Nov. 7, 1950 M. CARUSO 2,529,374

ARTICLE SELECTOR AND PRICE-SETTING UNIT

Original Filed Dec. 26, 1946 2 Sheets-Sheet 1

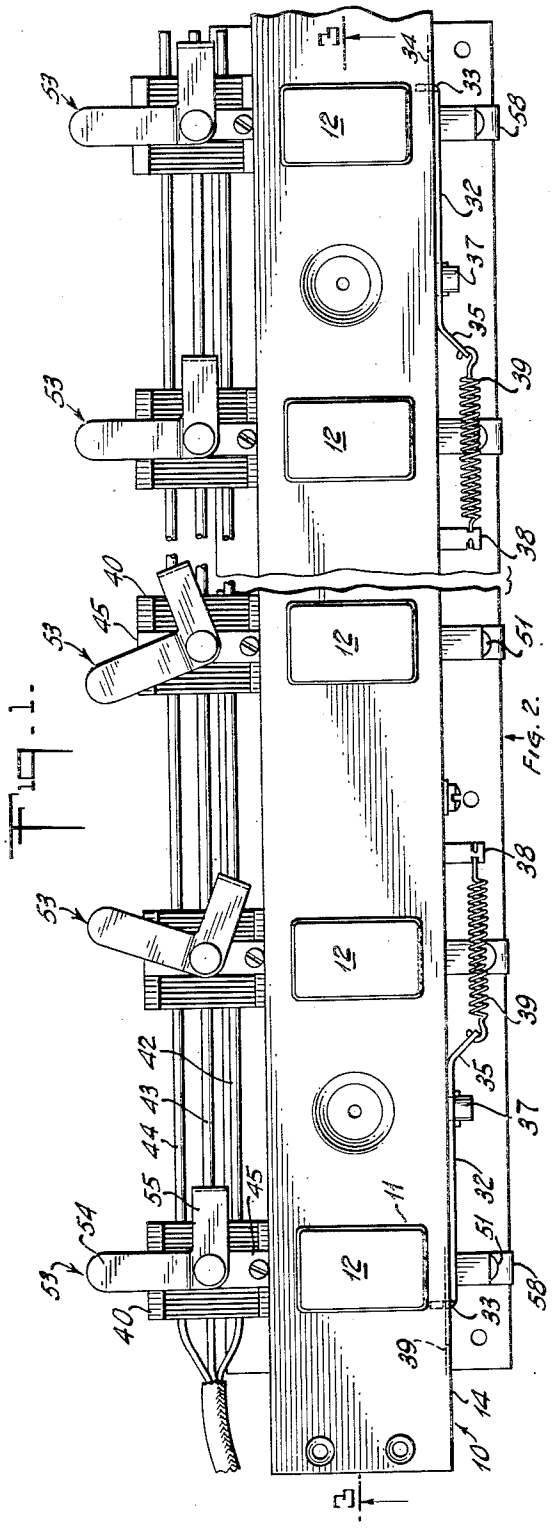


Fig. 1.

