

Dec. 12, 1939.

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2,182,955

AUTOMATIC CIGARETTE LIGHTER AND DISPENSER

Filed Dec. 15, 1937

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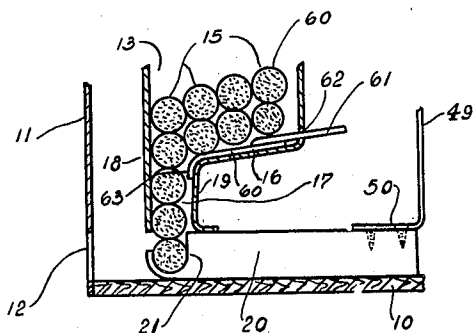
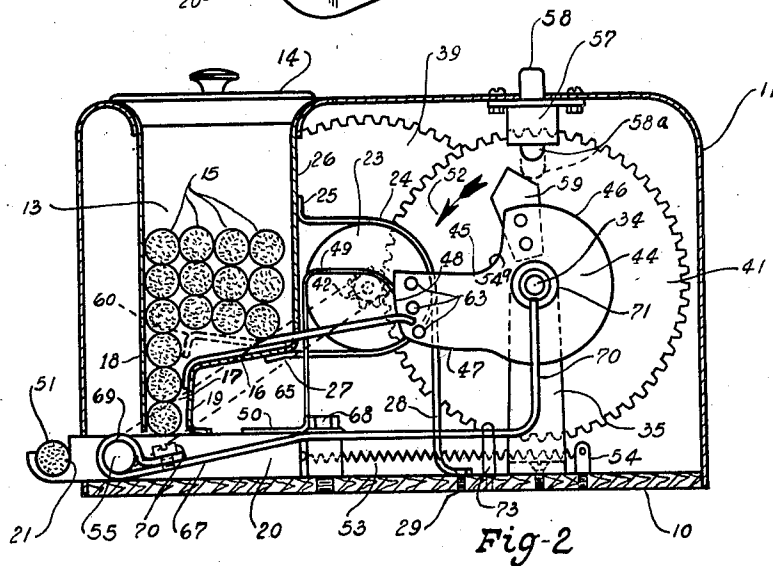
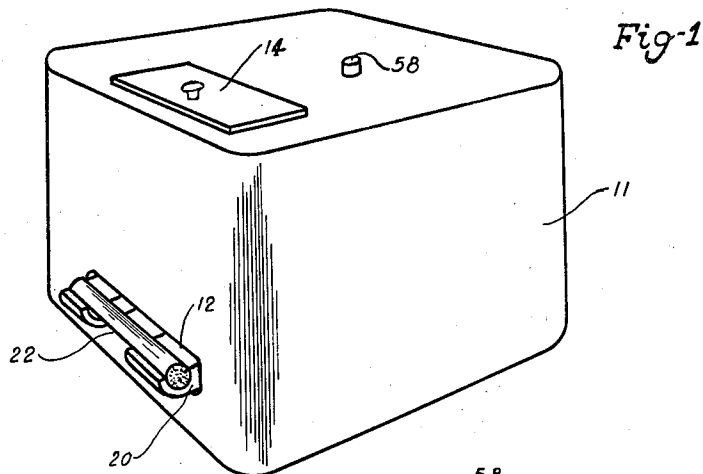


Fig-3

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Dec. 12, 1939.

