J. W. HUGHES.

AUTOMATIC VENDING MACHINE.

APPLICATION FILED OCT. 23, 1917.

1,395,676.

Patented Nov. 1, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

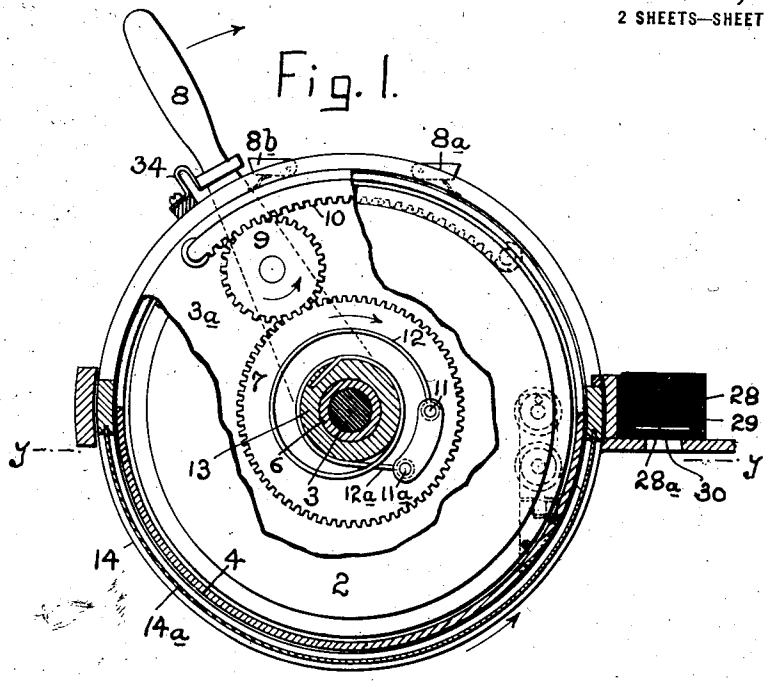
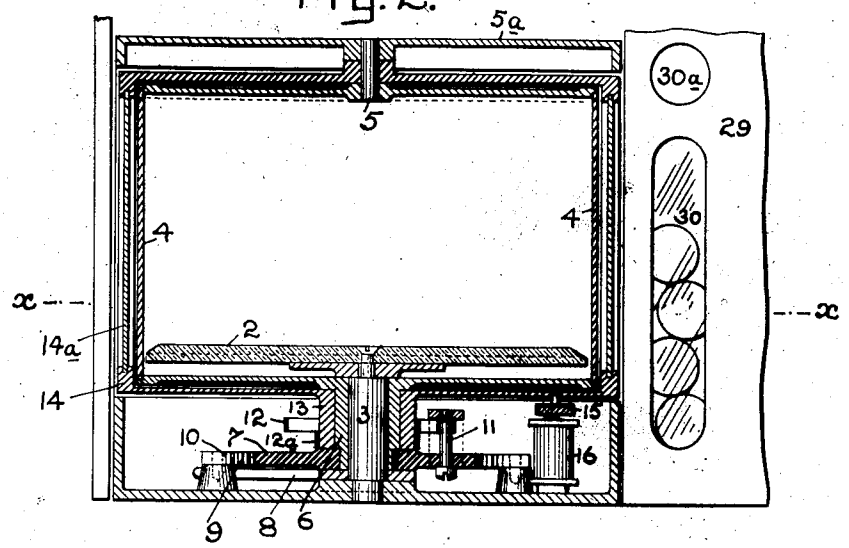


Fig. 2.



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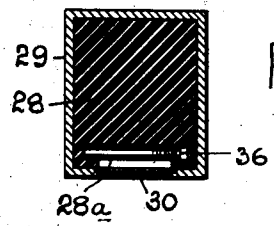


Fig. 3.

