

No. 771,643.

PATENTED OCT. 4, 1904.

W. JOHNSON.
CHANGE MAKER.

APPLICATION FILED FEB. 4, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 2.

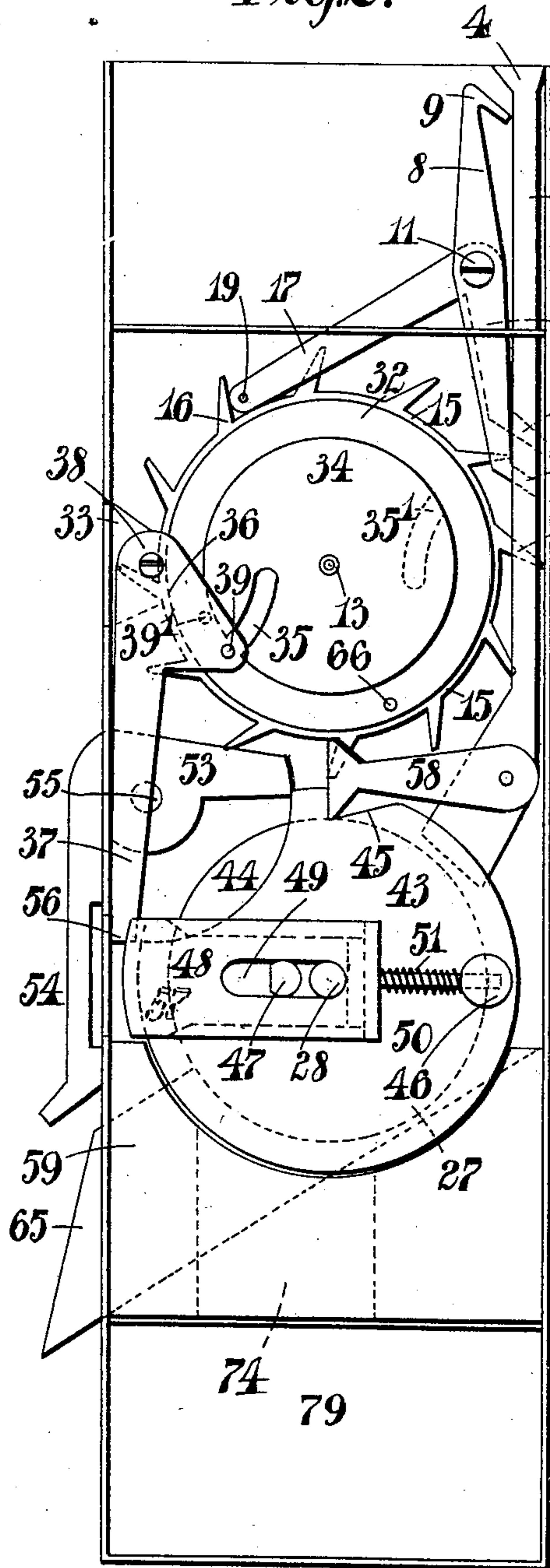
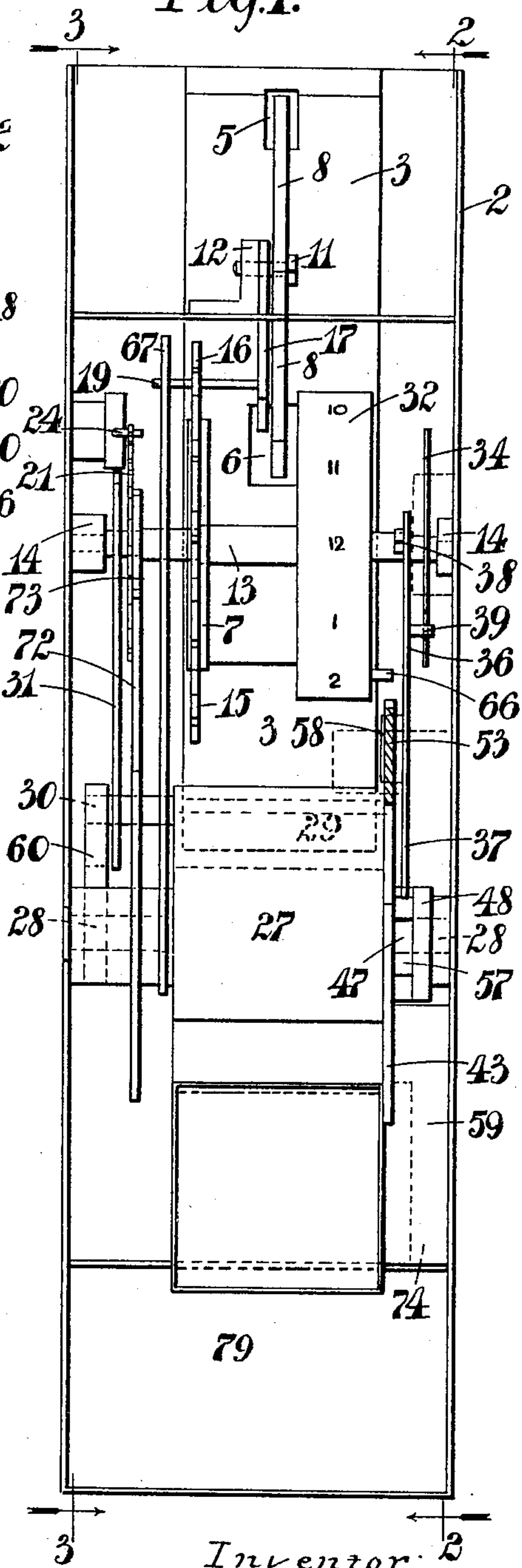


