

No. 751,968.

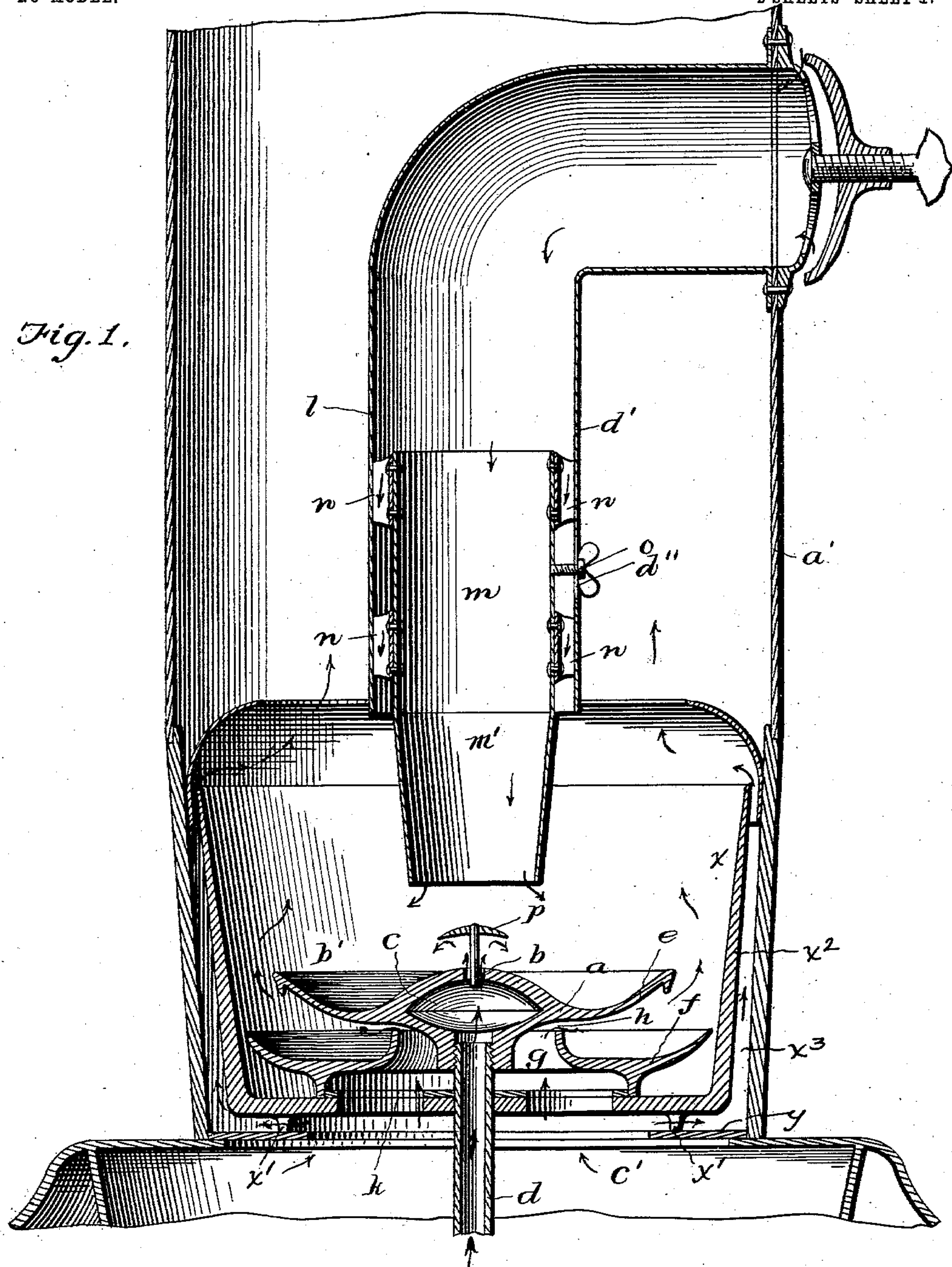
PATENTED FEB. 9, 1904.

