

No. 614,801.

Patented Nov. 22, 1898.

J. C. DUPEE.

OIL BURNER.

(Application filed Oct. 22, 1897.)

(No Model.)

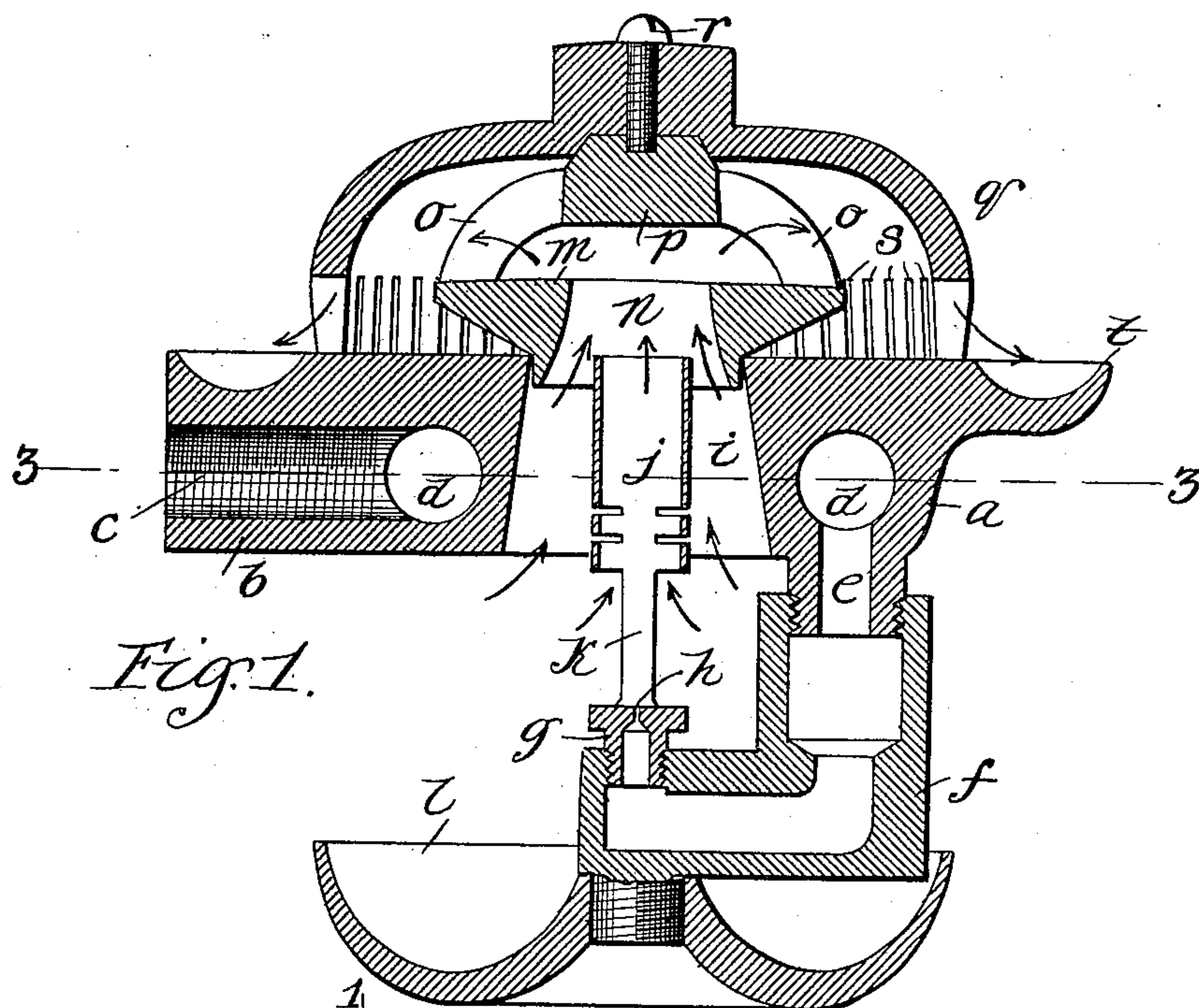


Fig. 1.

