

No. 751,249.

PATENTED FEB. 2, 1904.

A. B. BLACKBURN.
HYDROCARBON BURNER.

APPLICATION FILED MAY 2, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

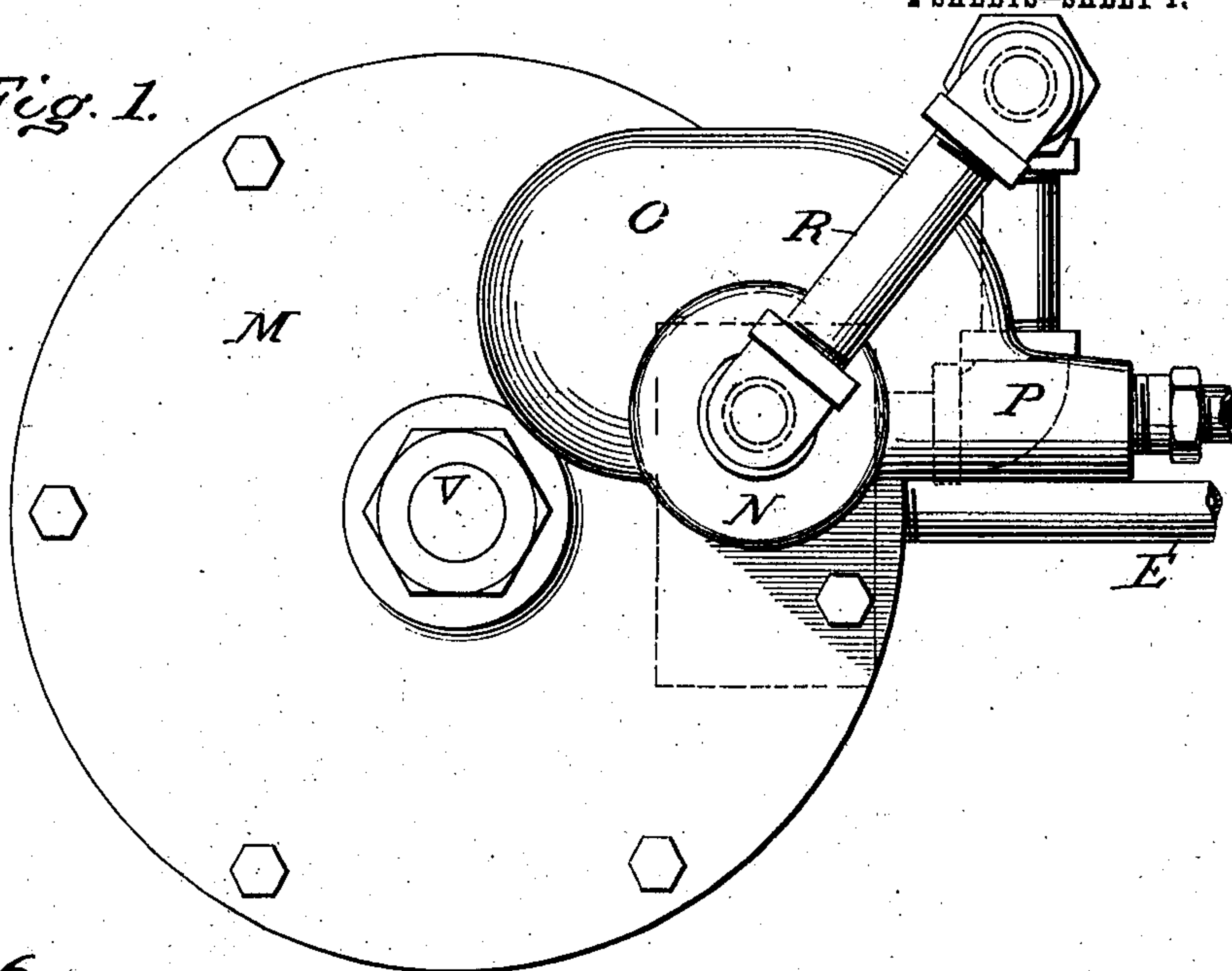


