ROBERT HITCHCOCK.

Lamp for Burning Heavy Oils.

No. 125,954. Patented April 23, 1872.

Fig. 1.

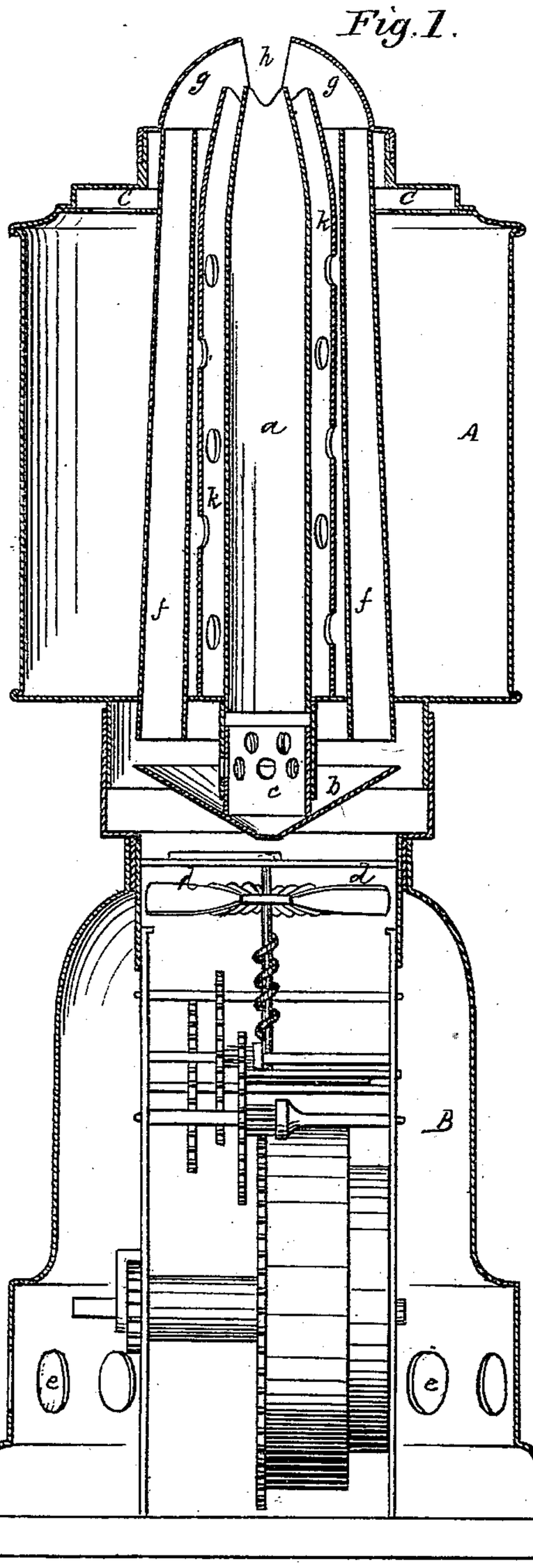
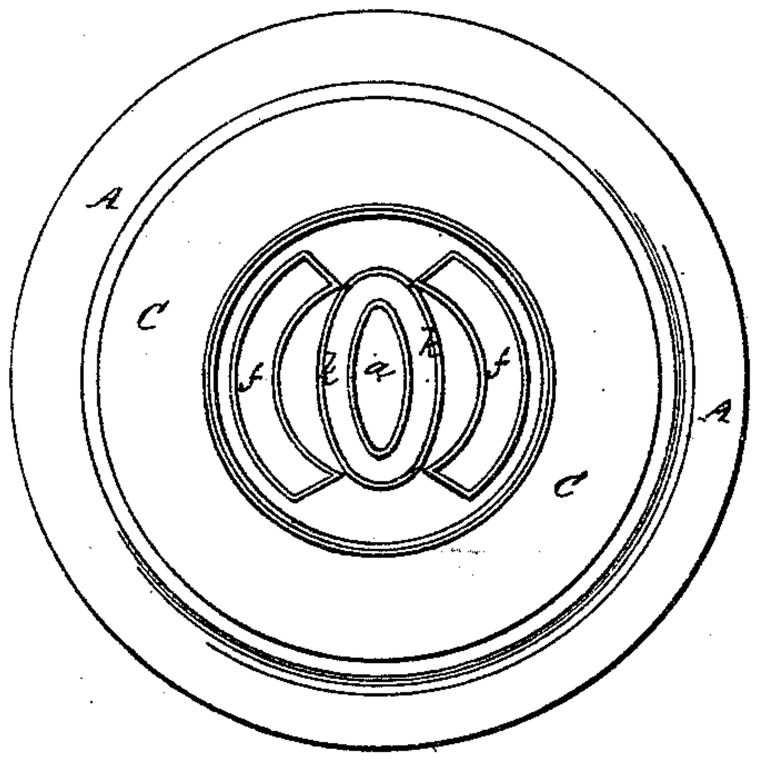


