

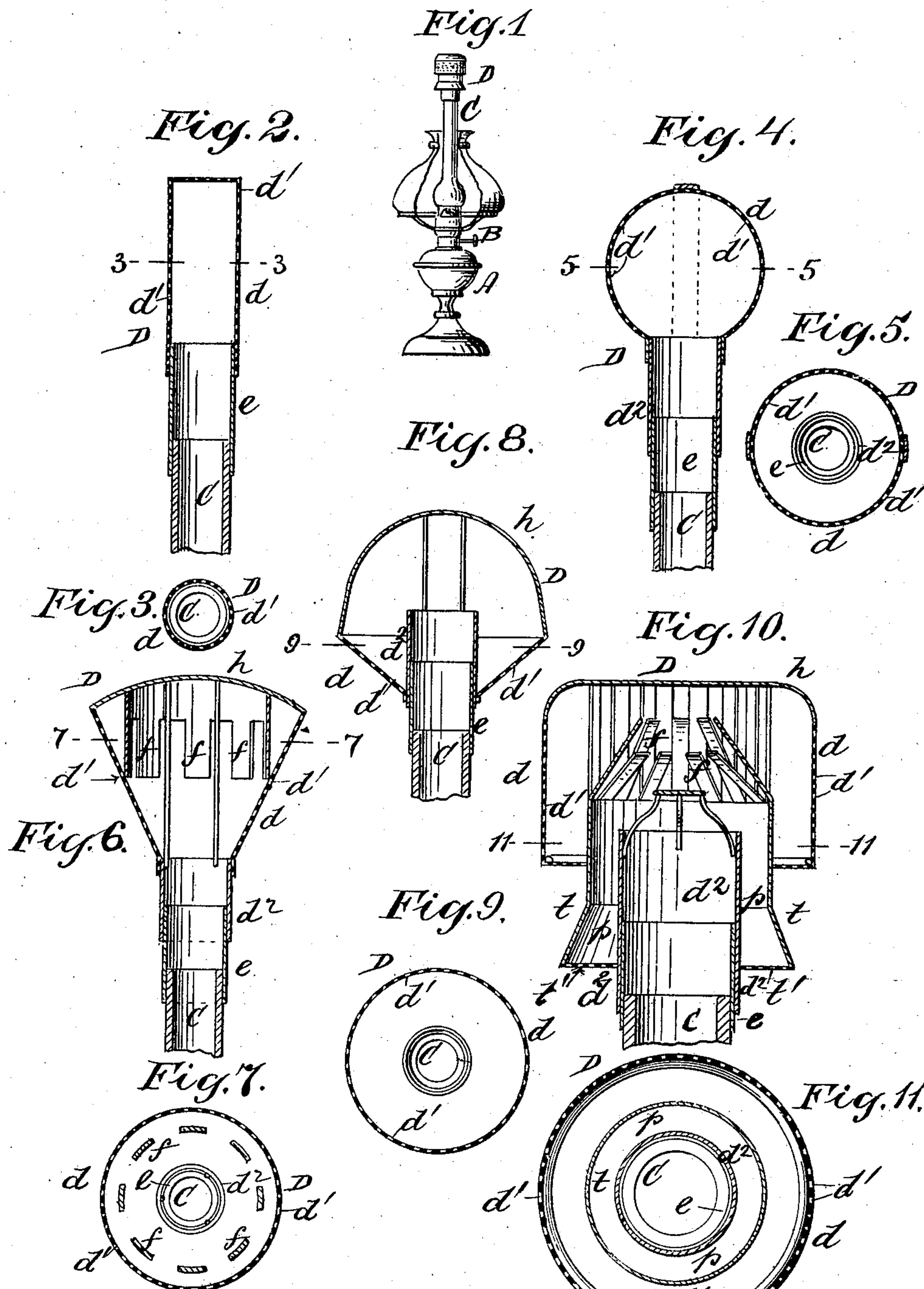
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PATENTED JUNE 21, 1904.

G. O. A. LIEBAU.  
LAMP EXTINGUISHING DEVICE.

APPLICATION FILED JUNE 26, 1903.

