May 7, 1929. A. GIRTANNER 1,711,936

IGNITING DEVICE FOR CIGARETTE DISPENSING CONTAINERS

Original Filed March 24, 1927 2 Sheets-Sheet 1

Fig. 1

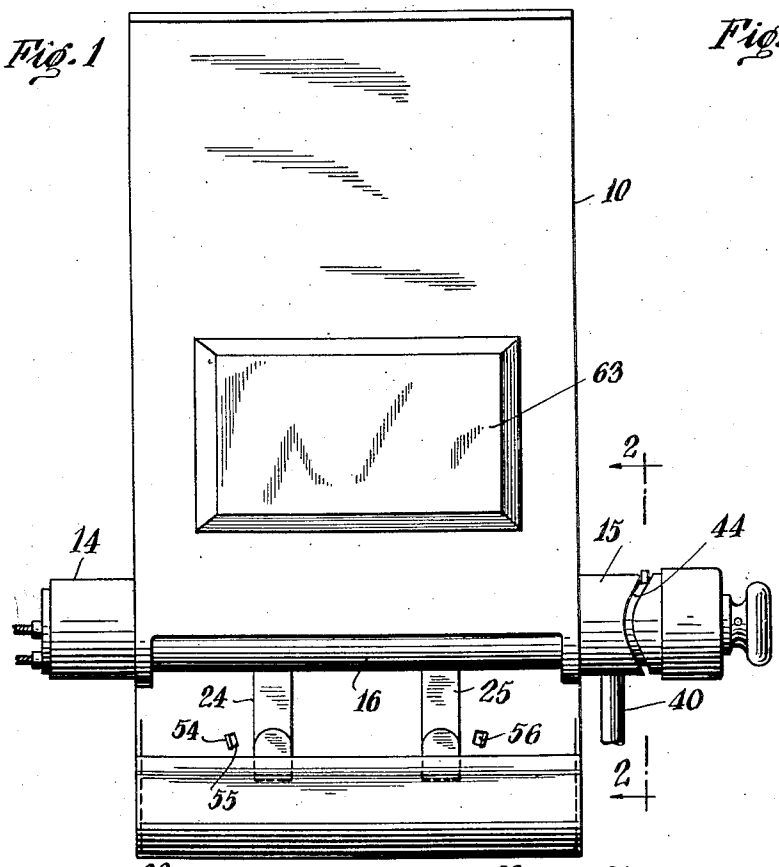


Fig. 2

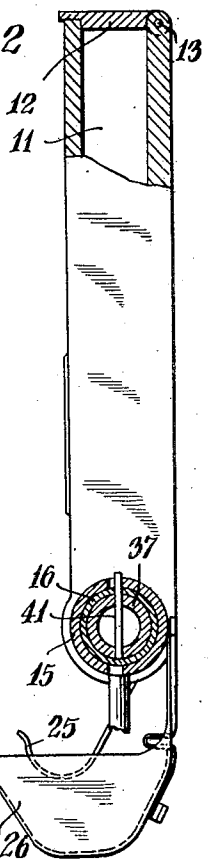


Fig. 3

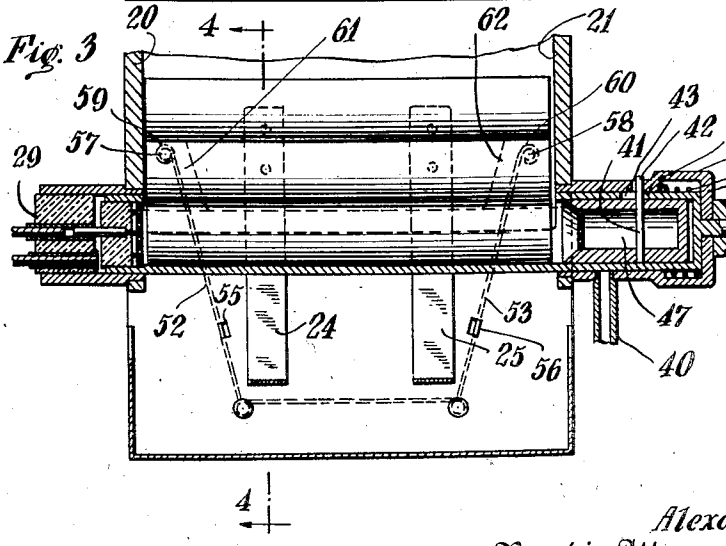
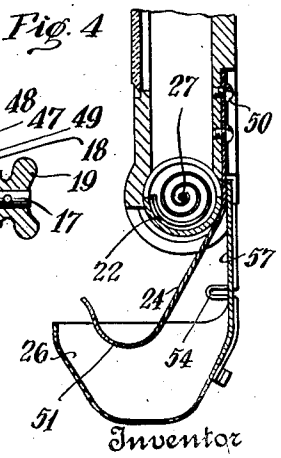


