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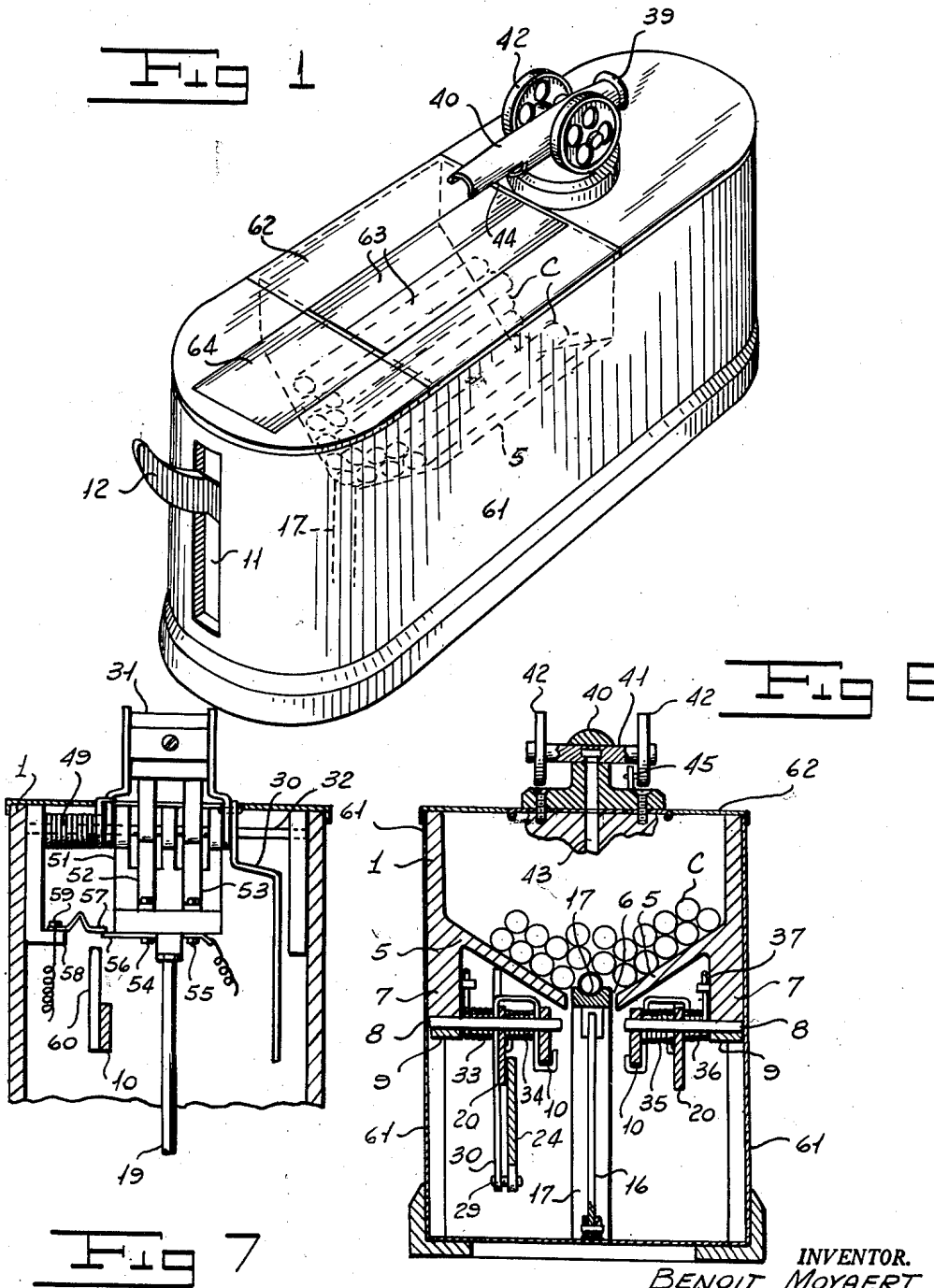
B. MOYAERT

