Feb. 22, 1938. A. M. ANDREWS 2,109,003

CIGARETTE LIGHTER

Filed Aug. 17, 1934

Fig. 1

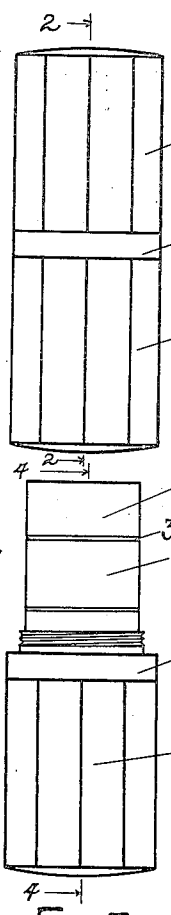


Fig. 2

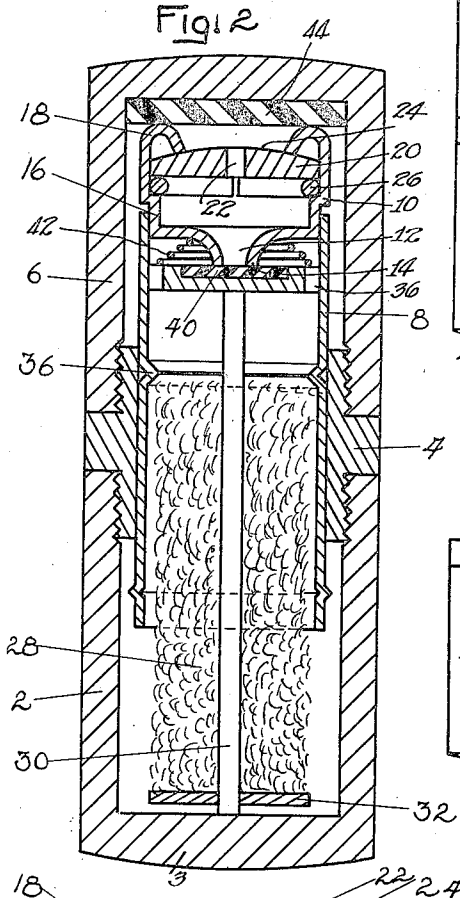


Fig. 3

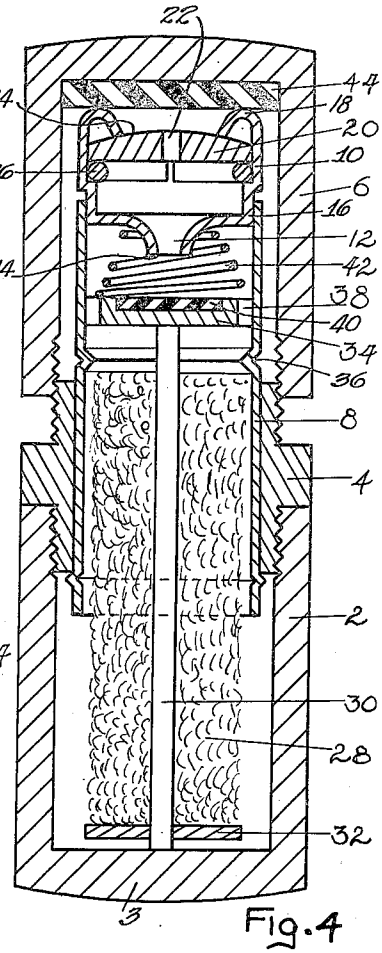
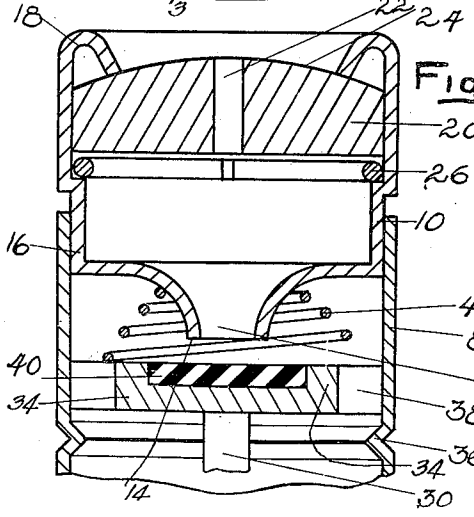


