2 Sheets—Sheet 1.

K. G. TUNK.

Lamp Extinguisher.

No. 202,077. Patented April 2, 1878.

Fig. 1.

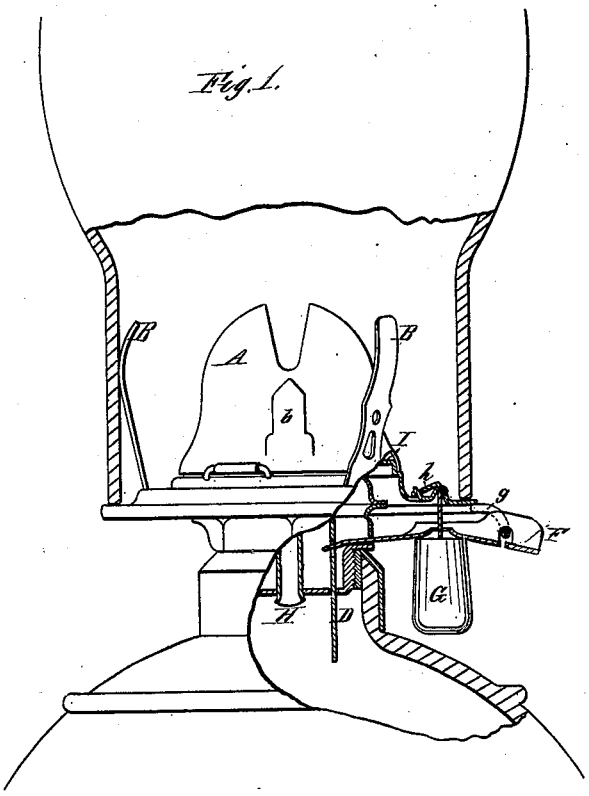


Fig. 2.

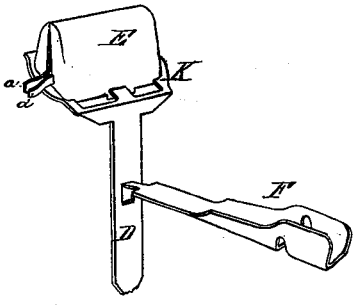
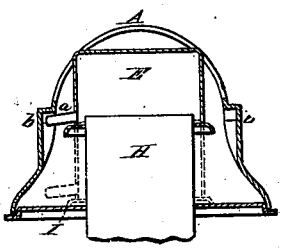


Fig. 3.



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2 Sheets—Sheet 2.

K. G. TUNK.
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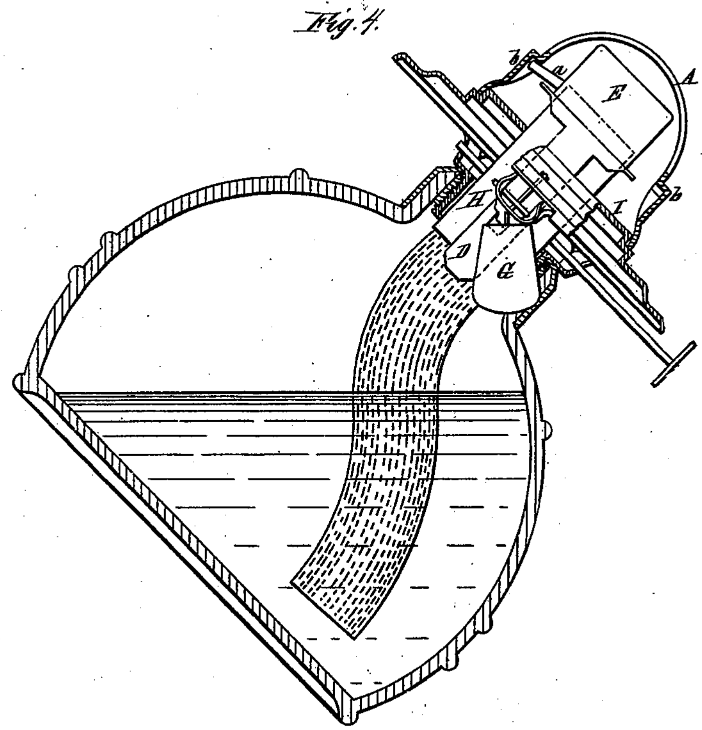
Fig. 4.



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UNITED STATES PATENT OFFICE.

KNUT G. TUNK, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN LAMP-EXTINGUISHERS.

Specification forming part of Letters Patent No. **202,077**, dated April 2, 1878; application filed March 14, 1878.

To all whom it may concern:

Be it known that I, KNUT G. TUNK, of Sweden, at present residing at Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Lamp-Extinguishers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is a partial section and elevation of a lamp-burner having my improvements applied thereto, and showing the relative arrangements of the essential elements of the improvements in the position they assume when the lamp is in use. Fig. 2 is a perspective view, illustrating the extinguisher-lid carrier, with the lids mounted thereon and closed, and the operating-lever, which parts are detached from the burner. Fig. 3 is a vertical section of the burner-cone upon a plane a trifle removed from the axis of the burner, showing the extinguishing-lid in full sectional lines in its elevated position, and in dotted lines in its depressed or lowest position. Fig. 4 is a sectional elevation of the lamp and burner with the improvements applied, the lamp being represented as tipped or tilted over toward the horizontal line and the extinguisher-lids elevated and closed over the wick-tube in the position which they automatically assume whenever the lamp is tipped or tilted.

Like letters in all the figures indicate corresponding parts.

My present invention is, in some respects, an improvement upon devices shown in my former application for Letters Patent, filed February 15, 1878, wherein the extinguishing-lids were shown as connected with the lamp-chimney by suitable attachments.