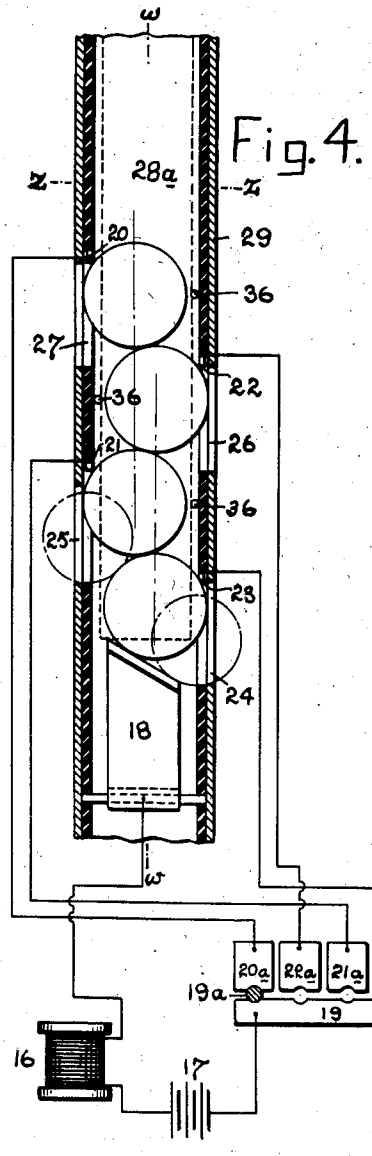


Fig. 4.

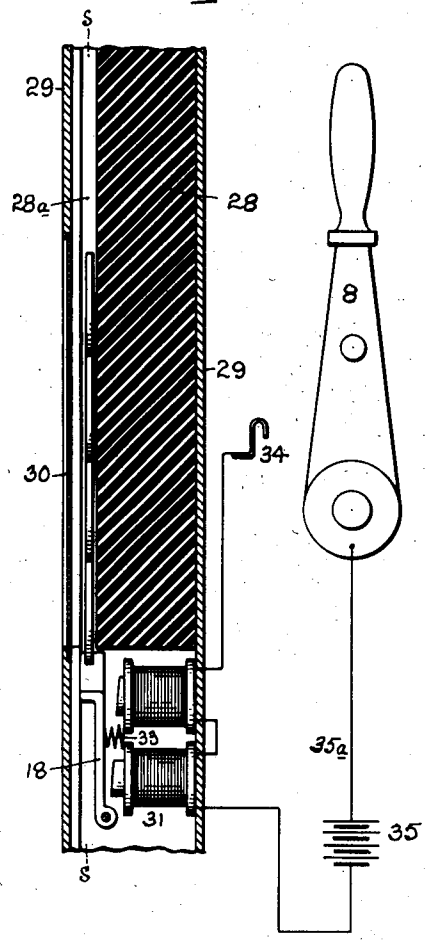


Fig. 5.

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UNITED STATES PATENT OFFICE.

JAMES W. HUGHES, OF HADDON HEIGHTS, NEW JERSEY.

AUTOMATIC VENDING-MACHINE.

1,395,676. Specification of Letters Patent. Patented Nov. 1, 1921.

Application filed October 23, 1917. Serial No. 198,028.

To all whom it may concern:

Be it known that I, JAMES W. HUGHES, a citizen of the United States, and resident of Haddon Heights, county of Camden and State of New Jersey, have invented an Improvement in Automatic Vending-Machines, of which the following is a specification.

This invention relates to that class of coin operated vending devices especially adapted for the dispensing of food in automat restaurants and in similar places.

The object of my invention is to provide an improved automatic vending device in which food or other articles are exposed for sale within a glass covered case, which serves to protect them from dust and handling, and in which the insertion of the proper coin or coins operates a mechanism which causes the said glass covered case to open and make available to the purchaser the food or other articles therein.

A further object of my invention is to provide an automatic vending device so constructed that the act of filling the same with the article or articles to be dispensed and adjusting it to the dispensing position, automatically sets a locking mechanism for coin operation, and likewise drops the coins, already contained, into a suitable receptacle.

My object is further to provide, in an automatic vending device, manually operated means which, when opening the case to fill it, puts into action means to open the case automatically when a coin actuated lock is operated, whereby the purchaser may have access to the contents by depositing the requisite price in coins of a definite denomination.

More specifically considering my invention, I provide a case adapted to receive an article to be vended, a back cover for said case rotatably mounted to provide access to the case to insert the article to be vended, a front cover comprising a transparent wall for inclosing the front of said case, a spring device connected between the front and back covers whereby the rotation of the back cover from its open to its closed position puts a tension thereon adapted to rotate said front cover from closed to open position, an electromagnetic lock adapted to hold the front cover in its closed position but adapted to be operated to release the front cover by a circuit controlling coin mechanism. My invention also comprehends manually operated means for putting the spring devices, aforesaid, into operation and for releasing the coin control and permitting the electromagnetic lock to become operative to relock the cover, aforesaid, in sealing position.

