June 3, 1941. J. J. SHIVELY 2,243,889

CIGARETTE LIGHTING AND DISPENSING DEVICE

Filed May 27, 1939 2 Sheets-Sheet 1

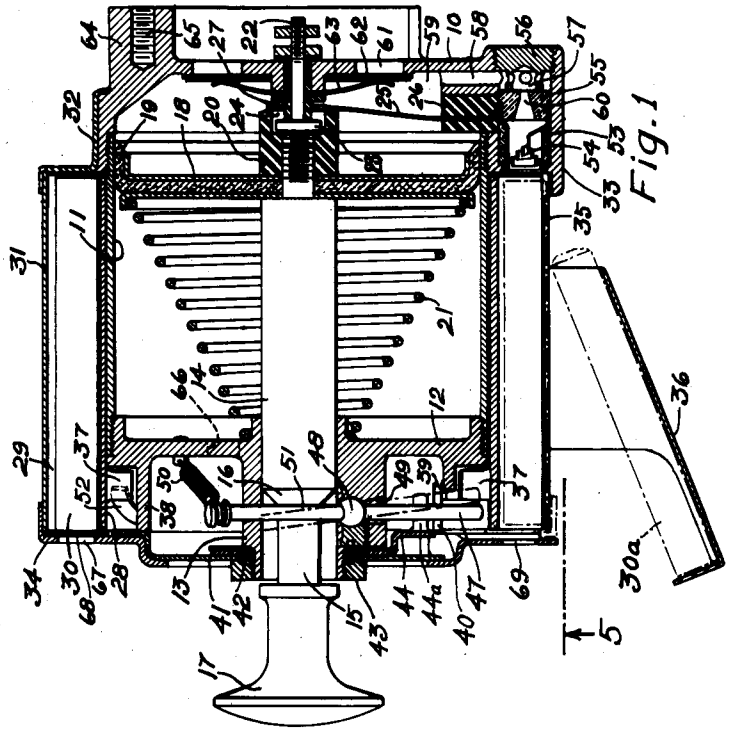


Fig. 1

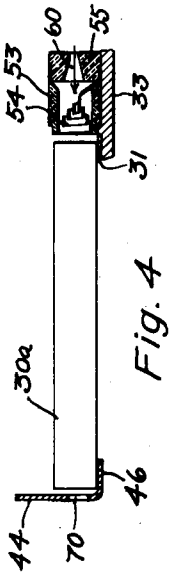


Fig. 4

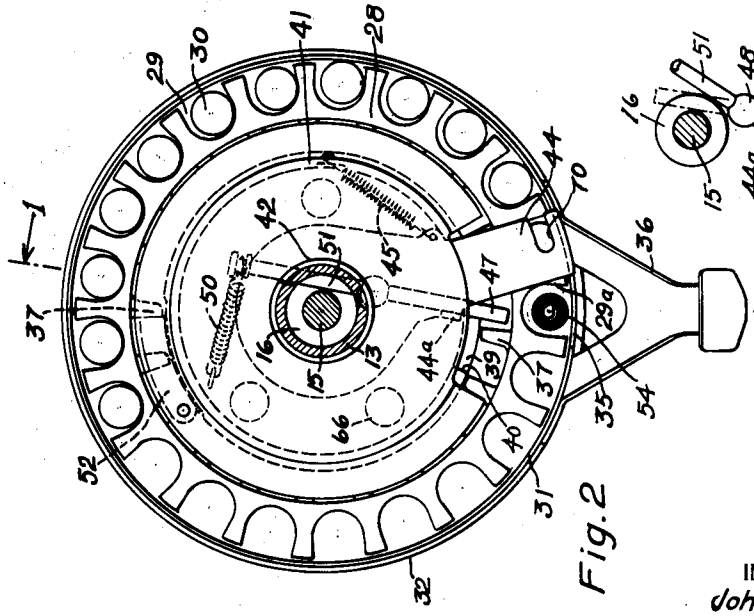


Fig. 2

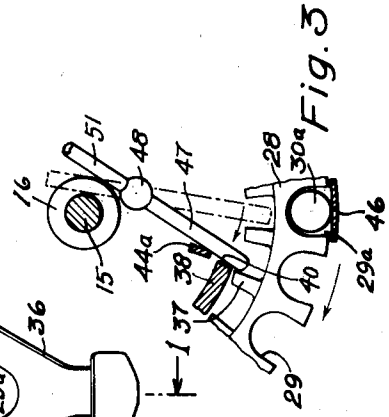


Fig. 3

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CIGARETTE LIGHTING AND DISPENSING DEVICE

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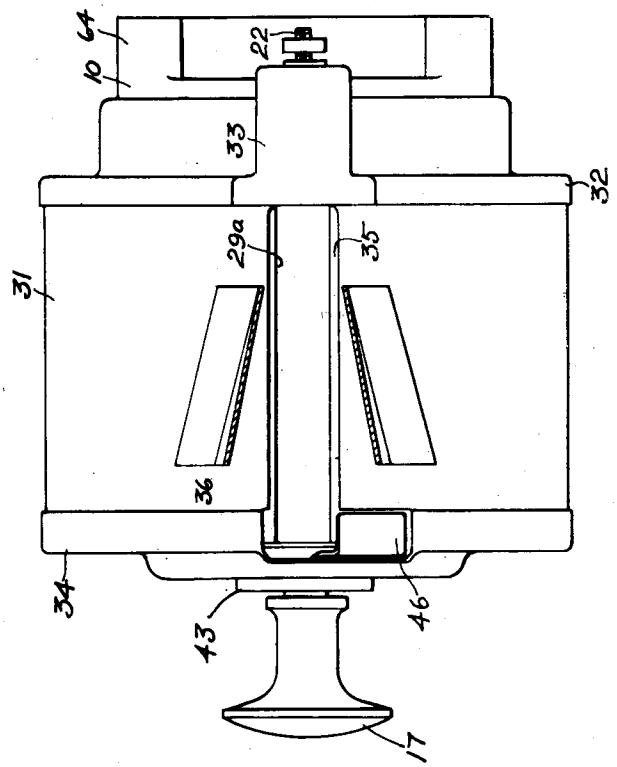


Fig. 5

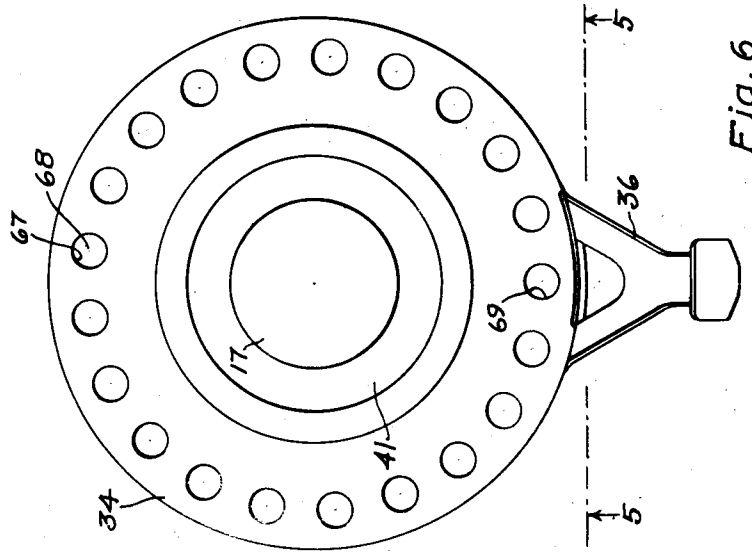


Fig. 6

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Patented June 3, 1941 2,243,889

UNITED STATES PATENT OFFICE

2,243,889

CIGARETTE LIGHTING AND DISPENSING DEVICE

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Application May 27, 1939, Serial No. 276,067

8 Claims. (Cl. 312—86)

This invention pertains to improvements in cigarette lighting and dispensing devices.

An object of the invention is to provide a device of the above nature adapted to store a quantity of cigarettes and to light and dispense the cigarettes one by one as required by the operator.

