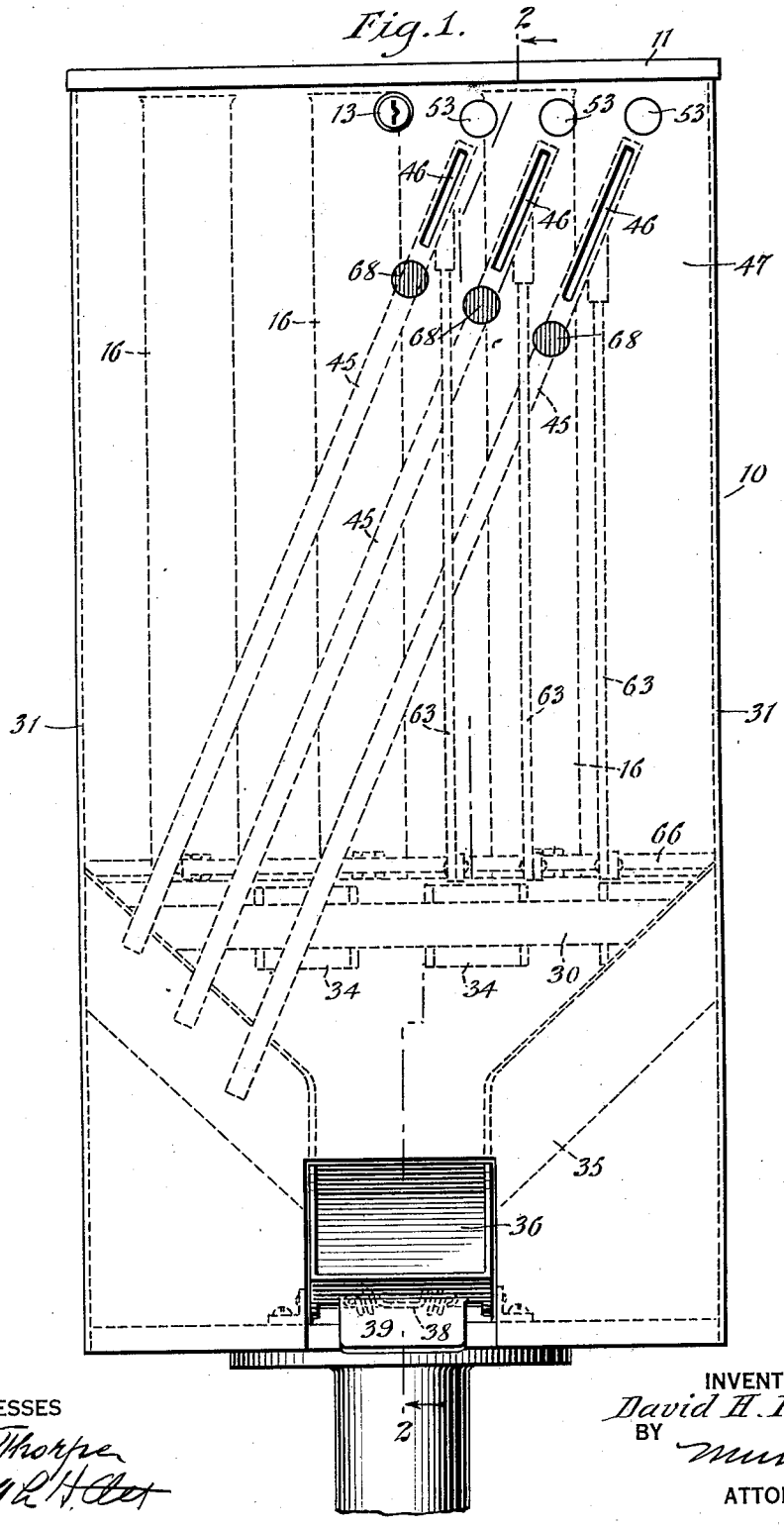
March 1, 1932. D. H. RUFF 1,847,984

TOKEN VENDING MACHINE

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Fig. 1.



WITNESSES

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Fig. 2.