2,791,351

CIGARETTE DISPENSER AND LIGHTER

Filed March 8, 1954

3 Sheets-Sheet 1



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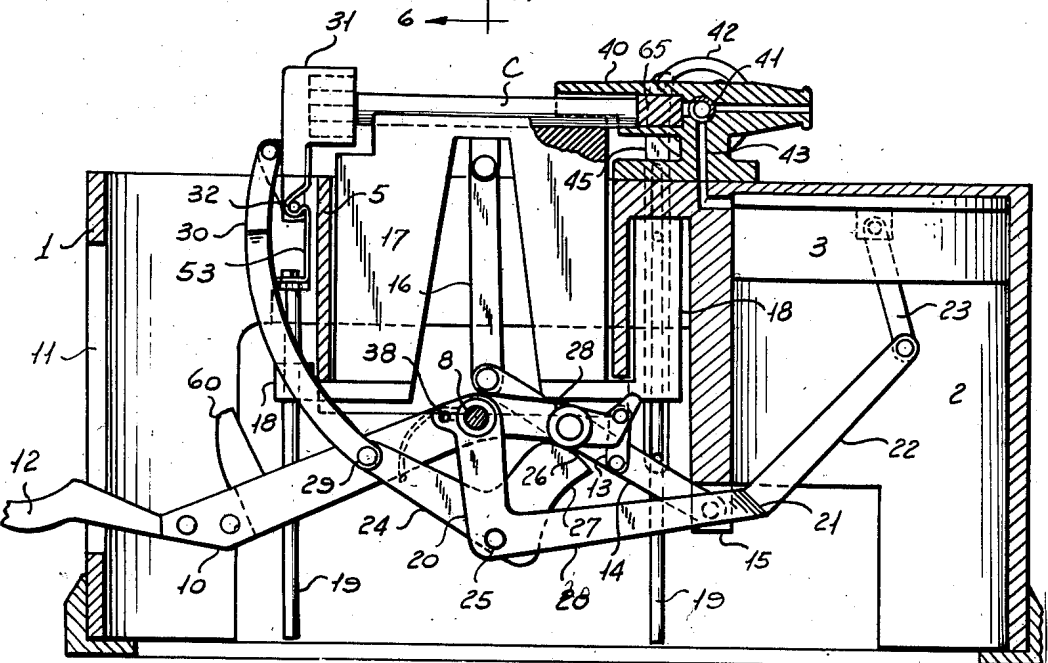
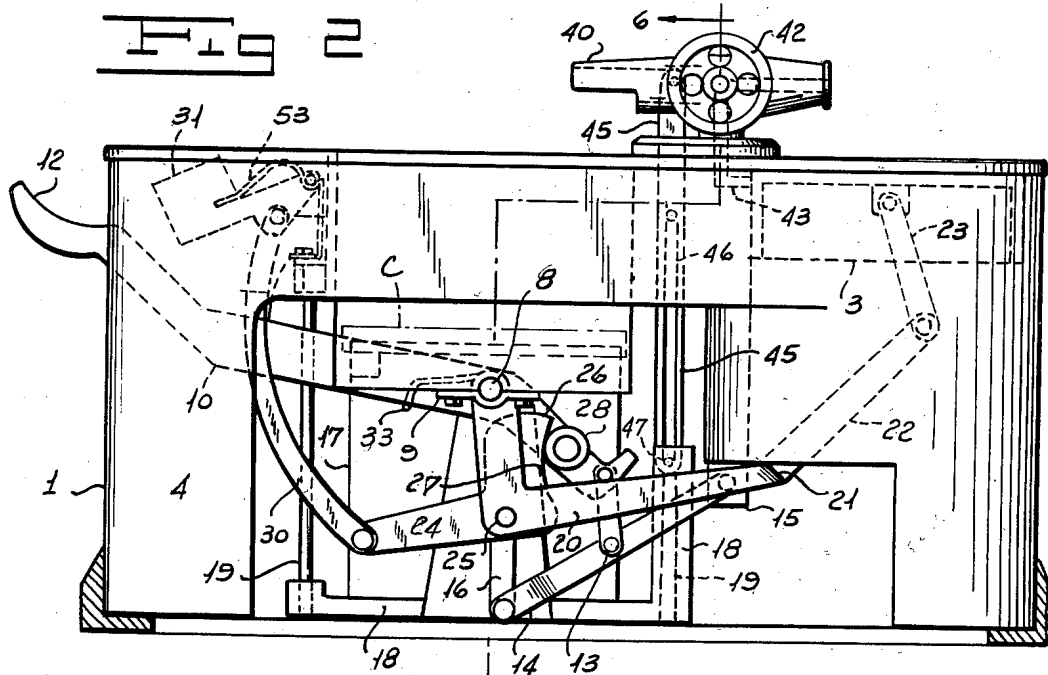
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3 Sheets-Sheet 3

