

Oct. 18, 1955

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SMOKER'S LIGHTER

Filed Feb. 26, 1954

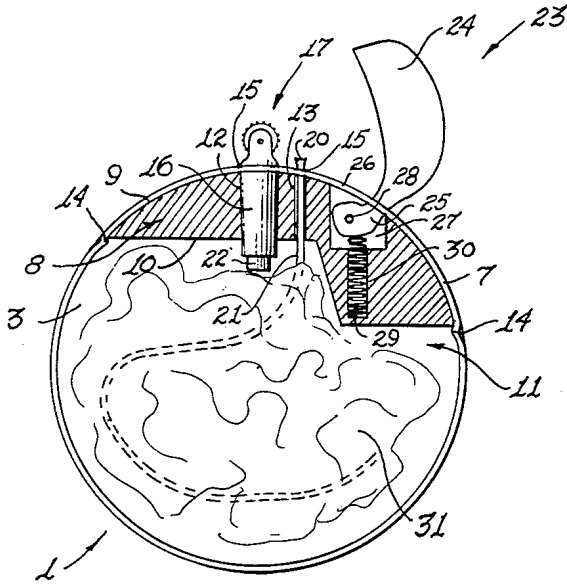


Fig. 2.

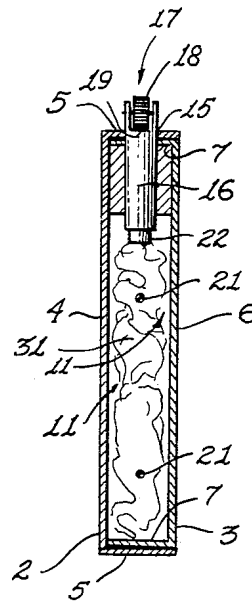


Fig. 3.

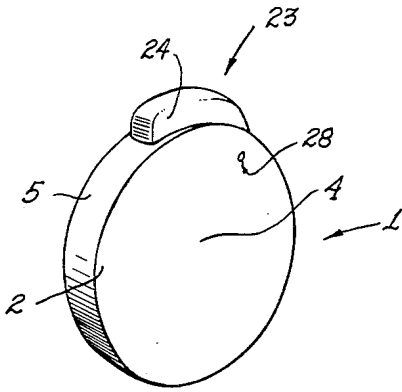


Fig. 1.

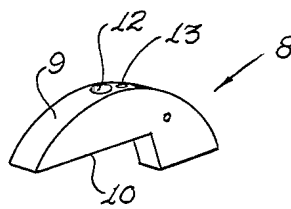


Fig. 4.

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SMOKER'S LIGHTER

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Application February 26, 1954, Serial No. 412,718

8 Claims. (Cl. 67-7.1)

Generally speaking, the present invention relates to the cigarette, cigar, and pipe lighter art and, more particularly, pertains to an improved, selectively operable, lighter of the type adapted to carry a supply of liquid, vaporizable, combustible fuel and provided with selectively operable pyrophoric ignition means adapted to selectively ignite such fuel, when desired, for any required period of time.

I am aware of the fact that numerous cigarette lighters, cigar lighters and pipe lighters of the above generally indicated type have been invented and developed heretofore. However, such prior art lighters, known to me, have various types of disadvantages.

One of the above-mentioned prior art disadvantages is the fact that most such prior art lighters are relatively bulky, which frequently mitigates against their general usage by persons who would have to carry such a lighter in his or her clothing pockets or other similar regions of small space volume.

In addition, such prior art lighters are usually of relatively complicated, costly construction, which further limits their field of usefulness.

