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2,586,380

CIGAR LIGHTER, IGNITER, AND THE LIKE

Filed Dec. 29, 1947

2 SHEETS—SHEET 1

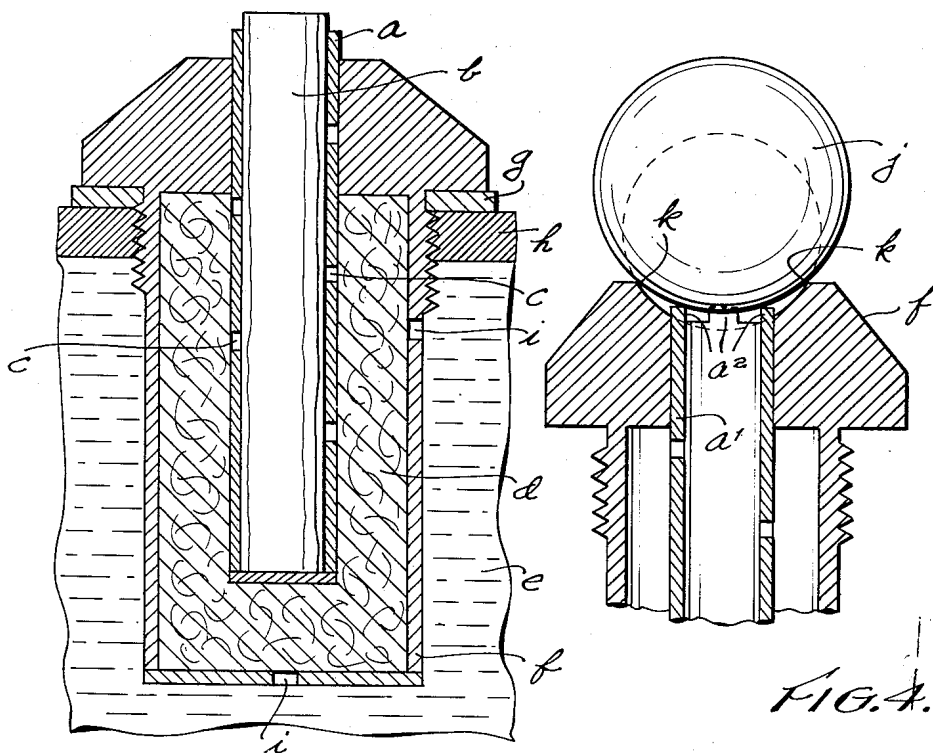
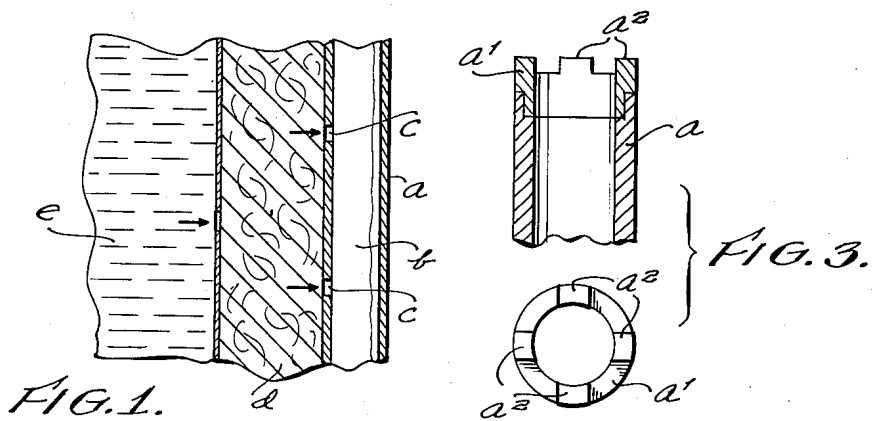


FIG. 2.

FIG. 4.

