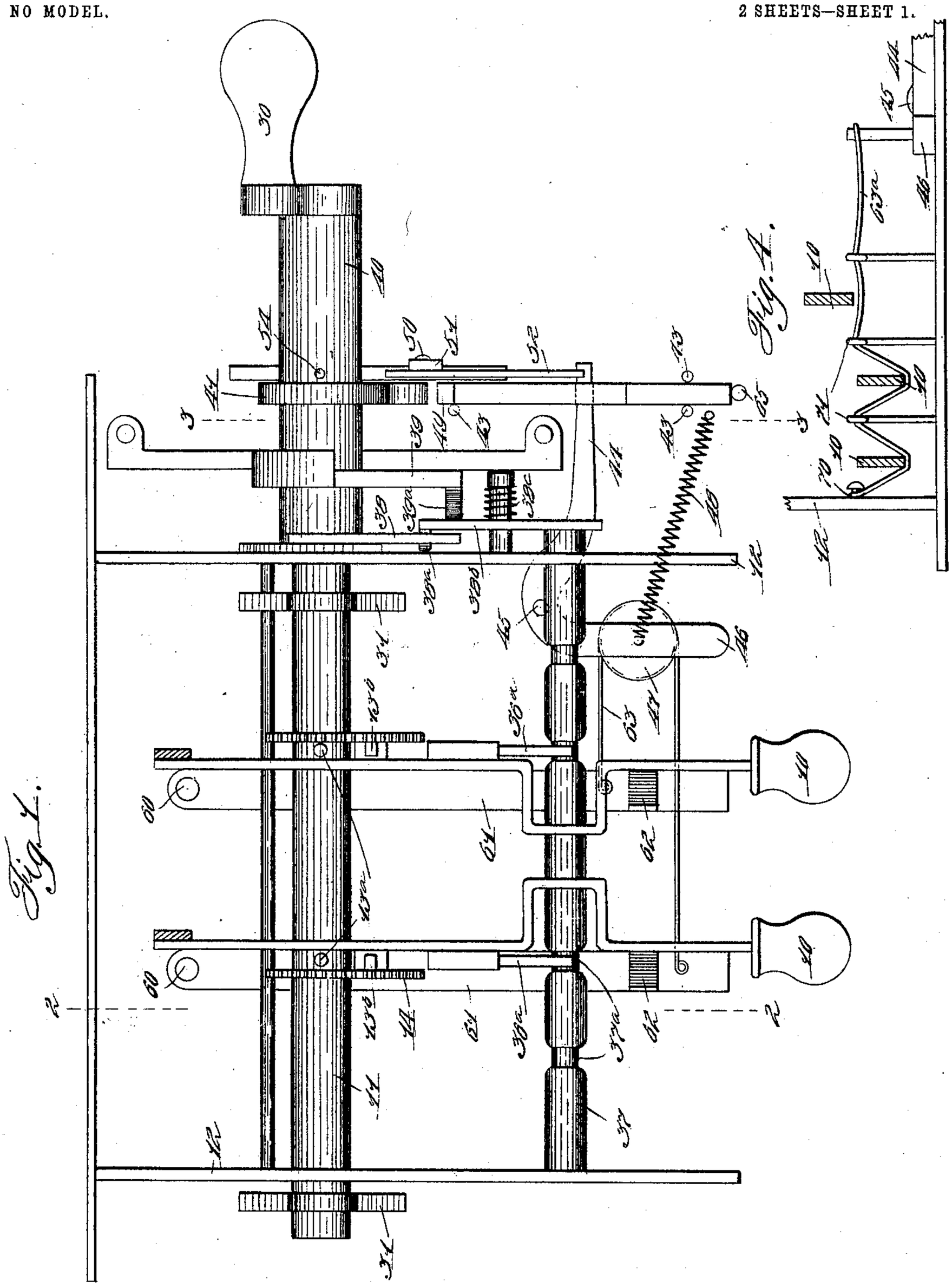
No. 756,218. PATENTED APR. 5, 1904.

W. F. DAVEY.

CASH REGISTER.

APPLICATION FILED SEPT. 17, 1903.

NO MODEL. 2 SHEETS—SHEET 1.



Witnesses
W. W. Cleaveley
Wm. O. Hendreon.