The object of the present invention is to still further diminish the cost of the necessary alterations in the burner, in order to adapt it to receive the extinguishing appliances, and to so arrange these appliances that they shall automatically operate independently of the chimney, whereby the improvements may be adapted to any ordinary form of burner, whether used with or without a chimney.

To accomplish these objects the invention consists, essentially, in operating the principal lever of the system through the medium of a suspended weight located outside of the lamp-bowl, and capable of maintaining its axis always in a vertical line, while at the same time the general symmetrical appearance of the burner is not detracted from, and the operating-lever is left free to be actuated by the finger to extinguish the flame.

Minor features include an improved form and location of the indentations in the cone, which accommodate the tangs upon the extinguisher-lids, and certain relative arrangements or combinations of parts and details of construction, as will be hereinafter first fully described, and then pointed out in the claims.

To illustrate the principles of my invention I have chosen an ordinary form of burner, wherein A is the cone, B the chimney-holding springs, and H the wick-tube. The deflector-plate I is suitably slotted to admit the carrier D, which is moved up and down by the action of a lever, F, hinged upon a stirrup, or by other suitable means, at a point a trifle outside of the perimeter of the deflector-plate I. The extinguisher-lids E E, either one or two, are hinged upon the horizontal portion K, and fall down over the wick-tube whenever the carrier D is elevated.

So far the construction and general arrangement, as well as the operation, of the devices, are similar to the corresponding characteristics of those shown in my former application.

In order to automatically move the lever F whenever the lamp is tilted, as would occur upon any accident thereto, I suspend a weight, G, having a practically flat top, by means of a flexible cord or other means of attachment, as *h*, so that when the lamp is at rest the lever shall remain in close proximity to the top of the weight.

It is obvious that whenever the lamp is tipped or tilted the flexible union *h* permits the weight G to maintain its vertical position until the carrier is so far lifted as to bring the tangs in contact with the top of the recess in the cone; and, inasmuch as the lever must move with the burner, its free end must be

elevated by contact with the top of the weight, which top remains horizontal, of course, as long as the axis is vertical.

In order that the weight shall always bear such relative relation to the lever F as that it will operate thereon, no matter in which direction the lamp may be inclined, the cord or union *h* is passed through a perforation in the lever, and secured at such a point of the deflector-plate I as will afford room for the weight to swing freely. A mere contact of the weight with the collar of the lamp will not prevent further relative movements of said weight and collar, because the jar occasioned by the striking of the lamp against any object, as in falling, will be sufficient to deflect the weight to one side or the other of the collar. Therefore the weight may be hung within a reasonable distance of the collar without detracting from the efficiency of the device.

Being about centrally located with respect to the longitudinal axis of the lever F, the cord *h* sustains the weight thereunder in a position such as to insure the desired movement of the free end of the lever, no matter what the direction of inclination of the lamp. The free end of lever F carries the bar D with it in all its upward movements, and, since the lids E E are hinged thereon, they will, whenever sufficiently elevated, have a tendency to drop over the wick-tube, and thus extinguish the flame.

To insure the proper movements of these lids E E under all circumstances, they are provided with tangs *a a*, as in my former case, and these tangs are movable within a slight recess formed in the cone A, as at *b b*. As in Figs. 1, 3, and 4, the recesses *b b* are formed in the side of the cone, and have pointed tops. They are located upon each side of the cone, so as to preserve a uniformity of appearance therein, and so that a double set of tangs may be employed, if desired; or the tangs may be located upon one side or the other, as may be found most convenient, in assembling the different parts of the device. In my former case the recess in the cone for the accommodation of the tangs was placed in close proximity to the end of the flame-slot, and its top was rounded off. This location of the recess might be found in some styles of burners to interfere with the proper working of the flame, and the rounded top is not the best form to rapidly direct the tangs toward each other. To obviate these possible difficulties, I locate the recesses *b* a little distance below the flame-slot, and bring their upper portions to a point, as plainly shown at Fig. 1, and this form is found better adapted for the purposes intended.

To secure the more accurate movement of the tangs, they are now made slightly curved in the direction of their length, as illustrated in Fig. 2, which improved form enables them to be crowded toward each other under the indirect influence of the weight with more certainty of completely closing the lids than could be attained if they were left straight.

The several essential elements of the device as thus constructed are made as light as is consistent with their necessary strength and durability, and they should be so mounted as to be easily operated, and not liable to become clogged up or otherwise prevented from freely performing their proper offices. The weight, being located without the lamp-bowl, may be easily and quickly adjusted, is applicable to any style of burner, and, since it occupies a position beneath the deflector-plate, does not materially detract from the appearance of the lamp.

As in my former case, I desire to acknowledge the previous existence of automatic extinguishers operated through the medium of weights. These I do not desire to be understood as claiming herein, nor do I lay any claim herein to the lever or its connections with the lids; but,

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

1. In an automatic flame-extinguisher for lamps, the combination, with the carrier supporting the extinguisher-lids, of an operating-lever hinged at or near one end, and a weight located thereunder, said weight being suspended by a flexible medium between the hinged and free ends, and adapted at all times to bear against the under side of said lever, substantially as and for the purposes set forth.

2. In a lamp-extinguisher, the combination of lids E E, carrier D, hinged lever F, and weight G, suspended by cord or flexible medium *h* passing through said lever, substantially as and for the purposes set forth.

3. In combination with the hinged extinguisher-lids, made vertically adjustable, as explained, the projecting tangs connected therewith, and bent or curved in the direction of their length, said tangs being made to operate in connection with a recessed cone, substantially in the manner and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

KNUT G. TUNK.

Witnesses:
J. D. HANNING,
JOHN RATTYEN.