Fig. 1.



Witnesses

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NO MODEL.

2 SHEETS—SHEET 2.

Fig.3.

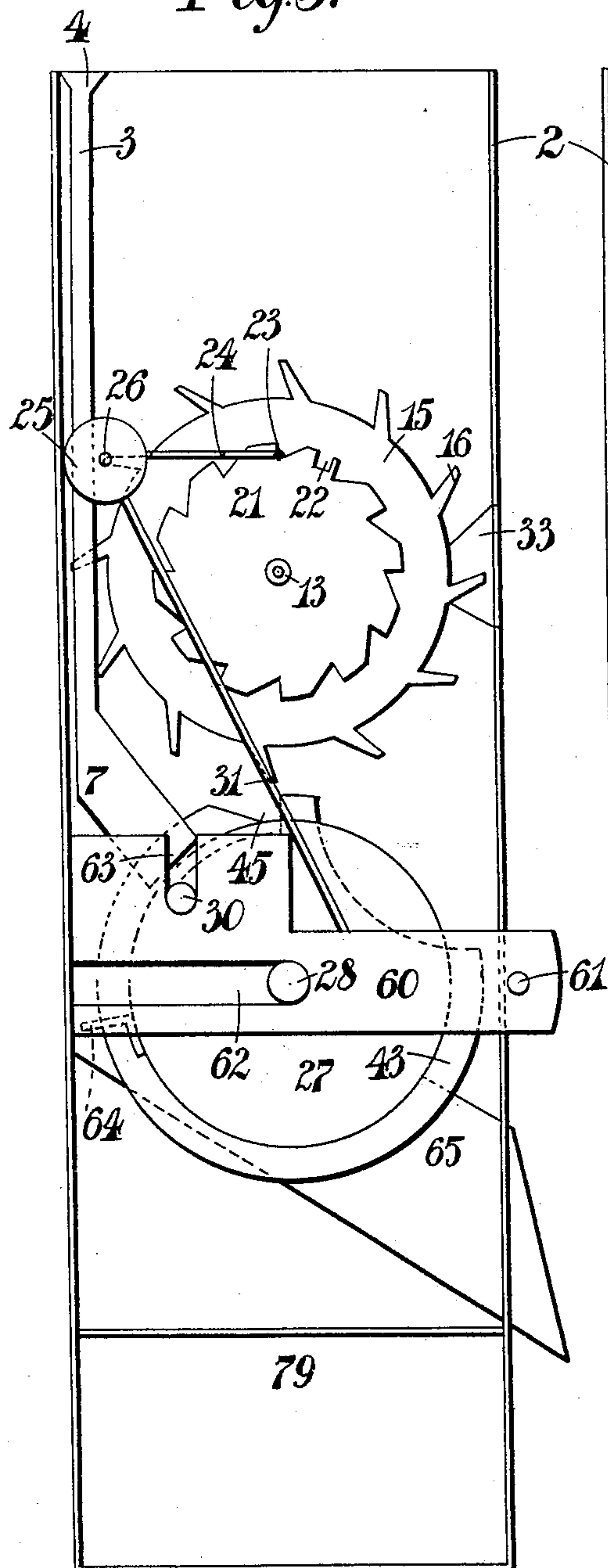
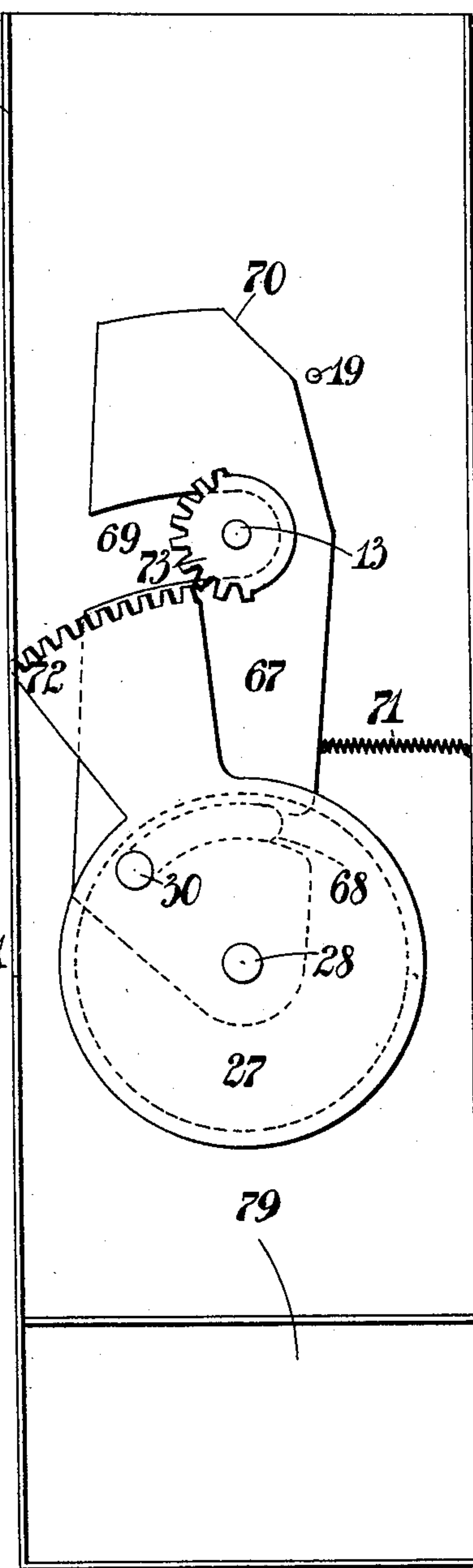


