June 14, 1949. A. E. HUTCHINSON ET AL 2,472,835

DISPENSING CIGARETTE LIGHTER

Filed Dec. 26, 1944 2 Sheets-Sheet 1

Fig. 6.

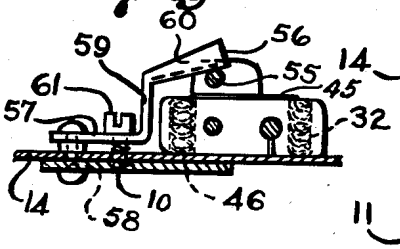


Fig. 8.

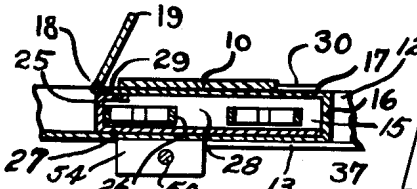


Fig. 1.

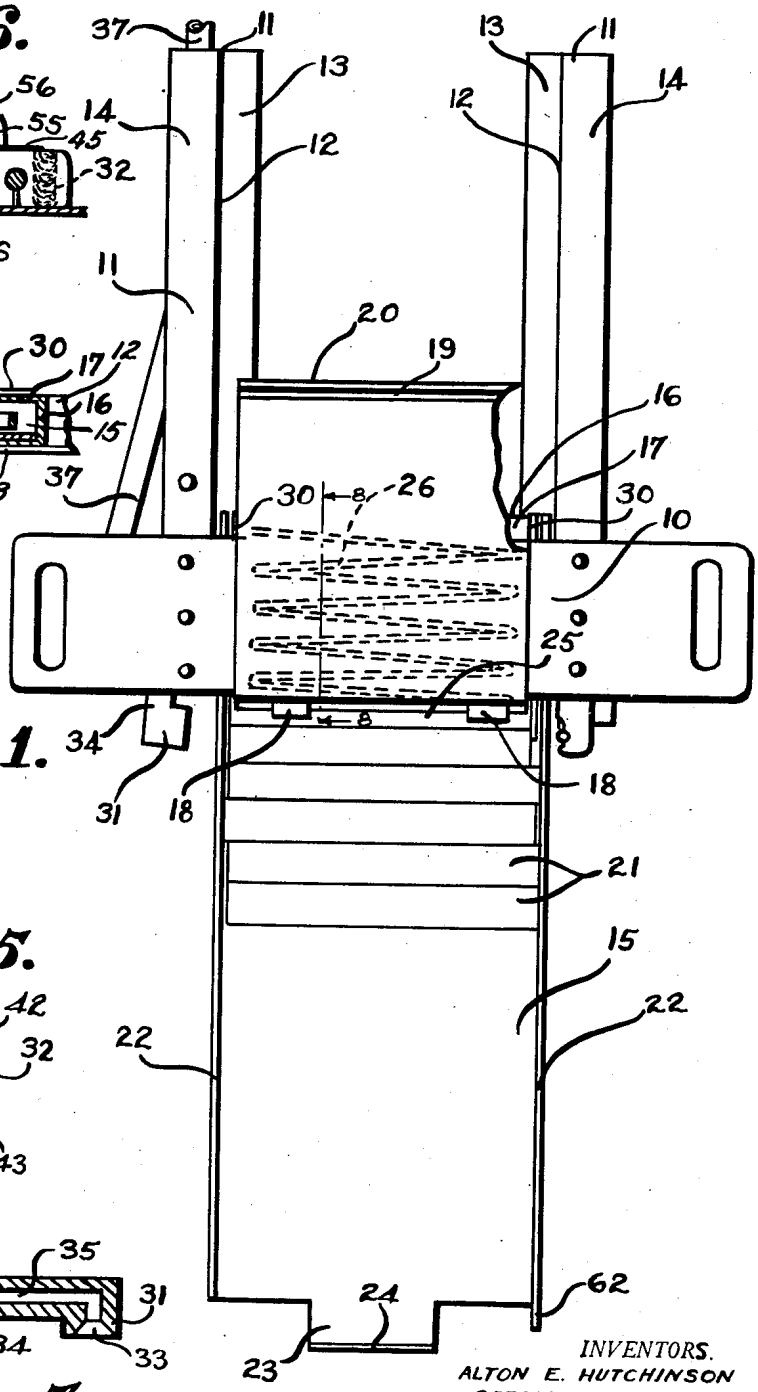
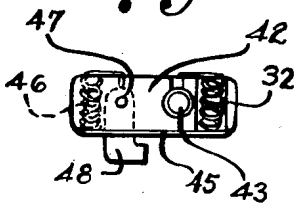