Fig. 4



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IGNITING DEVICE FOR CIGARETTE DISPENSING CONTAINERS

Original Filed March 24, 1927 2 Sheets-Sheet 2

Fig. 5

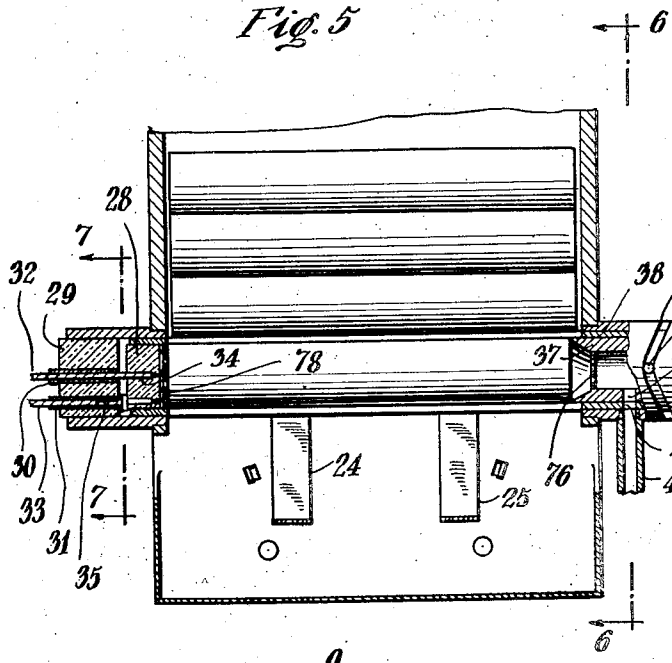


Fig. 6

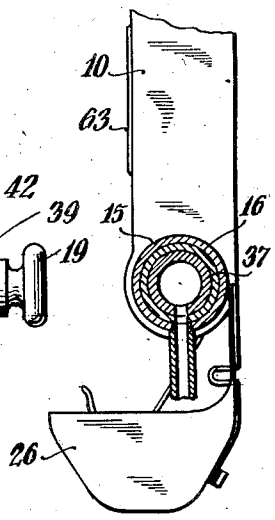


Fig. 7

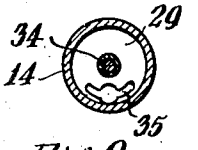


Fig. 8

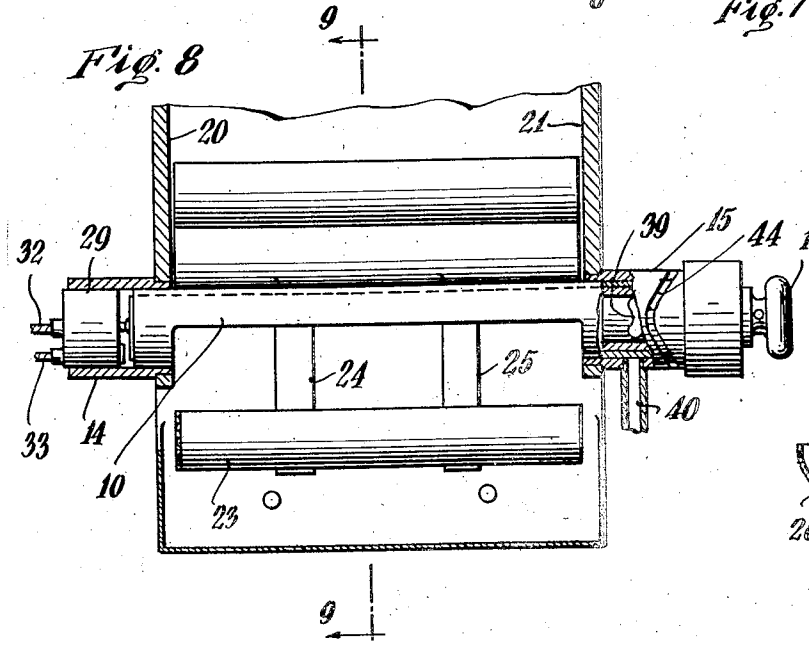
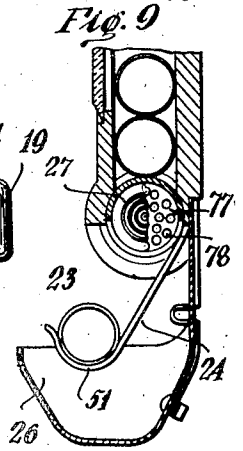