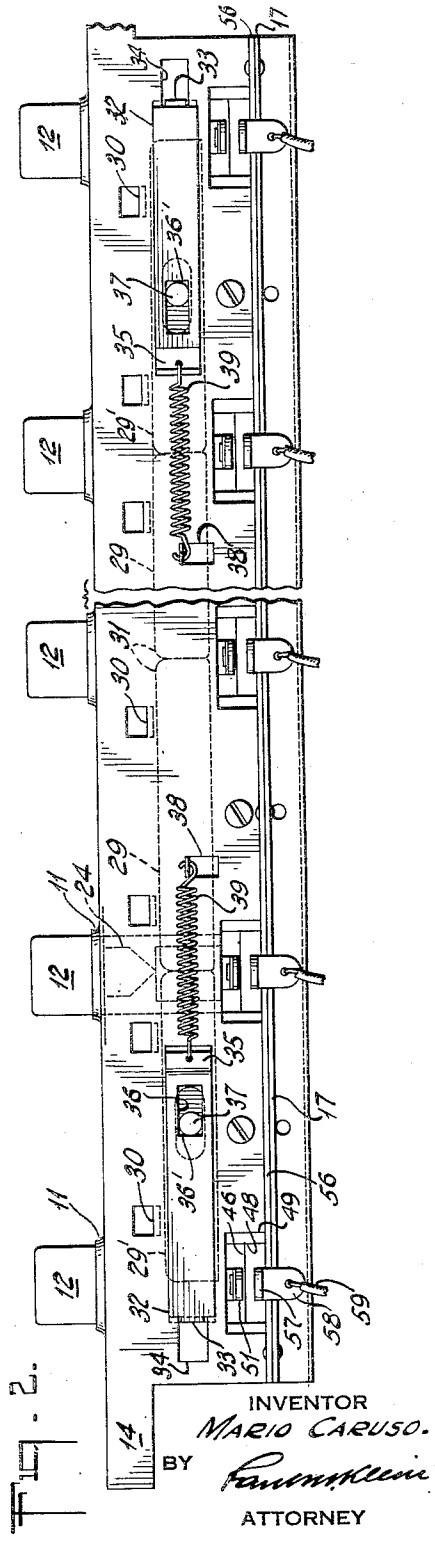


Fig. 2.

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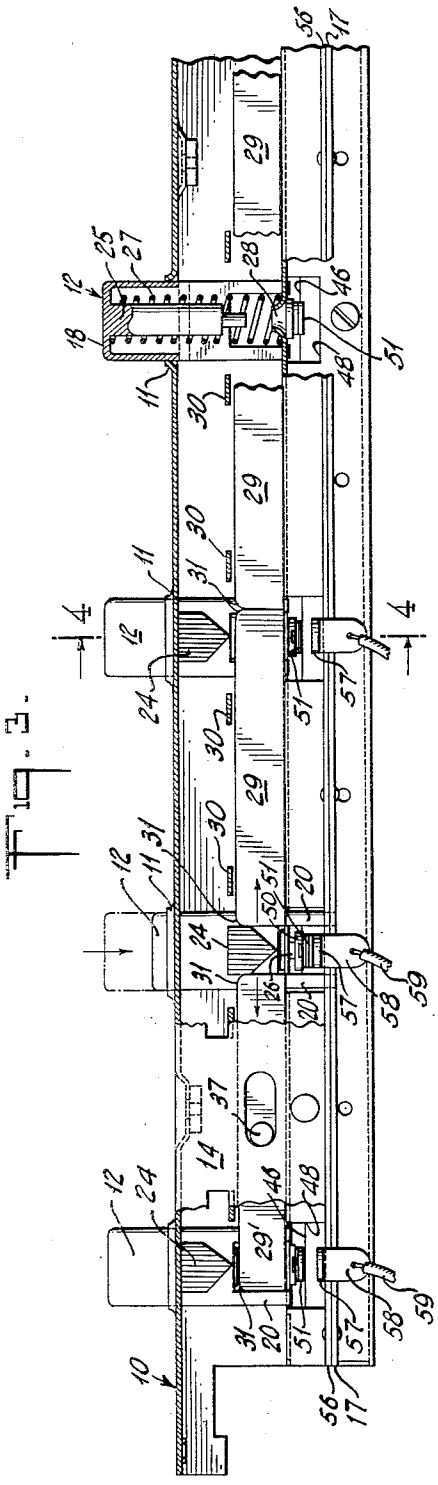


Fig. 3.

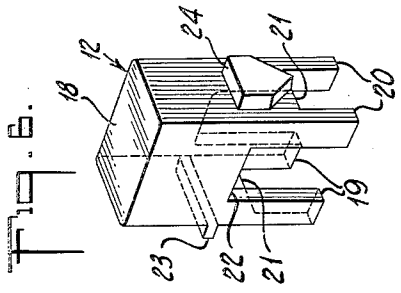


Fig. 6.

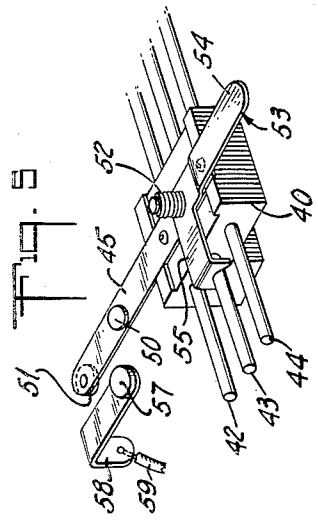


Fig. 5

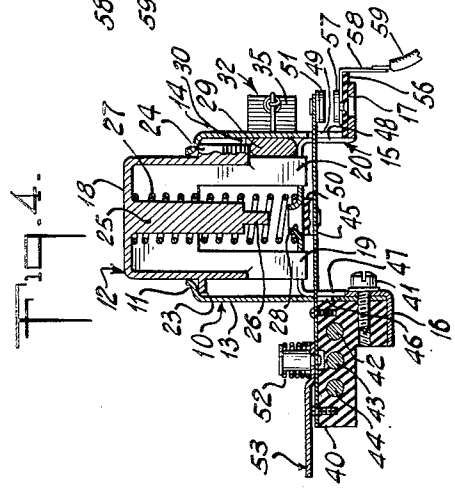


Fig. 4.