Fig.4.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM JOHNSON, OF COVENTRY, ENGLAND, ASSIGNOR TO JOHN ROTHERHAM, HUGH ROTHERHAM, AND KEVITT ROTHERHAM, TRADING AS ROTHERHAM AND SONS, OF COVENTRY, ENGLAND.

CHANGE-MAKER.

SPECIFICATION forming part of Letters Patent No. 771,643, dated October 4, 1904.

Application filed February 4, 1904. Serial No. 192,011. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM JOHNSON, a subject of the King of Great Britain, residing at Coventry, Warwickshire, England, have invented certain new and useful Improvements in Change-Makers, of which the following is a specification.

My invention relates to improvements in apparatus for receiving a predetermined number of coins, usually of small values, from coin-freed gas-meters or the like and delivering them in exchange for a single coin of equivalent value; and my invention especially relates to improvements in the type of apparatus in which the operating-coins after performing their functions in the coin-freed machine pass directly from the said machine into the apparatus singly and after operating mechanism for indicating the number of coins introduced into the apparatus pass into a rotatable drum or box normally locked, but released by the insertion of a single exchange-coin of a value equivalent to its entire contents and then rotated, whereby its contents are discharged.

I am aware that it is not new in apparatus for giving monetary change to employ a rotating box for receiving the operating-coins, nor is it new to employ the particular locking and unlocking devices for the said box hereinafter described, such a construction being shown in British Patent No. 6,366, dated March 5, 1902, a copy of which is on file in the United States Patent Office, and I do not claim these particular devices; but the main features of my invention are a device for automatically registering the coins or the like as they enter the apparatus, an arrangement for preventing more than a predetermined number of operating-coins from passing into the apparatus, and an appliance for preventing the insertion of an exchange-coin until the apparatus contains the required number of operating-coins.