Fig. 6

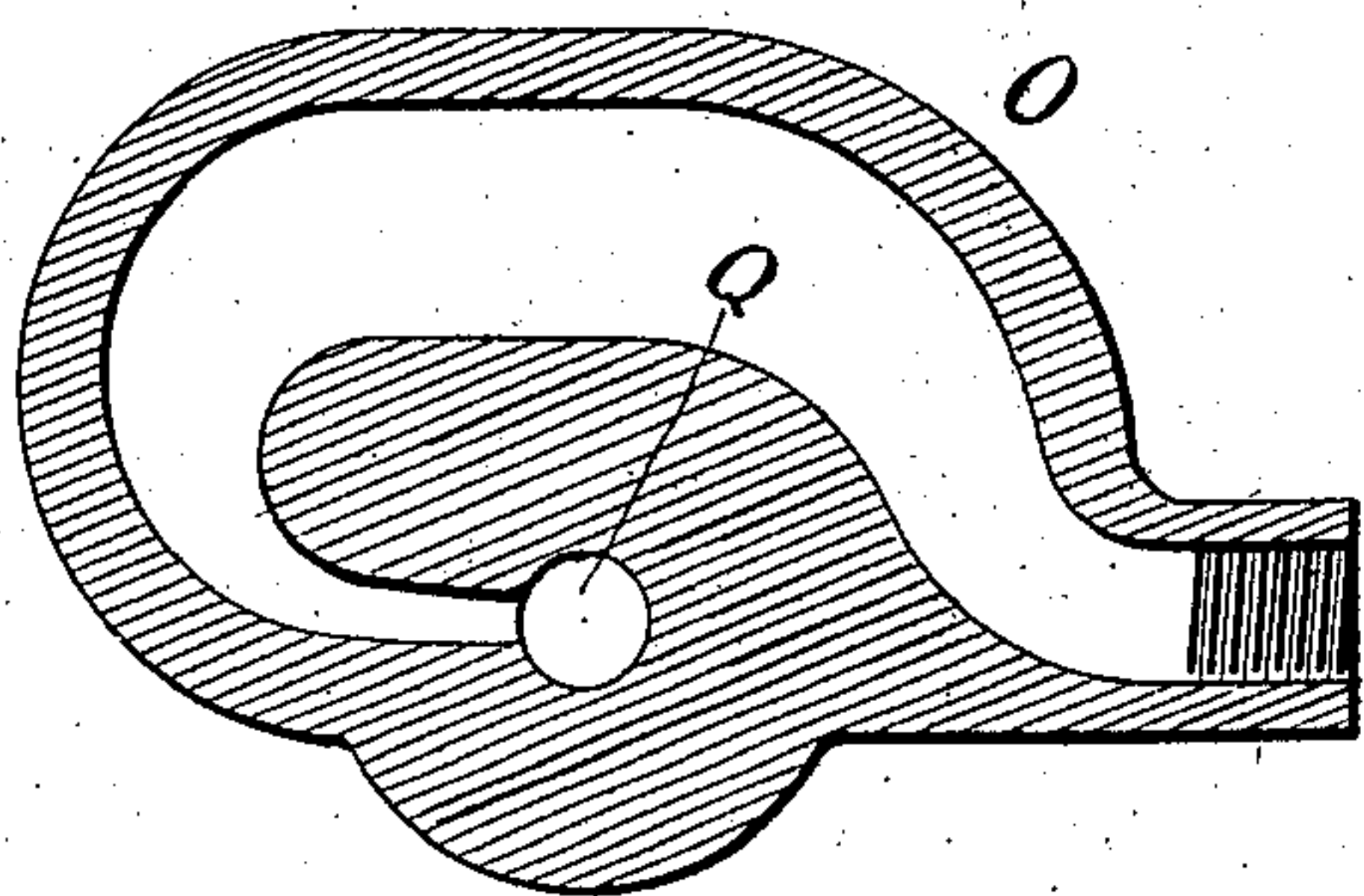
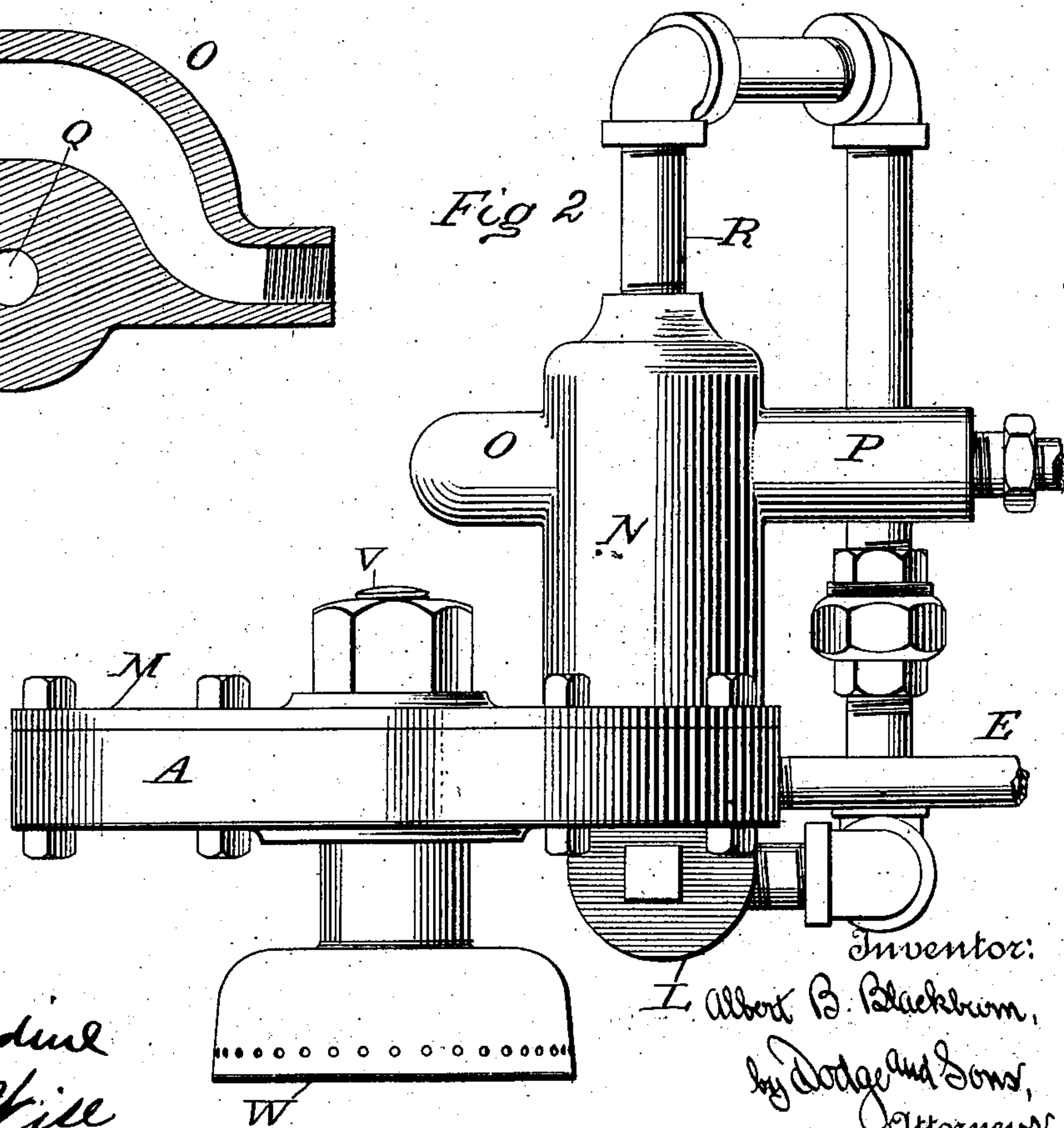


