(No Model.) 2 Sheets—Sheet 1.

F. DEIMEL.

LAMP CHIMNEY.

No. 419,600. Patented Jan. 14, 1890.

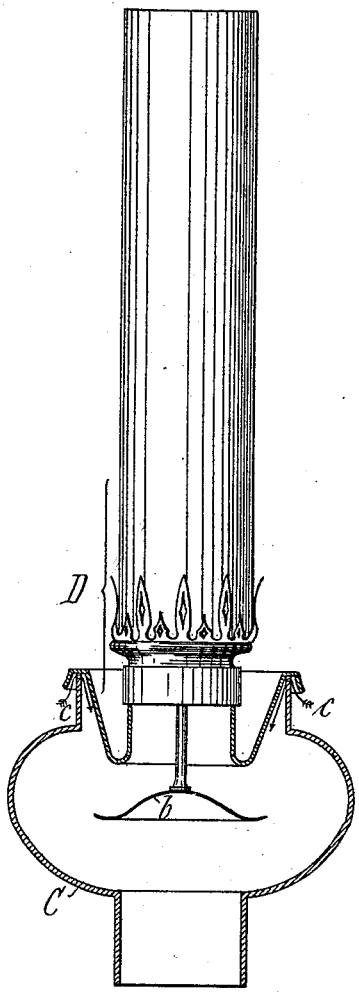

Fig. 1.

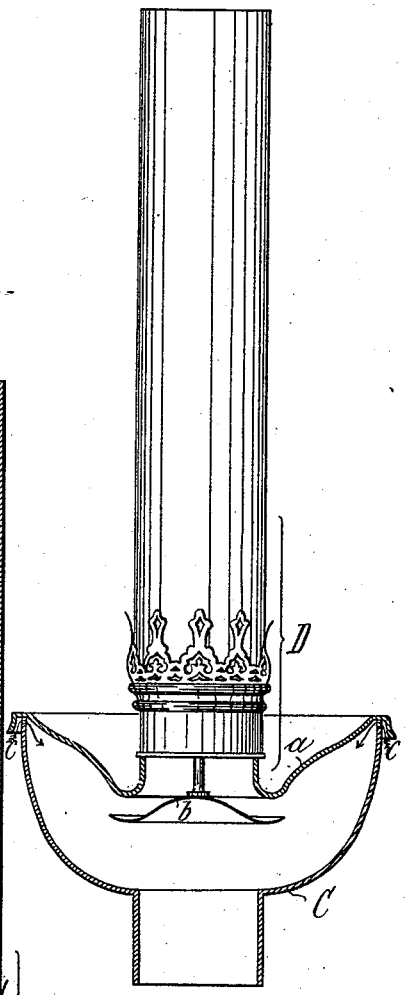

Fig. 2.

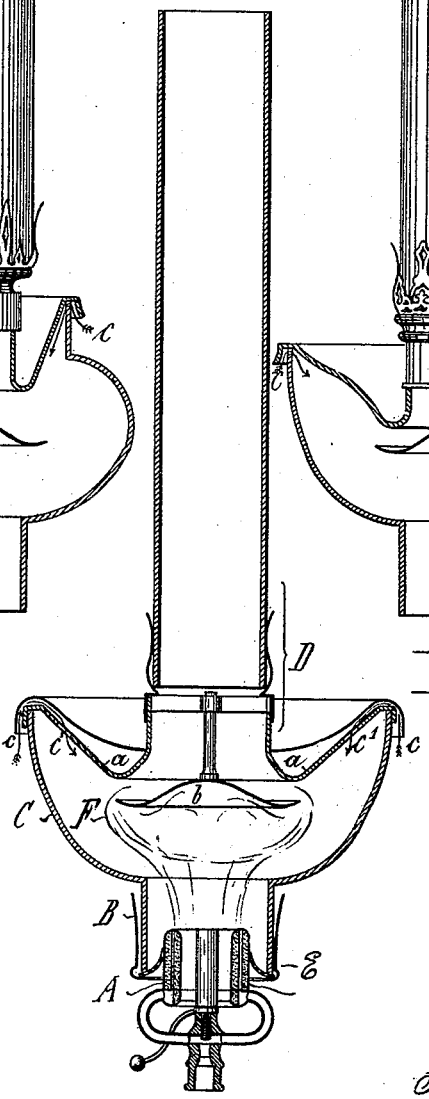

Fig. 3.

