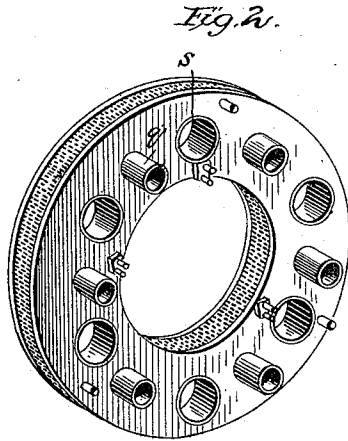
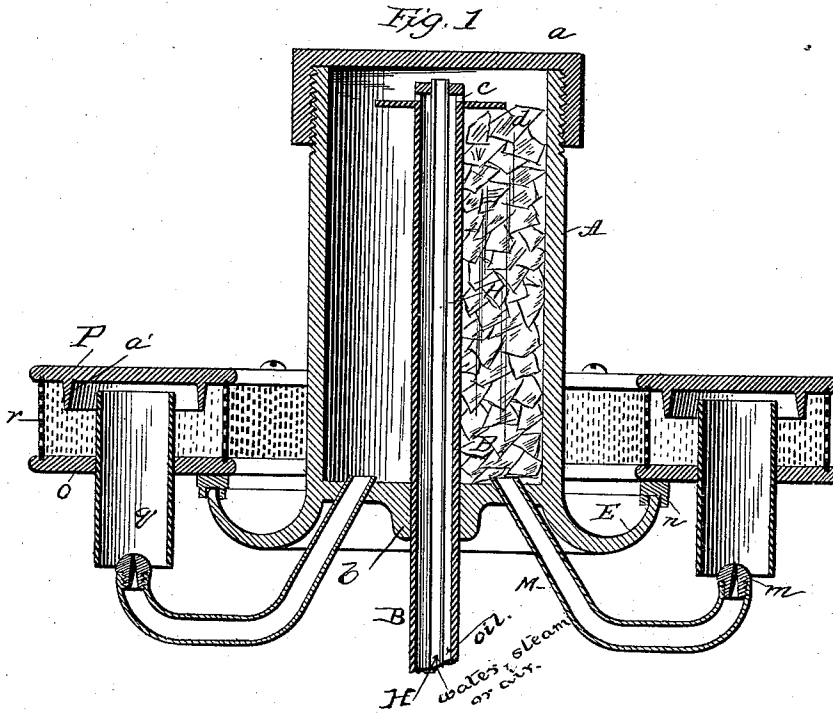


(No Model.)

W. WILSON.  
HYDROCARBON BURNER.

No. 417,457.

Patented Dec. 17, 1889.



Attest:  
*Walter Madison*  
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# UNITED STATES PATENT OFFICE.

WILLIAM WILSON, OF CHICAGO, ILLINOIS.

## HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 417,457, dated December 17, 1889

Application filed February 29, 1888. Serial No. 265,655. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM WILSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hydrocarbon-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is an improved burner for hydrocarbon oils.

The object of the invention is to provide a burner of simple and economical construction and adapt it to vaporize effectually hydrocarbon oils of any density. It is included in that class of burners in which the oil is vaporized by the heat of its own combustion; and the invention consists in the special construction, as hereinafter fully explained, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical central section through the generator and burner. Fig. 2 is a perspective view of a part of the burner.

In the drawings the vaporizing-chamber A is represented of tubular form and may be made of a piece of iron pipe or cast with one end integral with the body. A cap *a* in the form shown is screwed onto and covers the upper end. A pipe B, formed on or inserted through the lower head *b*, extends axially to near the upper end of the chamber. The upper end of the pipe is closed; but lateral openings *c* are provided in the pipe and near its end, just above an annular flange *d*, which extends from the pipe horizontally into the chamber. This pipe B is connected to any suitable pipe D extending from a tank for the supply of the hydrocarbon to the chamber. Around the lower end of the vaporizing-chamber is fixed an annular upwardly-curved flange E, which forms with the wall of the chamber A an annular trough or cup about the bottom of said chamber.