Fig. 2



Witnesses
D. E. Bardin
Fannie Will

Inventor:
A. B. Blackburn,
by Dodge and Sons,
Attorneys

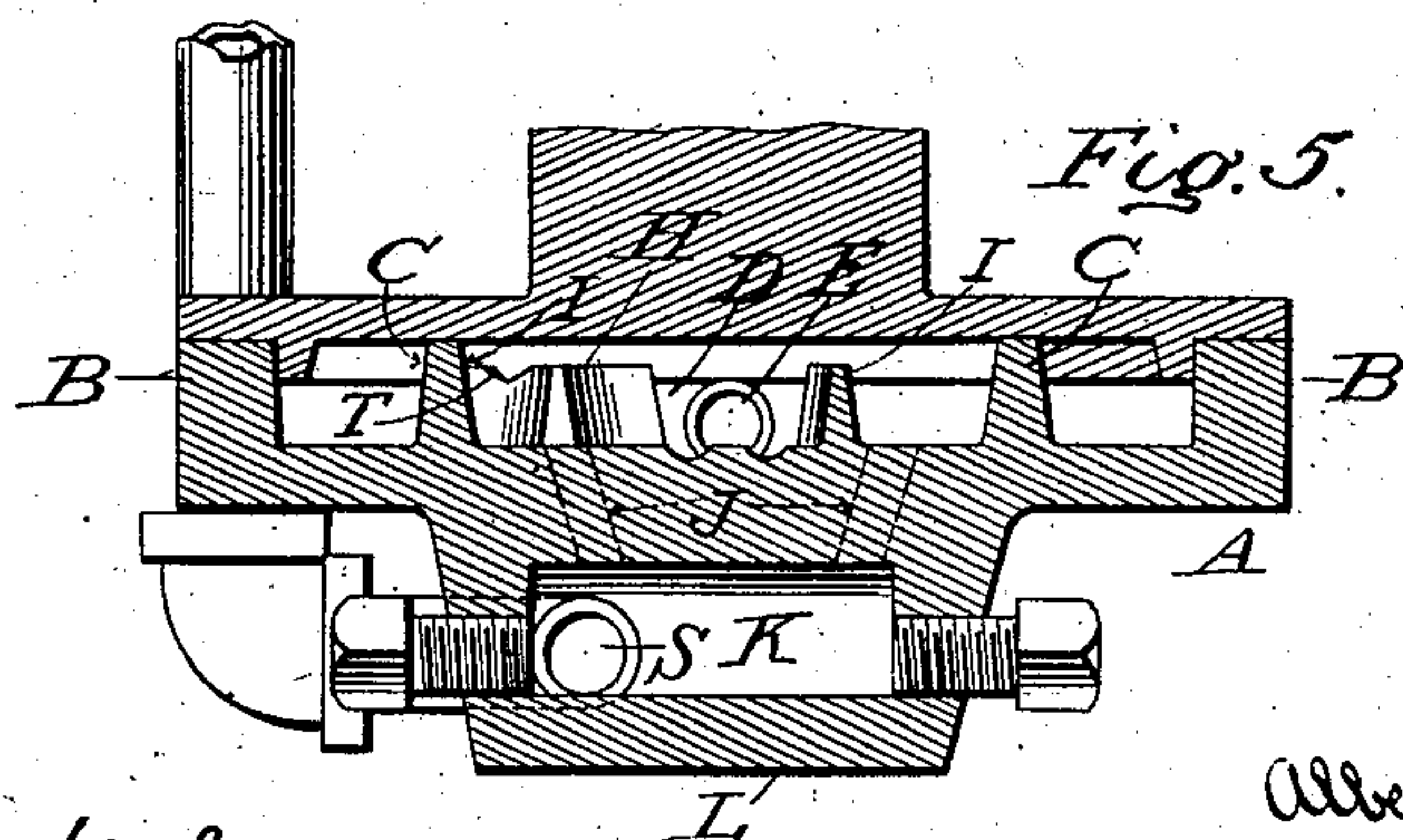
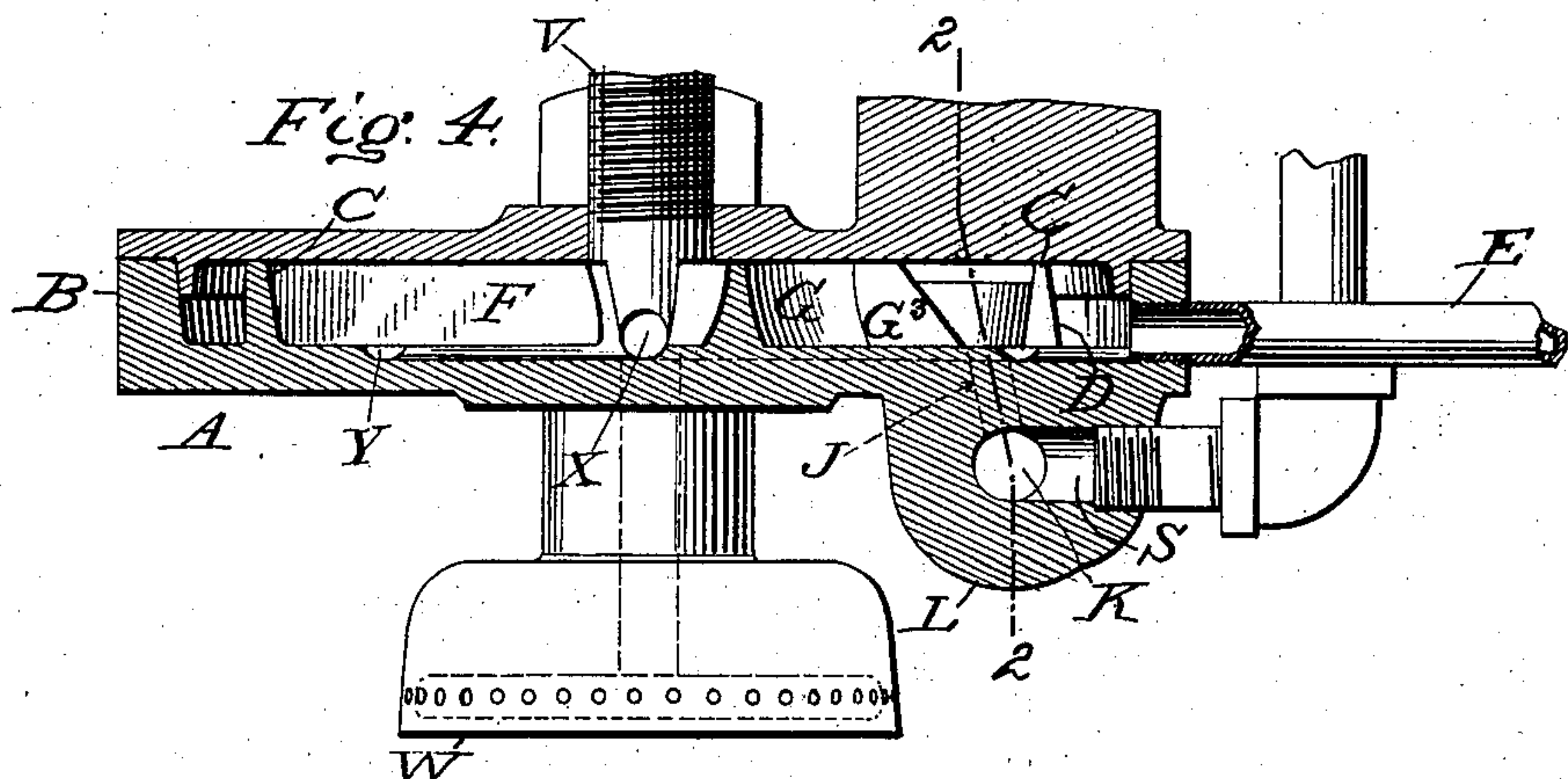
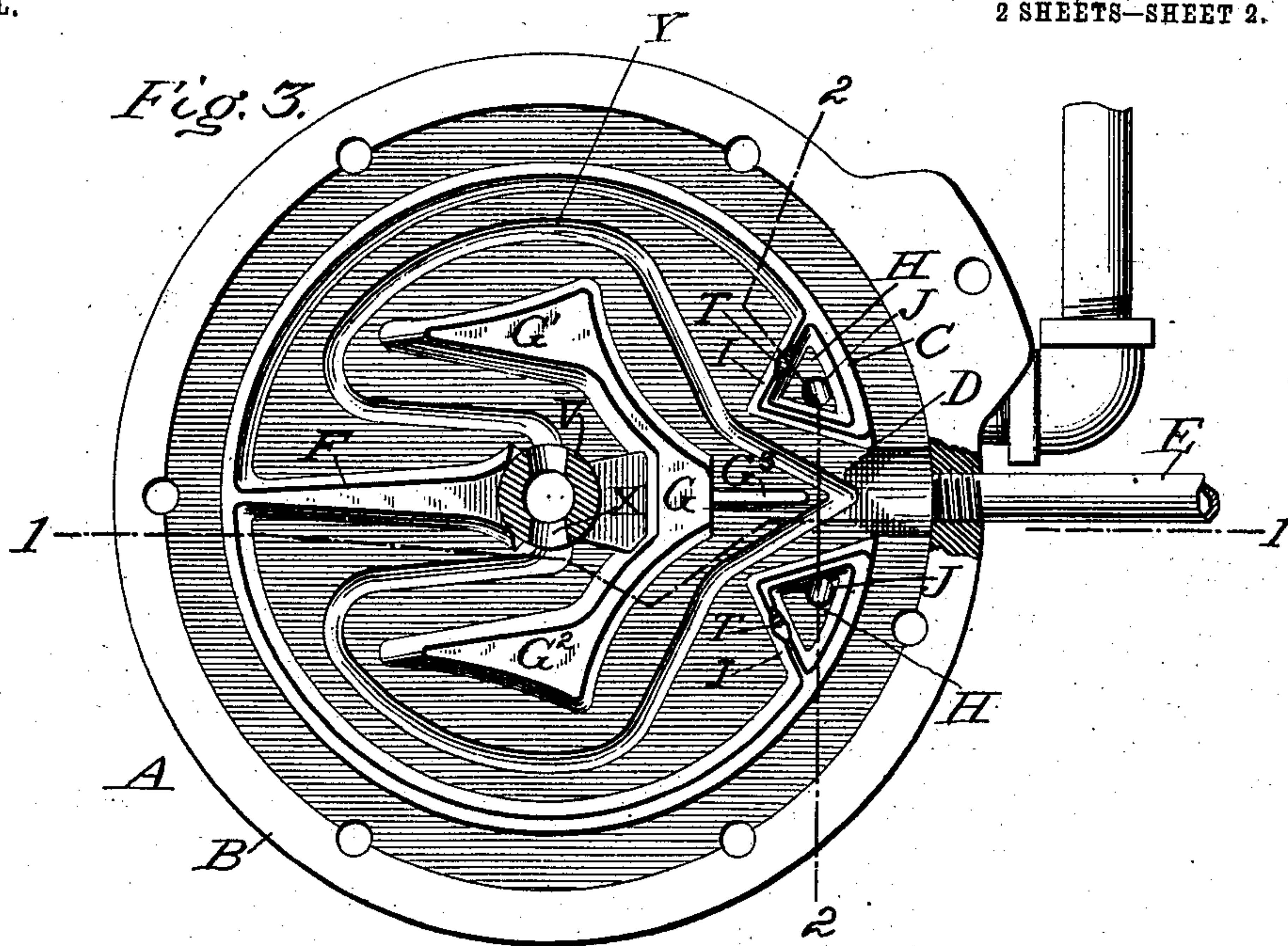
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Witnesses
D. C. Burdine
Fannie Wile.