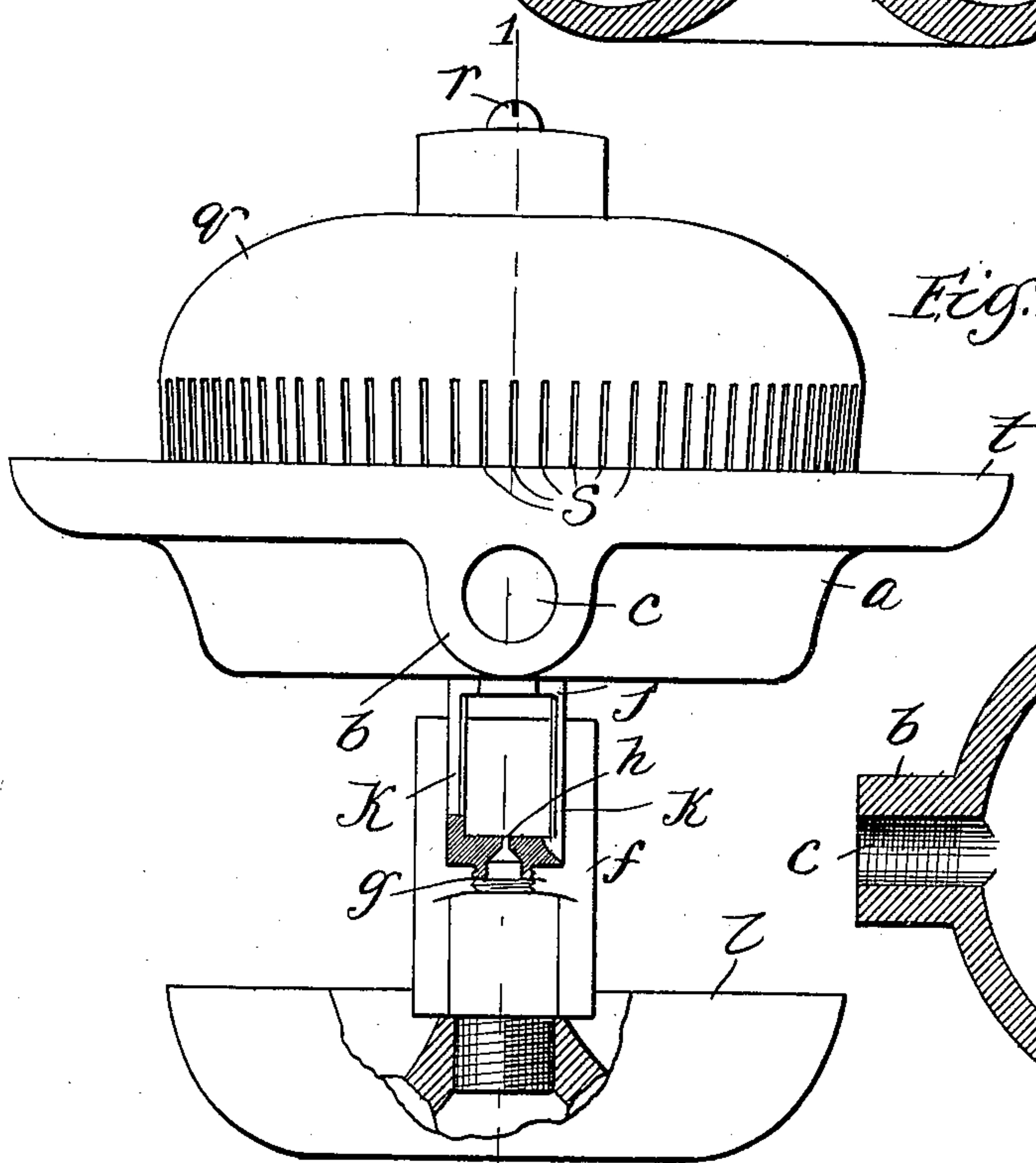
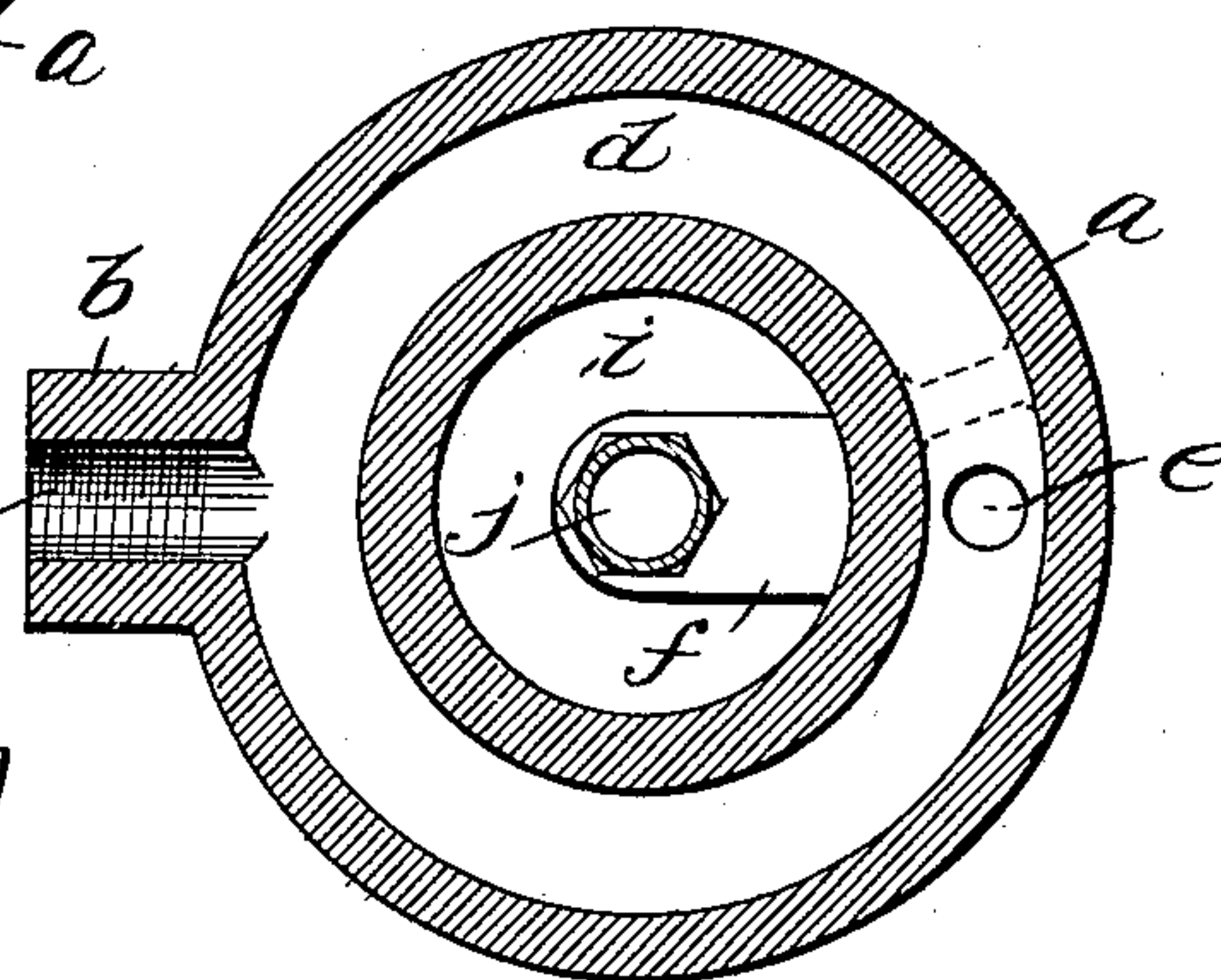


