

J. N. YOUNG.
HEATING APPARATUS.
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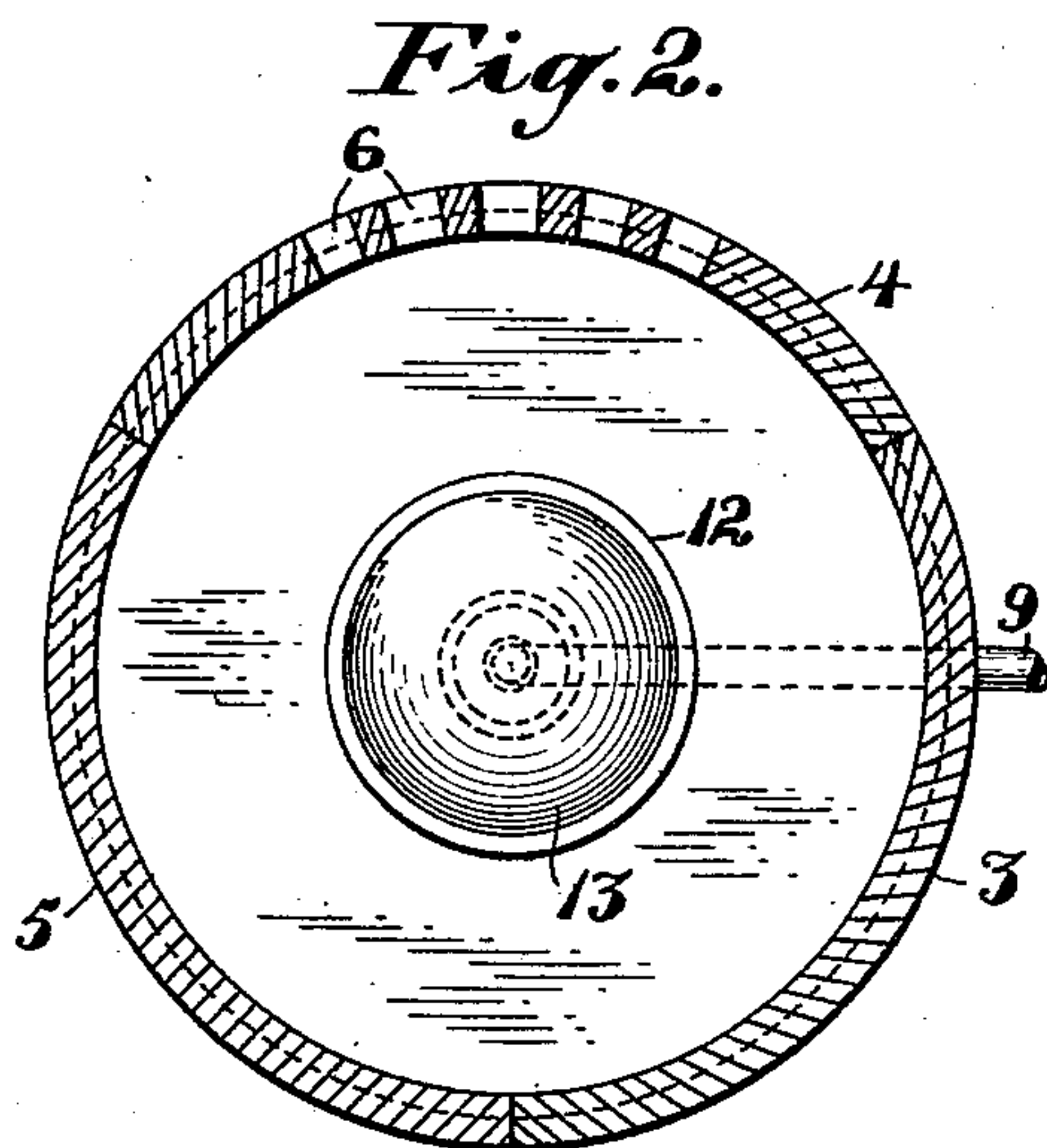