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UNITED STATES PATENT OFFICE

2,529,374

ARTICLE SELECTOR AND PRICE-SETTING UNIT

Mario Caruso, Maplewood, N. J., assignor to C-Eight Laboratories, Newark, N. J.

Original application December 26, 1946, Serial No. 718,529. Divided and this application December 10, 1947, Serial No. 790,843

3 Claims. (Cl. 312—35)

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This invention relates to a combination self-locking push button article selector and an electric price-controlling and price-setting unit energizable by the operation of the push buttons of the article selector, and forms a division of co-pending application Serial No. 718,529, filed December 26, 1946, for Vending Machine. The aforementioned co-pending application deals with a cigarette vending machine of which the combination article selector and price-setting unit forms a part.

The prime object of the present invention is to provide a combination push button operated article selector and price-setting unit for vending machines generally, wherein the price-setting unit is controlled and becomes energized by the operation of the push buttons of the article selector.

Another object of this invention is to provide a combination push button article selector and a price-setting unit, wherein the buttons of the article selector are self-locking, that is, that means are provided with the selector which, when one of the buttons is depressed, prevent the operation of all other push buttons, and wherein such depressed push button will close a selected price-controlling electric circuit of the price-setting unit.

Another object of the present invention is to provide a combination push button article selector and a price-setting unit controlled by the article selector, and wherein the price-setting unit is composed of a plurality of individual conductors, each electrically independent from one another, and each forming a part of a separate electric, price-range controlling circuit, and wherein for each push button of the article selector a circuit selector is provided, said circuit selector being adapted to effect contact at will with any one of the said conductors, said circuit selector being permanently associated and electrically connected with a movable member of a switch structure, and wherein that movable switch member is located in the operating path of a push button and is adapted, when the button is depressed, to close a circuit of which one of the selected price-controlling conductors forms a part.

The foregoing and still other important objects of the present invention will become more fully elucidated in the ensuing description, in conjunction with the accompanying drawings, which portray one of the many possible embodiments of the device, but are presented primarily

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for explanatory purposes, and in which drawings:

Fig. 1 is a fragmental top view of a combination self-locking push button article selector and electric price-setting unit;

Fig. 2 is a side view thereof as seen in the direction of arrow marked "Fig. 2," indicated in Fig. 1;

Fig. 3 is a similar view to that disclosed in Fig. 2 with certain parts broken away;

Fig. 4 is a section taken on line 4—4 of Fig. 3;

Fig. 5 is a fragmental perspective view of a portion of the price-setting unit; and

Fig. 6 is a perspective detail view of a push button employed in the article selector.

Article selector casing

Referring now specifically to the figures, numeral 10 denotes a hollow, elongated casing in substantially the form of an inverted channel. The top or web of the channel is closed, with the exception of perforated, drawn-up portions 11, adapted for the reception of individually operative push buttons 12, such as indicated in detail in Fig. 6. The bottom of channel casing 10 is open, as clearly seen in Fig. 4. One of the flanges of the channel, say the forward flange 13, is longer than the other or rearward flange 14.

Removably associated with the open bottom of casing 10 is a substantially channel-shaped closure 15, its web and portions of its flanges extending into the casing. One of the closure flanges is longer and is bent forwardly about longer casing flange 13, as shown at 16, while the other closure flange 17 is similarly bent about shorter flange 14 of the casing and extends rearwardly thereof. These two outwardly directed flanges form supporting ledges, the purpose of which will be presently evident.

Push button construction

Push buttons 12 comprise hollow structures, with a closed top end 18, and from which structures depend forward and rearward legs 19 and 20, respectively, arranged in pairs. The legs of both the forward and the rearward pairs are spaced by relatively shallow recesses 21, as clearly seen in Fig. 6, whereas a much deeper recess 22 separates the two leg pairs. At the front and rear sides of the button body are provided stop elements 23 and 24 for limiting the upward movement of the button as these stop elements abut with the interior face of the casing top. The rear stop element 24 is shaped to form a wedge with its point directed downwardly.

Depending from the center of button top 18 is a plunger 25, reduced at its lower end to form a pin 26. Plunger 25 serves as guide for an expansion spring 27, which bears with its upper end against the inner top face of the button, whereas its lower end rests against the web of closure 15. In alignment with the reduced end 26 of the plunger is provided an aperture 28 in the closure web to permit pin 26 to pass therethrough when the button is depressed. Spring 27 urges the buttons to assume their normal, upward position, at which abutments 23 and 24 engage the bottom face of the casing web.