Fig. 9



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UNITED STATES PATENT OFFICE.

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IGNITING DEVICE FOR CIGARETTE-DISPENSING CONTAINERS.

Original application filed September 22, 1926, Serial Nos. 137,111 and 137,112. Divided and this application filed March 24, 1927, Serial No. 178,082. Renewed July 14, 1928.

This invention relates to electrical igniting devices such as are used in connection with dispensing containers for cigarettes and the like, and more particularly refers to a method of energizing an igniting coil for the purpose of lighting cigarettes insuring effective operation at the same time providing complete safety in the use of the apparatus.

The primary object of this invention is to provide, in connection with a container for cigarettes and the like equipped with a controlling member, means for energizing an igniting coil for said cigarettes during the movement of the controlling member from the normal to its other extreme position, the energization of said coil however, taking place only in the interval of travel between the said two extreme positions of the controlling member and being terminated before or as the controlling member reaches its extreme position.

Other objects and advantages of the present invention will more fully appear as the description proceeds and will be set forth and claimed in the appended claims.

The invention will be better understood by referring to the accompanying drawings, in which

Fig. 1 is a front view in elevation of a device embodying my invention;

Fig. 2 is a side sectional view in elevation through line 2—2 of Fig. 1;

Fig. 3 is a fragmentary sectional front view in elevation of the lower part of said device, showing the dispensing member in its normal position;

Fig. 4, is a fragmentary side sectional view in elevation through line 4—4 of Fig. 3;

Fig. 5, is a fragmentary front sectional view in elevation similar to that of Fig. 3, showing the dispensing member midway of its travel towards its dispensing position and showing the manner of energizing the igniting coil;

Fig. 6, is a side sectional view in elevation through line 6—6 of Fig. 5;

Fig. 7, is a detail side sectional view in elevation through line 7—7 of Fig. 5;

Fig. 8, is a fragmentary front sectional view in elevation similar to that of Fig. 5, showing the device after a lighted cigarette has been delivered and the igniting coil de-energized; and

Fig. 9 is a side sectional view in elevation through line 9—9 of Fig. 8.

Devices for delivering lighted cigarettes from the container are usually provided with means adapted to cause the energization of an igniting coil, and also to cause the operation of a valve connecting the device to a suitable source of suction or other means of creating a draft, while a cigarette is being held with one of its ends abutting against said coil.

The igniting coil is normally inoperative and becomes operative only after or as one of the cigarettes to be lighted has been forced against it in order to establish an intimate contact therebetween. In all the devices that have come to my notice, the coil is either energized by the closing of an electric circuit occurring when or after the controlling member reaches its extreme operating position, or else it is energized while the controlling member is moving towards said extreme position, but the energization thereof lasts as long as the controlling member remains set in the said extreme position.

The controlling member is generally operated by hand, first one way and then the other, and its movement to its extreme position determines the axial shifting of the cigarette towards the igniting coil and the energization of said coil, while the return movement releases the cigarette so that it may be removed and at the same time causes the de-energization of said coil.