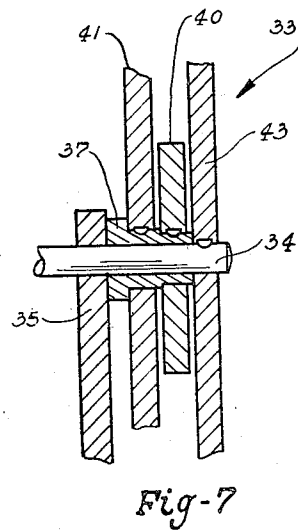
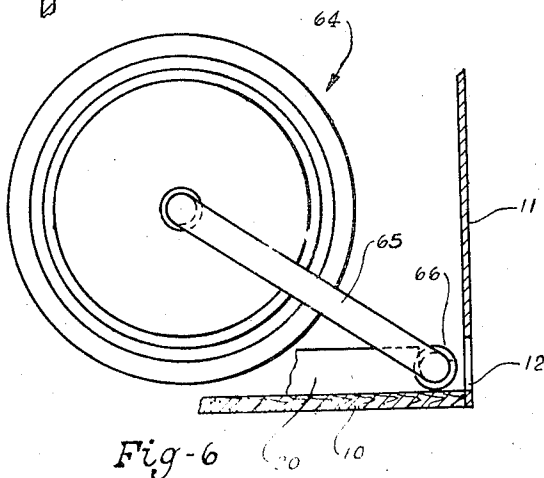
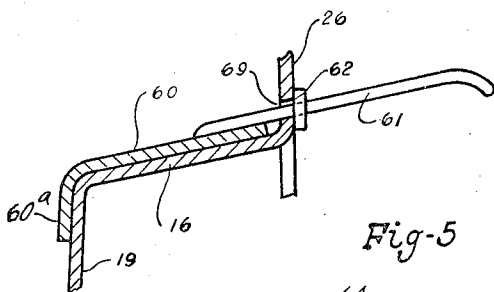
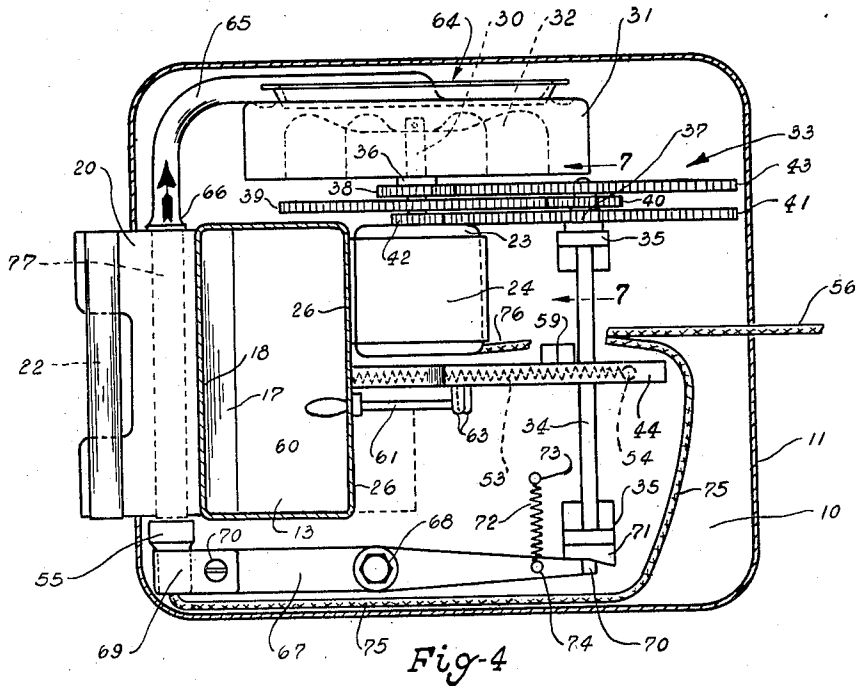
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AUTOMATIC CIGARETTE LIGHTER AND DISPENSER.

Filed Dec. 15, 1937

2 Sheets-Sheet 2



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2,182,955

AUTOMATIC CIGARETTE LIGHTER AND DISPENSER

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Application December 15, 1937, Serial No. 179,831

8 Claims. (Cl. 312-86)

This invention relates to new and useful improvements in dispensing or serving devices and has particular relation to an automatic cigarette lighter and dispenser.

5 The objects and advantages of the invention will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawings wherein a satisfactory embodiment of the invention is shown. However, it is to be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claims.

15 In the drawings:

Fig. 1 is a perspective view showing the improved dispenser and lighter;

20 Fig. 2 is a vertical sectional view through the device showing the same supporting a lighted cigarette in position to be picked up for use, the view being taken as though a side of the device had been removed;

25 Fig. 3 is a detailed sectional view showing the cigarette carrier or tray in position receiving a cigarette from a receptacle;

Fig. 4 is a plan view of the mechanism, the upper portion or top wall of the casing being removed;

30 Fig. 5 is an enlarged detail sectional view showing the mounting of an agitator employed;

Fig. 6 is a detail view showing the suction connection in elevation; and

Fig. 7 is a detail sectional view taken as along the line 7-7 of Fig. 4.