Generally speaking, the improved lighter of the present invention comprises hollow case means (usually, flat thin disc-like case means) including two mating portions provided with display surface means and selectively sealingly engageable together (usually, by press-fitting two curved edge flanges together) to form a complete hollow case means. An intermediate member (usually, a flat thin member provided with a peripheral edge adapted to engage the inside of the mated edge flanges and also usually including a boundary edge) is provided with fuel ingress port means therethrough and wick transmission port means therethrough (said port means usually extending from the boundary edge of the intermediate member to the peripheral edge thereof). Positioning means is adapted to effectively cooperate with respect to the interior of the hollow case means and with respect to said intermediate member to effectively position said intermediate member in a selected operative position effectively defining at least one boundary of a hollow region in the interior of the hollow case means and whereby to effectively communicate the wick transmission port means and the fuel ingress port means with said hollow region. The hollow case means is also provided with port means aligned with said wick transmission port means and said fuel ingress port means in the intermediate member when said intermediate member is positioned within the hollow case means as above-described, whereby to provide communication between said hollow region and the exterior of the case means through the wick transmission port means and also through the fuel ingress port means whereby said hollow region can be loaded with liquid fuel through said fuel ingress port means and whereby said wick transmission port means can be provided with wick means extending therethrough so as to have one end in capillary action communication with liquid, vaporizable fuel in the hollow region, and have the other end extending outwardly from the exterior of said port means into a convenient accessible position for ignition of fuel vaporized therefrom. Also included is selectively manually removable stopper means cooperable with the fuel ingress port means to removably make sealing engagement therewith. In certain forms of the invention, the upper end of the stopper means may be provided with selectively operable pyrophoric ignition means. Hollow cap means may also be included for selectively removable encompassing and seal-

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ing cooperation with respect to the fuel ingress port means (and the end of wick adapted to extend therefrom) whereby to normally effectively cover said wick-end to minimize evaporation of fuel therefrom during periods of non-use.

From the above description of the basic form of the present invention, it will be apparent to those skilled in the art that virtually all of the hereinbefore-mentioned prior art disadvantages are virtually entirely eliminated and overcome in and through the use of the present invention.

For example, the construction of the present invention is so simple (the body of the device including merely two press-fitted, mated, hollow case portions and an intermediate member positioned therein) that the lighter can be quite small and still have a relatively large hollow region therein for carrying liquid fuel. In other words, the lighter has an extremely high ratio of usable fuel capacity to total volume of the entire lighter. This is so because of the novel, simple, highly efficient construction of the device.

Also, because of the extremely simple construction of the device and the fact that assembly of the device requires very little labor—and this labor is of the relatively unskilled variety, the device is very much less costly than prior art lighters.

Furthermore, this simple construction of the present invention makes it relatively foolproof and maintenance free—however, if any repair is required, such repair work is extremely simple to do by reason of the construction of the present invention.

Furthermore, the device of the present invention, in its preferred form, bears two relatively smooth (usually, flat) display surfaces well adapted to bear suitable display material such as material identifying a person, organization, affiliation or the like, various types of advertising material, various types of ornamental or aesthetic display material, or other desired display material, whether of a written (or textual) nature, a pictorial nature, an artistic nature, or otherwise. This display material may be applied to the display surfaces, be formed in the display surfaces, or otherwise effectively associated therewith by any suitable means, thus producing a lighter of cheap, simple construction having display features of a novel type.

With the above points in mind, it is an object of the present invention to provide an improved lighter of novel, cheap, simple, small, easy-to-assemble, virtually maintenance-free construction.

It is a further object of the present invention to provide a lighter of the type set forth in the preceding object, which has a relatively high ratio of fuel capacity volume to total lighter volume, and which is further provided with display surface means of a novel character.

Other and allied objects will be apparent to those skilled in the art after a careful perusal, examination and study of the accompanying illustrations, the present specifications and the appended claims.

To facilitate understanding, reference will be made to the hereinbelow-described drawings, in which:

Fig. 1 is a perspective view of one illustrative embodiment of the present invention with the cap means shown in closed position.

Fig. 2 is a somewhat larger view, partly in elevation and partly in vertical section, showing the lighter illustrated in Fig. 1 with the front or female mating portion of the hollow case means removed for clarity and also showing the cap means in open position. The intermediate member is shown in vertical section and the rear or male mating portion of the case, stopper means, the wick means, the cap means and the spring biasing same are all shown in elevation.

Fig. 3 is a vertical sectional view taken in the direction

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of the arrows III—III in Fig. 2. However, it should be noted that the female case portion (not shown in Fig. 2) is shown in Fig. 3 in fully assembled relationship with respect to the male case portion.

Fig. 4 is a perspective view similar in aspect to Fig. 1, but is of the intermediate member only.