Push button locking means

Within the casing, and supported by the web of closure 15, is arranged a plurality of push button locking bars, consisting of intermediate locking bars 29 and end locking bars 29', see Fig. 3. These locking bars are guided between rear web 14 of the casing, rear legs 20 of the buttons and projections 30 knocked out inwardly from the material of web 14. All of the bars are of equal length, their length corresponding to the distances between two adjacent push buttons, and they are bodily movable within the casing. As will be clearly seen from Fig. 3, the upper edges of the bars are rounded off at 31.

Referring to Fig. 2, wherein bars 29 and 29' are indicated in broken lines at their normal position, it will be observed at the left hand part of that figure that the abutting ends of each two adjacent bars, as well as the outer ends of the end bars, are located in a vertical center plane passing through the buttons and their wedges 24, whereby the pointed lower wedge ends are placed in alignment with the bar ends.

For the purpose of keeping the locking bars in their above stated normal position there is provided a tension arrangement at both ends of the series of bars, which arrangement comprises two sliding elements 32 operative exteriorly to casing flange 14. These elements have reduced inwardly-bent ends 33 which are guided in slots 34 provided in casing flange 14. Their other ends are crimped outwardly at 35. Near crimps 35 there are provided slots 36 in the body of the elements, and through which slots extend pins 37 secured to and projecting from end bars 29'. These pins are adapted to be always tensionally engaged by the outer ends 36' of slots 36.

Attached to flange 14 of the casing are brackets 38 for accommodating one end of tension springs 39, while the other end of the springs engages crimped portion 35 of sliding element 32.

Operation of the push buttons and the locking bars

As stated, locking bars 29 and 29' are normally held under tension so that their respective ends abut with one another. The normal positioning of the bars in their end-abutting state is effected by tension springs 39 which urge slide elements 32 towards one another, whereby slot ends 36' bear against pins 37 of the end bars. Thus the tension of the springs is translated to all of the bars to keep them normally in their abutting position. All bar ends are in registry with the pointed ends of wedges 24 of the buttons. When one of the buttons, such as the second button from the left shown in Fig. 3, is depressed, its wedge 24 cleaves apart the locking bars therebeneath, whereby all locking bars are moved, against the tension of springs 39, from their normal position to a position at which the upper faces of the bars are placed beneath wedges 24 of all other buttons, thus preventing their operation. Thus, when one of the push buttons is operated, all of the other buttons are rendered inoperative.

Price setting unit

Referring to Fig. 4, it will be seen that to lower ledge 16 of the casing closure 15 there is attached, by means of screw 41, a dielectric supporting member 40. There are as many such supporting members as there are buttons in the device. These supports carry a plurality of independent electric conductors in the shape of bars 42, 43 and 44, the number of which may be increased or decreased, depending upon the type of machine in which the present device is to be employed. Resting on top and secured to support 40 is a mobile switch plate or switch member 45, which passes through the bottom end of the casing and the closure, there being provided in both the casing and the closure suitable openings 46, 47, 48 and 49 within which switch member 45 may freely operate.

At a portion just below opening 28 of the closure mobile switch member 45 carries a dielectric abutment 50 adapted to be engaged by reduced portion or pin 26 of button plunger 25. At the end of contact member 45, which projects beyond flange 14 of the casing, there is provided a contact 51. Electrically connected with switch member 45 and held under tension by spring 52 is a bell crank contact lever 53, composed of handle 54 and a contact arm 55. This contact arm is intended to selectively engage any one of the conductors 42, 43 and 44 and to electrically connect a thus-engaged conductor with mobile switch member 45. Each one of the conductors illustrated is meant to represent a part of an independent, price-controlling electric circuit. Thus lever 54 serves as circuit selector when brought into contact with one of the conductors.

Secured to higher ledge 17 of the casing closure is a dielectric strip 56, supporting a plurality of fixed switch contacts 57 which obviously are electrically insulated from leg 17. Fixed contacts 57 are placed directly below contacts 51 of mobile switch members 45. Extending from contacts 57 are wire attaching lugs 58, from which extend conductors 59, which are meant to represent parts of individual article selector circuits controlled by the several buttons.

