S. R. WILMOT.

Kerosene Burner.

No. 48,860. Patented July 18, 1865.

Fig. 1

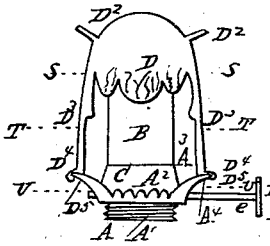


Fig. 2

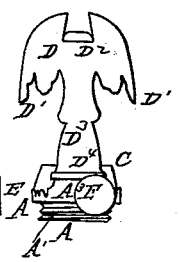


Fig. 8

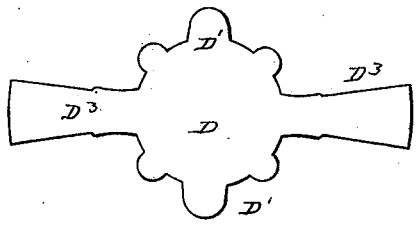


Fig. 9.

Fig. 3

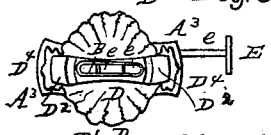


Fig. 4

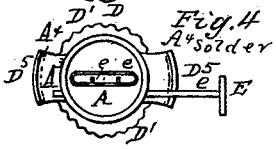


Fig. 5

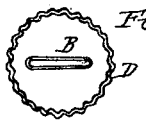


Fig. 6

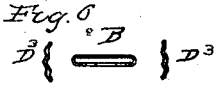


Fig. 7

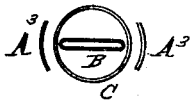


Fig. 10

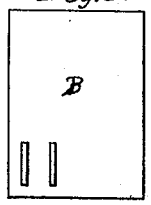


Fig. 11

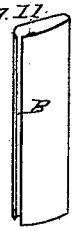


Fig. 12

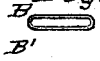


Fig. 13

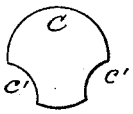


Fig. 14

Fig. 15

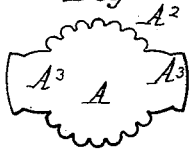
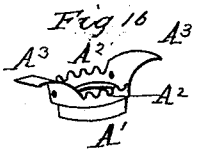


Fig. 16



WITNESSES

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D. W. Stetson.

INVENTOR

S. R. Wilmot.

UNITED STATES PATENT OFFICE.

SAML. R. WILMOT, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN KEROSENE-BURNERS.

Specification forming part of Letters Patent No. **48,860**, dated July 18, 1865.

To all whom it may concern:

Be it known that I, SAMUEL R. WILMOT, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in the Manufacture of Kerosene-Burners for Lamps and Lanterns to be used without Chimneys; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation; Fig. 2, an edge elevation; Fig. 3, a top view; Fig. 4, a bottom view; Fig. 5, a section on the line S S in Fig. 1; Fig. 6, a section on the line T T in the same figure, and Fig. 7 a section on the line U U in the same figure. Fig. 8 represents the form of the dome D as it is cut out by suitable dies from a sheet of thin metal. Fig. 9 is a perspective view of the same after it has been struck nearly into its complete shape by successive operations of the press, and the flame-hole has been properly formed by cutting the metal and leaving portions attached, ready to be bent outward at the ends of the hole. Fig. 10 represents the form of the tube-piece as it is cut out by suitable dies from a sheet of metal. Fig. 11 is a perspective view of the same after it has been bent or folded around so as to approximate the flat tubular condition required. Fig. 12 is an end view of the same after the edges have been soldered together. Fig. 13 represents the form of the cap as it is cut out by suitable dies from a sheet of metal. Fig. 14 is a perspective view of the same after it has been pressed into shape. Fig. 15 represents the form of the body or bottom piece as it is cut out by suitable dies from a sheet of metal. Fig. 16 is a perspective view of the same after it has been pressed into shape and punched.

Similar letters of reference indicate like parts in all the figures.

