

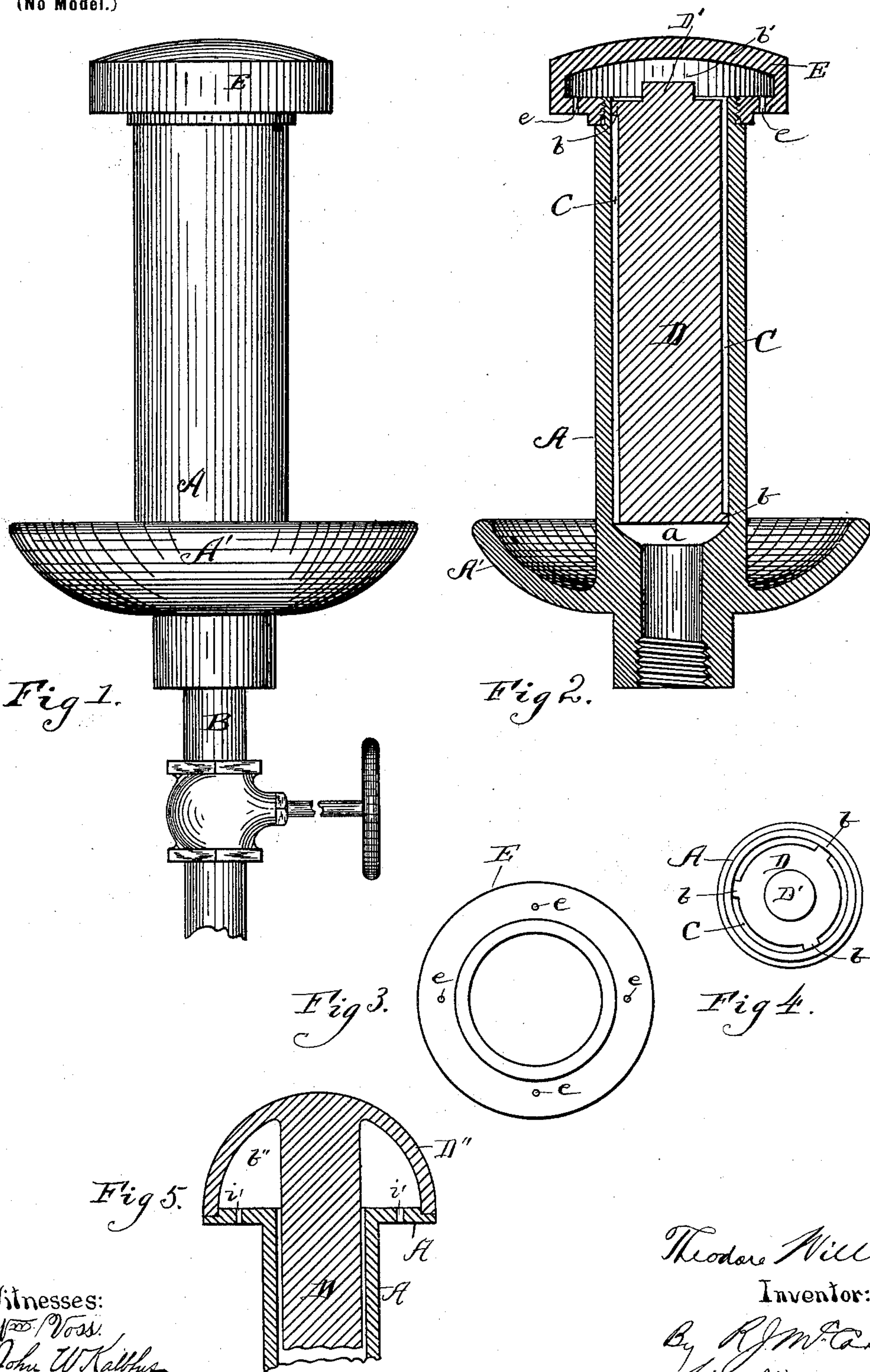
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Patented Oct. 25, 1898.

T. WILLI.
HYDROCARBON OIL BURNER.

(Application filed Apr. 18, 1898.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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HYDROCARBON-OIL BURNER.

SPECIFICATION forming part of Letters Patent No. 612,888, dated October 25, 1898.

Application filed April 18, 1898. Serial No. 677,937. (No model.)

To all whom it may concern:

Be it known that I, THEODORE WILLI, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Hydrocarbon-Oil Burners; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in hydrocarbon-oil burners for vaporizing and burning crude oil.

