J. A. S. HANFORD.

Non-Explosive Lamp Collar and Filler.

No. 162,646. Patented April 27, 1875.

Fig. 1

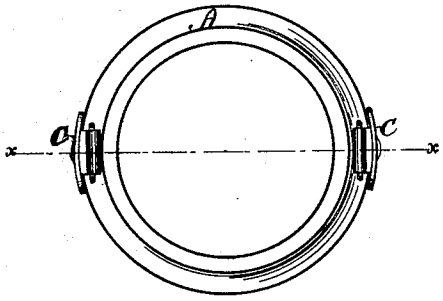


Fig. 2.

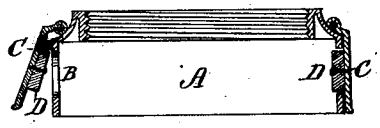


Fig. 3.

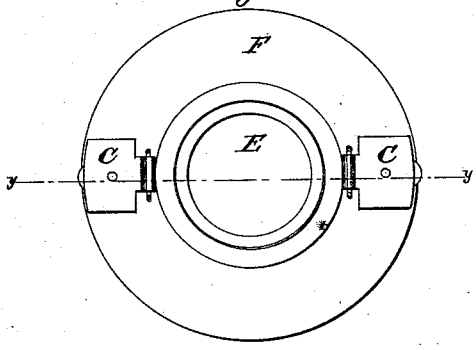
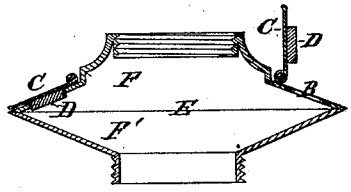


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES A. S. HANFORD, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN NON-EXPLOSIVE LAMP COLLARS AND FILLERS.

Specification forming part of Letters Patent No. **162,646**, dated April 27, 1875; application filed March 31, 1875.

To all whom it may concern:

Be it known that I, JAMES A. S. HANFORD, of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Non-Explosive Lamp Collar and Filler; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a plan view of the collar of an ordinary lamp provided with my improvement; Fig. 2, a section of the same through line *x x*; Fig. 3, a plan view of my supplemental collar; Fig. 4, a section of the same through line *y y*.

The object of this invention is to obviate the danger attending the explosions of the accumulated gas or oil vapor in coal-oil lamps; and it consists in the combination, with an ordinary lamp-collar, having vertical sides peforated with horizontal holes, of hinged caps which cover the said holes, and elastic stoppers which are attached thereto, and fill the said holes to prevent the oil from running out if the lamp is upset, and act also as valves to release the confined gases and render them harmless when ignited. The invention also consists in the peculiar construction of a supplemental collar in combination with said cap and pad, as hereinafter more fully described.

In the drawing, A represents the collar of an ordinary coal-oil lamp, which is attached to the same by cement, and is screw-threaded upon its upper inner periphery for the reception of the burner. Said collar is perforated with holes B, which make a communication between the outside air and the interior of the lamp, and through which the lamp may be filled without detaching the burner, more than one hole being desirable, so as to avoid entirely closing the vent, as would be the case when filling through a single hole with the nozzle of the can. The flange of the glass oil receptacle which receives the collar is notched at these holes to make a direct and unbroken communication between the interior of the lamp and the outside air. C are caps of thin metal, which are hinged to the collar just above the holes B, and are provided upon the inside with elastic stoppers D, which fit nicely in the holes B, and prevent leakage of oil in case the lamp is upset. The stoppers may be of cork, rubber, or any other elastic material, which prevents the leakage of oil and still fits sufficiently loose in the holes to be blown out by the first expansion of the gases in the incipiency of an explosion. This safety-valve arrangement prevents the accumulation of expansive force in the oil-chamber, which bursts the lamp, and is attended with such dangerous results. To hold the cap C in proper place, and securely over the holes, I may, if found desirable, re enforce the elastic stoppers by means of small spiral springs contained within the collar. E represents a supplemental collar, which may be screwed upon the collar of the lamp, and to which the burner may be attached, the supplemental collar occupying an intermediate position between the two. This device consists of two conical plates, F F′, attached to each other, so as to form an annular chamber around the wick. The top one of these plates is perforated with holes B, similar to those shown in Fig. 2, and have also the hinged caps C and elastic stoppers D.

By means of this peculiar construction of my supplemental collar the lamp may be readily filled with oil while burning, the annular space around the wick allowing plenty of room for the passage of oil to the oil-chamber. It is also of such construction as to be readily applicable to any lamp without alteration, and at a trifling cost, thus enabling poor persons to use with impunity the cheap volatile oils, which, under ordinary circumstances, are so apt to produce dangerous explosions.

I am aware of the fact that lamps have been constructed which are filled through holes in the glass oil-chambers, which are covered by caps attached to the collar, and that numerous ventilating-tubes have been patented to carry off the explosive gas; but experience has demonstrated the fact that in spite of such ventilation the explosions will occur, the gas or inflammable vapor of the oil hanging so close to the surface of the oil as to render an explosion possible at any time, and this leads me to the conclusion that the only practically safe way is to accept the phenomenon and take care of the result.

By means of the device hereinbefore described all danger is obviated, for while explosions are not prevented they are so modified in lamps constructed in accordance with my invention as to be able to stand the test of flame, red-hot iron, or even a stream of ignited oil in the oil-chamber without any dangerous explosions, or even noisy demonstration.

Having thus described my invention, what I claim as new is—

1. The hinged cap C, having the elastic stopper D, in combination with the ordinary collar of a coil-oil lamp, having vertical sides and horizontally-perforated holes, which receive the said stoppers for the purpose of forming an inlet for the oil and a safty-valve for the lamp, substantially as described.

2. The supplemental collar E, consisting of the conical plates F F′, forming a closed chamber, which opens into the oil-receptacle, in combination with the hinged caps C and elastic stoppers D, substantially as and for the purpose described.

The above specification of my invention signed by me this 27th day of March, 1875.

J. A. S. HANFORD.

Witnesses:

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