Tints are employed to aid in distinguishing parts, and do not imply a difference of material. I prefer to make the main parts from rolled sheet-brass or spinning-brass or common yellow brass.

My invention economizes material and labor, and enables me to produce a burner at a low price which is equal in beauty and usefulness to any in the market. The parts of my burner are of such form that the blanks usefully consume nearly all the stock and are pressed into shape or formed with a much smaller number of operations than are usually required, and all are completed without annealing and without trimming.

The successive heating of the metal to soften it, known as "annealing," is necessary when the metal is required to be very greatly distorted. The cutting off of the irregular edges, known as "trimming," is necessary to the perfection of the work when edges are to be very accurately applied together, and is also necessary to the beauty of the appearance when strictly symmetrical or regular figures—such as straight or circular edges—are to be presented. My invention entirely avoids these necessities.

In burners as ordinarily constructed the dome is with much labor elongated downward and the bottom elongated upward, so as to form complete tight cups to be joined at their edges. They are afterward perforated with much labor to admit the air. Modern practice favors the employment of very extensive openings between the top of the dome and the bottom. The cutting away, in short, removes a great proportion of the metal which has been so laboriously distorted by the working up.

The necessity for a perfect line of junction completely around between the dome and the bottom is all imaginary, and by dispensing with it and introducing the several other modifications involved in my invention I am able, by joining the two parts at only a small portion of their respective circumferences and giving an irregular and fanciful form to the edges where metal is omitted, to avoid not only most of the labor of working up and afterward cutting away, but also the necessity for trimming. My blanks are of such shape that they match into each other in the sheets of metal, and involve but little wastage or scrap in the cutting out, and require no punching or other cutting away of any of the metal in order to admit air properly into the dome after the parts are shaped.

To enable others skilled in the art to make and use my invention, I will proceed to describe it by the aid of the drawings and of the letters of reference marked thereon.

A is the body or bottom; B, the wick-tube; C, the cap, and D the dome.

The thumb-wheel E, ratchet-wire *e*, and ratchets *e'* are of the ordinary character.

The drawings and the brief description thereof given at the commencement will render clear the several stages or conditions through which the several parts, A, B, C, and D, pass in the process of manufacture, the operation of forming being effected by pressure, as usual, except that a smaller number of successive steps are required with each. The part A is formed at a single blow, B with two blows, C with one blow, and D with two blows.

Certain portions of the several parts are denoted by additional letters, as follows: The body A is cut in the form of a screw at the part A' in the ordinary manner. It is turned up along a large portion of its edge in narrow ornamental spurs or leaves, (denoted A^2,) and it is prolonged upward at two points opposite to each other and opposite to the edges of the wick-tube, as denoted by A^3. These latter projections are important in forming the connection to the dome. The tube B is joined along its abutted edge by solder B'. The cap C is notched at the point C' to allow the passage of the ratchet-wire. The dome D is scalloped around a portion of its edge, as indicated by D'.

A portion of the metal removed in forming the ordinary hole for the flame is allowed to remain fast to the dome at each end of the hole and turned outward, as indicated by D^2, and a portion of the metal is extended downward at the two points opposite each other and opposite the edges of the wick-tube in long arms, as indicated by D^3. These latter arms are important in forming the connection with the bottom A, through the medium of the arms A^3, before described. A portion of each arm, near its lower end, is bent outward, as indicated by D^4, and after this part has been properly applied to the corresponding arms, A^3, of the bottom A a further extension of the metal (indicated by D^5) is folded under by a suitable press, and thus made to embrace and confine the arm A^3. The junction thus made between the dome D and the body A, through the medium of the arms A^3 and D^3, is completed and made firm by the addition of a little soft solder, A^4, applied in the obvious manner.

The abutting-edges of the metal of the tube B are soldered along the line B' by holding the edges firmly in contact, each with the other, in a suitable clamp, after the metal has been touched with acid, and subjecting it to heat in a horizontal position, with its edge downward, and a thin slip of soft solder laid along the inside. As soon as the soft solder is melted it flows into and fills the narrow crack B', and on cooling the union is found complete. I have demonstrated by experiment that it will endure the severest action, whether mechanical or chemical, to which such tubes are subjected. I employ in practice a clamp which confines and thus treats a great number at once.