Inventor:
Albert B. Blackburn,
by Dodge and Sons,
Attorneys

UNITED STATES PATENT OFFICE.

ALBERT B. BLACKBURN, OF SPRINGFIELD, OHIO.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 751,249, dated February 2, 1904.

Application filed May 2, 1903. Serial No. 155,332. (No model.)

To all whom it may concern:

Be it known that I, ALBERT B. BLACKBURN, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification.

My present invention pertains to improvements in hydrocarbon-burners, the construction and advantages of which will be hereinafter set forth, reference being had to the annexed drawings, wherein—

Figure 1 is a top plan view of the burner; Fig. 2, a side elevation of the same; Fig. 3, a top plan view of the retort, the cover-plate being removed; Fig. 4, a vertical sectional view taken on the line 1 1 of Fig. 3; Fig. 5, a sectional view taken on the line 2 2 of Figs. 3 and 4, and Fig. 6 a horizontal sectional view of the water receiving and vaporizing chamber.

The object of my present invention is to produce a simple and effective burner in which the hydrocarbon is vaporized and intimately mixed with steam, which is likewise generated by the burner. In other words, the water and hydrocarbon are introduced into the device, the water being transformed into steam and the hydrocarbon into gas. The steam and gas are then intimately mixed, passed to the burner, and there ignited.

Referring to the drawings, A denotes the body or base portion of the retort, provided with an upstanding rim or collar B at its periphery and with an inner wall or collar C, which latter, however, is not continuous, but is broken away to form an opening D, Figs. 3 and 4, in line with the oil-inlet pipe E. The base or body portion A is provided with a central aperture, and a rib F extends from the wall C to the edge of said aperture. Extending upwardly from the bottom of the body A is a second rib or flange G, having diverging fingers G' G², which project outwardly to each side of the rib or flange F. Rib G is also provided with a finger G³, which extends outwardly therefrom in the direction of the opening D, said finger serving to divide the inflowing stream of oil or vapor, causing it to pass equally into the two cir-

cuitous passages formed by the wall C, the fingers G' G², and the rib F.

At each end of the wall C, adjacent to the opening D, is a triangular space or chamber H, formed by said wall and an upstanding flange or rib I. An opening or passage J leads from each space H to a common channel K, formed in a boss or projection L, extending downwardly from the member A.

The upper or cover plate M is provided with an upwardly-extending column N, which has formed integral with it a steam-generating chamber or boiler O, cored out, as shown in Fig. 6. The outer end of said chamber is connected with a water-supply pipe P, while the inner end thereof discharges into an opening or passage Q, which extends to the upper end of the column and is there connected with a pipe R, which in turn is extended downwardly and connects with an opening S, formed in the boss L and communicating with the channel K. The ribs I are, as will be seen upon reference to Figs. 3 and 5, each provided with a port or opening T in line with the circuitous passages heretofore referred to. When the cover-plate M is in position, its downwardly-extending flange U makes a close fit with the inner face of the upstanding rim or collar B, and the under face of the cover-plate also fits closely upon the wall C and the ribs F, G, and I, so that the steam and vaporized oil must of necessity pass through the circuitous passages on their way to the burner. In order to properly secure the cover-plate and the body portion together, bolts are passed through the outer portions of said members. The cover-plate is provided with an opening in line with the opening formed in the body portion A, and the reduced threaded stem V of the burner W is passed through said openings, a nut being secured upon said threaded end. The shoulder or enlarged portion of the burner bears against the under face of the body A, and as the nut is screwed into position the construction just described tends to draw the cover-plate closely to its seat upon the base. The lower portion of the stem of the burner is made hollow, and two laterally-extending openings X

formed therein (see Figs. 3, 4, and 5) afford communication between the burner and the interior of the retort. A groove or channel Y is formed in the upper face of the body of the retort and extends from the opening D to each of the openings X in the burner-stem, so that any unvaporized particles of oil will collect in the groove and be retarded in their flow to a certain extent, thus allowing time for them to become vaporized.