Inventor
Wm F Davey
by Frank Parker Davis
J. B. Hayward Attorneys

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

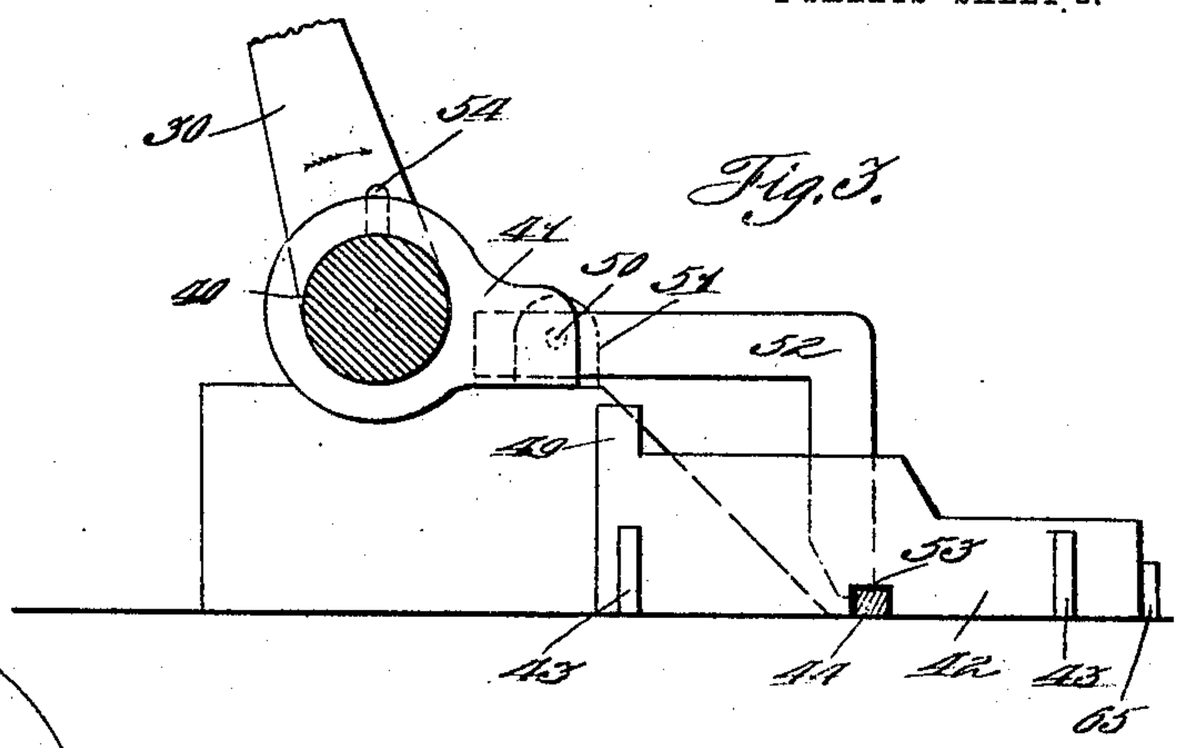
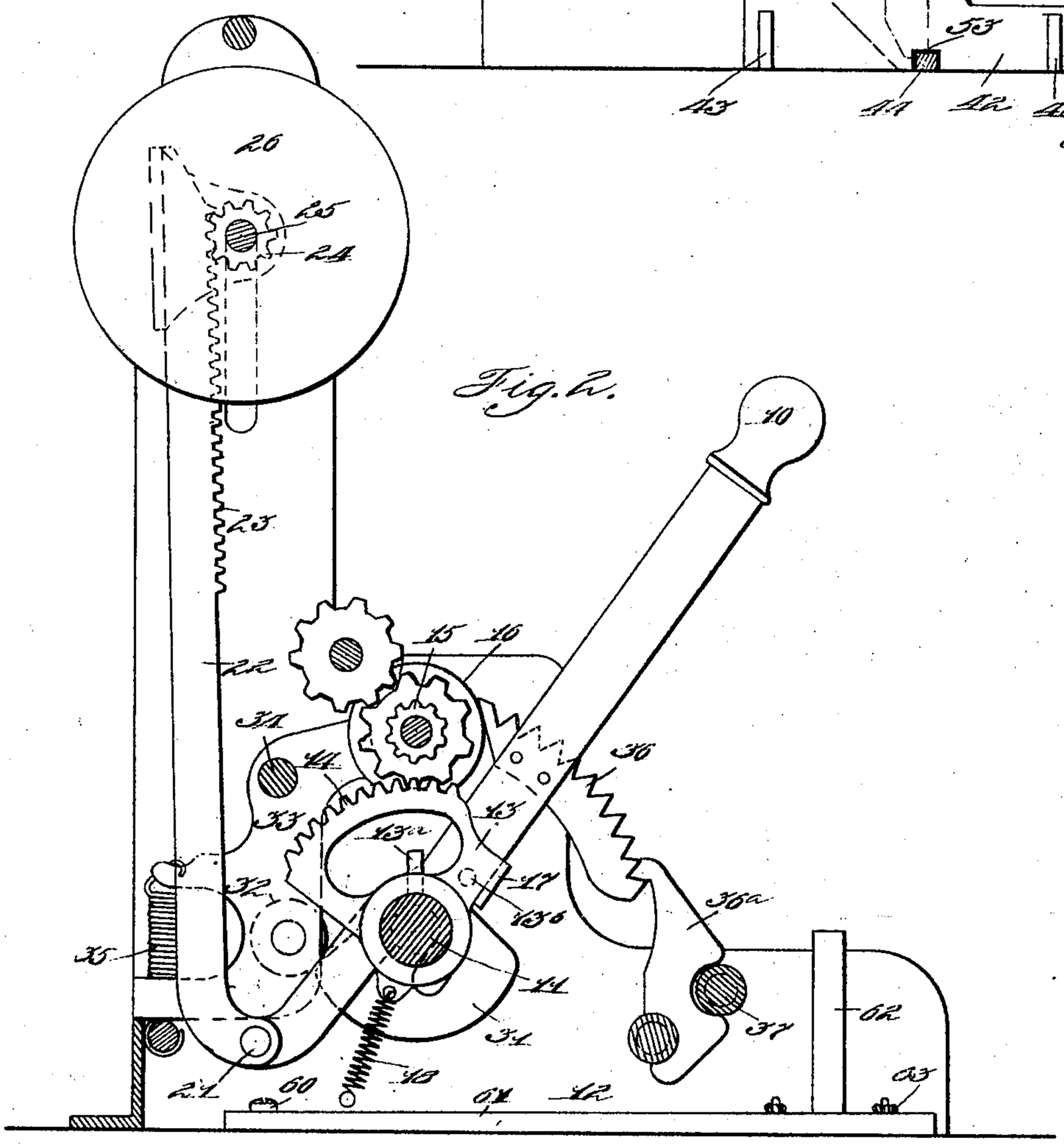


