

June 19, 1951

A. E. HUTCHINSON
ELECTRIC CIGARETTE LIGHTER

2,557,225

Filed March 21, 1949

2 Sheets-Sheet 1

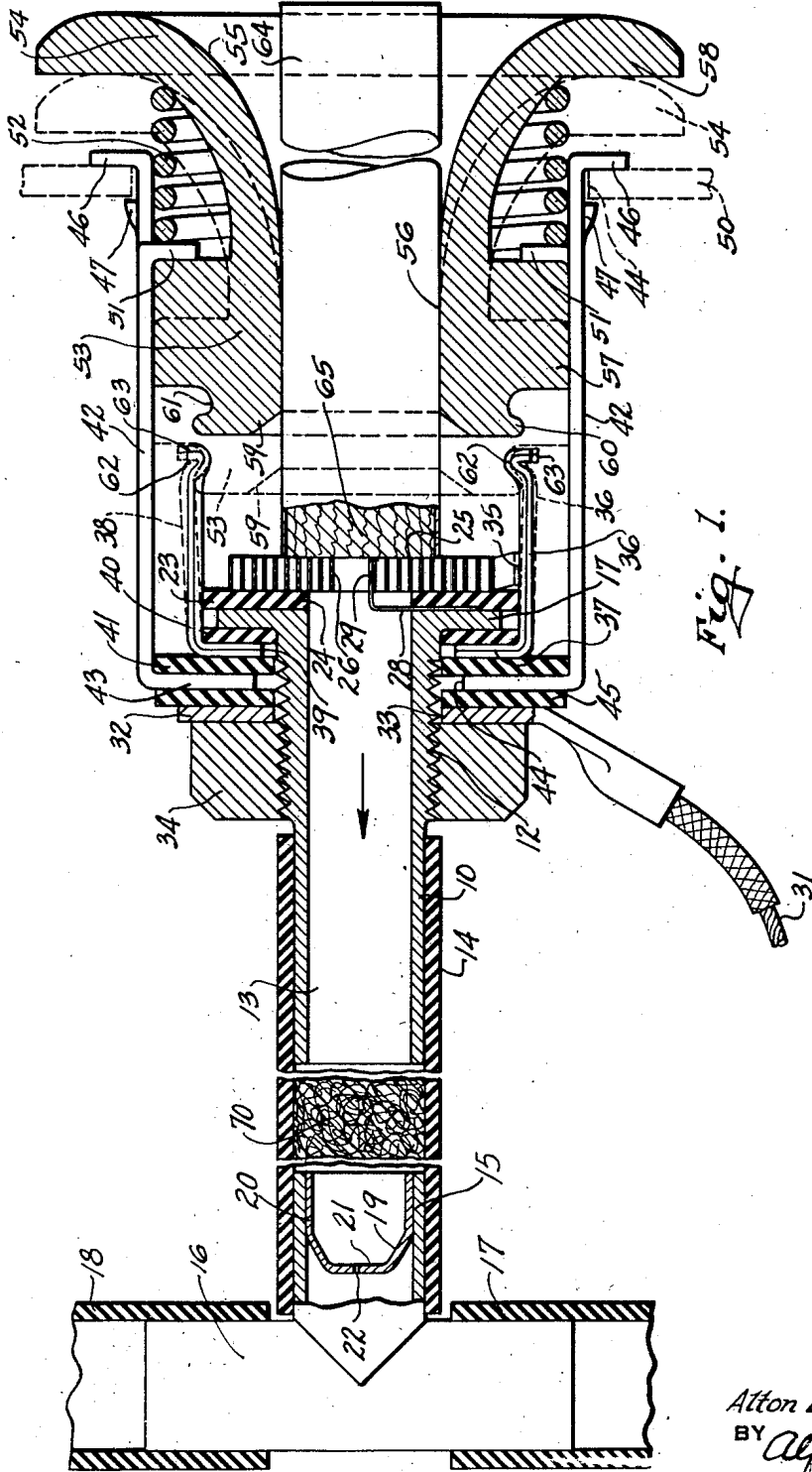


Fig. 1.

