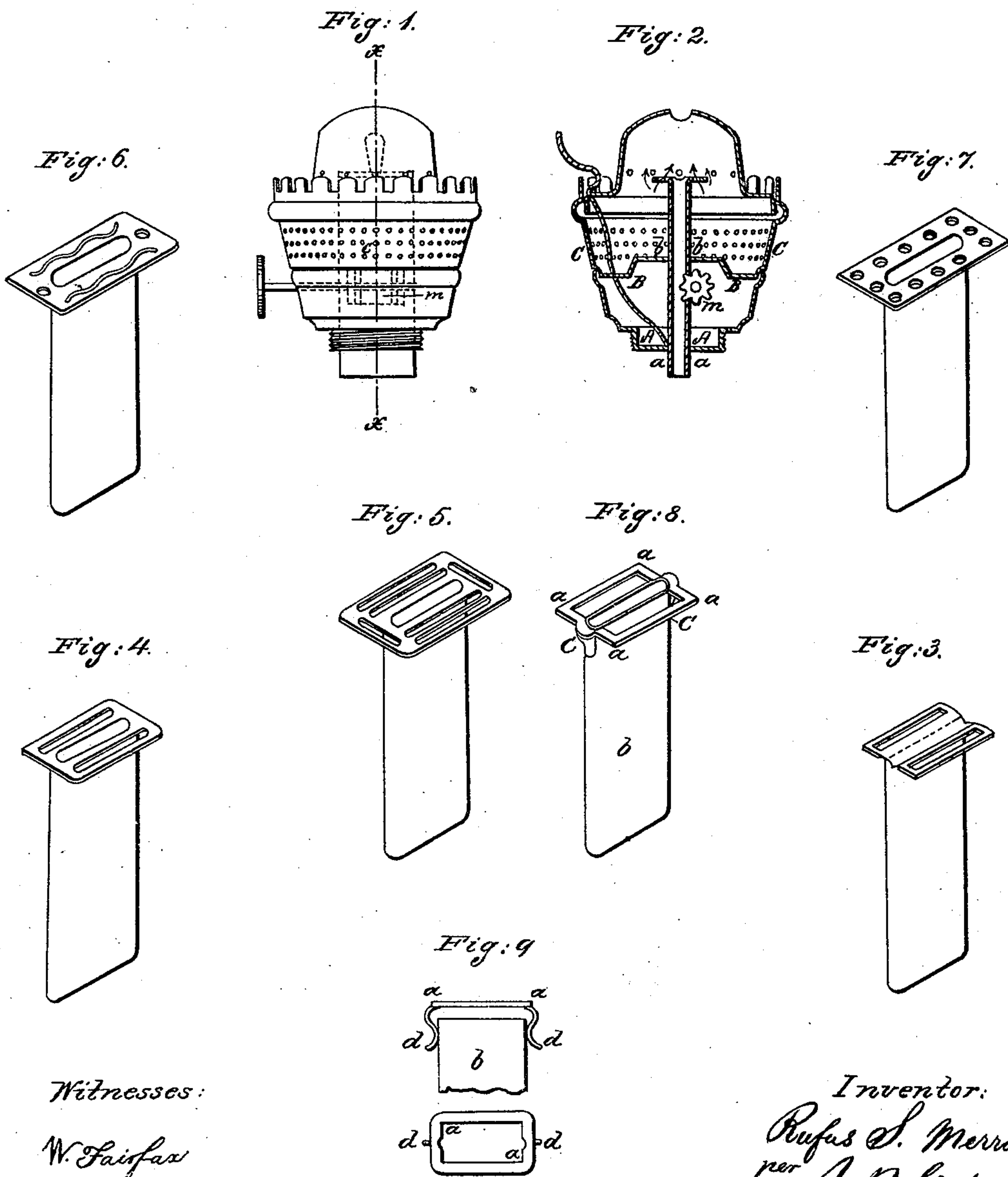


R. S. MERRILL.

Lamp Burner.

No. 28,762.

Patented June 19, 1860.



Witnesses:

W. Fairfax  
J. D. Hampton.

Inventor:

Rufus S. Merrill  
per A. P. Kelly.

# UNITED STATES PATENT OFFICE.

RUFUS S. MERRILL, OF LYNN, MASSACHUSETTS.

## COAL-OIL LAMP.

Specification of Letters Patent No. 28,762, dated June 19, 1860; application for reissue filed October 6, 1873.

*To all whom it may concern:*

Be it known that I, RUFUS S. MERRILL, of Lynn, in the county of Essex and the State of Massachusetts, have invented certain new and useful Improvements in Coal-Oil Burners in Which Flat Wicks are Used; and I do hereby declare the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification.

This my improvement relates to coaloil burners, constructed in such a manner as to impel the vapors generated in the oil reservoir and issuing therefrom, to mingle with a current of air and to impinge upon the flame, and thus supply it with the quantity of oxygen requisite to consume entirely the hydrogen and carbon of the oil and vapor decomposed by heat and thereby avoid the production of smoke and increase the brilliancy of the light without however augmenting the consumption of oil.

