

J. H. IRWIN.

Lamps.

No. 138,653.

Patented May 6 1873.

Fig. 1.

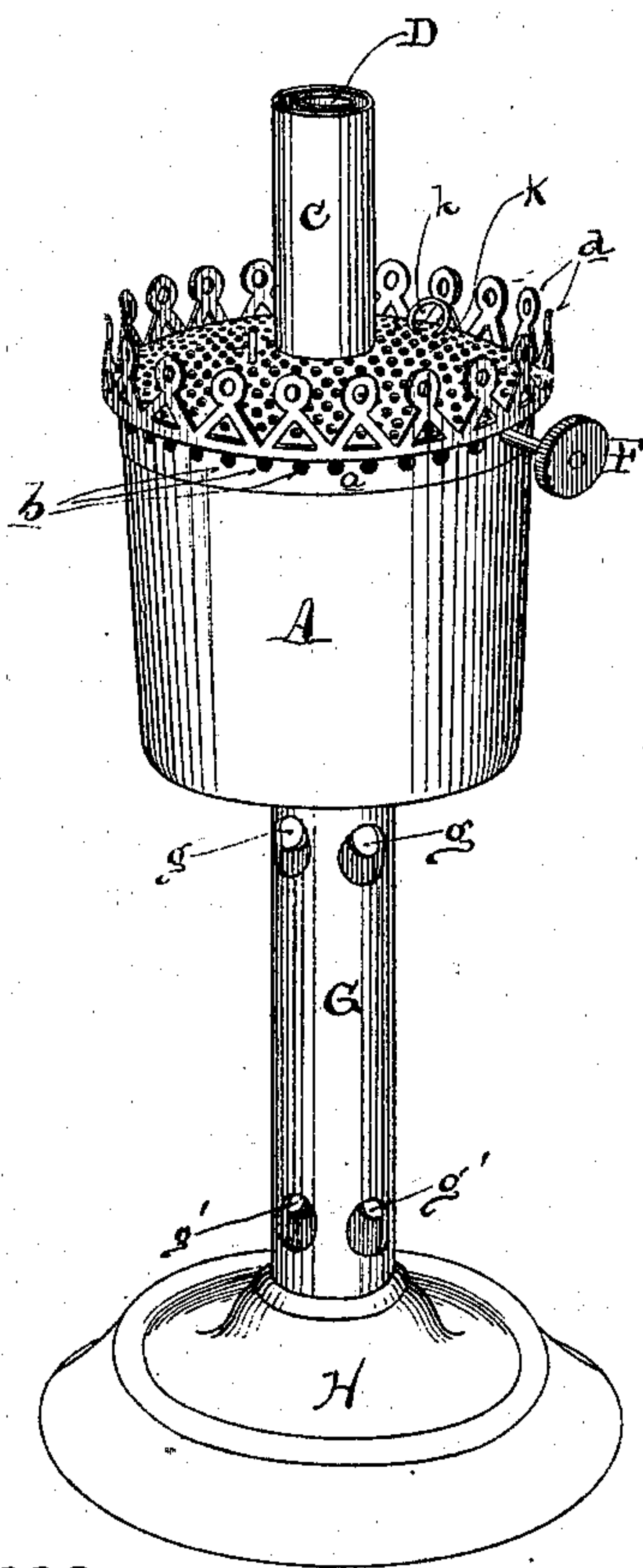
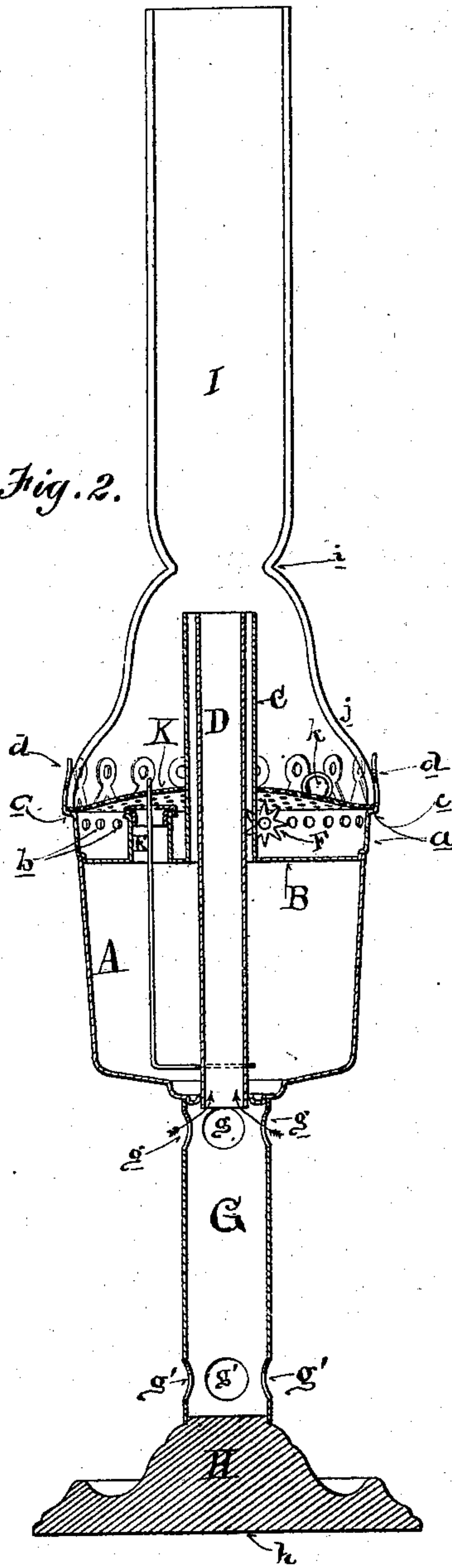