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2 SHEETS—SHEET 2

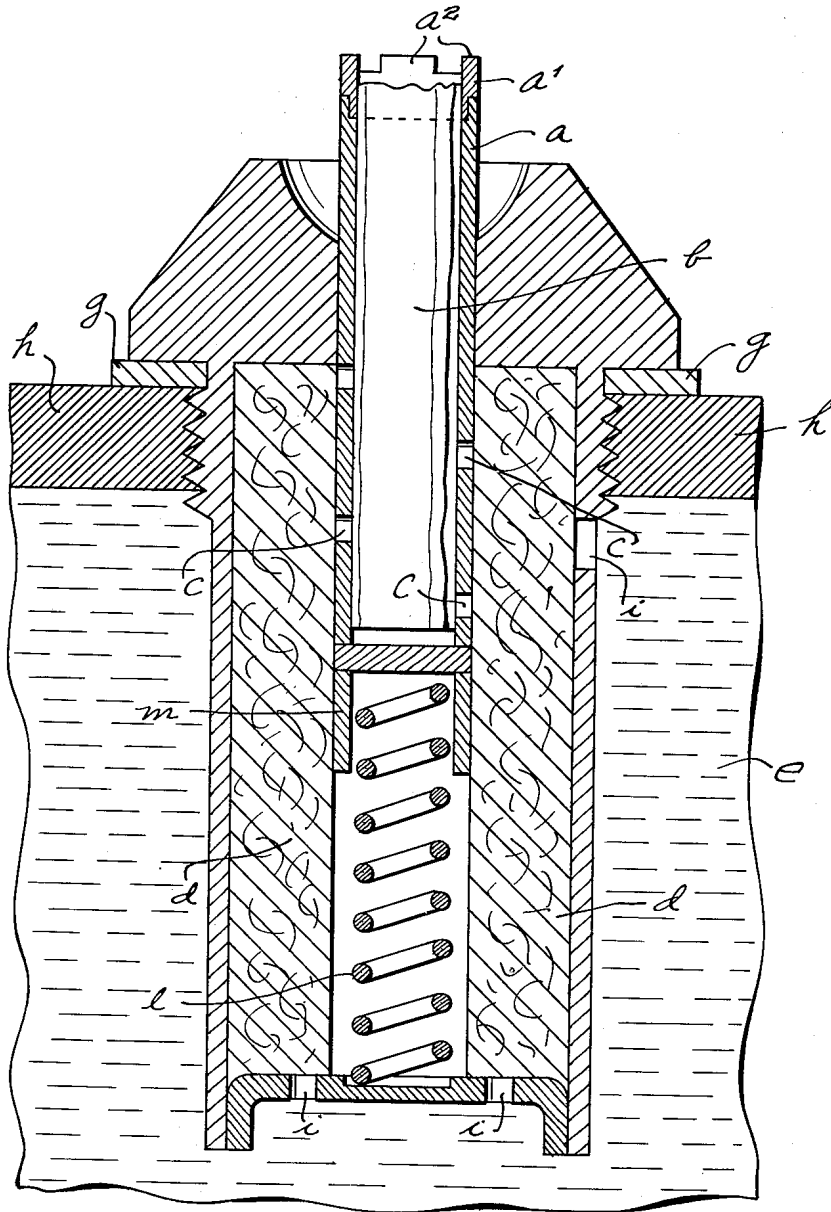


FIG. 5.

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UNITED STATES PATENT OFFICE

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CIGAR LIGHTER, IGNITER, AND THE LIKE

Marcel Quercia, Paris, and Georges Ferdinand,
Nogent, FranceApplication December 29, 1947, Serial No. 794,346
In France March 17, 1943Section 1, Public Law 690, August 8, 1946
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1 Claim. (Cl. 67—7.1)

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The invention concerns improvements in or relating to cigar lighters, igniters, lamps, heaters and more generally any apparatus for kindling, lighting or heating, utilizing for their supply combustible liquids, the object of these improvements being essentially to increase the duration of the combustible load of said apparatus.

It is known that the duration of the load depends on two closely related factors, which are the type of supply to the wick, and the tightness conditions of the apparatus, in particular when the latter is at rest.

The usual supply of the wick in cotton or in any other filling is not rational, even under the most favorable conditions i. e. with a good quality filler and a wick very adequately located in said filler, since the combustible fluid cannot be entirely exhausted and the regions remote from the wick do not supply it. Besides, the end of the wick is not always sufficiently humidified, so that sparks are frequently lost or wasted before the kindling. Further, the amount of liquid absorbed by the cotton is relatively small and does not correspond at all to the capacity of the container enclosing this cotton.