However, it frequently happens that the controlling member is inadvertently left in its extreme position and then the energization of the coil continues and will in all probability burn out the coil. This occurrence is also made possible by the fact that any one tampering with the device may inadvertently set the controlling member in said position and then the energization of the coil takes place as a matter of course.

In certain types of devices, the operating member is equipped with or controlled by a spring tending to oppose its displacement from its normal position, so that when the said operating member is released it will of its own accord return to its normal position and prevent the dangers attending upon a

prolonged energization of the coil. However, even in these cases, the operating member is moved to its extreme position by hand and is liable to be kept there for a certain time before it is released, and since it does not take a very long time for a small coil such as is used in these devices to become overheated, although to a lesser degree, the danger of the burning out of the coil still exists.

The same remark applies to such devices where the energization of the coil is produced by the axial displacement of the suction member when moved to force the cigarette against the coil and to establish the necessary draft circuit.

This application is a division of another patent application, copending herewith, entitled Cigarette igniting coil controls, Serial No. 137,111 and also of another copending application, entitled, Cigarette igniting device, Serial No. 137,112.

The present invention has for its main object to provide an improved arrangement of igniting coil control, whereby in such cases where operation of the igniting coil is controlled by a movable element of the device, capable of being displaced from one extreme position to another, the coil becomes energized during the movement of said element but will become de-energized as the said element reaches either one or the other of its extreme positions.

In order to avoid the possibility of said controlling element being inadvertently set at an intermediate position, the device is also preferably equipped with a spring tending to normally retain said coil controlling element in one or the other of its extreme positions.

Such an arrangement obviously pre-supposes a co-related operation of such means as may be employed to force the cigarette against the igniting coil, because when the coil is energized, the cigarette should already be abutting or should be about to abut against said coil. If this condition is fulfilled, and if the suction is also at the same time established, I have found that an almost instantaneous energization of the coil is quite sufficient to produce the desired effect. Since the movement of the coil controlling element from one position to the other usually requires a certain length of time, which, if limited is however not strictly instantaneous, a fraction of time of sufficient duration is available for insuring positive and satisfacory operation of the coil at all times.

The inventive idea will be better understood by referring to the drawings, in which 10 designates a suitable container adapted to contain a plurality of cigarettes in a single vertical row within its chamber 11. Said magazine or container is provided at the top with a cover 12 hinged at 13, normally closing the top of the container, said cover being opened when a new supply of cigarettes is inserted into the container.

The lower end of the container is provided with two coaxial extensions 14, 15, one at each side thereof, within which is rotatably mounted a dispensing member 16, which is provided with an extension 17 projecting through the end wall 18 of extension 15. A button or knob 19, is mounted upon said extension and is used for the operation of the dispensing member, said knob acting at the same time as a positioning means for said member preventing axial displacement thereof. Said dispensing member is tubular in nature, its inner diameter being about the right size for receiving a cigarette; and that portion of the dispensing member which is delimited by the inner surface of the side walls 20, 21 of the container is cut away to about half of its circumference, forming a semi-circular receiving chamber 22, which is normally arranged to form a semi-circular closure of the bottom of chamber 11, as Fig. 4 clearly shows.

In this position of the dispensing member the lowermost cigarette in the container is free to fall into the receiving chamber of the dispensing member, the entire stack of cigarettes being supported thereby.

If now, the dispensing member is caused to rotate 180°, the edge of its semi-circular wall will gradually be inserted between the lowermost and the next cigarette, and the cigarette within the dispensing member will become isolated from the others in the stack. Only when the opposite position of the dispensing member is reached, the cigarette 23, thus isolated is free to fall upon two receiving or supporting members 24, 25, arranged underneath the container.

Said receiving or supporting members are preferably inclined towards the front, so that the cigarette will be held slightly ahead of the container, directly above a receptacle 26, the somewhat detached position of the cigarette thus obtained facilitating its removal. The position of the dispensing member in its dispensing position and the cigarette delivered thereby, are clearly illustrated in Fig. 9, where it is seen that the inverted semi-circular wall of the dispensing member now supports the stack of cigarettes within chamber 11.