The tube B is slightly nicked and forced through the cap B and the bottom A, with suitable vent-holes or leaks at the line of junction, and is retained by the projections above and the spreading of the metal below, all in the ordinary manner. The same instruments and processes are employed in putting together these parts and in properly securing the ratchets *e'* on the wire *e* as are commonly employed in this branch of manufacture.

The ears D^2, by being formed in the manner before intimated, cost little, either for material or labor, and being bent outward at the angle represented, which is done by suitable dies in a press, like the other forming operations, serve to check the upward current of air along the exterior of the dome and to form an eddy or partial vacuum above each ear. This partial vacuum is filled by flame from the interior of the dome. The result is a widening of the flame and increase in the efficiency of the illuminating power and a diminishing of the inclination to smoke.

I form the entire dome D with corrugations or waves extending up and down the dome, as indicated in the figures. These are made without expense by simply producing similar corrugations in the dies which complete the forming operation, and are useful by adding to the stiffness and also, it is thought, to the ornamental appearance of the article, and to the distribution of light reflected therefrom.

My wick-tube B is made in the manner represented much more cheaply than by the ordinary mode, and the soldered joint B', being located exactly on one edge of the flat tube, is sufficiently strong. When a soldered joint in such tube is made on the flat side every force applied to the tube tends seriously to wrench and strain the joint. Heat applied to melt the solder is liable to disturb the position of the edges, except when the joint is on the edge as I have arranged it.

I can make my joint either by butting or lapping the edges. In either case it is strong and enduring.

I propose in some instances to join the parts A and D by soldering along the short lines of junction represented, without first locking the parts together, and in others to confine the parts along the same lines by locking alone, without soldering, if desired. I can make the lock very effective by impressing points so as to produce indentations in the one part and corresponding spurs or projections in the other part fitted tightly together.

I have found that both soldering and locking, as I have described, may be effected very cheaply.

I can, if desired, join the parts A and D by more than two of the arms A^3 and D^3. Thus three or any other number of arms greater than two may be employed, and in such case the arms may be narrow and the lines of junction still shorter, if desired. Only the same number of blows will in such case be required to form the parts; but such forms of the blanks interfere somewhat with the close fitting to-

gether of the same in cutting them from the sheets, and are thus prejudicial to the economy of stock.

I attach much importance to the fact that my dome is seamless or without joint, because seams or joints not only involve labor, but almost inevitably induce irregularity in the form of the flame-hole.

It is obvious that the skeleton form of the parts A and D may be varied by prolonging the arms A^3 and shortening the arms D^3, or the reverse, to any extent desired.

Having now fully described my invention, what I claim as new in the manufacture of kerosene-burners, and desire to secure by these Letters Patent, (marked B,) is as follows:

1. The arms D^3, or their equivalents, on the seamless dome D, made from the same piece of metal and serving to unite it with the bottom A along short lines A^4, substantially in the manner and with the advantages herein set forth.

2. Bending outward the ears D^2, formed from the metal cut out of the dome itself, substantially as and for the purposes herein set forth.

3. The wick-tube B B′, soldered along the edge, substantially as and for the purposes herein specified.

4. The seamless and legged dome D D^3, as a new article of manufacture, adapted to be cheaply made by the means set forth and to be afterward connected to the parts A B, substantially as and so as to allow of the economy of material and labor herein set forth.

5. The method herein described of manufacturing the seamless skeleton-dome D by forming the same from a blank cut in shape before forming and afterward striking or swaging in dies, so as to produce the legs D^3, having between them the openings required for the admission of the air without further cutting, all substantially in the manner and with the economy of material and of labor herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

S. R. WILMOT.

Witnesses:
THOMAS D. STETSON,
D. W. STETSON.