Fig. 4

Fig. 5



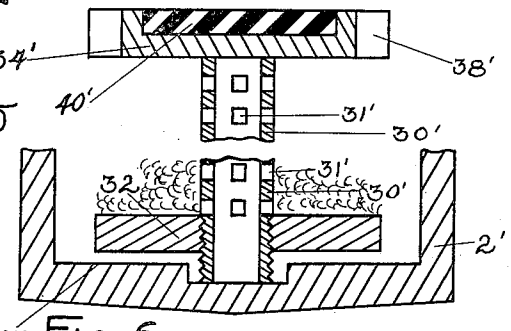


Fig. 6

Inventor

ARCHIE M. ANDREWS

By Bailey and Larson

Attorneys

Patented Feb. 22, 1938 2,109,003

UNITED STATES PATENT OFFICE

2,109,003

CIGARETTE LIGHTER

Archie M. Andrews, Greenwich, Conn.

Application August 17, 1934, Serial No. 740,363

8 Claims. (Cl. 67—7)

My invention relates to cigarette lighters and more particularly to lighters of the catalytic type.

Catalytic lighters in which the cigarette is ignited by contact with a tablet, disc or pill of catalytic material, such as platinum, which becomes hot through contact with the vapors of a volatile fuel, are well known. Such lighters have the disadvantage that when the pill is exposed to the fuel vapors it soon becomes saturated or flooded with the fuel and no longer glows properly when the cigarette is pressed against it.

The present invention provides a lighter which avoids the flooding of the catalytic member by closing the same off from the fuel supply when the lighter is not in use. The particular object of the invention is to accomplish this result and at the same time to provide a simple and durable construction for such operation. Further, it is an object of my invention to close off the pill both above and below so as to avoid any possibility of having the fuel vapors reach the catalytic member.

A further object of my invention is to provide a pill or disc of special shape peculiarly adapted for lighting a cigarette. This is accomplished by forming the pill with a convex upper surface, and providing an aperture through the center of the pill. When the cigarette is pressed against the pill, this will act to spread the paper at the end of the tube outwardly and give a firm engagement so that suction on the cigarette will draw the material up through the pill without admixing air from the outside of the device. Such a construction also makes it easier to obtain good contact between the cigarette and the pill surface.

Further objects and advantages of my invention will appear more fully from the following description, particularly when taken in conjunction with the accompanying drawing which forms a part thereof.

In the drawing:

Fig. 1 shows my lighter in side elevation in closed and inoperative position.

Fig. 2 is a cross section substantially on the line 2—2 of Fig. 1.

Fig. 3 is a side elevation of my lighter in open, operative position.

Fig. 4 is a cross section on the line 4—4 of Fig. 3.

Fig. 5 is an enlarged cross section of the upper part of Fig. 4.

Fig. 6 is a cross section through a portion of a modified form of the invention.

The primary feature of the construction of the present invention resides in the fact that the catalytic disc is mounted in a cup-like member which is slidable, and that the access of fuel to the disc is controlled by such sliding movement. Particularly, the spring is located adjacent the cup-like member and in the upper portion of the lighter, and is supported by a stem or supporting element which is movable both longitudinally and angularly with respect to the cup and which rests on the bottom of the casing. In this manner there is no positive connection between the cup and the supporting member, and any distortion which may occur in the use of the device cannot in any way damage or affect the arrangement.

According to the invention, my lighter comprises an outer casing consisting of a base member 2 carrying at its upper end an externally threaded member 4 which is engaged by an internally threaded cover 6. As will be seen in the drawing, the external appearance of the lighter is very simple, and there are no objectionable protrusions of any sort when the lighter is carried in the pocket.

Within the base 2 is slidably arranged a cylinder or sleeve element 8 which is open at the bottom. Seated in the top of the cylinder and secured therein by a tight friction fit is a cup-like member 10 having an opening 12 centrally of its bottom and a nipple 14 formed as a continuation of the opening 12. The upper portion 16 of the cup-like member is arranged to be flush with the wall of the cylinder 8, and its upper edges are turned over as at 18. The turned edge 18 engages the upper surface of a pill or disc 20 of catalytic material which, as shown, is provided with a central passage 22 and a convex upper surface 24. The pill is held against downward movement by a spring ring 26 which engages the inner walls of the cup.

