

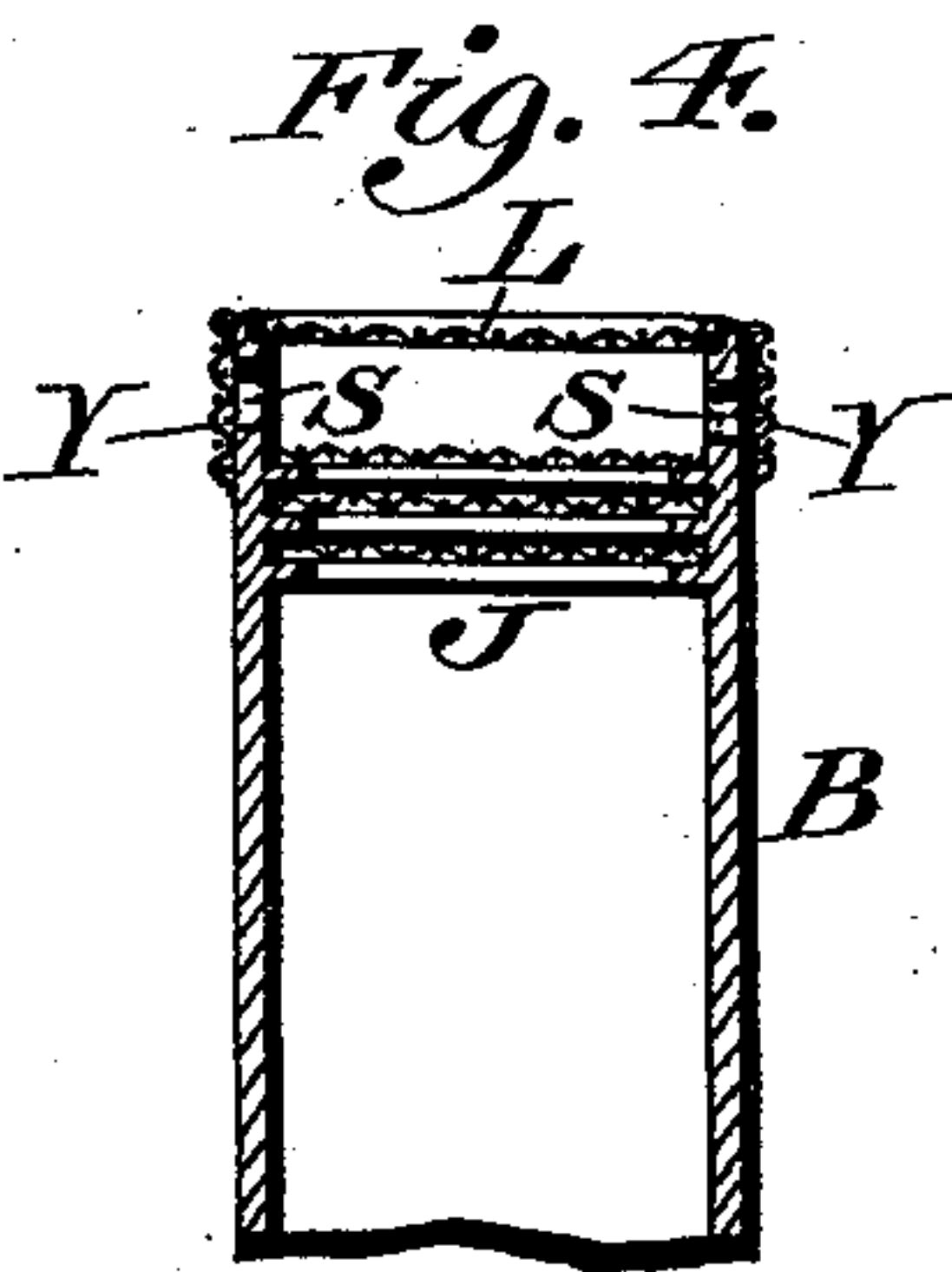
