

No. 667,974.

Patented Feb. 12, 1901.

J. A. DENSMORE.

VAPOR BURNER.

(Application filed May 31, 1900.)

(No Model.)

Fig. 1.

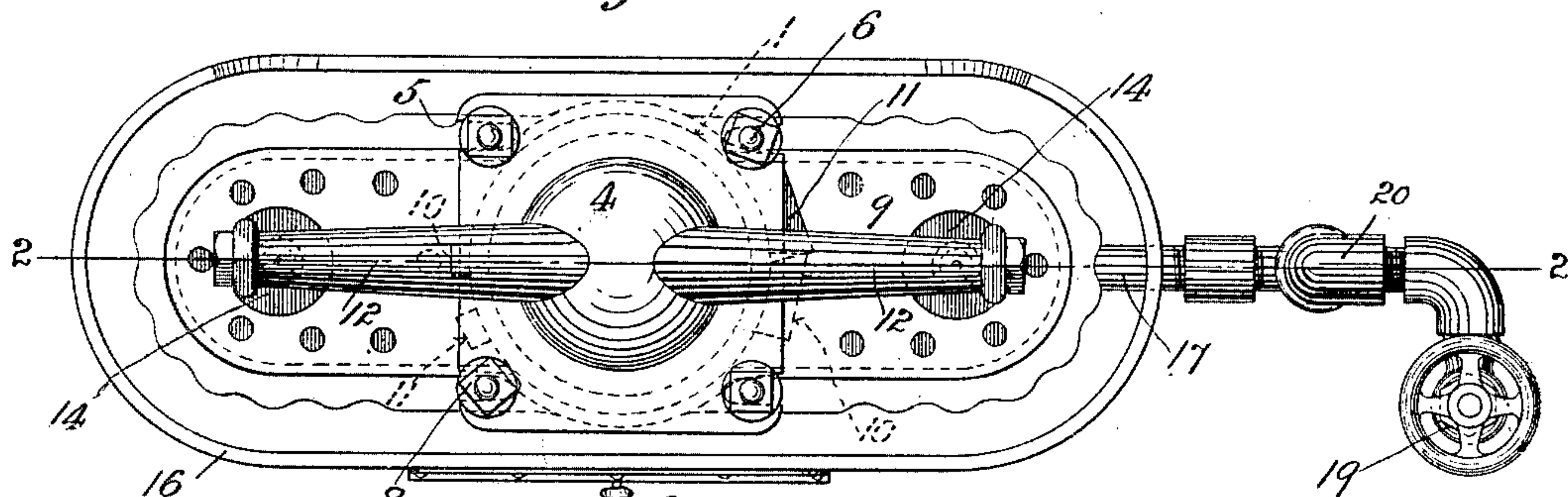


Fig. 2.