G. N. WOLF.
HYDROCARBON BURNER.

APPLICATION FILED JAN. 20, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

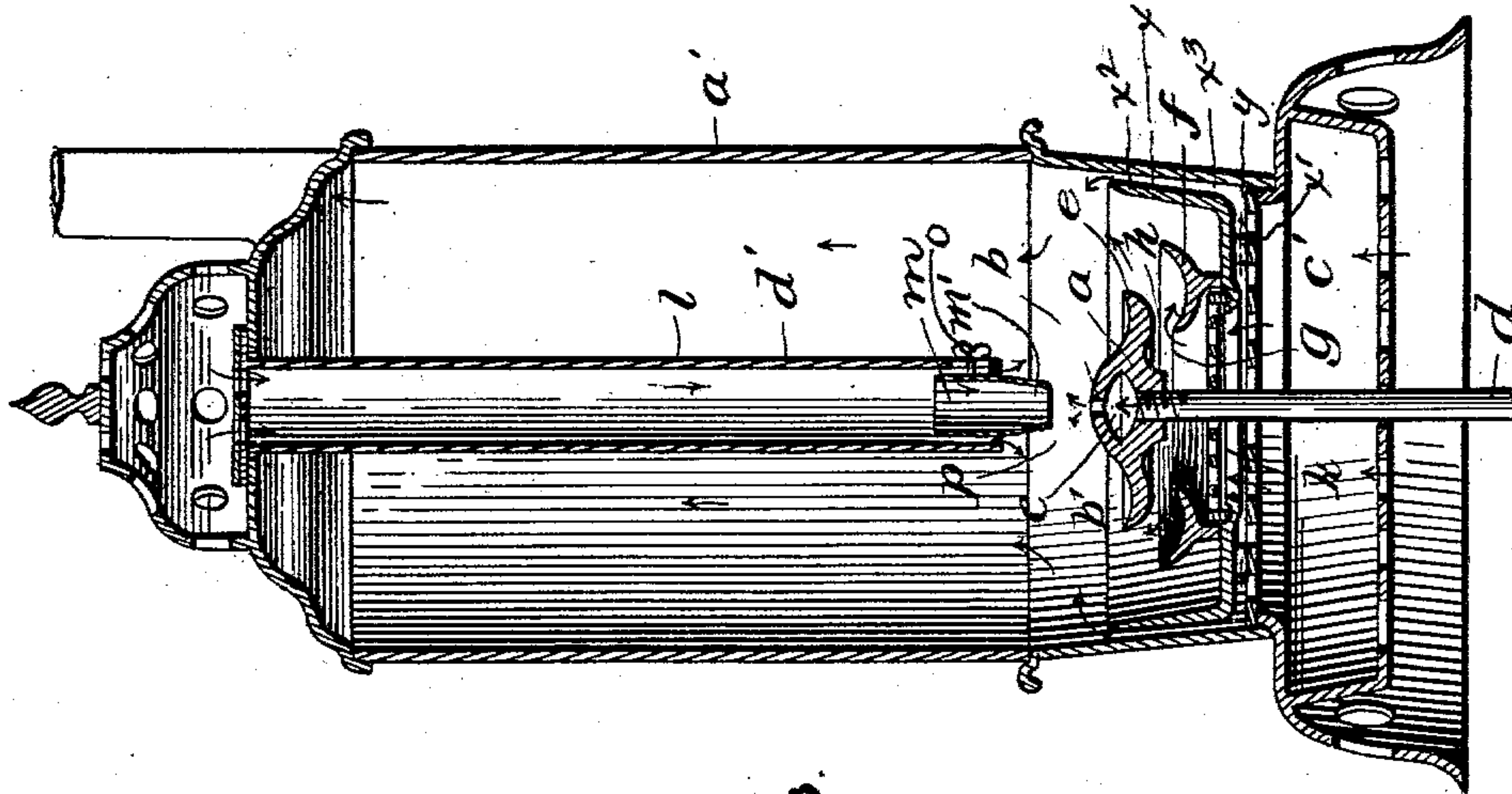


Fig. 3.