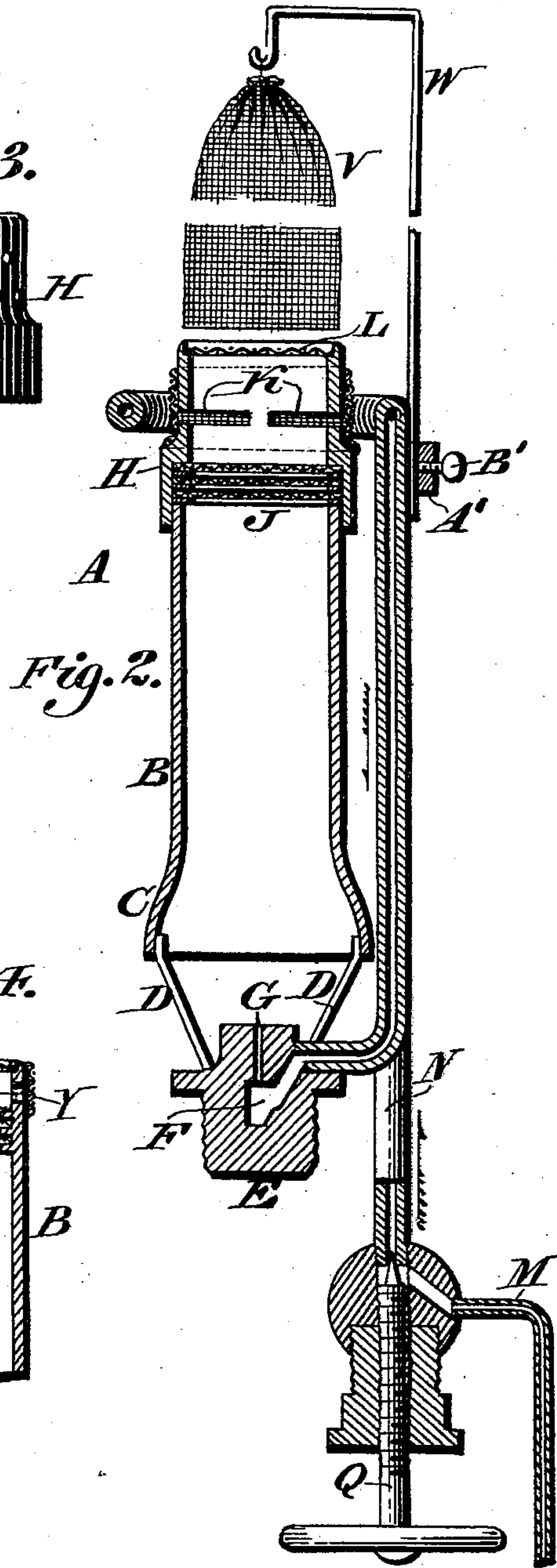
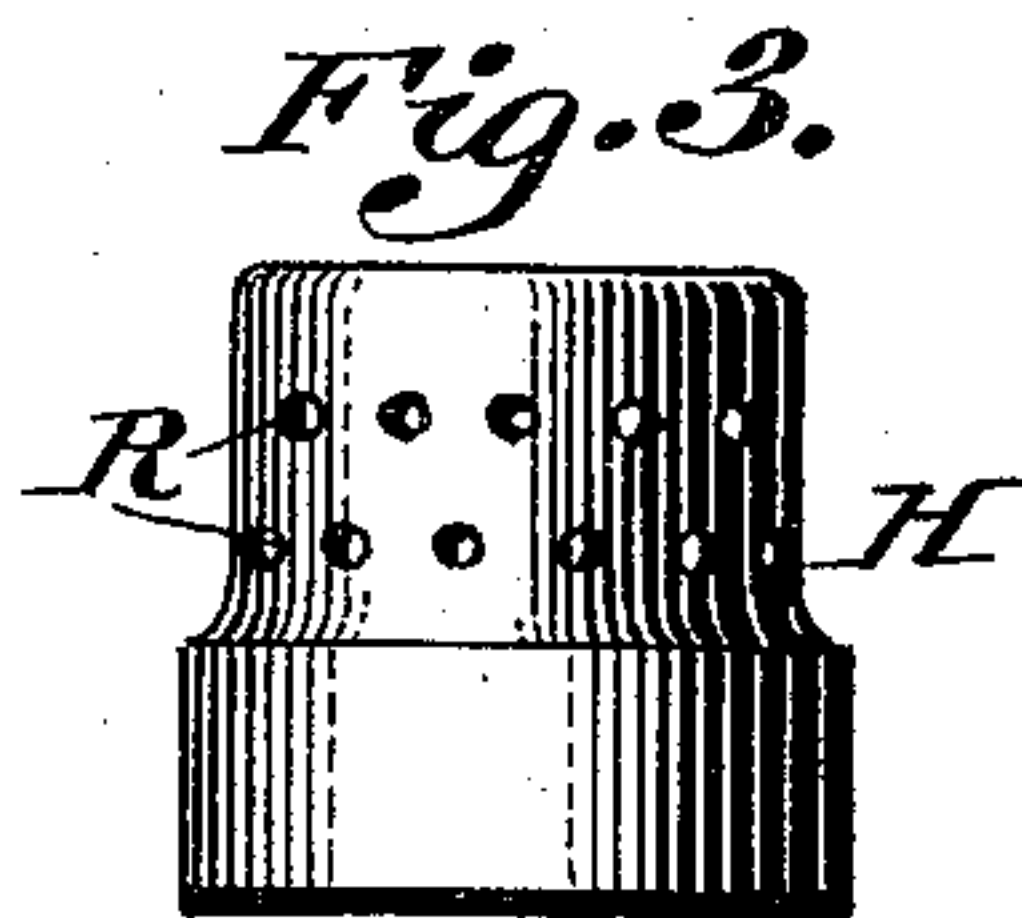