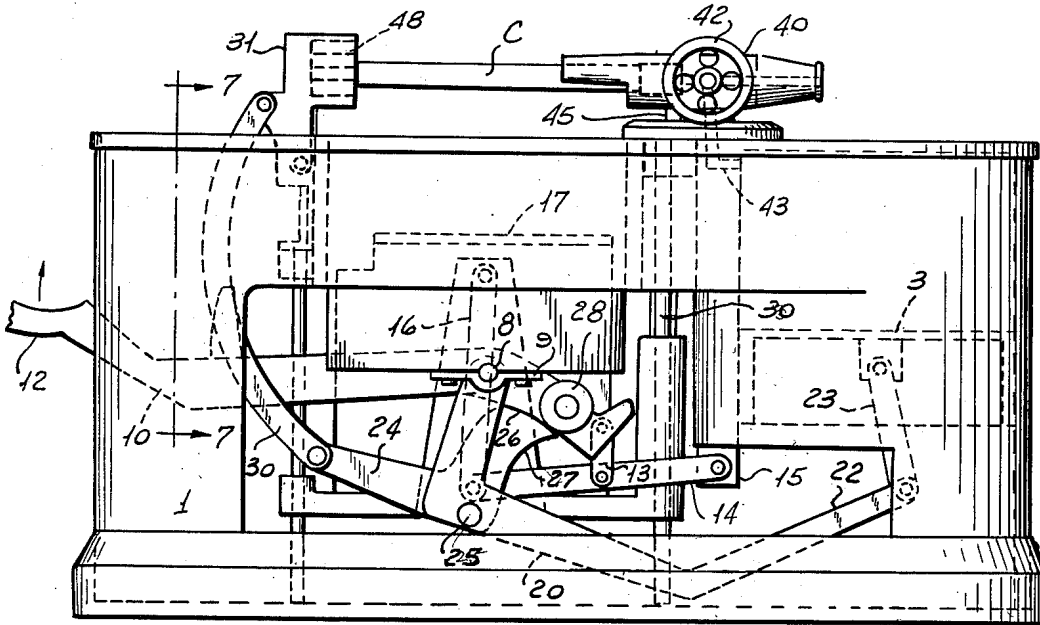


FIG 4

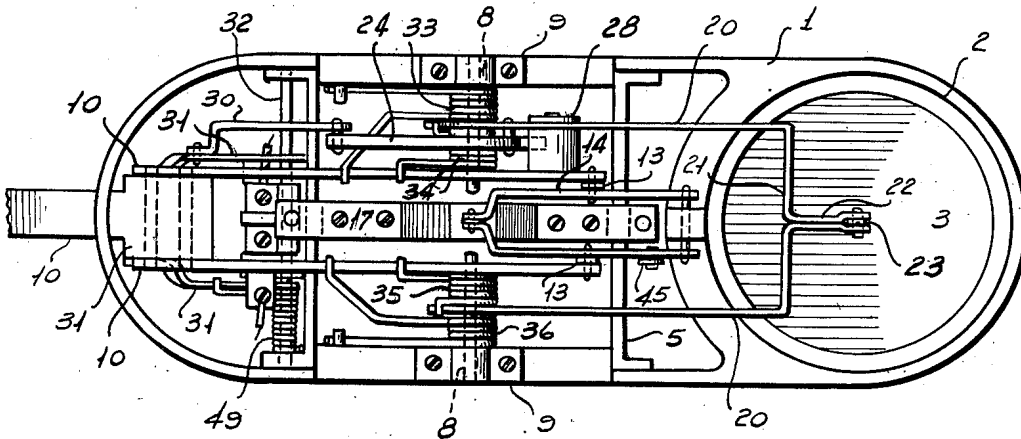


FIG 5

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2,791,351

CIGARETTE DISPENSER AND LIGHTER

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15 Claims. (Cl. 221-145)