Generally speaking, the present invention includes hollow case means including two mating portions selectively and sealingly engageable together to form a complete hollow case means. In the specific example illustrated, the hollow case means is indicated generally at 1 and is made up of two mating case portions 2 and 3, the case portion 2 being a female case portion having a circular flat smooth display surface 4 and a circular laterally directed edge flange 5, and the other case portion 3 being a male case portion having a circular flat display surface 6 and a circular laterally directed edge flange 7. It should be noted that the two mating case portions 2 and 3 and their edge flanges 5 and 7 are dimensioned and relatively positioned (in fact the edge flanges may be slightly, angularly inclined in respect to each other) so that they can be forced together into the assembled relationship shown in Figs. 1 and 3 to form the hollow case means 1, which is effectively sealed (except for port means to be mentioned hereinafter).

Also, generally speaking, the present invention includes an intermediate member provided with wick transmission port means therethrough and provided with fuel ingress port means therethrough. In the specific form illustrated, such an intermediate member is indicated generally at 8 and includes a curved peripheral edge 9 adapted to fit against a portion of the interior surface of the edge flange 7 of the rear or male case portion 3, as best shown in Fig. 2. Said intermediate member 8 is also provided with a boundary edge 10 adapted to effectively define one boundary of a hollow region, indicated generally at 11, within the case means 1. Said intermediate member 8 is provided with fuel ingress port means 12 and wick transmission port means 13, each of which extends from the peripheral edge 9 through the boundary edge 10.

Also, generally speaking, the present invention includes positioning means effectively cooperable with respect to interior of the hollow case means and with respect to said intermediate member to effectively position said intermediate member in operative position. In the specific example illustrated in Fig. 2, said positioning means takes the form of positioning detent 14 inwardly directed and carried by the edge flange 7 of the rear or male case portion 3. Said detents 14 are adapted to abut the ends of the intermediate member 8 and retain it in the position shown in Fig. 2 after it has been slidably inserted into said position. This, of course, is done prior to press-fitted engagement of the two mating case portions 3 and 2 into the assembled relationship shown in Figs. 1 and 3, and also prior to any other assembly operations mentioned subsequently herein. The edge flanges 5 and 7 are provided with aligned port means such as the port means 15, in alignment with the fuel ingress port means 12 and the wick transmission port means 13. The purpose of this arrangement will be explained hereinafter.

The present invention also includes manually removable stopper means cooperable with the fuel ingress port means for removably sealing engagement therewith. In the specific example illustrated in Figs. 2 and 3, the stopper means comprises a conical, tapered longitudinal member 16 adapted for a forced frictional taper-fit within the fuel ingress port means 12, which may also be tapered, whereby to removably sealingly close said fuel ingress port means when the stopper member 16 is inserted through the port means 15 into the fuel ingress port means 12 in the position shown in Figs. 2 and 3. It will be understood that the stopper can be removed when desired to allow reloading of the hollow region 11 with liquid fuel, by feeding same through the fuel ingress port means 12 into the hollow region 11.

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In the specific example illustrated, the upper or outer end of the stopper means 16 is provided with ignition means, indicated generally at 17, and comprising a rotatable, serrated striking wheel 18 adapted to engage the end of a flint or the like 19 to produce a spark and ignite fuel vaporized from the end 20 of a wick 21 which extends through port 15 and wick transmission port means 13 into the hollow region 11 and the fuel contained therein. The flint 19 is adapted to be carried longitudinally within the member 16 and to be spring biased upwardly by suitable spring means contained within the member 16 (and not shown). The flint is adapted to be replenished when desired by threadedly removing a closure member 22 from the bottom of the member 16 to allow insertion thereinto of additional flint. The exact constructional details of the flint biasing and feeding portions of the ignition means are not shown in detail since such arrangements are well known in the art and do not constitute the inventive aspects of the present invention.

Also, generally speaking, the present invention may include hollow cap means movably cooperable with respect to the case means for normal encompassing sealing relationship with respect to the port means therein in communication with the wick transmission port means whereby to effectively cover the outwardly extending end of a wick projecting from said port means so as to minimize evaporation of said fuel from said wick-end when the cap is in encompassing sealing relationship with respect thereto during periods of non-use of the lighter. In the specific example illustrated, the cap means is indicated generally at 23 and includes a hollow cap member 24 and a pivotal lever arm 25 adapted to extend through aligned port means 26 in the mated edge flanges 5 and 7 into recess means 27 extending downwardly through the intermediate member 8 from the peripheral boundary 9 thereof, and be pivotally pinned therein by pin 28 whereby to pivotally mount the entire cap for movement from normally closed position shown in Fig. 1 into the normally open position shown in Fig. 2, and vice versa. Also included is biasing spring means 29 lying in a blind recess extension 30 with the upward end of the spring abutting a cam portion of the lever arm 25 whereby to effectively bias the cap means 23 to maintain it in either open or closed position.