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(No Model.) 2 Sheets—Sheet 2.

F. DEIMEL.

LAMP CHIMNEY.

No. 419,600. Patented Jan. 14, 1890.

Fig. 4.

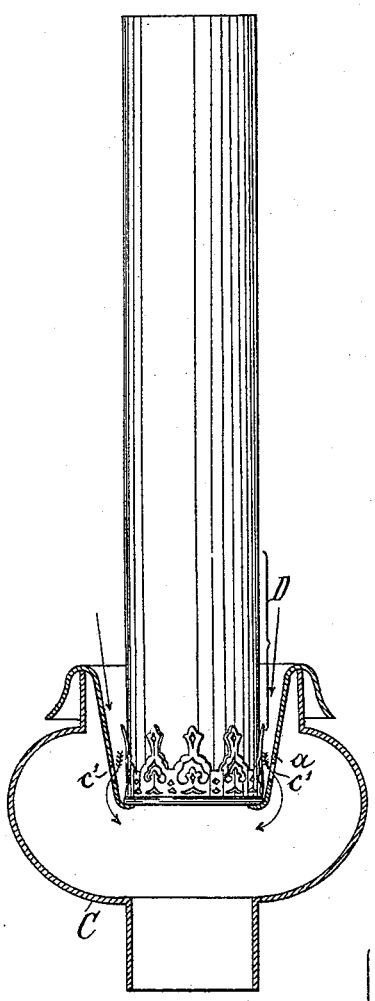


Fig. 5.

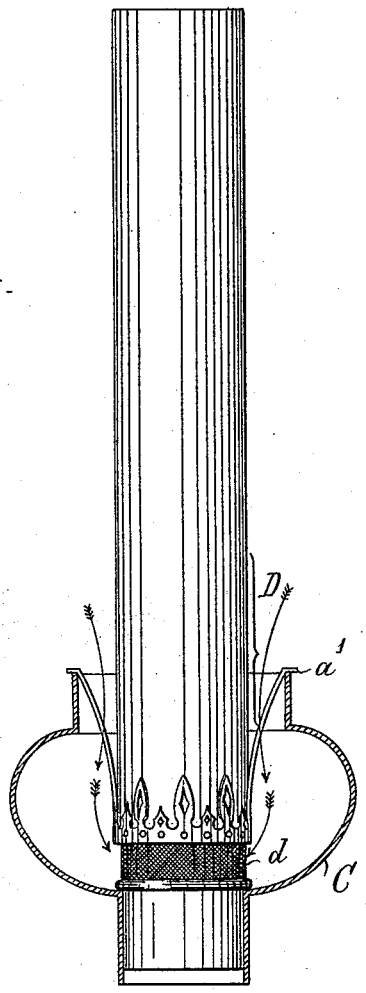
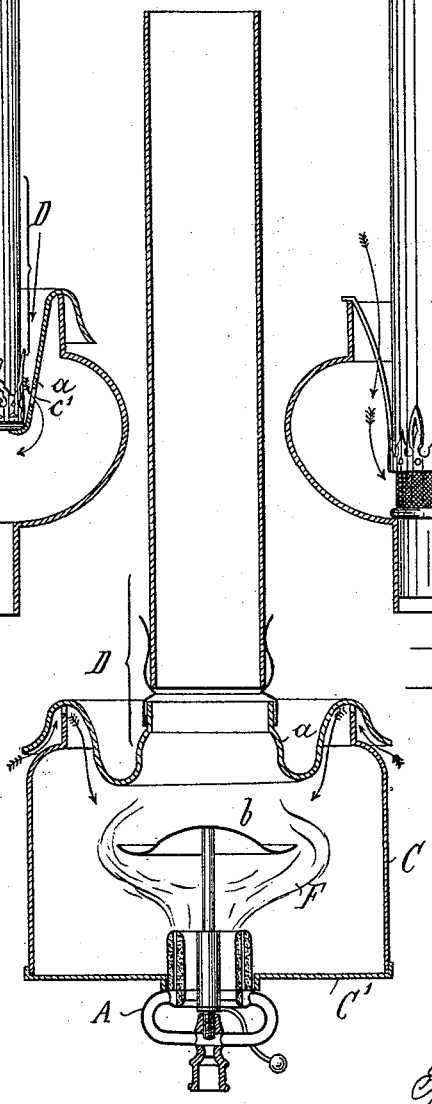