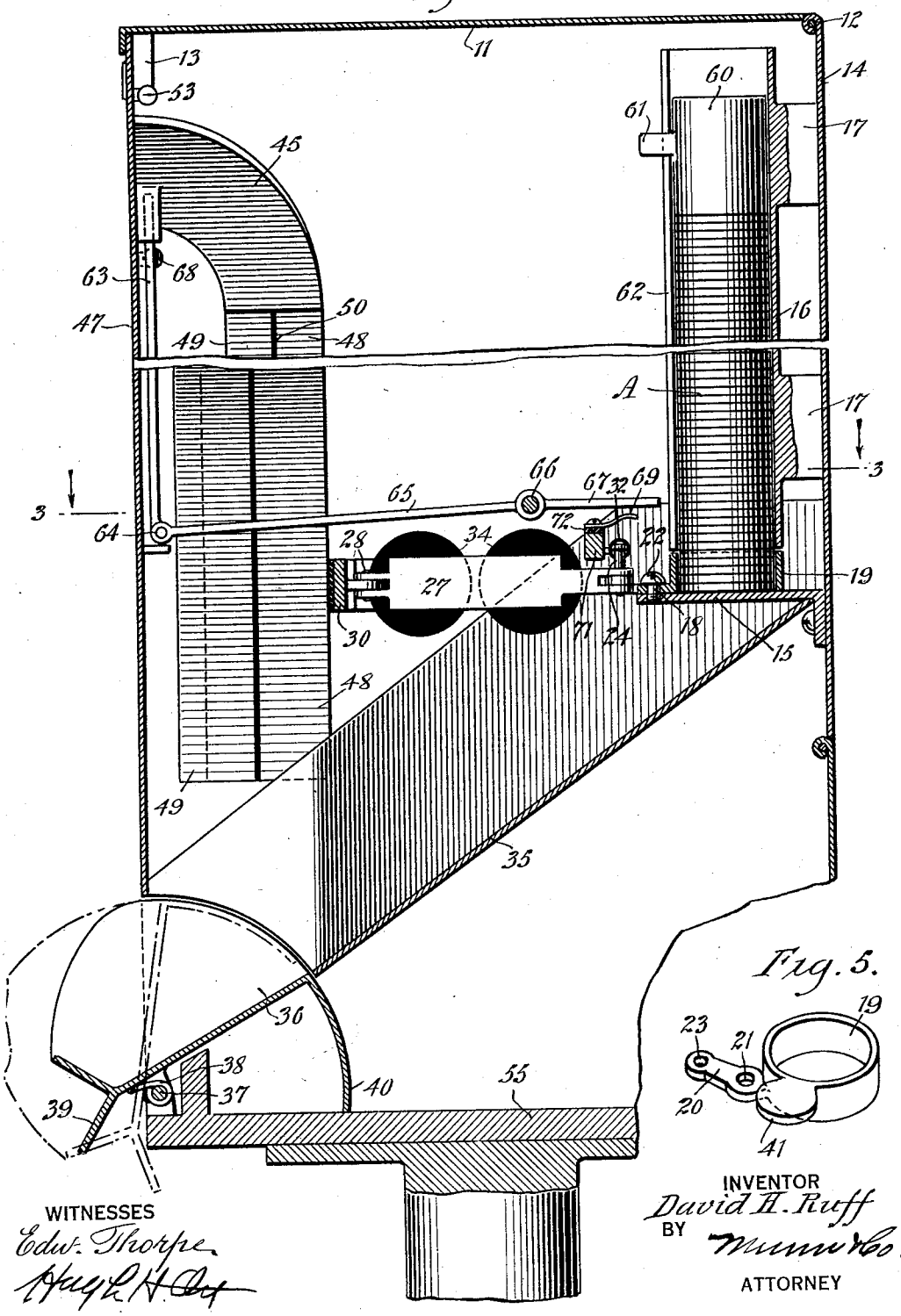


Fig. 5.

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Fig. 3.