Fig. 2.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN LAMPS.

Specification forming part of Letters Patent No. **138,653**, dated May 6, 1873; application filed March 17, 1873.

To all whom it may concern:

Be it known that I, JOHN H. IRWIN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Lamps; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, in which—

Figure 1 is a perspective view of my lamp, and Fig. 2 is a vertical central section of the same.

The first part of my invention relates to the construction of the burner and means for regulating the wick.

This burner belongs to that class known as Argand, wherein is produced a hollow cylindrical frame. The burner is not detachable from the oil-pot, but is constructed with but one plate interposed between the burner and the contents of the oil-pot; said plate forming at once the top of the reservoir and the bottom of the burner. The oil-pot is designated by the letter A, and the plate forming its top by the letter B. C is the outer wick-tube firmly secured to the plate B, and extending above the same as far as may be required to avoid heating the walls of the oil-pot. D is the central air-tube reaching to the top of tube C, and extending downward through the bottom of the oil-pot A, and receiving air at its lower end. At one side of the wick-tube C is a ratchet wick-raiser, F, the shaft of which is mounted in the usual manner upon plate B, and the wheels of which enter the wick-space between the tubes C D through slots cut in the former, and said teeth may extend across said space and strike against the surface of the inner tube D. The tube D, being secured only to the bottom of the oil-pot, has a degree of elasticity proportionate to the stiffness of the plate composing the said bottom; and hence, the wick will be supported against the ratchet-teeth of the wick-raiser with an elastic pressure, and the said teeth can, therefore, be adjusted so as to insure the penetration and movement of the cylindrical wick by the action of ratchets applied to one side only.

I am aware that detachable burners have been constructed to produce a cylindrical flame, but such burners have been constructed

with a lateral inlet for the admission of air to the central tube; and with burners so constructed it is necessary to employ an ordinary flat wick, of which the edges of the upper end only connect together to form a cylindrical flame. The edges of the wick, downward, are required to separate so as to straddle the lateral inlet-tube; and, therefore, at the upper end of the burner-tube, the wick presents its central portion first, and requires to be trimmed to reduce it to the plane of the top of said tube. The edges of the wick being separate from each other renders it difficult to move said wick uniformly across its whole width; and, therefore, burners of this description have generally been constructed with a movable sleeve outside the wick-tube, whereby the flame can be regulated without moving the wick.

My burner receives a wick cylindrical through its whole length; and it therefore presents its upper end squarely at the top of the wick-tube, and it will also move up and down with freedom and without liability to bind at any point.

The second part of my invention relates to a drip-cup formed on the top of the oil-pot to receive and hold the oil which overflows from the wick-tube.

The plate B is provided with a vertical peripheral flange, *a*, which, in practice, I prefer to form by drawing or spinning the edge of the plate B. At a little distance above the surface of said plate a shoulder, *c*, is formed for a seat for the chimney, and above this shoulder a series of peripheral springs, *e*, to clasp and hold the lower end of said chimney. Below the seat *c* is a series of holes, *b*, for the admission of air within the chimney to support combustion upon the outer surface of the flame. Whatever oil creeps over the top of the wick-tube will, therefore, be caught upon the top of the plate B; and any volatile emanations from the same will only find escape upward through the chimney, and they will be consumed by the flame. It will appear evident that the plate B may be simply a diaphragm inserted, and the seat *c* and the peripheral springs *d* may be formed upon the side or wall of the pot A. And it will also appear evident that, so far as the advantages of a drip-cup

are concerned, the bottom of the burner may be elevated above the top of the oil-pot, and the burner detachable in the usual way. The particular construction and arrangement shown is adopted only because of motives of economy and cheap production, which enable me to manufacture and sell a lamp and first-class burner at a less price than has hitherto been possible.