35 Referring in detail to the drawings, the present device is shown as including a base 10 and a casing or housing 11 projecting above the base and in its front wall provided with a slot or opening 12 through which a carrier may deliver a lighted cigarette as will appear. Within the casing 11 toward the front thereof is a receptacle 13, the upper end of which is normally closed by a cover 14 giving access to the receptacle where-
40 by it may be loaded with cigarettes 15.

45 The lower wall 16 of said receptacle inclines, as shown, in Figs. 2, 3 and 5 toward a restricted throat portion 17, one wall of which is formed by the wall 18 of the receptacle and the other wall of which is formed by a depending skirt-like portion 19 comprising a continuation of the bottom wall 16. Obviously, cigarettes disposed in the receptacle 13 will tend to move toward the throat 17 and such throat is of a size whereby the cigarettes may pass one at a time through
50 it toward its lower end.

The lower end of the throat 17 is in spaced relation to the inner or upper surface of the base 10 and the space between base 10 and the lower end of the throat 17 is equal to the thickness of a slidable carrier 20, which toward its forward end is provided with a groove 21 of a size to receive a cigarette as shown. In one of its positions, as will later more fully appear the carrier 20 is so located that a cigarette may move from the throat 17 into the groove 21 (Fig. 3),
5 10 and in another position, the slide is so disposed (see Figs. 1, 2 and 4) that its forward portion containing the groove 21, is projecting through the opening or slot 12 to dispose the cigarette at the outer side of the casing. This forward or
15 grooved portion of the slide is bifurcated whereby a recess 22 is formed so that a cigarette may be easily removed from the carrier by grasping the intermediate portion of the cigarette.

A small electric motor 23 is supported within 20 the casing or housing 11 as by means of a strap or band 24, one end 25 of which may be secured to the rear wall 26 of receptacle 13 and an end 27 of which may be secured to the bottom wall of such receptacle. In addition, a leg-like portion 25 28 may be lanced from said strap 24 and carried down and secured to the base at 29. It is noted that motor 23 is supported in spaced relation to the base 10 and the shaft 30 of said motor projects into a fan housing 31 and therein carries the blades 32 of a suction fan. Thus, the blades 32 are driven at the speed of the motor 23.

Through reduction gearing generally designated 33 the motor 23 drives a cam shaft 34 supported above the base as by bearing member 35. On the motor shaft 30 is a bushing 36 within which such shaft turns and on the cam shaft 34 is a similar bushing 37 turnable relative to said cam shaft. Bushing 36 carries a small gear 38 and a large gear 39, while bushing 37 carries a small gear 40 and a large gear 41.

Fixed to the motor shaft is a small gear 42 meshing with and driving the large gear 41 of bushing 37 whereby the small gear 40 of said
45 bushing is also driven. Such small gear 40 meshes with and drives large gear 39 of bushing 36 whereby the small gear 38 of such bushing is driven and the latter meshes with and drives a
50 large gear 43 secured to the cam shaft 34. With this arrangement it will be apparent that the shaft 34 has a slow movement as compared with that of the motor shaft 30 and further it is to be understood that the gear reduction is accom-
55

plished without the use of jack shafts or the like.

On the cam shaft 34 is a cam 44 including a low portion 45, a cam surface 46 and a higher cam surface 47 terminating in an end 48. This cam cooperates with a metal arm 49 secured to the carrier 20 at 50. Fig. 2 shows the relation of the cam to the arm at the end of one cycle of the machine's operation. There the cam has its highest portion 43 in engagement with the arm whereby the carrier 20 is in its foremost position with its bifurcated portion projecting through the front wall of the housing 11 so as to present a lighted cigarette 51 for use.

The next time the machine is to be operated the motor 23 is energized (in a manner to be described) and driving the cam shaft 34 moves the cam in the direction indicated by the arrow 52 (Fig. 2). As the high point of the cam moves downward away from the arm 49, a coil spring 53 anchored at one end to a pin 54 and at its other end to the slide 20 retracts such slide to the position of Fig. 3. The low portion 45 of the cam permitting of this movement.

In its retracted position the tray receives the cigarette from the throat 17 and as the cam continues to rotate its surface 54a engages the arm 49 and begins to move the slide forwardly and at the time that the surface 46 of the cam comes against the arm 49 the cigarette being carried by the slide is opposite an igniter 55 (later to be described). The cigarette remains in this position for that period of time required for movement of cam surface 46 past the arm and during such period of time the cigarette is ignited. Movement of the cam continuing in the same direction, cam portion 47 comes into engagement with the arm forcing it and the carrier forwardly so as to dispose the latter in the position of Fig. 2 by the time cam surface 48 again engages the arm. This completes a cycle of the machine's operation and at this time the motor is deenergized as will later be described.