This invention is a cigarette dispenser and lighter and is directed more particularly to apparatus of the table or desk type. It provides for the delivery of a cigarette from a magazine or hopper and the lighting of the selected cigarette by an electrically energized element while the cigarette is supported in a holder through which a draft is created through the cigarette during the lighting period.

The object of the invention is to provide a smoothly operating, infallible apparatus which will effectually deliver and light a cigarette, without damage to the same, and leave the lighted cigarette removably gripped in the holder, from which it can be removed by the user for smoking.

The invention embodies numerous features, herein described in detail, shown in the accompanying drawings, and set forth in the appended claims.

The accompanying drawings illustrate the invention in its preferred practical form, but the construction therein shown is to be understood as illustrative, only, and not as defining the limits of the invention.

Fig. 1 is a perspective view showing the apparatus of the present invention in its normal inactive condition.

Fig. 2 is a side elevation of the apparatus of Fig. 1 with the housing removed, so as to show the interior parts of the apparatus.

Fig. 3 is a central vertical longitudinal section through the apparatus showing certain of the operating parts in elevation and with the stationary parts of its body or casting in section. This view shows the parts in the positions which they occupy at the start of the operation of lighting a delivered cigarette.

Fig. 4 is a view similar to Fig. 2, but showing the position of the parts at substantially the conclusion of the cigarette lighting operation.

Fig. 5 is an underneath plan view of the structure, as shown in Fig. 4.

Fig. 6 is a transverse section on the broken line 6-6 of Fig. 2.

Fig. 7 is a fragmental section on the line 7-7 of Fig. 4.

The apparatus of this invention comprises a body member shown in the form of a casting 1. This casting is of elongated form. It is provided at one end with an upright suction cylinder 2 having therein a piston 3. Its other end is in the form of a hollow shell 4 and intermediate the ends of the casting is formed an integral hopper 5, the floor of which slopes toward the longitudinal medial line of the casting and is there provided with an open slot 6 toward which cigarettes C, contained in the hopper, are adapted to gravitate. The opposite sides of the hopper are provided with depending flanges 7, as shown best in Fig. 6, and these flanges support alined stub shafts 8 rigidly clamped in position by caps 9.

Fulcrumed for pivotal movement on the alined shafts 8 is a main operating lever 10. This lever extends through an upright slot 11 in the end of the hollow shell 4 into accessible position and is provided at its outer end with a finger piece 12 exteriorly of the apparatus to permit of

its manual operation. Within the confines of the casting, the main operating lever is forked or bifurcated with each of its legs pivotally mounted on one of the shafts 8 (see Figs. 5 and 6).

The inner end of the main operating lever projects beyond the shafts 8 and is connected by links 13 to a serving lever 14. One end of this serving lever is pivoted to a fixed boss 15, while its other end is pivoted to the lower end of a connecting rod 16, the upper end of which is pivoted to a server 17. This server 17 is provided at its opposite ends with guide brackets 18 and these guide brackets are perforated to ride upon vertical guide rods 19 rigidly supported in the casting. They guide the server in its vertical movement from a depressed position within the slot 6 in the bottom of the hopper, as illustrated in Fig. 6, upwardly through the confines of the hopper to the elevated position shown in Fig. 3. During this movement, the server delivers a cigarette from the hopper to a position of lighting above the casting 1, as will be presently explained.

There is also supported upon alined shafts 8 two legs of a bifurcated lever 20 (Figs. 3 and 5). Its legs are brought together at 21, 22 (Fig. 5) and connected by a link 23 to the piston 3.