Fig. 2.



Witnesses

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125,954

UNITED STATES PATENT OFFICE.

ROBERT HITCHCOCK, OF WATERTOWN, NEW YORK.

IMPROVEMENT IN LAMPS FOR BURNING HEAVY OILS.

Specification forming part of Letters Patent No. 125,954, dated April 23, 1872.

To whom it may concern:

Be it known that I, ROBERT HITCHCOCK, of Watertown, Jefferson county, New York State, have invented certain new and useful Improvements in Lamps for Burning Lard, Sperm and other Heavy Animal or Mineral Oils, of which the following is a specification:

My invention is directed to the burning of heavy oils in lamps in such manner that a brilliant flame without smoke may be produced without requiring the use of a chimney. To the accomplishment of this object I have found the following instrumentalities requisite: First, passages or ducts through which air may be conducted both to the exterior and interior of the flame from the wick; second, mechanism for impelling currents of air through these passages to both the exterior and interior of the flame; third, a deflecting cap or cone placed over the wick, with an aperture for the passage of the flames, and so shaped as to direct the external-impelled current of air to impinge upon the exterior of the flame.

I claim separately neither the employment in a lamp of an artificially-impelled current of air, nor the employment of air-passages arranged to convey air both to the interior and exterior of the flame, for I am aware that these features, separately considered, are not new, and have been heretofore contained in lamps. The lamp patented to Keravenan in 1863 may be taken as the type of the first-named kind of lamp, and the common argand burner or lamp as the type of the second. Neither of these in itself is competent to produce the result which I have in view, and it is only by the union of the three above-specified instrumentalities that a lamp can be made in which an illuminating flame will be produced from heavy oils without the use of a glass chimney.

To enable those skilled in the art to understand and use my invention, I shall now proceed to describe the manner in which the same is or may be carried into effect by reference to the accompanying drawing, in which—

Figure 1 is a vertical central section of a lamp made in accordance with my invention. Fig. 2 is a top view of the same with the cone removed.

I prefer to make the oil-reservoir and all the parts which it carries of metal or some other good heat-conducting material, in order to keep the lard, sperm, or other heavy oil in the lamp at the requisite temperature to enable it to burn freely and to be taken up readily by the wick. The oil-reservoir is shown at A, of any suitable size and shape. Extending centrally up through it is the central draught-tube *a*, around which, when the lamp is in use, the wicking, composed either of a tubular wick or one or two flat ones, is placed. For the purpose of producing a flat or bat's-wing flame I prefer to make the top of the tube oval in section, as shown in Fig. 2, or approaching the form of the ordinary flat wick-tube. Below its top the tube expands or is made more nearly cylindrical, for the purpose of allowing any pieces of charred wick or burnt matches that may fall into the tube to pass down through it without impediment. To prevent this refuse from falling upon and clogging the air-impelling mechanism I place below the bottom of the tube an ash-box or shield, *b*, which is united with the body of the lamp in any suitable way. In this instance it is provided with a tubular tenon, *c*, fitting in the lower end of the tube *a*, both tube and tenon being perforated to admit the passage of the impelled current up through the central draught space. The lamp-reservoir is connected in any suitable manner with the frame that contains the mechanism for producing the artificial air-blast. It is in this case fitted in a socket or sleeve, which forms a continuation of the case that contains the fan *d*. This fan is driven by clock-work of any suitable kind, as shown in the drawing, which is surrounded by a base, B, serving to protect and conceal the works, holes *e* or other openings being provided for the admission of air to the fan. The external air-current may be caused to pass to the flame either around the exterior of or through the oil-reservoir. The latter arrangement, which I prefer on several accounts, both because it economizes space and serves to more effectually heat the oil, is shown in the drawing. At suitable distances from and on each side of the central tube *a* are placed tubes or conduits *f*, which extend up to or above the top of the oil-reservoir and also down through the bottom of the same. Through these conduits, as well as through the central tube, the impelled current of air from the fan is discharged upon the flame. To direct the external currents to properly impinge upon the

