

C. GEIGE.
Lamp.

No. 220,370.

Patented Oct. 7, 1879.

Fig. 1.

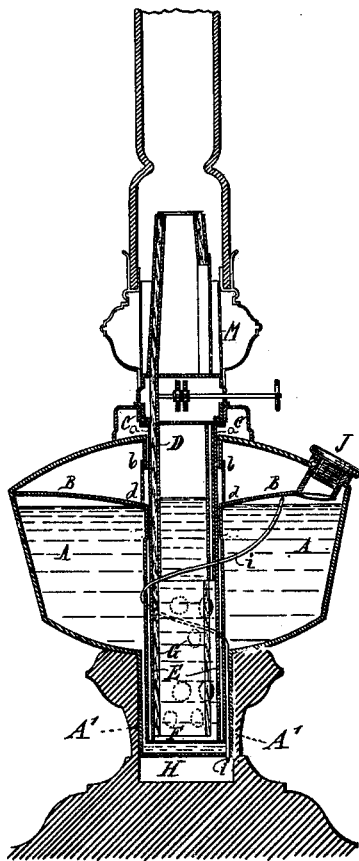


Fig. 2.

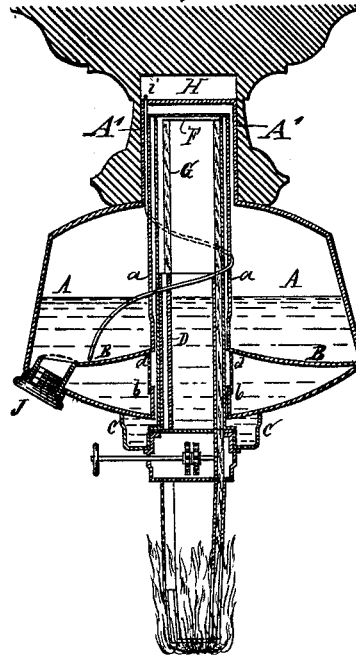


Fig. 3.

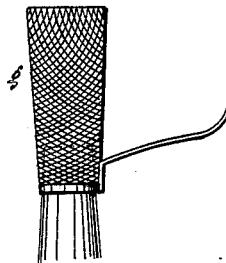
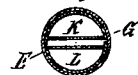


Fig. 5.



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Fig. 6.

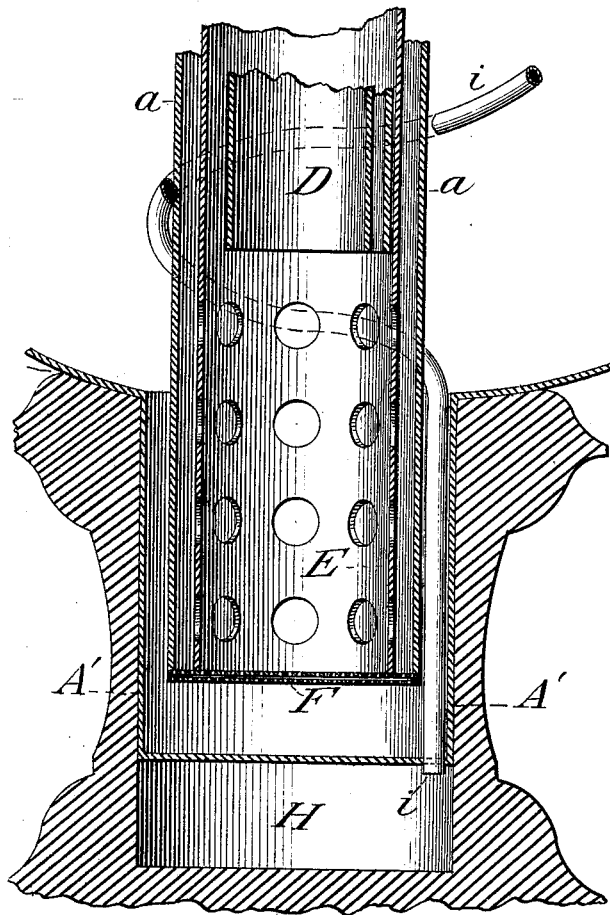


Fig. 7.