INVENTOR:
Alton E. Hutchinson
BY *Alfred R. Fuchs*
ATTORNEY

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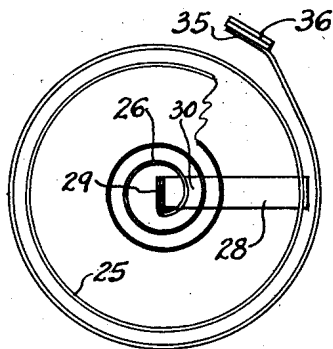


Fig. 2.

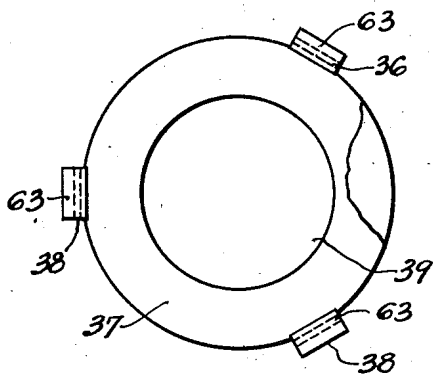


Fig. 3.

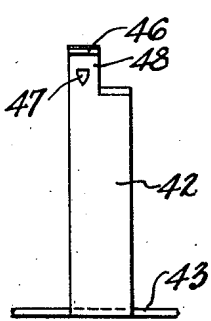


Fig. 5.

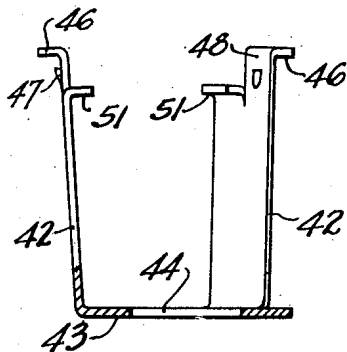


Fig. 4.

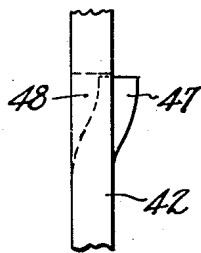


Fig. 6.

INVENTOR:
Alton E. Hutchinson
BY *Alfred R. Fuchs*
ATTORNEY

UNITED STATES PATENT OFFICE

2,557,225

ELECTRIC CIGARETTE LIGHTER

Alton E. Hutchinson, Milwaukee, Wis., assignor
to Dovi Products, Inc., a corporation of Wisconsin

Application March 21, 1949, Serial No. 82,683

19 Claims. (Cl. 219—32)

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My invention relates to cigarette lighters, and more particularly to a cigarette lighter that utilizes the suction obtained from the intake manifold of an internal combustion engine to assist in the lighting operation.

My invention relates to a cigarette lighter of the above mentioned character, in which the end of a cigarette is contacted with a heating element that is fixedly mounted in the lighter and through which air is drawn in a slow moving stream by means of the intake manifold suction.

In cigarette lighters one of the common difficulties that is encountered is that there is a tarry material formed in the burning of the tobacco and gums up the heating element, sticking thereto, and which, if a strong draft is exerted on the cigarette, is pulled into the suction passage, such sticky, tarry material being frequently drawn into the passages to such an extent as to interfere with the operation of other apparatus that is connected with a suction line to which the cigarette lighter is connected. By providing sufficient air to support the combustion and passing this air through the heating element, no such tarry products of combustion result, but only fine powdery products of combustion of an ash-like character are produced. By providing a slow moving gentle stream of air flowing through the heating element, no tobacco or tarry products of combustion are drawn through the heating element and only very minute quantities of fine powdery ash will pass from the heating element into the suction connection.

This result is obtained by providing a mounting for the heating element that is of a tubular character and has an air passage leading to one side of the heating element, the tubular member being wide open to the heating element at the end thereof at which the heating element is located, and by providing for the engagement of the cigarette with the opposite side of the heating element to that in which the air passage leading to the suction means is located, the cross sectional area of said passage at its open end being only slightly less than that of the cigarette.

Preferably, a spiral heating element is provided, which has the turns thereof spaced so as to provide air passages between said turns, and the air passage leading to the suction connection is arranged co-axially of said spiral heating element, the means for guiding the cigarette into engagement with the heating ele-

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ment being so arranged that the end of the cigarette engaging the heating element is also substantially co-axial relative to the air passage and the heating element, and protrudes a short distance beyond the guiding means when in such engagement with said heating element.