Fig. 5.



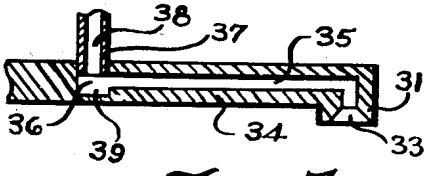


Fig. 7.

INVENTORS.
ALTON E. HUTCHINSON
GERALD G. THOMAS
BY Alfred R. Fuchs
ATTORNEY

June 14, 1949. A. E. HUTCHINSON ET AL 2,472,835

DISPENSING CIGARETTE LIGHTER

Filed Dec. 26, 1944 2 Sheets-Sheet 2

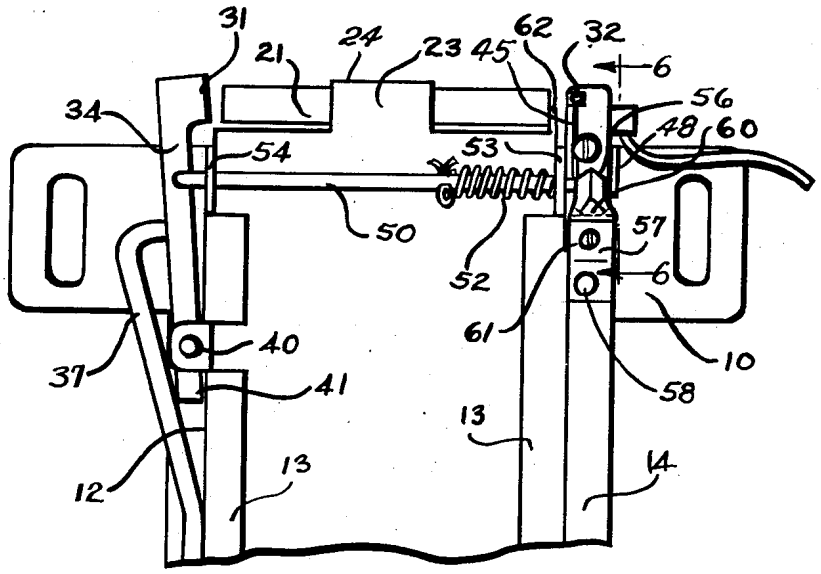


Fig. 2.