It should also be noted that the hollow region 11 may be provided with suitable capillary action filler material 31 in addition to the capillary action wick 21 if desired to facilitate feeding the liquid fuel contained therein to the outer wick-end 20.

It should be noted that either or both of the display surface means 4 and 6 may be provided with suitable display material by any suitable means such as by stamping, engraving or the like or by affixing to said surfaces the desired display material.

Numerous modifications and variations of the present invention will occur to those skilled in the art after a careful study hereof. All such properly within the basic spirit and scope of the present invention are intended to be included and comprehended herein as fully as if specifically described, illustrated and claimed herein.

For example, while the preferred form of the present invention, as illustrated and described, is made of two mating portions adapted to be very cheaply and simply formed, either with or without suitable display material thereon, and with mating edge flanges adapted to sealingly engage each other around a cheaply and simply die-cast intermediate member of the type indicated, to provide, together with the other components, a very cheap and simple construction, the present invention is not limited to this specific mode of construction or configurations. This is also true of the positioning means, the stopper means, the ignition means (which for example may be separate from the stopper means, if desired) or the cap means.

The exact compositions, configurations, constructions,

relative positionings, and cooperative relationships of the various component parts of the present invention are not critical, and can be modified substantially within the spirit of the present invention.

The embodiment of the present invention specifically described and illustrated herein is exemplary only, and is not intended to limit the scope of the present invention, which is to be interpreted in the light of the prior art and the appended claims only, with due consideration for the doctrine of equivalents.

I claim:

1. An improved selectively operable lighter of the type adapted to carry a supply of liquid, vaporizable, combustible fuel and provided with pyrophoric ignition means adapted to ignite said fuel when desired, comprising: flat thin hollow case means including two mating portions, one of said mating portions being a male case portion having a virtually flat smooth display surface and a virtually laterally directed edge flange, the other of said mating portions being a female case portion having a virtually flat smooth display surface and a virtually laterally directed edge flange of virtually the same configuration as the edge flange of the male case portion and selectively sealingly engageable with said flange of said male case portion to form a complete hollow case means; a flat thin intermediate member having two flat surfaces and a peripheral edge and a boundary edge, said peripheral edge being similarly shaped to the mated edge flanges of the assembled case means and effectively cooperable with the inner side of the inner flange of the male case portion along a portion of the interior surface thereof; positioning detent means carried by the inside of the edge flange of the male case portion and removably cooperably with respect to said intermediate member to effectively position said intermediate member in a selected position whereby said boundary edge effectively defines one boundary of a hollow region within the interior of the hollow case means; fuel ingress port means extending through said intermediate member from the boundary edge to the peripheral edge; wick transmission port means extending through said intermediate member from the boundary edge to the peripheral edge thereof, said fuel ingress port means and said wick transmission port means being closely adjacent at said boundary edge; the flange edges of the hollow case means being provided with port means aligned with said wick transmission port means and said fuel ingress port means in the intermediate member when said intermediate member is positioned by the positioning means within the hollow case means whereby to provide communication between said hollow region and the exterior of the case means through the wick transmission port means and also through the fuel ingress port means whereby said hollow region can be loaded with fuel through said fuel ingress port means and whereby said wick transmission port means can be provided with wick means extending therethrough so as to have one end in capillary action communication with liquid, vaporizable fuel in the hollow region and have the other end extending outwardly from the exterior of said port means into a convenient accessible position for ignition of fuel vaporized therefrom; and manually removable stopper means cooperable with the fuel ingress port means to removably make sealing engagement therewith.

2. A device of the character defined in claim 1 including hollow cap means pivotally cooperable with respect to the case means for selective movement into and out of encompassing sealing relationship with respect to the port means therein in communication with the wick transmission port means through the intermediate member whereby to effectively cover the outwardly extending end of a wick adapted to be mounted in and extend through said port means whereby to minimize evaporation of fuel from said wick end when the cap is in encompassing sealing relationship with respect thereto.