One of the important purposes of my invention is to eliminate the distracting effect and fire hazard existing in cigarette lighters now in use. By providing the gentle, slow movement of air through the heating element and thus through the body of the cigarette, which may be referred to as a breathing action, and by providing a lighter in which the cigarette is merely inserted in the lighter and the circuit closing means actuated by a simple pushing movement to energize the heating element, it is unnecessary to hold anything or to watch anything in connection with the operation of the lighter, and it is thus unnecessary to remove the eyes from the road, if such a lighter is used on an automobile, when it is desired to light a cigarette. There is nothing that has to be detached that is hot, as in the case of portable or removable heating elements commonly in use, and there is nothing that can cause fire because the heating element is always in a fixed position at a location where no damage can be done thereby.

It is a further important purpose of my invention to provide thermostatically operated means for breaking the circuit to the heating element, so as to de-energize the same when a sufficient interval of contact with the end of the cigarette of the energized heating element has taken place so that the heating element will not continue to operate, thus further eliminating any possibility of fire. Furthermore the cigarette, after having been ignited, will remain in position in the lighter and even if completely forgotten, can do no damage because the holding means for the cigarette, which also comprises part of the switching means for controlling the heating element, is of such mass that, being cool and of heat conducting material, it will automatically extinguish the cigarette by conducting heat away from the same after the cigarette has been ignited and the heating element has been de-energized.

A further advantage of my invention is that not only is the cigarette extinguished if completely forgotten, but the cigarette is moved away from the heating element at the same time that the circuit is broken, thus preventing ash from being drawn through the heating element after ignition of the cigarette has been accom-

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plished. However, the heating element will be at maximum temperature at the time the cigarette is removed therefrom, assuring that any ash adhering thereto at the time of such removal will be consumed. The movement of the cigarette away from the heating element is small, however, and the air being drawn through the heating element will, for a reasonable time, keep the cigarette burning, if not promptly removed after it has been lighted by the heating element. By providing the thermostatic controlling means for the heating element, uniform lighting of the cigarettes that are ignited by my improved lighter is assured.

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

In the drawings:

Fig. 1 is a longitudinal sectional view through my improved lighter, on a greatly enlarged scale, showing the connection therewith of a source of suction, a portion of the suction tube being broken away.

Fig. 2 is a plan view of the heating element, a portion of the bi-metallic controlling element being shown connected therewith.

Fig. 3 is a top plan view of the bi-metallic controlling element, partly broken away.

Fig. 4 is a transverse sectional view through the mounting frame for mounting the lighter in an opening in a panel on a vehicle body.

Fig. 5 is a fragmentary view of said frame, showing one of the combination holding and stop fingers, and

Fig. 6 is a fragmentary view taken at right angles to Fig. 5, on a greatly enlarged scale.

Referring in detail to the drawings, my improved cigarette lighter comprises a tubular metallic body portion 10 that is provided with an outwardly directed flange 11 at one end thereof and an externally threaded portion 12 extending from adjacent the flange 11 a substantial distance lengthwise of the tubular member 10. The tubular member 10 is provided with a bore 13 of uniform diameter from end to end thereof opening out through the flanged end 11 to its full size. A flexible conduit of rubber or similar electrical insulating material 14 is mounted on the unthreaded portion of the tubular member 10 and constitutes a suction connection, inasmuch as it is mounted on the one arm 15 of a T 16, which is in turn mounted between two sections 17 and 18 of a suction line that is connected with a source of suction, such as the intake manifold of an internal combustion engine and may be connected with suitable apparatus actuated by suction, such as a windshield wiper, for example. Thus the portion 17 of the suction line may be connected with an intake manifold and the portion 18 thereof lead to a suitable device actuated or operated by means of the suction in said line. Mounted in the arm or leg 15 of the T 16 to which the flexible conduit 14 is connected, is a suction controlling and restricting member in the form of a sheet metal plug 19 that has a cylindrical portion 20 that is mounted in the leg 15 of the T and which has a transverse wall portion 21 provided with an extremely small opening 22 therein that may be referred to as substantially a pin opening.