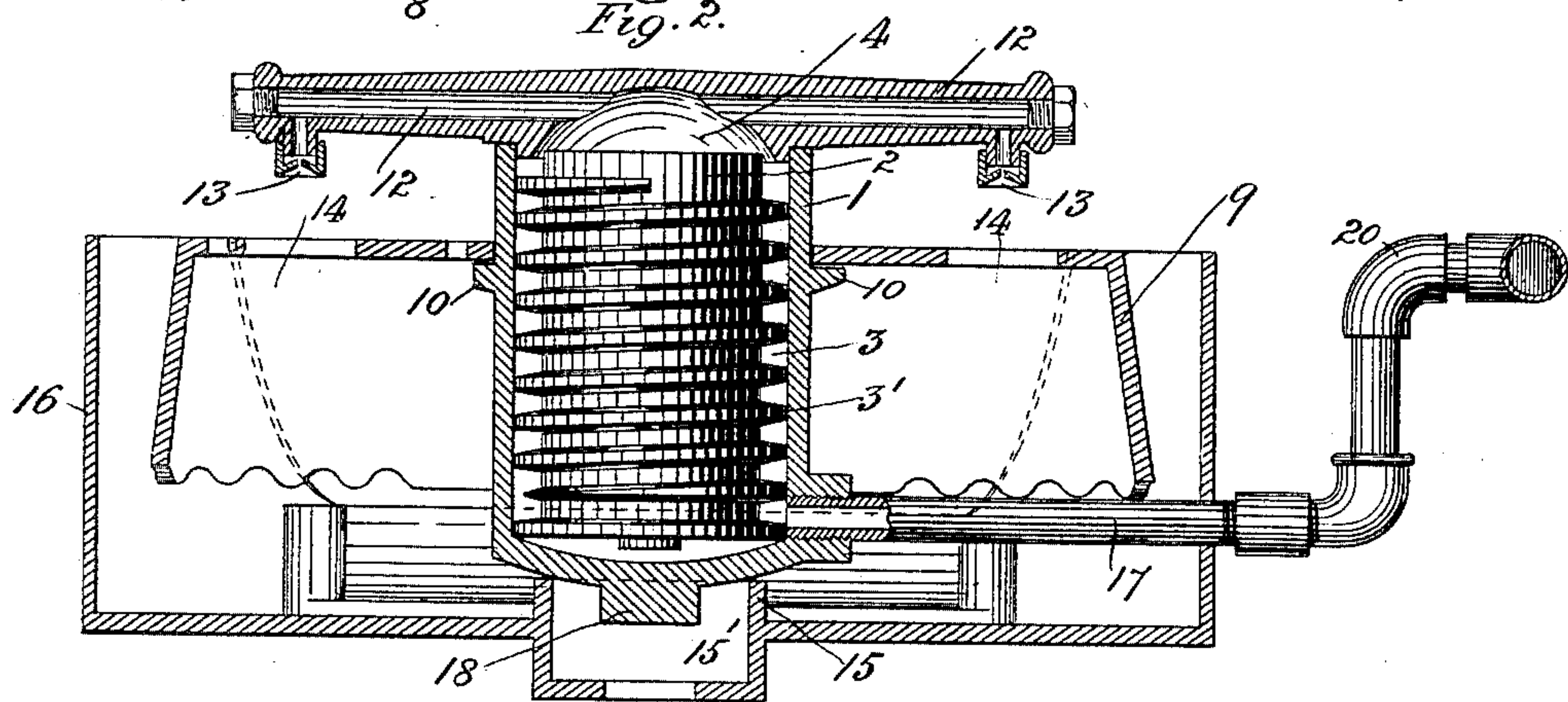


Fig. 3.