A lead-in wire 56 from any suitable source enters the casing 11 and connects with a push-through type of switch 57 having a push button 58 projecting through the upper wall of the casing and by means of which the circuit to the motor 23 may be closed. Secured to the cam 44 is a dog 59 arranged in alignment with the button 58a of switch 57 and the arrangement is such that as the cam 44 completes one revolution, the dog 59 is caused to act on the push button 58a to open the switch 57 thereby deenergizing motor 23. Obviously with this arrangement to start the machine it is simply necessary to depress the push button 58 to close the switch 57 and when the machine has completed a cycle of operation dog 59 operating on push button 58a opens the switch.

Within the lower portion of the receptacle 13 is an agitator means comprising a plate-like part 60 to which a wire 61 is connected and the said wire passes out through an opening 62 in the rear wall 26 of receptacle 13 and projects over into the path of movement of a series of pins 63 carried by cam 44. Obviously, with this arrangement for each revolution of the cam 44 the plate-like part 60 will be flapped up and down as suggested by the dotted lines in Fig. 2 so as to agitate the cigarettes in the receptacle 13 and prevent them from becoming packed therein in such manner that they do not feed into the throat 17. This movement of the agitator tends to throw the cigarettes into a column or row

along the front wall 18 of the receptacle and it is from this column that the cigarettes feed into the throat 17. Preferably, plate-like part 60 includes a depending portion 60a whereby when such part is in an upper position as in the dotted line position of Fig. 2 a cigarette may not move laterally and lodge under the part.

The suction fan which I have generally designated 64 applies a suction to a tube 65 having a bell mouth 66 positioned to be opposite an end of a cigarette when the carrier 20 is supporting the latter in position to be ignited.

The igniter 55 is carried by a strap-like arm 67 pivotally mounted intermediate its ends at 68 and having a portion 69 bent about a part of the lighter and secured by a screw 70 so as to clamp the lighter. The rear end portion of arm 67 is bent to extend upwardly as at 70 whereby to be engaged by a cam 71 on the shaft 34. A spring 72 is anchored by a pin 73 at one end and the other end of said spring is secured to the rear portion of the arm 67 at 74. Thus, coil spring 72 keeps the arm 67 in engagement with the cam 71. Obviously, as the cam rotates it will rock the arm 67 about its pivot 68 whereby to swing the igniter 55 inwardly toward a cigarette in the carrier when the carrier is in its second or cigarette-igniting position. As shaft 34 continues to rotate and the high part of cam 71 passes beyond 67 spring 72 will rock such arm in the opposite direction to carry the igniter away from a cigarette with which it has been in engagement.

Energizing of the igniter is controlled by switch 57 from which wires 75 lead to the igniter while the lead to the motor 23 is shown at 76.

Assuming that receptacle 13 contains cigarettes in order for the operator to obtain an ignited cigarette from the device it is but necessary that he push the switch button 58 to close the switch 57. This results in the button 58a being moved from the full to the dotted line position of Fig. 2. Switch 57 being closed, motor 23 is energized and operates the suction fan 64 applying a suction to the tube 65 and closing of the switch also energizes the igniter 55.

Through the gearing 33 motor 23 drives the shaft 34 and on initial movement of the latter the igniter is not shifted but remains in its inoperative position. However, during such initial movement cam 44 moves so that its high surface 48 is carried below arm 49 and spring 53 moves slide 20 from the position of Fig. 2 to that of Fig. 3. Then the lowermost cigarette in throat 17 drops into the groove 21 of the carrier 20; thereafter cam 44 proceeds to move the carrier 20 forwardly so as to dispose the cigarette in the position of the dotted-line cigarette 77 of Fig. 4.

At this time surface 46 of cam 44 is in engagement with arm 49 so that the cigarette stays in this second position for a given length of time. While the cigarette is in such position, cam 71 engages portion 70 of arm 67 to rock such arm on pivot 68 whereby to carry the igniter 55 against one end of the cigarette and by so doing force the other end of the cigarette against the mouth 66 of tube 65. At this time the igniter is energized and engaging one end of the cigarette and as a suction is being applied to the other end of the cigarette the latter is lighted.