3. An improved selectively operable lighter of the type adapted to carry a supply of liquid, vaporizable, combustible fuel and provided with pyrophoric ignition means adapted to ignite said fuel when desired, comprising: flat thin hollow case means including two mating portions, one of said mating portions being a male case portion having a virtually flat smooth display surface and a virtually laterally directed edge flange, the other of said mating portions being a female case portion having a virtually flat smooth display surface and a virtually laterally directed edge flange of virtually the same configuration as the edge flange of the male case portion and selectively sealingly engageable within said flange of said male case portion to form a complete hollow case means; a flat thin intermediate member having two flat surfaces and a peripheral edge and a boundary edge, said peripheral edge being similarly shaped to the mated edge flanges of the assembled case means and effectively cooperable with the inner side of the inner flange of the male case portion along a portion of the interior surface thereof; positioning detent means carried by the inside of the edge flange of the female case portion and removably cooperable with respect to said intermediate member to effectively position said intermediate member in a selected position whereby said boundary edge effectively defines one boundary of a hollow region within the interior of the hollow case means; fuel ingress port means extending through said intermediate member from the boundary edge to the peripheral edge; wick transmission port means extending through said intermediate member from the boundary edge to the peripheral edge thereof, said fuel ingress port means and said wick transmission port means being closely adjacent at said boundary edge; the flange edges of the hollow case means being provided with port means aligned with said wick transmission port means and said fuel ingress port means in the intermediate member when said intermediate member is positioned by the positioning means within the hollow case means whereby to provide communication between said hollow region and the exterior of the case means through the wick transmission port means and also through the fuel ingress port means whereby said hollow region can be loaded with fuel through said fuel ingress port means and whereby said wick transmission port means can be provided with wick means extending therethrough so as to have one end in capillary action communication with liquid, vaporizable fuel in the hollow region and have the other end extending outwardly from the exterior of said port means into a convenient accessible position for ignition of fuel vaporized therefrom; and manually removable stopper means having an inner end and an outer end, said inner end and adjacent portion being removably frictionally cooperable with the fuel ingress port means to removably make sealing engagement therewith, and said outer end being provided with selectively operable pyrophoric ignition means adjacent the wick.

4. A device of the character defined in claim 3 including hollow cap means pivotally cooperable with respect to the case means for selective movement into and out of encompassing sealing relationship with respect to the ignition means and the port means in the edge flanges of the case means in communication with the wick transmission port means through the intermediate member whereby to effectively cover the outwardly extending end of a wick adapted to be mounted in and extend through said port means whereby to minimize evaporation of fuel from said wick end when the cap is in encompassing sealing relationship with respect thereto.

5. An improved lighter of the type adapted to carry a supply of liquid, vaporizable, combustible fuel and provided with pyrophoric ignition means adapted to ignite said fuel when desired, comprising: flat thin hollow disc-like case means including two mating portions, one of said mating portions being a male case portion having a virtually flat smooth display surface and a virtually

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laterally directed curved edge flange, the other of said mating portions being a female case portion having a virtually flat smooth display surface and a virtually laterally directed curved edge flange of virtually the same curved configuration as the edge flange of the male case portion, said edge flanges being slightly inclined with respect to each other for forcible press-fitted sealing engagement of the female flange around the exterior of the male flange to form a complete hollow case means; a flat thin intermediate member having two flat surfaces and a curved peripheral edge and a boundary edge, said curved peripheral edge being similarly curved to the mated edge flanges of the assembled case means and effectively cooperable with the inner side of the curved inner flange of the male case portion along a portion of the curved interior surface thereof; positioning detent means carried by the inside of the edge flange of the male case portion and removably cooperable with respect to said intermediate member to effectively position said intermediate member in a selected position whereby said boundary edge effectively defines one boundary of a hollow region within the interior of the hollow case means; fuel ingress port means extending through said intermediate member from the boundary edge to the peripheral edge; wick transmission port means extending through said intermediate member from the boundary edge to the peripheral edge thereof, said fuel ingress port means and said wick transmission port means being closely adjacent at said boundary edge; the flange edges of the hollow case means being provided with port means aligned with said wick transmission port means and said fuel ingress means in the intermediate member when said intermediate member is positioned by the positioning means within the hollow case means whereby to provide communication between said hollow region and the exterior of the case means through the wick transmission port means and also through the fuel ingress port means whereby said hollow region can be loaded with fuel through said fuel ingress port means and whereby said wick transmission port means can be provided with wick means extending therethrough so as to have one end in capillary action communication with liquid, vaporizable fuel in the hollow region and have the other end extending outwardly from the exterior of said port means into a convenient accessible position for ignition of fuel vaporized therefrom; and manually removable stopper means cooperable with the fuel ingress port means to removably make sealing engagement therewith.