The action of the burner above described is as follows: A small amount of oil is permitted to pass through the retort to the burner, where it is ignited in order to prime the burner, as is usual. When it has become heated sufficiently to vaporize the oil, the supply thereof is cut down and water admitted to the generating-chamber O. The steam generated therein passes through the pipe R into the chambers H, thence to the ports or openings T, through which it is ejected with considerable force and commingled with the vaporized oil which passes in through the pipe E, the oil of course being more or less vaporized immediately it enters the retort through said pipe. By reason of the formation of the rib G, which projects slightly into the path of the steam-jets, the steam and vaporized oil are thoroughly commingled, and a highly-combustible mixture is thereby formed, said mixture being perfected by the time the steam and oil have reached the burner-stem and passed into the openings X on the way to the burner.

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

1. In combination with a retort having a channel, oil and steam inlets and an outlet; diverging fingers located on opposite sides of the oil-inlet; and a dividing-finger projecting beyond the oil-inlet and serving to divide the incoming stream of oil or vapor.

2. In a vapor-burner, the combination of a retort having channels formed therein and provided with an oil-inlet; and means to divide the oil and cause it to pass equally into the channels, each of said channels communicating with a steam-inlet.

3. In a vapor-burner, the combination of a retort having a central discharge-opening and an oil-inlet located at one side thereof, said retort having likewise circuitous passages extending from said oil-inlet to the discharge-opening; means for introducing steam into said passages adjacent to the oil-inlet; and means, located in line with the oil-inlet, for dividing the incoming oil and causing it to pass equally into the circuitous passages, substantially as described.

4. In a vapor-burner, the combination of a base-plate having a central opening and pro-

vided with a wall C extending approximately around the base-plate; a rib F extending from said wall to a point adjacent to the central opening; a rib G extending upwardly from the base-plate and provided with diverging fingers; a dividing-finger G³ in line with an oil-inlet; and steam-chambers H arranged adjacent to the oil-inlet and having openings extending therefrom in line with the circuitous passages formed by the wall, fingers and ribs, substantially as described.

5. In a vapor-burner, the combination of a retort having circuitous passages formed therein and an oil-inlet; a generating-chamber mounted upon the upper portion of the retort; a pipe extending from said chamber and communicating with openings formed in line with the circuitous passages and adjacent to the oil-inlet, substantially as described.

6. In combination with a retort provided with steam and oil inlets, and with a discharge-opening; channels formed in the retort in line with said openings; a hollow stem fitting into said retort and provided with lateral openings in line with the channels; a burner carried by said stem; and means, located in line with the oil-inlet, for causing the oil to pass equally into the channels.

7. In combination with a retort, a burner having its stem extended upward through the retort; and a nut applied to the upper end of the stem, substantially as and for the purpose described.

8. The combination with a retort, a burner having its stem extended upwardly through the retort and shouldered beneath the same; and a nut applied to the upper end of the stem.

9. In combination with the base A, a cover-plate therefor, said parts being provided with openings in alinement with each other; a shouldered hollow stem passed through said openings and provided with a nut at its upper end and with lateral openings; and a burner carried by the lower end of said stem and communicating with openings formed therein, which openings are in turn in communication with the interior of the retort, formed by the base and the cover-plate.

10. In a vapor-burner, the combination of a suitable retort having a passage formed therein for conducting vaporized oil from the inlet to the discharge opening, said passage having a channel or groove formed in the lower wall thereof, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALBERT B. BLACKBURN.

Witnesses:

H. S. SHOWERS,
W. H. BRYANT.