No. 725,862. PATENTED APR. 21, 1903.

J. McDERMOTT.

OIL HEATER AND VAPORIZER.

APPLICATION FILED SEPT. 27, 1902.

NO MODEL.

Fig. 1

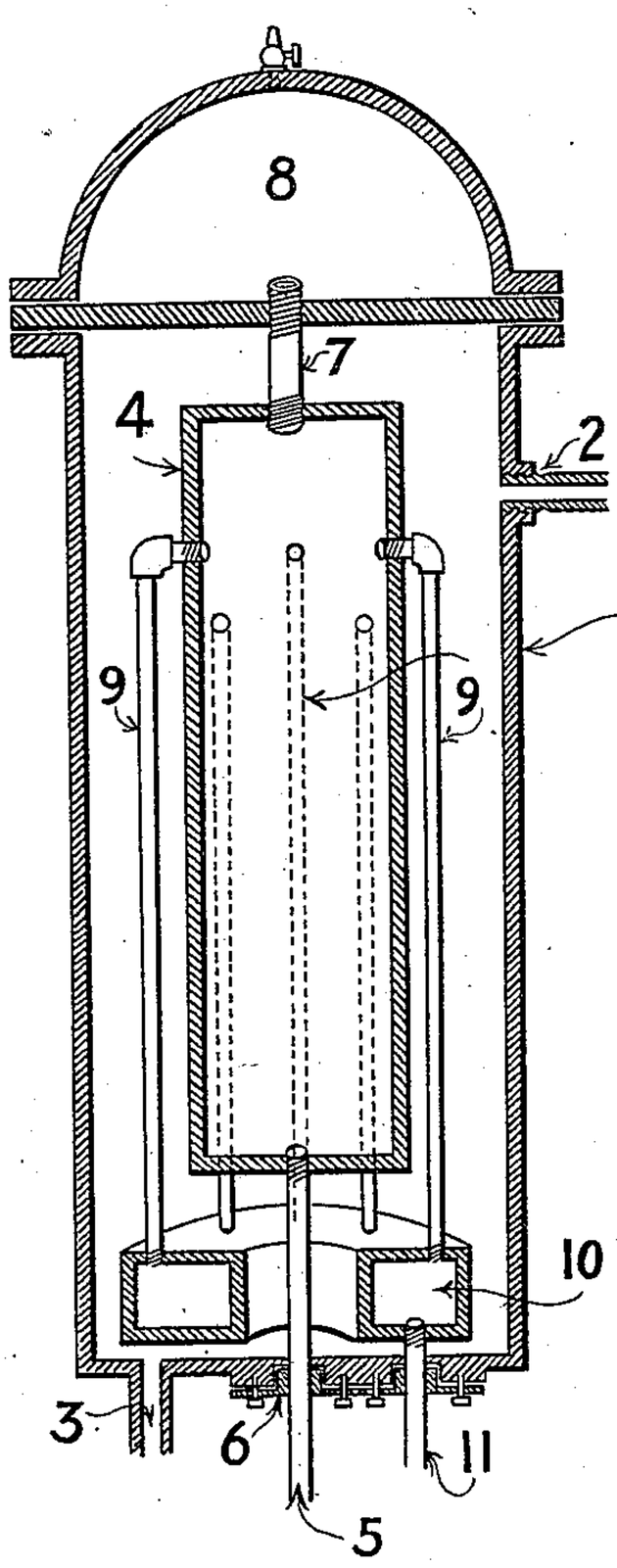
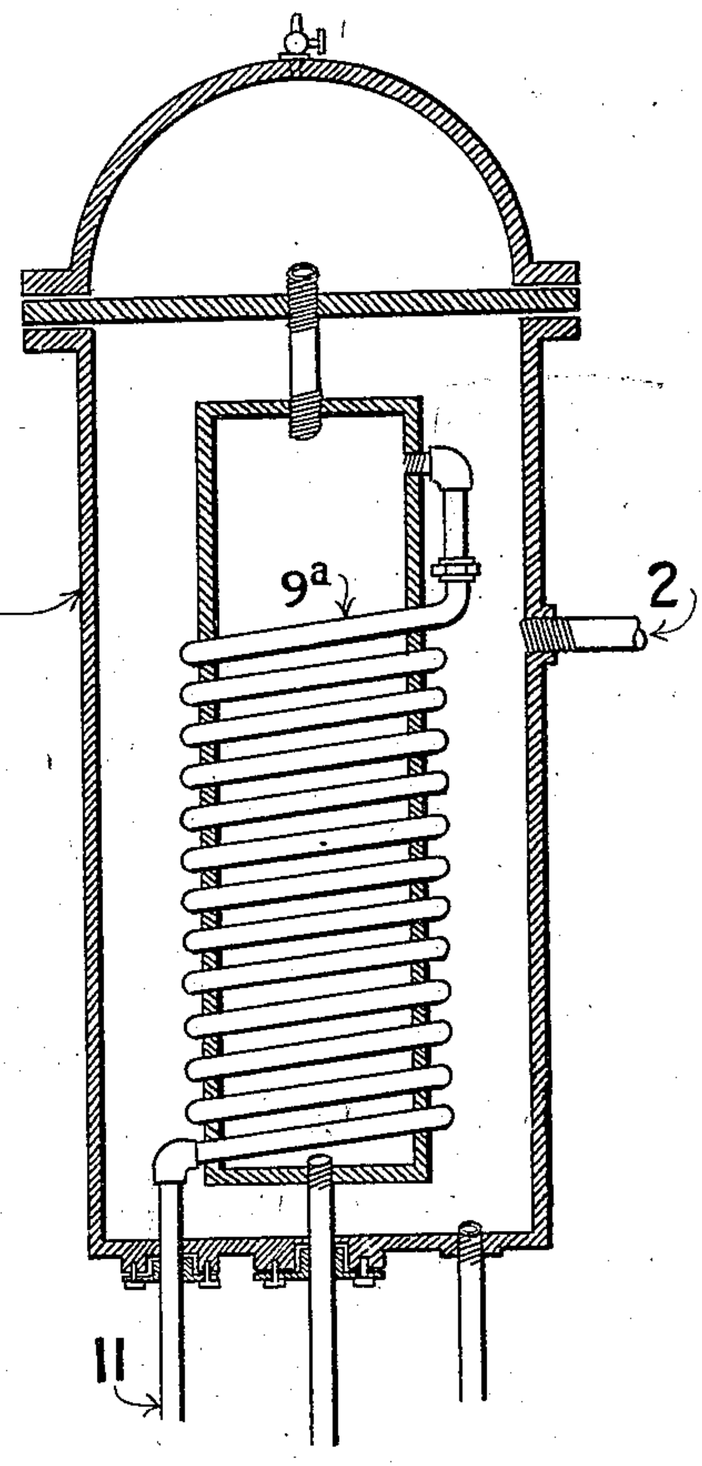


