

No. 748,267.

PATENTED DEC. 29, 1903.

J. H. DAVIS.
OIL BURNER.

APPLICATION FILED FEB. 10, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

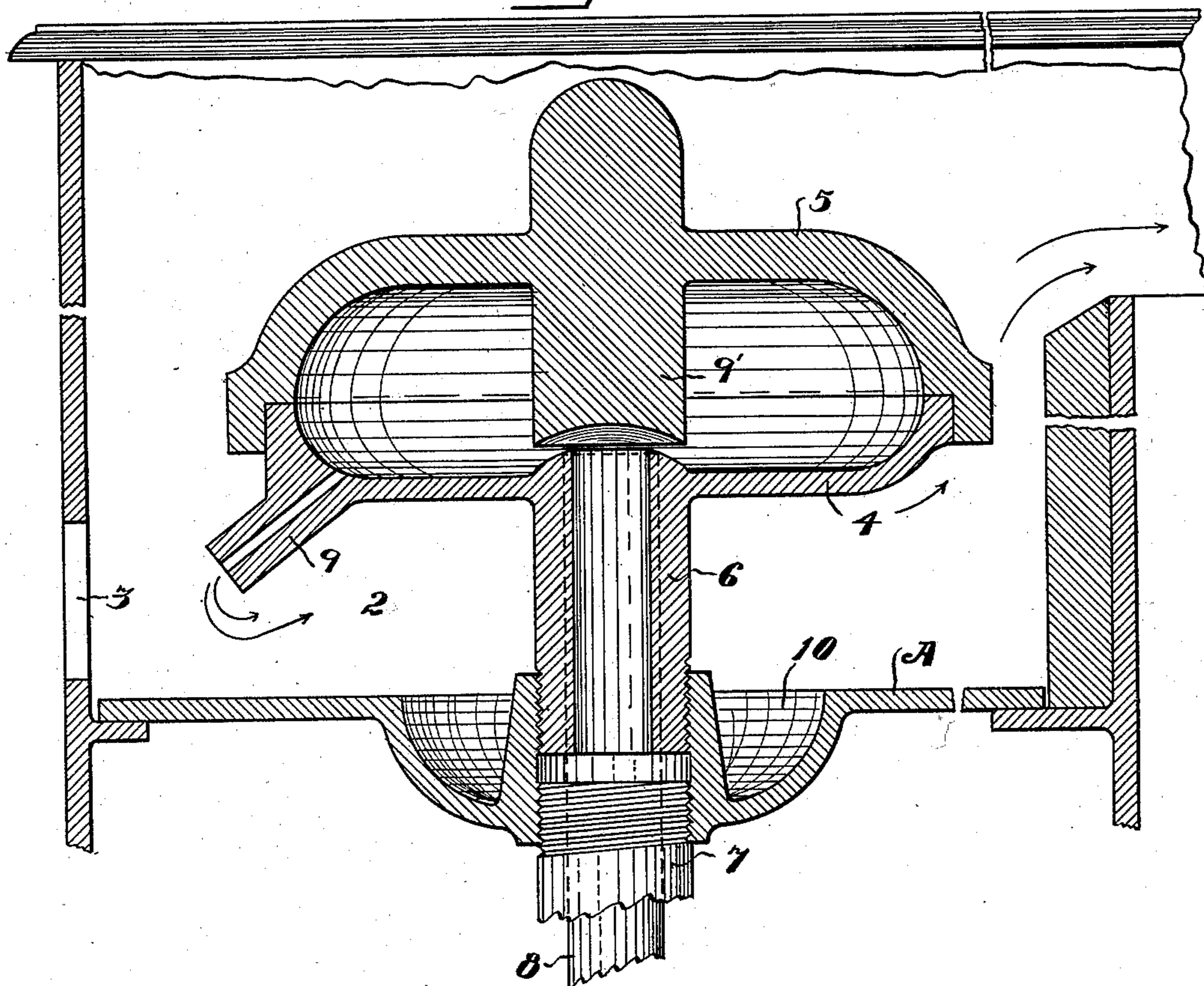
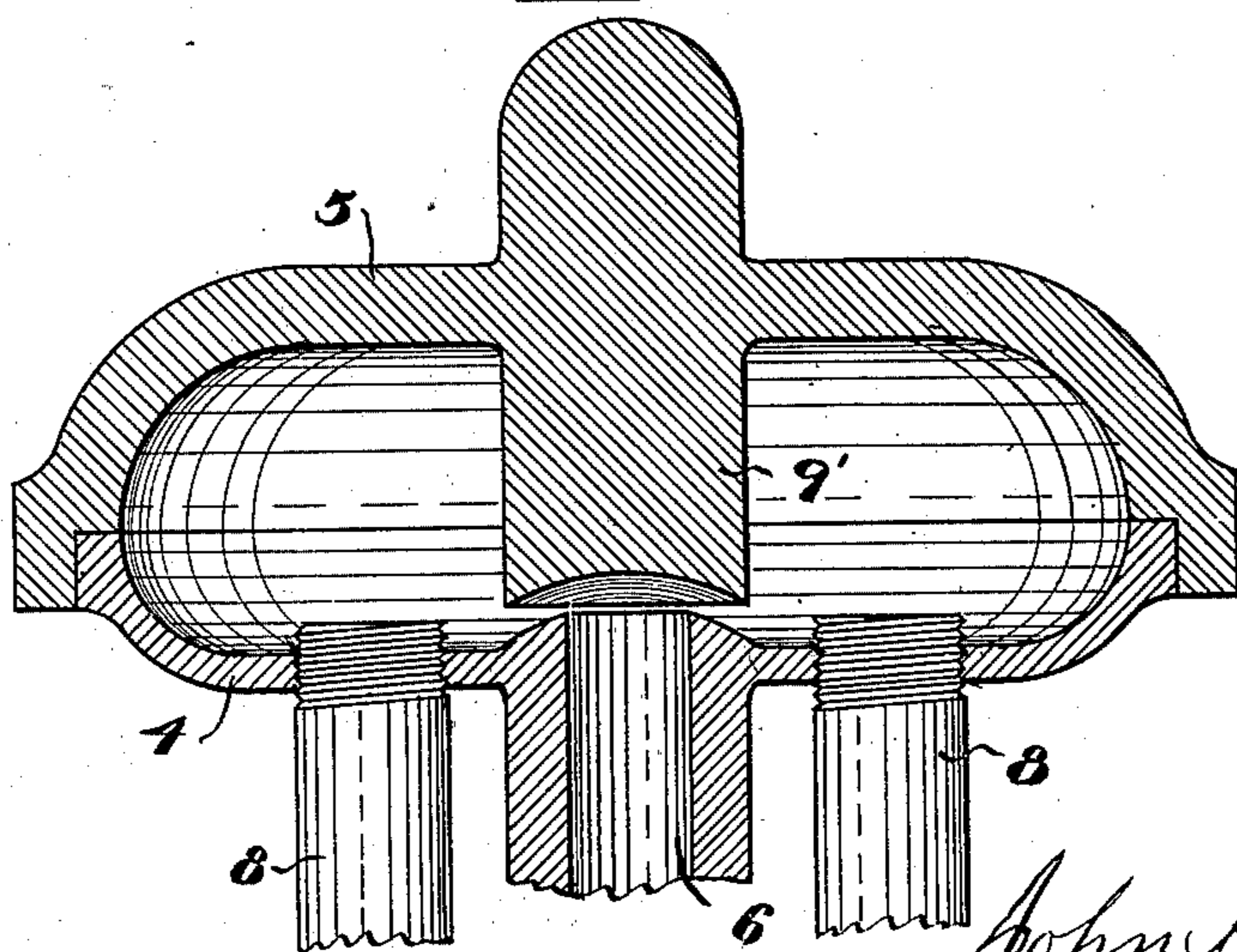