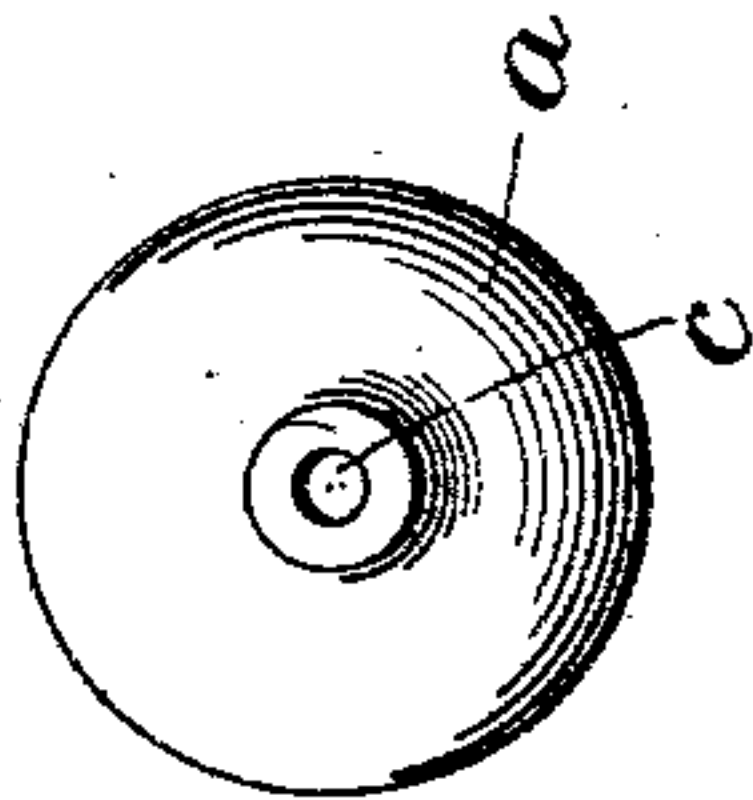


Fig. 4.

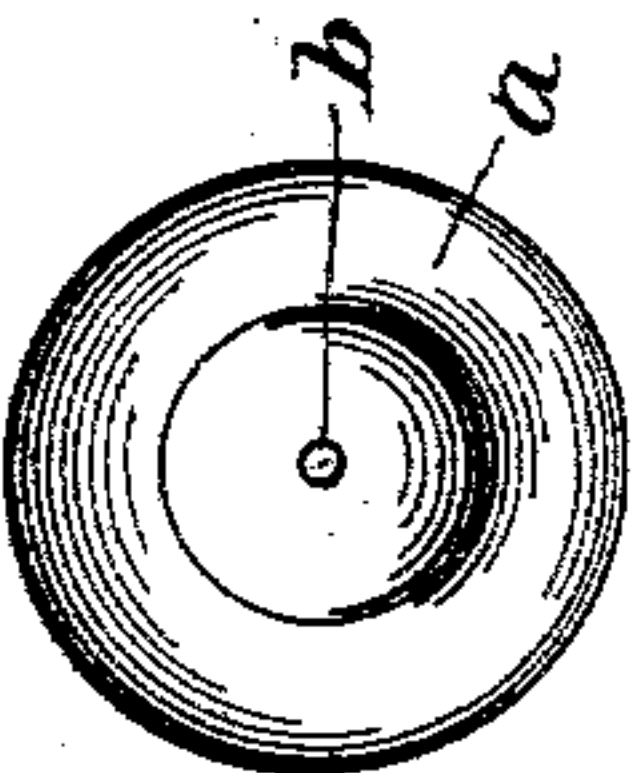


Fig. 5.

