No. 606,784.

Patented July 5, 1898.

J. JOHNSTON.

OIL BURNER.

(Application filed Apr. 19, 1897.)

(No Model.)

2 Sheets—Sheet 1.

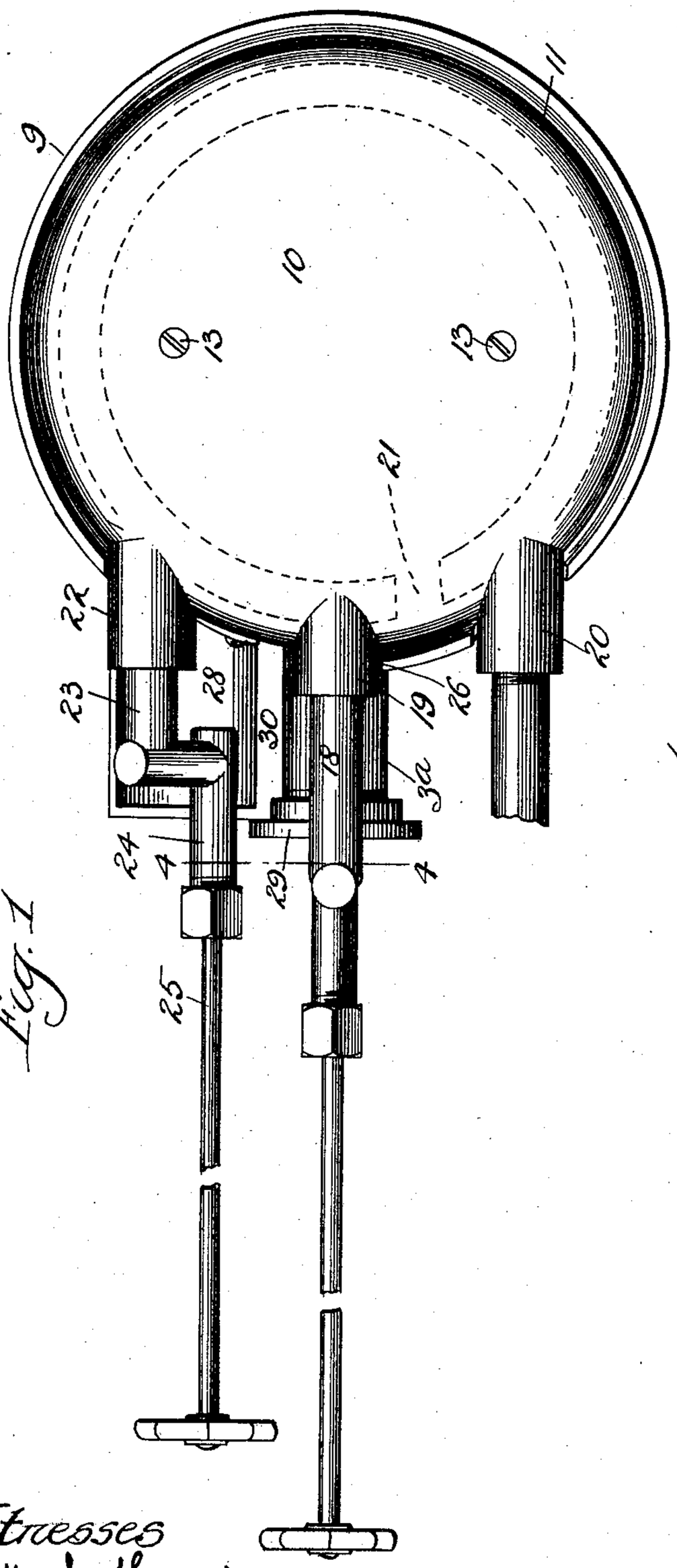