Fig. 2.



Witnesses,

Lt Source
 Dudley Mass.

Inventor,

By John H. Davis
Geo. H. Strong

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2 SHEETS—SHEET 2.

Fig. 3.

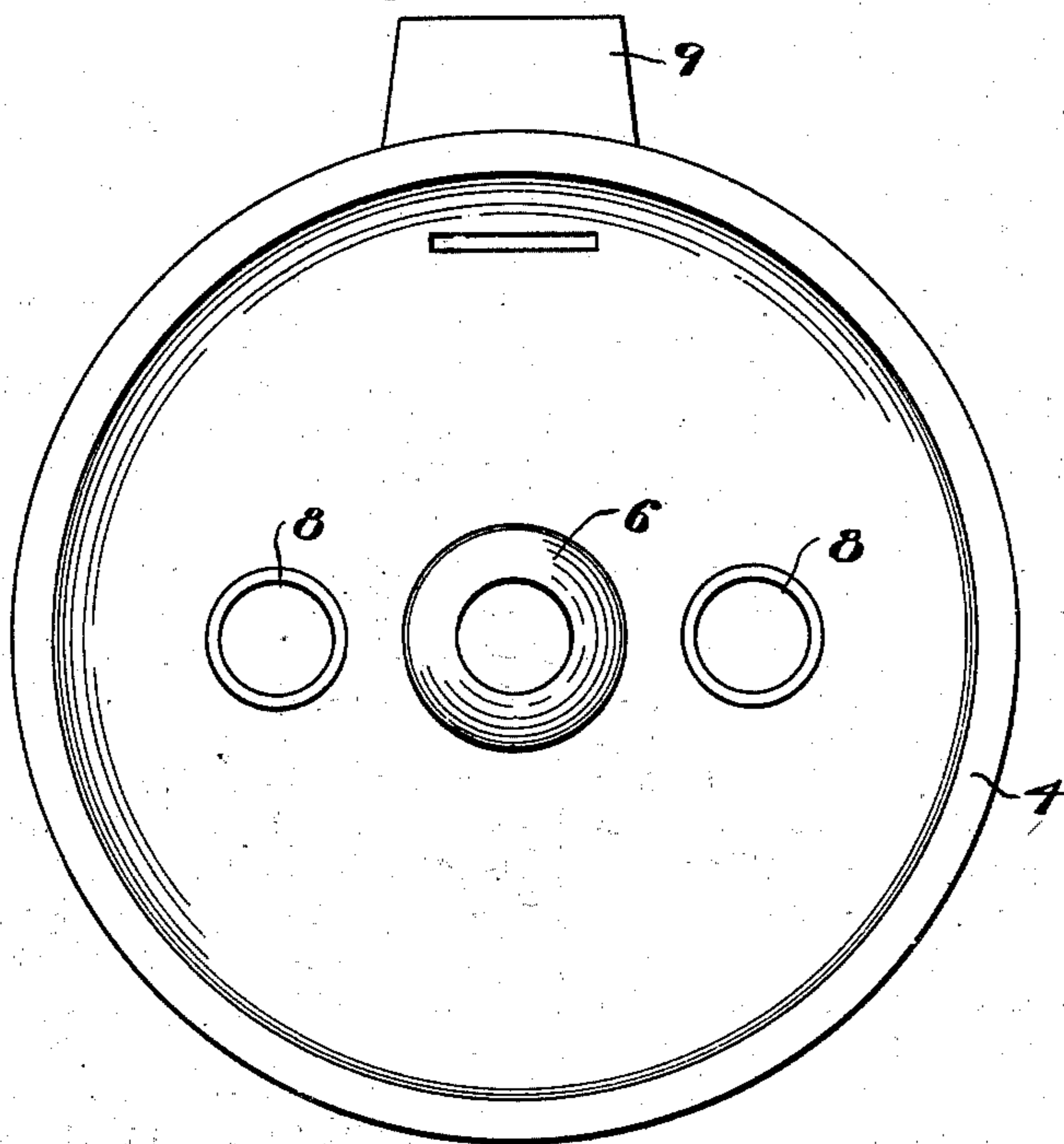
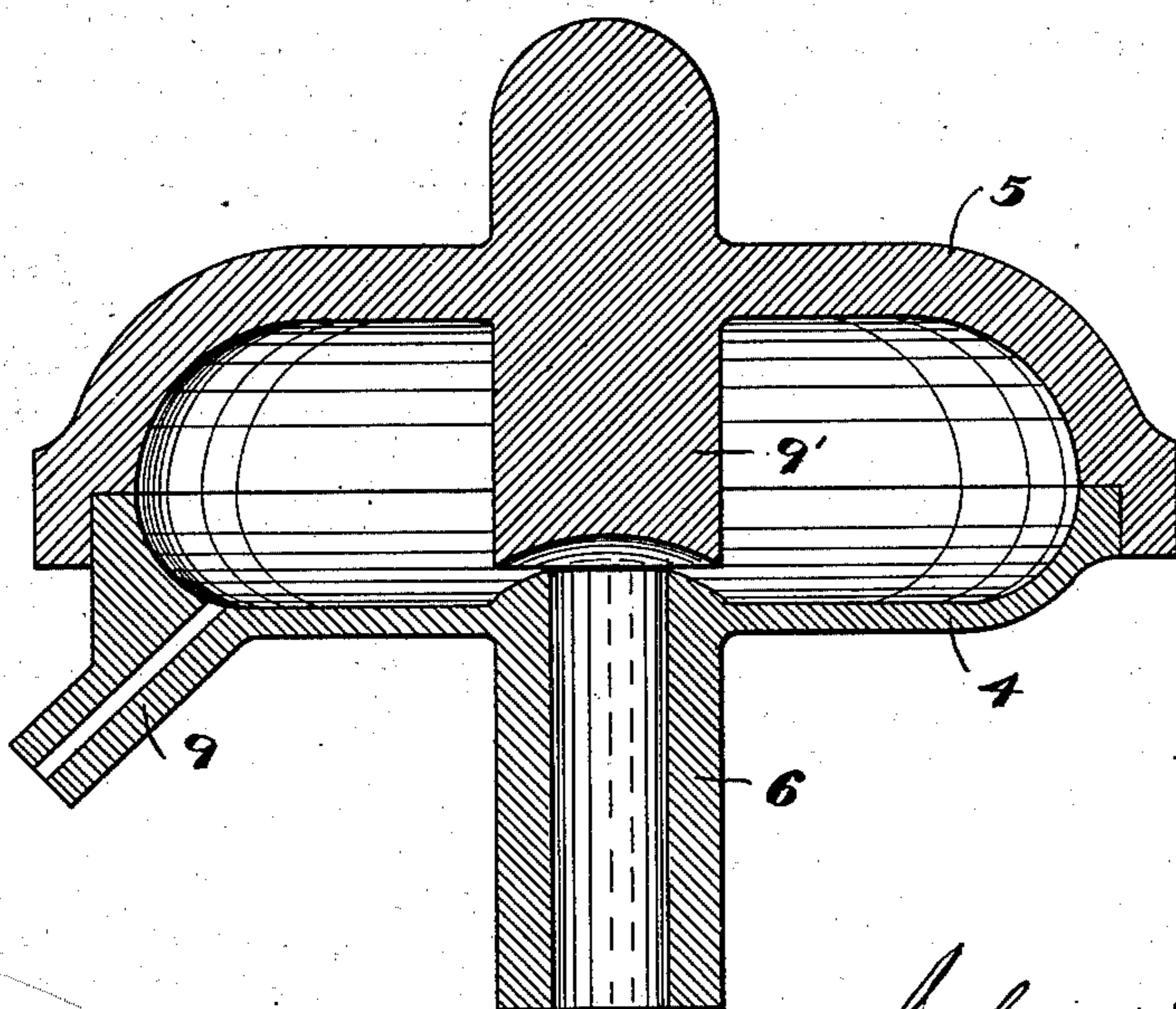