The lever 20 is actuated from the main operating lever 10 through a cam catch 24. This cam catch is in the nature of a bell crank lever. It is pivoted at its elbow to the lever 20 on a pivot 25 carried by the latter. One arm of the cam catch is provided with two cam faces 26 and 27 arranged contiguous to one another, the cam face 26 being across the end of the arm, while the cam face 27 extends along the adjacent edge of said arm. These cam faces are adapted to cooperate with a roller 28, carried by the work arm of the main operating lever 10, between its fulcrum 8-8 and the link 13, see Figs. 2, 3 and 4. The roller acts upon the cam faces 26 and 27 successively, as hereinafter explained. The other arm of the cam catch is secured by a pivot 29 to one end of a curved link 30, the other end of which is secured to an ignition element 31 mounted on a transverse pivot 32 fixed at one end of the hopper 5.

Coiled around the shafts 8 are springs 33, 34, 35 and 36. One end of each of the springs 33 and 36 is anchored to a lug 37 on the casting, while its other end is hooked under the two spaced apart legs of the power arm of the main operating lever 10. These two springs are biased to normally elevate the outboard end of said lever 10, so that it occupies the inactive position shown in Figs. 1 and 2. One end of the spring 35 is hooked under the lower edge of the power arm of the main operating lever 10, while its other end is passed through a perforation 38 of the lever 20 which is connected to the piston. This spring is so biased as to tend to lift the main operating lever 10 and also to rotate the lever 20 counterclockwise, as viewed in Fig. 3, and thus furnish power to elevate the piston 3. The remaining spring 34 operates upon the main operating lever 10 and functions in the same manner as the spring 35. In other words, all of these springs are arranged and biased to move the operating parts into normally inactive position with the server 17 lowered, the piston raised and the ignition element swung downwardly into the dotted line retracted position shown in Fig. 2. When the parts are thus positioned, the roller 23 will bear against the cam face 27 of the cam catch and lock the ignition element in its lowered retracted position.

Mounted on the top of the casting above the cylinder 2 is a cigarette holder 39 shown in the drawings as simulating a cannon. This cannon has a barrel 40, through which extends a transverse axle 41 (Fig. 6) to the opposite ends of which are secured wheels 42. The barrel is

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hollow and the axle 41 is chambered intermediate its ends to form, in effect, a rotary valve. In one position of this valve, the muzzle end of the barrel 40 is placed in communication with a suction passage 43 leading to the upper portion of the cylinder 2, while in the other position of this valve, the suction passage is vented to the breach end of the barrel 40. That portion of the barrel which overlies the server 17 is cut away at its lower half, as indicated at 44, so that, when the server elevates a cigarette, it places that cigarette in the overhanging undercut portion of the barrel. Suction is communicated to the cigarette to facilitate the lighting of the latter, through the suction passage 43, by downward movement of the piston 3 within the cylinder.

It is therefore essential to properly control the position of the rotary valve 41, so as to properly synchronize this operation with the other parts of the apparatus. To accomplish this result, one of the wheels 42 is pivotally connected to an upright slotted actuator slide 45. This slide is best shown in Fig. 2. It is provided with an upright slot 46 into which projects a stud 47 carried by one of the brackets 18 of the server 17. The slot is of such length that, as the server is elevated, it engages the upper end of the slot and elevates the slotted slide 45, so that, by the time the server has placed a cigarette in the barrel 40 of the cigarette holder, the rotary valve 41 will have opened communication between the adjacent end of the cigarette and the suction passage 43, so that suction may be communicated to the cigarette during the lighting operation. When the server subsequently descends leaving the cigarette in the holder, the suction on the cigarette will continue until the server nears the lower terminus of its travel. At that time, the stud 47 will engage the lower end of the slot of the slide 45 and rotate the valve 41 sufficiently to open communication between the suction passage 43 and the breach end of the holder barrel, so that smoke which has accumulated within the cylinder, may be exhausted through the breach end of the barrel to the atmosphere.