Because of the provision of this infinitesimal opening 22 providing communication between the bore 13 of the tubular member 10 through the

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flexible conduit 14 and the source of suction, a slow gentle flow of air in the direction of the arrow will occur in the tubular member 10 through the opening in the flanged end 11 thereof. An insulating washer 23 is mounted on the flange 11 and has an opening 24 therein of the same size as the bore 13. Thus there will be an inward slow flow of air through the opening 24 in the insulating washer 23. Mounted in engagement with the face of the insulating washer 23 opposite that engaging the flange 11 is a heating element 25. The heating element 25 is made up of a spirally wound flat strip of metal having high electrical resistance. The innermost turn 26 of said heating element and several adjacent turns overlie the opening 24, and said innermost turn has a flat strip 28 of said high resistance metal secured thereto by providing an angular end 29 on said strip 28 engaging flatly with a slightly flattened end 30 on the innermost turn 26 of said heating element 25 and welded thereto. The other end of the flat strip 28 is welded face to face to the flange 11. Thus an electrical connection is provided between the tubular body portion 10 and the inner end of the heating element 25.

A conductor 31 is provided, which extends from a suitable terminal, such as an ignition switch terminal, for example, and which has a terminal 32 thereon that is provided with an opening 33 fitting over the threaded portion 12 of the tubular member 10. The nut 34 engages directly with the terminal 32 so as to provide a good electrical connection between the conductor 31 and the tubular member 10. The outer end of the heating element 25 has a flattened end portion 35, which is welded to a bi-metallic finger 36. The bi-metallic finger 36 extends from a ring-like base portion 37, that is also provided with additional bi-metallic fingers 38, said base portion having an opening 39 therein that is considerably larger than the external diameter of the tubular member 10. An insulating washer 40 is mounted between the fingers 36 and 38 and is provided with an opening therein that snugly receives the tubular member 10. Thus the ring-like base portion 37 is spaced from the metallic member 10 and the fingers 36 and 38 are insulated from the tubular member 10 so that these are only electrically connected with said tubular member 10 through the heating element 25.

An insulating washer 41 is also provided on the tubular member 10 so as to snugly receive the same and fits closely between the fingers 42 provided on a mounting bracket, which also has a ring-like base portion 43 provided with an opening 44 therein, which is considerably greater in diameter than the threaded portion 12, so that said ring-like member 43 is spaced from the tubular member 10. An insulating washer 45 is also provided between the ring-like base portion 43 of the mounting bracket and the terminal 32, said washer fitting snugly on the threaded portion 12 of the members 10. It will be seen that if the nut 34 is tightened up the insulating washers 40, 41 and 45, and the ring-like portions 37 and 43, as well as the terminal 32, will be clamped between the flange 11 and the nut 34, and all of the parts will be held in fixed position on said tubular member so that the fingers 42 will be insulated from the tubular member 10 and the only electrical connection between the tubular member 10 and the fingers 36 and 38 will be through the heating element 25.

The fingers or arms 42 on the mounting bracket are provided with right angularly extending end

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portions 46 and with outwardly struck fingers 47 provided on a reduced end portion 48 of said arms or fingers 42. Said arms or fingers are adapted to be pushed through an opening 49 in a panel 50, such as is ordinarily provided on an automobile for the reception of a lighter or similar apparatus, and upon pushing the arms 42 of said bracket through the opening 49 the struck out fingers 47, which have a certain amount of resiliency, will snap back of the panel 50 to hold the lighter in position on the panel. The arms or fingers 42 are also provided with inwardly extending right angular portions 51, which constitute stop members or abutments, against which the inner end of a compression coil spring 52 engages.

Mounted on the bracket between the arms 42 for sliding movement on said arms is a ring-like member 53, which has an outer bell-shaped portion 54 that has a flaring mouth 55 leading to a cylindrical bore 56. The ring-like member has a lateral cylindrical enlargement 57 that slidably fits between the arms or fingers 42, and which is adapted to engage the inwardly directed stop fingers 51 to limit outward movement of the ring-like member 53. The coil spring 52 is mounted between the outwardly directed flange 58 provided by the bell portion 54 and the stop fingers 51 and tends to urge the enlargement 57 on the ring-like member 53 into engagement with the stop fingers 51. The inner end of the bore or passage 56 is provided with an outwardly flaring wall 59. Said ring-like member is also provided with an annular transversely curved flange 60 and an annular groove 61 providing an annular hook flange on the inner end of said ring-like member 53. The ring-like member comprises a movable contact member. As the circuit is completed through the metallic frame of the automobile through the panel 50 and the bracket having the ears or fingers 42 thereon engaged with said bracket, the metallic ring-like member 53 will be grounded to the frame of the vehicle.

