

Nov. 7, 1967

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3,351,735

CIGARETTE DISPENSER AND LIGHTER

Filed Sept. 3, 1965

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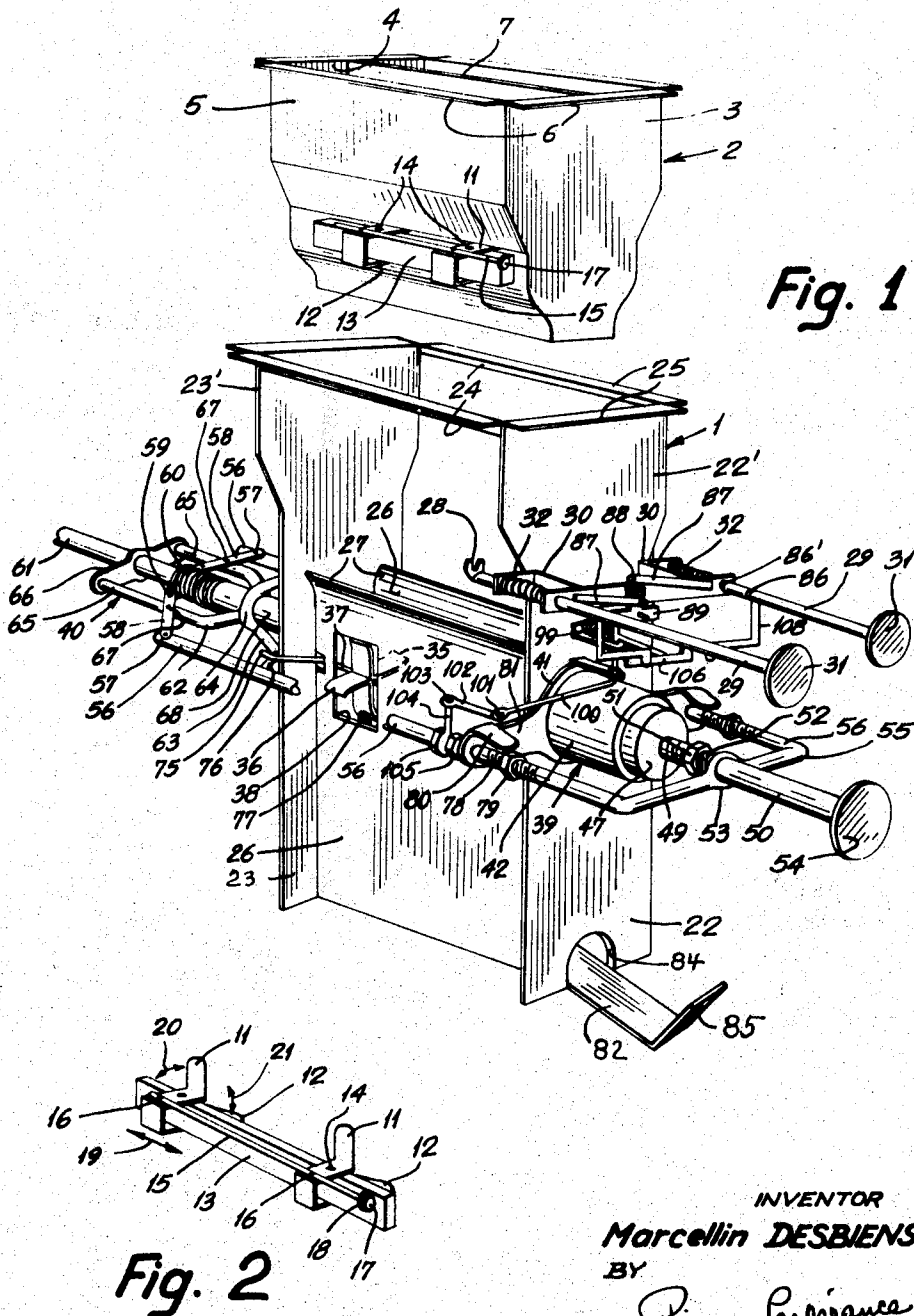


Fig. 1

Fig. 2

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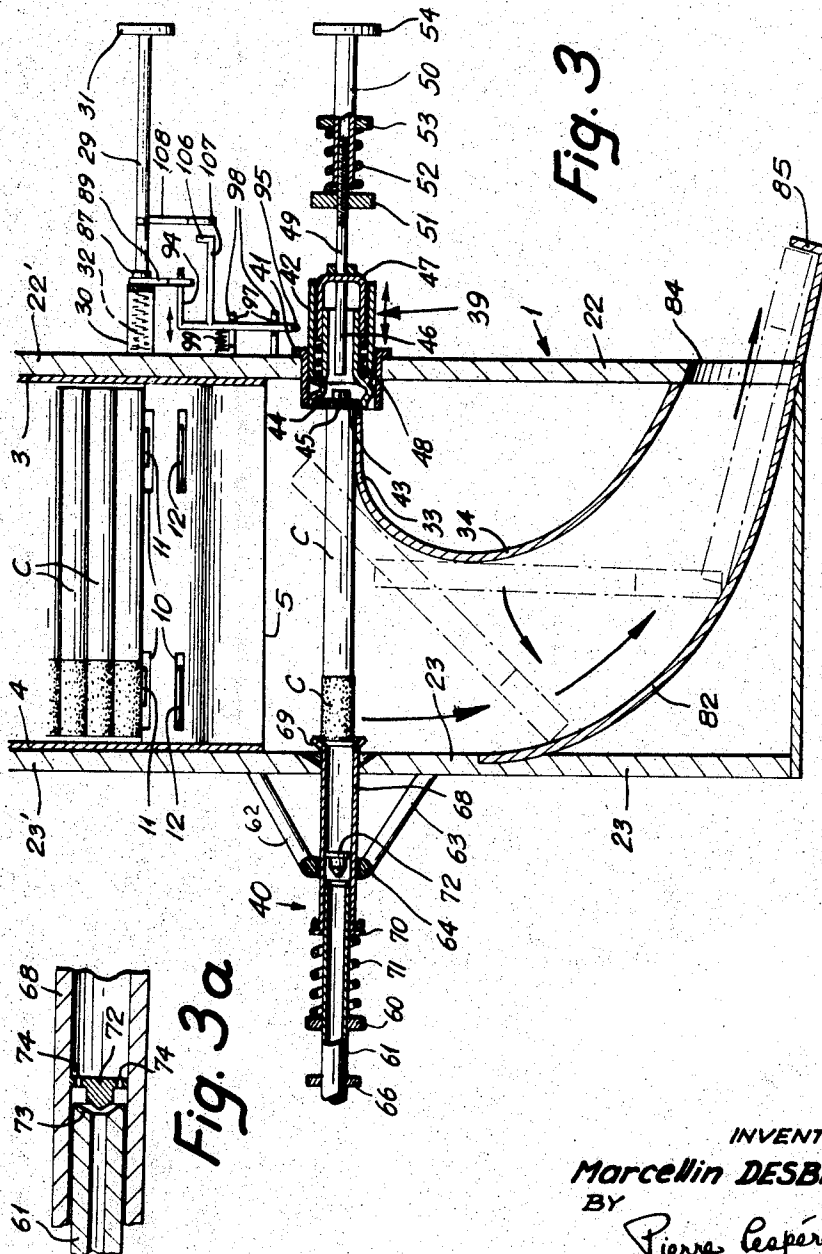
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6 Sheets-Sheet 5