Fig. 2



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UNITED STATES PATENT OFFICE.

JOHN McDERMOTT, OF WEST BERKELEY, CALIFORNIA.

OIL HEATER AND VAPORIZER.

SPECIFICATION forming part of Letters Patent No. 725,862, dated April 21, 1903.

Application filed September 27, 1902. Serial No. 125,072. (No model.)

To all whom it may concern:

Be it known that I, JOHN McDERMOTT, a citizen of the United States, residing at West Berkeley, county of Alameda, State of California, have invented an Improvement in Oil Heaters and Vaporizers; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an apparatus for heating and vaporizing oil or petroleum products for ultimate use in an oil-burner.

It consists of a mechanism for distributing the oil over a considerable surface and means for applying the steam or other heat thereto and in details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a sectional view of inside of heater with vertical oil-pipes between inner and outer casing. Fig. 2 is a sectional view of inside of heater with oil-pipe coiled around inner casing.

It is the object of my invention to provide an apparatus for heating and vaporizing petroleum products, either the crude heavy oil or the lighter products thereof, by means of an apparatus within which the oil is distributed over a considerable surface and is subjected to the heat of the exhaust-steam of an engine or steam otherwise supplied.

As shown in the drawings, A is an exterior case, having a steam-inlet at 2 and a steam-outlet at 3. Within this case is a second casing, as at 4. This casing is in the present instance shown as concentric with the outer casing A, and the oil is introduced into the interior of this casing through a pipe 5. This pipe is here shown as passing through a stuffing-box at 6 in the bottom of the outer casing A and is screwed or otherwise fitted into the bottom of the inner casing 4. A pipe 7 extends from the top of the inner casing 4 into the space within the crown 8, which is located above the casing A, and this pipe 7 serves for the escape of any air contained within the inner casing 4 while the oil is being introduced thereto. Any well-known and appropriate provision may be made for the escape of air from the crown 8. From this inner casing 4 the oil is carried down outside and between it and the outer casing A by means of suitably-disposed pipes 9, through which it is distributed and passed to the outlet. I have shown these pipes arranged in two different ways.

In Fig. 1 the pipes 9 open outwardly from the upper part of the chamber 4 at various points around its circumference and extend downwardly, the lower ends discharging into an annular chamber 10, which is located below the chamber 4. From this chamber 10 a pipe 11 leads outwardly and may connect with the burner or other receiver for the vapor and oil. Another manner for distributing the oil from the chamber 4 is by substituting a spiral coil 9^a for the pipes 9, previously described; but the action in either case is essentially the same, as it distributes the oil over a large surface which is exposed to the steam entering the space between the chambers A and 4. The oil thus carried by either the pipes 9 or the coil 9^a will be discharged, as before stated, through the pipe 11, whether the intermediate receiver 10 be employed or omitted.

The action of the apparatus will then be as follows: The oil is supplied by one or more pumps or by gravitation and passing through the pipe 5 into the interior of the chamber 4 is first acted upon by the heat surrounding this chamber, and its temperature is gradually raised as the oil rises within the chamber until it reaches the point of exit into the surrounding pipes 9 or 9^a. Passing out through these pipes in reduced quantities the steam acts to still further raise the temperature of the oil on account of the small bodies which are subjected to the action of the steam, and when it reaches the exit it will have been sufficiently vaporized or heated.

If a light oil or product is used, it will be manifest that there will be more vaporization than if the heavy crude oil is employed. If the latter is used, then the heat to which it is subjected will prepare it for subsequent use in the burner to which it is conducted.

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

1. An apparatus for heating oil, consisting of an outer and an inner chamber, a pipe or passage by which oil is conducted into the inner chamber, an air-discharge passage connecting with the top of said chamber, pipes connecting with the upper part of the cham-

ber and adapted to convey the oil therefrom through the space intervening between the outer and inner chambers and steam inlet and outlet pipes connecting with said intervening space.

2. An apparatus for heating and vaporizing oil consisting of exterior and interior interspaced chambers, a pipe through which oil is admitted into the lower part of the inner chamber, and means for the escape of air therefrom, one or more pipes opening from the upper part of said inner chamber extending downwardly through the space between the two chambers, a supplemental chamber located within the outer and below the inner chamber, into which said pipes discharge, an outlet connecting with said supplemental chamber and pipes through which steam is admitted into and discharged from the space surrounding the inner and supplemental chamber.

3. An apparatus for the heating and vaporizing of oil consisting of outer and inner interspaced chambers, steam inlet and outlet pipes connecting with the space between the two chambers, a pipe through which oil is admitted into the lower part of the inner chamber to rise therein whereby its temperature is gradually raised, pipes leading from the upper part of said chamber extending downwardly around the inner chamber whereby the oil is subdivided and exposed to the steam heat in smaller bodies, a supplemental chamber into which said pipes discharge and a discharge-pipe connecting with said chamber extending outwardly through the outer chamber.

In witness whereof I have hereunto set my hand.

JOHN McDERMOTT.

Witnesses:
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