The bi-metallic fingers 36 and 38 are provided with inwardly curved portions 62 and outwardly directed end portions 63 providing hook-like formations on said bi-metallic fingers, which are adapted to engage back of the annular flange 60 in the groove 61 when the member 53 is moved to the dotted line position shown in Fig. 1. With the parts in this latter position the circuit is completed from the conductor 31 through the tubular member 10, the member 28, the heating element 25, the fingers 36 and 38 and the ring-like member 53 to the frame of the vehicle, the heating element 25 being thereupon energized.

In operation, the cigarette 64 is inserted through the bell-shaped mouth 55 of the ring-like member 53 into the bore or passage 56 and through said bore or passage until the inner end of the cigarette engages the heating element 25 on the side thereof that is opposite that next to the passage 13 in the tubular member 10. It will be noted that the major portion of the end of the cigarette lies opposite the opening leading from said passage. At this time the ring-like member 53 is in the full line position shown in Fig. 1. Next the bell portion 54 of the member 53 is engaged with the fingers to push the member 53 inwardly to the dotted line position, whereupon the hook-like portions on the fingers 36 and 38 engage in the groove 61 so that said movable switching element 53 and said fingers are interlocked in circuit closing position. The end of the cigarette remains in contact with

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the heating element 25 and a substantial portion thereof extends beyond the inner end of the member 53 constituting holding means therefor. Closing of the circuit causes the heating element 25 to be energized and the tobacco 65 in the inner end of the cigarette 64 to become ignited. It will be noted that at this time the cigarette at and adjacent the end engaging the heating element is otherwise free and thus air can readily circulate around the end thereof that is being ignited.

After the ignition of the tobacco 65 the heat produced by the heating element 25 causes the thermostatic elements comprising the bi-metallic fingers 36 and 38 to move outwardly to the dotted line position shown in Fig. 1, whereupon the hook ends of said fingers disengage from the groove 61 and are moved outwardly far enough that the flange 60 will cam the fingers 36 and 38 outwardly under the influence of the spring 52 and the movable switching means formed by the ring-like member 53 will move out of engagement with said bi-metallic fingers so as to open the circuit through the heating element 25. At the same time, due to the fact that the cigarette 64 fits snugly in the passage 56, the inner end of the cigarette will be moved slightly away from the heating element 25, the heating element being at its maximum temperature at the time separation of the cigarette therefrom takes place.

It will be noted that the flexible suction tube 14 is of considerable length and that the plug 19 that has the pin hole 22 therein is located at a considerable distance from the tubular member 10. Due to the restriction of the flow provided by the small opening 22, there will be only a gentle flow or passage of air through the heating element 25 at the central portion thereof, which is engaged with the end of the cigarette 64, into the tubular member 10 at all times. Thus there will be a slow flow of air through the heating element while it is energized and the cigarette is engaged therewith. This slow flow of air will continue through the heating element and thus around the ignited part of the cigarette after the heating element has been de-energized to thus keep the tobacco in the end of the cigarette burning where this end protrudes beyond the inner end of the ring-like member 53, and in fact until the cigarette burns to the point where it is consumed to such an extent that its ignited portion reaches the junction of the flaring part 59 of the passage 56 with the portion of uniform bore of said passage.

After the cigarette has been consumed to that extent, then air will no longer flow around the end thereof and there is insufficient suction to pull any appreciable amount of air through the tobacco in the cigarette from the outer end of the cigarette, and inasmuch as the ring-like member 53 is of heat conducting material and of considerable mass, the heat will be conducted away from the cigarette sufficiently to terminate the ignition thereof.

Accordingly all that is necessary to light a cigarette by means of my improved lighter is to push the cigarette into the lighter into engagement with the heating element, push in on the bell-shaped portion 54 of the ring 53 and leave the cigarette in position until after the member 54 springs outwardly, due to release of the ring-like member from the bi-metallic holding fingers. The cigarette is then ignited and each cigarette will be uniformly ignited, because the heating element will be energized to the same extent each

time prior to movement of the bi-metallic fingers to such a position as to break the circuit through the heating element. The cigarette having been ignited, it can be left in the lighter for a reasonable period of time and will continue burning because of being supplied with air at the ignited portion thereof. However, if the cigarette is forgotten and burning continues to the extent that the portion of the cigarette that is snugly fitted in the bore 56 begins to burn, the cigarette will be extinguished by conduction of heat therefrom through the member 53 and lack of air for supporting the combustion.