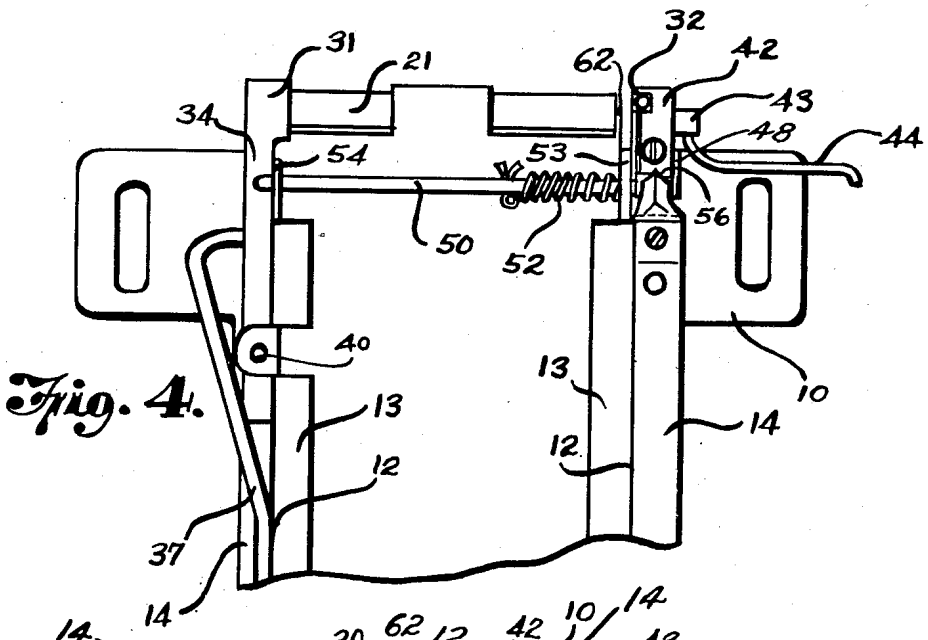


Fig. 4.

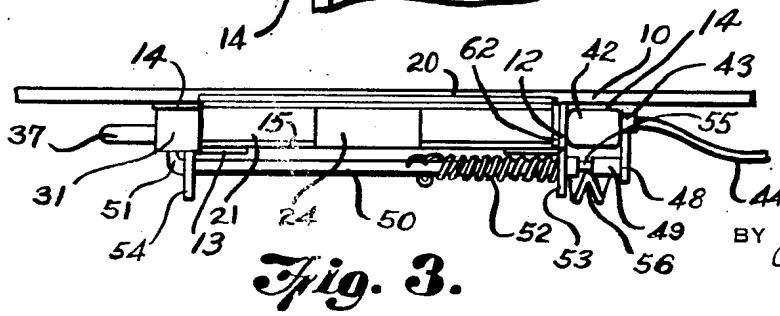


Fig. 3.

INVENTOR
ALTON E. HUTCHINSON
GERALD G. THOMAS
BY Alfred R. Fuchs
ATTORNEY

Patented June 14, 1949

2,472,835

UNITED STATES PATENT OFFICE

2,472,835

DISPENSING CIGARETTE LIGHTER

Alton E. Hutchinson, Milwaukee, Wis., and Gerald G. Thomas, Detroit, Mich., assignors, by mesne assignments, to Dowi Products, Inc., Milwaukee, Wis., a corporation of Wisconsin

Application December 26, 1944, Serial No. 569,882

9 Claims. (Cl. 312—86)

1

Our invention relates to cigarette lighters, and more particularly to a dispensing cigarette lighter.

It is a purpose of our invention to provide a dispensing cigarette lighter which comprises a receptacle or case in which the cigarettes are carried, which is provided with means for lighting a cigarette after the same is discharged from the receptacle, but while engaged with supporting means carried by the receptacle.

It is a further purpose of our invention to provide a combination cigarette dispenser and lighter, which is provided with means for lighting a cigarette, comprising a heating element and suction means located at opposite ends of the cigarette, said suction means being controlled so as to operate only when the lighting means is being energized, said suction and lighting means cooperating so that when the cigarette is in position to be lighted and the means for energizing the lighting means is set in operation the suction means will cooperate with the cigarette so as to draw on the same in the manner that is necessary to cause ignition of the tobacco within the same from the heating element constituting the lighting means.

It is a particular purpose of our invention to provide means associated with the igniting means that serves as stop means or a barrier to hold the end of the cigarette that is to be ignited in spaced relation to the heating element forming part of the lighting means, so that the cigarette will not be fused to the heating element upon ignition thereof.

It is a further purpose of our invention to provide means for lighting a cigarette, which comprises means for controlling the length of time that the lighting means comprising the heating element and the suction means is operating on the cigarette, said means comprising a thermostatic element controlling both the suction operated means and the operation of the heating element, said thermostatic means being adjustable to vary the length of time that the lighting means is operating on the cigarette.

It is a further purpose of our invention to provide a receptacle for the cigarettes comprising a drawer-like member, which is provided with a hinged cover member that is adapted to swing to an open position to fill said drawer-like member with cigarettes, and which is further provided with means for properly locating the drawer in its closed position for cooperation with the lighting means so that the cigarette that is to be lighted will be in proper relation to the suction

2

means and the heating element comprising the lighting means.

