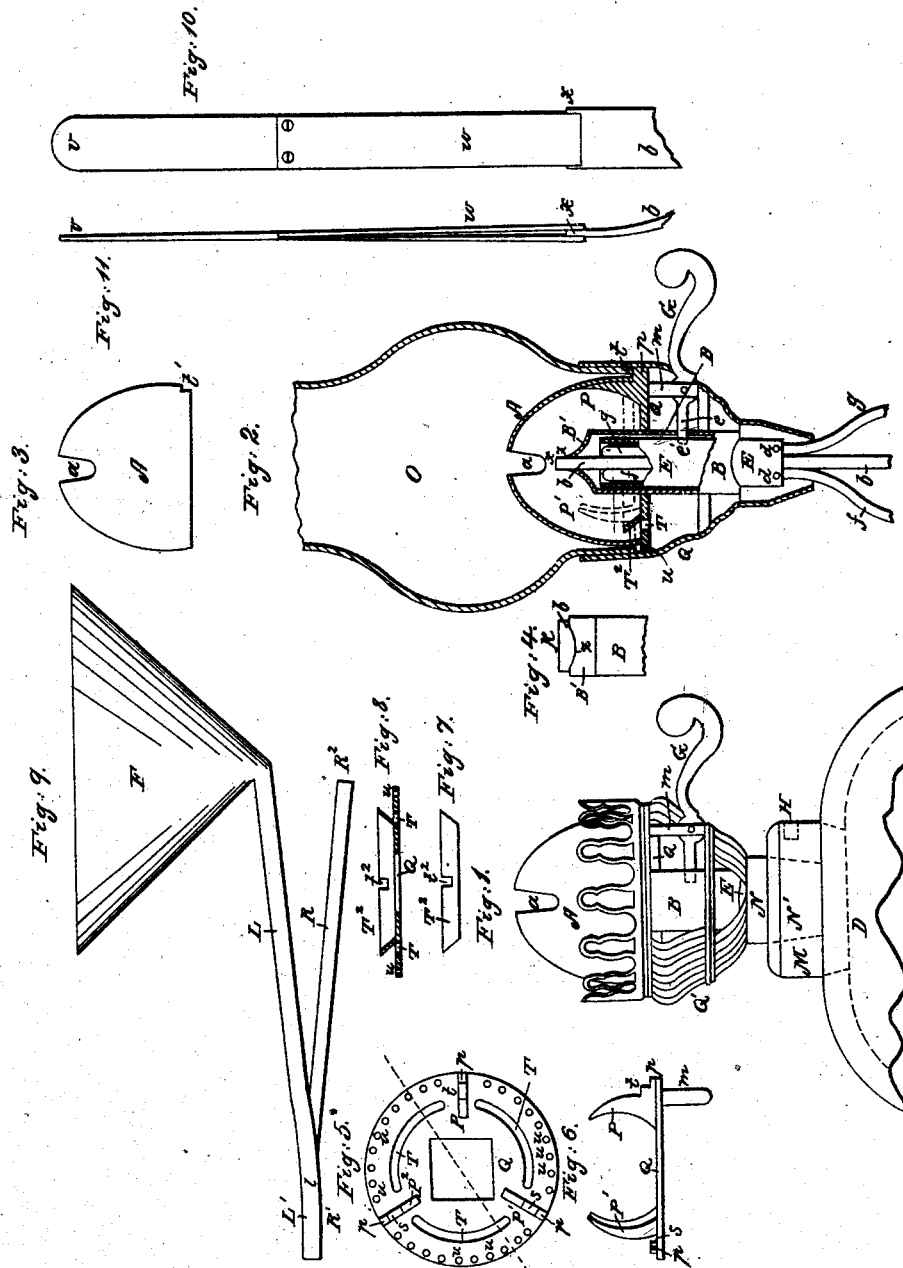


G. A. TREMESCHINI.

Lamp.

No. 46,059.

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Witnesses:

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UNITED STATES PATENT OFFICE.

GIUSEPPE ANTONIO TREMESCHINI, OF VICENZA, AUSTRIA.

IMPROVEMENT IN LAMPS.

Specification forming part of Letters Patent No. **46,059**, dated January 24, 1865.

To all whom it may concern:

Be it known that I, GIUSEPPE ANTONIO TREMESCHINI, of Vicenza, in the Empire of Austria, but at present residing at Paris, France, have invented certain Improvements in Lamps; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

These improvements in lamps relate principally to lamps intended for burning petroleum; and they have for their object to insure a perfect combustion of the liquid to be burned in the lamp, and consequently prevent any bad odor arising from an imperfect combustion, while the arrangement of my lamps is such as to do away with any danger of explosion of the vessel containing the liquid to be burned.