My invention also consists of improvements hereinafter described whereby the above objects and results are attained, said improvements comprising certain organizations and combinations of parts which are fully described hereinafter and more particularly defined in the claims.

For the purpose of illustrating my invention, I have shown in the accompanying drawings the embodiment thereof which is at present preferred by me, since the same is in form to give satisfactory and reliable results, but it is to be understood that the several instrumentalities of which my invention consists, can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Referring to the drawings: Figure 1 is a sectional plan view showing the base of the vending device taken on line *x*—*x* of Fig. 2; Fig. 2 is a sectional elevation of the vending device taken on line *y*—*y* of Fig. 1; Fig. 3 is a cross section of the coin chute taken on line *z*—*z* of Fig. 4; Fig. 4 is a sectional elevation of the same taken on line *s*—*s* of Fig. 5 and showing the retaining armature; and Fig. 5 is a sectional elevation of the coin chute taken on line *w*—*w* of Fig. 4 and showing the coin releasing magnet.

My vending cabinet or case consists of a fixed plate or table 2 mounted on a post 3 extending upward from the base 3^a. Surrounding the table 2 is a curved back cover 4 rotatably mounted on an upper spindle 5 and having a lower sleeve 6 mounted on the post 3. This lower sleeve carries a gear 7 adapted to be rotated by a handle 8 carrying a gear 9 which meshes with both a curved rack 10 and gear 7. The gearing is so arranged that moving the handle through a quarter of a circle moves the gear 7 and consequently the back cover 4, through a half revolution. Fixed to the gear 7 by a pin 11 is a spring 12 which has its other end secured to an outer sleeve 13 journaled upon sleeve 6. This outer sleeve 13 carries a curved front cover 14 which is adapted to be

rotated with the sleeve. The base of the front cover 14 has an aperture with which the locking armature 15 is adapted to engage and which armature may be released by an electro-magnet 16. 5^a is a top frame which provides a support for the spindle 5, and in combination with the bottom frame 3^a, forms a suitable case within which the movable parts and table 2 are located.

When filling the cabinet, the front and back covers 4 and 14 are in the positions shown in Fig. 1, inclosing the table and its contents at front and with the rear open to the attendant; and the front cover 14 is locked in this closed position by the armature lock 15. The front cover 14 is preferably glazed at 14^a so that the contents on the table 2 may be normally seen by the purchaser standing in front of the cabinet.

Aside from the helical spring 12 connecting the gear 7 with the sleeve 13, there is a second helical spring 12^a connected at one end to a pin 11^a on the gear 7 and having its other end connected to the sleeve 13. These two helical springs are wrapped about the sleeve in opposite directions so that when the gear 7 is rotated in one direction the spring 12^a winds up to put rotating tension on the sleeve to open the front cover 14 when released, and when rotated in the other direction the spring 12 winds up to put rotating tension on the sleeve to close the front cover. The movement of the lever handle 8 is the means for rotating the gear 7 and when moved in the direction of the arrow (Fig. 1), will cause the gears to rotate as indicated by their arrows. This action will wind up spring 12 and relieve the tension of spring 12^a, with the result that the front cover 14 is put under opening tension, but being held closed by the lock 15, it remains closed until the lock is operated by the coin controlling means to be described. The lever handle 8 is locked in this position by latch 8^a, and the rear cover 4 is also closed. When the handle 8 is released and moved to the left in a direction contrary to the arrow, the spring 12 will be relieved and spring 12^a put under tension as shown; and when at its extreme movement, the rear cover 4 will be opened by rotating in the same direction as the movement of the lever. When the rear cover has thus been opened it may be made to remain open by a latch 8^b. The articles to be vended may now be placed upon the table or stand 2. While this is being done, the curved rear cover 4 will have been moved back of the front cover 14 so as to hide or shield the attendant when introducing the articles. To close the rear cover, it is only necessary to release the latch 8^b and move the lever 8 to engagement with the latch 8^a, which as above explained puts the spring 12 under tension so that when the magnetically operated lock 15 is released by the coins, the front cover will automatically open to permit the purchaser to extract the contents from the table 2.