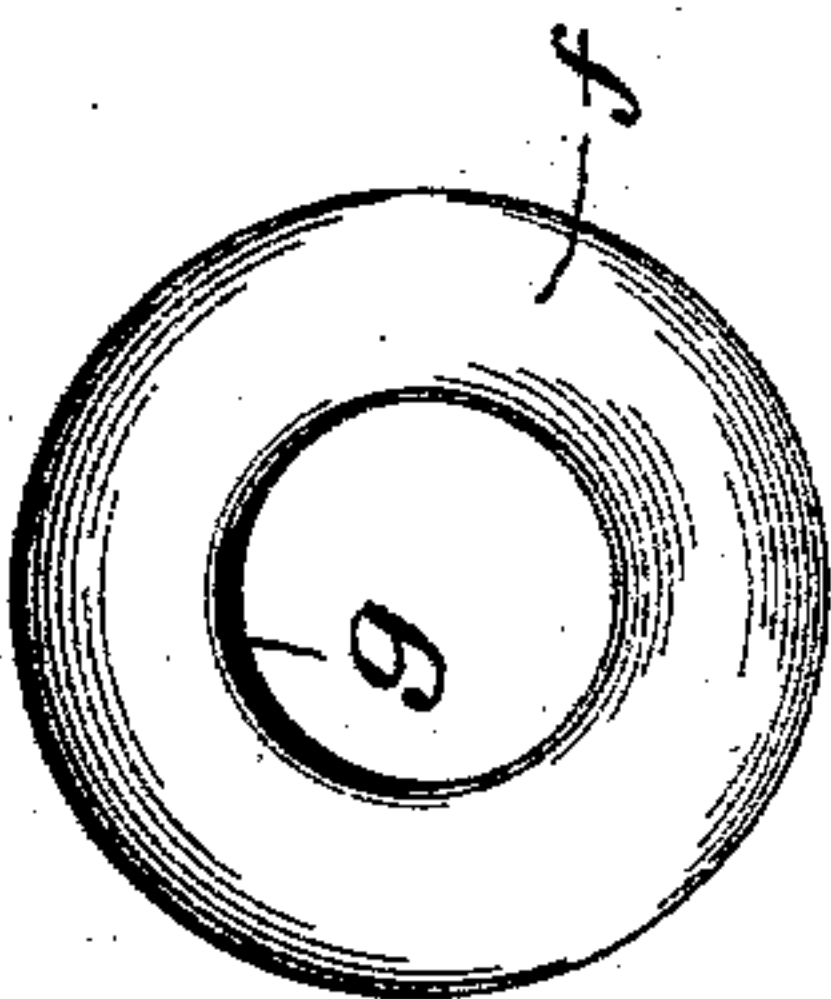


Fig. 6.

