Dec. 14, 1943. P. E. DAMON 2,336,675

WICK SEAL FOR FLARES AND METHOD OF MAKING SAME

Filed June 23, 1941

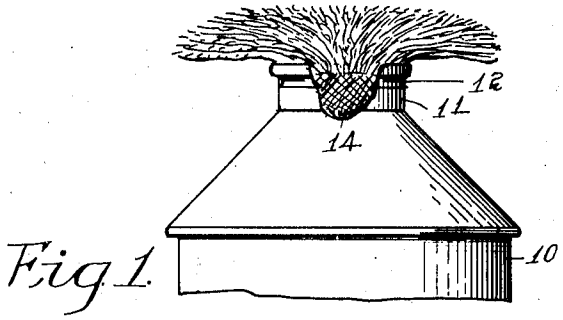


Fig. 1.

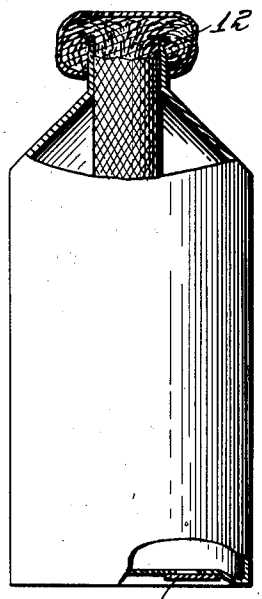
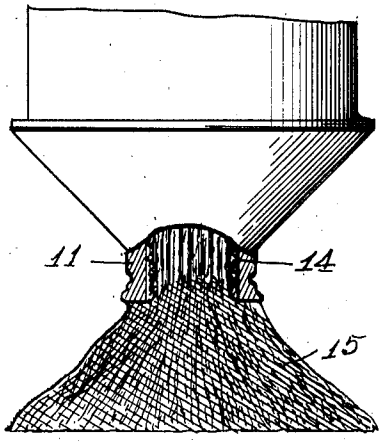


Fig. 3.



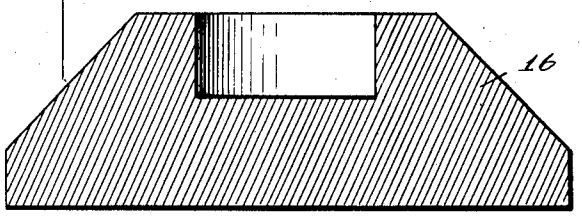


Fig. 2.

Inventor
Philip E. Damon
by Quigg & Teague
Attys

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WICK SEAL FOR FLARES AND METHOD OF MAKING SAME

Philip E. Damon, Ames, Iowa

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3 Claims. (Cl. 226—19)

It is the present custom to provide flares for motor vehicles for signalling purposes. These flares usually consist of a metal can containing liquid fuel, a wick projected above the neck of the can, and some have a metal cap covering the projecting portion of the wick. In practice it happens that fumes and the liquid fuel escape, and for that reason they are usually carried outside of the cab of the vehicle and are exposed to atmospheric conditions.

The object of my invention is to provide a wick seal for flares which burn a liquid fuel, designed so as to prevent escape of the fuel or fumes from the fuel and whereby flares so sealed can be carried inside a passenger car or cab of a truck without danger of the fumes or fuel injuring the occupants.

A further object of my invention is to provide a vapor-proof seal in and around the fibres of the projected portion of the wick, which seal may be melted upon the application of a flame, to thereby expose enough of the wick to readily and quickly start the flare to burn in the ordinary manner.

More specifically, it is my object to impregnate the exposed portion of the wick with a melted wax-like material which, when exposed to normal atmospheric temperatures, will harden, and during such hardening, it will shrink, and one of my objects is to utilize this shrinkage in more firmly sealing the wick.

A further object is to provide an improved method of applying the sealing material to the wick in melted condition and then spreading the saturated wick fibers and pressing them against the exterior of the flare neck and forming a solid seal completely covering the wick fibres and strengthened and reinforced by the wick fibres, so that the seal will not be broken by ordinary handling and use.

In the accompanying drawing:

Figure 1 shows a side view of a flare, showing the projected end of the wick with its fibres spread laterally over the neck of the flare, part of the can being broken away;

Figure 2 shows a sectional view of a portion of my improved flare in inverted position with the end of the wick impregnated with a melted seal material and placed adjacent a mould for completing the formation of a smooth rounded seal; and

Figure 3 shows a sectional view of a portion of a flare having a completed wick seal.