The ignition element 31, hereinbefore referred to, serves the purpose of supplying sufficient heat to the opposite end of the cigarette to cause ignition of the latter. To this end, this ignition element embodies a refractory honeycomb element with which is associated one or more coils of resistance wire 48. The ignition element 31 is adapted to be moved from the retracted position of Fig. 2 into the upstanding advanced position of Fig. 3, in which latter position it is engaged with one end of the cigarette while the other end thereof is aligned with the holder.

The operating parts of the apparatus are so constituted that, after the cigarette has been elevated into engagement with the holder by the server, its opposite end is engaged by the ignition element with sufficient force to press a cigarette longitudinally firmly into a socket at the muzzle of the holder. A spring 49, coiled about a pivot 32 which supports the ignition element for pivotal movement, is biased to keep the ignition element pressing against the end of the cigarette at this time and while the cigarette is being lit. This spring 49 is sufficiently strong to lift the ignition element into engagement with a cigarette in the holder when the roller 28 is freed from the cam face 27 but cannot lift said element while the roller is in contact with said face.

Current is supplied to the resistance coils of the ignition element, as shown best in Fig. 7. There is mounted, at the operating end of the hopper 5, a block of insulation 51 on which is supported two flexible metal ribbons 52 and 53 which function as current conductors. The upper ends of these ribbons are connected to the termini of the coils of the ignition element, while their lower ends are secured to the block 51 by bolts 54 and 55. The bolt 55 serves as one terminal of an electric circuit which may constitute one wire of an ignition cord, while the other bolt 54 electrically connects the ribbon 52 with a

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stationary contact 56. Normally engaged with this contact 56 is a resilient contact 57 mounted on an insulating piece 58 by a binding screw or bolt 59 connected to the other electrical lead of the cord.

When the ignition element is in upstanding position, as in Figs. 3 and 4, current will be fed uninterruptedly to the resistance coils of such element and by heating it to a point of incandescence, it will be made effective to light the cigarette. However, when the ignition element drops back into the retracted position, indicated in Fig. 2, and the main operating lever returns to its normal inactive position shown in this figure, a switch controlling finger 60 of insulating material, rigidly supported on the main operating lever 10, will engage with the under side of the resilient contact 57, shown in Fig. 7, and lift that contact free from the contact 56, thereby opening the circuit to the ignition element and de-energizing the coils thereof.

All parts of the apparatus thus far described, except the holder and the handle 12 of the main operating lever, are concealed within an external housing or casing 61 which entirely encloses the same. This housing has a cover 62 and on this cover are pivotally mounted twin trap doors 63, which overlie the server 17, and a single pivoted trap door 64 which overlies the ignition element. Each of these trap doors is preferably spring biased to normally close. However, when the apparatus is operated to deliver and light a cigarette, the elevation of the server will lift the twin trap doors 63 to permit the server to project upwardly beyond their contiguous edges and at the same time the ignition element will tilt the trap door 64 upwardly in a like manner. All of these trap doors return to horizontal position, when the operating parts return to normally inactive positions, to completely close the housing. Cigarettes may be deposited in the hopper by lifting off the cover 62 and dropping them into said hopper.

The apparatus operates in the following manner: The normal positions of the parts are as shown in Figs. 1, 2 and 6 with the trap doors closed and a suitable supply of cigarettes C contained in the hopper.

When the main operating lever 10 is actuated, by downward pressure applied by the operator upon the handle 12, the inboard end of this lever elevates the link 13 and in so doing pivots the lever 14 to raise the server 17 and open the trap doors 63. As the server is elevated, its concave upper edge selects a cigarette and lifts it into engagement with the holder 40. As the server is elevated, it carries with it the slotted slide 45 and shifts the rotary valve 41 of the holder into a position to open communication between the cigarette and the cylinder 2.

Simultaneously with these operations, the roller 28, near the inboard end of the main operating lever 10 rides upwardly over the cam face 27 of the cam catch 24 and serves to hold the ignition element in its retracted position until a cigarette has been placed in the holder. By the time this is accomplished, the roller 28 rides over the upper end of the cam face 27 and releases the cam catch for operation by the spring 49 which immediately functions to lift the ignition element into the elevated position shown in Figs. 3 and 4, with concurrent opening of the trap door 64. During this operation, the roller rides idly over the cam face 26 at the end of the cam catch.