6. A device of the character defined in claim 5 including: hollow cap means having a hollow cap member and a pivotal lever arm means; and aligned port means in the mated edge flanges of the case means and recess means extending into the intermediate member from the peripheral boundary thereof and adapted to receive the pivotal lever arm means of the cap means to pivotally mount the hollow cap member for selective movement into and out of encompassing sealing relationship with respect to the port means therein in communication with the wick transmission port means through the intermediate member whereby to effectively cover the outwardly extending end of a wick adapted to be mounted through said port means whereby to minimize evaporation of fuel from said wick end when the cap is in encompassing sealing relationship with respect thereto.

7. An improved lighter of the type adapted to carry a supply of liquid, vaporizable, combustible fuel and provided with pyrophoric ignition means adapted to ignite said fuel when desired, comprising: flat thin hollow disc-like case means including two mating portions, one of said mating portions being a male case portion having a virtually flat smooth display surface and a virtually laterally directed curved edge flange, the other of said mating portions being a female case portion having a virtually flat smooth display surface and a virtually laterally directed curved edge flange of virtually the same

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curved configuration as the edge flange of the male case portion, said edge flanges being slightly inclined with respect to each other for forcible press-fitted sealing engagement of the female flange around the exterior of the male flange to form a complete hollow case means; a flat thin intermediate member having two flat surfaces and a curved peripheral edge and a boundary edge, said curved peripheral edge being similarly curved to the mated edge flanges of the assembled case means and effectively cooperable with the inner side of the curved inner flange of the male case portion along a portion of the curved interior surface thereof; positioning detent means carried by the inside of the edge flange of the male case portion and removably cooperable with respect to said intermediate member to effectively position said intermediate member in a selected position whereby said boundary edge effectively defines one boundary of a hollow region within the interior of the hollow case means; fuel ingress port means extending through said intermediate member from the boundary edge to the peripheral edge; wick transmission port means extending through said intermediate member from the boundary edge to the peripheral edge thereof, said fuel ingress port means and said wick transmission port means being closely adjacent at said boundary edge; the flange edges of the hollow case means being provided with port means aligned with said wick transmission port means and said fuel ingress port means in the intermediate member when said intermediate member is positioned by the positioning means within the hollow case means whereby to provide communication between said hollow region and the exterior of the case means through the wick transmission port means and also through the fuel ingress port means whereby said hollow region can be loaded with fuel through said fuel ingress port means and whereby said wick transmission port means can be provided with wick means extending therethrough so as to have one end in capillary action communication with liquid, vaporizable fuel in the hollow region and have the other end extending outwardly from the exterior of said port means into a convenient accessible position for ignition of fuel vaporized therefrom; and manually removable stopper means having an inner end and an outer end, said inner end and adjacent portions being removably frictionally cooperable with the fuel ingress port means to removably make sealing engagement therewith, and said outer end being provided with selectively operable pyrophoric ignition means adjacent the wick.

8. A device of the character defined in claim 7 including: hollow cap means having a hollow cap member and a pivotal lever arm means; and aligned port means in the mated edge flanges of the case means and recess means extending into the intermediate member from the peripheral boundary thereof and adapted to receive and pivotally mount the pivotal lever arm means of the cap means to pivotally mount the hollow cap member for selective movement into and out of encompassing sealing relationship with respect to the ignition means and with respect to the port means in the mated edge flanges of the case means in communication with the wick transmission port means through the intermediate member whereby to effectively cover the outwardly extending end of a wick adapted to be mounted through said port means whereby to minimize evaporation of fuel from said wick end when the cap is in encompassing sealing relationship with respect thereto.

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