On the other hand, a good supply for the wick, i. e. the increase in the mass of liquid absorbed by the wick obtains its full value, only if the problem of the tightness has been solved previously. But, apart from the leakages occurring at the filling plug, of the screwed type or other, or due to a lack of tightness of the containers, leakages which, however, can easily be eliminated, it is mainly the end of the wick which gives occasion to the major part of the losses. For instance, in the case of a cigar lighter, the latter behaves, in the smoker's pocket, as an actual small still, constantly giving out combustible vapors. Whether the cigar lighter is in operation or remains in the pocket, the duration of the load is substantially the same. In some cases, in summer, for instance, the loss by distillation may reach as much as ninety per cent (90%) of the load, an amount which is not used for lighting. The difficulty resides in the impossibility of hermetically closing the part corresponding to the end of the wick in virtue of the very nature of the latter and of the absence of rigidity of that end.

The improvements which are an object of the invention are meant to obviate these drawbacks.

To this effect, these improvements consist first in ensuring the supply of the wick by the com-

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bustible liquid itself, by arranging said wick in a perforated sheath located inside a filling of porous material housed inside a casing, also perforated, surrounded by the combustible liquid.

5 This arrangement ensures a direct supply to the wick by the combustible liquid by means of a double capillary expansion, on one hand, of the liquid to the porous material, and, on the other hand, from the latter to the wick, an adequate adjustment of the apertures provided in the sheath of the wick and in the container for the porous material regulating the rate of supply and avoiding any influx of excess liquid to the end of the wick after lighting or at rest. This improved arrangement also makes it possible to use up completely the capacity of the container.

10 Another object of the present improvements is to ensure the tightness of the apparatus when at rest. To this effect, they consist, further, in housing the wick together with its sheath, inside a suitably provided housing which is hermetically closed by a valve or other suitable closing device whenever the apparatus, cigar lighter or other, is not in operation.

25 The whole of these improvements ensure a very substantial increase in the duration of the load in cigar lighters, igniters, lamps, heaters or other apparatus utilizing wicks supplied with a combustible liquid.

30 The appended drawings show, by way of example, the improved device which is an object of the invention, in its particular application to a cigar lighter.

35 Figure 1 of these drawings shows, schematically, the principle of the arrangement of the system.

Figure 2 is a vertical section of the device.

40 Figure 3 is a detail view showing, in vertical section and in plan the upper end of the sheath surrounding the wick.

Figure 4 is a vertical section of the upper portion of the device, showing a type of embodiment of the closure system.

45 Figure 5 is a vertical section of the whole device.

As may be seen from the principle of arrangement of Figure 1, the device comprises a sheath *a*, of metal for instance, surrounding the wick *b* and bored with calibrated apertures *c*. This sheath is in direct contact with the filling of porous material *d*, separated itself from the combustible liquid *e* by a wall *f* suitably provided with one or more supply apertures *i*.

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It will be understood that the supply by the mass of the combustible fluid is thus direct, by a double expansion, on one hand, of the combustible liquid *e* to the porous material *d* and, on the other hand, from the latter to the wick *b*. The calibration of apertures *c* of sheath *a* and of apertures *i* of wall *f* will regulate the output.

In the type of embodiment of Figure 2, the porous material *d*, felt, for instance, wherein penetrates the perforated metal sheath *a* surrounding the wick *b*, is itself surrounded by a casing *f* forming a wick holder, in direct contact with the outside combustible liquid *e*. This wick holder, which, like the wick, can be very short, is provided with one or more supply apertures *i*, suitably calibrated, and it is fixed, for instance by screwing or spinning, conveniently with the interposition of a tight joint *g* on the wall *h* of the container enclosing the combustible liquid *e*.

The liquid will thus effect a first expansion in felt *d* whose humidification is constant, then in a second expansion, the felt will supply to the wick *b* the combustible liquid used by the latter. By suitably adjusting the sections of the apertures *i* of the wick holder casing *f* and that of the apertures *c* of the sheath *a* containing the wick, a regular supply will be obtained for the wick and any influx of excess liquid will be avoided.