When the dispensing member is returned to its normal position, the entire stack of cigarettes descends by gravity so that the lowermost cigarette once more will fill the receiving chamber of the dispensing member, and the device is thus made ready for a new operation.

In order to render the operation of the device more effective, means are provided for lighting the cigarette before it is actu-

ally delivered, these means comprising an igniting coil at one end, and a suction member at the other.

The igniting coil comprises a length of resistance wire wound in a spiral 27, resting against the inner face of an insulating block 28, carried by the free end of the dispensing member and rotatable therewith. At a small distance from said insulating block, another insulating block 29 of a stationary nature is mounted within extension 14, said block 29 being provided with an axial terminal 30, and another terminal 31, near the periphery thereof, said terminals being connected by electric wires 32, 33, to a suitable source of electric supply which in the case of a motor car may be the battery used for ignition. Both terminals are tubular in form, terminal 30 receiving a metal contact bar 34, attached to the center of spiral coil 27 and projecting through the outer surface of block 28, while terminal 31 is provided at its inner end with a stationary segmental contact 35, against which slides the end of another contact bar 36, connected to the other end of the spiral coil during the rotatory movement of the dispensing member.

The suction member consists of a sleeve or mouthpiece 37 slidably mounted within the operating end 38, of the dispensing member, said sleeve or mouthpiece being adapted to force the cigarette against the igniting coil by its axial movement taking place during the rotatory movement of the dispensing member, and being provided with an opening 39, adapted to register with a tubular connection 40, at the time when the lighting end of the cigarette abuts against the coil and the coil is energized.

Tubular connection 40 leads to some suitable source of suction such as the vacuum tank or intake manifold of a motor car. The axial movement of the mouthpiece or suction member is also determined by the rotatory movement of the dispensing member, which is transmitted to the suction member by a cross pin 41 diametrally inserted through said suction member; said pin having an end 42 projecting through a longitudinal slot 43 in the dispensing member as well as through a cam slot 44 provided through the wall of extension 15, and extending for the 180° rotatory displacement allowed for the dispensing member.

Slot 43 is elongated so as to permit inward axial displacement of the suction member in relation to the dispensing member; and slot 44 follows an inwardly bent outline which causes first inward axial movement of the suction member and then return movement thereof, as the dispensing member progresses and reaches the end of its operating stroke.

The movement of the suction member thus resulting from the action of cam slot 44 results in the cigarette being forced against the igniting coil during the first half of the movement and then being released during the second half; so that when the dispensing member actually reaches its dispensing position, the cigarette is entirely free to fall to the position shown in Fig. 9, where it may be removed by the user.

The cam slot illustrated is a new feature of this class of devices and forms the object of the other application entitled "Cigarette igniting device" above referred to.

In a board sense the device illustrated and described is not new since other devices in which the rotatory movement of the dispensing member is used to produce axial shifting of a cigarette against the igniting coil, energization of the coil and actuation of a valve controlling the suction means, timed with the energization of said coil, have been heretofore used. In all the devices which have come to my notice, however, the energization of the coil starts before or after the dispensing position of the cigarette is reached, continuing as long as the cigarette remains in said position, up to such time when the member controlling the igniting circuit is withdrawn or operated in the opposite direction.

This creates a condition where overheating and burning of the coil is likely to and frequently does take place because the operator at times unconsciously lingers and retains the member controlling the igniting circuit in operative position for an excessive length of time.

In the case of a small coil such as used in these devices, the difference between a sufficient and an excessive time of energization is measured in fractions of a second, and therefore the operation of such devices becomes most unreliable when the control of this factor is left to the judgment of the operator and to the necessity of his giving his undivided attention to the device when a cigarette is being lighted.

I have purposely referred to a member controlling the igniting circuit instead of specifying the dispensing member because while in this and other cases the igniting circuit is controlled by the dispensing member itself, in some instances the igniting circuit is controlled by separate means; therefore, the improvement forming the object of the present invention must be understood broadly to apply to the means used for controlling the igniting circuit whatever they may be.

The specific feature of the present invention resides in the special arrangement of the contacting means by the action of which the igniting coil is short circuited or energized during the travel of the member controlling the circuit from one extreme position to another, said contacting means be-

ing so designed as to be operative when one end of the cigarette abuts against the igniting coil, becoming inoperative as the extreme end of the travel from the normal to the operating position of the member controlling the igniting coil is reached.

