a pinion
 61 loosely mounted on the shaft 21. This
 pinion meshes with a spring drawn register
 operating gear wheel 60, mounted on the
 90 shaft 37 adjacent to the gear wheel 56 (Fig.
 4). The gear 60 meshes with a counter ac-
 tuating gear 66, upon which is mounted a
 spring pressed pawl 67 engaging a ratchet
 95 68 attached to a counter wheel 69. Thus it
 will be seen that when the gear 60 rotates
 in the direction of the arrow as shown in
 Fig. 4, the counter wheel will be actuated,
 but when the gear is restored the pawl 67
 will ride idly over the ratchet 68. From
 100 this construction it will be plain that when
 the shafts are rotated as indicated in Fig. 4,
 the registering gears 60 will also be rotated,
 but if the gears 60 should be locked against
 rotation, then the teeth 64 of the clutch
 105 members 63 will be cammed out of the
 notches in the hubs of the pinions 61 and
 the shafts 21 will rotate independently of
 the pinions 61. The locking of the gears 60
 to prevent the counter from being actuated,
 110 is accomplished by the pressing in of any
 one of three special keys 70, which represent
 different classes of transactions such as
 "Charge," "Paid out" or "Recd. on acct",
 in the following manner. Mounted rigidly
 115 upon a shaft 71 (Fig. 2) is a downwardly
 extending arm 72, which is limited in its
 movement by an elongated slot 73 embracing
 the shaft 11, and is drawn to its normal po-
 sition by a spring 74. Upon the shaft 71
 120 are mounted downwardly extending locking
 arms 75 (Figs. 4 and 4^a), one for each reg-
 istering gear 60, which when the shaft 71 is
 rocked serve to lock the gears 60 and pre-
 vent the counter from being operated as pre-
 viously explained. The arm 72 is so shaped
 125 that only the three special keys 70 will oper-
 ate it. The displaced parts are returned
 slightly beyond their normal position by a
 rod 81 which is supported by arms 80, one
 of which is an extension of the segment 31 130

and the other is made fast to the shaft 13^a. As the shaft is oscillated by the handle 32, the rod 81 will contact with all of the displaced arms 82 of the segments 15 and restore them with the indicators and the registering gears 60 to their home position, the latter by the teeth 64 of the hubs 63 engaging the notches formed in the hubs of the pinions 61, if the sale has been registered; if the sale has not been registered, the gears 60 and the pinions 61 having been locked in their normal position, the hubs 63 will be returned independently. By returning the parts beyond their normal position, the rod 81 contacts with the under sides of the detent plates 12 and raises them to release the depressed keys. The segments are latched in this position by the pawls 23 engaging the gears 16, while the detents return to their normal position upon the rearward movement of the rod 81.

As is well known cash registers as now constructed are provided with mechanisms for performing different functions, such as indicating, registering, and recording of amounts previously determined. While in the specific embodiment of the invention herein disclosed there have been shown devices for preventing a movement of the actuators of the registering mechanism when it is desired to perform the functions of indicating and recording without registering, yet it is to be understood that this invention is not limited to this specific embodiment, but that the actuators for the mechanisms for performing other functions of the machine may equally as well be prevented from moving.

To accomplish the other object of this invention the following mechanism is employed: Loosely pivoted on the shaft 13^a (Fig. 4) is a bell-crank arm 85 provided at its lower end with an enlarged slot 86, which embraces the shaft 27, and with an anti-friction roller 87 adapted to be engaged by a cam 88 fast to said shaft. The upper end of the arm 85 is provided with a rod 89 which is normally engaged by a latching arm 90 pivoted at 91, and having a downwardly extending arm 92 carrying a wiper pawl 94 with which a pin 93 mounted upon the release key 22 contacts, when said key is operated. Mounted loosely upon the shaft 13^a besides the arm 85 are pawls 95, one for each registering gear 60, which are drawn into engagement with their respective gears by springs 95^a, the ends of which are connected to the pawls and to the rod 89. It will be seen that as soon as the release key 22 is depressed, the pin 93 will contact with the wiper pawl 94 and rock the latching arm 90, allowing the bell-crank 85 to drop carrying with it the pawls 95 out of engagement with the gears 60 so as to permit the latter to operate. The anti-

friction roller 87 now being in its downward position, will be operated upon by the cam 88 at the last part of the revolution of the shaft 27 thereby camming the bell-crank 85 upwardly which will, by means of springs 95^a, draw the pawls 95 into engagement with the gears 60, the bell-crank 85 and the pawls 95 being held in this position by the latching arm 90. These parts are timed so that the pawls 95 will not be cammed into engagement with the gears 60 until the latter have moved to the position determined by the depressed keys.