It will be noticed that the system avoids any danger when the apparatus is being used, since the mass of liquid is in communication with the supply system only through one or several very small apertures.

The felt *d* surrounding sheath *a* could be surrounded itself by a second zone of porous material (felt-like or not) or any other capillary system in contact with the liquid.

On Figure 4, showing the upper part of the device, it will be seen that the sheath *a*, together with the wick *b* contained therein, is mounted slidingly in the upper part of casing *f*. The latter also comprises an upper recess which can be closed by a ball *j* or part of a ball, suitably pressed by a spring (not shown) carried, for example, by the lid of the apparatus. In order to ensure a better tightness, the pressure contact of the ball will preferably be a circular linear contact, as shown at *k*. When the cigar lighter is closed, the ball *j* thus hermetically closes the housing of the wick holder. Upon opening the lid of the lighter the ball, by its rising, ceases its action on the sheath of the wick, which can then come back to its upper position.

It will be understood that the ball could be replaced with any other suitable closing organ, such as a valve, a flap or the like, fitted or not with plastic material.

In order to avoid a rapid damaging of the wick, the upper part *a*¹ of the metal sheath *a* (see Figure 3) which, preferably, is removable and added on to the body of said sheath, is suitably cut so as to offer suitable clutches or extensions *a*² on which rests the ball *j* or other closure organ upon the closing of the lid, so as to protect the wick. These extensions, in an appropriate number, may have any appropriate shape or arrangement.

It will be understood that with the improved device which is an object of the invention, the wick, well protected and always adequately humidified due to its uniform supply, practically does not wear off. Thus, instead of a cotton wick, an asbestos wick or any other solid capillary system can be used (silicates for instance).

In the type of embodiment of Figure 5, sheath

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a rests for instance through a thimble *m*, on a spring *l* bearing against the bottom of casing *f* and which tends to push this sheath upwards.

The device providing both for the supply of the wick and the tightness of the cigar lighter and as represented in Figure 5 forms a block which can be of very small dimensions and which may easily be mounted on any type of cigar lighter comprising a fixed or interchangeable container. This assembly can thus be either on the body of the lighter itself, or on the container forming a part of the latter or on the lighter meant for receiving an interchangeable load (bulb, tube, container, tank, canteen, etc.) or finally on the load itself. In the case of a cigar lighter meant for receiving a load, the device will be advantageously completed by a system allowing the fixation of the load and the tightness of the latter in accordance with known methods. In case the device is fixed on an interchangeable load, a special and temporary closing will be provided on the device itself for the period preceding its operation.

It must be noted that the supply device for the wick, shown on Figures 1 and 2, which can be applied to all lighters, may remain fixed and does not necessarily require the device for the lowering of the wick in a housing closed by a closure organ, such as shown on Figure 5; the improvements which are an object of the present invention being capable of being used independently or in combination.

What we claim is:

In a lighter, in combination, a housing for containing a fuel, the said housing having a wall thereof formed with an opening therein; a first receptacle having side walls and opposite end walls one of which is formed with an opening extending therethrough, said first receptacle being located at least partially in said housing with said side walls thereof connected to said wall of said housing and located about said opening therein, the other end wall of said first receptacle being located in the interior of said housing, and at least one portion of said first receptacle located within said housing being formed with an opening passing therethrough so that the interior of said housing communicates with the interior of said first receptacle and with said opening in said housing wall only through said opening in said one portion of said receptacle; a second receptacle having opposite ends one of which is closed and the other of which is open and having side walls formed with at least one opening passing therethrough, said second receptacle being located in said first receptacle with the side walls and closed end of said second receptacle located apart from the side walls and other end wall of said first receptacle so as to provide a space between said first and second receptacles, and a portion of the side walls of said second receptacle located adjacent to said open end thereof being located in said opening in said one end wall of said first receptacle; a wick located in said second receptacle; and a quantity of absorbent material located in and substantially filling said space between said first and second receptacles, whereby said wick receives fuel only from said absorbent material.

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