Fig. 2.

Fig. 3.



Witnesses
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Inventor
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UNITED STATES PATENT OFFICE.

JOHN C. DUPEE, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
R. J. WHITE, OF SAME PLACE.

OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 614,801, dated November 22, 1898.

Application filed October 22, 1897. Serial No. 656,072. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. DUPEE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in Oil-Burners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in which corresponding letters of reference in
10 the different figures indicate like parts.

My invention relates to that class of oil or vapor burners adapted for use in cooking or heating stoves and for analogous purposes; and the object of my invention is to so construct such a burner as to produce complete
15 combustion without the formation of soot or carbon in the burner and without causing the vapor to ignite within the burner, as the result of variable drafts, after it has once formed
20 upon the outside of the burner.

A further object is to so construct said burner that the flame will of itself and without any manipulation on the part of the user be transferred from the inside to the outside
25 of the burner as soon as the retort becomes sufficiently heated and the oil or other fuel used for starting is burned out from the drip-cup.

To these ends my invention consists in the
30 combination of elements hereinafter more particularly described and claimed.

In the drawings, Figure 1 is a vertical sectional view of a burner embodying the features of my invention, the same being taken
35 upon the line 1 1, Fig. 2. Fig. 2 is a side elevation of my improved burner; and Fig. 3 is a sectional view thereof in plan, taken upon the line 3 3, Fig. 1.