Fig. 6.



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UNITED STATES PATENT OFFICE.

FRITZ DÉIMEL, OF BERLIN, GERMANY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE SAFETY INCANDESCENT OIL AND GAS LAMP SYNDICATE.

LAMP-CHIMNEY.

SPECIFICATION forming part of Letters Patent No. 419,600, dated January 14, 1890.

Application filed March 1, 1888. Serial No. 265,862. (No model.) Patented in England December 29, 1887, No. 17,877.

To all whom it may concern:

Be it known that I, FRITZ DÉIMEL, a subject of the King of Prussia and Emperor of Germany, and a resident of the city of Berlin, in the Kingdom of Prussia, German Empire, have invented new and useful Improvements in Lamp-Chimneys, (patented in Great Britain December 29, 1887, No. 17,877,) of which the following is a specification.

This invention relates to petroleum, oil, gas, and other lamps; and the invention has for its object to provide a chimney and other attachments which, when placed in position on a lamp-burner, regenerates the flame issuing therefrom and causes it to assume a spherical form, and produces a dazzling white light.

The advantages of these improvements or the method of employing the principles hereinafter set forth are very important, as their employment obviates the need of a special lamp in order to obtain a dazzling white light, and because the inconveniences and objections inherent to regenerative burners or lamps are avoided—such as, in the case of gas-lamps, the decomposition of the gas in consequence of the high temperature and the consequent stopping of the inlet gas-pipe by the decomposition of separated hard particles of carbon.

On the accompanying drawings, Figure 1 shows a vertical section of an Argand burner turned into a regenerative lamp by placing on the said burner the new lamp-chimney. Figs. 2 to 6 show modified forms of the invention.

Similar letters of reference indicate like parts throughout the several views.

I will now proceed to describe my improvements in connection with a gas-lamp, although it is obvious that they can be applied to other lamps with equally good results.

On the bell-holder B of the Argand burner A, Fig. 1, the glass globe C is placed so that the usual gas-flame is obtained. The chimney-tube D is placed on the globe C. The chimney consists of the usual straight tube D and of the chimney-holder *a*, provided with the deflector *b* hanging downward. The holder *a* can be used for the purpose of heating and leading to the upper part of the flame the fresh air required for combustion, and can then be made hollow; or it can be formed of one single plate having the shape of a saucer, Figs. 2 and 3; or it can consist of a cross-piece *a'*, Fig. 6, in which case the air is heated by its contact with the chimney and led from the latter to the flame. If a hollow chimney-holder *a* is applied, its upper part is advantageously made of metal, while the lower part can be made of porcelain or enameled metal. The latter is provided with air-inlets *c'*, while the air is admitted at the edge of the globe between the upper and lower part of the holder. The air entering the glass globe from the outside is now compelled to pass into the highly-heated chimney-holder and comes in contact with its surface. Thence it is led to the upper part of the flame. The deflector *b*, which hangs down from the chimney-holder *a*, is preferably saucer-shaped, and preferably arranged so as to present its hollow surface to the flame F. The gas issuing from the burner A strikes against the deflector *b*. In consequence of the hollow in the deflector, the air rising upward inside the flame, and which has partly become mixed with gas on its way, is collected and heated. The perfect combustion of the gas is therefore assisted, so that the formation of an irregular point in the flame is prevented and the latter assumes the appearance of a perfectly uniform ball.