In the present case, as stated, the member controlling the igniting coil is the dispensing member itself, and the end of its operating stroke represents the position where the cigarette is actually released; therefore, the contacting means are so arranged that the energization of the coil starts soon after the movement of the dispensing member from its normal to its dispensing position has been initiated and terminates before or as the dispensing position is reached; the interval therebetween being quite sufficient for the lighting of the cigarette if the suction is properly timed at the other end.

One of the reasons necessitating the energization of the coil or the retaining of the coil in its energized position as long as the member controlling the circuit thereof remains set at the end of its operative stroke, is due to the fact that connection between the suction member and the suction producing means is generally established when said extreme position is reached, a port provided through the suction member being then made to register with the inlet leading to the suction means.

In the present case, I cause the suction circuit to become operative simultaneously with the energization of the coil and to remain operative as long as the coil is energized or a little longer, up to the time when the cigarette is released by the suction member and is free to fall onto the receiving members. In this manner, the suction also becomes operative during the interval of travel of the dispensing member from its normal to its dispensing position and the suction lasts as long as the coil is energized or more.

This is obtained by providing the end 38, of the dispensing member with a segmental slot 45 which begins to register with the connection 40 soon after the rotatory movement of the dispensing member is started, continuing to register therewith up to the end of the operating stroke of the dispensing member or slightly before. Furthermore the suction member 37 is provided with another slotted opening 39 which also extends along its circumference for an angle equal to the angular extension of slot 45, but since the suction member is capable of inward and then outward axial displacement in relation to the dispensing member, slot 39 does not follow a circumferential line but has an outwardly bulging curved outline which is determined by the combined rotatory and translatory movement of said suction member, causing slot 39 to register with slot 45 at all points of the axial movement of the suction member.

It follows therefore that the connection established between inlet 40 and slot 45 is also established through slot 39 with the inner chamber 47 of the suction member during the period specified.

I have therefore established a condition where both the energization of the coil and the actuation of the suction occur during the travel of the dispensing member from one of its extreme positions to the other, said coil and suction being inoperative while the dispensing member remains set at either position.

This arrangement permits the utilization to full advantage of the cam slot 44 whereby the suction member is withdrawn as or before the dispensing member reaches its dispensing position, so that the combination of these three factors permits of completing the operation of isolating, lighting and dispensing the cigarette at one stroke.

It is obvious that the connection between the dispensing member and the suction member may be of a permanent nature, since slot 45 through the dispensing member is sufficient to control the opening or closing of inlet 40.

The dispensing member and the other elements controlled thereby may be returned to their normal position by turning knob 19, 180° in a reverse direction; but I prefer to provide a spring connection between sleeve or extension 15 and the dispensing member, tending to retain or return the dispensing member to its normal position at all times. Said spring connection is represented in the drawings by a coil spring 47 inserted around the extreme end of the dispensing member, having one of its ends 48 attached to sleeve or extension 15 and the other end 49 attached to the dispensing member.

This spring is arranged so that rotatory movement of the dispensing member from its normal to its dispensing position increases the tension of the spring, so that at any time the dispensing member is released the spring will return it to its normal position. This spring should be strong enough to overcome any frictional resistance which might be offered by the sides of cam slot 44 against pin 41.

Besides being a convenience, causing the automatic return of the parts to their normal position, this spring also represents a safety measure, entirely doing away with the possibility of the dispensing member being inadvertently left midway in a position where the coil is energized; thus, the coil can only become overheated or burned if the dispensing member is deliberately retained in such a position and in no other way.

The receiving or supporting members 24,

25, are shown in the form of two metal strips attached to the lower part of the container at the rear by means of screws as shown at 50, depending therefrom and extending to a point underneath the dispensing member at a certain distance therefrom, preferably slightly to the front thereof; the lower end of said receiving or supporting members being bent upwardly to form a hook portion 51 adapted to receive and retain a cigarette as shown in Fig. 9.