Fig. 4.



Witnesses,
St. James
Dudley Moss.

Inventor,
John H. Davis
Geo. H. Strong

UNITED STATES PATENT OFFICE.

JOHN H. DAVIS, OF OAKLAND, CALIFORNIA.

OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 748,267, dated December 29, 1903.

Application filed February 10, 1903. Serial No. 142,719. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. DAVIS, a citizen of the United States, residing in Oakland, county of Alameda, State of California, have
 5 invented an Improvement in Oil-Burners; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in apparatus for burning crude oils in stoves, furnaces, and the like. Its object is to provide a burner particularly adapted for use in stoves which is simple, cheap, clean, and safe and from which there is absent the usual disagreeable and alarming noises of puffing and
 15 muffled explosions noticeable in many of the burners of this class.

It consists of the parts and the construction and combination of parts hereinafter more fully described, having reference to the accompanying drawings, in which—

Figure 1 is a vertical section of burner in fire-box. Fig. 2 is a vertical section of burner at right angles to position of Fig. 1. Fig. 3 is a plan view of burner with cover removed.
 25 Fig. 4 is a section of a modification of burner.

A represents a plate horizontally disposed in and conformable in shape to the fire-box 2 of the stove or furnace in which the burner is to be located. The fire-box is provided
 30 with a suitable draft-opening in the front, as at 3.

In Fig. 1 the burner is shown as comprising a shallow pan or shell 4, suitably supported in the fire-box and having a loose-fitting heavy lid 5, whose function as a safety-valve will be again noted. A perforated stem 6, forming the oil-inlet, is cast integral with the shell and has one end projecting centrally above the bottom and the other end
 40 extending downwardly below the shell to connect with the oil-supply pipe 7. The shell, with its cover, constitutes a safety-generator in which the oil is volatilized and commingled with air induced through the pipes 8 to form
 45 a highly-inflammable vapor which escapes through one or more broad flat downwardly-inclined nozzles 9 in the shell and discharges in the front of the fire-box adjacent to draft-opening 3. The pipes 8 pierce the bottom of the generator on opposite sides of the oil-inlet, and their lower ends extend through and below plate A and are open to the outer atmos-

phere. Their upper ends project within the generator-chamber approximately the same distance above the bottom that the end of stem 6 does. The number and size of the
 55 air-pipes 8 may vary according to the size and requirements of the burner.

