

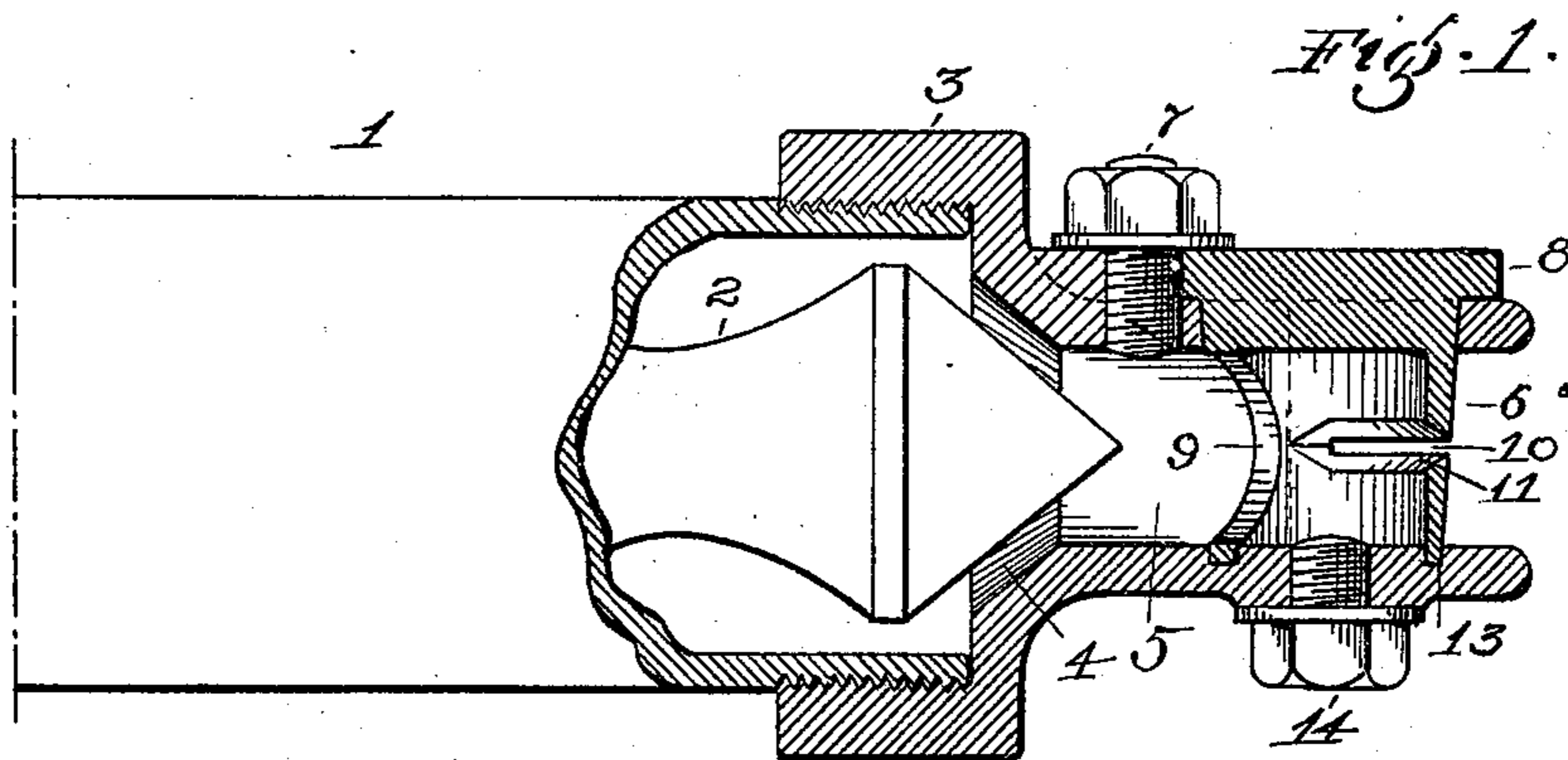
E. W. TUCKER.