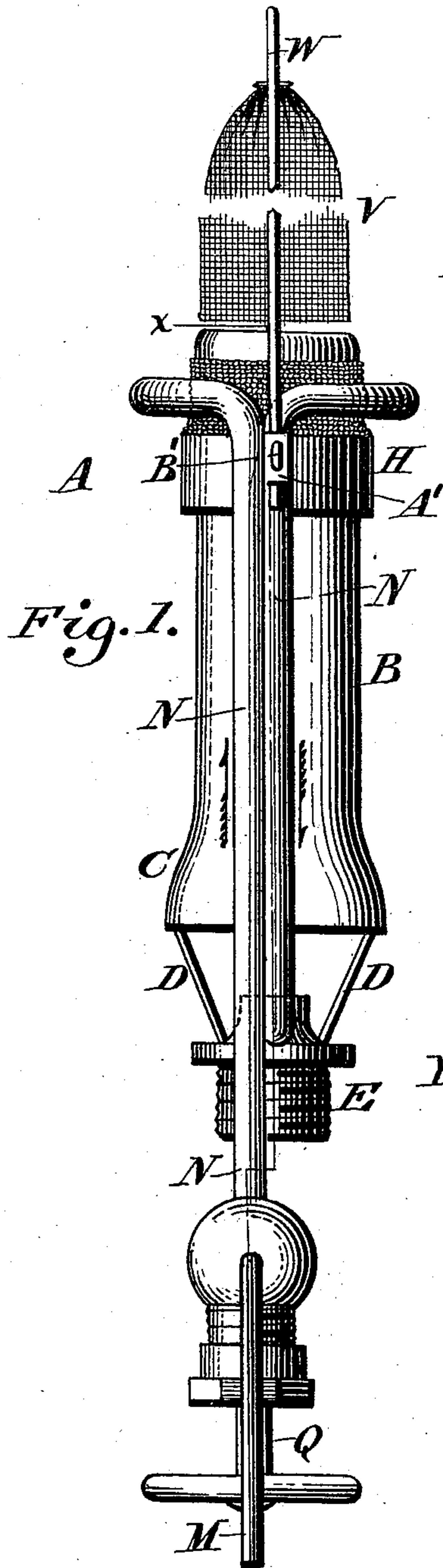
No. 613,921.