The operation of the mechanism will, it is thought, be obvious from the description. It will be seen that a mechanism has been provided which positively locks the operating mechanism for the counter when a special transaction key is depressed and thereby prevents the operation of the counter. The locking devices shown in Fig. 4 while permitting the return of the registering gears under any condition, prevent the forward movement of said gears except at the proper time thereby overcoming the defect of "pumping" the counter by moving the type wheels back and forth by hand.

While the form of mechanism here 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 of 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 as follows:

1. In a machine of the class described, the combination with registering and indicating mechanisms, of independent sets of actuators therefor, manipulative devices controlling the movement of said actuators, clutch devices connecting the sets of actuators, and means for preventing movement of the registering set of actuators while permitting movement of the indicating gearing and thereby disabling the clutch devices.

2. In a machine of the class described, the combination with registering and indicating mechanisms, of operating gearing for each of said mechanisms, clutch devices connecting the gearing of the different mechanisms, and means for preventing movement of the registering gearing while permitting movement of the indicating gearing and thereby disabling the clutch devices.

3. In a machine of the class described, the combination with registering devices, of operating racks therefor, differentially movable elements, clutch devices connecting the racks and movable elements, and means for disabling the clutch devices by preventing movement of the racks while permitting movement of the differentially movable elements.

4. In a machine of the class described, the combination with registering devices, of operating racks therefor, differentially movable elements, clutch devices connecting the racks and movable elements, a series of keys, and means controlled thereby for disabling the clutch devices by preventing movement of the racks while permitting movement of the differentially movable elements. 70
5. In a cash register, the combination with registering devices, of operating devices for same including a clutch, manipulative devices, and means operated thereby for locking said operating devices from operation, and thereby separating the parts of said clutch. 75
6. In a cash register, the combination with registering devices, of operating racks for same, clutches controlling said racks, manipulative devices and means controlled by said devices for positively locking said racks. 80
7. In a cash register, the combination with registering devices, of operating racks for same, clutch elements actuating said racks, a key, and means operated thereby for positively locking said racks and serving to separate the clutch elements. 85
8. In a machine of the class described, the combination with registering and printing mechanisms, of reciprocatory operating gearing for each of said mechanisms, clutch devices connecting the gearing for the different mechanisms, and means for disabling the clutch devices by preventing movement of the gearing for the registering mechanism while permitting movement of the gearing for the printing mechanism. 90
9. In a machine of the class described, the combination with registering and printing mechanisms, of reciprocatory operating gearing for each of said mechanisms, clutch devices connecting the gearing for the different mechanisms, a series of keys, and means controlled thereby for disabling the clutch devices by preventing movement of the gearing for the registering mechanism while permitting movement of the gearing for the printing mechanism. 95
10. In a machine of the class described, the combination with registering and indicating mechanisms, of reciprocatory operating gearing for each of said mechanisms, transverse shafts having clutch devices mounted thereon for connecting the gearing for the different mechanisms, and means for disabling the clutch devices by preventing movement of the gearing for the registering mechanism while permitting movement of the gearing for the indicating mechanism. 100
11. In a machine of the class described, the combination with registering and indicating mechanisms, of reciprocatory operating gearing for each of said mechanisms, transverse shafts having clutch devices mounted thereon for connecting the gearing for the different mechanisms, a series of keys, and means controlled thereby for disabling the clutch devices by preventing movement of the gearing for the registering mechanism while permitting movement of the gearing for the indicating and printing mechanisms. 105
12. In a machine of the class described, the combination with registering, indicating and printing mechanisms, of reciprocatory operating gearing for each of said mechanisms, clutch devices connecting the gearing of all of said mechanisms, a special key, and means controlled thereby for disabling the clutch devices by preventing movement of the registering gearing while permitting movement of the gearing for the indicating and printing mechanisms. 110
13. In a machine of the class described, the combination with registering devices, of actuators therefor constructed to be moved differentially in one direction, and then restored to normal position, pawls normally in engagement with said actuators, a manipulative device controlling the withdrawal of said pawls from engagement with the actuators, and means also controlled by said manipulative device for engaging the pawls with the actuators previous to the restoration of the latter for the purpose described. 115
14. In a machine of the class described, the combination with registering devices, of actuators therefor constructed to be moved differentially in one direction and then restored to normal position, pawls normally in engagement with said actuators, a manipulative device controlling the withdrawal of said pawls from engagement with the actuators, and a spring operated shaft also controlled by said manipulative device and having a cam thereon for engaging the pawls with the actuators previous to the restoration of the latter for the purpose described. 120
15. In a cash register, the combination with registering devices, of operating devices therefor, means normally preventing movement of said operating devices, a manipulative element for releasing said means, and mechanism for returning said means to normal position. 125
16. In a cash register, the combination with registering devices, of operating devices therefor, means normally preventing movement of said operating devices, a manipulative element for releasing said means, and mechanism for returning said means to normal position. 130
17. In a cash register, the combination

with registering devices, of racks for operating same, means normally preventing movement of said racks in one direction, a key, a lever operated thereby to release said means, and a cam for returning said means to normal position.