Fig. 1

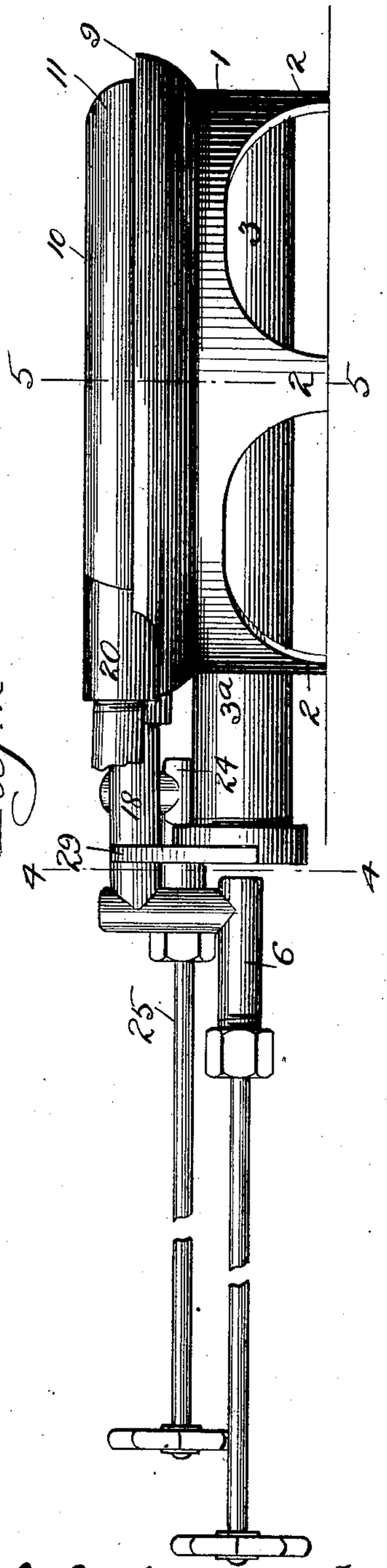

Fig. 2

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Fig. 3.

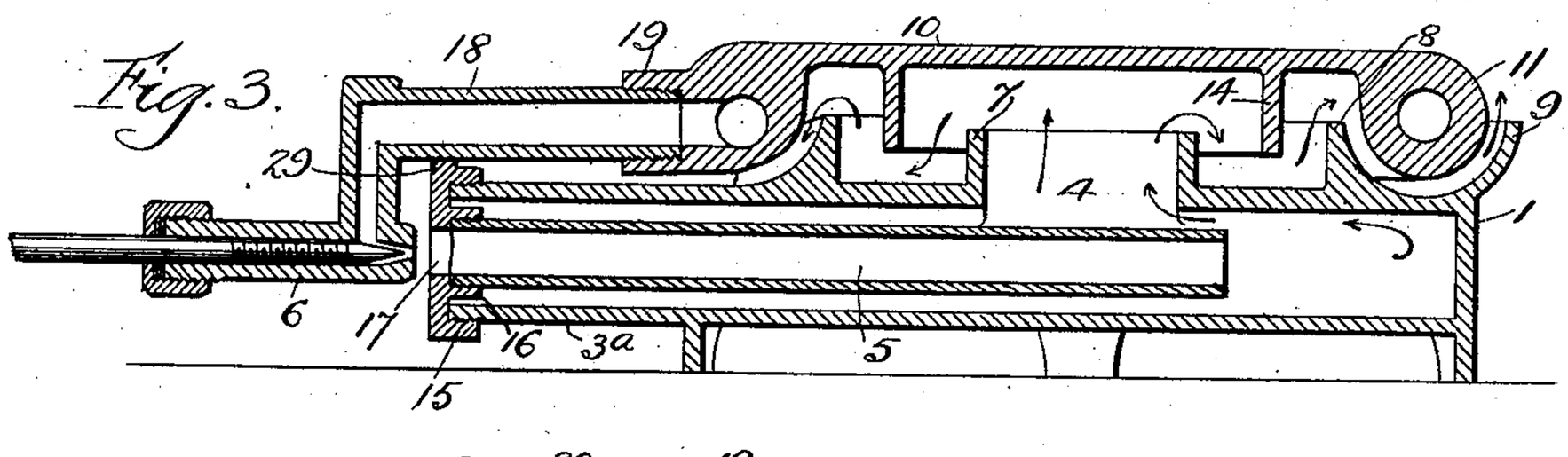


Fig. 4.