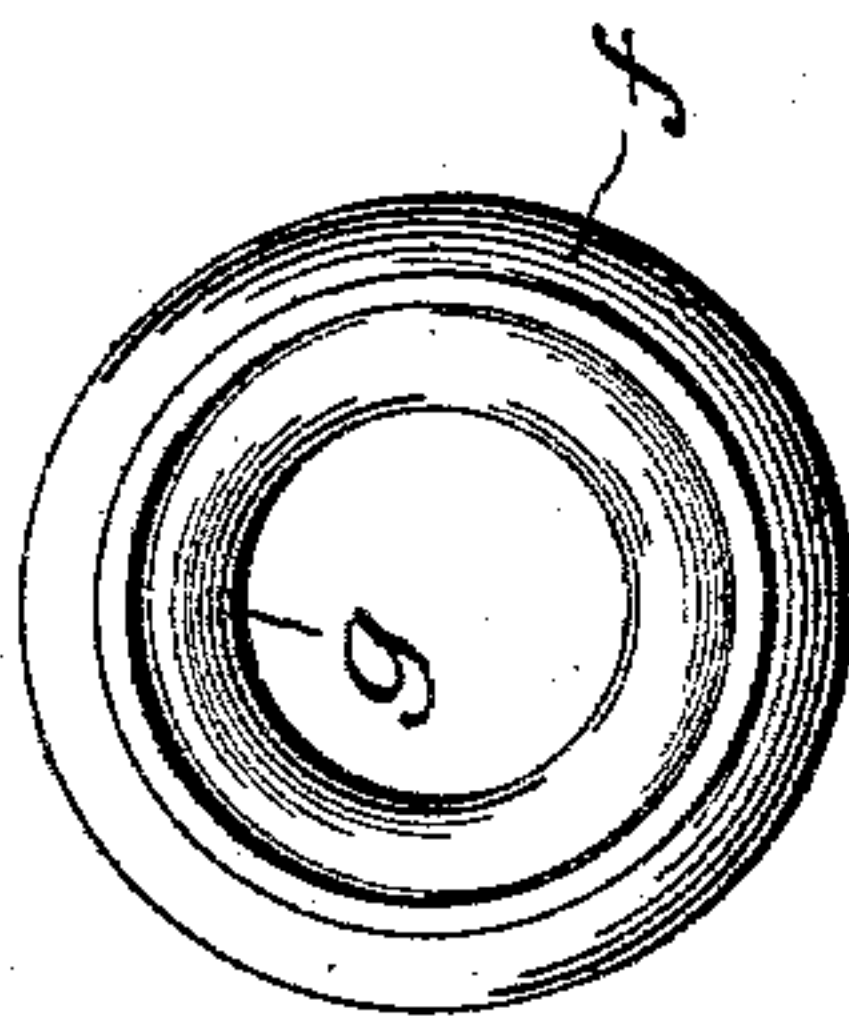


Fig. 7.