NO MODEL.



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# UNITED STATES PATENT OFFICE.

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## LAMP-EXTINGUISHING DEVICE.

**SPECIFICATION** forming part of Letters Patent No. 763,007, dated June 21, 1904.

Application filed June 26, 1903. Serial No. 163,182. (No model.)

*To all whom it may concern:*

Be it known that I, GUSTAV OTTO ANDREAS LIEBAU, a subject of the Emperor of Germany, residing in Moscow, Russia, have invented certain new and useful Improvements in Lamp-Extinguishing Devices, of which the following is a specification sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

The object of my invention is to afford an attachment for lamp and oil-stove chimneys which will automatically extinguish the burner-flame should the latter generate smoke from any cause, as by reason of unevenness in the trimming of the wick, dirt in the burner, or improper adjustment of the wick causing an excess of combustion, &c., the solid products of combustion generated under such conditions being utilized to obstruct the draft through the chimney and to thereby smother and extinguish the flame, thus obviating all danger that might arise from the overheating of the parts and at the same time preventing the escape of smoke, soot, &c., which might otherwise contaminate extraneous objects.

The invention consists, primarily and essentially, in providing the chimney with a hood or cap formed with a screen having comparatively small fine interstices or openings which admit of the free passage of the gaseous products of combustion under ordinary conditions, such intersticed screen, however, effectually preventing the escape of soot and other solid products of combustion, which are caught and held by the screen, so that the interstices therein become clogged and obstructed to such an extent as to destroy the draft through the chimney. As a result the flame is deprived of the necessary supply of oxygen and is soon smothered and extinguished, since there is no escape for the products of combustion except through the interstices of a screen.

In the practical application of my improvements to the various conditions and requirements of use the form and arrangement of parts may be varied considerably without departing

from the spirit and intent of my invention, the distinguishing feature of which consists in the combination, with the chimney, of an intersticed screen interposed in the path of the products of combustion, and I do not, therefore, confine myself to any of the identical forms or construction of parts herein shown and described, which simply illustrate modifications based upon the principle involved, which I claim to be generic. Incidentally, however, my invention includes certain features of structure hereinafter described and claimed specifically.

In the accompanying drawings I have illustrated my invention as applied to oil-lamp chimneys, although it is obvious that it may be applied to oil-stove chimneys or to chimneys used in connection with any form of burner, as gas-burners, hydrocarbon-vapor burners, &c., with like result.

Figure 1 represents diagrammatically a kerosene-oil lamp provided with one of my automatic extinguishers. Fig. 2 represents a longitudinal section of a simple form of my device; Fig. 3, a transverse section upon plane of line 3 3, Fig. 2. Fig. 4 is a central vertical section showing a globular form of screen; Fig. 5, a transverse section upon line 5 5, Fig. 4. Fig. 6 is a central vertical section of the device formed with an inverted conical-shaped screen. Fig. 7 is a section upon plane of line 7 7, Fig. 6. Fig. 8 is a central vertical section of the device formed with a hemispherical dome and inverted conical screen; Fig. 9, a transverse section upon plane of line 9 9, Fig. 8. Fig. 10 is a central vertical section of a preferred form of my device in which provision is made for an auxiliary air-current to cool the parts. Fig. 11 is a horizontal section upon plane of line 11 11, Fig. 10.

A represents a reservoir of liquid fuel, and B a burner of any desired or well-known construction.

C is the chimney for conducting the products of combustion away from the burner.

D represents my automatic lamp-extinguishing device as a whole.

The main feature of my automatic extin-



guishing device consists of a screen  $d$ , applied to the upper end of a chimney C by suitable means. This screen  $d$  is provided with numerous fine interstices or openings  $d'$ , attained either by the use of finely-woven metallic-wire screening, by the use of perforated sheet metal, or by any other means that will admit of the passage of the gaseous products of combustion while affording a barrier to the escape of solid products of combustion, as soot, &c.

