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LIGHTER FUEL FEEDING STRUCTURE

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Fig. 1.

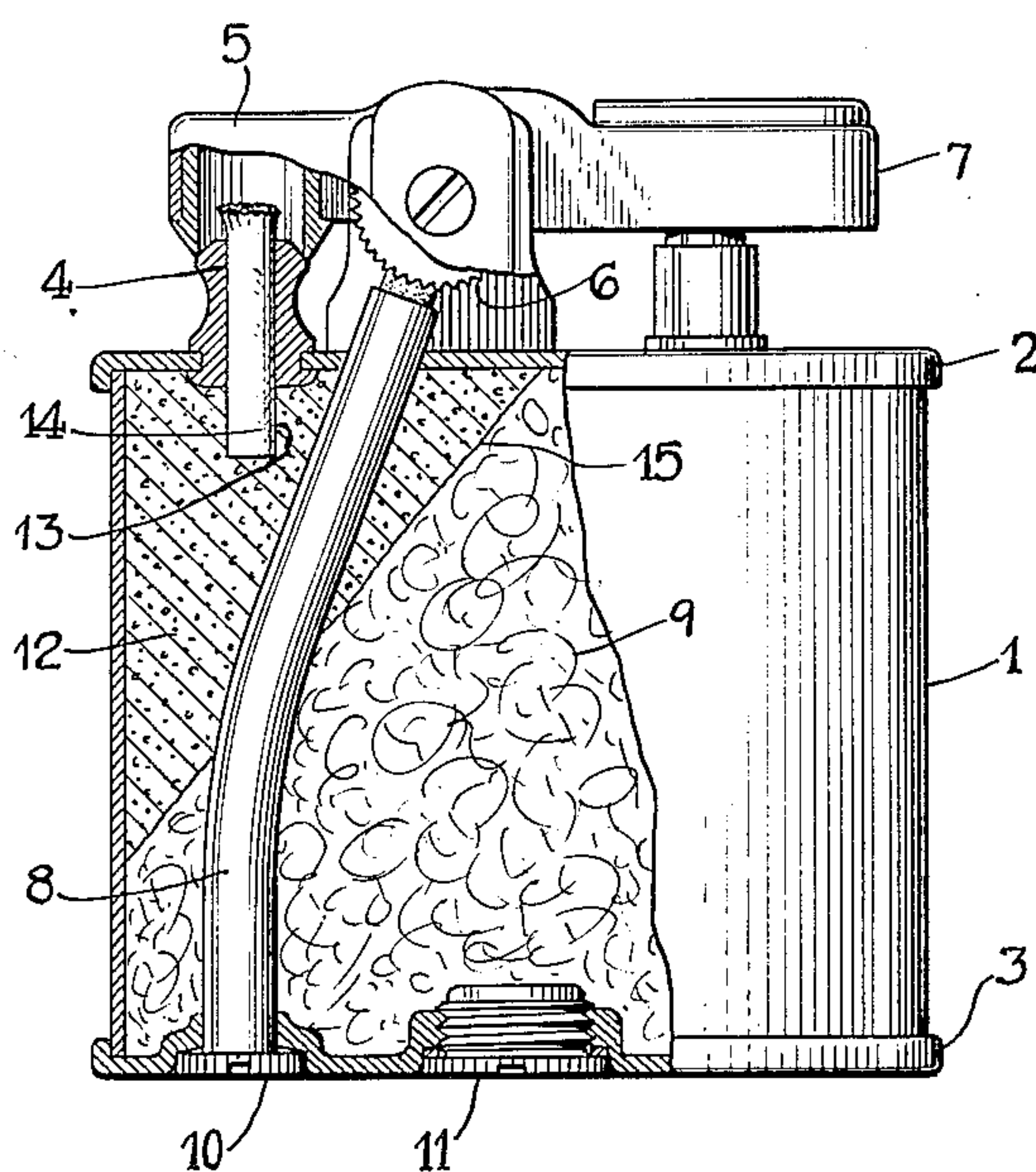
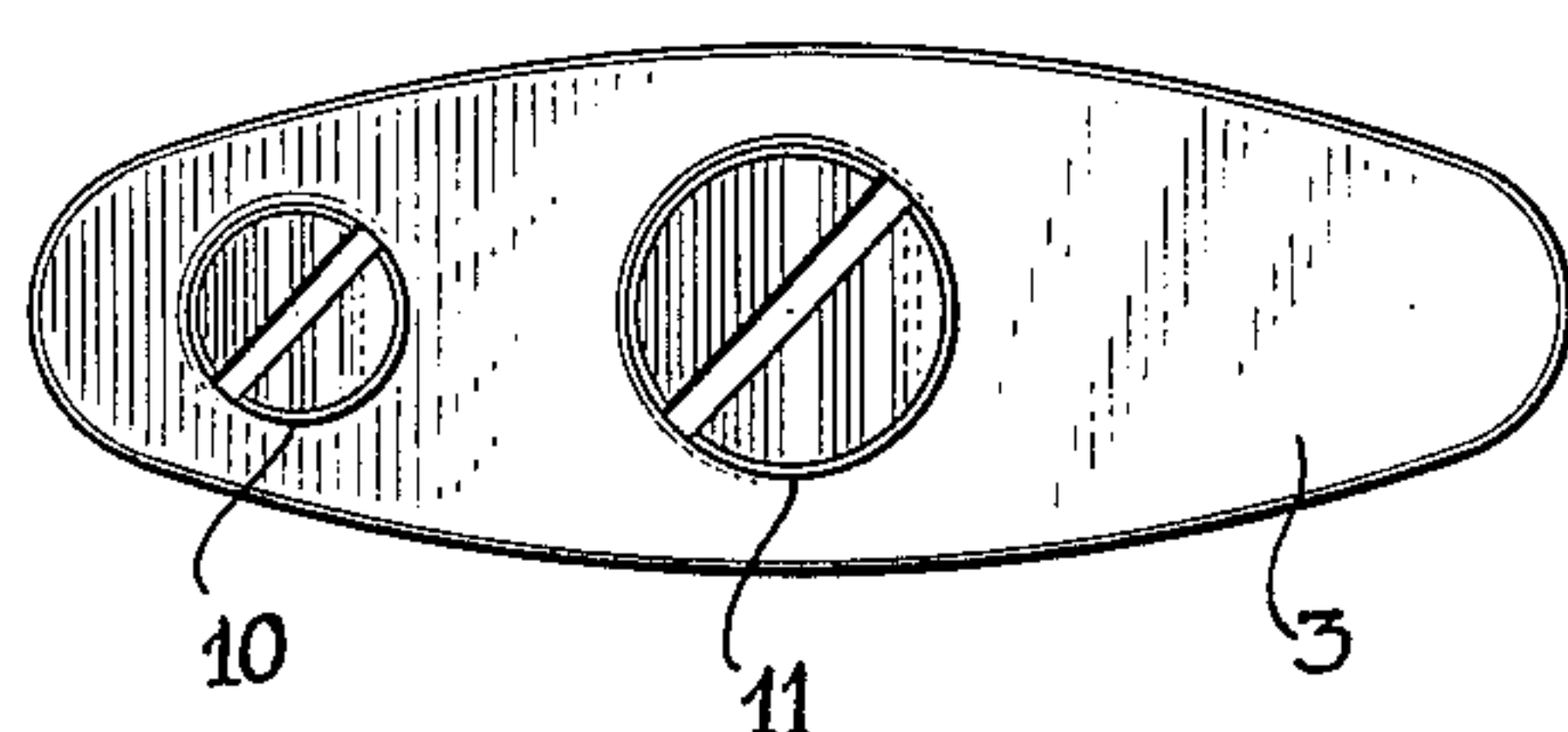