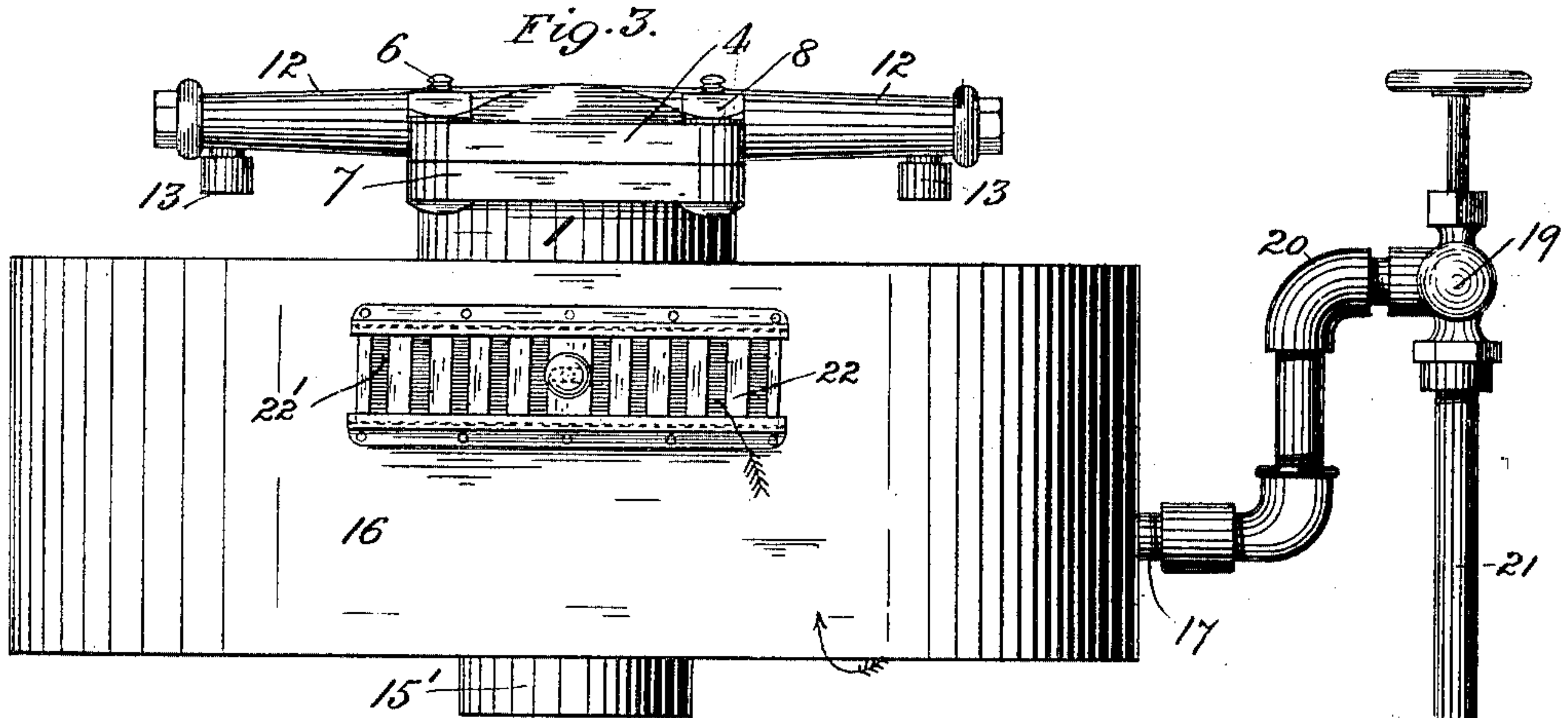
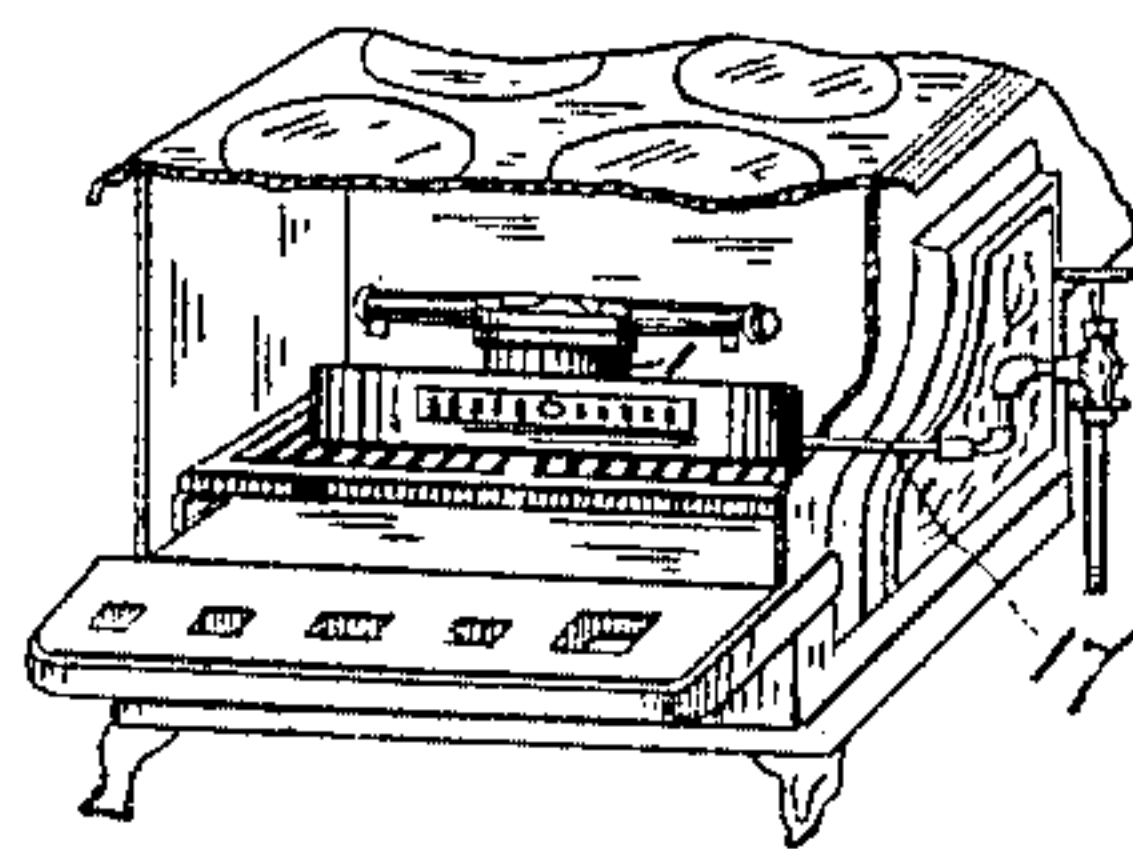