flame I employ a deflector or cone, *g*, with a slot, *h*, in it to correspond with the shape of the flame desired to be produced. This cone is arranged above the wick-tube and is held in place in any ordinary or suitable manner. I prefer that it should rest directly upon and in contact with the top of the reservoir, as shown in Fig. 1, where it fits upon a neck rising from the top of the reservoir, so that all of its heat may be conducted through the walls of the reservoir to the oil within. The central tube *a* and the tubes *f* also conduct heat to the oil, which is thus kept in as fluid a state as practicable, and is subjected as far as possible to the action of all the heat which can be conveyed to it. For the purpose of still further heating the oil, and also of holding the wick-tube in place, I employ around the central tube *a* an exterior tube or jacket, *k*, of the same general conformation, but of sufficiently greater diameter to fit loosely around the wick which surrounds the central tube. This exterior heating and supporting tube is removable, so that it may be taken out at any time, and I propose to attach to it the wick-raising wheels usually employed, so that all these parts may, whenever it is required to remove the wick or to clean the lamp, be lifted out together from the lamp. The jacket is slit or perforated, so as to admit oil through it to the wick. The top of the reservoir may be covered in any suitable way, but I find it sufficient to use the cone as a cover, the arrangement for this purpose being such as shown in Fig. 1. For the purpose of quickly heating a sufficient portion of the oil to enable the lamp to burn well until the main body of the oil has been raised to the proper temperature I form on the top of the reservoir and in the immediate neighborhood of the highly-heated metallic portions of the lamp an auxiliary reservoir, C, which communicates through openings or in any suitable manner with the main reservoir. In this reservoir a comparatively thin sheet of oil is surrounded on all sides by the most highly-heated portions of the lamp, so that when the lamp is lighted the small quantity of oil contained in the reservoir becomes almost instantly heated and affords the necessary supply of heated oil to the wick until the main body of the oil in the reservoir below has been raised to the proper heat.

In order to render this reservoir available the lamp must of course be filled each time it is used.

The exterior of the lamp-reservoir may be surrounded, if desired, by a suitable jacket or sheath of any material, and the lamp may have any configuration desired. The clock-work is wound up by means of a key, as is usual in this class of lamps.

Having described my invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. A lamp for burning heavy oils, in which the wick tube or holder and oil-reservoir are combined with conduits or passages for conducting air both to the exterior and interior of the flame; mechanism for forcibly impelling air through said passages; and a deflector or cone, substantially as herein shown and described.

2. The employment in a lamp substantially such as described, of an auxiliary oil-reservoir, arranged above and communicating with the main reservoir, substantially as shown and set forth.

3. The central draught and wick tube, flattened at the top and enlarged or expanded below to allow the charred wick and other refuse to fall through it without impediment, as shown and set forth.

4. In combination with the central draught-tube, the ash-box or shield attached to the oil-reservoir and placed below said central draught-tube, between it and the air-impelling mechanism, as shown and set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

ROBERT HITCHCOCK.

Witnesses:
M. DAILEY,
EDM. F. BROWN.