The fuel is held by wicking 28 arranged in the lower part of the cylinder 8 around a stem or rod 30 which is provided at its lower end with a disc 32 threaded on the end of the stem and serving as a guide member to limit sideward movement of the stem within the base 2 and also as a stop to hold the wick in place on the stem. The lower end of stem 30 rests on the bottom wall 3 of base 2. At the upper end of the stem is a second disc 34 arranged just above an inwardly directed bead 36 in the wall of cylinder 8. Disc 34 is fixed on stem 30, and around its periphery are provided three or more notches 38. The remainder of the periphery of disc 34 engages the walls of cylinder 8 and is thereby guided in the cylinder.

On the upper surface of disc 34, and in a recess therein, is arranged a washer disc 40 of rubber or other suitable material, below the nipple 14 and somewhat larger than the nipple. A conical coil spring 42 rests at one end on the disc 34 while its other and somewhat smaller end surrounds and is guided by the nipple 14 and rests against the bottom of cup 10.

Within the closed end 7 of the cover 6 is arranged a rubber disc 44. It will be noted that the internal diameter of the cover is somewhat larger than the diameter of the cup 10.

The operation of my lighter may be explained briefly. When the lighter is in the operative position, shown in Figs. 3 to 5, the fuel from wick 28 passes upwardly through notches 38 and nipple 14 to the lower side of the disc or pill 20. When the cigarette is pressed against the upper surface of the pill, and the smoker draws on it, the fuel is drawn up through the pill and the pill becomes sufficiently hot to ignite the cigarette.

When the cigarette is ignited, the user puts the cover 6 into position and presses down the cover until its threads engage the member 4. This pressure causes the cylinder 8 to slide downwardly into the base 2 against the action of spring 42. The height of the base and cover are so selected that when the cover is screwed down the member 8 will be forced down until the end of the nipple 14 engages the washer 40. This will effectually seal the lower end of the cup 10 and will prevent the passage of fuel through the nipple to the pill. At the same time, the spring 42 will force the upper edge of cup 10 into engagement with washer 44 and will seal the upper side of the disc 20. The catalytic disc is then entirely cut off from the fuel. When this is accomplished, no flooding of the pill is possible and the life of the lighter is greatly increased. Furthermore, the operation is much quicker and simpler and a prolonged drawing on the cigarette is not required.

When the lighter is to be used again, the cover is removed and the spring 42 forces the cylinder 8 upward, thus removing the lower end of the nipple 14 from the washer and opening the same. There is now a free passage through which fuel can flow from the wick 28 to the pill, and a cigarette can be ignited.

It will be noted that there is no positive connection between the stem 30 and disc 34, and the cylinder 8 and cup 10, only the bead 36 limiting these against outward or separating movement. It is quite evident then that any tilting of the stem 30 which may occur if the cylinder 8 is removed from the base 2 to fill the lighter will not do any permanent damage, and that the stem will immediately be restored to its proper position by the spring 42. The positioning of the spring at the upper part of the lighter and the use of a member resting on the bottom of the lighter thus avoids any danger of breaking any parts which might otherwise be provided in fixed position, for this purpose.

The modified form shown in Fig. 6 operates in the same manner. Instead of the stem 30, however, I provide a tube 30' which extends downwardly through the wick and has an open end resting on the bottom 3' of the base and provided with a disc 32'. This tube is provided at intervals with small slots 31' in its wall. The action of these slots is to aid in passing the fuel from the lower end of the wick to the upper end thereof. The slots permit fuel vapors and a certain amount of fuel to pass upward freely through the tube to the top of the wick near the disc 34'. Otherwise, the operation of this arrangement is the same as that shown in Figs. 1 to 5.

While I have described herein some embodiments of my invention, I wish it to be clearly understood that I do not intend to limit myself thereby except within the scope of the appended claims.

I claim:

1. A cigarette lighter comprising a body portion, a sleeve slidably mounted in said body portion, an ignition disc containing catalytic material mounted in said sleeve above the bottom thereof, means within said sleeve and body portion to hold a vaporizable fuel, said sleeve having a passage connecting said fuel holding means and said disc, and means operable by movement of said sleeve relative to said body portion to close said passage, said closing means including a valve seat member fixed in said sleeve, a valve member slidable in said sleeve, and an element secured to said valve member to support the same extending through the bottom of said sleeve and engaging the bottom of said body portion, and a spring between said valve seat and said valve member.

2. A cigarette lighter comprising a body portion, a sleeve slidably mounted in said body portion, an ignition disc containing catalytic material mounted in said sleeve above the bottom thereof, means within said sleeve and body portion to hold a vaporizable fuel, said sleeve having a passage connecting said fuel holding means and said disc, and means operable by movement of said sleeve relative to said body portion to close said passage, said closing means including a valve seat member fixed in said sleeve, a valve member comprising a disc within said sleeve having a passage therethrough, said disc being slidable and tiltable relative to said sleeve, and an element secured to said disc extending through the bottom of said sleeve and normally resting on the bottom wall of said body portion.