Fig. 2.



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LIGHTER FUEL FEEDING STRUCTURE

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1 Claim. (Cl. 67—7.1)

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To promote an adequate feed of fuel to the wick it has been usual in cigar lighters as heretofore constructed, to provide a long length of wicking which runs through a major portion of the fuel chamber, and is embedded in loose absorbent material such as cotton, which latter is packed into the fuel casing into close engagement with the wick. In lighters thus constructed, it is an awkward and time-consuming operation to replace a wick, or readjust a wick the outer end of which has passed down into the fuel chamber. Furthermore in lighters of the above character, if too much fuel is charged into the fuel chamber, excess fuel is likely to leak out at the exposed end of the wick and prevent ignition or produce an objectionable widely spread flame if ignition is obtained under the above conditions.

One object of the present invention is to provide a lighter fuel feeding structure wherein a short and readily insertable and replaceable wick may be satisfactorily used, with assurance of an adequate but definitely controlled and limited feed of fuel to and through the wick. With construction used heretofore it has not been practical in so far as I am aware, to regulate or control the flow of fuel to the wick. In another aspect, the invention aims to provide a fuel feeding structure which will avoid the risk of flooding the wick with excess fuel as above referred to. Further objects and advantages of the invention will be in part obvious and in part specifically referred to in the description hereinafter contained which, taken in conjunction with the accompanying drawings, discloses a preferred form of lighter which is constructed to operate in accordance with the invention; the disclosure however should be considered as merely illustrative of the invention in its broader aspects. In the drawings—

Fig. 1 is a side view partly in section of a cigar lighter constructed to operate in accordance with the invention.

Fig. 2 is a bottom plan view of the lighter shown in Fig. 1.

The invention is illustrated as applied to a cigar lighter which in respect to many of its operating parts, is of well known construction and mode of operation. As shown, the casing of the lighter is provided with an enclosing side wall 1, which is soldered to top and bottom plates 2 and 3 respectively, the interior of the casing serving as a fuel chamber for the reception of liquid fuel as commonly used in lighters. A wick hole 4 extends through the casing, and

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a snuffer 5, abradant wheel 6 and fingerpiece 7, of construction well known to the art, are shown as mounted on the top wall 2 of the casing. A flint tube 8 projects through the fuel chamber 9 of the casing, as shown in Fig. 1, and is provided with a screw plug 10 at its lower end. Liquid fuel may be charged into the fuel chamber 9 after removal of a further threaded plug 11 in the bottom wall 3 of the casing. Since the above mentioned parts of the lighter as thus far described are of construction well known in the art, or may be of any appropriate construction, they will not be described more in detail herein.

In accordance with the present invention, the portion of the fuel chamber adjacent the inner end of the wick hole 4, is filled with an integral porous mass 12 as hereinafter more specifically described, having therein a passageway 13 within which the wick 14 is slidably seated in close fuel transmitting relationship to the porous walls of the passageway. As the casing appears in Fig. 1, the mass 12 of porous material fills the upper left hand interior corner of the casing, and is exposed throughout the area of its interior surface 15, to the liquid fuel contained in chamber 9. Thus the fuel passes through the porous mass 12 to the wick 5, and the porous mass forms a barrier interposed between the fuel supply and the wick, which controls the rate of flow of fuel to the wick. Although it is preferred to fill the portion 9 of the fuel chamber with absorbent packing such as cotton, as is customary in lighters of the type under discussion, it is nevertheless possible, without resultant flooding of the wick, to omit the usual packing and fill chamber 9 with liquid fuel alone.

As indicated in Fig. 1, only a short length of wicking 14 need be used. For example, a wick about $\frac{3}{4}$ " in length will be sufficient for a lighter of the illustrated type, and such a wick may be readily inserted into or withdrawn from operative position through the wick hole 4 without disturbing the parts within the casing or requiring special tools. The wick seats against the bottom wall of the passageway 13 and thus cannot be pushed in so far as to be lost within the casing. To facilitate the adjustment thereof and avoid fraying, the wick may be provided with a wire gauze or like reinforcement, as is known in the art and therefore need not be described or illustrated in detail, the main point of the above described features being that the porous surrounding mass affords an adequate fuel supply to the short wick and enables the wick to be

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readily inserted into or withdrawn from operative position, and also prevents the exposed end of the wick from passing down through the wick hole 4 so as to be lost. The only way the fuel can pass to the wick 14 is through the body of the porous mass 12, and therefore flooding of the wick is avoided no matter how fully charged with fuel the chamber 9 may be.