Other objects and advantages of our invention will appear as the description of the drawings proceeds. We desire to have it understood, however, that we do not intend to limit ourselves to the particular details shown or described, except as defined in the claims.

In the drawings:

Fig. 1 is a top plan view of our improved dispensing cigarette lighter, showing the drawer pulled forward and the hinged cover swung to an open position for insertion of the cigarettes in the receptacle.

Fig. 2 is a fragmentary bottom plan view of the forward portion thereof, showing the lighting means in inoperative position.

Fig. 3 is an end elevation thereof showing the lighting means in cooperative relation with a cigarette to light the same.

Fig. 4 is a view similar to Fig. 2 showing the lighting mechanism in cooperative relation to a cigarette to light the same.

Fig. 5 is a detail view in elevation of the heating elements and the mounting therefor.

Fig. 6 is a fragmentary view partly in section and partly in elevation of the heating element mounting and the thermostatically controlled latch for the operating means for the lighting mechanism, taken on the line 6—6 of Fig. 2.

Fig. 7 is a longitudinal sectional view on an enlarged scale through the suction nozzle and conduit, showing the valve means provided for the suction nozzle, and

Fig. 8 is a fragmentary sectional view through a portion of the frame and the receptacle for the cigarettes, taken substantially on the line 8—8 of Fig. 1.

Referring in detail to the drawings, our improved dispensing cigarette lighter comprises a frame having the transversely extending member 10, which serves as an attaching bracket for the entire device to a suitable support on an automobile or similar vehicle, and a pair of longitudinally extending members 11, which are provided with vertically extending portions 12, lower horizontal flanges 13 and upper horizontal flanges 14, thus forming what constitute substantially Z-bars that serve as guides for a slidably mounted cigarette receptacle 15, said receptacle being provided with a fixed rear wall 16, only a portion of which is shown in Fig. 1, a fixed top wall portion 17 extending from said rear wall to the hinges 18 and a hinged cover or top wall portion 19 pivoted to the portion 17 by means of the hinges

18 having an upstanding lip 20 at the forward end thereof, said hinged cover 19 being normally in position on top of the cigarettes 21 and fitting between the vertical side walls 22 of said receptacle. The forward end of the receptacle is open and is provided with a forwardly extending lip 23 providing a support for a cigarette passing out of the opening in the forward end thereof, and having an upstanding flange 24 at its extremity serving as stop means to limit such forward movement of the cigarette, said lip serving to position the cigarette properly relative to the lighting means, to be described below, and the parts 23 and 24 forming a handle for sliding the receptacle 15 from the frame.

When the parts are in the position shown in Fig. 1 the receptacle is in a position for filling the same with cigarettes. A spring pressed follower member 25 is provided within the receptacle, between which and the year vertical wall 16 of said receptacle a zig-zag spring member 26 is mounted, which urges said follower forwardly toward the open end of the receptacle and the cigarettes 21 sidewise through the opening in the forward end of the receptacle onto the support 23 and into engagement with the flange 24. Said follower 25 has a bottom wall 27 and side walls 28 which engage the bottom and side walls of the receptacle to guide the follower in its movement, said follower also having a flange 29 thereon for confining the forward end of the spring 26, and being provided with stop ears 30 on the side walls 28 which extend above the fixed top wall 17 of the receptacle between side walls 22 and the side edges of the wall 17, spaced therefrom, so as to engage with the frame member 10 to limit forward movement of the follower 25 so that it can not move beyond the position shown in Fig. 1 when the receptacle 15 is slid to the position shown in Fig. 1 and the cover member is moved to open position to insert the cigarettes 21 in position against the bottom wall of the drawer-like receptacle 15 in a single layer.