My invention also comprises means for rotating the box for receiving the operating-coins and a device for bringing the indicator to its initial position when the apparatus is

used for exchanging different numbers of operating-coins for various exchange-coins of equivalent values.

In the accompanying drawings, which illustrate a construction of change-giving apparatus according to this invention, Figure 1 is a front elevation. Figs. 2 and 3 are side elevations of the same viewed as indicated by arrows in Fig. 1, and Fig. 4 is a side elevation of part of the mechanism for rendering the apparatus capable of exchanging two or more different numbers of coins for equivalent single coins.

Like numerals refer to like parts throughout the drawings.

The casing 2, which may conveniently be constructed of tinned iron, is provided with a coin-tube 3, having a slot 4 at the top, through which the operating-coins are introduced into the apparatus after having performed their functions in the coin-freed machine. The passage through the tube 3 is large enough for the admission and passage of one operating-coin at a time, but not two or more side by side or overlapping. At the lower end the tube is inclined and is increased in bore to allow of the coins passing down the inclined part. Three apertures 5 6 7 are cut in the tube. A pallet 8, having a sloping hooked tooth 9 at its upper end and an inclined tooth 10 at its lower end, is balanced and pivoted, as on the pin 11 and bracket 12, so that the tooth 10 normally projects into or through the aperture 6 in the tube 3. A spindle 13 is arranged transversely of the casing 2 and tube 3 and is mounted in bearings 14 thereon. To this spindle is secured a wheel 15, having long teeth 16. These teeth are adapted to project into the aperture 7 in the tube 3 to such an extent that one tooth and one tooth only can be acted upon at a time by the operating-coin and so that the operation of one coin will leave the next tooth ready to be operated upon by the next coin. The number of teeth on the wheel 15 is varied according to the number of operating-coins to be exchanged for one exchange-coin. Thus the apparatus illustrated in the drawings is provided with twelve teeth and is

adapted to exchange twelve operating-coins for one exchange-coin. A bell-crank 17 18, pivoted, say, on the pin 11, is provided with a stud 19 or the like on the end of the arm 17
 5 and an inclined tooth 20 on the end of the other arm, 18. The stud 19 is adapted to engage the teeth 16 of the wheel 15 and prevent the wheels rotating forward accidentally, the teeth preferably being inclined to give
 10 the stud 19 a more secure hold. The inclined tooth 20 is adapted to project into the slot 6 in the tube 3.

Fixed to the spindle 13, so as to revolve with the wheel 15, is a ratchet wheel or ring of
 15 ratchet-teeth 21, the shoulders of the teeth facing against the direction in which the said wheel 15 is adapted to revolve. An additional square-sided notch 22 is cut in the edge of the ratchet-wheel 21 at a point corresponding to
 20 the operation of the twelfth coin. A stud 23, carried by an arm 24, normally engages in the ratchet-teeth 21. The arm 24 is suitably pivoted, as by being secured in a disk 25, mounted freely on a fixed spindle 26. Below
 25 the wheels 15 21 is a rotatable box 27, mounted on trunnions 28 and having an opening 29 like the box numbered 12 in the British patent above referred to. From one side of the box 27 projects a stud 30, which is adapted to
 30 act upon a long arm 31, secured in the above-mentioned disk 25 or otherwise adapted to move with the arm 24. On the spindle 13 is also fixed a drum 32, bearing a series of figures, such as "1" to "12," corresponding to the
 35 number of teeth 16 on the wheel 15, which are arranged according to the number of coins the apparatus is intended to register at a time. These figures are adapted to show one at a time through a sight-hole 33 in the front of the
 40 casing 2. Upon the spindle 13 is further fixed a disk 34, having a curved slot 35. A bell-crank 36 37 is pivoted, as at 38, and carries on its short arm 36 a stud 39, adapted to enter the slot 35 when the proper time has arrived
 45 for exchanging the operating-coins in the box 27 for the single coin of equivalent value, such exchange being prevented at other times by the complete edge of the disk 34 obstructing the pin 39 if an attempt be made to move
 50 the said bell-crank. The long arm 37 is adapted to partly obstruct the slot 56, which is made in the casing for the introduction of the exchange-coin.