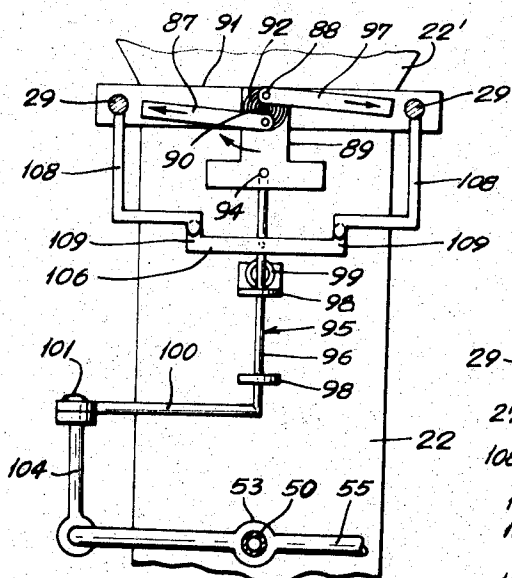


Fig. 4

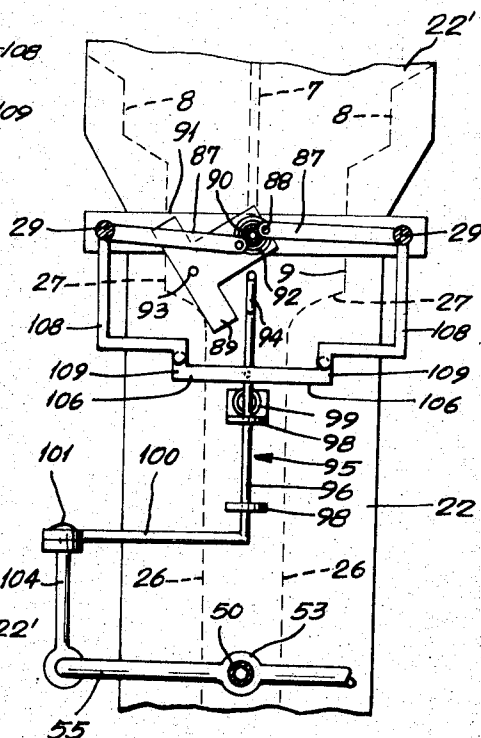


Fig. 5

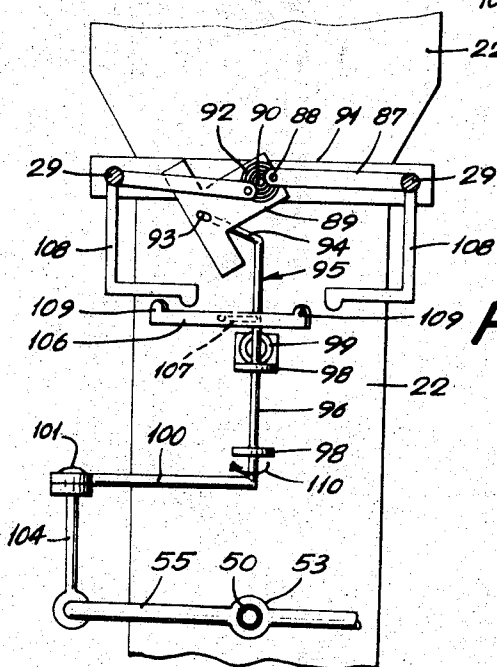


Fig. 6

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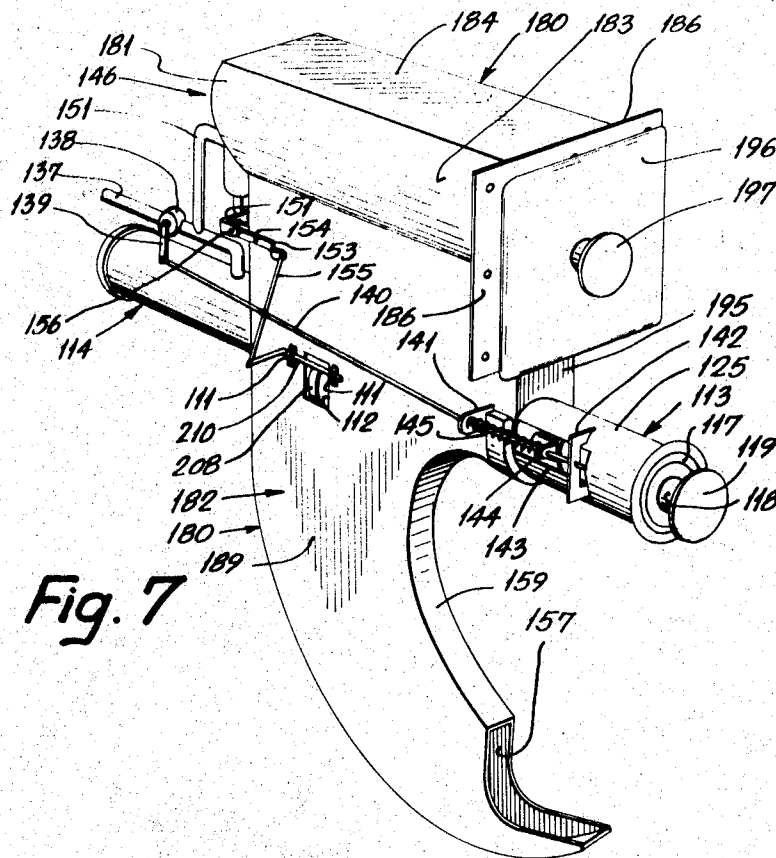
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6 Sheets-Sheet 4