After the receptacle has been filled, the same is slid back into a position such that the lip 20 on the cover member engages the forward edge of the frame member 10. The follower 25 will then act to push a cigarette 21 through the opening in the front end of the slidable receptacle 15 onto the support 23 and into engagement with the flange 24 on said support. Said cigarette will then be in alignment with a suction nozzle 31 and a heating element 32, which are mounted on opposite sides of the frame, so that the suction nozzle will be adapted to engage with one end of the cigarette and the heating element 32 will be adjacent the other end thereof.

The suction nozzle 31 is provided with a cup-shaped opening 33 in the end thereof, with which one end of the cigarette 21 engages in substantially fluidtight relation, when said nozzle is moved from the position shown in Fig. 2 to that shown in Fig. 4. Said nozzle is provided on the extremity of a pivoted arm 34, which has a passage 35 therein leading to the nozzle 31, said passage 35 leading from a transverse passage 36 into which the suction pipe 37 fits with a sliding fit, so as to make a substantially fluidtight connection between said suction pipe 37 and said passage 36. The walls of the passage 36 and the suction pipe 37 slidable therein provide a slide valve structure for opening and closing communication between the passage 35 and the passage 38 within the suction pipe 37. When the parts are in the position shown in Fig. 7 the valve is open, which is the position

of the suction nozzle shown in Fig. 4. When the parts are in the position shown in Fig. 2, however, the end of the suction pipe 37 is seated in the downwardly extending portion 39 of the passage 36 and the wall of the pipe 37 cuts off communication between the passage 35 and the passage 38, thus closing the slide valve thus provided. The pivoted arm 34 is mounted on a pivot member 40 and has a projecting end 41, which is adapted to strike the vertical wall 12 of one of the guideways providing a distinct click to indicate that the lighting of the cigarette has been completed and the member 34 moved to the position shown in Fig. 2 upon release of the holding means for said lever 34 in a manner to be described below.

The suction pipe 37 leads to any suitable suction providing means, such as the intake manifold of an internal combustion engine, or any other container in which a pressure below atmospheric pressure is provided by any suitable means.

The heating element 32 is mounted in an insulating block 42 and is connected with a terminal screw 43 carried by said insulating block to which a conductor 44 leads from a battery or other suitable source of electrical energy. A conductor 45, which may be a continuation of the high resistance wire comprising the heating element 32, extends in a groove in the insulating block 42 to the heating element 46, the purpose of which will be described below. The opposite end of the heating element 46 to that connected with the conductor 45 is connected with a terminal screw 47, which carries the stationary contact 48 of a switching means, with which a contact member 49 mounted on the operating rod 50 engages when the parts are in the position shown in Figs. 3 and 4, completing the circuit through the heating elements 32 and 46 from the conductor 44 through the switching elements 48 and 49 to the frame member 10 and thus to the frame of the automobile or similar device, upon which the cigarette lighter is mounted and which customarily has one terminal of the battery or other source of electrical energy connected therewith.

The operating rod 50 is pivotally connected with the pivoted arm or lever 34 at one end thereof, said operating member 50 having an upturned end 51 that is mounted for pivotal movement in an opening in said pivoted arm 34. A coil spring 52 is secured at one end in an opening in the member 50, and at its other end engages a depending ear 53 provided on one of the guide members of the frame, said member 50 extending through a similar ear 54 in the other guide member to thus guide the movements of said member 50 so that the same will have a substantially straight line movement transversely of the device. The member 50 is provided with a reduced portion 55 spaced from the end portion 49 thereof forming the movable contact member of the switching means controlling supply of electricity to the heating element 32. The normal tendency of the spring 52 is to move the member 50 endwise toward the left in Figs. 3 and 4, or in a direction to move the parts to the position shown in Fig. 2. A latch 56, however, is provided, which has a normal tendency to seat in the recess or reduced portion 55 to lock the parts in the position shown in Figs. 3 and 4. It will be noted that the latch is made of sheet material and, preferably, is a bi-metallic element, which will change in shape upon being heated, as is customary in bi-metallic thermostatic elements provided in thermostatic controlling devices. The

latching end of the member 56 is bent into a substantially V-shaped form to provide a sharp edge adapted to seat in the recess provided by the reduced portion 55.