The coin controlled electrically operated lock releasing means consists of battery or other source of electric potential 17 which operates an electro-magnet 16 through a circuit comprised of the coin supporting armature 18, plug switch 19, the metal pins 20, 21, 22 or 23, as the case may be, and the metal coins themselves. It will be noted that the plug switch 19 has a plurality of segments 20^a, 21^a, 22^a and 23^a respectively connected to the metal pins 20, 21, 22 and 23. The object of this is to provide a means, whereby a varying predetermined number of coins will be required to close the electric circuit before the front cover will be released. For instance, with the plug 19^a inserted at 23^a, one coin will be required, at 21^a two coins, at 22^a three coins, and at 20^a four coins. If coins of smaller diameter than the required denomination be inserted in the slot, they will roll out the openings 24, 25, 26 or 27 and return to the would-be purchaser. The metal pins 20, 21, 22 and 23 are mounted in a block 28 of suitable insulating material such as hard rubber which is surrounded by a metal casing 29. In Fig. 2, it will be noted that the front of the coin slot is covered by glass 30 so that the inserted coins are exposed in full view when in circuit controlling position.

To release the coins, an electro-magnet 31 is provided which, when excited, serves to attract the pivoted armature 18 against the pull of the spring 33. The excitation of this magnet is effected by the movement of the lever 8 when operated to open the rear cover for filling the case, by the momentary contacting of the lever 8 with a contact 34 as in Fig. 1. This completes a circuit 35^a from the source of electric potential 35 through the magnet 31.

In operation, the would-be purchaser sees the desired article through the glazed front cover 14. He inserts the proper coin or coins in the coin slot 30^a. The coins complete the electric circuit through the magnet 16 and operate the locking armature 15 to unlock the front cover 14. Thereupon the spiral spring 12 automatically rotates the front cover, exposing the article, which the purchaser withdraws.

The attendant receives notification that the vending device is empty in some suitable manner (which is not the subject of this application) and throws the lever 8 to the position shown in Fig. 1. This rotates both the front and rear covers to the front of the cabinet, where the front cover automatically locks. Likewise the circuit through contact 34 is closed and the coins are released by armature 18 and allowed to fall into their receptacle. The cabinet is then refilled and the

lever 8 moved back in the direction of the arrow, winding up the spring 12 again and placing the device in operative condition once more to be controlled by the coin controlling means.

It will be apparent that the improved automatic vending device, as above described, is at once simple in construction, that it allows the price of the vended article to be varied without necessitating any complicated changes in the mechanism, and that further, it discourages the use of slugs or counterfeit coins because the inserted coins are carried in plain view behind glass until released by the attendant.

Referring again to the coin controlled locking means for the front cover, it will be observed that the chute or race way 28ª through which the coins pass is formed in the insulating material 28 and does not control the circuits leading to the magnet 16 except when they rest in contact with the metal pins 20, 21, 22 and 23 and upon the inclined upper surface of the retaining armature 18; and in respect to the former, this contact is the better insured by the abutment pins 36 in the path of the coins which force them over in contact with the aforesaid contact pins 20, 21 and 22. The inclined armature surface forces the lower coin against the contact pin 23. In this way the coins take a somewhat zig-zag path and pile upon each other, the lowermost coin resting upon the inclined surface of the retaining armature 18. When the armature is operated by the magnet 31, as before explained, all of the coins pass down the chute into the receiving receptacle (not shown). The minor details of this coin controlling lock are capable of modification and this may be done, so long as the general principle of using the coins in stacked relation, for controlling the energizing circuit, is maintained. The simplicity of the means for changing the number of coins required to operate the magnetically operated lock, is an important feature of the invention. The obliquity of the top of the armature 18 is not only to hold the coin against the contact 23, but also to cause an undesirable coin to be projected laterally from the coin chute as indicated in dotted lines.

It will now be apparent that I have devised a novel and useful construction which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description, and while I have in the present instance shown and described the preferred embodiment thereof which is best suited to give satisfactory and reliable results in practice, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

No claim is made in this application for the specific character of coin controlled locking device in which the deposition of a plurality of coins are required to permit the operation and when associated with a suitable locking means, irrespective of the number of coins which might be necessary for its operation.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a vending machine of the character stated, the combination of a table for holding the article to be vended, and two curved vertically arranged covers rotatable about the same axis one of said covers inclosing the rear portion of the table and the other the front portion, locking means for normally locking the front cover in closed position, manually operable means for opening and closing the rear cover for inserting the articles to be vended, and power means energized by the manually operable means for automatically opening the front cover when it is released by the locking means and also for closing the front cover when the rear cover is opened.