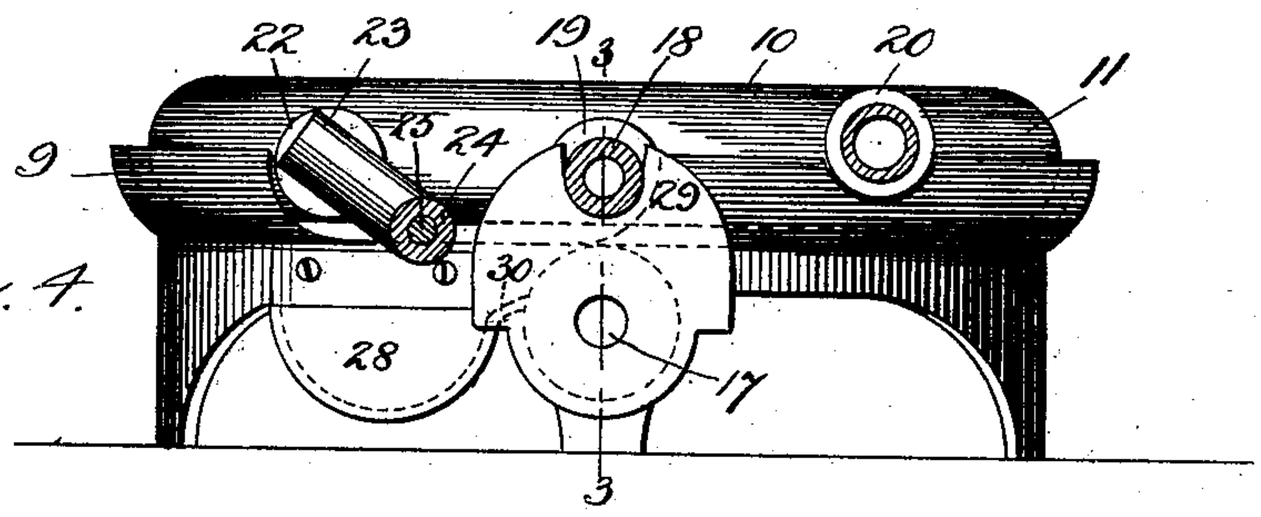


Fig. 5.