Thereafter, shaft 34 continuing to turn in the same direction, cam 71 moves to permit the spring 72 to shift the igniter away from the

cigarette and immediately thereafter surface 47 of the cam 44 begins its engagement with arm 49 shifting the carrier 20 again forwardly as to the position of Figs. 1, 2 and 4 wherein the lighted cigarette is exposed for easy removal from the carrier.

While the carrier is in this forward position dog 59 engages the push button 50a of the switch 57 forcing such button upwardly from the dotted to the full line position thereby opening switch 57 and deenergizing the motor 23 and the igniter 55. Thus, the machine is stopped with the lighted cigarette at the outer side of the machine.

In connection with movement of the carrier 20 attention is directed to the fact that when this carrier moves forward from the position of Fig. 3 its upper surface serves as a means for closing the lower end of the throat 17 whereby the feeding of a second cigarette from the receptacle 13 is prevented while the carrier is in a forward position or in fact at any time before the cigarette first fed has been removed from the receptacle.

Having thus set forth the nature of my invention, what I claim is:

1. In a device of the character described, a base, a housing over the base, said housing having an opening in a wall thereof, means forming a cigarette receptacle within the housing and having an opening for movement of cigarettes therefrom toward the base, a movable carrier within the housing below said means and supported for movement by said base, an igniter means within said housing and disposed along the path of movement of said carrier, means mounting said igniter for movement toward the path of movement of the carrier, spring means for moving said carrier into position to receive a cigarette from the receptacle, cam means for moving said carrier from a cigarette receiving position to a second position supporting a cigarette for engagement by said igniter, cam means for moving said igniter into engagement with a cigarette supported by the carrier when the latter is in said second position, said first cam means then operable to move the carrier to a third position projecting through said opening in the housing wall and supporting the cigarette at the outer side of said housing for removal by a user, a motor mounted to form a portable unit with the base and housing and connected to operate both of said cam means, means for starting said motor, and means for automatically stopping the motor when the first mentioned cam means has moved the carrier to the last mentioned position.

2. In a device of the character described, a base, a housing over said base, said housing having an opening in a wall thereof, a cigarette receptacle having an opening therein for movement of cigarettes therefrom, means supporting said receptacle within the housing, a carrier within said housing and movable to and from a position projecting through said opening in the housing wall, an igniter supported within the housing along the path of movement of the carrier, means for moving said carrier from a position receiving a cigarette from said receptacle to a position presenting the cigarette to said igniter for ignition thereby, said means after the cigarette has been presented to the igniter operable to move the carrier to pass the cigarette receiving portion thereof through said opening in the housing wall to locate said carrier portion at the outer side of

the housing to expose the cigarette for removal by a user, a motor supported within said housing and connected to operate said means, means for starting said motor, and means for automatically stopping the motor when said means has moved the carrier to the last mentioned position.

3. In a device of the character described, a cigarette receptacle having an opening therein for movement of cigarettes therefrom, an igniter, a carrier for receiving a cigarette from said receptacle and presenting it to said igniter, means mounting said carrier for movement along a predetermined path, means mounting said igniter for movement toward the path of movement of said carrier for engagement with a cigarette supported by the carrier, a motor, a fan on the shaft of said motor, a tube to which said fan applies a suction and having an end along the path of movement of said carrier and at the side of said path opposite that at which said igniter is located, a cam shaft, speed-reducing gearing between said motor and said cam shaft whereby the motor drives the cam shaft at a low speed, and cam means on said cam shaft for operating said carrier along said path and for moving said igniter against an end of a cigarette supported by the carrier whereby to force the opposite end of the cigarette into operative relation with said tube.

4. In a device of the character described, a base, a cigarette receptacle, means supporting the receptacle above the base, said receptacle having an opening therein for movement of cigarettes therefrom toward the base, a carrier, means slidably mounting said carrier below the receptacle whereby the carrier may receive cigarettes from the receptacle, an igniter supported by said base and located along the path of movement of said carrier, a motor supported by said base, means operated by said motor for moving said carrier from a position receiving a cigarette from said receptacle to a position presenting the cigarette to said igniter, a fan connected with said motor, a tube connected with said fan to have a suction applied to the tube, said tube having an end arranged opposite an end presented to said igniter, means mounting said igniter for movement, means for moving said igniter against an end of a cigarette when one is presented thereto to thereby bring the other end of the cigarette into operative relation with the mentioned end of the suction tube, a housing on said base and enclosing all of said parts, said housing having an opening in a wall thereof, and said first means operable after the cigarette has been presented to the igniter to move the carrier to a position projecting through said opening in the wall of the housing to expose the cigarette for removal from the carrier by a user.