2. In a vending machine of the character stated, the combination of a table for holding the article to be vended, and two curved vertically arranged covers rotatable about the same axis one of said covers inclosing the rear portion of the table and the other the front portion, locking means for normally locking the front cover in closed position, manually operable means for opening and closing the rear cover for inserting the articles to be vended, and means put into operative condition by manipulation of the manually operable means for automatically opening the front cover when released by the locking means.

3. In a vending machine of the character stated, the combination of a table for holding the article to be vended, and two curved vertically arranged covers rotatable about the same axis one of said covers inclosing the rear portion of the table and the other the front portion, locking means for normally locking the front cover in closed position, manually operable means for opening and closing the rear cover for inserting the articles to be vended, and means put into operative condition by manipulation of the manually operable means for automatically opening the front cover when released by the locking means and also for closing the cover into locked position as desired.

4. In a vending machine of the character stated, the combination of a table for holding the article to be vended, and two curved vertically arranged covers rotatable about the same axis one of said covers inclosing the rear portion of the table and the other the front portion, locking means for normally locking the front cover in closed position,

manually operable means for opening and closing the rear cover for inserting the articles to be vended, and spring devices for opening the front cover when released said devices put under tension by the manually operable means when closing the rear cover.

5. In a vending machine of the character stated, the combination of a table for holding the article to be vended, and two curved vertically arranged covers rotatable about the same axis one of said covers inclosing the rear portion of the table and the other the front portion, locking means for normally locking the front cover in closed position, manually operable means for opening and closing the rear cover for inserting the articles to be vended, spring devices for opening the front cover when released said devices put under tension by the manually operable means when closing the rear cover, and a latch to hold the manually operable means in adjusted position when the rear cover is closed.

6. In a vending machine of the character stated, the combination of a table for holding the article to be vended, and two curved vertically arranged covers rotatable about the same axis one of said covers inclosing the rear portion of the table and the other the front portion, locking means for normally locking the front cover in closed position, manually operable means for opening and closing the rear cover for inserting the articles to be vended, spring devices for closing the front cover when in released condition said devices put under tension by the manually operable means when opening the rear cover, and a latch to hold the manually operable means in adjusted position when the rear cover is opened.

7. In a vending machine of the character stated, the combination of a table for holding the article to be vended, and two curved vertically arranged covers rotatable about the same axis one of said covers inclosing the rear portion of the table and the other the front portion, locking means for normally locking the front cover in closed position, manually operable means for opening and closing the rear cover for inserting the articles to be vended said means comprising a gear on the rear cover, a hand lever, a rack, a pinion on the hand lever meshing with both the rack and gear, a hub carrying the front cover, and spring devices secured to the hub and to the gear.

8. In a vending machine of the character stated, the combination of a table for holding the article to be vended, and two curved vertically arranged covers rotatable about the same axis one of said covers inclosing the rear portion of the table and the other the front portion, locking means for normally locking the front cover in closed position, manually operable means for opening and closing the rear cover for inserting the articles to be vended said means comprising a gear on the rear cover, a hand lever, a rack, a pinion on the hand lever meshing with both the rack and gear, a hub carrying the front cover, and two oppositely acting spring devices secured to the hub and to the gear for moving the cover open or closed according to the direction of movement given to the hand lever.

9. In a vending machine, the combination of a table for holding the article to be vended, a back cover for providing access to the table, a front cover to permit access to the table, a lock to hold the front cover closed, a manually operable means for positively controlling the opening and closing of the rear cover, a lock to hold the front cover in closed position, and yielding means put into active condition by the manually operable means when closing the rear cover and adapted to automatically open the front cover when released.

10. In a vending machine, the combination of a table for holding the articles to be vended, a movable back cover, a movable front cover, manually operable means for positively opening and closing the back cover, spring actuated means connected with the front cover and arranged to be put under tension by the manually operable means whereby it tends to close the front cover when the manually operable means is operated in one direction for opening the rear cover and for tending to open the front cover when the manually operable means is operated in the other direction for closing the rear cover, and locking means for holding the front cover closed while permitting the rear cover to be opened and closed.