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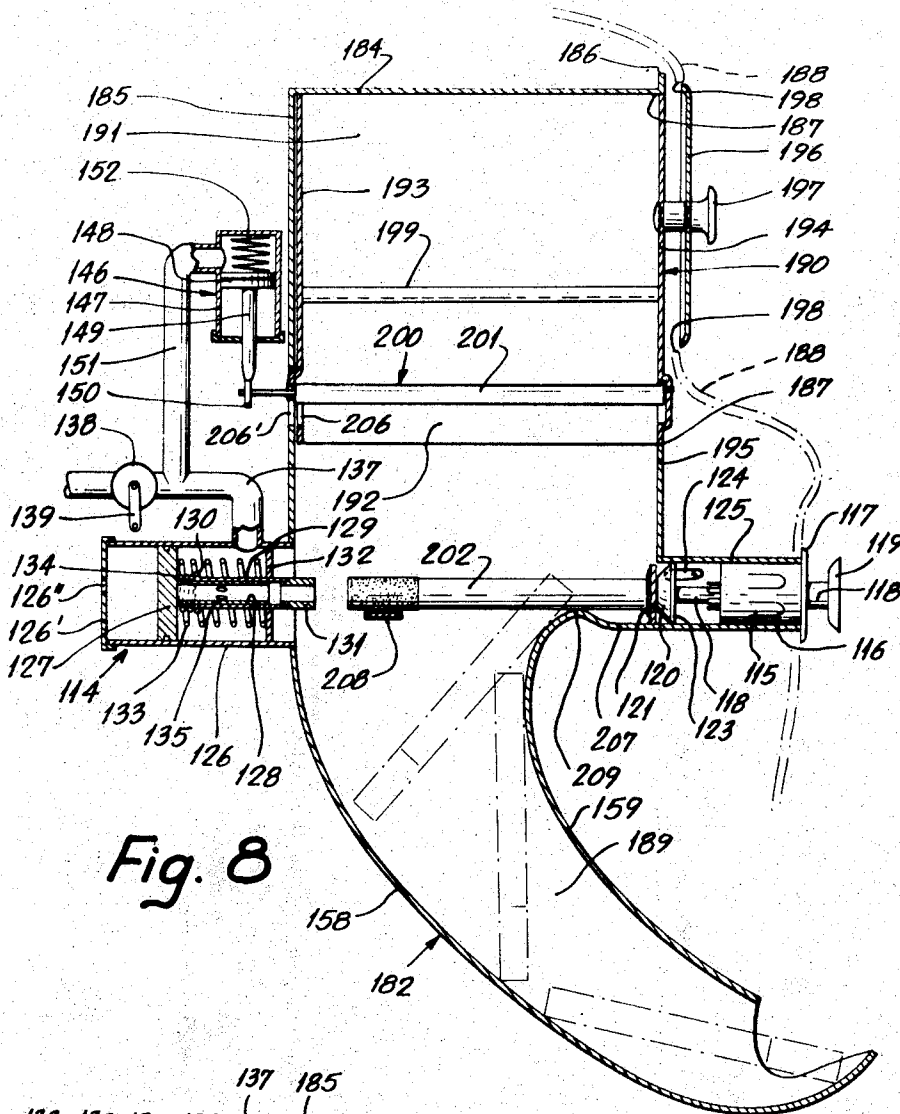


Fig. 8

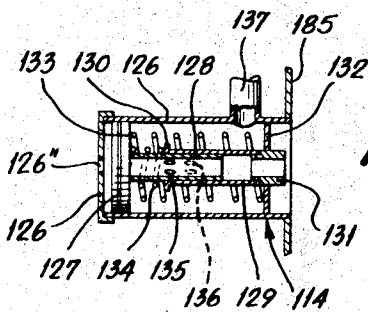


Fig. 9

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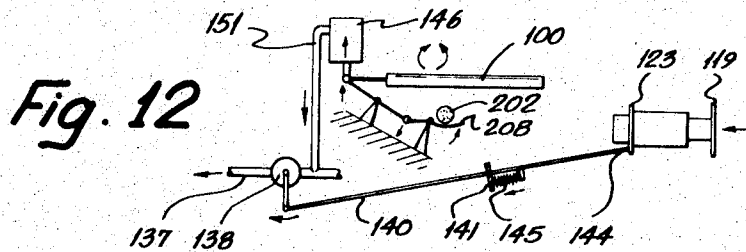
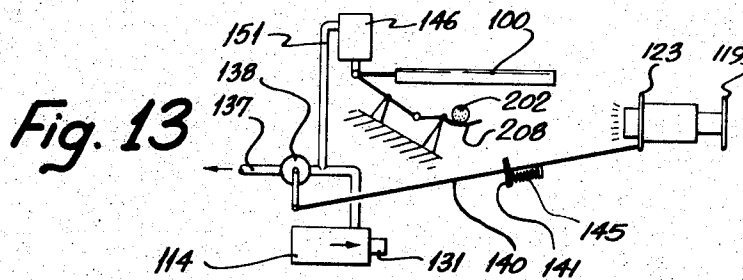
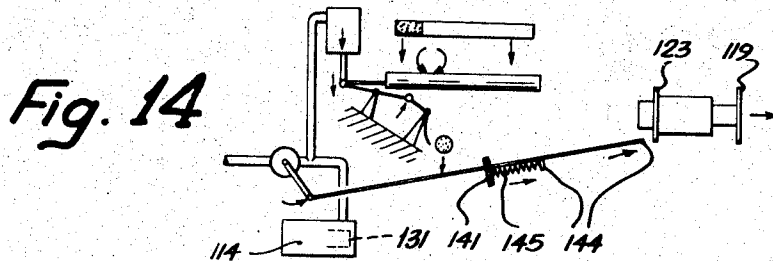
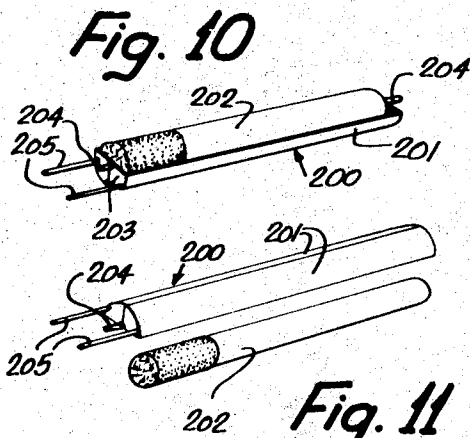
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6 Sheets-Sheet 6



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CIGARETTE DISPENSER AND LIGHTER

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10 Claims. (Cl. 219-261)

The present invention relates to apparatus for dispensing and lighting cigarettes or the like and particularly to an arrangement of this character specially suitable for mounting on the instrument panel of an automobile.

The general object of the present invention resides in the provision of an apparatus of the character described, which is so arranged that the cigarettes are disposed within the apparatus parallel to the long axis of the automobile, whereby the entire apparatus occupies a minimum transversal extent of the instrument panel and, therefore, there is left ample space for positioning the remaining instruments on the panel.

Another important object of the present invention resides in the provision of an apparatus of the character described, in which the lighted cigarette is discharged from the apparatus into a position to be readily grasped by the user and in which only the non-lighted end of the cigarette protrudes from the apparatus whereby the user cannot burn his fingers.

Another important object of the present invention resides in the provision of an apparatus of the character described, in which, in accordance with a first embodiment, cigarettes of at least two different brands or types may be selectively discharged from the apparatus.

Another object of the present invention resides in the provision of an apparatus of the character described, having, in accordance with a first embodiment, cigarette storage means which can be removed from the remaining part of the apparatus in order to facilitate filling of the same with cigarettes side by side and in parallel relationship with the longitudinal axis of the automobile.

Another important object of the present invention resides in the provision of an apparatus of the character described, which is provided with means to prevent the discharge of more than one cigarette into cigarette-igniting position, whereby jamming of the apparatus is prevented.

Another object of the present invention resides in the provision of an apparatus of the character described, which is readily adaptable to be mounted on all kinds of instrument panels.

