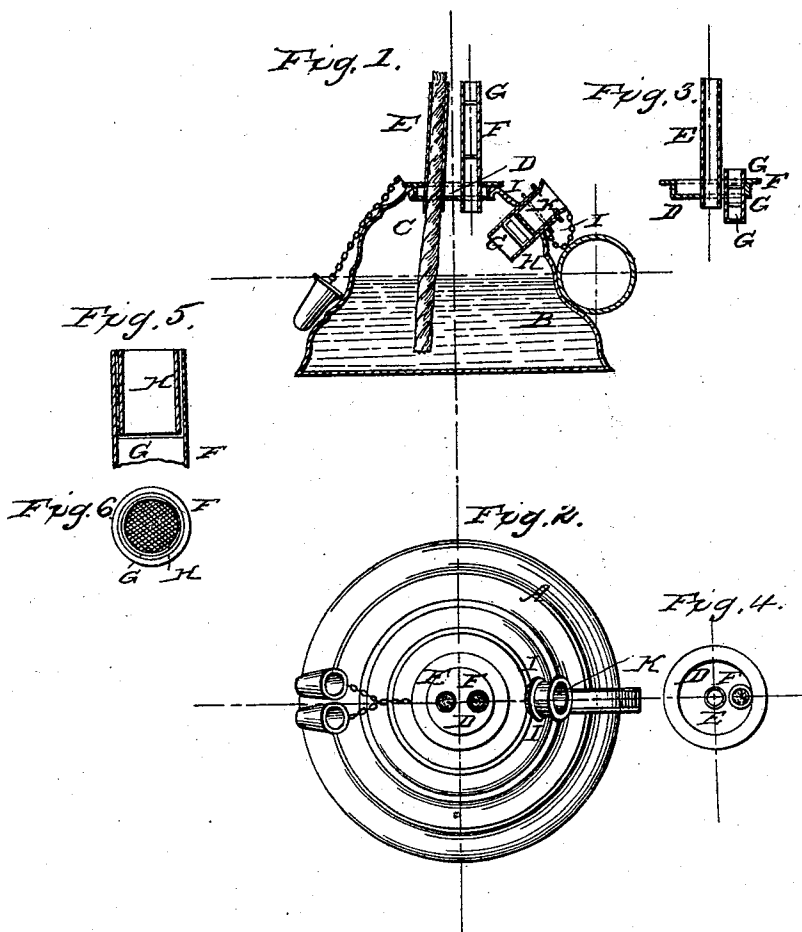


A. H. EMERY.
Safety Lamp.

No. 85,373.

Patented Dec. 29, 1868.



Witnesses:
Louis Keller
Rug Lister

Inventor:
A. H. Emery

United States Patent Office.

A. H. EMERY, OF NEW YORK, N. Y.

Letters Patent No. 85,373, dated December 29, 1868.

IMPROVEMENT IN SAFETY-LAMPS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, A. H. EMERY, of the city, county, and State of New York, have invented a new and improved Safety-Lamp; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in providing for all lamps, which burn kerosene-oil, burning-fluid, or any oil which generates vapors at a temperature at which the oil is liable to be heated in the lamp while burning, a tube-outlet for these vapors, where they may pass to the flame, the tube being provided with two or more diaphragms of fine-wire gauze, fastened therein without the aid of solder, (which is liable to be melted in the use of the lamp,) by means of an inner compressing-tube or ring, which serves by its friction to hold the diaphragms in their places. These diaphragms allow the air to pass into the lamp, or vapors to pass out and burn, but will not allow of the passage of any flame into the lamp, to cause explosion.

To enable others skilled in the art to make use of my invention, I will proceed to describe the precise construction and operation.

First, I would state that of all the various grades of kerosene-oils and their mixtures, together with all of the various kinds of illuminating-material known under the name of burning-fluids, not one of them separately, or in combination with each other, is explosive at any temperature, but all and each of them, either separately or in combination with each other, will, at some temperature, generate vapors, which, when mixed with atmospheric air in certain proportions, form explosive mixtures. Many of the mixtures of kerosene-oil; and most of the burning-fluids, give off vapor at the common temperature of the atmosphere. Kerosene-oil, properly prepared for burning-purposes, will not give off the vapors at ordinary temperatures, or at a temperature of less than 120° Fahrenheit; but most of the oil in market gives off vapors at a less temperature than the one here mentioned. But even if they do not, explosion must sometimes occur with their use, for the reason that the burner becomes heated to a degree much above this, and often, from this cause, throws vapors down into the air, which is above the oil in the lamp, and thus forms an explosive mixture, which may pass up beside the wick or other opening, when, if ignited, flame may be communicated to the explosive mixture within the lamp.

In the drawings—

Figure 1 shows a sectional elevation of the lamp, with a burner of my invention, to prevent the explosion of any mixture inside thereof;

Figure 2 shows a plan of the same; and

Figures 3 and 4, an elevation and plan of another burner, somewhat modified.

Like figures represent like parts.

A is the body of the lamp, partially filled with the oil B.

C is the wick.

D, the cap, containing the burner-tube or wick-tube E, and safety-tube F.

The safety-tube F contains two or more diaphragms, G, which are finely perforated so as to permit a free circulation of the air and vapors, but will not allow flame to pass through it.

This tube F may be made long or short, and placed above or below the burner-plate D, or both, as desired. In it I fasten the diaphragm G, by one tube slipped tightly inside of the other, as shown in figs. 1 and 2, where the diaphragm G is, a little cap of wire gauze put loosely over the end of the tube, before it (the inside tube) is pressed into the other, and, when in place, the friction from the inner and outer tubes holds the diaphragm in place.

The method of putting in the diaphragm without solder, or by use of the inner tube H, will be better understood by means of Figures 5 and 6, showing the tubes F and H, and diaphragm G, on a larger scale.

If solder is used to fasten the diaphragms, it is liable to be melted in the ordinary use of the lamp, and so loosen the diaphragms.

I am aware that others have used a tube with one diaphragm fastened in it with solder, or have used a wire diaphragm soldered, and a small hole to prevent explosion, but the use of a tube with two diaphragms is much to be preferred, for with the tube, and two or more diaphragms in it, we will not be troubled with the oil stopping out through it, and if any explosive vapors pass out through it, they will be immediately ignited by flame from the wick, and be burned for light, instead of being scattered loosely through the air.

One diaphragm may be sufficient protection against the passage of flame, but it is not sufficient to prevent the oil or fluid being stopped out when the lamp is carelessly handled, as is often the case.

I have also provided a filling-tube on the same principle, to be used in filling the lamp—through which the lamp may be filled while burning, without danger to the lamp—where I is the tube, G, the diaphragm of wire gauze, and H, the ring which fastens it in. K is the cap which stops it up, when not being used.

I may use one or more diaphragms G in this tube, as I prefer.

What I desire to claim, and secure by Letters Patent, is—

The method of fastening the diaphragms G in the tube F, by means of the inner tubes or rings H, substantially as and for the purposes herein described and set forth.

Witnesses:

LOUIS KOLBER,
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A. H. EMERY.