When the ignition element engages the contiguous end of the cigarette, it forces the opposite end of the cigarette into the grip of the socket of the holder and pressure is maintained thereon by the coil spring 49, so that proper ignition may be assured. Meanwhile, current has started to energize the ignition element because the withdrawal of the switch controlling finger 60 has permitted engagement of the contacts 56 and 57 (Fig. 7).

By the time all of these operations have taken place,

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the handle 12 has reached the bottom of its operating travel. As soon as the operator removes his hand from the handle 12, the springs 33, 34, 35, and 36 become effective to return the main operating lever 10 to its inactive position. As it starts its return movement, the roller 28 starts its retrograde movement along the cam face 26, and before it reaches the end of its surface and drops off onto the cam surface 27, it accomplishes two purposes. First, it bears down against the cam face 26 and forces the lever 20 downwardly, carrying with this lever the piston 3 and thereby creating suction in the cylinder. This suction is communicated through the suction passage 43 to cause a draft through the cigarette and effect the ignition thereof. This ignition is made possible because the engagement of the roller with the cam face 26 maintains the ignition element in its upright operative position during the return movement of the main operating lever 10 to its inactive position and thus provides a sufficient dwell of the ignition element in its cigarette lighting position to insure an adequate light, before the roller rides off of the cam face 28 and permits the ignition element to return to its retracted position under the biasing action of the spring 33-36 inclusive.

While the main operating lever is retracting, it returns the serving lever 14 to the position of Fig. 1, thus depressing the server into its lowermost retracted position. As the server nears the terminus of its downward movement, the stud 47 engages the end of the slot 46 in the valve actuator slide and turns the rotary valve 41 into a position to vent the cylinder above the piston to the atmosphere through the breach end of the cigarette holder. As the main operating lever 10 nears its inactive position, its finger 60 deenergizes the ignition element.

As the ignition element is retracted, the trap door 64 closes by virtue of its spring biased hinge and, as the server is retracted, the twin trap doors 63 similarly close and the part will return to the positions shown in Fig. 1 for the springs 33-36 are stronger than the spring 49. The apparatus will be left with the cigarette lit and held within the holder, so that the prospective user can simply grasp the cigarette and remove it in lighted condition ready for smoking.

Experience with the cigarette dispenser and lighter of this invention shows that it is unailing in its operation. It functions with high efficiency and is convenient for use as a table and desk model. The parts of the apparatus are smooth working and positive in their operations and the trap doors fit sufficiently tight so that cigarettes contained within the hopper will not dry and become unpalatable.

It will be apparent from the foregoing that the cam catch constitutes an important part of this invention for it permits the parts to operate positively in proper synchronous relation, while permitting a sufficient lag in the retractive operation of the ignition element to insure adequate lighting of the cigarette. This cam catch is so interlocked with the other operating parts of the apparatus that all of such parts are synchronized to act in the proper sequence in the carrying out of their intended individual functions.

The valve mechanism within the cigarette holder insures proper communication of suction to the cigarette during the lighting period and immediately thereafter vents the cylinder of smoke with its entrained tars and resins to the atmosphere, without impressing upon the cigarette a counterair pressure which would otherwise tend to dislodge the cigarette from the holder.

It will be noted that a filter 65 of any appropriate filtering material is positioned in the base of the socket of the holder to filter out dust and other extraneous materials which might tend to clog the passage 43 or interfere with the proper operation of the valve 41.

The foregoing detailed description sets forth the in-

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vention in its preferred practical form, but the invention is to be understood as fully commensurate with the appended claims.