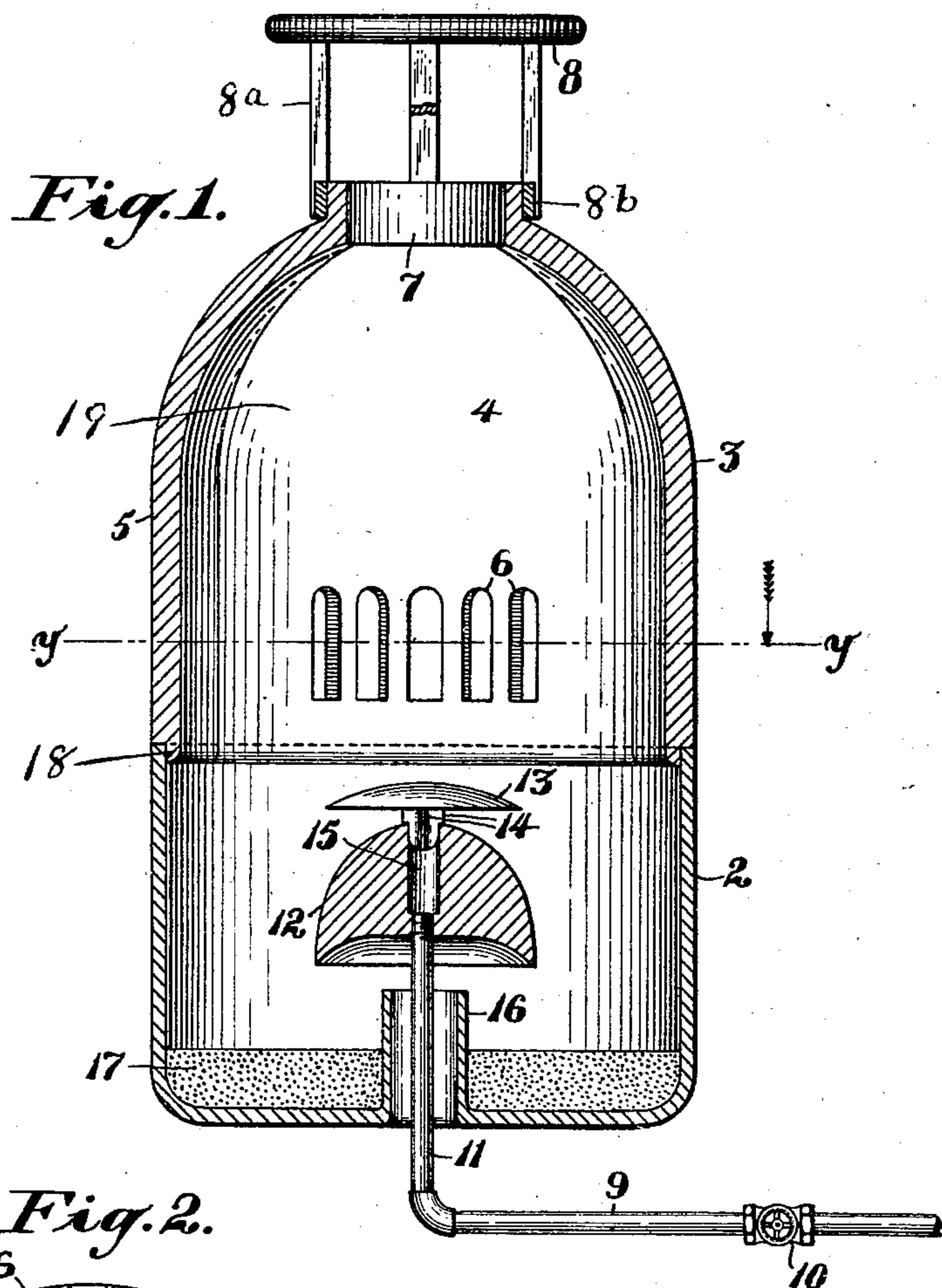
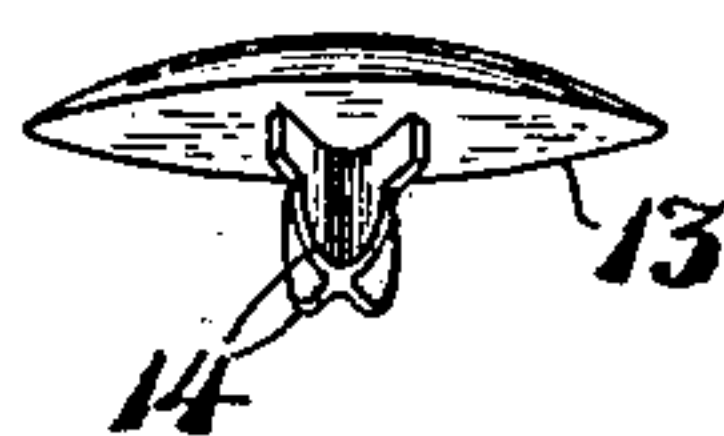


Fig. 3.