The flare comprises a container for liquid fuel and is in the form of a can 10, having at its top an upwardly projecting neck 11. On the exterior of the neck below its top is an annular groove 12. At the bottom of the container is a filling opening covered by a sealing plate 13 soldered to the container.

Within the container is a wick 14, preferably of cotton fibres and round in cross section. The upper end of the wick has its fibres spread out laterally over the top of the neck. I use a vessel containing hot melted wax, and invert the flare and dip it into the wax far enough to cover a portion of the neck, and hold it in such position until the wax has penetrated the wick to a point within the flare body, as shown in Fig. 2, the wax being marked 15. When this has been done, the flare is removed from submersion in the melted wax, and while still hot and in fluid or plastic condition, it is pressed into a cup shaped mould 16 with the result that the fibres of the wick, with their thick coating of wax, are pressed over the outer surface of the neck and into the groove 12. The flare is held in this position until the wax has sufficiently set and hardened to maintain its shape. This produces a seal fully covering all of the wick fibres and forming a rounded top for the wick which is strengthened and reinforced by the wick fibres and which will withstand the ordinary shocks and jars due to handling and shipping, without breaking or distorting the seal enough to permit leakage of vapors or the liquid fuel.

By said method of dipping the flare into melted wax I accomplish two desirable results: First, heated wax will penetrate deeply into the wick, and, second, the heated wax will heat the flare neck and thereby cause the wax to adhere to the heated metal.

I have demonstrated that if the heated wax were simply applied to the wick and penetrated it into the flare, then upon cooling, the wax will contract and separate at points from the interior of the neck, thereby permitting leakage. By my improved method I take advantage of this shrinking characteristic of heated wax upon cooling, by forming a wax seal reinforced by the wick fibres surrounding the outer surface of the neck, and which, when contracted upon cooling, will fit more tightly against the outer surface of the neck.

The groove 12 is of advantage in preventing the wick from being moved either out of or into the flare.

The fuels commonly used in flares are kerosene or alcohol.

I have had satisfactory results in flares using

kerosene or petroleum oils, by using the following materials for the sealing medium—carnauba wax, carnauba wax plus 20% rosin, Celluloid dissolved in acetone, shellac dissolved in alcohol; and for flares using alcohol, the following—carnauba wax, paraffin, Celluloid dissolved in acetone.

I have also obtained satisfactory results by employing as the sealing medium, shellac, sealing wax, rubber, Celluloid and the like. With sealing mediums of this class which are not readily combustible or readily meltable upon the application of heat, as, for instance, that of a match, I hold the wick and the neck of the flare into the melted and heated medium only long enough to form a relatively thin coating over the surface of the wick and then completing the seal in the manner described, and I find that with such seals they may be ignited with a match held adjacent the seal long enough to melt part of the seal sufficiently to expose a small part of the wick, whereupon the flame from the wick will burn up the rest of the seal. Instead of reducing the sealing medium to liquid or semi-liquid form by the application of heat I apply to the sealing medium a well known solvent for said medium, such as alcohol, acetone gasoline, etc.

In practice, I have obtained satisfactory results in the use of melted wax as the sealing medium at a temperature of approximately 175 to 195° Fahrenheit, at the time of dipping the flares. Also, I have obtained satisfactory results by maintaining the mould at approximately 105 to 120° Fahrenheit; at the time of use this prevents too rapid cooling and hardening and also prevents the wax from sticking to the mould.

I claim as my invention:

1. The method of sealing a wick opening in a flare which consists in inserting a combustible wick capable of being impregnated in said opening, impregnating the part of the wick in said opening with a hot combustible sealing material which is normally solid but liquid when hot, and then cooling said hot sealing material, with said sealing material being ignitible to ignite said wick.

2. The method of sealing the wick holding portion of a flare which consists in inserting a fibrous combustible wisk in said holding portion, spreading the outer end of said wick outwardly of said holding portion, impregnating the wick at said holding portion with a hot combustible sealing material which is normally solid but liquid when hot, molding the impregnated outer end of said wick about the outside of said holding portion, and then cooling said hot sealing material, with said sealing material being ignitible to ignite said wick.

3. The method of sealing a wick opening in a flare which consists in inserting a wick capable of being impregnated, in said opening, impregnating the part of the wick in said opening with a hot combustible sealing material which is normally solid but liquid when hot, and then cooling said hot sealing material, said sealing material being ignitible to ignite said wick.

PHILIP E. DAMON.