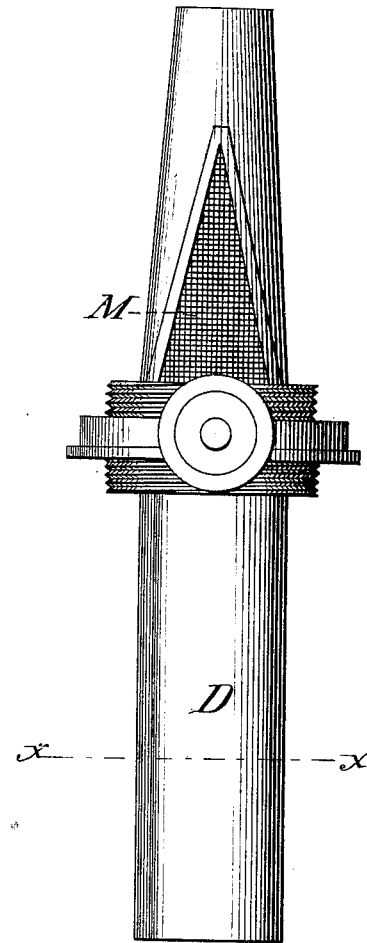
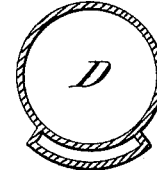


Fig. 8.



Attest:

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UNITED STATES PATENT OFFICE.

CARL GEIGE, OF WERDEN-ANDER-RUHR, GERMANY.

IMPROVEMENT IN LAMPS.

Specification forming part of Letters Patent No. **220,370**, dated October 7, 1879; application filed June 14, 1879.

To all whom it may concern:

Be it known that I, CARL GEIGE, of Werden-ander-Ruhr, in the Empire of Germany, have invented a new and Improved Safety-Lamp, of which the following is a specification.

The object of this invention is to prevent the frequent accidents arising from the use of petroleum-lamps, either by careless handling, dropping, or falling of the lamps, or by the ignition of the gases in the lamp-bowl by the forcing back of the flame, or by the filling of the lamp when the same is burning.

My improved lamp is so constructed that the lamp is either extinguished in the act of falling, especially when the chimney is placed on the burner, or that it continues to burn in horizontal or inverted position, but without the least danger of explosion, until the small quantity of oil in the wick is consumed, when the flame ceases to burn.

The non-explosive quality of my improved lamp is obtained by inclosing the wick entirely between the inner wick-tube of the burner and an exterior detachable tube or sleeve, the lower part of which is perforated. The bowl of the lamp has a funnel-shaped partition, with central downwardly-extending funnel-tube, that is concentric to the wick-covering sleeve, and closed at the lower end by wire-gauze. The space above the partition communicates by a wire-gauze portion with the space between the sleeve and funnel-tube, and takes up, in connection with a hollow collar at the top of the bowl, the oil in that space when the lamp is tilted or dropped. A vent-tube connects the interior of the bowl with the tubular shank or bottom of the same, and supplies the required quantity of air to the inside of the bowl.

In the accompanying drawings, Figures 1 and 2 represent vertical central sections of my improved safety-lamp, shown, respectively, in upright position with the chimney and in inverted position without a chimney. Fig. 3 is a wire-gauze cap, placed over the wick-tube when it is desired to fill the lamp while the same is burning; and Figs. 4 and 5 are horizontal sections, respectively, of the wick-tubes with a round and flat burner. Fig. 6 is a vertical central section of the lower part of the bowl with its wick-tube and supporting-stand

on enlarged scale. Fig. 7 is a side view of the burner and of the inner wick-tube; and Fig. 8 is a horizontal-section of the inner wick-tube, taken on line *x x*, Fig. 7.

Similar letters of reference indicate corresponding parts.

A in the drawings represents the lamp-bowl, which is preferably made of sheet metal to prevent the breaking of the same when the lamp is dropped or upset. At the interior of the bowl A is arranged a funnel-shaped partition, B, with a central tube, *a*, that extends downward through the bowl and into a bottom extension or shank, A', of the same, by which the bowl is securely attached to the supporting-stand. The funnel-tube *a* is provided at the bottom with a double wire-gauze covering, F, (see Fig. 6,) which acts as a safety device against the entrance of fire even in case the wick should be much smaller than required for the burner. The funnel-tube *a* is also extended upward, but is made immediately above the partition B at the portion *b d* of wire-gauze.

An annular hollow collar, C, with interior screw-thread for the burner is arranged at the top of the bowl.

The bowl A is filled, in the usual manner, through a screened side opening closed by a tightly-fitting screw-cap, J. The burner is provided with an interior cylindrical wick-tube, D, which extends to a certain depth into the bowl. After the wick G is placed over the inner wick-tube and raised to a level with the mouth of the burner, an exterior tube or sleeve, E, is placed over the wick. The sleeve E is perforated at its lower part, and provided with a flange and packing-ring at the upper end, by which a tight joint is formed with the upper conical burner portion. As the wick is entirely inclosed, and as the gases have to be forced up through the same, the flame cannot be pressed down to the oil and to the gases above the same. Thus any danger of explosion by the downward action of the flame is entirely avoided.