OIL BURNER.

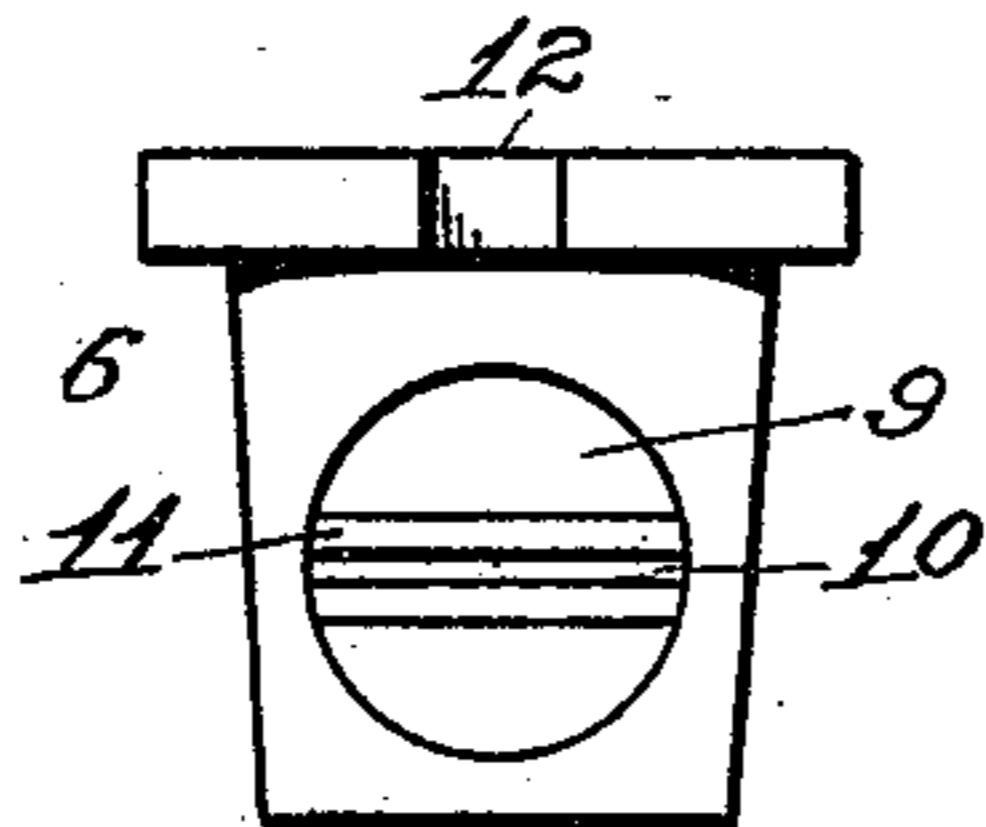
APPLICATION FILED MAY 26, 1908. RENEWED APR. 16, 1910.

975,482.