Before describing the peculiar means I have invented to effect this result as perfectly as, but in a more economical manner than this has been done heretofore, I would observe that on the ——— day of ——— 1859, Letters Patent of the United States have been issued to me for an improvement in coal oil burners, the same consisting in certain means by which the vapors arising from the fluid burned in the lamp are mingled with atmospheric air and the mixture directed so as to impinge upon the flame, being heated in its passage thereunto by conduction from the metallic walls of the directing passage. These means consisted in a removable director to the wick tube. Further experiments have led me to the discovery, that the same results with similar effect may be obtained by simply arranging in a plane parallel with and at a suitable distance from the border of the wick tube one or more flanges of any form or configuration as hereinafter described.

In order that my said invention may be fully understood, I shall now proceed to describe it, particularly referring to the accompanying drawing in which—

Figure 1, represents a front elevation of my improved coaloil burner and Fig. 2 a sectional view of the same through the line (*x x*) in Fig. 1.

The burner it will be seen is of ordinary construction with the exception of the wick

tube, which is there shown split or divided in its upper part; such split portion being bent over at the sides of the wicktube so as to occupy a plane parallel with the top of the wicktube, thus constituting a flange at right angles with and at either side of the wicktube. From these flanges the metal is cut or punched out in such a manner as to leave open spaces between the sides of the tube and the border of the flange.

An isometrical perspective view of the wicktube with the flange made as described is represented detached from the rest of the burner in Fig. 3. This simple device embraces the principle of my invention, but is capable of numerous modifications of which I shall describe a few for the further elucidation of my said invention.

To explain the operation of my improvement, I shall suppose the burner provided with its flat wick, lit in the usual manner by first removing the deflector and then properly adjusting, by means of the little pinion (*m*) the height of the wick in relation to the tube. The heat created by the flame will soon cause the formation in the oil reservoir, of vapors, which issuing through the openings (*a*) and (*b*) will mingle with the atmospheric air that is constantly drawn in through the apertures (*c*) in the outer wall of the burner, by the draft produced by the flame and the chimney. This mixture of air and vapor is naturally drawn toward the flame, but during its passage and before reaching the flame the current is divided by the flange or bar interposed as above described. The currents are thus violently repelled from their upward course and divided each, into two currents, one outside the bar or flange and the other inside the flange or bar. The former contains a comparatively small quantity of vapor, air being in excess, while the latter is charged with vapor, air being in comparatively small quantity. The former or current on the outside of the flange, after dodging the interposed obstacle is directed toward the flame, supplying it with the quantity of oxygen requisite perfectly to consume the hydrogen and carbon in the flame;—the latter or the current on the inside of the flange is directed obliquely to the flame in such a manner as to force it to impinge upon its lower or blue part *i. e.* upon that part of the flame which is the



least brilliant but where the heat is most intense. This division of currents whereby they are directed to the flame to impinge thereupon as described, accomplishes the desired result as perfectly as this has ever been done heretofore, for the reason that the conditions necessary to effect perfect combustion of the particles in suspension in the flame, are attained.

10 I have shown this device in its simplest form *i. e.*, stationary or permanently fixed to the tube. The mode of construction however, may be varied according to circumstances, and expediency. Thus I prefer for  
15 practical purposes to make the tube with its flange in one piece and at one operation in a machine by means of suitable dies and punches. I am thus enabled to turn out in large quantities burners executed with precision and finished appearance.

20 Fig. 4 represents the wick tube with its flange as made in one piece and at one operation.

25 Figs. 5, 6, and 7 show some of the numerous modifications of which this my invention is susceptible. In large lamps where the volume of vapor formed in the oil reservoir is greater than in lamps of ordinary size—and where consequently larger holes are provided for the issue of such vapor from the reservoir, the current dividing bar or flange may be made double, triple etc. and openings may also be provided at the ends corresponding to the edge of the tube as seen in  
30 Fig. 5. A similar effect may be produced by undulating the bar or the slot or opening in the flange between its extreme ends; by these means a larger quantity of the mixture of vapor and air will be permitted to impinge upon the blue part of the flame.  
40 Again I have found that if instead of making one continuous hole in the flange, several small ones be used, arranged in a row of any desirable configuration, the currents although more numerous, will have a greater force of impingement upon the flame.

Fig. 7 represents an isometrical perspective view of a burner constructed on this principle. The above described modes of constructing my improved wick tubes, I  
50 deem most preferable in the manufacture of new lamps; but where old lamps are desired to be modified or altered, so as to embrace my invention and to operate as described by either of the means shown I effect the object  
55 by an attachment to ordinary wick tubes as represented in Fig. 8.—In said figure (a) is the attachment proper; it consists in a quadrangular plate cut out of sheet metal at one stroke by means of dies and punches; the two  
60 short ends of this quadrangle are notched or rounded out so as to fit the tube (b) in the manner of a sleeve. The attachment constitutes a removable flange and is held in position either by means of studs (c) soldered on to the ends of the tube at suitable  
65 distances from the border,—or by means of springs (d) as shown in Fig. 9. These springs have the double advantage of dispensing with the use of solder which is liable to melt by exposure to heat and of allowing of the adjustment of the flange in relation to the tube.

70 Having thus fully described my improvement I shall state my claim as follows:

75 In coal oil burners of otherwise ordinary construction and provided with a flat wick tube and openings for the issue of the vapor generated in the oil reservoir, I claim the adaptation to the said wick tube and arranged in a plane parallel with and at suitable distance from its border, of one or more  
80 flanges constructed substantially as described to operate in the manner and for the purposes set forth.

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

RUFUS S. MERRILL.

Witnesses:

A. POLLAK,  
EDM. F. BROWN.