Within the oil-pipe B is a pipe H, which passes through the end of pipe B and opens into the chamber. The pipe H is smaller in external diameter than the interior diameter of the oil-pipe, so that an annular space is left for the flow of the oil. The pipe H leads

to any suitable water, steam, air, or gas supply, and it and the pipe B have suitable cocks for the regulation of the supply of oil or water.

Within the chamber A is placed a filling consisting of any suitable material in the form of fragments not absorbent of the oil and capable of resisting heat. It is broken material, and therefore has interstices, but may be of any shape having interstices.

From the interior of the generator-chamber ducts extend to the exterior to supply the burners with the vapor. These ducts consist of pipes M, leading from the bottom of the generator. They are turned outward and upward and have suitable tips *m*. These tips are arranged in a circle about the generator. Over them is located the burner. It is mainly composed of two annular plates O P, one above the other, suitably supported in proper relation to each other and to the generator, substantially as shown. Over each tip is an opening in the lower plate, in which is placed a tube *q*, the lower end of which extends to the tips of the vapor-ducts and the upper end into the space between the plates, but terminates a little below the upper plate, leaving a space for the flame or vapor to pass over the upper end of the tube. On the under surface of the upper plate P is a flange *a'*, surrounding the upper end of the tube, causing a more perfect mixture of the vapor and air, and thereby more complete combustion. The plates are connected to form an annular combustion-chamber by means of perforated walls *r*, and the said chamber surrounds the central chamber A. The tube *q*, the flange, and the walls may be circular, as shown in Fig. 3, or the tube and flange may be elongated or of oval shape. In either shape or of any cross-section the tube serves to draw in the air necessary for the complete combustion of the vapor. The same effect may be produced by having two concentric burners; but either will be sufficient when the generator is working to its fullest capacity. The upper plate becomes heated and in turn aids in the combustion of the vapor, which, rising through the tube, impinges against it. The flame from the circle of burners around the generator supplies heat thereto sufficient to produce constantly the required amount of va-

por. The annular cup about the base of the generator serves in the form just described to hold an amount of the hydrocarbon to start the apparatus.

5 The annular combustion-chamber, as shown in Fig. 1, is supported from the outer rim of the trough E by means of lugs *n*, having depending fingers fitting the rim of the said trough, as shown. At suitable intervals openings are made through the upper and lower plates of the combustion-chamber by means of the pipes *s*, and through these pipes air may pass for aiding in the combustion, the air in this manner being directed between the  
10 inner and outer flames.

I do not limit myself to the use of steam produced in the generator. It may be generated elsewhere and forced through the inner pipe, or under some circumstances air may  
20 be used. This may be desirable in connection with some oils. A very small amount of air, gas, or steam, or a mixture of any of these, will produce, even from heavy oils, a very superior heating-vapor.

25 I claim as my invention—

1. In combination with the chamber A and its filling, a central oil-supply pipe B, burners leading from the chamber A, and a combustion-chamber consisting of the annular  
30 plates O P, having perforated side walls and

openings in the bottom plate to the interior of the combustion-chamber, said openings being in line with the burners leading from the chamber A, substantially as described.

2. In combination with the chamber A and its filling, a central oil-pipe B, burners leading from the chamber A, a combustion-chamber consisting of the annular plates O P, having perforated side walls, tubular openings in the bottom plate in line with the tips of the burner, and tubular openings through both  
40 upper and lower plates for the passage of air, substantially as described.

3. In combination with the chamber A and its filling, the central oil-supply pipe B, burners leading from the chamber A, a combustion-chamber consisting of the annular plates O P, connected by perforated side walls, tubes extending through the chamber formed by the plates, tubes *q*, extending through the lower  
50 plate covering the tips of the burners, and a flange *a'*, formed on the under face of the upper plate, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two  
55 witnesses.

WILLIAM WILSON.

Witnesses:

ROBERT LAIRD,  
HERMAN POOLE.