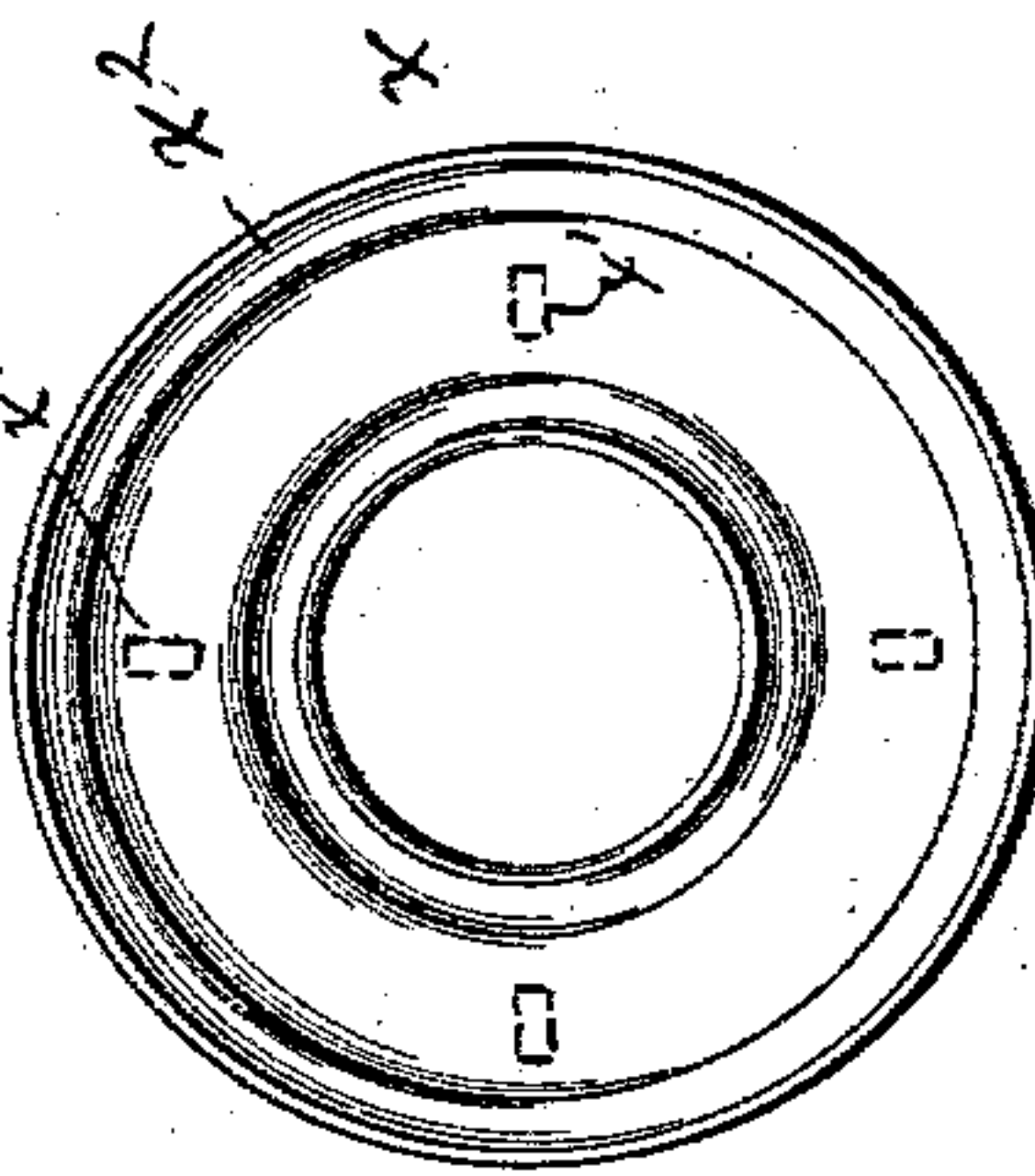
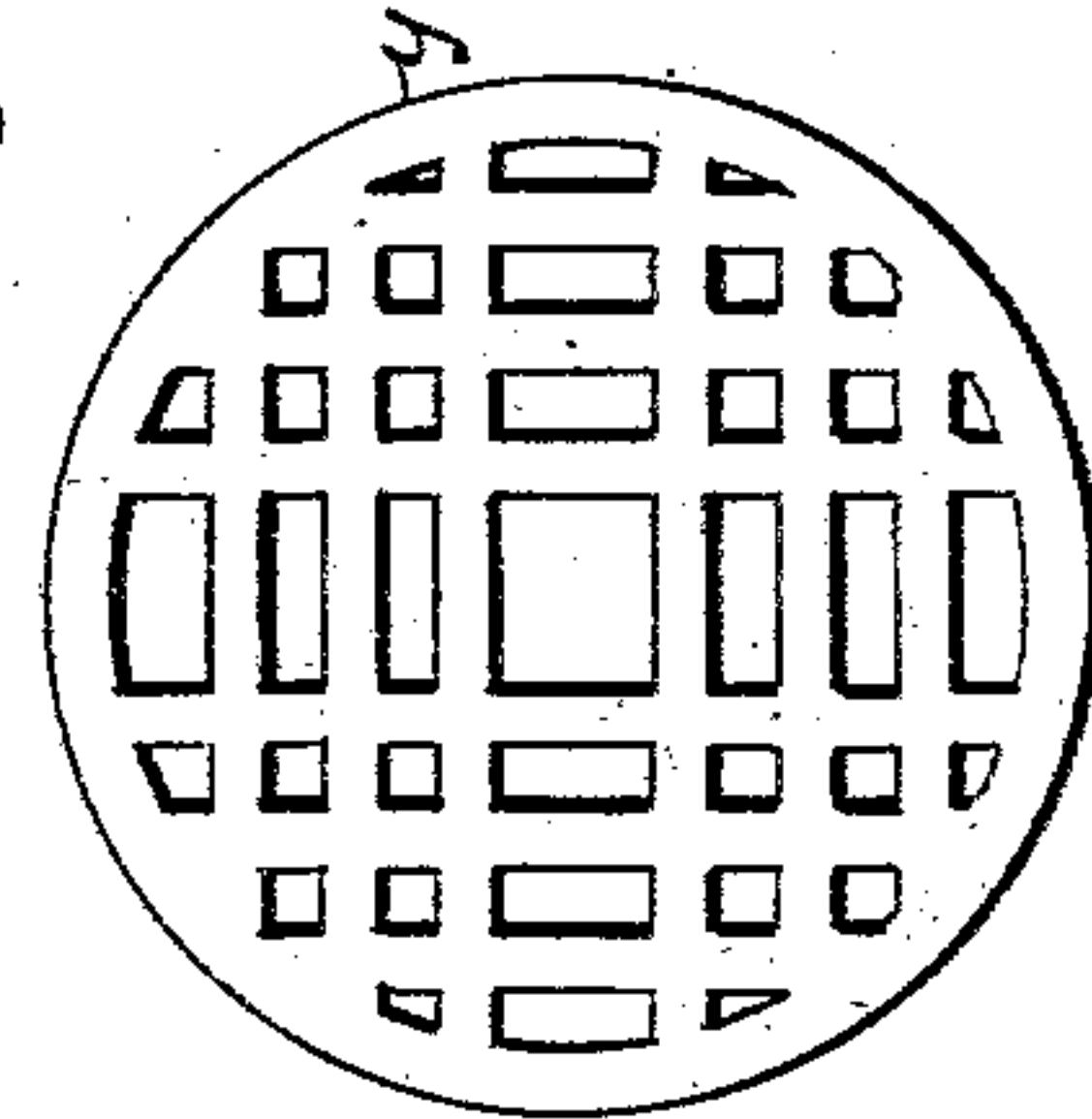