Another object is to provide improved means to position the cigarettes for lighting.

Another object is to provide means for lighting a cigarette with positive air blast instead of with suction.

A further object is to provide a device of the above character including a heating unit and means to force a draft of air through or across the heating unit into or against the end of the cigarette.

Another object is to provide a device of the above nature including a dash-pot adapted to prolong the action for proper lighting while at the same time furnishing the air current.

Another purpose is to provide a device of the above nature in which indexing movements and the like are positively actuated.

Another object is to provide a device of the above type adapted to use in motor vehicles and the like.

A still further object is to provide a device of the above type which is simple and reliable in action and which may be cheaply manufactured.

Other objects and advantages will become evident during the course of the following description in connection with the accompanying drawings, in which:

Figure 1 is a vertical longitudinal sectional view of a preferred form of the invention;

Figure 2 is a front view of the same with the cover plate removed and the operating rod and guide in section;

Figure 3 is a fragmental detail view of the indexing mechanism;

Figure 4 is a fragmental detail section showing a cigarette in lighting position;

Figure 5 is a bottom view on the line 5, Figure 1; and

Figure 6 is a front elevation.

Referring to Figure 1, the numeral 10 indicates a rear head to which is secured a cylinder 11. A front head 12 is in turn secured to the cylinder 11. The front head 12 has a central guide 13 in which is slidably mounted a piston rod 14. The front portion 15 of the piston rod 14 is of reduced diameter, joining the main portion at an angular shoulder 16. A pull knob 17 is provided on the front end of the reduced rod portion 15.

A piston 18, having a sealing cup 19 of leather or other suitable yielding material slidable in the cylinder 11, is secured to the rear end of the rod 14 by means of an insulating nut 20. A conical compression spring 21, disposed between the front head 12 and the piston 18, normally holds the latter to the right as shown in Figure 1.

A binding post 22, insulatedly secured in the middle of the rear member 10, has an interior contact head 23 normally received in a counterbore 24 in the insulating nut 20. A spring switch arm 25, secured in an insulating block 26, has a forked free end 27 underlying the contact head 23 but normally held clear thereof by the end edges of the insulating piston nut 20.

A cage or magazine 28, Figures 1 and 2, is mounted on the outside of the cylinder 11 so as to be readily rotatable thereon. The magazine comprises a series of circumferentially spaced pockets 29 each adapted to receive a cigarette 30. In the present embodiment the number of pockets is twenty-one, allowing for the storage of twenty cigarettes with one additional pocket for the lighting and discharging position as hereinafter described. It will be understood, however, that the device may be constructed with a greater or smaller number of pockets, depending on the size and desired application of the device.

An outer shell 31, adapted to retain the cigarettes 30 in the pockets 29, is held in place in a rear clamp member 32 and an extension 33 of the rear head 10. A front cover ring 34 is snapped or otherwise detachably secured to the shell 31. The shell 31 has a longitudinal discharge opening 35 located in the bottom thereof and overlying an inclined receiving basket 36 adapted to catch and retain a discharged cigarette.

The magazine or cage 28 has at its forward end a series of inwardly directed radial lugs 37, one for each pocket 29, and hereinafter referred to as ratchet lugs. A cylindrical extension 38 of the front head 12 lies within the circle of the lugs 37 and has a deep notch 39 in its lower portion. The notch 39 may have its bottom inclined inwardly in the clockwise direction, Figure 2, and terminates in an abutment 40. A dished plate 41 engages the cylindrical extension 38 and has its lower portion cut away as shown in Figure 2. The central portion of the plate 41 encircles the top of a stepped collar 42, the plate and collar being secured on the outer end of the guide 13 by means of a nut 43, Figure 1, this nut as well as the cover plate 34 being removed in Figure 2 to

show the relation of the operating parts most clearly.

A lever 44, hereinafter referred to as the control lever, is rotatably mounted on the collar 42, being retained between the latter's inner flange and the plate 41. A tension spring 45, Figure 2, hooked to the inner side of the disked plate 41 and to the control lever 44, urges the latter counterclockwise. The lever 44 has an inwardly turned foot 46, Figures 4 and 5, normally held to one side of the main longitudinal opening 35 in the shell 31 as shown in Figure 5 so as to allow any cigarette occupying the bottom pocket 29*a* to drop out as hereinafter explained.