Fig. 2.



Witnesses
W. McCarthy
Wm. O. Hendersen.

Inventor
Wm. F. Davey
by Paul Parker Davis
J. B. Hayward Attorneys

No. 756,218. Patented April 5, 1904.

UNITED STATES PATENT OFFICE.

WILLIAM F. DAVEY, OF ELMIRA, NEW YORK, 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. 756,218, dated April 5, 1904.

Application filed September 17, 1903. Serial No. 173,535. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. DAVEY, a citizen of the United States, residing at Elmira, in the county of Chemung and State of New York, 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 type of cash-registers in which a series of setting elements are moved to set parts ready for the subsequent operation of an operating member; and it has for its object to provide an improved locking mechanism for such operating member in connection with said setting elements.

For convenience I have shown my improvement as applied to the particular form of cash-register set forth and described in Letters Patent issued to E. S. Smith and H. Giles, No. 724,516, dated April 7, 1903, in which the setting of parts is accomplished by a series of setting-levers; but it will be obvious that my invention is equally applicable to other various forms of machines of similar construction.

In the manipulation of machines of this character in which the setting elements have first to be moved into setting positions by the clerk operating the machine it often occurs that the clerk will move certain of these setting elements to proper position, but will neglect to return to zero or normal position the remaining elements which were displaced on a previous operation of the machine and which he does not intend to use on this subsequent operation, and by thus leaving these other elements in displaced position he will inadvertently register the wrong amount. My invention will obviate this difficulty in that I have provided a locking mechanism whereby the operating mechanism will be locked until all of the setting elements have first been returned to normal position; but it is of course to be understood that this is only one of the possible advantages and purposes to which my invention is applicable.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a top plan view of the machine with certain parts of the register omitted for the sake of clearness. Fig. 2 represents a vertical cross-section on the line 2 2 of Fig. 1, showing in addition certain parts which are omitted in Fig. 1. Fig. 3 represents a detailed cross-sectional view on the line 3 3 of Fig. 1. Fig. 4 represents a diagrammatic modified form of my lock-controlling mechanism.