The third part of my invention relates to the order and method of manufacture. The sides and bottom of the oil-pot A are made from a single piece of metal, spun or drawn into shape, and the top B is likewise made from a single piece, with the wick and air tube located in the manner heretofore set forth. A short tube, E, with a screw-cap, is set in the top plate B of the oil-pot, for the purpose of filling said pot with oil. The pedestal G supports the oil-pot at a proper elevation above the table. This pedestal is composed of a single piece of tubing, and its base H of another plate spun or pressed into shape, as shown. This base may be weighted with sand or other suitable material and have a bottom plate, h, inserted to keep the same in place.

From the above it will be perceived that my lamp and burner entire is composed of only ten separate parts, and the only removable part is the cap to the filler E.

The pedestal G is perforated at *g g* for the admission of air to the tube D. The perforations *g g* near the bottom of said pedestal afford facilities for cleaning out the oil which creeps over and down the central tube D. In practice it is recommended to place some absorbent, as cotton waste, within the pedestal G at its lower end.

The fourth part of my invention relates to the chimney adapted to my lamp. Said chimney is shown at I, Fig. 2. It has a cylindrical shaft and a constriction or choke, *i*, as is common with Argand-burner chimneys, but below said constriction the chimney expands, with a bell-like form, and has a broad base, *j*, adapted to the seat *a*, the upper part of said base, immediately below the constriction *i*, being properly formed as a deflector of the air-current against the flame.

Glass is a poor conductor of heat, and the broad expanse of the base *j* prevents the conduction of any heat from the flame to the seat *a* and the wall of the oil-pot, while the illumination of this part of the lamp and the diffusion of the light by the base of the chimney gives the lamp a very pleasing and brilliant appearance and materially modifies and reduces the shadow of the oil-pot.

The fifth part of my invention relates to a removable safety-plate covering the drip-cup and filler. This plate is designated by the letter K. It is a perforated plate or diaphragm with a central orifice capable of receiving the

wick-tube C, and its edges extending to the seat *a* beneath the edge of the chimney. It covers the entire surface of the drip-cup and the filler E, so that, if oil flows over upon the drip-cup surface, even in considerable quantity, or if the cap of the filler is absent, no accident can happen by communication of flame to the oil beneath the plate K, on the surface of plate B, or within the oil-pot. The draft air also passes through said plate K, and the flow of air is thereby made regular and uniform. A small ring or handle, *k*, serves for the easy removal of said plate when necessary.

Having described my invention, what I claim as new is—

1. The combination, in a kerosene-lamp, of an Argand burner having its central tube extended through the bottom of the oil-pot, and a ratchet wick-raiser acting against said central tube, as and for the purpose set forth.

2. A kerosene-lamp constructed with the wick-tube permanently attached to the oil-pot, and but a single plate, B, with no unclosed perforations, interposed between the burner and the contents of the oil-pot.

3. A cylindrical or hollow wick-burner, constructed so that the central air-tube shall exert an elastic pressure against the teeth of a ratchet wick-raiser, substantially as and for the purpose set forth.

4. A kerosene-burner with its bottom plate formed to constitute a drip-cup, as and for the purpose set forth.

5. In combination with a drip-cup formed by the bottom plate of the burner, a perforated peripheral rim or flange, *c*, with a seat, *a*, and series of springs *d* to clasp and hold the chimney, and so as to cause the volatile emanations from said drip-cup to pass up said chimney to be consumed.

6. A series of springs, *d*, arranged upon the wall of the oil-pot A to receive and hold the chimney, as described.

7. The cup A, plate B, and tubes C D, and the wick-raiser, constructed and arranged in the manner shown and described.

8. The cup A, plate B, tubes C D, filler E, pedestal G, and base H, all constructed and arranged as shown and described, for the purpose set forth.

9. The chimney I constructed with the expanded base, substantially as described, combined with the peripheral flange *c* of a burner whose bottom plate forms a drip-cup, substantially as and for the purpose set forth.

10. The removable perforated plate K, covering the drip-cup and filler and extending from the wick-tube to the chimney-seat, as and for the purpose set forth.

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