Referring to Fig. 6, it will be noted that the latch member has a foot portion 57, which is secured in fixed position to one of the flanges 14 and to the cross frame member 10 by a securing element 58. From said foot portion 57 an arm 59 extends substantially at right angles to the inclined V-shaped portion 60 of the member 56, which constitutes the latching means engaging with the reduced portion 55 of the operating member 50. A headed screw-threaded member 61 extends through an opening in the foot portion 57 of the latch 56 and screw-threadedly engages the member 10 for adjusting the position of the member 56 to thus vary the position of the inclined portion 60 thereof relative to the operating rod 50. The heating element 46, it will be noted, is closely adjacent the vertical arm 59 of the latch 56 and will heat the bi-metallic latching element when said heating element 46 is energized. The heating element 46 will be energized at the same time the heating element 32 is energized.

Thus when the user of the device desires to light a cigarette he manually moves the pivoted arm 34 from the position shown in Fig. 2 to that shown in Fig. 4 into engagement with one end of the cigarette 21. It will be noted that a barrier or stop ear 62 is provided on the receptacle 15 projecting forwardly from the open forward end thereof so that movement of the cigarette 21 will be limited thereby upon engagement of the suction nozzle 31 therewith, to thus hold the end of the cigarette opposite that in engagement with the suction nozzle spaced slightly from the heating element 32, to thus prevent any engagement of the cigarette with the heating element, such engagement causing fusing of the contents of the cigarette to the heating element and preventing the successful lighting of the cigarette, as the ignited part thereof will stick to the heating element instead of remaining in the cigarette. Furthermore the heating element would become coated with the fused contents of the cigarette and its efficiency would be lowered.

When the manual movement of the pivoted arm 34 from the position shown in Fig. 2 to that shown in Fig. 4 takes place the operating rod 50, which also serves as a latching rod or holding member for the suction nozzle, moves into the position shown in Figs. 3 and 4 and the latch 56 drops into the annular groove provided by the reduced portion 55 to latch the parts in position with the suction nozzle in substantially fluidtight engagement with the one end of the cigarette. At the same time the valve connecting the passage 38 with the passage 35 is opened and the connection to the suction nozzle 31 is completed from the source of reduced pressure.

When the rod-like member 50 is moved to the position shown in Figs. 3 and 4 the contact 49 engages the stationary contact 48 and the circuit from the source of electricity to the heating elements 32 and 46 is completed. The heating elements are thus energized at the same time that the suction nozzle engages one end of the cigarette. The heating element 46 will heat up the bi-metallic latch member so as to change the shape thereof to gradually raise the inclined end 60 away from the reduced portion 55. The position of the latch member can be adjusted by means of the adjusting screw 61 so that the proper time interval will elapse between the closing of the switch made up of the contacts 48 and 49 and the opening thereof, due to the change in shape of said latch member under the influence of the heating member 46, that the cigarette will be properly lighted by the heating element 32 in cooperation with the suction means provided at the opposite end thereof to that adjacent the heating element 32.

When the bi-metallic element has changed in shape sufficiently to release the end 60 of the latch from the reduced portion 55 of the rod-like member 50 the spring 52 will, by snap action, separate the contacts 48 and 49, move the suction nozzle 31 quickly away from the end of the cigarette, close the valve made up of the parts 36 and 37 and cause the end of the pivoted arm 34 beyond the pivot 40 to sharply strike the portion 12 of one of the guide members to give an audible signal that the cigarette is lighted and ready to remove from the support 23. This can be readily done due to the fact that sufficient space is provided on opposite sides of the support 23 to insert the fingers so as to raise the cigarette up off the support.

As soon as the cigarette has been removed from the support another cigarette will be moved by means of the follower member 25 into position to be operated on by the lighting mechanism. While these operations are taking place the bi-metallic element will cool sufficiently that the latch will again engage with the reduced portion 55, if the pivoted arm 34 is moved into position to engage the suction nozzle with the end of the cigarette that is then in position for lighting, whereupon the entire cycle of operations above described will again take place.