11. In a vending machine, the combination of a table for holding the articles to be vended, a movable back cover, a movable front cover, said covers independently movable, manually operable means for positively opening and closing the back cover, means controlled by the manually operable means and tending to open and close the front cover respectively with the closing and opening of the rear cover, and a lock for normally holding the front cover in locked position against the action of the means tending to open the front cover.

12. An automatic vending machine, comprising an inside and an outside casing, combined with manually operated means for positively rotating the inside casing, and spring devices connecting the two casings whereby the outside casing may be closed by the operation of the manually operated means through the action of the spring devices.

13. In an apparatus of the character stated, an inner casing mounted to revolve on

a stationary member with an outer casing mounted to revolve about the inner casing, said casings having closures at one side only whereby said closures may jointly close the compartment within the inner casing, a spring to operate the outer casing, a manually operated means to operate the inner casing and put the spring under tension, and means to detachably hold the outer casing against the action of the spring.

14. An apparatus of the character stated, comprising a stationary stanchion, a casing within a casing mounted to revolve concentrically about the stationary stanchion as a common axis, and a stationary support on which the articles may be placed carried by the stanchion and within the casings, said casings movable one in front of the other both in front and at the rear of the stationary support and each providing an opening to give access to the interior when said casings are revolved to a position in alinement with each other both at the front and rear of the stationary support.

15. In an automatic vender, a machine comprising a fixed frame, interior and exterior casings each revoluble about a common axis on said frame and each provided with an opening of fixed area arranged so as to come in alinement in front and rear of the frame to afford access to the interior space both from the front and from the rear as required, and means for operating said casings to bring said openings into or out of alinement.

16. In an automatic vender, a machine composed of interior and exterior revoluble casings, combined with a manually movable part to move one of said casings, a spring device mounted on the movable part and connected with the other of said casings whereby it will be revolved through a given angle when released, and a lock for alternately locking and releasing the last mentioned casing.

17. An apparatus for vending articles, comprising a stationary frame, combined with at least one revoluble circular casing with an opening in the same for access to the interior when properly positioned on the stationary frame, a manually movable part, and spring devices attached to the movable part and to the casing whereby the casing is spring actuated both in opening and closing, and means to temporarily hold the casing when in closed position against the action of the spring.

18. A vending device, comprising a pair of hollow cylinders mounted to revolve one within the other and each provided with an aperture of fixed area to form an opening to the interior when said apertures are brought into alined positions, and means for operating the casings to bring their apertures into or out of alinement as required and the outer of said cylinders having a glazed portion equal to the area of the opening in the inner cylinder.

19. A vending machine of the character described, consisting of a frame open at both front and back, a shelf like member within the frame for supporting articles to be vended, a stanchion for supporting said shelf, a semi-cylindrical opaque casing for the back of the frame, and a semi-cylindrical transparent casing for the front of the frame, both of said casings being mounted to revolve concentrically one within the other both at front and back of the frame and about said central stanchion and shelf, with means for revolving both casings so that they may be both moved to the rear, both moved to the front or one to the front and the other to the rear.

20. A vending machine of the character stated, comprising two hollow cylinders mounted to revolve one within the other, a spring device to revolve one of said cylinders, a catch to hold said spring actuated cylinder in a desired position against the action of the spring until said catch is released, and a hand operable device for putting the spring under tension.

21. An apparatus of the character stated, comprising a hollow cylindrical light casing mounted to be revolved, an outer casing inclosing said cylindrical light casing, a lever pivoted to the axis of said cylindrical light casing, a stationary segmental gear, a gear on the cylindrical light casing, a gear journaled upon the lever and interposed between and engaging the segmental stationary gear and gear on the cylindrical light casing, whereby the casing may be revolved through a greater angle than that through which the lever is shifted.

22. As an automatic vender, two revoluble casings, one within the other, each having an opening so alined that when the two openings are turned to the same angular position access is provided to the space within, and means for revolving the casings comprising manually operable means for positively rotating the inner of the casings in either direction, and spring devices between the manually operable means and the outer of the casings for causing said outer casing to be rotated in either direction with yielding force, and means to hold the outer casing against movement.

In testimony of which invention, I hereunto set my hand.

JAMES W. HUGHES.

Witnesses:
E. W. SMITH,
R. M. HUNTER.