Yet another object of the present invention resides in the provision of an apparatus of the character described, which, in accordance with a second embodiment of the invention, is mounted in the instrument panel of an automobile in such a way that it can be loaded from the front of the instrument panel and which can be filled with cigarettes of different lengths and in which the vacuum produced by the engine of the motor vehicle is used for operating some of mechanisms of the apparatus to provide a simplified mechanical construction.

The foregoing and other important objects of the present invention will become more apparent during the following disclosure and by referring to the drawings, in which:

FIGURE 1 is an exploded perspective view of the apparatus in accordance with the first embodiment;

FIGURE 2 is a perspective view of one portion of the mechanism for retaining cigarettes and feeding the same, one at a time, into cigarette-igniting position;

FIGURE 3 is a longitudinal section of the apparatus;

FIGURE 3a is a partial longitudinal section on an enlarged scale;

FIGURES 4, 5, and 6 are partial end views of the apparatus showing three different positions of the mechanism

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for locking the selecting and feeding means, when a cigarette is in igniting position;

FIGURE 7 is a perspective view of the apparatus in accordance with the second embodiment of the invention;

FIGURE 8 is a longitudinal section of the same;

FIGURE 9 is a longitudinal section of part of the mechanism shown in FIGURE 8, but in another position;

FIGURE 10 is a perspective view of the mechanism for retaining cigarettes and feeding the same one at a time into cigarette-igniting position;

FIGURE 11 is a perspective view of the mechanism of FIGURE 10, but in cigarette-unloading position

FIGURES 12 to 14 inclusive show, in schematic view, the apparatus in accordance with the second embodiment in different stages of its operation.

Referring now more particularly to the drawings in which like reference characters indicate like elements throughout, the apparatus in accordance with the first embodiment shown in FIGURES 1 to 6, comprise a casing 1 and a removable magazine 2 for storing the plurality of cigarettes and adapted to fit within the casing 1. Magazine 2 is in the form of elongated container of substantially rectangular shape in plan section, and having flat parallel front and back walls 3 and 4 respectively and side walls 5. The magazine 2 is open at the top and bottom, the top end being provided with a marginal outwardly extending flange 6 depending from the front, back and side walls.

The lower portion of the magazine 2 is tapered, as shown in FIGURE 1, and the inside of the magazine is provided with a vertical partition 7 extending in the longitudinal central plane of the magazine, as shown in FIGURE 5, thereby defining two cigarette compartments 7: one on each side of partition 7 for storing cigarettes of different types or brands.

Each compartment 7 is provided with a stepped guiding wall 8, which defines at the lower portion thereof a passage 9 having a width corresponding to the external diameter of a cigarette. Passage 9 opens at the lower end of magazine 2.

Each guiding wall 8 and each outside side wall 5 of magazine 2 are provided with registering elongated horizontally disposed slots 10 disposed in superposed pairs adjacent the front and back walls of the magazine, as shown in FIGURE 3. These slots are arranged on both sides of the magazine and are adapted to receive angularly disposed outer and lower fingers 11 and 12 respectively of a cigarette-retaining mechanism shown in FIGURE 2.

This mechanism comprises a bar 13 secured to the side of the magazine 2 and on which are pivoted the fingers 11 and 12 which are arranged in two spaced pairs longitudinally of bar 13; each pair of fingers 11 and 12 forms part of a U-shaped element straddling the bar 13 and pivoted thereon intermediate its end at 14. The fingers are of angular shape such that the portion of the fingers protruding through slots 10 and passage 9 are superposed, but at right angles to each other.

An actuating rod 15 is pivotally connected at 16 to each pair of fingers 11 and 12. The front end of rod 15 is provided with a head 17 having a circumferential groove 18 made therein.

Referring to FIGURE 2, it will be noted that longitudinal displacement of rod 16 will cause pivoting movement of fingers 11 and 12, in accordance with double arrows 19, 20, and 21. In one limit position of the fingers, the lower fingers 12 extend at right angles within passage 9 and the upper fingers 11 are in retracted position, whereby the cigarettes in the magazine compartment 7 rest on the lower fingers 12. As the distance between the superposed fingers 11 and 12 corresponds to the diameter of a cigarette, upon pivoting movement of the fingers towards their other limit position the lowermost cigarette

within the compartment which is located just below the upper fingers 11, is allowed to be discharged because the lower fingers 12 become retracted, while the other cigarettes are retained on the upper fingers 11, because the latter take a projecting position within passage 9. Upon the further pivoting movement of the fingers, a new cigarette takes a position resting on lower fingers 12.

Casing 1 comprises two spaced parallel flat front wall and back walls 2 and 23, respectively, each having an enlarged upper portion 22 and 23', respectively. These upper portions are connected by bars 24 and these bars, together with the upper edges of portions 22', 23', are provided with an outwardly directed flange 25.

A pair of spaced parallel longitudinally extending guiding walls 26 extend between and are secured to front and back walls 22 and 23 in the lower portions thereof. Walls 26 are spaced a distance corresponding to the diameter of a cigarette and have flaring upper marginal portions 27. The magazine 2, together with the two assemblies of fingers 11, 12, bar 13, and rod 15, is removably fitted between the upper portions 22' and 23' of the front wall and back wall of casing 1 with the flange 6 of the magazine 2 resting on the flange 25 of the casing 1 and with the discharge lower end of the magazine side walls 5 engaging the flaring marginal portions 27 of the guiding walls 26 of casing 1.

In the fitted position of the magazine 2, the groove 18 of head 17 of each actuating rod 15 removably engages the upstanding fork 28 at the rear end of a pusher rod 29.

There are two pusher rods 29, one on each side of the front wall 22 of casing wall, and each mounted for slidable longitudinal movement in a support bracket 30 secured to said front wall 22 and each of U-shape. Each pusher rod 29 has an enlarged head 31 at its front end, and is surrounded by a coil spring 32 in the portion thereof within bracket 30, said coil spring abutting against one leg of the bracket and attached to the rod at the other end, and resiliently urging the pusher rod into a forward limit position in which the fingers 11 and 12 assume their pivotal limit position in which the lower fingers 12 extend across the passage 9 of the associated compartment 7 of magazine 2.

When a pusher rod 29 is depressed, fingers 11 and 12 pivot into their other limit position in which the lower fingers 12 are retracted and the upper fingers 11 extend across passage 9. Thus, by pushing either one of pusher rods 29, one cigarette of the associated compartment 7 of magazine 2 is discharged from the said magazine and drops between guiding walls 26 to take a cigarette lighting position, as shown in FIGURE 3, in which the end of the cigarette to be ignited is adjacent front wall 22 of casing 1 and rests on the upper horizontal portion 33 of a guide strip 34; while the other end of the cigarette rests on a radial blade 35 of a four-bladed rotor 36 (see FIGURE 1), which is secured to a small shaft 37, extends through an opening 38 made in one guiding wall 26, shaft 37 being journaled on said guiding wall. The blade 35 on which the cigarette rests extends across the passage defined between the two guiding walls 26 and is temporarily maintained in said position by latching means to be described hereinafter.

Mounted in a hole made in the front wall 32 of casing 1 below the pusher rods 29 and in the center of the casing, is an igniting mechanism 39, and mounted in alignment with said mechanism in an aperture made in the back wall 33 of casing 1, is a cigarette suction mechanism generally indicated at 40.