Furthermore, due to the fact that the flow of air through the passage 13 is very slow and gentle, none of the tarry products of combustion will be drawn through the heating element, but these will be consumed and will turn into a fine powdery ash, some of which may pass into the tubular member 10 in the air stream flowing through said member and even into the suction connection 14, but only infinitesimal amounts thereof collect in the passages and are dry and powdery and so finely divided that these particles will not interfere in any manner with any of the apparatus connected with the suction connection 18 and also will not clog the pin hole opening 22 in the plug 20. Preferably, to make sure that no fine particles of ash will clog said pinhole opening, a filter member 70 may be placed in the flexible tube 14 between the tubular member 10 and the plug 19.

What I claim is:

1. In a cigarette lighter, a stationary heating element having openings therethrough, a circuit for energizing said heating element, a combination switching and cigarette guiding member having means for holding a cigarette in cooperative relation with one side of said heating element, said member being mounted for limited movement toward and away from said heating element parallel to the length of said cigarette, resilient means urging said member in a direction away from said heating element, means for holding said member against such movement comprising circuit closing means including thermostatic means heated by said heating element to release said holding means and open the circuit to said heating element, said resilient means moving said member upon release of said holding means to move said cigarette endwise in a direction away from said heating element, and means for creating a continuous gentle draft of air from the aforementioned side of said heating element to the opposite side thereof through an area of said heating element approaching that of the end of said cigarette irrespective of the position of said switching means.

2. In a cigarette lighter, a stationary heating element having openings therethrough, a circuit for energizing said heating element, a combination switching and cigarette guiding member having means for holding a cigarette in cooperative relation with said heating element, said member being mounted for limited movement toward and away from said heating element parallel to the length of said cigarette, resilient means urging said member in a direction away from said heating element, means for holding said member against such movement comprising circuit closing means including thermostatic means heated by said heating element to release said holding means and open the circuit to said heating element, said resilient means moving said member upon release of said holding means

to move said cigarette endwise in a direction away from said heating element, and means for creating a continuous gentle draft of air through an area of said heating element approaching that of the end of said cigarette irrespective of the position of said switching means, comprising a long tubular member having a wide open passage therethrough from end to end thereof of a diameter approaching that of the cigarette, said heating element overlying one end thereof and the openings through said heating element providing air passages leading into said end.

3. In a cigarette lighter, a stationary heating element having openings therethrough, a circuit for energizing said heating element, a combination switching and cigarette guiding member having means for holding a cigarette in cooperative relation with said heating element, said member being mounted for limited movement toward and away from said heating element parallel to the length of said cigarette, resilient means urging said member in a direction away from said heating element, means for holding said member against such movement comprising circuit closing means including thermostatic means heated by said heating element to release said holding means and open the circuit to said heating element, said resilient means moving said member upon release of said holding means to move said cigarette endwise in a direction away from said heating element, and means for creating a continuous gentle draft of air through an area of said heating element approaching that of the end of said cigarette irrespective of the position of said switching means, comprising a long tubular member having a wide open passage therethrough from end to end thereof of a diameter approaching that of the cigarette, said heating element overlying one end thereof and the openings through said heating element providing air passages leading into said end, and a suction line connected with the other end of said tubular member having flow restricting means therein.

4. In a cigarette lighter, a stationary heating element having openings therethrough, a circuit for energizing said heating element, a combination switching and cigarette guiding member having means for holding a cigarette in cooperative relation with said heating element, said member being mounted for limited movement toward and away from said heating element parallel to the length of said cigarette, resilient means urging said member in a direction away from said heating element, means for holding said member against such movement comprising circuit closing means including thermostatic means heated by said heating element to release said holding means and open the circuit to said heating element, said resilient means moving said member upon release of said holding means to move said cigarette endwise in a direction away from said heating element, and means for creating a continuous gentle draft of air through an area of said heating element approaching that of the end of said cigarette irrespective of the position of said switching means, comprising a long tubular member having a wide open passage therethrough from end to end thereof of a diameter approaching that of the cigarette, said heating element overlying one end thereof and the openings through said heating element providing air passages leading into said end, a suction line connected with the other end of said tubular member having flow restricting means therein.