Referring to the drawings, *a* represents the
40 main body of my improved burner, which consists of an annular metal casting, forming not only the generator or retort, but the frame or support for the other parts as well. The part
a is provided with a laterally-projecting stem
45 *b*, having an opening *c* therein, which is threaded for the reception of an oil-supply pipe (not shown) adapted to communicate with any source of oil-supply. The opening
50 *c* is in communication with a chamber *d*, Figs. 1 and 3, which communicates with an opening *e*, formed in a depending tube, upon

which is tapped a hollow elbow *f*. A nipple
g, having a small central bore *h*, is tapped into the elbow substantially as shown, the bore coinciding substantially with the axis of
55 the opening *i* of the retort. A tube *j*, which is concentric with the opening *i*, is placed therein and secured in position either by means of supports *k k*, which connect with the nipple, or by means of a spider or other
60 device attached to the retort. The bottom of the tube is by preference located somewhat below the bottom of the retort, while the top of said tube is about even with the top of the retort or somewhat below. A drip-cup *l* is at-
65 tached to the bottom of the elbow in any well-known way.

Inserted within the opening *i* is a circular block *m*, Fig. 1, having a bell-mouthed opening *n*, restricted at the top, which is substan-
70 tially concentric with the tube *j*. Spider-arms *o* connect said block with a superimposed spreader *p*, to which a mushroom-shaped cap *q* is attached by means of a central screw *r*. The cap is so shaped that its bottom rests
75 upon the flat face of the retort, as shown, while a series of openings, preferably in the form of vertical slots *s*, is formed in said cap. I prefer to extend the upper portion of the
80 part *a* laterally beyond the cap *q*, the extension (marked *t*) being either flat or grooved, as shown, but preferably the latter.

Having thus described the construction of my improved device, I will now explain its op-
85 eration.

The valve in the supply-pipe (not shown) being opened, oil is permitted to flow into the chamber *d* and thence downwardly through the elbow-shaped tube *f* to the nipple *g*, from whence it overflows through the opening *h*
90 into the drip-cup. It is then ignited and permitted to burn until the retort becomes sufficiently heated to vaporize the oil within, it being understood that the ignition primarily takes place within the burner—that is to say,
95 beneath the cap *q*. An upward draft of air is formed through the tube *j*, which not only aids and insures the direct upward flow of the vapor from the opening *h*, but mixes therewith during the passage. At the top of
100 the tube *j* the mingled vapor and air is brought into contact with the current of air which

passes upwardly through the annular space *i* surrounding said tube, where a further mingling takes place and a further dilution of the vapor, the combined product being then
5 brought into contact with the spreader *p*, from whence it is deflected laterally and downwardly through the openings *s* against the body of the retort, which serves to retain the latter at the proper generating temperature.
10 As soon as the oil for starting the flame and heating the retort is burned out the flame immediately ceases to burn within the burner and at once shifts to the outside of the cap *q*, where the mixed air and vapor issues from
15 the openings *s*. The vapor burns from these openings around the burner in a series of blue jets and under ordinary pressure is practically noiseless. As long as the flame is maintained upon the outside of the burner, as described,
20 it is not only noiseless, or nearly so, but the burner merely becomes sufficiently hot to generate the vapor; but if permitted to burn inside, which may be accomplished by slightly lifting the cap *q* or by dispensing with the
25 tube *j*, the burner soon becomes red-hot, while the sound increases to a seriously objectionable roaring noise. The life of the burner is not only shortened thereby, but its efficiency is greatly impaired.
30 As stated, the tube *j* and opening *n* form a double mixing-chamber, the action being somewhat analogous to that of an ordinary steam-injector. I have found as a result of careful experiment that neither of these fea-

tures can be dispensed with without causing 35 the vapor to ignite within the burner; but when they are both employed substantially in the manner shown the flame will of itself, if ignited inside, immediately shift to the outside and there remain. If from careless 40 usage the cap should become displaced so as to cause the flame to recede to the interior of the burner, the roaring noise resulting therefrom will at once attract attention, and as soon as the cap is properly adjusted the flame 45 will shift back to the proper place.

Having thus described my invention, I claim—

In a burner of the class described, the combination of a retort provided with a central 50 orifice and an air-mixing tube projecting into said orifice, leaving an annular space around the same for the further admixture of air, and connected with the interior of the retort for its supply of vapor, a block placed over said 55 central orifice having a restricted central opening substantially coincident with said air-mixing tube, a spreader above said central opening, and a cap having orifices upon its lower outer edge, substantially as described. 60

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 19th day of October, 1897.

JOHN C. DUPEE.

Witnesses:

D. H. FLETCHER,

T. S. E. DIXON.