Referring to the aforesaid drawings, a series of setting-levers 10 are pivoted upon a transverse shaft 11, suitably journaled in the main frame 12 of the machine, and also journaled on this shaft 11 and adjacent to each of the levers 10 is a register-operating segment 13, having teeth 14, which mesh with pinions 15, fast upon the respective counter-wheels 16. Each operating-segment 13 is formed with a laterally-projecting lug 17, which engages the lever 10, and by means of a spring 18 these segments 13 are made to follow the positions of the setting-lever 10 during the setting movement of the same. The rearwardly-extending portion of each lever 10 has pivoted to it at 21 a suitable rack-bar 22, formed with teeth 23, which mesh with pinions 24, journaled upon a shaft 25 and made fast to suitable indicators 26. After the setting-levers 10 have been moved to proper positions, corresponding to the amount to be registered, the machine is subsequently operated by means of the crank-handle 30, which is fast to the shaft 11. The shaft 11 has fast to it a cam-plate 31, which coöperates with a roller 32, formed upon a counter-frame 33, which frame is pivoted upon a shaft 34 and carries at its forward end the various counter-wheels 16. Upon the oscillation of the shaft 11 by means of the crank-handle 30 this counter-frame 33 is rocked about its pivot 34 and the pinions 15 are thrown into mesh with their respective segments 13, and by means of a lug 13^a on said shaft 11 and a pin 13^b on said segment 13 these segments 13 are returned to normal position by the oscillation of the shaft 11, and upon such return to normal position they operate the register-wheels by means of the pinions 15, and after such return to normal position the register-

wheels are thrown out of mesh from their operating-segments, and these segments are allowed to return to engagement with their respective operating-levers. The counter-frame 33 is normally held with the counters out of mesh by means of the spring 35.

Each setting-lever 10 carries an alining rack 36, which is engaged by an alining pawl 36^a, normally lying opposite a recessed portion 37^a of a locking-shaft 37. This shaft is mounted to slide laterally in the main frame 12 and is given such lateral movement by means of an arm 38, which is mounted upon the enlarged shaft 40, which extends from the crank-handle 30 to the shaft 11, and the said arm 38 engages a beveled projection 38^a, formed on an arm 38^b, fast to the locking-shaft 37, so that upon the downward oscillation of the shaft 40 the arm 38 forces the arm 38^b and the shaft 37 to the right against the tension of the spring 38^c, and in such shifted position the recessed portion 37^a of said shaft 37 no longer lies opposite the pawl 36^a; but the full portion of said shaft forces said pawl into engagement with the rack 36, thereby locking the levers 10 from movement while the operating-handle is moving. On the return oscillation of said shaft 40 the spring 38^c forces the locking-shaft 37 back to normal position; but a positive return is insured by means of the arm 39, which is also fast on the shaft 40 and has a beveled projection 39^a, which engages the under side of the arm 38^b.

Only a limited description is given of the foregoing mechanism, since it constitutes no part of my present invention, and for a more detailed description reference may be had to the aforesaid Letters Patent.

Locking mechanism.—Fast upon the aforesaid shaft 40 is a locking disk or projection 41. (See Figs. 1 and 3.) Situated in lateral alinement with this locking-disk is a locking-bar 42, which slides upon the base-plate of the machine and is guided in its sliding motion by means of guide-pins 43. Formed in the bottom portion of this locking-bar 42 is a recess through which projects one arm 44 of a bell-crank lever pivoted to the base-plate of the machine at 45 and having a forwardly-extending arm 46, upon which is mounted a pulley 47. A spring 48, attached at one end of the base-plate of the machine and at the other end to the arm 46 of the aforesaid bell-crank lever, normally tends to force the arm 44 of said lever rearward, and thereby carry the locking-bar 42 rearward in such manner as to bring its upwardly-projecting nose 49 into the path of the locking-disk 41, and thereby prevent the oscillation of the shaft 40. Pivoted at 50 to a suitable standard 51, extending upward from the base-plate of the machine, is an L-shaped arm or latch 52, the forward end of which extends downward and is formed with a shoulder 53, adapted to engage the rearward side of the bell-crank arm 44 and hold said arm in its forward position, thereby holding the locking-bar 42 in forward position and out of locking relation with the locking-disk 41. A pin 54, fast to the shaft 40, is in lateral alinement with the rearward end of the latch 52, and upon the oscillation of the shaft 40 by means of the crank-handle 30 this pin comes in contact with the rearward end of said latch, and thereby raises the forward end so as to release the shoulder 53 from contact with the lever-arm 44, and thereby allow the locking-bar 42 to slide rearwardly into locking position.