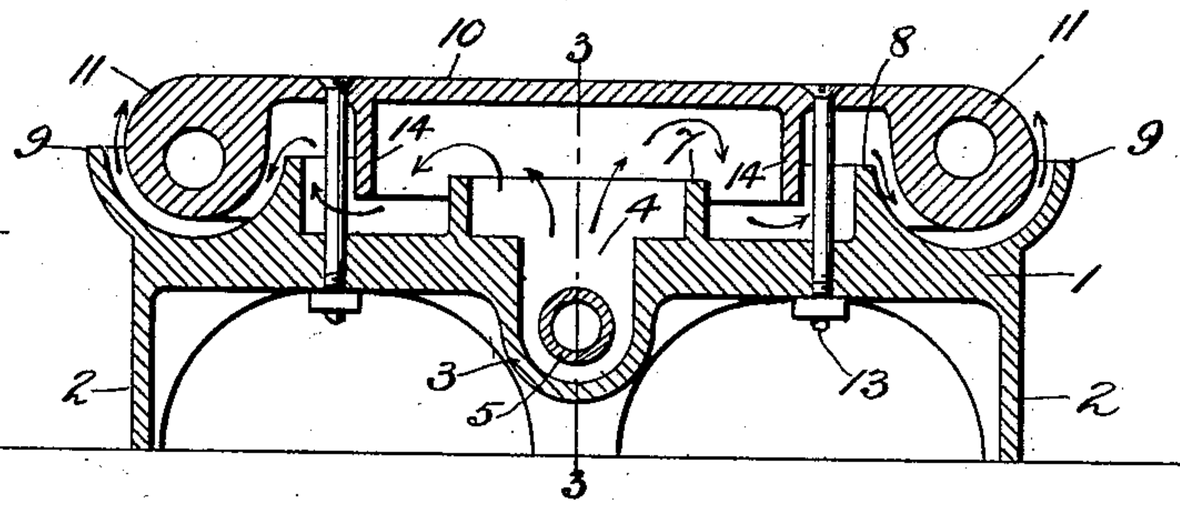
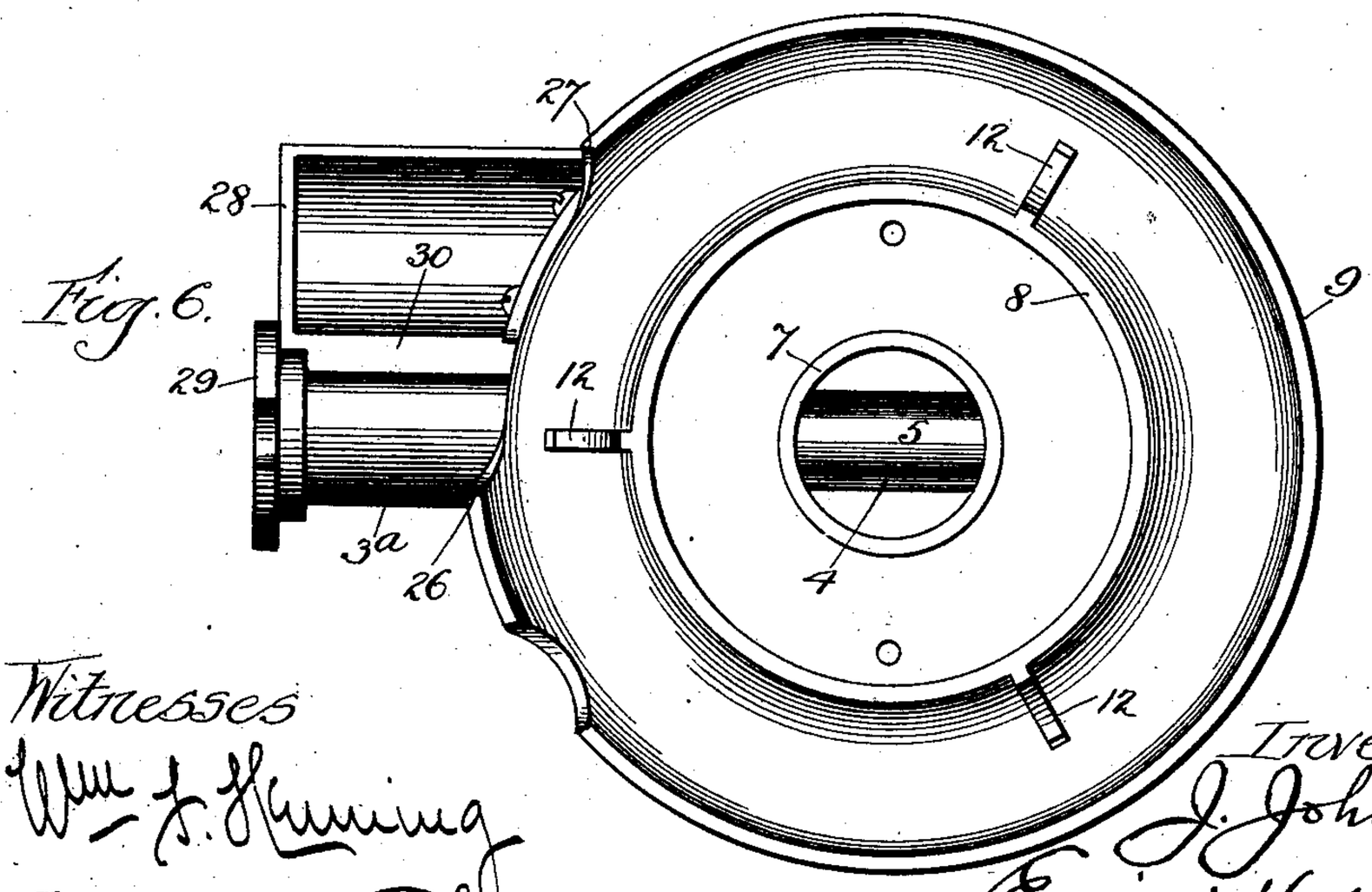


Fig. 6.



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UNITED STATES PATENT OFFICE.

JONATHAN JOHNSTON, OF MORGAN PARK, ILLINOIS, ASSIGNOR TO HERBERT O. BENNETT, OF CHICAGO, ILLINOIS.

OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 606,784, dated July 5, 1898.

Application filed April 19, 1897. Serial No. 632,786. (No model.)