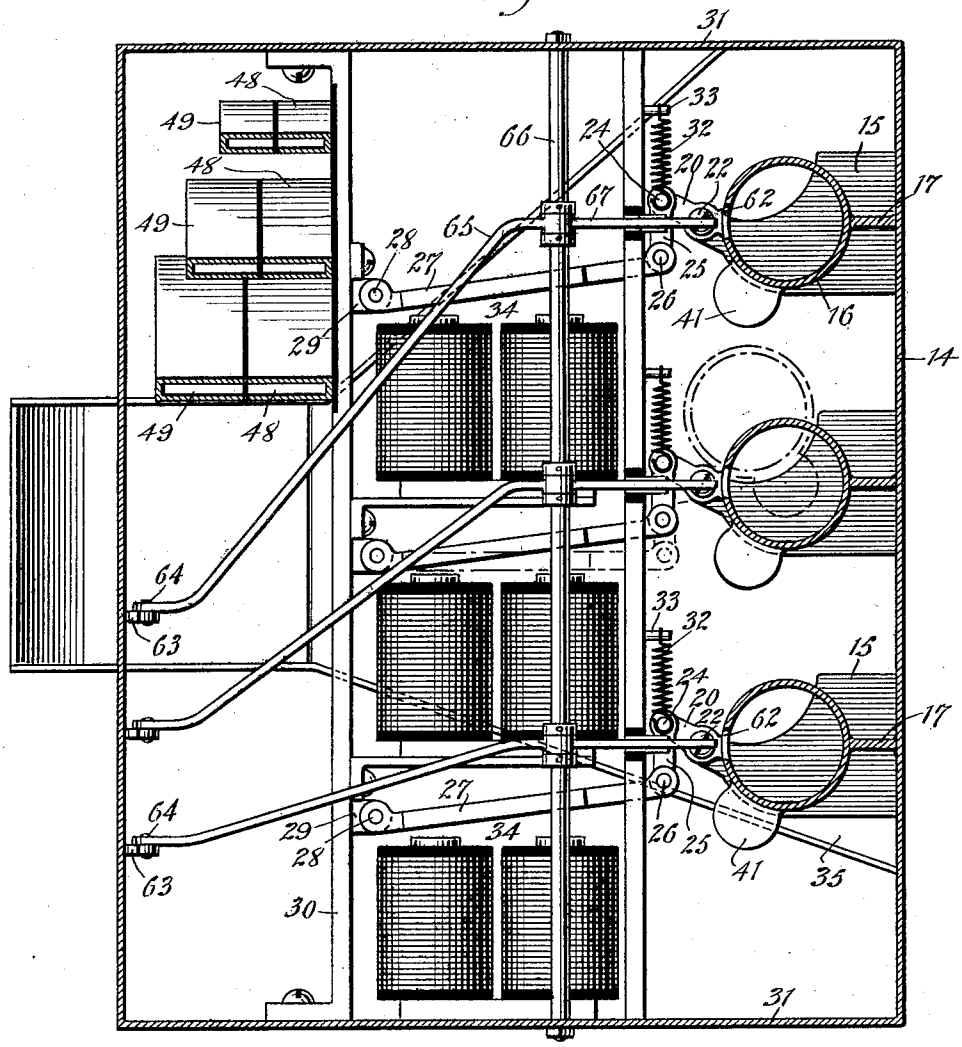
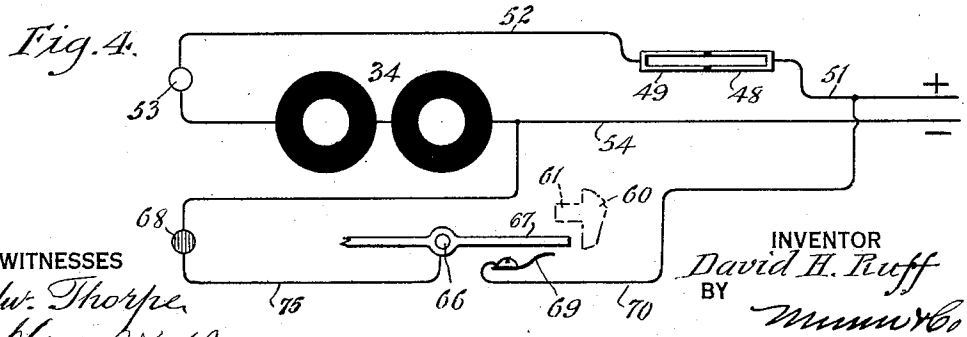


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE

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TOKEN VENDING MACHINE

Application filed October 30, 1929. Serial No. 403,553.