To one side of the box 27 is fixed a plate 43,
 55 having two recesses 44 45 and two bosses 46 47. A bolt 48, having a slot 49, is mounted freely on the trunnion 28. The bolt is normally impelled to the left of Fig. 2 by a spring, such as 50, threaded onto the pin 51, project-
 60 ing from the bolt and engaging in a hole in the boss 46, the spring being compressed between the end of the bolt and the said boss. The engagement of the boss 47 with the slot 49 and the engagement of the pin 51 with the
 65 hole in the boss 46 confine the movements of

the bolt 48 to a diametrical direction relatively to the plate 43. A bent lever 53 54 is pivoted to the casing at 55. The arm 54 forms a handle and covers a slot 56 in the casing. The
 70 slot 56 is for the introduction of the exchange-coin, and the bolt 48 is provided with a pocket 57, adapted to receive the said exchange-coin; but the depth of the pocket 57 is suitably less than the diameter of the said exchange-coin. A pawl 58, pivoted to the casing 2, normally
 75 engages in the recess 45 in the plate 43. A block 59, shaped concentrically with the trunnion 28, is fixed to the casing, and the top thereof projects under the end of the bolt 48 to an extent somewhat less than the difference
 80 between the total depth of the pocket 57 and the diameter of the exchange-coin. The pawl 58 and recess 45 normally prevent the plate 43 and box 27 rotating in one direction, and the block 59 and bolt 48 normally prevent the
 85 said plate and box rotating in the other direction.

The rotatable receiver 27 and the devices for normally locking it and for unlocking it by the insertion of an exchange-coin do not
 90 in themselves form part of the present invention; but in order to make the working of the whole apparatus clear we will now describe the receiver and its controlling devices as illustrated in the accompanying drawings, the ex-
 95 ample shown therein being particularly adapted for use with our present improvements.

At the other side of the box 27 is a plate 60, one end of which projects through the
 100 front of the casing and is provided with a handle 61. This plate has one slot, 62, which engages the trunnion 28, and another slot, 63, which engages the stud 30 on the box 27. A stud 64 is mounted on the said box 27 and projects radially, so that its path cuts the path
 105 of the teeth 16 on the wheel 15.

For the apparatus shown in the drawings the action is as follows: Upon an operating-coin entering the tube 3 through the slot 4
 110 it first strikes and pushes back the inclined tooth 20 on the arm 18. The arm 17 moves with the arm 18 and lifts the pin 19 clear of the teeth on the wheel 15, thus leaving the said wheel free to revolve forward. Next the coin acts upon the tooth 10 of the pallet
 115 8, moving back the lower end thereof and causing the hook-tooth 9 to enter and obstruct the tube 3. Before leaving the teeth 10 and 20 the coin begins to operate that tooth of the wheel 15 which is at the time projecting
 120 into the tube 3. To avoid the use of a larger wheel, the wheel 15 is set toward one side of the tube 3, so that a comparatively small part of the coin operates upon the teeth thereof. The pin 19 being clear of the teeth 16, the
 125 wheel is revolved to the extent of one tooth 16 by the falling coin, the pin 23 on the arm 24 tripping over one of the ratchet-teeth on the wheel 21. The bell-crank lever 17 18 is released so soon after the coin begins to ro-
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tate the wheel that the pin 19 immediately falls and engages the tooth 16 next to the one that has just passed under it, thus preventing the wheel 15 being rotated more than one tooth by each operating-coin. The revolution of the wheel 15 is thus promptly arrested, and it is prevented from rebounding in the opposite direction by the pin 23 engaging the shoulder of the ratchet-tooth adjacent thereto. The movement of the wheel 15 is accompanied by that of the drum 32, which presents the figure "1" to the sight-hole 33. On clearing the tooth of the wheel 15 the coin passes down the lower end of the tube 3 and through the inclined part thereof, which delivers the said coin into the box 27, and the next tooth on the wheel 15 is left ready to be operated upon by the next coin falling down the tube 3. It will be observed that the operating-coins pass through the mechanism into the collecting-box, and their number is registered and shown one by one by the figures on the drum 32 without any extraneous assistance. When the twelfth coin has passed through the tube 3, the pin 23 on the arm 24 lodges in the square-sided notch 22, thus preventing further rotation of the wheels 21 and 15 in either direction. If a thirteenth coin fall, it will move back the inclined tooth 10 on the pallet 8 and rest upon the tooth 16 on the wheel 15, for the time being obstructing the tube 3. The moving back of the tooth 10 is accompanied by the moving forward of the hook-tooth 9, which effectually blocks the tube 3 and prevents further coins falling through the tube until the pin 23 is released from the notch 22. If a fourteenth coin enter the slot 4, it will rest on the hook-tooth 9 and project up through the slot and will usually lock the coin-freed machine so long as it remains in this position. No further steps can now be taken until the twelve operating-coins in the box 27 have been ejected therefrom. The action of the twelfth coin has brought the slot 35 round opposite to the pin 39 on the bell-crank 36 37, which may now be moved about its pivot 38. The handle 54 is raised, and the exchange-coin is thrust into the slot 56, when it encounters and pushes backward and upward the end of the arm 37 and on clearing this enters the pocket 57 of the bolt 48. Part of the exchange-coin remains outside of the casing 2 until forced in by pressing down the handle 54 onto the projecting part of the coin and onto the surface of the casing 2. This lifts the arm 53 out of the recess 44 and at the same time forces the bolt 48 back against the action of the spring 50 clear of the top of the block 59, and thus allows the plate 43 and box 27 to be rotated by drawing forward the handle 61, the notch 63 acting on the pin 30, turning the lineal movement of the plate 60 into a rotary movement of the said box. As the box is turned over, the operating-coins therein fall out through the opening 29 into the chute 65,