To all whom it may concern:

Be it known that I, JONATHAN JOHNSTON, a citizen of the United States, residing at Morgan Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Oil-Burners, of which the following is a full, clear, and exact specification.

My invention relates to that class of burners for burning hydrocarbon oils and other like fluids in which the oil is admitted first into a retort in which it is converted into vapor by the heat of such vapor burned under the retort; and my invention has for its object generally to provide an improved and effective form of construction consisting of the minimum number of simple, durable, and inexpensive parts.

Another object of my invention is to provide improved means for readily producing the initial heating of the retort, whereby the same may be accomplished with a less quantity of free oil than heretofore.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said object and certain other objects hereinafter appearing are attained, all as fully described, with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a plan view of my improved burner. Fig. 2 is a side elevation thereof, partly broken away. Fig. 3 is a vertical transverse section taken on the line 3 3, Figs. 1, 4, and 5. Fig. 4 is a front elevation, partly in section, taken on the line 4 4, Figs. 1 and 2. Fig. 5 is a transverse section taken on the line 5 5, Fig. 2; and Fig. 6 is a plan view of the base portion.

In carrying out my invention I construct the burner of two principal parts, one of which is in the form of an inverted pan or cup, whose depending rim or side wall is hollowed out so as to constitute a surrounding retort, and depending from the bottom of this depending cup or pan is a continuous ring or flange of smaller diameter than said surrounding retort. The other of said portions or the base portion is formed with two continuous channels or troughs, one surrounding the other and being located under said depending flange and retort, respectively, and into which troughs the latter portions depend. This base portion is also provided with a central inlet formed through its bottom and surrounded by the inner one of the said troughs for the admission of the vapor to the spaces between these two main portions of the burner.

Referring more specifically to the drawings, the base portion of the burner is constituted by a plate or casting 1, having a number of supporting-feet 2, if desired, and provided with a subway or passage 3, which extends from side to side thereof, and has an upwardly, extending outlet 4, located substantially at the center of the burner or outlet at a point removed from the inner extremity of the subway 3. Supported concentrically within this subway 3 is a tube 5 of considerably smaller diameter than the passage 3, which extends backwardly into the latter and terminates at a point beyond the outlet 4, the outer end of the pipe 5 being arranged opposite the injector 6, so that the gas or vapor admitted at the outer end of the pipe 5 will be compelled to pass to the rear end of the passage 3 and again traverse a portion of the length of the passage 3 before discharging through the opening 4, thus insuring a thorough mixing of the air and vapors before reaching the point of combustion in the burner.

The opening or outlet 4 is surrounded by a standing flange 7, which is continuous or annular and which, together with a flange 8, constitutes the inner one of the continuous or annular channels or troughs hereinbefore referred to, while the outer one of such channels or troughs is constituted by the flange 8 and a marginal flange 9, rising from the outer edge of the plate 1.

The upper or inverted-cup-like portion of the burner is constituted by a substantially flat plate 10 and a surrounding depending retort 11, which is annular in plan view and preferably cylindrical in cross-section. The plate 10 is supported at a distance above the upper end of the flange 7, and the retort 11 depends into the trough or channel formed by the flanges 8 9, so that the outer periphery of the retort 11, together with the flange 9, will form an annular space or outlet for the

burning gases, which in issuing therefrom will partially envelop the retort by virtue of its tendency to follow upwardly around its curve. The bottom of the channel formed by the flanges 8 9 is preferably curved concentrically with the bottom of the retort 11. The retort may be supported in any suitable manner—such as, for instance, by a number of short curved lugs 12, formed between the flanges 8 9, and the upper member of the burner held firmly in place with the retort, resting upon these lugs, by a number of vertical bolts or screws 13.

Extending downwardly from the bottom of the plate 10 and depending into the trough or channel formed by the flanges 7 8 is a flange 14 of annular form, which extends below the upper edges of both flanges 7 8, and thus constitutes a tortuous passage for the gases or vapors as they rise through the opening 4 and strike the plate 10, thereby insuring a thorough mixing before discharging at the outlet between the retort 11 and the flange 9, at which point combustion takes place.