This invention relates generally to the class of vending machines, and comprehends a machine for vending tokens, especially for use in coin operated turnstiles for subway and elevated railways, although it is to be clearly understood that the machine is not necessarily restricted to the vending of tokens for this use.

In its broadest aspect, the invention aims to provide a machine by virtue of which tokens may be vended or change made by the simple operation of the insertion in the machine of coins of the necessary denominations.

More specifically, the invention contemplates a token vending machine including one or more vertical stacks of tokens and coin actuated means operable to release a predetermined number of tokens from the stack or stacks, whereby the number of attendants necessary at the various stations of subway and elevated railway stations may be materially reduced.

The invention furthermore embodies a vending machine of the indicated character in which the articles to be vended are dispensed by the closing of a circuit through the medium of a coin passing through a coin chute, thereby dispensing with the necessity of the vendee having to perform any operation other than the insertion of the coin and the removal of the tokens or other articles vended.

The invention aims as a still further object to provide a coin controlled vending mechanism which is positive in its action, which employs but few working parts of durable construction, rendering the machine inexpensive to produce and to maintain in proper working order.

The invention furthermore comprehends means for indicating defective operation of the machine and the fact that the same is out of order, in addition to means for indicating that the machine is empty and for preventing the insertion of a coin when the supply of articles to be vended has been depleted.

With the above recited and other objects in view, reference is had to the following description and accompanying drawings, in which there is exhibited one example or embodiment of the invention, while the claim defines the actual scope of the same.

In the drawings:

Figure 1 is a front view of the machine, the underlying parts being shown in broken lines to indicate the general arrangement thereof.

Figure 2 is a vertical sectional view therethrough taken approximately on the line indicated at 2—2 in Figure 1.

Figure 3 is a horizontal sectional view taken approximately on the line indicated at 3—3 in Figure 2.

Figure 4 is a diagrammatic view of the wiring system.

Figure 5 is a detail perspective view of the token dispensing element.

Referring to the drawings by characters of reference, the machine includes a substantially rectangular casing or housing 10, the top wall 11 of which is preferably hinged at 12 to permit of the swinging of the same to an open position for the purpose of replenishing the token stacks. In practice, the top wall 11 will be preferably locked in its closed condition by a suitable lock mechanism 13. Supported by and projecting forwardly from the rear wall 14 of the casing or housing is a plurality of horizontal shelves 15, preferably three in number, each to support a vertical stack of tokens A to be vended by the machine respectively upon the insertion of a ten-cent piece, a twenty-five-cent piece or a fifty-cent piece. It is, of course, to be understood that the number of tokens to be vended for each of the coins indicated will depend upon the amount of the fare in the locality in which the machine is to be used. In the present instance, however, it will be assumed for the purpose of illustration, that the fare is five cents, in which instance two tokens will be vended for each ten-cent piece inserted, five tokens for each twenty-five-cent piece, and ten tokens for each fifty-cent piece. It is, of course, assumed that the tokens A will be in the nature of discs of metal of a uniform thickness and that the same will be arranged in a vertical stack within a tube 16 superposed with re-

