Jan. 3, 1967 KYOZO MATOBA 3,295,510

IGNITER OF A BENZINE POCKET WARMER

Filed June 11, 1964 2 Sheets-Sheet 1

Fig. 1

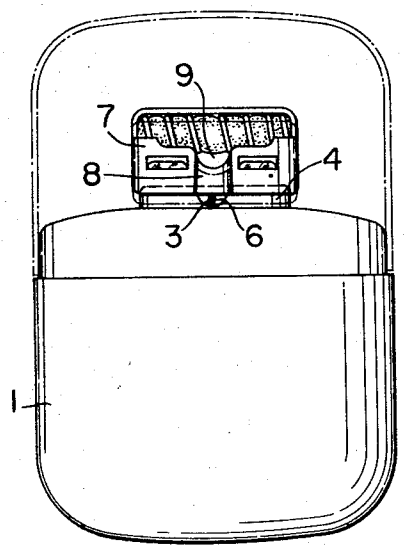


Fig. 2

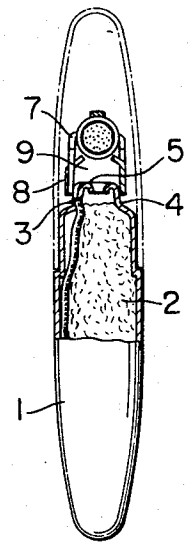
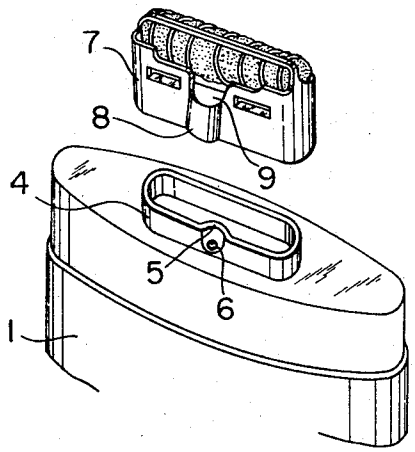


Fig. 3



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Fig. 4

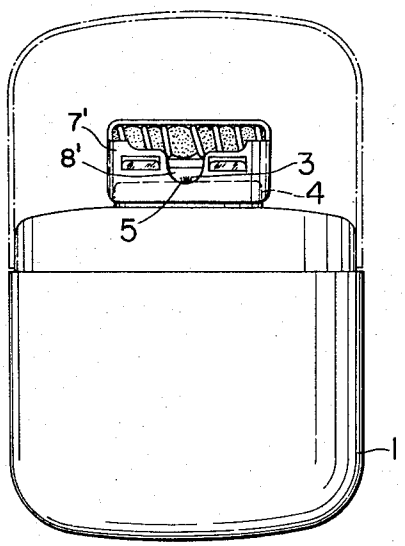


Fig. 5

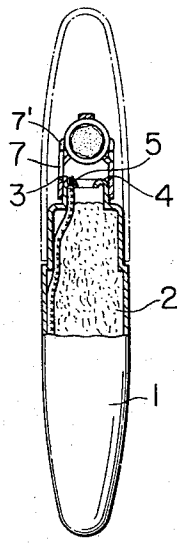
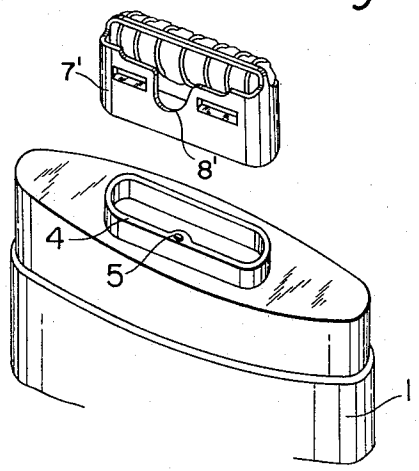


Fig. 6



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3,295,510

IGNITER OF A BENZINE POCKET WARMER

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6 Claims. (Cl. 126—208)

The invention relates in general to a benzine pocket warmer, and, in particular, to an igniter of a benzine pocket warmer.

Hitherto, in a pocket warmer with an ignition wick, the ignition wick is fit into the tank of the pocket warmer or a part of the burner body, and the igniter heats from the upper part of the carrier of the catalyzer the suface of the cotton absorber of the fuel in the tank. This quickens the vaporization of the fuel, and ignition is performed. But in this method ignition is not easy, and further due to the offensive smell of the gas which is not burned at the ignition wick when used, it is not adapted for practical use.

It is an object of the invention to provide an igniter for a benzine pocket warmer which removes the above defects.

It is a further object of the invention to provide an igniter of a benzine pocket warmer which works safely, and can be made economically.

These and other purposes, advantages, characteristic features and uses will be apparent during the course of the following description, when taken in conjunction with the accompanying drawings, wherein:

FIGURE 1 is a front view of the first embodiment of the invention;

FIGURE 2 is a vertical cross-sectional view at its center;

FIGURE 3 is an enlarged perspective view of the nozzle and the tank of the embodiment of FIG. 1 separated from each other;

FIGURE 4 is a front view of a second embodiment of the invention;

FIGURE 5 is a vertical cross-sectional view of the embodiment of FIG. 4 taken at its center; and

FIGURE 6 is an enlarged perspective view of the nozzle and the fuel tank of the embodiment of FIG. 4 separated from each other.

In the following description, the invention is explained in detail referring to the embodiments in the drawings. First, the first embodiment shown in FIG. 1 through FIG. 3 is described.