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and a filter between said tubular member and said flow restricting means.

5. In a cigarette lighter, a stationary heating element having opposed faces, means for energizing said heating element for a limited interval, means for creating a continuous uniform slow flow of air through and in contact with said heating element from one face thereof to the opposite face thereof irrespective of the energization thereof comprising an air conduit having an open end adjacent and facing one face of said heating element, and means for holding the end of a cigarette in igniting relation to said heating element, said holding means being adjacent but spaced from said end of said cigarette.

6. In a cigarette lighter, a stationary heating element having opposed faces, means for energizing said heating element for a limited interval, means for creating a continuous uniform restricted flow of air through and in contact with said heating element from one face thereof to the opposite face thereof irrespective of the energization thereof comprising an air conduit having an open end adjacent and facing one face of said heating element, and means for holding the end of a cigarette in igniting relation to said heating element only during energization of said heating element.

7. In a cigarette lighter, a flat faced spiral stationary heating element, means for energizing said heating element for a limited interval, means for creating a continuous draft through and in contact with a large area of said heating element from one face thereof to the opposite face thereof irrespective of the energization thereof comprising an air conduit having an open end adjacent and facing one face of said heating element, and means movable toward and away from said heating element for holding the end of a cigarette in igniting relation to said heating element opposite said area.

8. In a cigarette lighter, a stationary heating element having opposed faces, means for energizing said heating element for a limited interval, the mounting for said heating element having an air passage therethrough, said passage having an open end adjacent and facing one side of said heating element, means for holding the end of a cigarette in igniting relation to the other side of said heating element, said means being adjacent but spaced from said end of said cigarette, and means for producing a continuous unidirectional flow of air through said heating element and passage irrespective of the energization of said heating element.

9. In a cigarette lighter, a stationary tubular heating element mounting having an open ended air passage therethrough, a stationary spiral heating element overlying the open end of said passage in fixed position on said mounting, means movable axially of said mounting toward and away from the heating element for holding the end of a cigarette in cooperative relation with said heating element in alignment with said passage, means for energizing said heating element for an interval, and means for creating a uniform flow of air into the open end of said passage through said heating element both when said element is energized and not energized.

10. In a cigarette lighter, a stationary heating element, a circuit for energizing said heating element, means for creating a draft through said heating element, releasable means for holding the end of a cigarette in cooperative relation with said heating element engaging said cigarette at

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a point spaced from both ends thereof, means for closing the circuit to said heating element, means for moving said cigarette endwise of itself away from said heating element, and thermostatic means heated by said heating element for opening said circuit and releasing said holding means to permit said cigarette moving means to move said cigarette away from said heating element.

11. In a cigarette lighter, a stationary heating element, a circuit for energizing said heating element, a stationary mounting for said heating element having an air passage therethrough leading to one side of said heating element, releasable means for holding the end of a cigarette in cooperative relation with the other side of said heating element, means for closing the circuit to said heating element, means for moving said cigarette endwise of itself away from said heating element, and thermostatic means heated by said heating element for opening said circuit and releasing said holding means to permit said cigarette moving means to move said cigarette away from said heating element.

12. In a cigarette lighter, a stationary heating element mounting having an air passage therethrough, a stationary spiral heating element overlying the open end of said passage on said mounting, a circuit for energizing said heating element, means for creating a flow of air into said open end of said passage through said heating element, releasable means for holding the end of a cigarette in cooperative relation with said heating element in alignment with said passage on the opposite side of said heating element from said passage, means for closing the circuit to said heating element, means for moving said cigarette endwise of itself away from said heating element, and thermostatic means heated by said heating element for opening said circuit and releasing said holding means to permit said cigarette moving means to move said cigarette away from said heating element.

13. In a cigarette lighter, a tubular member wide open at both ends thereof, a constantly open suction line means connected with one end of said tubular member for creating a steady uniform flow of air therethrough, flow restricting means of fixed aperture in said suction line spaced from said tubular member, a heating element, and means for mounting said heating element over the other open end of said tubular member.