When the lamp is burning the oil takes its way from the bowl between the wall of the extension A' and the funnel-tube *a* downward, passes then through the double wire-gauze covering F at the bottom of the funnel-tube upward in the space between the funnel-tube,

and the outer sleeve of the wick, and in the space at the interior of the sleeve. The openings of the sleeve E admit the passage of the oil to the wick from the space between sleeve and funnel-tube. The oil is then drawn up to the flame between the sleeve E and the inner guide-tube, D, which latter is open at the lower end, and has a raised guide portion of quadrantal shape, which fills up the space not taken up by the wick, and serves for the better guiding of the same.

The interior construction of the bowl, in conjunction with the enveloping of the wick, prevents accidents, in consequence of the falling or dropping of the lamp, as by the upsetting or overturning of the lamp, all the oil that is contained in the space between the inner wick-tube, D, and the funnel-tube *a* passes through the wire-gauze portion *b d* into the space above the partition B and into the hollow collar C. The oil in the body of the bowl outside of the funnel-tube remains, of course, in the bowl, as shown clearly in the inverted position of the lamp in Fig. 2.

When the lamp is dropped and the cylinder detached therefrom or broken, it will continue to burn for some time, until the oil contained in the wick is consumed. A small quantity of this oil will drop from the burner as the heat renders it lighter. After a few minutes, however, the wick is dry and the flame becomes extinct, as no oil is supplied to the wick, owing to the changed relative position of the oil in the bowl, upper space, and collar.

As the burner is closed toward the bowl and tightly connected to the inclosing sleeve of the wick, the flame cannot obtain any air from the bowl when the lamp is upset with the chimney on, nor can it receive a sufficient quantity of air through the wire-covering M of the open portion of the burner-cone, so that the extinction of the flame is accelerated by the sudden current of air produced from below on the flame.

A vent-tube, *i*, is arranged in the bowl, through which the required quantity of air is drawn into the bowl to fill up the space above the oil. The vent-tube *i* extends from a point near the partition B to the bottom of the bowl, and passes between the funnel-tube and the wall of the extension A' downward, and through the bottom of the latter to the outside, communicating with the space H of the stand. The air is supplied to the space H by passing through between the walls of the stand and bowl-extension A', which are not so tightly fitted to each other as to exclude the air entirely.

Any oil that passes through the vent-tube by the motion of the lamp to the outside is collected in the space H, and from time to time removed therefrom.

The lamp may be filled without the least danger, even while burning, when the chimney is in position, or by placing a wire-gauze cap or hood, *g*, over the flame, as in Fig. 3, in case no chimney should be on hand.

This non-explosive construction of bowl and wick-tube may be employed for round or flat burners, as desired. In the latter case the wick is guided between semicircular shells, as shown in Fig. 5, of which one is soldered to the burner.

Accidents to life and property arising from the explosion or dropping of petroleum-lamps may be prevented by the use of this safety-lamp, in which all the safeguards are combined to render the lamp safe and reliable.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a safety-lamp, a lamp-bowl, A, having a funnel-shaped partition, B, and a central funnel-tube, *a*, which is extended above the partition of the top of the bowl, and provided with a wire-gauze portion, *b d*, and which is also extended downward below the partition, and provided with a wire-gauze bottom, F, at the lower end, substantially as set forth.

2. In safety-lamps, a lamp-bowl, A, having a funnel-shaped partition, B, and a central funnel-tube, *a*, with a wire-gauze portion, *b d*, above the partition, substantially as specified.

3. The combination of a lamp-bowl, A, partition B, central funnel-tube, *a*, with a burner, having inner wick-tube, D, and exterior sleeve, E, substantially as and for the purpose described.

4. The combination of a burner having inner wick-tube, D, which is provided at one side thereof with a raised quadrantal guide-piece, with an exterior sleeve or shell secured tightly to the upper part of burner and perforated at its lower part, substantially as set forth.

5. The combination of a lamp-bowl, A, having bottom extension, A', with a funnel-shaped partition, B, and with a central funnel-tube, *a*, that is extended downward into the extension A', and arranged with a wire-gauze bottom, F, substantially as described.

6. The combination of a lamp-bowl, A, having partition B, central funnel-tube, *a*, and vent-tube *i*, with a supporting-stand having drip-reservoir H, substantially as and for the purpose set forth.

7. The combination of a lamp-bowl, A, having a partition, B, a central funnel tube, *a*, having gauze portion *b d* above the partition, and an annular hollow top collar, C, with a burner having interior wick-tube, D, and exterior wick-inclosing sleeve, E, substantially as specified.

8. In safety-lamps, a lamp-bowl having partition B, central funnel-tube, *a*, and annular hollow top collar, C, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARL GEIGE.

Witnesses:

FOR CLEVER, in Werden,
A. CLEVER, in Werden.