Patented Nov. 8, 1898.

H. M. HAMRICK.  
BURNER.

(Application filed Aug. 22, 1898.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

HARRY M. HAMRICK, OF PHILADELPHIA, PENNSYLVANIA.

## BURNER.

SPECIFICATION forming part of Letters Patent No. 613,921, dated November 8, 1898.

Application filed August 22, 1898. Serial No. 689,222. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY M. HAMRICK, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Burners, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists in an improvement in burners in which I employ a tube having a substantially continuous series of openings in the periphery thereof for the exit of flame, said tube having a generator surrounding said openings, whereby flame is caused to impinge on substantially every portion of the adjacent surface of said generator, whereby the hydrocarbon is converted into vapor or gas and the same conducted to a chamber and thence into the burner-tube, said generator being located in proximity to openings through which flames have their exit, whereby substantially every portion of said generator is heated to a high degree.

It further consists of novel details of construction, all as will be hereinafter set forth.

Figure 1 represents an elevation of a burner embodying my invention. Fig. 2 represents a vertical sectional view on line  $x x$ , Fig. 1. Fig. 3 represents an elevation of a cap employed, showing perforations therein. Fig. 4 represents a vertical sectional view of a portion of the tube employed without the use of the cap.

Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings, A designates the burner, the same consisting of a tube B, having in the present instance the flaring end C and having the bars D, which are suitably secured to said tube and to the casing or plug E, which latter is screw-threaded in order to be secured to the place of support and is provided with a chamber F, having the outlet or passage G leading therefrom. H designates a cap which is adapted to be placed on the upper end of said tube B, between which and said cap are situated the screens or gauzes J, said cap having slots K above said screens and being provided at or near its mouth with a screen or gauze L, said screens being held in position by any suitable means.

M designates a supply-pipe, which leads from any suitable source of supply (not shown) and conducts the hydrocarbon to the generator-tube N, which is adjacent to said tube and passes up the same and has a lateral portion  $N^x$ , which serves as a generator proper and passes around the cap H at about a level with the slots K, through which the flame is adapted to pass and heat said generator, which serves to conduct the heat to the plug E, since said generator is extended down said tube and communicates with the chamber F in the plug E.

Y designates a screen which is placed around the cap and covers the perforations or slots, so that the flame which issues therethrough may be steadied.

A suitable pin-valve Q or analogous device is conveniently situated in order to control the supply of hydrocarbon, as desired.

In lieu of the slots L in the cap H, I may employ the perforations R, the effect being the same, and I may dispense with said cap H and seat the screens J directly within the tube B, (seen in Fig. 4,) in which event I will provide perforations S in the tube B, above said screens, and above said perforations will be placed the gauze or screen L, the effect being the same.

V designates a mantle which is supported above the burner by the rod or bar W, which is removably supported in a lug A' by a set-screw B'.

The operation is as follows: The hydrocarbon passes through the tube M into the generator-tube N, the amount being adjusted by the valve Q, and passes up to the generator  $N^x$  and around the same, where, the burner having been lighted, flames will play against the generator and the hydrocarbon will be converted into vapor or gas and passes down from the generator into the chamber F, from which it is forced through the outlet G and into the tube B, where it mingles with the air and passes through the screens and is ignited. The screen L serves to cushion enough of the flame to be thrown through the openings in the cap.

It will of course be evident that the advantage of employing the cap is that by removing the same access to the screens can be



readily had and the same replaced if worn or broken, and this is the preferred form; but, as above stated, the screens may be placed directly in the tube and the cap dispensed with.

5 By employment of the screens L and J in conjunction with the openings surrounded by the gauze Y it will be apparent that no pulsations will occur and the flame will burn evenly and steadily under all conditions.

10 It will of course be evident that various changes may be made in the construction without departing from the spirit of my invention, and I do not therefore desire to be limited in every instance to the form as here-  
15 in shown and described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a burner the combination of a tube  
20 having a substantially continuous series of openings therein through which flame is adapted to pass and a generator surrounding said tube and located in proximity to said openings whereby flames are caused to im-  
25 pinge on substantially every portion of the adjacent surface of said generator.

2. In a burner, a tube having a substan-  
tially continuous series of openings therein,  
30 a generator surrounding said tube, and lo-  
cated in proximity to said openings and means for forcing a flame against said generator, said openings permitting said flame to im-  
pinge on substantially every portion of the adjacent surface of said generator.