5. In a device of the character described, a base, a housing over said base, said housing having an opening in a wall thereof, a cigarette receptacle supported within said housing and having an opening for the movement of cigarettes therefrom, a slidable carrier supported by said base within the housing, an igniter means within the housing and supported by the base and located along the path of movement of said carrier, spring means located within said housing and operable to slide the carrier into position to receive a cigarette from said receptacle, operating means for sliding said carrier from a cigarette receiving position to a position to have the cigarette engaged by said igniter and to retain the carrier in such position while the cigarette is

being ignited, said means operable thereafter to slide the carrier to a position projecting through said opening in the wall of the housing to present the cigarette for removal from the carrier
 5 by a user, a motor supported on said base and connected to drive said operating means, means for starting said motor, and automatic means for stopping the motor when the operating means has moved the carrier to a position exposing the
 10 cigarette at the outer side of the housing.

6. In a device of the character described, a base, a housing over said base, said housing having an opening in a wall thereof, a cigarette receptacle within said housing and supported by the base, said receptacle having an opening therein for movement of cigarettes therefrom, a movable carrier supported within the housing by the base, an igniter means supported within the housing and located along the path of movement of
 15 said carrier, means for moving said carrier from a cigarette receiving position to a position to have a cigarette carried thereby engaged by said igniter and to retain the carrier in such position while the cigarette is being ignited, means there-
 20 after operable to move the carrier to a position projecting through said opening in the wall of the housing to present the cigarette carried by the carrier for removal therefrom by a user, a motor supported by said base and connected to drive
 25 said means, a switch associated with said base and housing and controlling said motor, means operated by the motor for opening the switch when the motor has moved the carrier to the outer side of said housing, and spring means in
 30 said housing and connected to said carrier to return the carrier to its cigarette receiving position on said switch being again closed.

7. In a device of the character described, a base, a housing over said base, said housing having an opening in a wall thereof, a cigarette receptacle within said housing and having an opening therein for movement of cigarettes therefrom, a slidable carrier within said housing and supported by said base, said carrier having a groove
 35 therein to receive a cigarette from said receptacle and support said cigarette until manually removed from the carrier, an igniter means supported by said base within said housing and located along the path of movement of said carrier, operating means within said housing for
 40 moving said carrier from a position receiving a cigarette from said receptacle to a position pre-

senting an end of the cigarette to said igniter means and for temporarily retaining the carrier in such position, and thereafter operable to move the carrier partly through said opening in the housing wall to dispose the grooved portion of the carrier at the outer side of the housing to have the carrier support the cigarette at the outer side of the housing in position for manual removal by
 5 a user, a motor for driving said operating means, said motor supported as a unit with said base and housing, means to start said motor, and means for automatically stopping the motor when the operating means has moved the carrier to the last described position.

8. In a device of the character described, a base, a housing on said base and having an opening in the front wall thereof, a cigarette receptacle in said housing, means supporting said receptacle above said base, said receptacle having
 10 an outlet for the feeding of cigarettes in horizontal positions toward the base, a carrier within the housing and slidable on the base below said outlet and aligned with said opening, an igniter in said housing at one side of the path of movement of the carrier, means pivotally mounting said
 15 igniter, suction means in said housing at the other side of the path of movement of the carrier and in alignment with said igniter, a motor in said housing, said carrier having three stationary positions in one of which it is located to receive a cigarette from said receptacle, in the second of which it aligns a cigarette with said suction means to have the latter apply a suction
 20 to one end of the cigarette, and in the third of which it projects through said opening in the housing wall and supports the cigarette at the outer side of the housing, means operated by said motor for moving said carrier from the first through to the second and third of said stationary positions, means operated by the motor in
 25 timed relation with said carrier to rock said igniter about its pivotal mounting to bring the igniter into engagement with an end of the cigarette while supported by the carrier when the latter is in the second of said positions whereby
 30 to ignite the cigarette, and said means thereafter operable to move the igniter away from the cigarette to permit of movement of the cigarette with the carrier as the latter moves to the said third position.

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