The improvements are based on the practical application of three well-known laws of natural philosophy relating to lighting—viz., first, that in order to obtain perfect combustion the temperature of the air coming in contact with the flame or burning part of the wick is to be raised as much as possible, while the quantity and the equal distribution of the said air is to be properly regulated; second, that, on the contrary, the degree of heat of that part of the wick situated underneath the burning part or flame be lowered as much as possible; third, that the burning part of the wick be always fed in a regular manner and abundantly with the liquid to be burned in the lamp.

In order to obtain the above-mentioned results, the following devices are made use of:

First. The cone or deflector serving for directing and heating the current of air required for combustion, instead of being made of brass and rather thin, is made of a much better heat-conducting metal—viz., copper—and stouter than hitherto, so to impart a much higher degree of temperature to the air coming in contact with the said cone or deflector.

Secondly. The wick carrier or tube containing the wick or wicks is inserted and kept in position in another or outer tube, a small distance being left between both tubes for allowing the entrance of an ascending current of air to cool that part of the wick situated below the flame or burning part. The upper end of the outer tube forms the burner, and its upper end

is situated within the cone or deflector, the slit of the burner corresponding with that of the said cone.

Thirdly. In order to insure a more plentiful ascent of the liquid to be burned in the lamp, from the reservoir of this latter to the upper or burning part of the wick, and, as it were, double or triple the capillary effect of this latter, and consequently the ascending of the liquid, one or more additional wicks are applied against and in close contact with the real or burning wick, but so as not to come in contact with the flame, the said additional or auxiliary wicks serving merely, by their capillary effect, to draw the liquid up from the reservoir to the upper part of the real or burning wick. Besides, my improved lamp is arranged in such manner as to do away with nearly any danger of explosion, even when a rather volatile liquid—such as various descriptions of petroleum—is to be burned therein, the arrangements also allowing of feeding the reservoir with liquid while the lamp is burning.

Having thus explained the principles or main features of my invention, I will now enter into a more minute description of the various parts and their mode of acting, thereby referring to the annexed drawings, in the various figures of which the same letters relate to corresponding parts, various parts being represented as partly cut away, in order to make the arrangement better understood.

Figure 1 represents an elevation view of the reservoir or vessel D, which is to contain the liquid to be burned in the lamp. On this vessel D is applied what I will henceforth call the "lighting apparatus" of the lamp, shown in vertical sectional view in Fig. 2. Fig. 3 represents an elevation view of the cone or deflector, and Fig. 4 of the burner. Figs. 5 and 6 respectively represent a plan and a elevation view of the disk serving as a rest for the cone and the lamp chimney. Figs. 7 and 8 represent a side and a sectional view of the deflecting-screen, while Figs. 9, 10, and 11 show accessory parts.

A is the cone or deflector, made of copper and thicker than those of thin brass hitherto made use of. The shape of this cone, particularly in the inside from the base to the top, is that of a paraboloid, ellipsoid, hyperboloid, or other regular curved surface formed by the

revolution of a suitable regular curve. The cone might be flattened to a suitable extent on two sides, parallel to the slit or longitudinal opening a at the top of the cone, through which slit the flame passes. Copper being a much better heat-conductor than brass, and the metal of my cones being thicker than that hitherto made use of for this purpose, much more heat will be transmitted to the air coming in contact with the sides of the said cone, the strength of which sides might be still increased by means of a jacket.

B is the burner-tube, which, on the contrary of the cone A, ought to be made of a bad heat-conducting metal and rather thin. This tube B serves as a sheath for the wick-tube or wick-carrier E, and is situated and fixed exactly in the axial part of the lamp, a suitable distance being left between both tubes for allowing an upward current of air entering from underneath by the wind-guard and the lower opening of the tube B, to keep that part of the wick situated immediately underneath the flame at as low a temperature as possible. The tube E is provided with what I call the "acting" or "burning" wick b , intended for burning, and one or more auxiliary wicks, $f g$, intended merely for the capillary action of the tissue or fabric they are made of, to draw the liquid from the reservoir D toward the upper end or burning part of the wick b , for which purpose the said auxiliary wick or wicks $f g$ must not protrude beyond the tube E, so as never to come in contact with the burning part of the wick b , the said wick or wicks $f g$ being of such length as to have their lower ends constantly immersed in the liquid in the reservoir D, and are fixed in position by pins d or other suitable means. I generally prefer to have two auxiliary wicks, $f g$, one of them applied against each side of the real wick b , in close contact with this latter, for a suitable part of its length, thus offering sufficient friction for preventing this latter from falling down. The upper end of the wick b protrudes through the slit z at the upper part, B', or burner of the tube B.

The ordinary well-known means for raising or lowering the wick b may be resorted to; but I prefer using a lever, G, turning on a pin in the hanger m , fixed to the disk Q, and entering with its small arm in small notches e and e' of the tubes B and E.