Underneath the receiving or supporting members is placed a receptacle 26, which is adapted to collect all ashes falling from the cigarette and also the burned stub thereof, if the cigarette should inadvertently be left upon the supporting members.

The device illustrated, also comprises two new features which further assist in improving its operation. One of said features is represented by a screen 76 which may be made of wire netting or perforated metal, inserted between the suction end of the suction member and the suction chamber.

The object of said screen is to prevent all possibility of loose particles of tobacco entering the suction chamber and from there the suction ducts which might become clogged as a result. I have found this screen to be useful not only for this reason but also because by decreasing as it does the section through which the suction is exerted, it increases the velocity of the draft, increasing its effectiveness in proportion.

The other feature consists in a perforated disk 77 which is made of mica or other suitable insulating material, inserted over the coil preventing the cigarette from coming directly in contact with said coil. Said disk permits the ignition to take place through its perforations 78 and at the same time protects the coil against possible tampering and injury from the outside. It also prevents the possibility of the residuary heat of the coil lighting the next cigarette falling into the receiving chamber of the dispensing member when said dispensing member is returned to its normal position, because ignition in this case can positively only occur when suction is exerted at the other end.

As previously stated, the temporary energization of the coil can be obtained either by causing the igniting circuit to be controlled by the dispensing member during its travel from its normal to its dispensing position, or by an axially shiftable member such for instance, as the suction member shown and described, from its normal position to the position where one end of the cigarette has been forced against the igniting coil.

While cam slot 44 is formed with a peak representing the innermost position of the suction member, the cigarette is actually in contact with the coil before and after said peak is reached, because the cigarette is to a certain extent yielding; therefore, both the energization of the coil and the actuation of the suction can start before the peak is reached and can last after the peak has been passed.

This factor insures the positive and satisfactory operation of the device, avoiding a truly instantaneous action of the igniting coil which in practice would be insufficient to light the cigarette.

Parts of the mechanism herein shown and described, but not claimed are made the subject matter of copending applications, Serial Nos. 137,111; 137,112 and 137,113, filed Sept. 22, 1926.

The invention may be varied in its details without substantially departing from the inventive idea and therefore I reserve myself the right to carry my invention into practice in all those ways and manners which may enter fairly into the scope of the appended claims.

I claim:

1. In a device of the class described, the combination with an electric circuit, a normally inoperative igniting element, means for holding a cigarette in axial alignment therewith normally detached therefrom, and means for causing one end of a cigarette thus held to abut against said igniting element, said means comprising a member adapted to be moved in one direction from one extreme position to another, of means controlled by said member for inserting said igniting element in said circuit during the movement of said member from one of said positions to the other, energizing said element, said means becoming inoperative by the time said member reaches the other extreme position, of its movement in the operative direction.

2. In a device of the class described, the combination, with an igniting element, means for holding a cigarette in axial alignment therewith normally detached therefrom, means for shifting one of the said elements against the other, said means comprising a member adapted to be moved in one direction from one extreme position to the other, and means controlled by said member for energizing said element, during the movement of said member, of means for creating a draft through a cigarette thus held during the period of travel of said member in one direction from one of said extreme positions to the other, before said other extreme position is reached.

3. In a device of the class described, the combination, with an igniting element, means for holding a cigarette in axial alignment therewith, normally detached therefrom, and a controlling member adapted to be moved in one direction from one extreme position to another, of means operatively associated with said controlling member for

shifting a cigarette thus held against said element while said controlling member is being moved from one of said positions to the other, and means for simultaneously creating a draft through the end of the cigarette adjacent to the igniting element to ignite the same, before said controlling member reaches the other extreme position of its movement in the operative direction.

4. In a device of the class described, the combination with an electric circuit, a normally inoperative igniting element, means for holding a cigarette in axial alignment therewith, normally detached therefrom, and a controlling member movable in one direction from one extreme position to another, of means controlled by said member for inserting said element in said circuit during the movement of said member in said direction energizing said element, said means becoming inoperative by the time said member reaches said other extreme position, means operatively associated with said member for shifting a cigarette thus held against said igniting element while said element is thus energized, and means operatively associated therewith for simultaneously creating a draft through the end of the cigarette adjacent to said element to ignite the same.

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