What we claim is:

1. In a combination cigarette dispenser and lighter, a frame, a receptacle adapted to contain cigarettes in side by side relation slidably mounted in said frame, means for limiting the sliding movement of said receptacle in opposed directions, said means including a hinged cover movable to open position only when said receptacle is in one of its limiting positions, said receptacle having a discharge opening at one end thereof, means tending to urge said cigarettes sidewise toward said opening, supporting means on said receptacle for a cigarette discharged through said opening, and means for lighting a cigarette on said supporting means.

2. In a combination cigarette dispenser and lighter, a frame, a receptacle adapted to contain cigarettes in side by side relation, slidably mounted in said frame, means for limiting the sliding movement of said receptacle in opposed directions, said means including a hinged cover movable to open position only when said receptacle is in one of its limiting positions, said receptacle having a discharge opening at one end thereof means tending to urge said cigarettes sidewise toward said opening, supporting means on said receptacle for a cigarette discharged through said opening, and means for lighting a cigarette on said supporting means comprising a heating element mounted in fixed position on said dispenser and lighter adjacent one end of said cigarette, suction means engaging the other end of said cigarette, and means for holding said one end of said cigarette from contact with said heating element, said supporting means comprising a handle for sliding said receptacle in said frame.

3. In a combination cigarette dispenser and

lighter, a horizontally disposed receptacle adapted to contain a row of cigarettes in side by side relation, said receptacle having a discharge opening at one end thereof, means tending to urge said cigarettes sidewise toward and through said opening, supporting means for a cigarette discharged through said opening mounted in fixed position relative to said receptacle, said supporting means having a stop thereon against which one of said cigarettes is pressed by the urging means, and means for lighting a cigarette on said supporting means comprising a heating element mounted in fixed position on said dispenser and lighter, a suction nozzle pivotally mounted on said dispenser and lighter and movable toward and away from one end of said cigarette, a switch controlling operation of said heating element, means for simultaneously closing said switch and moving said nozzle into engagement with said end of said cigarette, means urging said switch toward open position and said nozzle away from said cigarette, a latch mounted on said dispenser and lighter for holding said means from urging said switch, and nozzle to such position, means for releasing said latch a predetermined interval after said lighting means has been set in operation, and a barrier fixed on said support and positioned adjacent said heating element engaged by the end of said cigarette opposite that engaged by said suction nozzle.

4. In a combination cigarette dispenser and lighter, a horizontally disposed receptacle adapted to contain cigarettes in side by side relation, said receptacle having a constantly open discharge opening at one end thereof, means tending to urge said cigarettes sidewise toward and through said opening including a follower, means for limiting the movement of said follower toward said opening to a position short of passage entirely through said opening, supporting means for a cigarette discharged through said opening fixed relative to said receptacle and having upstanding stop means limiting discharge movement of said cigarettes, and means for lighting a cigarette on said supporting means in engagement with said stop means, comprising a heating element mounted in fixed position on said dispenser and lighter adjacent one end of said cigarette, suction means movably mounted on said dispenser and lighter for engagement with the other end of said cigarette, and means fixed relative to said supporting means and said receptacle for holding said one end of said cigarette from contact with said heating element.

5. In a combination cigarette dispenser and lighter, a frame, a receptacle adapted to contain cigarettes in side by side relation slidably mounted in said frame, a hinged cover on said receptacle, means on said cover for limiting the sliding movement of said receptacle in one direction, said receptacle having a discharge opening at one end thereof, means tending to collectively urge said cigarettes sidewise toward said opening, including a follower slidably mounted in said receptacle, means for limiting the movement of said follower toward said opening, supporting means for a cigarette discharge through said opening, and means for lighting a cigarette on said supporting means, said last named limiting means cooperating with said receptacle to limit sliding movement of said receptacle in the opposite direction, said cover being movable to open position when said receptacle is in the limiting position determined by said last mentioned limiting means.