An indexing rod 47 has a middle portion forming a ball 48 movably socketed and retained in the guide portion 13 of the front head 12. The guide portion 13 is cut away as illustrated at 49 to allow the rod 47 rocking motion either in an inward direction as illustrated in dot and dash lines, Figure 1, or in a rotary direction as shown in Figure 3. A diagonal tension spring 50 normally holds the rear portion 51 of the rod 47 against the reduced portion 15 of the piston rod 14 and in engagement with the shoulder 16, the rod 47 in this position lying clear of the lugs 37.

When the knob 17 is pulled outward the shoulder 16 first rocks the rear portion 51 of the rod 47 straight outward, causing the front end thereof to move inward behind a lug 37 until the rod encounters the inclined inner surface of the notch 39 which restrains the inward motion. Continued outward movement of the piston rod 14 thereafter causes the inclined shoulder 16 to shift the rear portion 51 of the indexing rod 47 diametrically as shown in Figure 3, the end of the rod 47 engaging the lug 37 and rotating the magazine cage 28. By this means, at each outward pull of the knob 17, the cage 28 is positively indexed through a rotative distance equal to the spacing between adjacent pockets 29, the pockets thus being successively brought into registry with the bottom discharge opening 35. An inwardly turned lug 44*a* on the lever 44 engages the rod 47 so that as the rod is swung, the lever 44 is also swung to bring the foot 46 below the lowest magazine slot 29*a* as shown in Figure 3. At each return of the piston rod 14 to normal position, as shown in Figure 1, the spring 50 also returns the indexing rod 47 to normal position ready for the next indexing action, the lever 44 being also returned by its spring 45.

A leaf spring pawl 52 is secured to the inner side of the dished plate 41 and is adapted to successively spring inward behind the lugs 37 to prevent possible return motion of the cage 28. The pressure of this spring pawl also serves normally to prevent rattling of the cage due to vibration, for example in automobile use.

A hollow cylindrical member 53 of electrical insulating and heat resisting material such as porcelain or the like, is disposed in the forward end of the rear member 10, and contains an electrical heating unit of any suitable form such as a conical spiral of resistance ribbon 54. A ring 55, also of insulating material, is pressed against the rear end of the member 53 by a threaded plug 56, thus clamping the member 53 in place. The ring 55 also clamps the two ends of the heater unit ribbon 54 respectively against the outer end of the switch arm 25 and the interior of extension 33. By this arrangement it will be seen that the heater 54 is electrically connected at one end to the insulated switch arm and is grounded at the other end to the body of the device.

The inner end of the retaining plug 56 contains a central chamber 57 in communication through a hole 58 with the large air chamber 59 inside the rear cylinder head 10. The interior of the ring 55 comprises a restricted orifice or nozzle 60 adapted to project air from the chamber 57 through the heating unit 54 as illustrated in Figure 4.

The rear head 10 has therein a number of large inlet air holes 61 controlled by a light resilient faced inlet valve 62 normally held shut by a light spring spider 63.

The head 10 may be formed with a semi-circular abutment 64 having threaded holes 65 for attaching the device to any desired support, either directly or by means of suitable brackets or clamps.

Taking as typical the use of the device in an automobile, the device is attached to a suitable portion of the car in such manner that the rear head member 10 is grounded, and the binding post 22 is connected by a wire to the car's electrical system. As the nut 20 normally holds the switch arm 25 out of contact with the head 23 of post 22, however, no circuit normally exists through the heating unit 54.

The operation is as follows: The detachable cap 34 is removed and cigarettes 30 inserted in all pockets 29 except the lowest or lighting and discharge pocket 29*a*, after which the cap 34 is replaced.