Fig. 4.



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VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 667,974, dated February 12, 1901.

Application filed May 31, 1900. Serial No. 18,586. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. DENSMORE, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Vapor-Burners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in vapor-burners; and it consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a top plan view of the device. Fig. 2 is a middle vertical longitudinal section on line 2 2 of Fig. 1. Fig. 3 is a front elevation of the device; and Fig. 4 is a diagrammatic perspective view of a section of the stove, showing the manner in which my burner is applied.

The object of my invention is to construct a vapor-burner which may be readily taken apart and cleaned, one in which a maximum degree of temperature will be developed, one which will insure perfect combustion for the carbon contained in the vapor fed to the flame, one in which the highest percentage of the heat units developed thereby can be utilized to the best advantage, one in which the feed-valve will not become overheated, and one possessing further and other advantages better apparent from a detailed description of the device, which is as follows:

Referring to the drawings, 1 represents a preferably cylindrical receptacle closed at the bottom, having a smooth interior surface and adapted to receive a plug 2, provided with outer peripheral spiral grooves 3 and threads 3', the plug fitting snugly within the receptacle, so that when once inserted the threads 3' and the inner surface of the receptacle form a spiral worm or passage for conveying the vapor to the burners, as presently to be seen. This spiral passage serves as a vaporizing-coil, the latter under the circumstances being composed of two sections—viz., the receptacle 1 and the plug 2—which can at any moment be taken apart and cleaned should the spiral passage for any reason become clogged or choked. The receptacle 1 is closed by a cover-plate 4, provided at the

corners with recesses 5, adapted to receive bolts 6, passed through corresponding alining recesses of the upper terminal flange 7, carried by the receptacle, the parts being subsequently united by nuts 8, carried by the bolts. The receptacle 1 is surrounded by a hood 9 open at the bottom, the receptacle being inserted through an opening formed in the roof or top of the hood. The receptacle is provided with peripheral lugs 10, adapted in the act of inserting to pass through corresponding recesses 11, formed in the top of the hood, and when the lugs have once passed below the recesses the receptacle is given a slight turn, so as to bring the lugs and recesses out of alinement, when the parts will become locked. The cover-plate 4 is provided with hollow arms 12, extending, when once the receptacle 1 is in place, parallel to the longitudinal axis of the hood, the arms being closed at their outer ends and being provided with depending nozzles or burner-tips 13, which are superposed directly over the enlarged openings 14, formed in the top of the hood, the flame issuing from the burner-tips 13 shooting downward and burning within the hood, which thus constitutes the combustion-chamber.

The base of the receptacle 1 rests upon an annular hub 15, formed at the bottom of an outer shield 16, which is open at the top and surrounds the front and ends of the hood, the shield being cut away in the rear. The feed-pipe 17 passes through the end wall of the shield, under the lower scalloped edge of the hood, and taps the receptacle 1, near the bottom thereof, the vapor or fluid being delivered through the vaporizing-coil to the burner-tips, as is obvious. To effect an even distribution of the fluid to the two arms 12, the plug 2 is so inserted as to bring the upper terminal of the screw-thread cut therein at a point approximately midway between the inner ends of said arms. The flow of vapor will then better distribute itself.