The object of the invention is to provide a highly-efficient appliance of this character that combines in its construction simplicity, cheapness of cost, and safety and in which the oil or liquid fuel is quickly generated into vapor and ascends to the burner.

With the above ends in view the invention consists in an upright tube or pipe having a solid core placed therein and providing a narrow annular chamber throughout the length of said pipe, in which the hydrocarbon oil is quickly generated. The chamber is formed around the inner surface of this pipe, so that the heating of the outer surface of said pipe is alone sufficient to quickly convert the oil into vapor. A gas-chamber is provided at the upper end of said pipe, into which the gas ascends from the peripheral or surface chamber before referred to.

The peculiar construction of my improved generator and burner will be readily understood by referring to the annexed drawings and the detailed description to follow.

Figure 1 is a vertical side elevation of my improved generator and burner complete. Fig. 2 is a vertical mid-sectional elevation. Fig. 3 is a detached plan view of the lower side of the burner-cap. Fig. 4 is a top view with the burner-cap removed. Fig. 5 is a sectional view of the upper portion of the burner, showing a variation in the construction.

The outer tube A and the oil-cup A', in which oil is placed for the initial heating, are in one integral body, adapted to be screwed

onto a supply-pipe B. The bore or opening in the tube A is essentially larger throughout its length above the oil-cup in order to provide a vapor-generating chamber C around and close to the inner surface of said tube, and the lower terminal of said bore or opening in said tube tapers inwardly to provide a space or chamber *a* at the bottom for the oil to enter from the supply-pipe. The vaporizing-chamber C is provided by inserting a heat-radiator consisting of a solid core D of a slightly-smaller diameter than the opening in said tube. The lower end of said core is flat in order that it may not enter the conical chamber *a*, and from the upper and lower ends thereof there are projected lugs *b*, which come in contact with the inner side of the tube and maintain said core in a central position. The upper end of said core is provided with a smaller extended portion D', by which it may be removed from the tube. The burner-cap E screws onto the upper end of the body of the burner and forms a chamber *b'*, into which the gas or vapor ascends from the generating-chamber C. The bottom of said cap has a series of discharge-orifices *e* therein that are close to the body of the tube and through which attenuated jets of vapor are emitted. These, combining with the oxygen of the atmosphere, produce flames of intense heat around the tube.

As a feature of great advantage the solid core or radiator D is again referred to. This core, it will be seen, closes up the greater portion of the opening throughout the length of the body of the burner and concentrates the heat around the side of the burner. This causes a more quick and thorough vaporization of the oil by utilizing the entire heat which is thrown out around the inner surface of the tube. The outer surface of the core D forms the inner wall of the generating-chamber C. The narrow annular chamber thus formed throughout the length of the burner becomes intensely hot. Consequently the oil which is transformed into a vapor as it enters said chamber is superheated as it ascends to the burner-cap.

In Fig. 5 the tube A is terminated in a flange A', in which the orifices *i'* are placed, and the core D is terminated at its upper end

in an integral cap D'', the lower edge of which interlocks with the flange A' and therewith forms a gas or vapor chamber b''. The connection between the flange A' and the cap D'' is such as to keep the core in a central position in the tube, thereby maintaining a uniformity in the area of the space between said core and the tube.

Having described my invention, I claim—

10 1. In a hydrocarbon-burner, the combination with an upright tube, of a core placed therein and coöperating therewith to form an annular chamber on the interior of said tube, the said core being supported in the tube at
15 a point above the lower terminal of the bore of said tube so as to provide a chamber below the lower end of the core, and a chamber at the upper end of the tube, substantially as specified.

20 2. A hydrocarbon-burner, comprising an upright tube having the bore thereof reduced at its lower end, a core placed in said tube and providing an annular chamber throughout the length of the tube, the lower end of
25 said core being supported in the reduced end of the tube at a point above the lower terminal of the bore, and coacting with the tube to

form a chamber therein below the core, that communicates with the annular chamber; and a burner-cap on the upper end of the
30 tube having a chamber therein communicating with the said annular chamber, substantially as specified.

3. A hydrocarbon-burner, comprising an upright tube, a core placed therein and providing an annular gas or vapor generating
35 chamber between the core and tube, a burner-cap mounted at the upper end of the tube and providing a gas or vapor chamber thereat, the said burner-cap having a series of orifices
40 in its lower side through which, vapor or gas is projected down around and parallel with the tube, whereby, when said gas or vapor so projected, is ignited, the tube will become
45 enveloped in a mantle of flame to speedily cause a generation of gas or vapor therein, substantially as specified.

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

THEODORE WILLI.

Witnesses:

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