When the operator requires a lighted cigarette he pulls out the knob 17, preferably to its fullest extent, compressing the spring 21. This operation performs three functions as follows: The indexing rod 47 is actuated to rotate the cage 28 as previously described, bringing a cigarette 30*a* into line with the heating unit 54, in which position the cigarette is supported at its front and rear ends respectively by the foot 46 of lever 44 and the small rear end portion of the shell 31, as shown in Figure 4. Secondly, the initial withdrawal of the insulated piston nut 20 allows the switch arm 25 to spring into contact with the head 23 of the binding post 22, causing current to flow through the heating unit 54 and bring the latter to incandescence. Thirdly, the outward movement of the piston 18 draws a charge of air inward past the valve 62 into the cylinder 11.

When the knob 17 is released the spring 21 expands to force the piston 18 inward. The air trapped ahead of the piston can find egress only through the hole 58 and nozzle orifice 60, and is consequently forced outward through the latter, thence through the heater 54 and against the end of the cigarette 30*a*. The air passing through the incandescent heater 54 is heated thereby to a high temperature, and the blast of hot air driven against and into the end of the cigarette and aided by direct radiation from the heater 54, lights the end of the cigarette. The smallness of the orifice 60 delays the return of the piston to normal position, thus allowing the lighting action to continue for ample time to assure proper ignition of the cigarette.

As the piston rod 14 approaches normal position to release the indexing rod 47 as previously described, the spring 45 swings the control lever 44 to the side position shown in Figure 2. The foot 46 is thereby moved from under the front end of the lighted cigarette 30*a*, allowing the latter to topple down into the basket 36 where

it comes to rest as shown in dot and dash lines in Figure 1. In this position, it is readily picked up by the smoker. At the conclusion of the inward piston stroke the nut **20** forces the switch arm **25** out of contact with the binding post head **23**, thus breaking the circuit through the heating unit **54**.

Breather holes **66** are provided in the front head **12** to prevent any compression or vacuum in the front part of the cylinder **11**. Due to the constriction of the orifice **60**, its resistance to the passage of air is so much greater than that of the inlet valve **62** on the suction stroke that any inward flow through the hole **58** is so small as to be negligible. It is obvious, of course, that a check valve of any common type may be provided therein, but in the preferred form shown, this is unnecessary for the reason stated above.

From the foregoing description of the structure and operation, it will be evident to those skilled in the art that the invention presents many advantages over prior devices, some of which are as follows:

A dash-pot action performs the double function of sustaining the lighting action and at the same time furnishing a positive air blast to ensure thorough lighting. The use of this positive blast, instead of suction as used in some prior devices, eliminates the necessity for accurate registration of the cigarette with a suction opening and also avoids any outside connection to a source of suction such as an automobile inlet manifold, the only connection necessary for the present invention other than the grounded mounting being the wire to the binding post **22**. The device thus being substantially self-contained allows great ease and latitude in location in a vehicle. The lack of suction tubes into which smoke is drawn eliminates such common troubles as plugging up of tubes with gum deposits, leaking or breaking of tubes, or failure of the source of suction for example when the engine is stopped. The cigarette normally does not come into contact with the heating unit during lighting, the lighting being accomplished by combined radiation and hot air blast, as previously set forth. Obviously, therefore, the heating unit is kept free from any troubles due to adhering ashes or partially burned tobacco, which troubles are well known characteristics of the contact type of unit. It will be noted that the closing of the electric circuit at the beginning of the outward piston stroke allows the heating unit some time to be heated before the start of the air blast. Finally, each cigarette occupies its individual pocket **29** in the magazine cage **28** and is individually controlled at all times, so that interference and clogging of cigarette feed cannot occur even in case of imperfect cigarettes.

The removable cap **34** may be formed with windows **67** overlying an inner transparent strip **68** cemented or otherwise secured on the inside of the cap. These windows permit the number of cigarettes in the magazine to be observed. An open hole **69**, Figures 1 and 6, is provided in the cap **34** in line with the heating unit **54**. This hole **69**, together with a slot **70** in the lever **44**, allow for the escape of air and smoke which may be driven through the cigarette **30***a* by the air blast.