Fig. 8.



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UNITED STATES PATENT OFFICE.

GEORGE N. WOLF, OF ANDERSON, INDIANA.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 751,968, dated February 9, 1904.

Application filed January 20, 1903. Serial No. 139,868. (No model.)

To all whom it may concern:

Be it known that I, GEORGE N. WOLF, a citizen of the United States, and a resident of Anderson, in the county of Madison and State of Indiana, have made a certain new and useful Invention in Hydrocarbon-Burners; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the invention, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a central longitudinal vertical section of my invention as applied to one form of stove. Fig. 2 is a similar view, on a smaller scale, of the invention as applied to a different form of stove. Figs. 3 and 4 are detail bottom and top plans of plate *a*. Figs. 5 and 6 are detail bottom and top plans of plate *f*. Fig. 7 is a detail top plan view of fire-pot or plate *x*. Fig. 8 is a detail plan view of grating *y*.

The invention has relation to hydrocarbon-burners designed for use with crude or refined oil; and it consists in the novel construction and combinations of parts, as hereinafter set forth.

In the accompanying drawings, illustrating the invention, the letter *a*' designates a portion of a stove; *b*', the burner; *c*', the lower ventilator or air-inlet, and *d*' the tubular downdraft for air.

The burner comprises a convex burner-plate *a*, having one or more jet-openings *b* for the escape of the oil or vapor, said plate having a chamber *c* for holding and vaporizing the oil, usually below the jet-openings, which are made through the top of said chamber. A pipe *d*, leading from a supply can or reservoir of oil to the jet-chamber, serves to feed the oil by gravity to the burner. The burner-plate is formed with a concave flange *e* around the jet portion, said flange having a concave bottom usually and serving to receive the first overflow of oil when the burner is being started in operation. Under the flange of the burner-plate is a concave overflow skirting-plate *f*, extending outward beyond the burner-flange and having an opening in its middle portion,

as at *g*, above which the burner-plate *a* is supported by the pipe *d* or by projections of the overflow skirt-plate or by other device, passages *h* being, however, left between the burner-flange and the skirt-plate for the under supply of air, which being admitted as may be required through a register-plate *k* passes upward between said skirt-plate and the flange of the burner-plate to the outward flow of flame at the rim of the burner-plate. An outside fire-pot plate *x* is also provided, being supported by an inturned flange or a grating *y* upon lugs *x'* thereof and supporting in turn the register-plate *k* and the burner proper. This plate *x* has an upturned flange *x*², surrounding the burner and separated from the side walls of the stove by a narrow passage *x*³. Above the jet or jets of the burner is provided a downdraft-tube *l* for the main supply of air, which is admitted through openings or through a register in the upper portion or side of the stove-casing and which is drawn down under the operation of the burner to mix with the vaporized oil from the jet. When the burner is in operation, this downdraft-tube is highly heated by the flames from the burner, and the air drawn down through the same is raised to a high temperature, forming a sort of hot blast, which is designed to aid materially in effecting the complete combustion of the oil and vapor and giving an outward spread to the flame, bringing the same in powerful contact with the walls of the stove or heater.

Usually the lower end of the downdraft-tube is provided with a sliding sleeve *m*, which can be adjusted to suit the working of the burner, this device, together with the upper and lower air-inlet registers, serving to control the draft and consequent combustion in such a manner as to avoid smoke and otherwise produce a satisfactory effect. The sleeve *m* has a converging lower end *m'* adjacent to the burner and is provided with guides *n*, whereby it is spaced from the downdraft-tube. It is held to the position to which it may be adjusted by means of a winged screw *o*, working through a slot *d''* in the downdraft-tube. A spreader-piece *p* may be supported above the jet-openings to spread the

vapor just below the lower end of the down-draft-pipe, but is not essential.