The lid 5 has a downwardly-extending central projection 9' in line with and opposed to the open end of the oil-inlet within the generator-chamber. The end of the projection is concaved, as shown, and forms a deflecting-hood and distributor for the oil and for the gas generated in the stem after the burner
 65 becomes heated. When the lid is in position, there is just sufficient space between the end of the projection and the oil-inlet to allow the oil and gas to pass freely on all sides into the generator.

The operation of the burner is very simple. At first a small quantity of oil is poured into the chamber 10 in plate A and lighted. The casing is quickly heated, and on the oil being turned on the gas formed by the volatilizing
 75 of the oil escapes through nozzles 9 and is ignited. The flame from the burning gas meeting the air entering through opening 2 swirls about the generator and thenceforth keeps the generator hot, and it is only necessary to properly regulate the flow of oil. The air induced through pipes 8 oxygenizes the oil-vapor to produce a highly-inflammable gas and to prevent carbonization within the generator. In the present case the air-feed is
 85 entirely automatic in its operation. No external-air pressure nor regulating means are required. The air is drawn in from outside the burner simply by the draft created according to the temperature of the generator.

Experience shows that with this burner as small or as large a flame may be had as desired. The flame burns as smoothly and quietly as a wood or coal fire. It may be turned as low as any gas-jet, and there is an
 95 entire absence of the intermittent flashing and pulsating noticeable often in burners of this class. These results are due in great measure to the proper admixture of air and oil and particularly to the disposition of the conical hood or deflector 9' over the oil-pipe, for it was found that if this part 9' were omitted or if the end were made straight and not
 100 concaved a disagreeable puffing and blowing

of the oil out through the pipe into the generator-chamber took place as the oil-pipe became heated.

The burner is absolutely safe, as the heavy lid rests loosely on the generator, so that any excess of pressure within the generator may seek and find immediate relief. The lid thus performs the function of a safety-valve and at the same time permits of ready access to the interior of the generator.

The size of opening 3 depends on the air-draft necessary to effect perfect combustion. The air-supply through this space may be regulated, if desired, by suitable damper means, not necessarily here to be shown.

In Fig. 4 I have shown a burner of even simpler construction in which I omit the internal-air-mixing pipes 8, which may be done under some circumstances with satisfactory results. In this case I depend for perfect combustion upon the indraft of air through opening 3, whereupon it is essential that the fire-box be otherwise entirely closed except for the usual flue-passages in the stove and that the nozzles be disposed well in the front and bottom of the fire-box. The bottom of pan 4 is made flat, and the nozzle opens into the bottom, as shown, so that any by-products forming in the generator will readily flow down through the nozzle, drop upon the plate A, and be consumed. The air entering through opening 3 meets the broad flat jet of gas from the nozzle well toward the front and bottom of the fire-box and commingles with it to form a highly-inflammable vapor, which when ignited is carried back beneath and around the generator and spread over and through the fire-box, heating the generator to a high temperature to volatilize the oil, heating an oven as satisfactorily as a wood fire, and giving a sootless flame.

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

1. The combination in an oil-burner, of a generator having a gravity-lid loosely resting thereon, an oil-supply pipe, and a hood or deflector depending from the inner wall of the lid and disposed in line above said oil-pipe,

and having a concaved end, said generator having a suitable vapor-discharge.

2. The combination in an oil-burner, of a generator having a loosely-fitting removable lid, an oil-supply pipe entering the bottom of said generator and terminating above the floor thereof, a hood or deflector integral with and extending inwardly from the center of said lid and disposed over the end of said oil-pipe and having a concaved lower end, and said generator provided with vapor-outlets.

3. The combination in an oil-burner, of a generator provided with a removable cover, a perforated stem integral with said shell adapted as an oil-inlet and having one end projecting within the generator and the other end extending below the generator, and a flat nozzle extending downwardly from one side of said generator.

4. The combination with the combustion-chamber of a stove or furnace, of a plate disposed horizontally of said chamber, a generator provided with a removable cover portion and supported above said plate, an oil-inlet pipe entering the generator, a broad flat vapor-discharge nozzle extending downwardly from the front of the generator into juxtaposition with an air-draft opening in the front of the fire-box whereby the vapor so discharged is met by and commingled with the indraft through said opening to be carried thence beneath the generator and over and through the fire-box.

5. The combination of a stove or furnace having an air-inlet; an oil-burner in the fire-box and including a generator having a gravity-lid which forms a part of the generating-chamber and serves as a safety-vent therefor, a vapor-outlet disposed in the path of the air-current entering through said air-inlet; means for admitting oil to the generating-chamber; and a deflector within the generator-chamber in the path of the oil admitted thereto.

In witness whereof I have hereunto set my hand.

JOHN H. DAVIS.

Witnesses:

S. H. NOURSE,
JESSIE C. BRODIE.