and so are returned to the user. As the box 27 is thus rotated the stud 30 thereon engages the arm 31, which, acting through the disk 25 and arm 24, lifts the pin 23 out of the notch 22. During the rotation of the box the stud 64 thereon engages one of the teeth 16 of the wheel 15, so as to turn the said wheel, and therefore also the ratchet-wheel 21, a little forward. A pin 66 on the side of the drum 32 comes in contact with the (now raised) pawl 58 and prevents the stud 64 turning the wheel 15 too far forward, so that as the box is rotated back again by pushing in the plate 60 and the stud 30 leaves the arm 31 the pin 23 drops into the ordinary notch forward of the square-sided notch 22 and the pawl 58 falls into the notch 45 clear of the pin 66, leaving the wheel 15 again ready to register the number of the next series of operating-coins falling into the box 27. If there be thirteenth and fourteenth coins in the position above referred to, the thirteenth will now operate the wheel 15 and fall into the box 27 and by releasing the pallet 8 will allow the fourteenth to do the same. The rotation of the said box is transmitted to the bolt 48, and the exchange-coin falls through a slot 74 into a receptacle 79, only accessible by fair means to an authorized person. It will be observed that the exchange-coin drops through the slot 74 before the operating-coins are ejected from the box 27.

When it is required to exchange different numbers of operating-coins—*e. g.*, two numbers of operating-coins for single coins of equivalent values—substantially the same apparatus is employed, provision being made for bringing the indicator to zero when the maximum number of operating-coins is not exchanged. Thus in the example illustrated in the drawing when it is desired to take out the operating-coins when only six have passed into the receiver it is necessary to provide means for completing the revolution of the wheel 15 after it has been rotated through a half-turn by the six operating-coins. An additional slot, similar to 56, is made for the introduction of the smaller exchange-coin, and an additional bell-crank, similar to 36 37, is pivoted opposite thereto and provided with a stud 39', adapted to enter a second slot, 35', in the disk 34, or two disks may be employed each having its own slot. The stud and slot 39 35 and the stud and slot 39' 35' are set at different angular positions, so that they cannot be incorrectly employed. On one of the trunnions 28 is mounted loosely a plate 67, having slots 68 and 69 to clear the stud 30 and spindle 13, respectively. It also has an inclined edge 70, adapted to act upon the stud 19 and lift it out of the path of the teeth 16 at the proper time. A spring, such as 71, is employed to move the plate forward when the box 27 is turned over forward by the plate 60. Rotating with the box 27 is a toothed