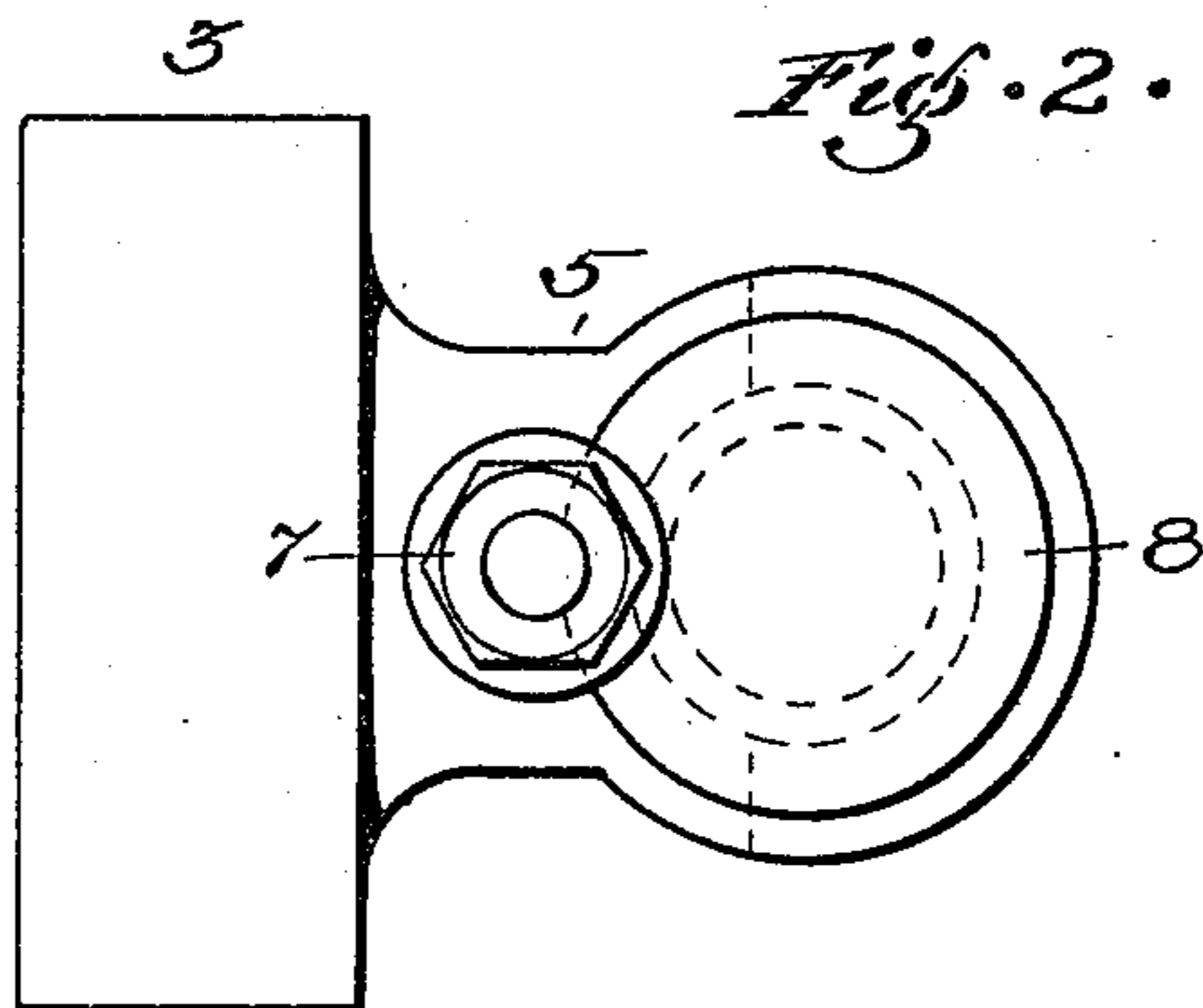
Patented Nov. 15, 1910.