6. In a combination cigarette dispenser and lighter, a horizontally disposed receptacle adapted to contain a row of cigarettes in side by side relation, said receptacle having a discharge opening at one end thereof, means tending to urge said cigarettes sidewise toward and through said opening, supporting means for a cigarette discharged through said opening mounted in fixed position relative to said receptacle, and means for lighting a cigarette on said supporting means comprising a heating element mounted in fixed position on said dispenser and lighter adjacent one end of said cigarette, suction means pivotally mounted on said dispenser and lighter and manually movable into engagement with the other end of said cigarette, means actuated by the manual movement of said suction means to energize said heating element, said suction means being simultaneously connected into operation, and means for automatically throwing said suction means out of operation and simultaneously de-energizing said heating element after said heating element has been energized for a predetermined time interval.

7. In a combination cigarette dispenser and lighter, a receptacle adapted to contain cigarettes in side by side relation, said receptacle having a discharge opening at one end thereof, means tending to urge said cigarettes sidewise toward and through said opening, supporting means for a cigarette discharged through said opening mounted in fixed position relative to said receptacle, and means for lighting a cigarette on said supporting means comprising a heating element mounted in fixed position on said dispenser and lighter adjacent one end of said cigarette, suction means pivotally mounted on said dispenser and lighter and manually movable into engagement with the other end of said cigarette, means actuated by the manual movement of said suction means to energize said heating element, said suction means being simultaneously connected into operation, and a second heating element mounted on said dispenser and lighter in series with said first mentioned heating element, means for throwing said suction means out of operation and simultaneously de-energizing said heating elements and holding means therefor comprising thermostatic means influenced by said second heating element for releasing said holding means.

8. In a combination cigarette dispenser and lighter, a container for cigarettes, a support on said container, means for delivering cigarettes singly from said container to said support, and means for lighting a cigarette on said support, comprising a heating element mounted in fixed position on said dispenser and lighter, a suction nozzle pivotally mounted on said dispenser and lighter and movable toward and away from one end of said cigarette, a switch controlling operation of said heating element, means for simultaneously closing said switch and moving said nozzle into engagement with said end of said cigarette, means urging said switch toward open position and said nozzle away from said cigarette, a latch mounted on said dispenser and lighter for holding said means from urging said switch and nozzle to such position, said latch comprising thermostatic means, and a heating element in series with said first mentioned heating element mounted closely adjacent said thermostatic means to heat said thermostatic means to release said latch.

9. In a combination cigarette dispenser and

lighter, a horizontally disposed receptacle adapted to contain a row of cigarettes in side by side relation, said receptacle having a discharge opening at one end thereof, means tending to urge said cigarettes sidewise toward and through said opening, supporting means for a cigarette discharged through said opening mounted in fixed position relative to said receptacle, said supporting means having a stop thereon against which one of said cigarettes is pressed by the urging means, and means for lighting a cigarette on said supporting means comprising a heating element mounted in fixed position on said dispenser and lighter, a suction nozzle pivotally mounted on said dispenser and lighter and movable toward and away from one end of said cigarette, a switch controlling operation of said heating element, means for simultaneously closing said switch and moving said nozzle into engagement with said end of said cigarette, means urging said switch toward open position and said nozzle away from said cigarette, a latch mounted on said dispenser and lighter for holding said means from urging said switch and nozzle to such position,

said latch being movable only transversely of said urging means, means for releasing said latch a predetermined interval after said lighting means has been set in operation and a barrier fixed on said support and positioned adjacent said heating element and engaged by the end of said cigarette opposite that engaged by said suction nozzle to prevent engagement of said opposite end with said heating element.

ALTON E. HUTCHINSON.
GERALD G. THOMAS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,384,690	Dominick	July 12, 1921
1,704,844	Stewart	Mar. 12, 1929
2,002,492	Dess	May 28, 1935
2,083,464	Mayer	June 8, 1937
2,115,099	Ferguson	Apr. 26, 1938

Certificate of Correction

Patent No. 2,472,835 June 14, 1949

ALTON E. HUTCHINSON ET AL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows:

Column 7, line 67, for the word "discharge" read *discharged*;

and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of January, A. D. 1950.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.