sector 72, adapted to engage during the intermediate part only of its stroke with a second toothed sector 73, rotating with the wheel 15. When six operating-coins have entered the collecting-box 27, the slot 35' has arrived opposite the stud 39', and the bell-crank carrying the said stud is left free to move to allow of the insertion of the smaller exchange-coin in its slot, and the box 27 may be rotated by drawing forward the plate 60. As the box is rotated the plate 67 follows up the stud 30 under the influence of the spring 71, and the incline 70 engaging the stud 19 lifts it out of the path of the teeth 16, leaving the wheel 15 free to rotate forward, and the wheel 15 is rotated forward to the extent of the remaining half-revolution by the sector 72 engaging with and rotating the sector 73 through half a turn, when the sectors clear one another. On the wheel 15 thus completing its revolution the stud 23 lodges in the square-sided notch 22, but is released by the stud 30 acting upon the arm 31, as previously described. The forward revolution of the box is accompanied by the discharge of the six operating-coins down the chute 65, and its backward revolution leaves the apparatus ready to deal with the next series of operating-coins, the stud 30 carrying the plate 67 back clear of the stud 19 against the action of the spring 71 and the sector 72 passing back without rotating the sector 73.

It will be obvious that apparatus constructed in a substantially similar manner may be employed for exchanging other numbers of operating coins or tokens or for other similar purposes.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a monetary change-giving apparatus the combination of means for guiding the operating-coins singly into the apparatus, means for automatically indicating the number of operating-coins passed into the apparatus and controlling the indicator, a rotatable receiver for the operating-coins means for locking the receiver, means for releasing the receiver by the insertion of an exchange-coin, and means for rotating the receiver to discharge the operating-coins contained therein.

2. In a monetary change-giving apparatus the combination of means for guiding the operating-coins singly into the apparatus, means for automatically indicating the number of operating-coins passed into the apparatus and controlling the indicator, means for preventing the insertion of more than a predetermined number of operating-coins, a rotatable receiver for the operating-coins, means for locking the receiver, means for releasing the receiver by the insertion of an exchange-coin, and means for rotating the receiver to discharge the operating-coins contained therein.

3. In a monetary change-giving apparatus the combination of means for guiding the op-

erating-coins singly into the apparatus, means for automatically indicating the number of operating-coins passed into the apparatus and controlling the indicator, means for preventing the insertion of more than a predetermined number of operating-coins, a rotatable receiver for the operating-coins, means for locking the receiver, means for releasing the receiver by the insertion of an exchange-coin, means for preventing the insertion of an exchange-coin until a predetermined number of operating-coins have passed into the apparatus and means for rotating the receiver to discharge the operating-coins contained therein.

4. In a monetary change-giving apparatus the combination of means for guiding the operating-coins singly into the apparatus, means for automatically indicating the number of operating-coins passed into the apparatus and controlling the indicator, means for preventing the insertion of more than a predetermined number of operating-coins, a rotatable receiver for the operating-coins, means for locking the receiver, means for releasing the receiver by the insertion of an exchange-coin, means for preventing the insertion of an exchange-coin until a predetermined number of operating-coins have passed into the apparatus, means for rotating the receiver to discharge the operating-coins contained therein, and means for bringing the indicator to its operative position after the discharge of the receiver.

5. In a monetary change-giving apparatus the combination of means for guiding the operating-coins singly into the apparatus, means for automatically indicating the number of operating-coins passing into the apparatus, and controlling the indicator, a rotatable receiver for the operating-coins, means for locking the receiver, means for releasing the receiver, by the insertion of an exchange-coin, means for rotating the receiver to discharge the operating-coins contained therein and means for completing the revolution of the indicator.

6. In a monetary change-giving apparatus the combination of a tube to guide the operating-coins singly into the apparatus and provided with an aperture, a rotatable toothed wheel whose teeth enter said aperture one at a time, means for indicating the distance turned by the said toothed wheel, a lever to prevent its forward rotation, and a ratchet-wheel on the spindle carrying the toothed wheel, a pivoted arm carrying a stud adapted to engage the ratchet-wheel and prevent backward movement of the toothed wheel, a rotatable box to receive the operating-coins, means for locking the box, means for releasing the box on the insertion of an exchange-coin, and means for rotating the receiver to discharge the operating-coins contained therein.