As will be seen by reference to the drawings, the form of this intersticed screen may be varied considerably with like result. The screen  $d$  may be attached to the chimney C in any desired manner. I prefer, however, to accomplish this connection by means of a telescopic joint consisting of a cylindrical section  $e$ , fitting over the upper end of the lamp-chimney, upon which section  $e$  the screen may be adjusted either directly, as shown in Fig. 2, or by means of a sliding sleeve-section  $d''$ , attached rigidly to the screen  $d$ , as shown in the other figures.

The object of making the screen  $d$  adjustable with relation to the chimney C by means of a telescopic joint, as indicated above, is to regulate with accuracy the draft with relation to the resistance which the gaseous products of combustion have to encounter in passing through the interstices in the screen  $d$ .

In Figs. 6, 8, and 10 the screen  $d$  is shown as provided with a hood  $h$ , by which the products of combustion are deflected to the screen. By the use of the hood  $h$  I increase the area of surface to which the products of combustion are exposed, and thereby distribute the heat and cool said products to some extent, so that overheating of the parts is more likely to be precipitated in the form of soot within the hood and before escaping through the interstices of the screen.

In order to further increase the superficial area to which the products of combustion are exposed and to insure an equal distribution of the products to the screen  $d$ , I employ in some cases deflectors  $f$ , interposed under the hood  $h$  and in the path of the products of combustion as they pass to the screen  $d$ .

Figs. 6 and 10 show illustrations of this feature of my invention, which not only insures an even distribution of the products of combustion to the screen, but also increases the cooling capacity of the hood  $h$ , thereby reducing the temperature of the products of combustion, precipitating carbon contained therein and preventing the overheating of the parts.

The cooling of the parts of the device and of the products of combustion may be still further augmented, if desired, by the employment of an auxiliary current of air, as illustrated in Fig. 10, in which the device is

formed with an annular thimble  $t$ , surrounding the sliding sleeve-section  $d''$ , the space between the said thimble  $t$  and the sleeve-section  $d''$  forming an annular passage  $p$ , through which extraneous air is admitted to the hood. Thus when the lamp is in operation the atmosphere will be drawn into and through the hood and will tend to cool the parts and condense any free carbon contained in the products of combustion. The thimble  $t$  is provided with a screen  $t'$  to prevent the escape of smoke or soot in that direction, so that all products of combustion generated by the flame must pass through the interstices in a screen before they can escape into the atmosphere.

The area of the screen used and the size of the parts are designed to be so proportioned as to give adequate draft to the lamp under normal conditions—that is to say, in the absence of soot or other solid products of combustion the lamp will burn as well with as without my automatic extinguishing device. It is only when from any cause carbon is given off in excess by the flame that my screen affords undue resistance to the products of combustion, and this it does by catching and holding the precipitated carbon in such manner that the interstices in the screen are rapidly obstructed and closed, thereby destroying the draft and smothering and extinguishing the flame.

It is to be understood that my device is to be used only as a measure of precaution and that it will be seldom, if ever, brought into play, and thus automatically extinguish the flame. When, however, it does thus become clogged with soot, it may be readily cleaned by means of a jet of water and when dry can be used again, and such use can be continued indefinitely.

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

1. The combination with a burner and chimney therefor, of a screen formed with small interstices and interposed in the path of the products of combustion and constructed to automatically extinguish the light by the clogging of its interstices, and a series of deflectors disposed angularly with relation to the said screen and interposed in the path of the products of combustion between said intersticed screen and the chimney to distribute the products of combustion evenly to the screen, for the purpose set forth.

2. The combination of a burner and a chimney therefor, a screen formed with interstices and interposed in the path of the products of combustion and constructed to automatically extinguish the light by the clogging of its interstices, and an air-conduit for introducing air into the products of combustion prior to their passage through the said screen and a

screen at the lower end of said conduit, for the purpose set forth.

3. The combination of a burner and a chimney therefor, of a screen tightly fitted to said chimney and having small interstices forming the only means for free escape of the gaseous products of combustion said interstices being sufficiently small to prevent the escape

of soot and the other solid products of combustion and immediately extinguish the light as soon as carbon is given off.

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