The means of retracting the locking-bar 42 out of locking position will now be described. Below each setting-lever 10 there is pivoted, as at 60, a swinging bar 61, which has formed upon its forward end an upwardly-extending beveled lug 62, which is adapted to be engaged by the setting-lever 10. Fast to one of these swinging bars 61 is an operating-cord 63, which extends around the pulley 47 on the bell-crank arm 46 and is then made fast to the other swinging bar 61. The normal or zero position of the setting-levers 10 is when they have been moved to their lowest position and extend forward almost horizontally. When these setting-levers 10 are displaced from such normal position, the operating-cord 63 is slack and the spring 48 will tend to pull the bell-crank arm 46 to the right, and will thereby carry the bell-crank arm 44 rearwardly and carry the locking-bar 42 into locking position, when the latch 52 is released, as heretofore described. In such position the machine will evidently be locked from operation; but upon return of the setting-levers 10 to normal or zero position the levers will contact with the beveled lugs 62 and will force the swinging bars 61 to the left, thereby drawing taut the operating-cord 63, and thus pulling the arm 46 to the left and the arm 44 forward in such manner as to retract the locking-bar 42 out of locking position, this retracting movement of the bar 42 being limited by the stop-pin 65. As soon as the bar has thus been retracted the latch 52 drops down into position to hold the bar 44 forward, and thus hold the locking-bar 42 in unlocking position, and the machine may then be operated by the oscillation of the shaft 40, in which case the pin 54 will strike the rearward end of the latch 52 and allow the locking-bar 42 to spring rearward in contact with the locking-disk 40, which during this part of the oscillation of the shaft 40 has been swung downward; but as soon as the shaft 40 is oscillated backward the locking-disk 41 raises to normal position and the bar 42 is free to spring forward under said disk 41 and lock the shaft 40 from operation. Thus it will be apparent that if the setting-levers 10 remain in normal undisplaced position they will be in contact with the lugs 62, and will thereby retract the arm 44 to release the locking mechanism, so that the machine will be free to operate; but as

soon as any one of the levers 10 is displaced from normal position its respective swinging bar 61 will be free to swing to the right, and thereby supply slack to the operating-cord 63, and thus allow the arm 44 and the bar 42 to spring forward when the latch 52 is released by the operation of the crank-handle.

I have heretofore described my locking mechanism in connection with only two levers; but it will be perfectly obvious that the same or similar mechanism can with equal facility be applied to a plurality of levers, and in Fig. 4 I have shown means for applying my lock-controlling mechanism to three or more levers. In this case the locking-cord 63^a is made fast at 70 to the main frame and at the other end is made fast to the bell-crank arm 46. This cord 63^a extends below the setting-levers 10 and is led through suitable eyelets 71, situated on either side of the path of movement of the setting-levers. The cord is normally slack to such an extent that when one or two of said levers are moved to normal undisplaced position a certain amount of this slack will be taken up by contact of the setting-levers with the cord; but not enough slack will be taken up by the movement of these two levers to actuate the releasing mechanism for the lock—that is, not enough to pull the arm 46 to the left; but when the third and remaining lever is moved to its normal position the operating-cord 63^a will be drawn taut and will draw the arm 46 to the left, and thereby release the lock, so that the machine may be operated in the manner heretofore described. It will be apparent that this device may be applied to any number of levers provided that the operating-cord normally has a certain amount of slack and is drawn taut only by the combined action of all the levers, so that when they are all in their normal positions the slack in the operating-cord will be fully taken up and the lock-releasing mechanism will be actuated.

It is to be understood that the mechanism herein described constitutes only one possible embodiment of my invention, and I do not wish to be limited to any particular form of setting elements or locking mechanism, and I also wish to include within the scope of my invention other constructions, such as where the locking mechanism for the operating mechanism is controlled by the setting elements when said elements conjointly occupy certain predetermined positions.