The igniting mechanism 39 is of a construction similar to conventional cigarette lighters for automobiles. It comprises a bushing 41 inserted within the opening made in the front wall 22 and in which is mounted a sleeve 42, at one end of which is secured an electrically-insulated electric resistance element 43 connected with the positive side of the automobile battery by insulated wire 44

and having a central contact 45 adapted to make contact with a contact rod 46 secured to a flanged cap 47 slidably mounted within sleeve 42. It is retained against spring 48 by a bi-metallic element (not shown) and the electric circuit is closed between stud 45 and contact rod 46; the element 43 heats up and ignites the end of the cigarette in contact therewith and, at the same time, the bimetal element heats up and finally releases flange cap 47 which takes a projecting position limited by a suitable stud member. A threaded stem 49 is screwed to cap 47 at one end and slidably enters a pusher tube 50 at its other end. A nut 51 is adjustably screwed on stem 49. A coil spring 52 surrounds stem 49 and pusher tube 50 and abuts at one end against nut 51, and at the other end against a collar 53 secured to tube 50. Thus, upon pushing on the enlarged head 54 of pusher tube 50, the latter pushes in turn on stem 49 which causes igniting mechanism 39 to take an igniting position.

Collar 53 is an integral part of the middle of a U-shaped element 55, the legs 56 of which extend spacedly alongside casing 1 and protrude past the back wall 23 of said casing to be connected and to actuate the cigarette suction mechanism 40. The free end of each leg 56 is pivoted at 57 to one end of a rocker lever 58, the other end of which is pivoted at 59 to a collar 60 which is slidable on a vacuum tube 61 co-axial with igniting mechanism 39 and disposed at the back wall 23 of casing 1.

A support bracket 62 serves to rigidly maintain vacuum tube 61 in its position. Support bracket 62 comprises arms 63 secured to back wall 23 and supporting a collar 64 in alignment with tube 61; bracket 62 further includes legs 65 spacedly disposed and parallel to vacuum tube 61 and provided at their outer ends with a cross bar 66 having a central opening through which vacuum tube 61 extends and is rigidly secured to bar 66.

Rocker levers 58 are pivoted intermediate their ends at 67 to the legs 65. A suction tube 68 is slidably inserted through collar 64 and slides also over vacuum tube 61, being in telescopic engagement therewith. Suction tube 68 passes through an opening made in back wall 23 and is provided at its inner end with funnel-shaped element 69 adapted to abut one end of a cigarette C in igniting position. The outer end of suction tube 68 is provided with a flange 70 to which is attached one end of a coil spring 71 which surrounds vacuum tube 61 and abuts at its other end against the slidable collar 60.

A valve member 72 is secured within suction tube 68 and is adapted to make sealing contact with the bevelled end 73 of vacuum tube 61 when suction tube 68 is in released position. Valve member 72 is provided with a plurality of holes 74 near its periphery for the passage of gases when the valve is open. Upon pushing on head 54 of pusher tube 50 to operate igniting mechanism 39, the legs 56 of U-shaped element 55 cause pivoting movement of rocker levers 58 which, in turn, cause slidable movement of collar 60 towards the back wall 23 of casing 1. The coil spring 71 is therefore compressed and causes projecting movement of suction tube 68 within the casing 1, so that funnel 69 engages the end of cigarette C in cigarette-igniting position. Coil spring 71 is calibrated so that it causes only a small pressure on tube 68 and, consequently, on cigarette C. Spring 71 causes retracting movement of tube 68 upon release of the igniting mechanism 39.

The shaft 37 of bladed rotor 36 has an outer bent extension 75 adapted to be engaged by a finger 76, secured to one of the legs 56 of U-shaped element 55.

In the released position of igniting mechanism 39, the lowermost radial blade of rotor 36 abuts against resilient finger 77 secured to the edge of opening 38; thus rotor 36 is resiliently maintained in a position in which one of its radial blades 35 extends across the passage between the two guiding walls 26 ready to receive and support a cigarette dropped from magazine 2. Upon pushing on pusher tube 50, funnel 69 is projected within casing 1 and engages the end of the cigarette C in cigarette-igniting position.

and, meanwhile, finger 76 rides underneath extension 75 and causes clockwise rotation of rotor 36, so that its bottom blade 35 moves past resilient finger 77, the cigarette C being still held by funnel 69.

Upon release of the cigarette C by funnel 69, the weight of said cigarette causes free clockwise rotation of rotor 36, allowing the cigarette to drop between guiding walls 26. This movement is obtained because rotor 36 is mounted with a ratchet mechanism on shaft 37, which allows free clockwise rotation of the rotor with respect to the shaft, but prevents anticlockwise rotation of said rotor. Thus, extension 75 is allowed to return under its own weight into its original position upon release of the igniting mechanism and movement to the right of the leg 56 on which finger 76 is mounted.

The blade 35 which held the cigarette now takes a lower-most position resting on finger 77 and the next blade 35 extends across the passage between guiding walls 26 ready to receive and support the next cigarette. In order to maintain the legs 56 of U-shaped element 55 in operative position, that is towards the right as shown in FIGURE 1, during the time the cigarette C is being ignited by the igniting mechanism 39; legs 56 are threaded at 78 and are each provided with an adjusted nut 79 adapted to engage a resilient blade 18 depending from an ear 81 having a hole through which the legs 56 slidably pass, said ear 81 being integral with and projecting laterally from bushing 41.

When the bi-metal and spring 48 of the igniting mechanism 39 cause release of cap 47, the combined action of said spring 48 with spring 52 causes release of nuts 79 from underneath blades 80 and thus return of the legs 56 to their original limit position towards the left of FIGURE 1. This causes retracting movement of the suction tube 68 towards the left, as shown in FIGURE 2, and because the igniting mechanism 39 simultaneously releases the ignited end of the cigarette, the latter is allowed to drop at its non-ignited end, as shown in FIGURE 3, whereby this latter end engages and slides down a curved lower guiding strip 82 and the portion of the cigarette adjacent its ignited end slides also on the other guiding strip 34, whereby the cigarette makes a complete half-turn in a vertical plane and the non-ignited end slides through a discharge opening 84 at the bottom of the front wall 22 and comes to abut against upwardly extending flange 85 at the protruding discharge end of strip 82. In this discharged position, the non-lighted end of the cigarette can be easily grasped by the user.

It will be noted that all the cigarettes within the dispenser lie in longitudinal planes parallel to the long axis of the motor vehicle in which the dispenser is installed.

The dispenser is further provided with a mechanism to prevent the feeding of more than one cigarette at a time to the cigarette-igniting position. This mechanism comprises the following elements: each selector rod 29 is provided with a pair of notches 86, 86' facing inwardly. Notch 86 is spaced a certain distance from the front end of support bracket 30, as shown in FIGURE 1, when the pusher rod 29 is in released position while notch 86' is adjacent said bracket 30. When one pusher rod 29 is pushed to discharge a cigarette from the associated compartment 7' of magazine 2, notch 86 takes a position in alignment with a locking bar 87 and the free outer end of said bar is urged to engage the said notch. One locking bar 87 is associated with each selector rod 29. The inner ends of the two locking bars are pivoted at 88 on an inverted T-shaped element 89 pivoted at 90, between pivot points 88, on support bar 91 extending across and secured to the two brackets 30. A spiral spring 92, having one end secured to the pivot 90 and the other outer end to element 89, urges said element 89 to take an inclined position, as shown in FIGURE 5, in which the locking bars 87 engage the respective notches 86 or 86' of the selector rods 29.