7. In a monetary change-giving apparatus the combination of a tube to guide the oper-

ating-coins singly into the apparatus and provided with an aperture, a rotatable toothed wheel whose teeth enter said aperture one at a time, means for indicating the distance turned by the said toothed wheel, a lever to prevent its forward rotation and a ratchet-wheel on the spindle carrying the toothed wheel, a pivoted arm carrying a stud adapted to engage the ratchet-wheel and prevent backward movement of the toothed wheel, a retaining-notch on the ratchet-wheel to engage the stud on the pivoted arm and lock the toothed wheel, a second arm moving with the stud-carrying arm, a rotatable box to receive the operating-coins, means for locking the box, means for releasing the box on the insertion of an exchange-coin, means for rotating the box to discharge the operating-coins contained therein, and a stud on the box to release the ratchet-wheel when the box rotates.

8. In a monetary change-giving apparatus the combination of a tube to guide the operating-coins singly into the apparatus and provided with an aperture, a rotatable toothed wheel whose teeth enter said aperture one at a time, means for indicating the distance turned by the said toothed wheel, a lever to prevent its forward rotation and a ratchet-wheel on the spindle carrying the toothed wheel, a pivoted arm carrying a stud adapted to engage the ratchet-wheel and prevent backward movement of the toothed wheel, a rocking lever to close the exchange-coin slot, means for releasing such lever when a predetermined number of operating-coins have passed into the apparatus, a rotatable box to receive the operating-coins, means for locking the box, means for releasing the box on the insertion of an exchange-coin, and means for rotating the receiver to discharge the operating-coins contained therein.

9. In a monetary change-giving apparatus the combination of a tube to guide the operating-coins singly into the apparatus and provided with an aperture, a rotatable toothed wheel whose teeth enter said aperture one at a time, means for indicating the distance turned by the said toothed wheel, a lever to prevent its forward rotation and a ratchet-wheel on the spindle carrying the toothed wheel, a pivoted arm carrying a stud adapted to engage the ratchet-wheel and prevent backward movement of the toothed wheel, a rotatable box to receive the operating-coins, means for locking the box, means for releasing the box on the insertion of an exchange-coin, a plate adapted to project through the casing and when pulled out, to rotate the box to discharge the operating-coins contained therein.

10. In a monetary change-giving apparatus the combination of a tube to guide the operating-coins singly into the apparatus and provided with an aperture, a rotatable toothed wheel whose teeth enter said aperture one at

a time, means for indicating the distance turned by the said toothed wheel, a lever to prevent its forward rotation and a ratchet-wheel on the spindle carrying the toothed wheel, a pivoted arm carrying a stud adapted to engage the ratchet-wheel and prevent backward movement of the toothed wheel, a retaining-notch on the ratchet-wheel to engage the stud on the pivoted arm and lock the toothed wheel, a second arm moving with the stud-carrying arm, a rotatable box to receive the operating-coins, means for locking the box, means for releasing the box on the insertion of an exchange-coin, means for rotating the box to discharge the operating-coins contained therein, and a stud on the box to release the ratchet-wheel when the box rotates, a second stud on the box adapted to engage the toothed wheel and bring the same to an operative position, and means for preventing the toothed wheel from being moved too far.

11. In a monetary change-giving apparatus the combination of a tube to guide the operating-coins singly into the apparatus and provided with an aperture, a rotatable toothed wheel whose teeth enter said aperture one at a time, means for indicating the distance turned by the said toothed wheel, a lever to prevent its forward rotation and a ratchet-wheel on the spindle carrying the toothed wheel, a pivoted arm carrying a stud adapted to engage the ratchet-wheel and prevent backward movement of the toothed wheel, means for releasing the toothed wheel, gearing to return the indicator to its initial position, a rotatable box to receive the operating-coins, means for locking the box, means for releasing the box on the insertion of an exchange-coin, and means for rotating the receiver to discharge the operating-coins contained therein.

12. In a monetary change-giving apparatus, the combination with means for guiding the operating-coins singly into the apparatus, of a rotatable receiver, for the coins, means for locking the receiver, means for releasing the receiver by the insertion of an exchange-coin and means for rotating the receiver to discharge the coins contained therein; substantially as described.

13. In a monetary change-giving apparatus, the combination with means for guiding the coins to the apparatus, of a movable receiver for the coins, means for locking the receiver against movement, means for releasing the receiver by the insertion of a coin, and means for moving the receiver to discharge the contained coins; substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM JOHNSON.

Witnesses:

KERITT ROTHERHAM,
WILLIAM GOODING.