18. In a cash register, the combination with registering devices, of operating devices for same, devices for normally holding each of said operating devices against movement in one direction, a key for releasing said holding devices, and a shaft operated by the machine and serving to return said holding devices to normal position.

19. In a cash register, the combination with registering devices, of operating mechanism for same, arms normally holding said mechanism against movement, a manipulative device for releasing said holding arms, and a shaft having a cam given a movement at each operation of the machine to restore said holding arms to normal position.

20. In a machine of the class described, the combination with an accounting mechanism, of operating devices therefor, means for normally rendering the operating devices inoperative, a normally inoperative power driven member, means for rendering the operating devices and the power driven member operative, and means controlled by the power driven member for rendering the operating devices inoperative.

21. In a machine of the class described, the combination with registering devices, of actuators therefor constructed to be moved differently in one direction and then restored to their normal position, pawls preventing movement of the actuators from normal position, a manipulative device controlling the disabling of said pawls, and a power driven member also controlled by said manipulative device for enabling the pawls previous to the restoration of said actuators.

22. In a machine of the class described, the combination with an accounting mechanism, of reciprocatory operating devices therefor, means for normally locking said devices, a power shaft, means for normally locking said shaft, means for disabling the locking means of the operating devices and the power shaft, and means controlled by the power shaft for enabling the locking means of the operating devices preparatory to the return movement of said devices so as to prevent fraudulent manipulation of the accounting mechanism.

23. In a cash register, the combination with a totalizer, of operating elements therefor having advancing and retrograde movements, manipulative devices for controlling the advancing movement of said elements, means for imparting retrograde movement to the operating elements, a spring driven shaft having a constant ex-

cursion during each operation of the machine, and devices controlled by the shaft for preventing any advancing movement of the operating elements during their retrograde movement.

24. In a cash register, the combination with a totalizer, of operating elements therefor having advancing and retrograde movements, manipulative devices for controlling the advancing movement of said elements, means for imparting retrograde movement to the operating elements, a spring driven shaft having a constant excursion during each operation of the machine, and pawls controlled by the shaft for preventing any advancing movement of the operating elements during their retrograde movement.

25. In a cash register, the combination with a totalizer, of operating elements therefor having advancing and retrograde movements, of means for advancing and retracting said elements, a motor shaft, and means controlled thereby for preventing any advancing movement of the operating elements during their retrograde movement.

26. In an accounting machine, the combination with registering and indicating mechanisms, of reciprocatory operating gearing for each of said mechanisms, the gearing for the indicator mechanism being connected thereto in both directions of movement thereof while the gearing for the registering mechanism is connected thereto in only one direction of movement thereof, and a series of keys for preventing the movement of the gearing for the registering mechanism while permitting the movement of the gearing for the indicating mechanism.

27. In an accounting machine, the combination with a totalizer comprising a plurality of movable elements, of reciprocatory operating devices therefor having a one way connection with the elements of the totalizer, pawls normally preventing movement of the operating devices from normal position, and means for withdrawing said pawls out of engagement with the operating devices thereby permitting the movement of said devices to actuate the totalizer elements and then for moving the pawls into engagement with the operating devices previous to their return movement to prevent manipulation of the totalizer elements by said operating devices.

28. In a machine of the class described, the combination with a plurality of mechanisms for performing different functions, of a set of actuators for each mechanism, clutch devices connecting the various sets of actuators, and means for disabling said clutch devices by preventing movement of the actuators of one set while permitting the movement of the actuators of the remaining sets.

29. In a machine of the class described,

the combination with a plurality of mechanisms for performing different functions, of a set of actuators for each mechanism, clutch devices connecting the various sets of actuators. a manipulative device, and means controlled thereby for disabling said clutch devices by preventing movement of the actuators of one set while permitting the

movement of the actuators of the remaining sets.

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

WILLIAM M. McCARTHY.

Witnesses:

ROY C. GLASS,

CARL J. BENST.