The lower portion of T-shaped element 89 is provided with a hole 93 adapted to receive the free bent end 94 of an upright return rod 95, having an L-shape, the vertical leg 96 of which extends through elongated slots 97 of two superposed brackets 98 secured to the front wall 22 of casing 1. Return rod 95 is urged away from said front wall 22 by means of coil spring 99. The lower horizontal leg 100 of rod 95 extends across front wall 23 and its free end is pivotally connected at 101 to a link 102, itself pivotally connected to the upper end 103 of the arm of an eye 104 adjustably secured on leg 56 by means of nuts 105 screwed on leg 56. A transversely extending pusher bar 106 is secured to return rod 95 just above the upper bracket 98 by means of rod 107 secured to the center of pusher bar 106. Each selector rod 29 is provided with an L-shaped arm 108 rigidly secured thereto and depending downwardly and inwardly thereof, whereby the outer free end 109 of each arm 108 is disposed in alignment with the associated outer end of pusher bar 106.

In inoperative position, the bent end 94 of return rod 95 lies in a plane substantially perpendicular to front wall 22 of casing 1 and engages hole 93 of T-shaped element 89 to maintain same in upright position, as shown in FIGURE 4, whereby said element 89 maintains the two locking bars 87 in retracted position against action of spiral spring 92. Upon depressing either one of selector rods 29 to discharge a cigarette into cigarette lighting position, the associated L-shaped arm 108 pushes against the corresponding end 109 of pusher bar 106 which, in turn causes backward movement of return rod 95 towards wall 22 against the action of coil spring 99, whereby the bent end 94 of return rod 95 disengages the hole 93 of element 89 and the latter is allowed to pivot in a clockwise direction, as shown in FIGURE 5, under action of spiral spring 92, whereby the outer ends of the locking bars 87 engage the notch 86 of the pusher rod which has remained in inoperative position; thus, the locking bars 87 lock both pusher rods 29 against further movement.

To unlatch the pusher rods 29, the igniting mechanism has to be operated: upon depression of pusher tube 50, legs 56 move towards the left, as shown in FIGURE 1, thereby rotating return rod 95 in accordance with arrow 110 shown in FIGURE 6, and the bent end 94 again engages hole 93 of the pivoted element 89. When the cigarette C has been ignited and upon return of the igniting mechanism to its inoperative position, the legs 56 move to the right, as shown in FIGURE 1, which causes rotating return movement of return rod 95 which returns element 89 to its upright position shown in FIGURE 4, whereby the locking bars 87 release the two pusher rods 29 and the apparatus is ready for the discharge and igniting of another cigarette.

The apparatus in accordance with the invention is preferably mounted within the instrument panel of a motor vehicle in such a way that the pusher rods 29 and pusher tube 50 face the operator, together with the discharge opening 84. The long axis of casing is arranged parallel to the long axis of the motor vehicle.

The magazine 2 protrudes through an opening made in the top of the instrument panel and can be bodily removed. Magazine 2 may be provided with a pivotal closure (not shown), if so desired. Vacuum tube 61 is connected to a source of vacuum such as the air intake of the internal combustion engine of the vehicle. Wire 44 is connected to the electrical circuit of the motor vehicle in conventional manner.

Magazine 2 is removable to facilitate insertion of a plurality of cigarettes in the two compartments 7'. Two different brands or types of cigarettes may be used.

Upon depression of the selected pusher rod 29, a cigarette is discharged into cigarette-igniting position and, upon subsequent depression of the pusher tube 50, the cigarette in the latter position is ignited and automatically

drops through the discharge opening 84 with its unlighted end abutting flange 85 in a position ready to be grasped by the user.

Because all the cigarettes are arranged with their long axis parallel to the long axis of the motor vehicle, the apparatus takes a minimum width on the instrument panel, and there is ample space for the other instruments on said panel.

FIGURES 7 to 14 inclusive relate to the second embodiment of the present invention. In these figures, there is shown a casing 180 consisting of an enlarged top portion 181 and a generally flattened bottom portion 182, which is curved downwardly and forwardly and has the general shape of a pistol grip. The top portion 181 forms a magazine-receiving compartment. It has curved lateral walls 183, a flat top wall 184, and a back wall 185, and its open front is surrounded by a flange 186 for securing the apparatus inside the instrument panel 188 of a motor vehicle with front opening 187 being directed towards the passengers.

Front opening 187 extends downwardly partly between the flat lateral walls 189 of the bottom portion 182 of casing 180. A magazine 190 is slidably inserted within the top portion 181 of casing 180, said magazine 190 having curved lateral walls 191 extended downwardly with flat lateral wall portions 192, a flat back wall 193 adapted to abut against the back wall 185 of casing 180, and a front wall 194 adapted to be flush with flange 186 and with the front wall portion 195 of the bottom casing portion 182, in the position of magazine 190, inserted within casing 180.

A cover 196 is secured to front wall 194 by means of knob 197, which extends at the front of cover 196. Cover 196 is adapted to overlap the marginal portion of the opening 198 made in the instrument panel 188. A horizontally-arranged bar 199, of U-shaped cross-section, extends within magazine 190 and is spaced from the lateral walls thereof. Bar 199 serves to retain to a certain extent the cigarettes on top thereof in the magazine so as to relieve pressure on the cigarettes below bar 199.

Bar 199 is disposed just above the junction between the curved lateral walls 191 and the flat lateral wall portions 192 of the magazine. The latter further includes a trap, generally indicated at 200, for retaining the cigarettes in the magazine and dispensing the same one at a time into cigarette-igniting position.

Trap 200 consists of a tray made of two elongated tray sections 201, each having a cross-sectional shape forming a quarter of a circle, sections 201 being disposed side by side so as to form a half-circle, the inside diameter of which is substantially equal to the outside diameter of a cigarette 202, as shown in FIGURE 10.

Sections 201 are provided with end walls 203, which are pivotally interconnected at 204 at the top inside corners of the end walls 203 at each end of the tray.

The pivot pins 204 are journaled within the front and back walls of magazine 190, so that trap 200 extends longitudinally of the magazine in the region thereof between the bottom flat lateral wall 192 of said magazine.

The space between the walls 192 and the sections 201 is very small and at least much less than the diameter of a cigarette 202. Under action of gravity, the sections 201 take a lowermost position, as shown in FIGURE 10, retaining a cigarette 202 therein. However, the two sections 201 may be pivoted upwardly above their pivot pins 204, so as to release the cigarette in the tray and let it drop into cigarette-igniting position.