14. In a cigarette lighter, a tubular member wide open at both ends thereof, a constantly open suction line means connected with one end of said tubular member for creating a steady uniform flow of air therethrough, flow restricting means of fixed aperture in said suction line spaced from said tubular member, a heating element having spaced turns, means for mounting said heating element over the other open end of said tubular member, the only opening into said other end of said tubular member being between the turns of said heating element, one end of said heating element being connected with said tubular member, and means for connecting a conductor with said tubular member.

15. In a cigarette lighter, a tubular member wide open at both ends thereof, a constantly open suction line means connected with one end of said tubular member for creating a steady uniform flow of air therethrough, flow restricting means of fixed aperture in said suction line spaced from said tubular member, a flat spiral

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heating element, means for mounting said heating element over and adjacent the other open end of said tubular member in axially spaced relation thereto, the only opening into said other end of said tubular member being through said heating element, one end of said heating element being connected with said tubular member, a circuit for energizing said heating element including means for connecting a conductor with said tubular member, and means connected with the other end of said heating element for completing the circuit through the same.

16. In a cigarette lighter, a tubular member having a uniform unrestricted passage there-through from end to end thereof and wide open at both ends thereof, a constantly open suction line connected with one end of said tubular member and continuously open thereto, flow restricting means of fixed aperture in said suction line spaced from said tubular member, a spiral heating element, means for mounting said heating element over the other open end of said tubular member in fixed position, one end of said heating element being connected with said tubular member, a circuit for energizing said heating element including means for connecting a conductor with said tubular member, and means connected with the other end of said heating element for completing the circuit through the same, comprising a movable switching element, thermostatic switching means interlocking therewith to close the circuit through said switching element, and means urging said movable element away from said thermostatic means and heating element, said movable element including means engaging said cigarette to hold said cigarette in igniting relation to said heating element only said thermostatic means is interlocked with said movable element.

17. In a cigarette lighter, a tubular member having a uniform unrestricted passage there-through from end to end thereof and wide open at both ends thereof, a constantly open suction line connected with one end of said tubular member and continuously open thereto, flow restricting means of fixed aperture in said suction line spaced from said tubular member, a spiral heating element, stationary means for mounting said heating element over the other open end of said tubular member in fixed position, one end of said heating element being connected with said tubular member, a circuit for energizing said heating element including means for connecting a conductor with said tubular member, means connected with the other end of said heating element for completing the circuit through the same, comprising a movable switching element, bi-metallic fingers interlocking therewith, one of said fingers comprising switching means cooperating with said movable switching element to close the circuit through said switching element, and means urging said movable element away from said thermostatic means and heating element, and cigarette holding means movable with said switching means in a direction away from said heating element upon release of said switching element by said fingers.

18. In a cigarette lighter, a tubular member having a uniform unrestricted passage there-through from end to end thereof and wide open

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at both ends thereof, a constantly open suction line connected with one end of said tubular member and continuously open thereto, flow restricting means of fixed aperture in said suction line spaced from said tubular member, a spiral heating element, stationary means for mounting said heating element over the other open end of said tubular member in fixed position, one end of said heating element being connected with said tubular member, a circuit for energizing said heating element including means for connecting a conductor with said tubular member, means connected with the other end of said heating element for completing the circuit through the same, comprising a movable switching element, bi-metallic fingers interlocking therewith, one of said fingers being connected with the other end of said heating element and cooperating with said movable element to close the circuit through said switching element, and means urging said movable element away from said thermostatic means and heating element, and cigarette holding means movable with said switching means in a direction away from said heating element upon release of said switching element by said fingers.

19. In a cigarette lighter, a stationary heating element, a circuit for energizing said heating element, and switching means in said circuit controlling operation of said heating element, comprising a movable switching element, having means for guiding a cigarette endwise toward said heating element and holding said cigarette in cooperative relation therewith, thermostatic switching means interlocking with said switching element to close the circuit through said switching element, guiding means for said movable switching element having stop fingers thereon, and means urging said movable element away from said thermostatic means and into engagement with said stop fingers, said last mentioned means being mounted between said stop fingers and an enlargement on said element, said thermostatic means being mounted to move out of interlocking relation with said element upon predetermined heating thereof by said heating element.

ALTON E. HUTCHINSON.

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Certificate of Correction

Patent No. 2,557,225

June 19, 1951

ALTON E. HUTCHINSON

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

Column 11, line 38, after "only" insert *when*;

and that the said Letters Patent should be read as corrected above, so that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of October, A. D. 1951.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.