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UNITED STATES PATENT OFFICE.

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HEATING APPARATUS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN N. YOUNG, a citizen of the United States, residing at No. 2128 Alameda avenue, Alameda city, Alameda county, and State of California, have invented certain new and useful Improvements in Heating Apparatus, of which the following is a specification.

This invention relates to heating apparatus for stoves, ranges, grates, ovens, furnaces, fire boxes, boilers and for any and all other heating purposes where liquid fuel may be employed.

A further object of the invention is to provide an apparatus in which the lowest grades of crude oil may be successfully employed as fuel, without danger of choking or clogging the apparatus from carbonaceous residuent such as ordinarily form in retort vaporizers and like apparatus where heavy oils are used for fuel.

A still further object of the invention is to provide a liquid fuel burner in which the fuel is fed under gentle pressure upon the upper and outward surface of a thick segment of a solid body in globular form and allowed to spread on the surface of said segment in the form of a film, which being contacted by the heat and flame in the burner and the heat of the thick segment, is quickly expanded and consumed.

A still further object of the invention is to provide a liquid fuel burner in which the carbonaceous residuent and other deposits which usually form in the combustion of oils, and clog and obstruct heating apparatus, rendering them useless, may be collected and burned without any loss of energy or time.

With these and other objects in view, my invention consists in the construction and combination of elements hereinafter described, illustrated in the accompanying drawings and particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a sectional elevation of an oil burner embodying the invention; Fig. 2 is a sectional plan view of the same on the line y, y , of Fig. 1; Fig. 3 is a perspective view illustrating the combined supporting lug and oil spreader integral with the upper segment of the invention.

In the drawings:—The base of the burner is in the form of a cup 2, in the lower portion of which is placed a refractory or other

material 17, in the form of fire clay, sand or the like. On the top of the base is mounted the upper portion, 19, of the casing, this being preferably formed of a number of sections 3, 4 and 5 for convenience in handling. The lower edges of these sections are provided with depending ribs, which when together form a continuous annular flange 18, that fits within the upper portion of the cup shaped base 2. The casing 19 is of greatly reduced diameter toward the upper end and the top of each of its sections is provided with a rib 7, the ribs being arranged to fit within a ring 8^b, which in a measure serves to hold the sections in proper relative positions. Above the top of the casing and over its opening outlet, is a spreader plate 8, which is supported by a number of vertical standards 8^a, integral with the spreader plate 8, and the ring 8^b. One of the sections of the casing is provided with a number of draft openings 6, for the admission of air to the interior of the casing.

In the bottom of the base is a tube 16, which opens outwardly through the bottom and extends upwardly a short distance within the burner. Within this tube 16 a fuel pipe 11 is placed and which extends upwardly a short distance above the tube. Upon the upper end of the fuel pipe a segment of a solid of globular form, 12, is mounted. Through the center of this segment there is a perpendicular opening, 15, and into the lower end of which the fuel pipe, 11, is securely fastened. This perpendicular opening affords a passage way for the fuel flowing from the pipe, 11, to pass upwardly to the upper surface of the segment 12. The fuel pipe, 11, continuous with 9, conducts the fuel oil or other fuel from the fuel reservoir to this passage way through the segment 12. In this fuel pipe there are one or more valves, 10, which control the flow of the fuel.

Surmounting the segment 12, is a smaller segment of a solid of globular form, 13, having integral with the center of its under or flat surface a supporting ribbed lug 14 formed with shoulders which rest upon the top of the segment 12, and the point of which lug enters a short distance into the upper end of the passage way 15. This ribbed point divides the oil or other fuel passing upwardly through said passage way and causes it to flow out evenly on all sides and to spread uniformly over the upper surface

of the segment 12. Segment 13 deflects the heat upon segment 12. The upper segment 13 may be made much smaller than is here shown, and for many purposes be equally effective.