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

1. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, and means for locking said member at the end of each operation thereof until all of said elements have been moved into certain predetermined relative positions.

2. In a cash-register, the combination with a series of setting elements, of an operating mechanism, a lock for locking said mechanism at the end of each operation thereof, and means for releasing said lock requiring the combined positioning of all of said elements.

3. In a cash-register, the combination with a series of setting elements adjustable into various positions, of an operating mechanism, a lock for locking said mechanism at the end of each operation thereof, and means for releasing said lock requiring the combined positioning of all of said elements.

4. In a cash-register, the combination with a series of setting elements, of an operating mechanism, a lock for locking said mechanism at the end of each operation thereof, and means for controlling said lock by the joint coöperation of said setting elements.

5. In a cash-register, the combination with a series of setting elements, of an operating member, a lock for locking said member at the end of each operation thereof, and means for releasing said lock when said elements simultaneously occupy certain predetermined positions.

6. In a cash-register, the combination with a series of setting elements adjustable into various positions, of an operating member, a lock for locking said member at the end of each operation thereof, and means for releasing said lock when said elements simultaneously occupy certain predetermined positions.

7. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, and means for locking said operating member at the end of each operation thereof until said setting elements have all been returned to normal position.

8. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, a locking mechanism for locking said member at the end of each operation thereof, and means for releasing said locking mechanism by the combined positioning of said setting elements.

9. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, means for locking said member at the end of each operation thereof, and means controlled by the combined predetermined relative positioning of said setting elements for releasing said locking mechanism.

10. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, means for locking said member at the end of each operation thereof, and means for releasing said lock operated by said elements upon their combined returning to normal position.

11. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, locking mechanism for locking said member at the end of each operation thereof, and means for rendering said lock-

ing mechanism inoperative when said elements are in normal position.

12. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, locking mechanism for locking said member at the end of each operation thereof, means for rendering said locking mechanism inoperative when said elements are in normal position, and means for holding said locking mechanism in inoperative position.

13. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, locking mechanism for said member, means for rendering said locking mechanism inoperative when said elements are in normal position, means for holding said locking mechanism in inoperative position, and means actuated by said operating member to release said holding means.

14. In a cash-register, the combination with a plurality of setting-levers, of an operating member, a lock for said member, and a releasing mechanism for said lock partially operated by the movement of any one of said levers, and completely operated by the movement of the remaining lever or levers.

15. In a cash-register, the combination with a series of setting elements, of an operating member; a lock for said member; and a releasing mechanism for said lock, including a controlling mechanism therefor partially operated by any one of said elements and completely operated to release said lock by the combined movement of all of said setting elements.

16. In a cash-register, the combination with a series of adjustable setting elements, of an operating member; a lock for said member; and an operating-cord for controlling said lock arranged to be drawn taut by the combined movement of said setting elements into normal position, for the purpose described.

17. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, means for locking said member after each operation thereof when said levers have been displaced from normal position, and an operating-cord connected with said locking means and arranged to be drawn taut by the combined positioning of said levers to normal position.

18. In a cash-register, the combination with an operating member, a locking mechanism therefor, means for releasing said locking mechanism having a certain amount of free movement independent of the locking mechanism, and a series of setting elements arranged by their conjoint operation to give said releasing means a movement in excess of said free movement and thereby actuate the locking mechanism.

19. In a cash-register, the combination with a series of setting-levers, of a register, oscillatory register-actuating devices, an operating-shaft, connections between said shaft and said register-actuating devices for operating the latter, and means for locking said shaft at the end of each operation thereof until all of said setting-levers have been returned to normal position.

20. In a cash-register, the combination with a series of setting-levers, of a register, oscillatory register-actuating devices, an operating-shaft, connections between said shaft and said register-actuating devices for operating the latter, a lock for locking said shaft at the end of each operation thereof, and a releasing mechanism for said lock actuated by the joint coöperation of all of said setting-levers when said levers are returned to normal position.

21. In a cash-register, the combination with a series of setting-levers, an operating-shaft formed with a locking projection, a locking-bar arranged to engage said projection, a lever for retracting said locking-bar, swinging levers moved by said setting-levers when the latter are brought to normal position, an operating-cord extending between said swinging levers and said retracting-lever, a latch for said locking-bar, and means carried by said operating member for actuating said latch.