The upper part of the flame F is supplied with air, which enters through the inlets *c'*, Fig. 1, of the chimney-holder *a*, the air having traveled between and in contact with the sides of the holder, Figs. 2 and 3. This effects a complete combustion of the gas and produces, also, a white bright lighting-flame.

A further modification of the combination of the chimney D and the gas-burner is represented in Fig. 4. On the globe-holder of the Argand burner A rests the tray C', which carries the globe C. On the upper edge of the globe C lies the hollow-shaped chimney-holder *a*. The air flows between the upper edge of the globe C and the chimney-holder *a*, and before reaching the flame gets heated by contact with the said chimney-holder. The

flame F assumes its ball-shaped form by means of the deflector *b*, which, however, is not fixed here to the chimney-holder *a*, but to the burner itself. In this form, too, a dazzling white ball-shaped flame is obtained. As seen in the foregoing, the deflector *b* serves more especially to communicate to the flame a spherical form. If this form is not required, but only a white dazzling flame, the deflector can be entirely omitted and the chimney shown in Figs. 5 and 6 applied.

Fig. 5 shows a form very similar to that of Fig. 3. The air flowing downward to the flame is heated by the hollow-shaped chimney-holder *a*, and led sidewise to the flame. A very long pointed white flame is thus obtained.

In Fig. 6 a cross-piece hanging downward in the globe C is used as a chimney-holder. The cylinder D and the cross-piece *a'* are provided with a device *d*, which consists of a fine wire-gauze net, for the purpose of supplying the flame with a fine uniform current of air, which flows down and in contact with the chimney and thus becomes heated. This form gives, also, the required result; but it must be remarked that the air required for combustion is supplied to the flame above the openings from which the gas escapes. The base of the chimney D is therefore above the gas-outlet opening. The piece *d* can, of course, extend downward below the gas-outlet openings, and it is accordingly immaterial whether the wire-gauze net is applied to the chimney-holder or to the chimney itself. If this wire-gauze is made sufficiently strong so that in a highly-heated state it will carry the chimney D, the cross-piece *a'* can be omitted, if only the base of the chimney is above the gas-outlet. The method of obtaining a white flame in the new lamp-chimney is therefore different from that used in the regenerative lamp.

The heated air for effecting the complete combustion of the gas is not admitted direct to the burner, but behind or above the place of ignition. Therefore the disadvantage of overheating the gas before escape from the burner is avoided.

The temperature at the mouth-piece of the burner is the same as is usual in gas-burners. This temperature cannot cause a decomposition of the gas. The combustion will gradually increase, and if a comparison with well-known burning devices be made the working will be found to be similar to that of fireplaces provided with smoke-consuming devices—that is, with a supply of air to the back part of the flame.

In order to obtain a complete and uniform burning of gas and a noiseless flame, it is necessary to make an essential alteration in the introduction of the air to the burner itself. If gas-burners were to be used as they are in practice, there would arise whirling currents in the flame. These currents are easily recognized by means of the wandering dark stripes they produce. In order to avoid these disadvantages, it is necessary to divide as finely as possible the air which enters from below into the globe-holder and admit it to the flame. This effect is obtained by placing a fine wire-gauze net E in the globe-holder B. A perforated plate does not fulfill the intended purpose, for the edges of the perforations cannot be made otherwise than sharp, so that the air flowing through them meets always with a resistance which prevents the uniform combustion of the gas. If, on the contrary, a wire-gauze is used, the openings in the latter have all their edges rounded, and the air flows through the holes without meeting with much resistance.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is—

In a lamp, the combination, with a suitable burner, of a globe having a small neck which rests upon said burner, the upper part of which is enlarged, and having air-inlets at or above its top edge, of a saucer-shaped chimney-holder resting upon said globe, and of a deflector attached to and hanging downward from said chimney-holder, so as to present its hollow surface to the flame, substantially as described, and for the purposes set forth.

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

FRITZ DÉIMEL.

Witnesses:
B. ROI,
ALEX. SCHOLZE.