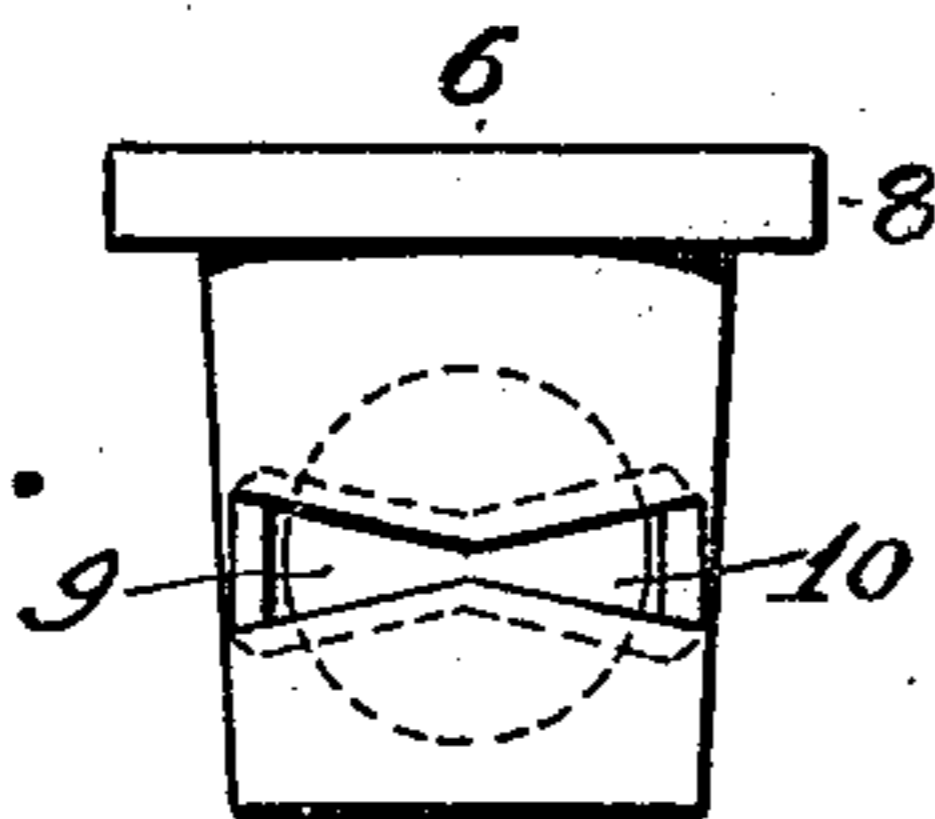
*Fig. 3.*



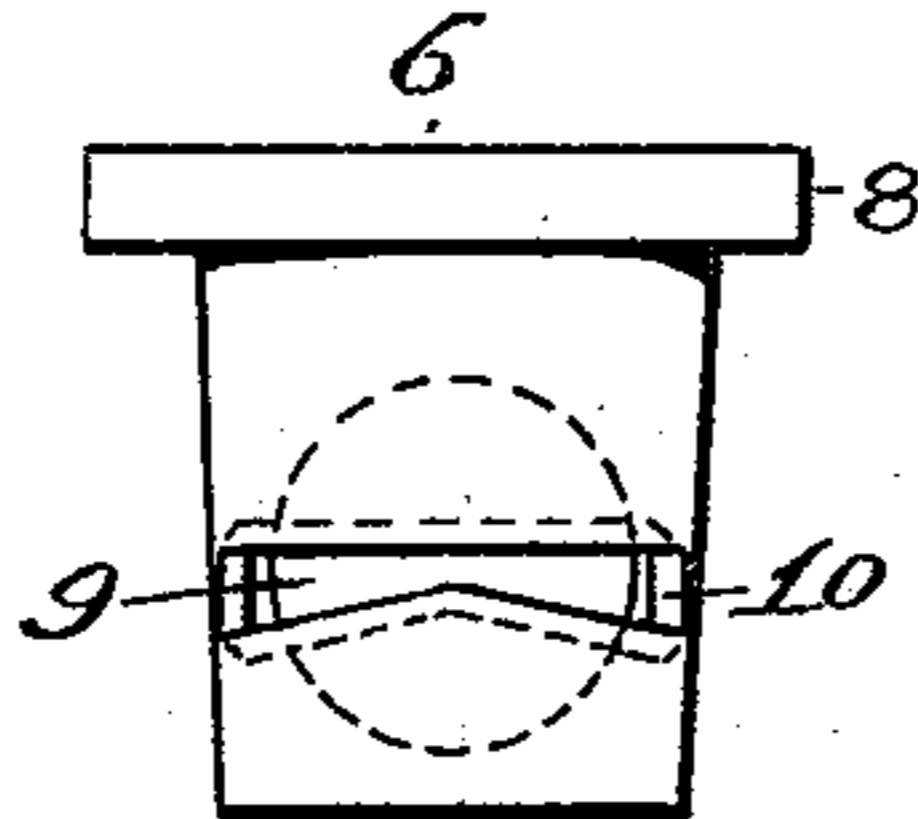
*Fig. 2.*



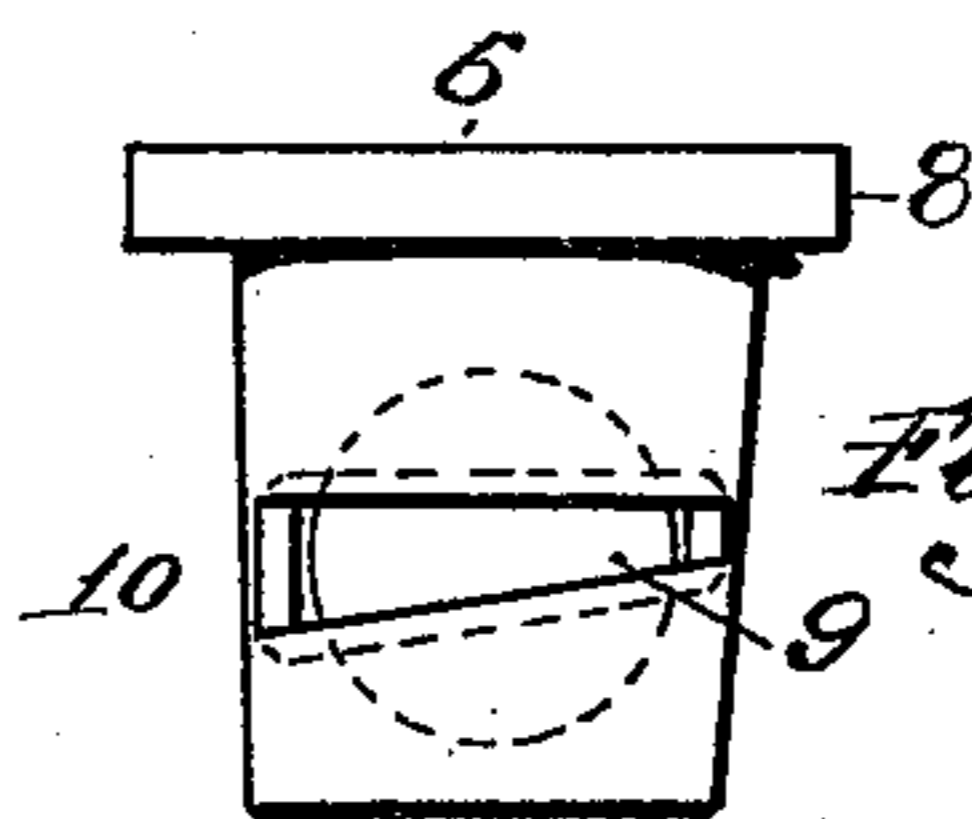
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



WITNESSES:

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*M. J. Kuhl*

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# UNITED STATES PATENT OFFICE.

EDWIN W. TUCKER, OF SAN FRANCISCO, CALIFORNIA.

OIL-BURNER.

975,482.

Specification of Letters Patent,

Patented Nov. 15, 1910.

Application filed May 26, 1908, Serial No. 435,039. Renewed April 16, 1910. Serial No. 555,933.

*To all whom it may concern:*

Be it known that I, EDWIN W. TUCKER, a citizen of the United States, and residing at 818 Page street, in the city of San Francisco, county of San Francisco, and State of California, have invented certain new and useful Improvements in Oil-Burners; and I do hereby declare the following to be a full, clear, and exact description of the said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

This invention relates to improvements in oil burners and more particularly to atomizing tips, therefor.

The invention consists in the novel construction and arrangement of the parts.

The tips of atomizing oil burners are subject to carbonization and obstructions due to the accumulations of the by-products of combustion, necessitating a construction which renders the tip easily removable for cleaning without altering the adjustments of the other burner parts. The tip being the principal point of deterioration in the burner it is essential as a matter of economy that it be cheaply replaced. The tip is the part which determines the size, contour and direction of the flame, and to a considerable extent the quality of atomization; it is essential therefore to consider minutely the mechanical and physical characteristics of the tip.