The outer end of the subpassage 3 is extended, as shown more clearly in Fig. 3, and its end is provided with a screw-cap 15, having a threaded flange 16 on its inner side, which constitutes means for supporting the pipe 5, the cap being provided with an opening 17, opposite which the injector 6 is arranged. The injector 6 is connected by a pipe 18 with the outlet 19 of the retort, the inlet of the retort being shown at 20 and being located on the same side as the outlet 19, but the retort being divided between the inlet and outlet by a plug 21. Contiguous to the outlet 19 the retort is provided with a supplemental outlet 22, which is connected by pipe 23 to an auxiliary burner 24, having a suitable needle-valve 25 and arranged opposite the space between the plate 1 and the retort 11, so that in starting the burner a fine spray may be injected against the bottom of the retort at a point adjacent to the main outlet 19, and thus more quickly gasify or vaporize the oil in the immediate vicinity of the outlet 19 than could be accomplished by attempting to heat the entire retort. The outer flange 9, opposite the mouth of the injector 24, is cut away between the points 26 27 to accommodate pipes 18 23 and to admit the flame or spray from the injector 24, as more clearly shown in Figs. 4 and 6. The flame from the injector 24 not only plays against the bottom of the retort immediately opposite, but travels around the retort a considerable distance within the flange 9, and the pipe 23 being more or less rotatable in the auxiliary outlet 22, the injector 24 may be raised or lowered, as desired, for causing the flame or spray issuing therefrom to strike the retort 11 at the proper point.

Arranged under the injector 24 is a drip-pan 28 for catching the oil dripping from the nozzle or injector 24 and also for heating the connection leading down to the injector when desired, and thus converting the contents of the latter into vapor before it is discharged.

In order that the flame from the pan 28 and nozzle 24 may not find its way into the inlet 17 of the pipe 5, the collar 15 is provided with an upwardly-extending flange 29, which partially overlaps the end of the pan 28 and also fits against the outer end of a bridge or web 30, extending from the inner edge of the pan 28 and overlapping the extension 3^a of the passage 3, thus preventing the flame from creeping under the extension 3^a and finding its way into the inlet 17. The upper edge of the flange 29 is notched or cut away for the admission of the pipe 18.

The interior of the retort 11 is formed on a gradual continuous incline from its inlet 20 to its main outlet 19, so that there will be afforded no opportunity for the residuum to collect therein, and in order that the deposit of residuum may be still further guarded against the outlet-pipe 18 is also inclined toward the nozzle 6 and is of substantially the same diameter as the interior of the retort, whereby the formation of a shoulder for the collection of residuum is avoided.

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

1. An oil-burner consisting of two detachable portions, the upper one of which is in the form of an inverted cup or pan having its depending surrounding wall or rim made hollow and constituting a retort having an inlet and an outlet, a ring or rim depending from the bottom of said pan and being arranged concentrically within and at a distance from said wall, and the base or other of which portions is in the form of two concentric channels or troughs in which said retort and ring on the upper portion depend respectively, the inlet for the vapor being formed through the bottom of said base portion and surrounded by the inner one of said channels and being in communication with the outlet of the retort, substantially as set forth.

2. An oil-burner consisting of two detachable portions one of which is in the form of an inverted cup or pan whose depending outer wall or rim is hollow and constitutes a retort having an inlet and an outlet and a ring or flange arranged concentrically within said wall and depending from the bottom of said cup or pan, and the other of which portions consists of two annular concentric channels into which said retort and flange depend respectively, the inlet for the vapor being formed through the bottom of said second portion and surrounded by the inner one of said channels, supporting-lugs arranged in one of said channels for holding said first portion of the burner aloof, and bolts passing through said portions of the burner for binding the same together, substantially as set forth.

3. An oil-burner consisting of two detach-

able portions, the upper one of which is in the form of an inverted cup or pan having its depending surrounding wall or rim made hollow and constituting a retort having an inlet and an outlet, and the base or other of which portions is provided in its upper side with a surrounding channel or trough into which the bottom side of said retort depends and is supported at a distance from the bottom of said trough, said base portion having a bottom inlet for the vapor and a flange rising therefrom around said inlet and around which said trough extends, and an injector connected with the outlet of said retort and having its end directed into said inlet of the base portion, substantially as set forth.

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Witnesses:

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