The bottom of the receptacle 1 is provided with a boss 18, adapted to be received by the socket 15', the boss being adapted to be inserted into a socket of a suitable base-plate (not shown) set upon the grate of an open fireplace, in which event the outer shield is first removed. The shield is employed in cases where the device is inserted into the

fireplace of an ordinary stove, the shield resting upon the grate thereof, the feed-pipe being properly connected in any mechanical manner. (See Fig. 4.)

5 The needle-valve 19, by which the hydrocarbon is fed to the burner-tips, has interposed between it and the feed-pipe 17 the elbow connections 20, which bring the casing of the valve substantially even with the upper edge
10 of the shield and above the pipe 17, the oil thus dripping from the valve to a point below its casing and preventing overheating of the latter. The bottom of the valve-casing is coupled to any supply-pipe 21, leading to any
15 suitable source of supply. (Not shown.)

The front wall of the shield 16 is provided with a damper-plate 22, which controls the admission of air from the outside of the shield to the space between the shield and hood, the
20 damper-openings 22' being located in such manner that the air-currents impinging against the bottom of the shield are caused to pass through said openings, being subsequently deflected downward below the lower
25 edge of the hood and then upward into the combustion-chamber. Thus a positive and maximum quantity of oxygen is fed to the downwardly-directed flame issuing from the burner-tips 13, insuring complete combustion
30 of the carbon and developing a maximum amount of heat.

It is of course apparent that minor changes may be made in the construction without departing from the spirit of my invention. Thus
35 the inner surface of the receptacle 1 may have a screw-thread cut therein and the plug 2 may be one having a smooth exterior. So, also, the plug may be hollow instead of solid. The form of the hood and shield may also be al-
40 tered, as well as other changes resorted to, which are obvious to the skilled mechanic.

Having fully described my invention, what I claim is—

1. In a vapor-burner, a suitable receptacle,
45 a plug having a screw-thread and spiral groove formed about its peripheral surface whereby a spiral vaporizer is formed upon the assembling of the parts, hollow arms leading from the cover of the receptacle, down-
50 wardly-projecting burner-tips at the ends of the arms, a hood forming a combustion-chamber enveloping the receptacle, the hood having an opening beneath each tip for the free passage of the flame into the combustion-

chamber, and a pipe conducting the fluid to 55 the receptacle, substantially as set forth.

2. In a vapor-burner, a suitable vaporizer, hollow arms leading therefrom, burner-tips at the ends of said arms, a hood open at the bot-
60 tom surrounding the vaporizer, the top of the hood being provided with openings beneath the burner-tips, and a shield closed at the bottom but open at the top surrounding the
65 hood, the front wall of the shield being provided with openings for admitting air to the space between the shield and hood, substantially as set forth.

3. In a vapor-burner, a suitable spiral vaporizer, hollow arms leading therefrom, burner-tips at the ends of said arms, a hood
70 open at the bottom surrounding the vaporizer, the top of the hood being provided with openings beneath the burner-tips, and a shield closed at the bottom but open at the top surrounding the hood, the front wall of the shield
75 being provided with openings for admitting air to the space between the shield and hood, substantially as set forth.

4. A vapor-burner comprising a central re-
80 ceptacle, a plug, having a spiral thread and groove formed along its peripheral surface, adapted to be inserted into said receptacle, a cover-plate, having hollow arms extending in diametrically opposite directions, adapted to be coupled to the receptacle, depending
85 burner-tips formed at the outer ends of the arms, a hood open at the bottom surrounding the receptacle, and having openings formed in its top opposite the burner-tips, a shield open at the top and closed at the bottom sur-
90 rounding the hood, the base of the receptacle being carried by the shield, and the lower edge of the hood being raised a suitable distance above the floor of the shield, a feed-pipe passing through the wall of the shield and
95 tapping the base of the receptacle, a feed-valve carried by the feed-pipe at a point substantially opposite the upper edge of the shield, and a series of damper-controlled open-
100 ings formed in the front wall of the shield adjacent to the upper edge of the same, substantially as set forth.

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

JAMES A. DENSMORE.

Witnesses:

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G. L. BELFRY.