An ignition wick **3** made of incombustible material such as asbestos fibre or glass fibre is embedded at one end in a cotton absorber **2** of benzine filled in the tank **1** of the pocket warmer, the other end of the wick **3** being exposed slightly through a port **5** in the center of the upper part of a mouth frame **4** of the tank of the pocket warmer along the inner wall of the frame. A burner body **7** with a semicircular ignition port **8** in the center of its upper part is fixed on the mouth frame **4** of the tank so that the ignition wick **3** is at the center of the ignition port **8**.

When this apparatus is used, first, one end of the ignition wick is inserted in the cotton absorber of the benzine filled in the tank of the pocket warmer, the other end of the ignition wick is exposed slightly through the port **5** in the center of the upper part of the mouth frame of the tank along its inner wall, and the benzine is poured into the tank. When the body **7** with the semicircular ignition port **8** in the center of its upper part is fixed on the mouth frame of the tank, the ignition wick is slightly exposed below the ignition port **8**, and upon ignition of

the ignition wick through the ignition port **8** with a match or the like, its flame heats both the carrier of the catalyzer contained in the body **7** and the cotton absorber of the benzine or the like in the tank, so that the vaporized gas quickly reacts with the carrier of the catalyzer, and the benzine is vaporized rapidly and instantly generates heat.

In this way, after obtaining perfect generation of heat from the burner body, the cap is closed and the flame at the ignition wick extinguishes. Thereafter, oxygen is supplied through the ignition port **8** in the body **7**, and the fuel is burnt perfectly. Moreover, the ignition wick is secured at the port **5** in the center of the upper part of the mouth frame of the tank, and the ignition wick is immovably fixed safely to the mouth frame. Even if some gas should leak through the ignition wick, it is mixed with the gas coming through the mouth frame of the tank of the pocket warmer and is burned while passing through the carrier of the catalyzer in the body **7**, so that there is no offensive smell. Furthermore, as the flame of the ignition wick heats directly from below the gas container filled with the gas through the ignition port in the body **7** and the adjacent carrier of the catalyzer, the catalytic action starts at once and the fuel burns quickly and stably, and its practical effects are remarkable.

The embodiment shown in FIG. 4 through FIG. 6 will next be described. Therein, the same reference numerals will be utilized to describe the same elements as in the first embodiment in FIGS. 1–3.

One end of the ignition wick **3** made of incombustible material such as asbestos fibre or glass fibre is embedded in the cotton absorber **2** of the benzine filled in the tank **1** of the pocket warmer. The port **5** for securing the ignition wick is in the form of an aperture in a central part of the mouth frame **4** of the tank **1** of the pocket warmer which is bent inwardly. The burner body **7'** is provided with a central semicircular notch **8** which constitutes an ignition port and said body **7'** is mounted on the mouth frame **4**.

When this apparatus is used, first, the benzine is poured into the tank, then the part of the mouth frame where the notch is located is disposed towards the ignition wick side, and the body **7'** is placed on the mouth frame of the tank so that the ignition wick lightly touches the lower side of the body **7'** and the ignition wick is ignited with a match or the like. In this way, the carrier of the catalyzer contained in the body **7'** is ignited through the notch **8'** and generates heat at once, so that the upper part of the body **7'** can now be applied by the cover of the pocket warmer fully onto the mouth frame of the tank. In this case, the ignition wick is pushed between the frame **4** and the body **7'**, and the flame of the wick immediately extinguishes and the wick is accommodated in the body **7'**.

As explained above, in the present invention, the ignition wick is pushed and stored in the burner body after the ignition, so that the flame of the ignition wick extinguishes completely and no offensive gases are generated. Even if a small amount of leakage gas is present, it is mixed with the gas passing through the mouth of the tank of the pocket warmer into the burner body, and is burned while passing through the carrier of the catalyzer and no offensive gases are generated. Furthermore, as the flame of the ignition wick heats directly from below the gas container in the tank filled with the gas through the port and the adjacent carrier of the catalyzer, the catalytic action starts immediately.

What is claimed is:

1. A pocket warmer comprising a hollow tank containing absorbent material adapted for absorbing fuel, said tank including an upper frame having an open mouth, said warmer further comprising a wick having one end

embedded in said absorbent material and an opposite free end, said frame having a port in which is engaged the free end of the wick, such that said free end is slightly exposed through said port and a burner body containing a catalytic substance slidably and detachably engageable with said frame to enclose the same, said burner body having a U-shaped notch therein positioned in alignment with said port to provide external communication with said free end of the wick with said burner body engaged on the frame, said wick being supported in said port and being positioned within the confines of the burner body with the latter mounted on the frame.

2. A warmer as claimed in claim 1 wherein said frame has an upper rim which is inwardly curved, the said port being provided in said rim, said free end of the wick facing upwardly in said port.

3. A warmer as claimed in claim 2 wherein said notch has a lower end which extends below said upper rim of the frame with said burner body mounted on the frame.

4. A warmer as claimed in claim 3 wherein said frame has an inner surface, the port being positioned in said rim to hold the wick proximate the inner surface of the frame.

5. A warmer as claimed in claim 1 wherein said frame has an inner recessed portion in which is provided said port, said burner body including an outwardly bulged portion which is in alignment with the inner recessed portion when the burner body is on the frame, said U-shaped notch being in the said bulged portion.

6. A pocket warmer comprising a hollow tank containing absorbent material adapted for absorbing fuel, said tank including an upper frame having an open mouth, said warmer further comprising a burner body containing a catalytic substance, said body being slidably and detachably mountable on said frame to cover the same, a wick having one end embedded in the absorbent material and an opposite free end, and means supporting said wick from said frame at said free end such that the wick is contained within the frame and the tank with the free end of the wick protruding slightly above the frame, said burner body having an upper edge and being provided with a U-shaped notch opening upwardly in said upper edge, said notch being positioned in alignment with said port to provide external communication with the free end of the wick with the burner body mounted on the frame.

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