It is the object of this invention to construct a burner tip meeting the requirements above set forth.

In the drawings: Figure 1 is a side elevation in cross section of an oil burner tip constructed in accordance with this invention. Fig. 2 is a plan view from above of the same. Fig. 3 is a rear elevation of the tip insertible in the nozzle. Figs. 4—5—6 are similar views of alternative tips with openings for various shapes of flames.

Broadly the invention consists of a nozzle adapted to be screwed onto the end of the burner barrel and having a valve seat forming part of a needle valve to control the volume of flame, and a tip insertible in the nozzle and having an internally beveled opening of the desired shape.

In detail the construction consists of the barrel #1 of the burner, the valve head #2, the nozzle cap #3 having the valve seat #4 therein, forming the entrance to the nozzle neck #5, the tapered tip #6, inserted trans-

versely in the nozzle neck #5, and securely held by the stud bolt #7, screwed into the nozzle and engaging the flange #8 on the tip. The tip has the opening #9, coinciding with the opening of the nozzle neck #5. From the tip the combustible mixture is ejected through the atomizing slit #10 cut through the walls of the tip and internally beveled at #11. The periphery of the flange #8 is provided with the notch #12, which engages the stud bolt #7 to insure coincidence of the openings #9 with the nozzle neck opening. The open end of the tip is seated in an annular groove #13 formed in the nozzle which effectually prevents leakage. Should the tip become cemented in ("frozen") by carbonization it can be readily dislodged by removing the cap screw #14, inserting a pin against the head of the tip and driving it out. The function of the internal bevel #11 is to cause the flame to expand nearer to the tip, to break up and atomize the fuel better, and increase the incandescent area of the flame. When the bevel is absent the flame blows into the fire box a considerable distance before expanding, (in many instances of high velocity without igniting) and this obviously decreases the area of incandescence, and also the heating surface acted upon within the fire box.

The tip opening shown in Figs. 1 and 3 throws a flat flame of uniform thickness. Fig. 4 throws a flat flame, thin in the center and of greater volume as it approaches the edges. Fig. 5 is similar to Fig. 4, except that it directs the edges of the flame more downward. Fig. 6 throws a flame with its greatest volume to one side of the center, which is desirable when burners are used in pairs or the shape of the fire box calls for a flame of this shape.

These various shapes of tip openings are cited, merely to show the possibilities of the invention. I do not wish to be limited to the exact shapes shown, as it is within the spirit of the invention to form the openings to suit circumstances.

Having thus described this invention what is claimed and desired to secure by Letters Patent is:

1. In an oil burner, a nozzle cap provided with a discharge neck, the wall of which is provided with a groove, and a transversely arranged hollow burner tip located in said neck and provided with an internally bev-

eled outlet opening, said tip being tapered and having one end fitting in said groove, and means for preventing displacement of said tip.

5 2. In an oil burner, a nozzle cap provided with a discharge neck, a transversely arranged burner tip located in said neck and provided with an internally beveled outlet opening, the opposite edges of said opening  
10 being arranged at different angles, said tip being provided with a flange resting upon one wall of said neck, and means for securing said flange to said wall.

15 3. In an oil burner, a nozzle cap provided with a discharge neck, a transversely arranged burner tip located in said neck and provided with an internally beveled outlet opening, the opposite edges of said opening being arranged at different angles with the

narrowest point at the center, said tip being provided with a flange resting upon one wall of said neck, and means for securing said flange to said wall.

4. In an oil burner, a nozzle cap provided with a discharge neck, a transversely arranged burner tip located in said neck and provided with an internally beveled outlet opening, said tip being provided with a flange resting upon the top wall of said neck, and means for securing said flange to said  
25 neck. 30

In testimony whereof, I have hereunto set my hand this 16th day of April 1908.

EDWIN W. TUCKER.

Witnesses:

E. W. TUCKER, Jr.,

M. J. KUHLE.