3. A cigarette lighter comprising a body portion, a sleeve slidably mounted in said body portion, an ignition disc containing catalytic material mounted in said sleeve above the bottom thereof, means within said sleeve and body portion to hold a vaporizable fuel, said sleeve having a passage connecting said fuel holding means and said disc, and means operable by movement of said sleeve relative to said body portion to close said passage, said closing means including a valve seat member fixed in said sleeve, a valve member slidable in said sleeve, and an element secured to said valve member to support the same extending through the bottom of said sleeve and engaging the bottom of said body portion, and a spring between said valve seat and said valve member, a cup-like cover adapted to fit over and engage the upper end of said sleeve, and means operable when the cover is depressed and the sleeve has been moved down towards closing position to hold said cover on said body portion.

4. A cigarette lighter comprising a body portion, a sleeve slidably mounted in said body portion, an ignition disc containing catalytic material mounted in said sleeve above the bottom thereof, means within said sleeve and body portion to hold a vaporizable fuel, said sleeve having a passage connecting said fuel holding means and said disc, and means operable by movement of said sleeve relative to said body portion to close said passage, said closing means including a valve seat member fixed in said sleeve, a valve member slidable in said sleeve, and an element secured to

said valve member to support the same extending through the bottom of said sleeve and engaging the bottom of said body portion, and a spring between said valve seat and said valve member, a cup-like cover adapted to fit over and engage the upper end of said sleeve, and means operable when the cover is depressed and the sleeve has been moved down towards closing position to hold said cover on said body portion, said cover having means therein to seal the upper end of said sleeve.

5. A cigarette lighter comprising a base portion, a sleeve slidable in said base portion and extending thereabove, a catalytic disc mounted in the upper part of said sleeve, a valve seat in said sleeve below said disc, a disc valve member having a passage therethrough slidably and tiltably arranged in said sleeve below the valve seat member, a spring between said valve disc member and valve seat member, a tube connected to the lower side of said valve disc member extending below the lower end of the sleeve and engaging the bottom wall of the base member, said tube having apertures in the walls thereof, a disc on said tube adjacent its lower end, porous material for holding a vaporizable fuel arranged around said tube and between the discs thereon, a cover adapted to fit over and engage the upper end of said sleeve, and means to hold said cover on said base, movement of said cover to the position in which it is so held causing said sleeve to move downwardly so as to bring said valve seat against the valve disc and shut off the catalytic disc from the fuel holding material.

6. A cigarette lighter comprising a base portion, a sleeve telescopically connected with said base portion and relatively slidable, a cup structure secured to the upper end of the sleeve and enclosing a disc of catalytic material in the upper portion thereof, and having the lower portion provided with a nipple spaced downwardly from said disc for passage of fuel therethrough, a coiled spring surrounding said nipple and bearing upwardly thereagainst and means for closing said nipple.

7. A cigarette lighter comprising a base portion, a sleeve telescopically connected with said base portion and relatively slidable, a cup structure secured to the upper end of the sleeve and having a disc of catalytic material enclosed in the upper portion thereof, means for holding said disc in place, said cup structure having a reduced nipple at the lower portion thereof and spaced downwardly from the disc for the passage of fuel to said disc, means of communication between the base portion and said nipple, a valve cooperating with the lower end of the nipple to close the same, and a coiled spring surrounding said nipple and interposed between said valve and nipple and bearing upwardly against the nipple.

8. A cigarette lighter comprising a base portion, a sleeve telescopically connected with said base portion and relatively slidable therein, a cup structure secured to the upper end of the sleeve and enclosing a disc of catalytic material in the upper portion thereof, means for holding said disc in place, said cup structure having a nipple at the lower portion thereof and spaced downwardly from the disc for the passage of fuel to said disc, means within the sleeve and base portion to hold a vaporizable fuel and including a stem extending upwardly through the base portion and resting on the bottom thereof, and a valve disc connected with the upper end of the stem and carried thereby in position to bear against the open lower end of the nipple and close the same, said valve disc having openings therethrough for communication between the fuel holding means and the nipple, and resilient means interposed between the valve disc and the nipple normally tending to separate the same.

ARCHIE M. ANDREWS.