The discharging position of the tray is shown in FIGURE 11. In order to pivot the sections 201, each one is provided at the back of the magazine with a pin 205 secured thereto near the outer corners of the end walls 203 and freely extending through aperture 206 of magazine 190 and aperture 206' of casing 180 and are lifted by mechanism to be described hereinafter.

Upon removal of magazine 190, the cigarette trap 200, naturally, is removed with the magazine 190. The cigarette released from trap 200 drops into cigarette-igniting position onto a shelf 207 and a retractable finger 208.

Shelf 207 is defined by a re-entrant portion of the front wall 194 of casing bottom portion 182, said shelf having an upstanding boss 209, more particularly adapted to engage the smoking end of the cigarette 202.

Finger 208 is secured to a pivot pin 210 extending flat against the outside of lateral wall 189 and journaled in brackets 111 secured to said lateral wall. Finger 208 extends through an opening 112, made in said lateral wall, and is longitudinally curved to conform to the under side of a cigarette. Finger 208 has a cigarette-clearing position, as shown in FIGURE 7, extending downwardly within opening 112, and a cigarette-retaining position, as shown in FIGURE 8, extending transversely across the passage formed between the lateral walls 189 and engaging with the mouth-engaging end of the cigarette.

In the cigarette-igniting position, the cigarette is disposed in alignment with a lighter assembly 113, mounted at the front of the apparatus, and a suction assembly 114, disposed at the back of the apparatus.

The lighter assembly 113 is of conventional construction, being similar to those found in motor vehicles. It comprises a cylindrical body 115 provided with cut-out resilient tongues 116 and a radial flange 117 at its outer end. Within the body 115, is slidably mounted a stem 118 carrying an operating knob 119 at its end protruding from body 115 on the outside thereof. The inner end of stem 118 carries a head 120 having at its outer face an electric resistance element 121 wound in a flat spiral. Head 120 has a flange 123 engageable with bi-metallic blades 124 which are secured inside a sleeve 125, of cylindrical shape, and protruding from and secured to the front wall 195 and in communication with the interior of the casing.

Sleeve 125 has such a diameter that the body 115 has a sliding fit therein and is frictionally retained by tongues 116. Stem 118 is urged in outward position with respect to body 115 by means of an internal spring, not shown, arranged within body 115 and engaging the stem 118.

The flange 117 of body 115 is adapted to abut against the outer end of sleeve 125, and, upon pressing on knob 119, the stem 118 is displaced inwardly against the action of its spring, so that electric resistance element 121 engages the ignitable end of the cigarette 202 in cigarette-igniting position and displaces the cigarette rearwardly axially of the apparatus.

Upon inward movement of stem 118, the electric circuit is closed for the resistance element 121, switching means being provided by the bi-metal blades 124 engaging the flange 122 of head 120.

The suction assembly 114 comprises a cylinder 126 secured to the back wall 185 of the casing and opening within said casing. A piston 127 is slidable within cylinder 126 and has a tubular piston rod 128 in telescopic engagement within a short suction tube 129.

Tube 129 has a radial flange 130 at its outer end and its inner end is secured to a rubber bushing 131 in axial alignment therewith. Tube 129 is guided in the hole of a partition 132 secured to cylinder 126 and closing the inner end of the same.

A main coil spring 133 abuts against partition 132 and against piston 127 to urge the same into retracted position with the bushing 131 retracted from within the casing 180, as shown in FIGURE 9.

A second smaller and weaker spring 134 surrounds tubular piston rod 128, is attached at one end to piston 127 and, at the other end, to flange 130.

Spring 134 serves to retract tube 129 upon retracting movement of piston 127 and to allow rubber bushing 131 to contact the cigarette in cigarette-igniting position, in a gentle manner, upon advancing movement of the piston 127.

Tubular piston rod 128 has apertures 135 adapted to register with apertures 136 made in tube 129 when the latter is telescoped over piston rod 128, as shown in FIGURE 8. The cylinder 126 is closed at its outer end by a cover 126' having a hole 126'' for the admission of air behind the piston 127.

The space between the piston 127 and partition 132 is in communication with a source of vacuum by tube 137. Tube 137 is preferably connected to the intake manifold of the internal combustion engine of the vehicle, or to any other appropriate source of vacuum, and is provided with a shut-off pneumatic valve 128, of conventional construction, and having an operating lever arm 139.

As shown in FIGURE 7, said lever arm 139 is automatically actuated by the cigarette lighter assembly 113; more particularly, a link rod 140 is pivotally attached at one end to the outer end of lever arm 139, extends alongside casing 180 and its front portion is slidable within two spaced brackets 141 and 142 secured to the casing 180 and to sleeve 125 of the lighter assembly.

Sleeve 125 has a longitudinally extending slot 143, in which is movable a finger 144 slightly projecting within sleeve 125 and secured to link rod 140. A coil spring 145 extends around link rod 140 and abuts against bracket 141 and against finger 144 and serves to move said finger forwardly to thereby normally maintain valve 138 in closed position.

Upon pushing on the lighter knob 119, flange 122 of head 120 engages the finger 144 and pushes against link rod 140, in order to open valve 138. A vacuum actuator 146 serves to actuate trap 200 for releasing a cigarette. Actuator 146 consists of a cylinder 147 and of a piston 148, the piston rod 149 of which extends downwardly from cylinder 147 and carries transverse bar 150, over the edge of which the pins 205 of sections 101 are adapted to extend.

The space of cylinder 147 over piston 148 is in communication with the source of vacuum by branch tube 151 connected to tube 137 on the same side of valve 138 as the connection of tube 137 to cylinder 126. A coil spring 152 is disposed within cylinder 147 and abuts against piston 148 to urge the same in a downward limit position.

Referring to FIGURE 7, a lever 153 is pivoted at 154 intermediate its ends to the casing 180. A link rod 155 is pivotally attached to the forward end of lever 153 and to the outer end of the crank arm portion of the pivot pin 210 of finger 108.

The rearward end of lever 153 is pivotally connected at 156 to a forwardly extending finger of bar 150. Thus, upon upward movement of piston 148 under the action of vacuum, lever 153 pivots in a clockwise direction, as seen in FIGURE 7, to thereby cause upward pivotal movement of finger 208 into a cigarette-retaining position.

Bar 150 also lifts pins 205 of the sections 201 which release a single cigarette which drops onto the already lifted finger 208 and onto boss 209 of shelf 207.

The bottom portion 182 of casing 180 has a pistol shape and is terminated by a discharge opening 157, at its lower end, said discharge opening being adapted to be outside the dashboard or instrument panel 188. Bottom portion 182 of the casing forms a passageway for the lighted cigarette, which has a width slightly wider than the diameter of a cigarette and which is forwardly downwardly inclined to allow the cigarette to slide downwardly towards discharge opening 157.

The curved back wall portion 158 of the bottom casing portion 182 merges with the top back wall 185, while front wall portion 159 of the casing is rearwardly offset with respect to front wall 195.

The dispenser in accordance with the invention operates as follows:

Magazine 190 is pulled off casing 180 and filled with cigarettes, taking care that the end of the cigarettes to

be lighted will be disposed forwardly of the magazine closest to cover 196. Magazine 190 is re-inserted within casing 180.