Several of these burners may be arranged in series in connection with an oil-supply and
5 with an air-pipe carrying downdraft-tubes in such a manner that it is adapted for use in a long furnace or under a boiler.

The downdraft-tube and the concave burner-plate below it cause a powerful outward move-
10 ment of the flames and heat.

The smooth upper surface of the concave burner permits the ready removal of the accumulations of carbon or soot and other foreign substances.

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

1. A hydrocarbon-burner comprising a convex burner-plate having an oil-chamber, a jet-
20 opening and a concave flange, an oil-supply pipe connected with the oil-chamber and a concave skirt-plate of larger diameter than the burner-plate, surrounding the oil-supply pipe and spaced from the burner-plate and
25 providing air-passages between the burner-plate and the skirt-plate.

2. A hydrocarbon-burner comprising a convex burner-plate having an oil-chamber, a jet-
30 opening, and a concave flange, a spreader supported above the jet-opening, an oil-supply pipe connected with the oil-chamber, and a concave skirt-plate surrounding the oil-supply pipe and spaced from the burner and providing air-passages between the burner-plate
35 and the skirt-plate.

3. A hydrocarbon-burner comprising a convex burner-plate having an oil-chamber, a jet-
40 opening, and a concave flange, an oil-supply pipe connected with the oil-chamber, a concave skirt-plate surrounding the oil-supply pipe and spaced from the burner-plate and providing air-passages between the burner-plate and the skirt-plate, and the fire-pot having a central opening and within which the burner-
45 plate and skirt-plate are located.

4. A hydrocarbon-burner comprising a convex burner-plate having an oil-chamber, a jet-
50 opening, and a concave flange, a concave skirt-plate surrounding the oil-supply pipe and spaced from the burner-plate, the fire-pot having a central opening and within which the burner-plate and skirt-plate are located, and

the register seated on the fire-pot beneath the skirt-plate.

5. A hydrocarbon-burner comprising a
55 burner-plate having an oil-chamber and a jet-opening from the oil-chamber through the burner-plate, a central downdraft-pipe, a sleeve adjustable in the central downdraft-pipe, over the jet-opening and an oil-supply pipe con-
60 nected with the oil-chamber beneath the jet-opening.

6. A hydrocarbon-burner comprising a burner-plate having an oil-chamber and a jet-
65 opening from the oil-chamber through the burner-plate, a central downdraft-pipe, a sleeve having a converging end and adjustable in the central downdraft-pipe over the jet-opening, and an oil-supply pipe connected with the oil-chamber beneath the jet-opening.
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7. A hydrocarbon-burner comprising a burner-plate having an oil-chamber, and a jet-
opening from the oil-chamber through the burner-plate, a central downdraft-pipe, a sleeve
75 provided with guides whereby it is spaced from the central downdraft-pipe and adjustable in the latter over the jet-opening, means for retaining the sleeve to its adjustment and an oil-supply pipe connected with the oil-chamber be-
80 neath the jet-opening.

8. A hydrocarbon-burner comprising a burner-plate having an oil-chamber, and a jet-
opening from the oil-chamber through the burner-plate, a central downdraft-pipe, a sleeve
85 adjustable in the central downdraft-pipe, over the jet-opening, an oil-supply pipe connected with the oil-chamber beneath the jet-opening, and a skirt-plate surrounding the oil-supply pipe and spaced from the burner-plate and providing air-passages between the burner-plate
90 and the skirt-plate.

9. A hydrocarbon-burner comprising a burner-plate having a concave flange, an oil-
chamber and a jet-opening, a concave skirt-plate, spaced from the burner-plate and pro-
95 viding air-passages between the burner-plate and the skirt-plate, and an adjustable downdraft-pipe above the jet-opening.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE N. WOLF.

Witnesses:

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LEE H. BRONNENBERG.