In assembling a construction of the above character, I prefer to insert the mass 12 in plastic form, after which it is set or hardened in situ. Ordinary building plaster moistened with water will satisfactorily serve the purpose, also various other granular or plastic materials may be used which are capable of setting or being shaped into a unitary coherent porous mass of definite and permanent form or shape, so that the wick may be readily inserted into and withdrawn from proper fuel conducting relationship with the walls of passageway 13. Many porous materials of the above character are well known in the filtering art. Also, if desired, short absorptive fibers of cellulose or the like may be incorporated into the mass to increase its liquid conductivity.

In making a structure of the above character, a rod of the size and shape of the passageway 13 may be first inserted through the wick hole 4 into the position which the wick 14 will later occupy as shown in Fig. 1, then moistened building plaster or other appropriate porous material may be introduced in plastic form into the location indicated in Fig. 1, either before the bottom plate 3 is applied, or through the opening covered by plug 11. Then the thus introduced plastic material dries and sets into a porous rigid mass as above described, after which the above mentioned rod may be withdrawn, and the wick 14 inserted into operative position. The remainder of the fuel chamber 9 is preferably packed with absorbent filling in the usual way, although as previously stated this filling may be omitted and liquid fuel alone charged in.

Alternatively, the porous mass 12 may be pre-shaped into proper form to fit within the fuel casing, and cemented to the adjacent walls of the casing. In either event the porous mass will be adherently secured to the casing so as to provide a tight joint and prevent the fuel from bypassing the porous mass by traveling along the walls of the casing to the wick hole 4 and thus reaching the wick without first passing through the porous mass.

A structure of the above character affords a means of definitely controlling the rate of flow of fuel to the wick, and limiting the flow to a substantially slower rate than has heretofore been provided in lighters in so far as I am aware. The fuel conductivity of the mass 12, i. e. the rate at which fuel will be supplied to the wick will depend upon the size of the pores of mass 12, the length of the path of travel of the fuel through the mass 12, and also upon the depth of the passageway 13. Also, the flow of fuel through the wick will vary according to the material of which the wick is composed, for example if glass fibre wicking is used, it is desirable to have somewhat

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greater fuel conductivity through the porous mass to the wick than will be needed for the cotton wicking frequently used in lighters. In previous lighters in so far as I am aware, the fuel conductivity in the fuel chamber has always been so high as to maintain a continuous flame at the wick, with flooding under certain circumstances as above mentioned. With the use of a porous mass as above described, the flow of the fuel may be readily limited to a rate such that the flame begins to die out after continuing for example from ten to fifteen seconds, which is sufficient for normal lighter purposes; then in a short time the supply of fuel at the wick will be restored sufficiently for another flame of ten to fifteen seconds duration to be obtained, while flooding of the wick with fuel is avoided. In the case of a lighter construction having dimensions substantially as shown in the drawings, the porosity of the above described mass 12 may be such that if immersed in ordinary lighter fuel, the mass will absorb a weight of fuel equal to about 40% to 60% of the dry weight of the mass.

While the invention has been disclosed as carried out by the preferred construction above described, it should be understood that changes may be made without departing from the invention in its broader aspects, within the scope of the appended claim.

I claim:

In combination, a lighter casing having therein a fuel chamber and a wick hole communicating with said chamber, sparking mechanism positioned to direct sparks toward the mouth of said wick hole, a mass of porous material within said chamber and interposed between the inner end of said wick hole and the remainder of said chamber, said mass being adherently secured in substantially fluid-tight relation to the wall portions of the casing which are adjacent said wick hole, said porous mass comprising granular material united into a substantially rigid body, said porous mass having therein an internal wick receiving passageway communicating with said wick hole and terminating within said mass whereby fuel flowing from the fuel chamber to said passageway is compelled to flow through said mass.

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