While the invention has been described in preferred form it is not limited to the exact structures illustrated, as various changes and modifications may be made without departing from the scope of the appended claims.

What is claimed is:

1. In a device of the character described, in combination, an electrical heating element, a magazine having pockets adapted to separately hold cigarettes, means to index said magazine whereby said cigarettes may be successively positioned adjacent said heating element, means to connect said element to a source of current, common means to actuate said indexing means and said connecting means whereby said cigarettes may be successively ignited by heat from said element, means to open said connecting means, and means to retard the operation of said opening means whereby the period of said ignition may be prolonged.

2. In a device of the character described, in combination, an electrical heating element, a magazine having pockets adapted to separately hold cigarettes, means to index said magazine whereby said cigarettes may be successively positioned adjacent said heating element, means to connect said element to a source of current, common means to actuate said indexing means and said connecting means whereby said cigarettes may be successively ignited by heat from said element, means to open said connecting means, a dash-pot, a piston in said dash-pot and connected to said common actuating means, said piston being movable in one direction by said common actuating means to draw air into said dash-pot, said opening means including a spring adapted to move said piston in the other direction and said dash-pot having a constricted outlet for said air whereby the operation of said opening means may be retarded.

3. In a device of the character described, in combination, an electrical heating element, a magazine having pockets adapted to separately hold cigarettes, means to index said magazine whereby said cigarettes may be successively positioned adjacent said heating element, means to connect said element to a source of current, common means to actuate said indexing means and said connecting means whereby said cigarettes may be successively ignited by heat from said element, means to open said connecting means, a dash-pot, a piston in said dash-pot and connected to said common actuating means, said piston being movable in one direction by said common actuating means to draw air into said dash-pot, said opening means including a spring adapted to move said piston in the other direction, said dash-pot having a constricted outlet adapted to discharge said air through said heating element and against the ends of said cigarettes.

4. In a device of the character described, in combination, a dash-pot, manual means to charge said dash-pot with air, a rotary magazine adapted to separately retain a plurality of cigarettes, an electric heating element, means to index said magazine whereby said cigarettes may be successively positioned with ends thereof adjacent said element, said dash-pot having a constricted outlet passage leading through said element, and resilient means to discharge air from said dash-pot through said passage and element and against said ends of said cigarettes whereby said cigarettes may be successively ignited.

5. A device as claimed in claim 4 including

means to successively release said ignited cigarettes from said magazine.

6. In a cigarette lighting and dispensing device, in combination, a dash-pot, a magazine rotatable around said dash-pot and having longitudinal pockets adapted to separately contain a plurality of cigarettes, a stationary casing around said magazine and having an opening defining a lighting station, a heating element at one end of said station, means to charge said dash-pot with air and to rotatively index said magazine whereby said cigarettes may be successively moved into said lighting station with ends thereof adjacent said heating element, a support adapted to be positioned by said indexing means to successively retain said cigarettes in said lighting station, means to discharge said air from said dash-pot, and means controllable by said discharging means to retract said support whereby said cigarettes may be successively released through said opening.

7. In a cigarette lighter and dispenser, in combination, a dash-pot cylinder, a head on said cylinder, a piston slidable in said cylinder, a spring normally holding said piston at one end of said cylinder adjacent said head, a rod secured to said piston and extending outward through said cylinder, an inlet valve in said head, a switch on said head, means on the inner end of said rod to normally hold said switch open, means to connect said switch to a source of current, a heating element electrically connected to said switch, a cylindrical magazine rotatably mounted on said dash-pot cylinder and adapted to hold a plurality of cigarettes, a handle on said rod and operable to draw said rod outward whereby said piston may be withdrawn from said head to draw a charge of air through said valve and whereby said switch may be closed, means operable by movement of said rod to rotarily index said magazine whereby said cigarettes may be successively positioned in registry adjacent said heating element, and means forming a constricted outlet passage for air from said cylinder through said element and against said positioned cigarettes.

8. A device as claimed in claim 7 including means controllable by return of said rod to normal position to release said positioned cigarettes from said magazine and casing, and an exterior basket adapted to catch said released cigarettes.

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