spect to each of the shelves 15. The lower end of the token tubes 16 will be spaced above its respective shelf 15 a distance equal to the thickness of the number of tokens to be dispensed from the particular stack, in the first instance mentioned the distance equal to the thickness of two tokens, in the second instance the distance equal to the thickness of five tokens, and in the third instance the distance of the thickness of ten tokens. The tubes 16 will be fixedly supported from the rear wall 14 in any suitable manner, such as by brackets 17, and both the upper and lower ends of the tubes will be bent and the diameter of said tubes will be slightly greater than the diameter of the tokens. Mounted on each shelf 15 for horizontal movement thereover by virtue of a vertical pivot 18, is a movable tube section 19 corresponding in diameter to the token tube 16 and corresponding in depth approximately to thickness of the number of tokens to be dispensed. The dispensing element or tube section 19 is formed with a radial arm 20 which is apertured as at 21 to receive therethrough the pivot 18 which, in the present instance, is in the form of a screw threadedly anchored in the shelf 15 and formed with a coifed head 22 which retains the dispensing element in place. The free end of the arm 20 is apertured as at 23 and receives therethrough a pin 24 which pivotally connects the free end of said arm 20 to a link 25, the opposite end of which is pivotally connected by a pivot pin 26 to the free terminal of an armature 27 which in turn is fulcrumed as at 28 to a bracket ear 29 carried by a transverse horizontal bar 30 supported from the side walls 31 of the casing or housing. A coiled contractile spring 32 engages the pivot pin 24 and is anchored to a spaced anchor pin 33 to normally shift or swing the arm 20 in a direction to dispose the same in axial alignment with the fixed token tube 16 and at the same time move the armature 27 in an angularly disposed relation spaced from an electromagnet 34 which is suitably supported within the casing. Obviously, the electromagnet is designed to be included in a circuit which receives a source of electrical energy for energizing the magnet to attract the armature against the action of the spring 32. When this occurs, it is apparent that a pull will be exerted on the link 25 to swing the arm 20 whereby the dispensing element or movable tube section 19 is shifted from its axially aligned position under the fixed token tube 16 to a dispensing position where the tokens contained therein will be displaced from the shelf 15 and permitted to gravitate therefrom into an inclined delivery chute 35, which delivery chute gravitationally discharges the token into a tiltable delivery trough 36. The delivery trough 36 is fulcrumed as at 37 and is normally moved to a receiving position with respect to the lower end of the delivery chute by a spring 38. The delivery chute is further provided with a manipulating lip 39 with which the tips of the fingers are adapted to be engaged for tilting the same to allow the tokens to gravitate into the hand of the vendee. The delivery trough is formed with an arcuate downwardly extending wall 40 at its inner free end which in addition to acting as a stop to properly align the drive with the lower end of the delivery chute also serves to close the lower end of the chute when the drive is tilted so as to prevent the tokens from gravitating into the bottom of the casing in event of the operation of the machine while the drive is tilted. It will also be observed that the upper edge of the dispensing element or movable tube section is provided with a downwardly projecting lip 41 which occupies a position underlying the center of the token stack when the element or section is disposed in its shifted dispensing position.

In order to provide means operable by the insertion and gravitational movement of a coin through the casing for closing the circuit to energize the electromagnets, coin chutes 45 are provided, the upper ends of which communicate with coin slots 46 in the front wall 47 of the casing or housing. The coin chutes are preferably disposed at a lateral angle, as clearly illustrated in Figure 1 of the drawings, and each coin chute is of a cross sectional configuration conforming approximately to the cross sectional size and shape of the coin which it is designed to receive. The coin chute is formed with sections 48 and 49 which are electrically separated from each other by the insulation 50, and said insulated sections 48 and 49 are included in a circuit which consists of a feed conductor 51 leading from one pole of a source of supply to the section 48. A conductor 52 leads from the section 49 through a signal lamp 53, thence through the electromagnet 34 and to a return wire 54 which is connected with the other pole of the source of supply. It thus follows that when the proper coin is inserted through the coin slot 46 and gravitates into that portion of the coin chute 45 formed with the insulated sections 48 and 49, the coin acts as a means for bridging the sections 48 and 49 to complete the circuit for energizing the signal lamp 53 and the electromagnet 34. Instantaneously the armature 27 of the electromagnet is attracted and moved to a position to exert a pull on the link 25 for swinging or shifting the delivery element 19 to a position to displace the lowermost tokens of the stack contained in said element from the shelf 15 where they will gravitate onto the delivery chute 35 and into the delivery trough 36. The lower ends of the chutes 45 are arranged within the lower portion of the casing or

housing so that the coins will gravitate therefrom onto the bottom wall 55 of the casing or housing, from which they will be subsequently removed through a locked door 56 constituting a hinged section of the rear wall 14. As soon as the coin emerges from the lower end of the chute, it is obvious that the circuit will again be opened and the electromagnet 34 deenergized. Immediately upon deenergization of the electromagnet, the spring 32 will swing the armature to its angularly disposed position and at the same time move the arm 20 and shift the dispensing element 19 to a position underlying and in axial alignment with the fixed token tube 16. The stack of tokens A will then gravitate downwardly into the dispensing element 19 for subsequent operations of the machine.