22. In a cash-register, the combination with a series of adjustable setting elements and a register, of a register-operating member, and means for locking said member at the end of each operation thereof until all of said elements have been moved into certain predetermined relative positions.

23. In a cash-register, the combination with a series of setting elements and a register, of a register-operating mechanism, a lock for locking said mechanism at the end of each operation thereof, and means for releasing said lock requiring the combined positioning of all of said elements.

24. In a cash-register, the combination with a series of setting elements and a register, of a register-operating mechanism, a lock for locking said mechanism at the end of each operation thereof, and means for releasing said lock by the joint coöperation of said setting elements.

25. In a cash-register, the combination with a series of adjustable setting elements and a register, of a register-operating member, means for locking said member at the end of each operation thereof until all of said elements have been moved into certain predetermined relative positions, and means for latching said locking means in inoperative position.

26. In a cash-register, the combination with a series of setting elements and a register, of a register-operating mechanism, a lock for locking said mechanism at the end of each operation thereof, means for releasing said lock requiring the combined positioning of all of said elements, and means for latching said lock into inoperative position.

27. In a cash-register, the combination with

a series of setting elements and a register, of a register-operating mechanism, a lock for locking said mechanism at the end of each operation thereof, means for releasing said lock by the joint coöperation of said setting elements, and means for latching said lock in inoperative position.

28. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, means for locking said member until all of said elements have been moved into certain predetermined relative positions, and means independent of said elements and disconnected from said operating member for latching said locking means in inoperative position.

29. In a cash-register, the combination with a series of setting elements, of an operating mechanism, a lock for said mechanism, means for controlling said lock requiring the combined positioning of all of said elements, and means independent of said lock-controlling means and disconnected from said operating mechanism for latching said lock in inoperative position.

30. In a cash-register, the combination with a series of setting elements, of an operating mechanism, a lock for said mechanism, means for controlling said lock by the joint coöperation of said setting elements, and means independent of said controlling means and disconnected from said operating mechanism for latching said lock in inoperative position.

31. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, means for locking said member until all of said elements have been moved into certain predetermined relative positions, means for latching said locking means in inoperative position, and means actuated by said operating member to release said latching means.

32. In a cash-register, the combination with a series of setting elements, of an operating mechanism, a lock for said mechanism, means for controlling said lock requiring the combined positioning of all of said elements, means for latching said lock in inoperative position, and means actuated by said operating mechanism to release said latching means.

33. In a cash-register, the combination with a series of setting elements, of an operating mechanism, a lock for said mechanism, means for controlling said lock by the joint coöperation of said setting elements, means for latching said lock in inoperative position, and means actuated by said operating mechanism to release said latching means.

34. In a cash-register, the combination with a series of adjustable setting elements and a register, of a register-operating member, means for locking said member at the end of each operation thereof until all of said elements have been moved into certain predetermined relative positions, means for latching said locking means in inoperative position, and means actuated by said operating member for actuating said latch.

35. In a cash-register, the combination with a series of setting elements and a register, of a register-operating mechanism, a lock for locking said mechanism at the end of each operation thereof, means for releasing said lock requiring the combined positioning of all of said elements, means for latching said lock in inoperative position, and means actuated by said operating member to release said latching means.

36. In a cash-register, the combination with a series of setting elements and a register, of a register-operating mechanism, a lock for locking said mechanism at the end of each operation thereof, means for releasing said lock by the joint coöperation of said setting elements, means for latching said lock in inoperative position, and means actuated by said operating mechanism for releasing said latching means.

37. In a cash-register, the combination with a series of setting-levers, of a register, oscillatory register-actuating devices, an operating-shaft, connections between said shaft and said register-actuating devices for operating the latter, means for locking said shaft until all of said setting-levers have been returned to normal position, means for latching said locking means in inoperative position, and means connected with said operating-shaft for releasing said latching means.

38. In a cash-register, the combination with a series of setting-levers, of a register, oscillatory register-actuating devices, an operating-shaft, connections between said shaft and said register-actuating devices for operating the latter, a lock for locking said shaft at the end of each operation thereof, a releasing mechanism for said lock actuated by the joint coöperation of all of said setting-levers when said levers are returned to normal position, means for latching said lock in inoperative position, and means connected with said operating-shaft for releasing said latching means.

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

WILLIAM F. DAVEY.

Witnesses:
A. S. FITCH,
GEO. W. AULT.