The burner composed of the base 2, and the top 19, is itself a hot expansion chamber in which the heating fuel is both expanded and burned. When the liquid fuel flowing through the oil pipe 11, and from the passage way 15, first spreads out over the upper surface of the segment 12, before the segment is heated, it runs down and drops off the lower outer edge of the segment to the compound 17, in the bottom of the base 2, where it is ignited by a match, a piece of blazing paper or any flame, and rapidly consumed. In a short time this combustion causes the interior of the burner, including segment 12, to become highly heated. The thickness and solidity of segment 12 greatly intensify its heat, which, with the heat in the burner, causes the oil as it flows out from the top of the segment to be instantly volatilized, where it is caught by the flame in the base of the burner and mixing with the air which enters through the draft openings 6, an intense flame is generated. The air which passes in through the tube 16 keeps the oil pipe 11 cool, and prevents the fuel from being overheated in the pipe and aids in the combustion in the burner.

When the fuel volatilizes on the upper surface of the segment 12, the usual residuum is there deposited; it clings tenaciously and can only be removed by a flame of high temperature. No inclosed retort can destroy it. In my burner the intense heat of the segment 12 and the interior heat and flame of the burner destroy these deposits and enable the burner to continue its operations without obstruction.

The operation of the burner is simple, and it is easily installed. The fire grate of a stove, range, furnace or fire box, or so much thereof as may be necessary to admit the burner, is first removed. The burner is lowered into the ash-pit sufficiently to place the upper part of the top casing into the lower part of the fire box. The oil pipes having their valves in position are then connected with the burner and the fuel supply. The air for the draft openings of the burner may be admitted through the usual air holes or other openings provided in the stove or other apparatus.

In practice, no more oil should be admitted to the burner than is consumed as fast as it enters the burner. As the heat increases the oil will be consumed more rapidly which will prevent it from accumulating in the base of the burner. The burner soon becomes intensely heated and gives out a strong heat from itself and a further heating flame passing out below the spreader 8

fills the fire box of the stove, range or other object to be heated.

It will be understood that I may make slight alterations in the construction of my burners or of any of their several parts without departing materially from the spirit of my invention.

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

1. In an oil burner, a casing, a liquid fuel supply pipe extending through said casing, and a vaporizing member supported at the end of said pipe, and spaced from said casing, said vaporizing member being substantially hemispherical in shape with the outer surface curving continuously in a down direction to permit the initial flow of the fuel down into the bottom of the casing and a heat deflector adjacent said vaporizing surface and supported thereby.

2. An oil burner including in combination, a burner inclosing casing having an opening in the top thereof, a spreader located adjacent to said opening outside of said casing, a fuel supply pipe extending through one wall of said casing, a thickened vaporizing segment supported by said pipe directly underneath said opening and an entrance tube for directing a current of air against the lower portion of the vaporizing segment; substantially as described.

3. An oil burner including in combination a casing having an opening in the top thereof, a spreader adjacent to said opening, a fuel supply pipe extending through one wall of said casing, a thickened vaporizing segment supported by said pipe, and a heat deflector supported by said vaporizing segment, substantially as described.

4. An oil burner including in combination a casing having an opening at the lower side thereof, a fuel supply pipe of smaller diameter than said opening and extending therethrough, a vaporizing member carried by the upper end of said pipe and spaced from said casing, said vaporizing member being substantially semi-spherical in shape with the outer surface curving continuously in a downward direction, and a heat deflector, said heat deflector having lugs formed integrally with said deflector and engaging said segment for supporting the deflector, substantially as described.

5. An oil burner including in combination a casing having a refractory material in the bottom thereof, a tube extending through said refractory material and communicating with the exterior of said casing, a fuel supply pipe of less diameter than said tube and extending centrally therethrough, and a vaporizing segment carried by said pipe, substantially as described.

6. An oil burner including in combination a casing having a refractory material

in the bottom thereof, a tube extending through said refractory material and communicating with the exterior of said casing, a fuel supply pipe of less diameter than said tube and extending centrally therethrough, a vaporizing segment carried by said pipe, and a heat deflector supported by said segment, substantially as described.

7. An oil burner including in combination a casing having a refractory material in the bottom thereof, a tube extending through said refractory material and communicating with the exterior of said casing, a fuel supply pipe of less diameter than said tube and extending centrally therethrough, a vaporizing segment carried by said pipe, a heat deflector, lugs formed integrally with said deflector and engaging said segment for

supporting the deflector, substantially as described.

8. An oil burner including in combination a casing having an opening in the top thereof, a spreader supported adjacent to said opening, said casing having a refractory material in the bottom thereof, a tube extending through said refractory material and a slight distance above the upper surface thereof, a supply pipe extending centrally through said tube, a vaporizing segment carried by said pipe and a heat deflector supported by said segment.

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