In order to insure the proper gravitation of the token stacks, a cylindrical weight 60 is arranged in the upper end of each token tube and rests directly upon the uppermost token of each stack. This weight in addition to performing the function stated, serves as a means for indicating the depletion of the stack and for closing the upper end of the coin chute against the introduction of a coin. This is accomplished by providing the weight with a radially projecting finger 61 which extends through a longitudinal slot 62 in the token tube 16 and projects beyond said token tube. An obstructing bar 63 is mounted for movement to an intersecting relation at the receiving end of each coin chute, and said obstructing bar is pivotally connected as at 64 to a lever 65 which is fulcrumed on a transverse shaft 66 in the casing or housing 10. The remaining free terminal 67 of the lever 65 is disposed in the path of movement of the finger 61 when the weight 60 is permitted to gravitate downwardly into engagement with the shelf 15. In order to further indicate the depletion of the tokens in the stack, the terminal 67 is electrically connected through the shaft 66 to a circuit wire 75 which leads through the filament of a signal lamp 68 and thence is connected with the return wire 54. A contact element 69 is connected by a circuit wire 70 to the feed wire 51, and said contact element 69 is supported by a transverse bar 71 from which it is insulated by the insulation 72. The contact element is disposed in a position where it will be engaged by the terminal 67 of the lever 65 when the stack of tokens is depleted, thereby completing the circuit to the signal lamp 68. In practice, the signal lamps 53 and 68 will be of a distinguishing character and will be preferably mounted on the front wall 47 of the housing or casing in close proximity to the coin slots 46 for the purpose of attracting attention. It is, of course, to be understood that the signals 53 and 68 may be of an audible as well as of a visible nature or that both visible and audible signals may be employed in combination.

In use and operation, the vendee inserts a coin in the proper coin slot 46 and the coin passing through the coin chute 45, through the insulated sections 48 and 49 thereof, closes the circuit to energize the electromagnet 34 which functions to swing the dispensing element 19, thereby displacing the tokens from the shelf 15 where they gravitationally fall onto the inclined delivery chute 35 for gravitational delivery into the delivery trough 36. The vendee then presses the manipulating lip 39 to tilt the trough 36 for discharging the tokens into his hand. As soon as the coin passes from the chute 45, it is obvious that the circuit to the electromagnet will again be broken and the dispensing element 19 will return to its position for receiving another set of tokens from the token stack. If for any reason the coin becomes clogged in the coin chute, it is obvious that the circuit will be closed to actuate the signal 53, thereby directing attention of the station attendant to the faulty condition of the machine. After the token stack has been depleted, the finger 61 on the weight 60 will effect the closing of the coin slot by the obstructing rod 63 and at the same time energize the signal 68 to call the attendant's attention to the machine.

What is claimed is:

A change-making vending machine adapted to be actuated by the coin to be changed, including a casing having a coin receiving chute, a shelf within said casing, a tubular change reservoir open at its lower end and positioned above and spaced from the shelf, a change-delivery tube leading from said reservoir to the outside of the casing, means for ejecting the change from the reservoir through said delivery tube, said means comprising a fulcrumed tubular change-displacing member normally positioned between said shelf and the lower end of said reservoir and means for moving said change-displacing member whereby to displace the required change from the reservoir, said latter means including an electric circuit adapted to be closed by the coin to be changed, an electromagnet in said circuit and energizable thereby, an armature operable by the electro-magnet, linkage between said armature and said change-displacing member, and a weight cooperative with said change-displacing member for urging the change from the reservoir.

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