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

1. A cigarette dispensing and lighting apparatus comprising: a body provided with a cigarette hopper and a cylinder with a suction applying piston therein, a vertically movable server operable through the base of the hopper to elevate one cigarette at a time to a lighting position, a holder having a socket to receive and hold a cigarette in lighting position and having a suction passage leading to the cylinder, an ignition element pivotal from a retracted position to an advanced position in engagement with a cigarette in said holder, means for urging the ignition element into engagement with a cigarette held in the holder, a main operating lever pivotal on a fixed fulcrum and carrying a cam roller, operating connections between said lever and the server to elevate a cigarette when said lever is actuated, a piston operating lever also supported on a fixed fulcrum and secured to the piston, and means for normally biasing both the main operating lever and the piston operating lever into normally inactive positions, in combination with a cam catch fulcrumed on the piston operating lever and connected to the ignition element, said cam catch having two cam faces one of which is traversed and freed by the cam roller while the main operating lever is manually actuated to release the ignition element for movement into engagement with a cigarette in the holder and the other of which is engaged by the roller to maintain the ignition element in engagement with the cigarette while the main operating lever returns to inactive position to tilt the piston operating lever on its fixed fulcrum and thus withdraw the piston from its normally inactive position to apply suction to the cigarette.

2. A cigarette dispensing and lighting apparatus according to claim 1, comprising a valve in the cigarette holder, and a slotted operating connection between the valve and the server to maintain suction communication between the cigarette and the cylinder while the piston is being withdrawn from normally inactive position and to vent the cylinder to the atmosphere while the piston is returning to said position.

3. A cigarette dispensing and lighting apparatus according to claim 1, wherein the cigarette holder is provided with a rotary valve connected off center with a slide having a longitudinal slot through which extends a stud supported on the server, said slot being of such length that when the server nears the upper terminus of its travel the stud engages one end of the slot and operates the valve to open suction communication between the cigarette and the cylinder and when the server nears the lower terminus of its travel the stud engages the other end of the slot and operates the valve to vent the cylinder to the atmosphere.

4. A cigarette dispensing and lighting apparatus according to claim 1, wherein the ignition element embodies an electric resistance coil, an electric circuit for supplying current to said coil, said circuit including a switch, and means on the main operating lever to hold said switch open when said lever is in its normal inactive position.

5. A cigarette dispensing and lighting apparatus according to claim 1, wherein the ignition element embodies an electric resistance coil fed by an electric circuit including a switch held open by the main operating lever when the latter is in normally inactive position and biased to close when said lever is out of said position.

6. A cigarette dispensing and lighting apparatus according to claim 1, wherein the ignition element is spring biased on its pivot to cause it to exert pressure on the cigarette during engagement with the latter.

7. A cigarette dispensing and lighting apparatus according to claim 1, wherein the ignition element embodies an electric resistance coil to which current is fed through

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an electric circuit including flexible conductive metal ribbons and a current controlling switch.

8. A cigarette dispensing and lighting apparatus according to claim 1, wherein the main operating lever is biased with respect to the body to urge said lever into its normally inactive position while the piston operating lever is biased with respect to the main operating lever to urge the piston operating lever into its normally inactive position.

9. A cigarette dispensing and lighting apparatus according to claim 1, wherein the cam catch comprises a bell crank lever pivoted at its elbow to the piston operating lever, with one arm having a link connection with the pivotal ignition element and the other arm formed with one cam face at its outer end and the other cam face along one adjacent side.

10. A cigarette dispensing and lighting apparatus according to claim 1, wherein both the main operating lever and the piston operating lever are fulcrumed on a common axis.

11. A cigarette dispensing and lighting apparatus according to claim 1, wherein the top of the hopper is provided with trap doors adapted to be opened by the server when the latter is elevated and to close when said server is lowered.

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12. A cigarette dispensing and lighting apparatus according to claim 1, wherein a trap door overlies the ignition element to be opened by said element when the latter is moved from retracted to active positions and closed when said element is returned to retracted position.

13. A cigarette dispensing and lighting apparatus according to claim 1, wherein the body is enclosed within a housing of finished appearance having a cover including automatically operable trap doors over the server and ignition element.

14. A cigarette dispensing and lighting apparatus according to claim 1, wherein the body is enclosed within a housing of finished appearance having a cover including trap doors over the server and ignition elements, said doors being normally in closed positions and automatically opened by the server and ignition element as the latter are respectively elevated.

15. A cigarette dispensing and lighting apparatus according to claim 1, wherein a filter is positioned in the base of the socket of the holder to filter out extraneous matter.

No references cited.

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