To dispense a lighted cigarette, the lighter knob 119 is pushed in. This immediately actuates link rod 140 which causes opening of valve 138.

Cylinder 147 being smaller than cylinder 126 is evacuated quicker than the latter and its piston rod 149 moves upwardly to first cause raising of finger 208 and then actuation of trap 200 to dispense a cigarette which drops immediately onto a cigarette-igniting position on finger 208 and on boss 209 of shelf 207. Further movement of the lighter body 115 causes its head 120 to engage the forward end of the cigarette and to push the latter slightly rearwardly; meanwhile, cylinder 126 continues to be actuated, to thereby cause forward movement of piston rod 128 and eventually of tube 129, the rubber bushing 131 of which firmly engaging the butt end of the cigarette.

The electric resistance 121 is automatically connected to the source of electricity, not shown, upon the lighter head 120 reaching its inward limit position, whereby the resistance 121 heats up to light the cigarette. Meanwhile, piston rod 128 becomes fully telescoped within tube 129 so that apertures 135 and 136 are now in register and the inside of suction tube 129 is now in communication with the source of vacuum, whereby air is sucked through the cigarette to further assist in the lighting of said cigarette.

Once the cigarette is lighted, the bi-metal blades 124 are heated enough to bend outwardly to release the lighter head 120, which immediately retracts under the action of the spring, not shown, contained in body 115.

The flange 123 of head 120 releases finger 144, which moves forwardly under the action of its spring 145, whereby link rod 140 moves forwardly and shuts off valve 128. There being no vacuum in the cylinders 126 and 147, piston 148 of the latter moves downwardly to thereby cause downward pivoting movement of finger 208, and also downward pivotal movement of the sections 201 of trap 200 to receive a new cigarette.

The released cigarette, which is now lighted, drops into the bottom portion 182 of the casing 180 after retracting movement of bushing 131. The cigarette makes a 180-degree turn while falling down portion 182, as shown in dot-and-dash lines in FIGURE 8, so that the non-lighted end of the cigarette appears in discharge opening 157 ready to be grasped by the user.

From the foregoing, it appears that the single manipulation of the knob 109, namely pressing on said knob, causes the entire operation of dispensing a lighted cigarette.

While preferred embodiments in accordance with the invention have been illustrated and described, it is understood that various modifications may be resorted to without departing from the spirit and scope of the appended claims.

What I claim is:

1. A cigarette dispenser and lighter comprising, in combination, a casing having an elongated cross-section and end walls and side walls, a storage magazine in communication with said casing at the upper portion thereof, igniting means mounted on one end wall of said casing, means to discharge a cigarette from said storage magazine, means to temporarily retain said discharged cigarette into a cigarette-lighting position in alignment with said igniting means, manually-operable means to operate said igniting means, cigarette guiding means to turn an ignited cigarette released from said position from end to end in a vertical swinging movement, said end wall having a cigarette discharge opening from which said guiding means protrude, whereby only the non-lighted end of the cigarette protrudes through said opening in the discharge position of said cigarette.

2. A cigarette dispenser and lighter as claimed in claim 1, wherein said storage magazine defines at least two sep-

arate compartments disposed side by side and opening at the lower end of said magazine, said casing having vertical guiding walls spaced from each other a distance substantially equal to the diameter of one cigarette, said guiding walls flaring at their upper ends for communication with the two compartments of said magazine, said cigarette-discharging means including a pusher rod and a retaining and discharge mechanism associated with each compartment of said magazine, said igniting means including an electric resistance element facing the space between said two guiding walls, said cigarette guiding means being disposed between said two guiding walls and below said resistance element.

3. A cigarette dispenser and lighter as claimed in claim 2; wherein said means for temporarily retaining a cigarette in cigarette-igniting position include an abutment member disposed between said guiding walls adjacent and below said resistance element for maintaining one end of a cigarette in cigarette-igniting position in alignment with said resistance element, and a retractable member disposed between said guiding walls and remote from said abutment member for supporting the end of said cigarette remote from said resistance element, said guiding means including a curved guiding strip disposed between said guiding walls and extending from one end wall of said casing to the other end wall thereof for engaging the non-lighted end of an ignited cigarette released by said retractable member.

4. A cigarette dispenser and lighter as claimed in claim 1, further including locking means associated with said cigarette-discharging means and with said igniting means and operable to lock said cigarette-discharging means upon a single operation thereof to discharge one cigarette, and returnable into unlocking position by operation of said igniting means.

5. A cigarette dispenser and lighter as claimed in claim 1, further including a suction tube slidably mounted on the other end wall of said casing in alignment with said igniting means; mechanism connecting said suction tube and said igniting means to press said suction tube against the end of the cigarette in cigarette-igniting position remote from the end in contact with said igniting means upon operation of said igniting means and to move said suction tube away from said cigarette upon return of said igniting means to a non-operative position.

6. A cigarette dispenser and lighter as claimed in claim 1, wherein said means to discharge a cigarette from said storage magazine include a pair of elongated tray sections, disposed side by side, and pivotally interconnected at their ends and each having a curved cross-section forming a quarter of a circle, of an inside diameter corresponding to the outside diameter of a cigarette to retain the same when said sections are in lowered position abutting each other, power means for pivotally raising said sections to allow a cigarette to fall therebetween, and means for controlling the operation of said power means and in

turn controlled by operation of said manually-operable means.

7. A cigarette dispenser and lighter as claimed in claim 6, wherein said power means include a vacuum-operated cylinder and piston unit, pins secured to said tray sections and removably engageable with the piston rod of said unit.

8. A cigarette dispenser and lighter as claimed in claim 7, wherein said means to temporarily retain said discharged cigarette include an abutment member disposed adjacent and below said igniting means for maintaining one end of a cigarette in cigarette-igniting position in alignment with said lighting means and a retractable member remote from said abutment member for releasably supporting the end of said cigarette remote from said igniting means, said retractable member being pivotally mounted on said casing and mechanically connected to the piston rod of said cylinder and piston unit for movement of said retractable member into a cigarette-retaining position upon movement of said piston.

9. A cigarette lighter and dispenser as claimed in claim 8, further including a tube for connecting said cylinder to a source of vacuum, a shut-off valve mounted in said tube and mechanical linkage extending from said shut-off valve to said igniting means and operated by said igniting means upon manual movement thereof, to open said shut-off valve.

10. A cigarette dispenser and lighter as claimed in claim 6, further including a suction tube slidably mounted on the other end wall of said casing in alignment with said igniting means, a cylinder and piston unit having a piston rod engageable with said suction tube, the cylinder of said unit connected to a source of vacuum by a tube having a shut-off valve, mechanical linkage between said shut-off valve and said igniting means, whereby movement of said igniting means opens said shut-off valve and vacuum in said cylinder causes advancing movement of said piston and suction tube associated therewith to contact the suction end of a cigarette in cigarette-igniting position, said advancing movement establishing vacuum in said suction tube and spring means to retract said piston and suction tube upon cut-off by said valve, to thereby release the suction end of the cigarette.

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