35 3. In a burner, a tube having openings therein, a screen covering said openings, a generator adjacent said openings and means for forcing flames against said generator, said  
40 screen being located intermediate said gener-  
ator and openings.

4. In a burner, a tube having a substan-  
tially continuous series of perforations or  
45 openings in the periphery thereof, a gener-  
ator surrounding said tube, and located in  
proximity to said openings, a chamber com-  
municating with said generator and a screen  
above said openings whereby a flame is pro-  
jected against substantially every portion of  
the adjacent surface of said generator.

50 5. In a burner, a tube, a cap therefor hav-  
ing openings therein, a screen above said  
openings, a screen below said openings, a gen-  
erator surrounding said openings, and a cham-  
ber with an outlet in communication with said  
55 generator.

6. In a burner, a tube, a chamber with an  
outlet below said tube, a cap for said tube  
having openings in the side, screens above  
and below said openings, a generator pass-  
60 ing upward and around said cap in proxim-  
ity to said openings and down and communi-  
cating with said chamber and means for regu-  
lating the supply of hydrocarbon.

7. In a burner, a tube, a chamber for the  
65 reception of the hydrocarbon, a substantially  
continuous series of openings in said tube

through which flame is adapted to pass, a gen-  
erator surrounding said tube and located in  
proximity to said openings whereby flame is  
caused to impinge upon substantially every 70  
portion of said generator and a pipe leading  
from said generator to said chamber.

8. In a burner, the combination of a tube  
having a substantially continuous series of  
openings therein, through which the flame is 75  
adapted to pass, a generator surrounding said  
tube and located in proximity to said open-  
ings, said flame impinging upon substantially  
every portion of the adjacent surface of said  
generator and a mantle supported above said 80  
tube.

9. In a burner the combination of a tube  
having openings therein through which flame  
is adapted to pass a generator surrounding  
said openings, and a gauze or screen inter- 85  
posed between said openings and generator.

10. In a burner, the combination of a tube  
having openings therein through which flame  
is adapted to pass, a generator surrounding  
said openings, a gauze or screen interposed 90  
between said generator and openings, and a  
gauze or screen located in said tube above and  
below said openings.

11. In a burner, a tube, a cap supported  
thereupon, a screen or screens interposed be- 95  
tween said cap and tube, a screen supported  
upon the top of said cap, openings in the lat-  
ter intermediate said screens, a generator sur-  
rounding said openings, a chamber for the re-  
ception of the hydrocarbon, and a heat-con- 100  
ducting pipe leading from said generator to  
said chamber.

12. In a burner, the combination of a tube  
having openings therein through which flame  
is adapted to pass, a generator surrounding 105  
said openings, and a gauze or screen inter-  
posed between said openings and generator,  
in combination with a mantle supported above  
said tube.

13. In a burner, a tube having openings in 110  
the upper portion thereof, a gauze located in  
said tube above and below said openings, a  
gauze or screen located externally of said tube  
and surrounding said openings, a generator  
surrounding said last-mentioned gauze and 115  
openings, a pipe leading upwardly along said  
tube to said generator, a chamber for the re-  
ception of the hydrocarbon and a pipe of con-  
ducting material leading downwardly from  
said generator to said chamber. 120

14. In a burner, a tube having openings in  
the upper portion thereof, a gauze located in  
said tube above and below said openings, a  
gauze or screen located externally of said tube  
and surrounding said openings, a generator 125  
surrounding said last-mentioned gauze and  
openings, a pipe leading upwardly along said  
tube to said generator, a chamber for the re-  
ception of the hydrocarbon and a pipe of con-  
ducting material leading downwardly from 130  
said generator to said chamber in combination  
with a mantle supported above said tube.

15. In a burner, a tube, openings in the upper portions thereof, gauze located above and below said openings a generator surrounding said openings, gauze interposed between the latter and said generator, a plug having a chamber therein, a tube leading from said generator to said chamber, and supporting de-

vices common to said plug and tube whereby oxygen is freely admitted to the lower portion of said tube.

HARRY M. HAMRICK.

Witnesses:

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