M is a ring fixed to the mouth of the reservoir D, in which ring is provided a suitable hole, H, for introducing liquid in the said reservoir. The socket or lower part, N, of the lighting apparatus fits by means of a conical prolongation, N', into the conical aperture of the ring M; but the socket might be adapted at once in a similar manner to the mouth of the reservoir D, the said mouth or opening having been for that purpose ground out in a corresponding hollow conical shape, which latter arrangement allows of doing away with the ring M. The lower periphery of the chimney O rests on the small props p of three

stays, P P' P², fixed at equal distances apart and from the center of the disk Q. This latter, respectively represented in plan and in side view in Figs. 5 and 6, fits horizontally in the wind-guard Q'. Toward the lower part the stays P' and P² have a notch, s , for the lower periphery or edge of the cone A to fit in, whereas the stay P has a small projecting part, p , entering in a notch, t' , of the lower edge of the cone, while the outer curve of the stays corresponds with the inner curvature of the cone, thus preventing this latter from shifting position when applied on the disk Q. This latter close to its outer edge is provided all round with a series of small holes, u , for allowing the air passing through the wind-guard Q' to enter into the lamp, and by the lower edge of the chimney be projected against the outside of the cone A. Air is also allowed to enter in the inside of this latter by the slits T, which air is in the same manner projected against the inner surface of the cone by the effect of a circular inclined plane or screen, T², Figs. 7 and 8, which screen is applied on the disk Q, and held in position by the stays P P' P², entering into corresponding notches, t^2 , of the screen. Instead of by this movable screen, the same effect may be produced by having the metal of the slits T turned up, so as to deflect the air against the inner surface of the cone A, or by means of a disk of wire-cloth, through the center of which passes the burner B'.

In order to allow, when burning a rather volatile oil—such as most descriptions of petroleum—of feeding the reservoir D with oil while the lamp is burning, the instrument represented in side view in Fig. 9 is made use of. The same consists of a funnel, F, forming the upper end of a pipe, L, the other end, L', of which is inserted and made to fit exactly in the hole H of the reservoir D. The upper half of the end L' is soldered to the lower half of the end R' of the tube R, so as to make those two halves form at the outside one entire tube, while the two halves are separated from each other at the inside by a partition, r , so as to leave no communication between the tubes L and R, except by the exit-opening to be inserted in the hole H, by which means, when pouring liquid in the funnel F, the said liquid will run down into the reservoir D till having reached in this latter the height of the end L' R', when the remainder of the liquid will run off by the tube R' into a vessel placed underneath the exit-opening R² of the tube R, which will continue as long as any liquid is poured into the funnel F, by which means the liquid in the reservoir D will be prevented from rising above any desired level.

For inserting the wick b between those $f g$, the end x of the wick b is taken hold of by means of a pair of flat pinchers, w , Figs. 10 and 11, and the free end v of these latter entered from underneath between the wicks $f g$, till the upper end, v , protrudes beyond the slit z of the burner, when, this end being taken

hold of, the pinchers and the wick *b* are drawn up till the end *x* of the latter protrudes beyond the slit *z*, after which the pinchers are removed and the wick *b* cut at the required length. That in burning the flame should not project lateral horns or flames, it was hitherto required in trimming the wick to cut down the two corners of the same—that is to say, cut these corners somewhat shorter than the remainder of the wick. In order to do away with this inconvenience and allow of simply cutting the wick in a straight horizontal line, a concave shape is given to the upper end, *B'*, of the burner, by which means the same effect will be obtained in burning as if the corners of the wick had been removed in trimming.

From what has been explained it will be evident that by the great distance which, in my lamp, may exist between the flame and the reservoir *D*, as also by the general arrangement of the apparatus, any danger of explosion will be prevented, even in case a very volatile liquid—such as some descriptions of petroleum—be made use of.

Having thus described and particularly ascertained the nature of my invention and the manner in which the same is to be put into effect, I wish it to be understood that I do not intend to restrict myself to the precise details of the invention above described, and illustrated in the accompanying drawings, as many

variations or modifications may be made thereon without departing from the main features of the invention; but

What I consider to be novel and original, and therefore claim as my invention, is—

1. The arrangement of the copper cone *A* and deflector *T*² in relation to each other and to the disk *Q* and its air-openings *T*, for the purpose of admitting air from below the disk, deflecting it against the copper cone, to be highly heated, and thence carried to supply combustion at the slot at its upper end, as described.

2. The arranging of the wicks *b f g* within a tube, *E*, that is movable within an outer stationary tube, *B*, and an intervening air-space between them, as and for the purpose described.

3. Securing the head of the lamp to the bowl by means of a conical shank on the former and a conical socket on the latter, the two making a tight metallic ground joint, substantially as described.

4. Filling the lamp through an opening in the side of the neck thereof by means of an instrument, substantially such as described, that will flow off the excess of burning-fluid beyond a given height, as described and represented.

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Witnesses:

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A. E. BRADY.