Operation

Each of the article selector buttons controls an individual circuit adapted, when closed, to cause the delivery of the desired article. Each of the selector button circuits includes as part thereof a mobile contact member 45, a fixed contact 57, the latter's lug 58 and the lead 59 extending therefrom to an instrumentality (not shown) which becomes energized and causes the delivery of the desired article, and circuit selector 54, and through the latter one of the price-controlling bars or conduits 42, 43 and 44 of the price-setting unit. These price-controlling conduits are electrically connected with price-controlling mechanism and a coin counter, not shown, and only when the proper amount of coins is paid into the machine will a depressed article selector button cause the delivery of the desired article. Each of the conduits thus forms a part of a price-controlled circuit, which is normally open, but which becomes closed when one of the article selector buttons is depressed and causes one of the mobile contact members 45 to abut with its

fixed contact **57**. At that moment not only one of the price-controlling circuits becomes energized, but also the circuit governing the operation of the mechanism for ejecting the selected article.

When one of the article selector buttons is depressed, button locking bars **29** and **29'** are so displaced from their normal position, at which the ends register with the points of wedges **24**, that the top faces of all bars slide beneath the wedges of all other buttons, thereby preventing them from being operated. The moment the depressed button is released, the locking bars reassume their normal position to permit the operation of another button. As the depressed button reverts to its normal, upward position, contact member **45** is released and automatically breaks the circuit .

As has been explained previously, circuit selector **53** may be placed into different positions in respect to conduits **42**, **43** and **44**, so that its contact lever **55** engages one of the conduits, and that there is provided one such circuit selector for each of the article selector buttons. Although only three price-controlling conductors are illustrated, their number may be either decreased or increased, depending upon the price ranges of articles to be dispensed from a machine equipped with the present device.

While in the foregoing a rather specific construction of the mechanism is described, it is self-understood that its arrangement is subject to variations, changes and improvements, depending upon the merchandise to be dispensed and the type of the vending machine with which the present combination of self-locking push button article selector and electric price-setting unit is to be associated. Such necessary changes and improvements being obvious, they are believed to lie within the scope of the present invention, that is of a device combining an article selector having self-locking push buttons with a manually operable price-setting unit, as defined in the annexed claims.

I claim:

1. In a push button assembly for article selectors of vending machines, a substantially channel-shaped hollow casing, closed at its upper end and open at its bottom, the upper casing end being provided with spaced perforations for the reception of push buttons, a closure for the open bottom end of the casing, push buttons operative in and normally projecting through the perforations, each of the buttons comprising a substantially hollow structure closed at its upper, projecting portion and guide legs, arranged in pairs, depending from that upper button portion, a plunger projecting downwardly from the button top and terminating in a switch-actuating pin, a spring element guided by said plunger and supported at one end by said closure, its other end bearing against the button top and stop means at the upper portion of the button for limiting the latter's upward movement induced by said spring element.

2. In a push button assembly for article selectors of vending machines, a hollow support having a plurality of guide apertures, depressible selector buttons operative in said apertures and normally projecting from the support; each of the buttons comprising a hollow structure having a closed upper portion and a plurality of spaced elements depending therefrom; a central plunger extending from the top of the button, a spring normally urging the button to its outward position in respect to the support, stop means at opposite faces of the button for limiting its outward movement, one of the stop means forming a downwardly pointed wedge for engagement with and for the operation of a locking instrumentality disposed beneath the buttons, said instrumentality being intended, when one of the buttons is depressed, to prevent the operation of the other buttons.

3. In a push button assembly for vending machines, an elongated hollow casing having a top wall formed with longitudinally spaced openings and front and rear walls, a closure plate for the bottom of said casing formed with openings under the openings of the top wall and having depending flanges contacting the inner surfaces of the front and rear walls, movable contacts spaced from each other longitudinally of the casing and disposed transversely of the casing and under the openings formed in the closure plate, hollow push buttons slidable vertically through the openings in the top wall, plungers mounted vertically in said push buttons and having their lower ends aligned with and movable through the openings in the bottom plate for engaging and depressing the movable contacts and thereby closing a circuit when the buttons are pressed downwardly, springs about the plungers resting upon the closure plate about the openings therein and having their upper ends engaging portions of the button about the plungers and urging the buttons upwardly, abutments carried by the front and rear portions of said buttons and limiting the upward movement of the buttons by contact with the top wall of the casing, the abutments at the front of the buttons comprising blocks having downwardly tapered wedge-shaped lower ends, stop bars slidable longitudinally of the casing along the front wall and yieldably held in end to end engagement with each other with their abutting ends normally disposed directly under the wedge-shaped blocks whereby downward movement of a selected button will cause its block to engage between the abutting ends of the stop bars directly under it and shift all of the bars longitudinally to a position for blocking downward movement of the other buttons while the said button continues its downward movement to a position in which its plunger moves the companion movable contact downwardly to a circuit-closing position.

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The following references are of record in the file of this patent:

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