March 4, 1924. 1,486,103

J. J. MILNES, JR

OIL BURNER

Filed Feb. 1, 1923 2 Sheets-Sheet 1

Fig. 1.

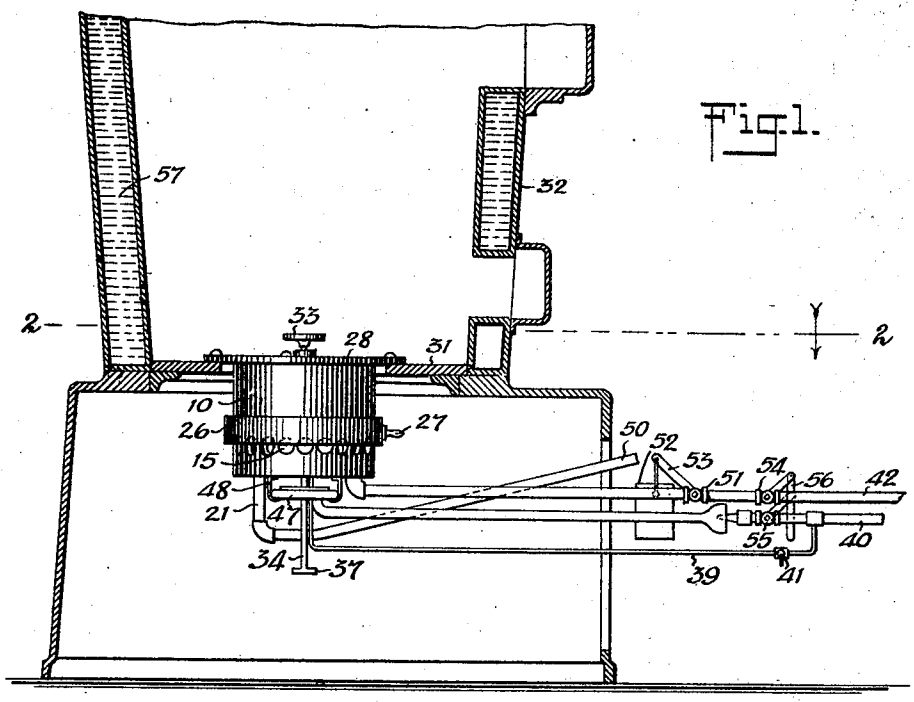
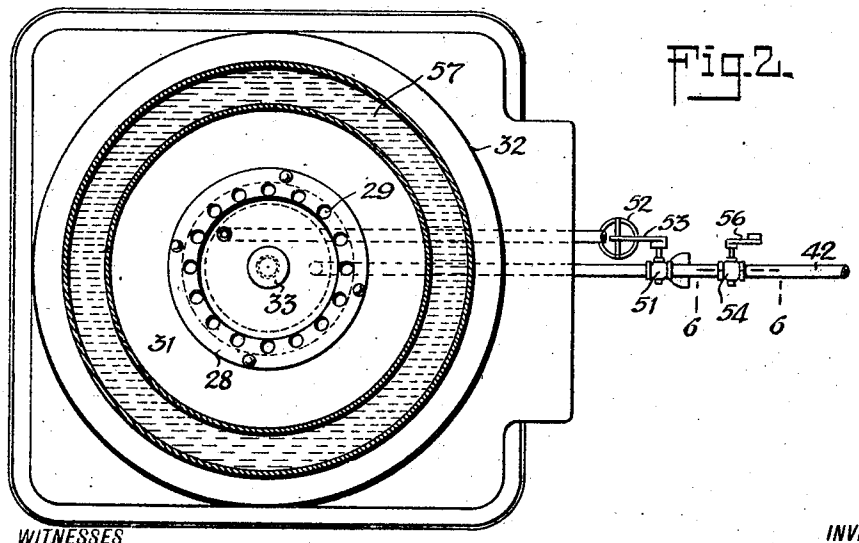


Fig. 2.



WITNESSES

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Fig. 3.

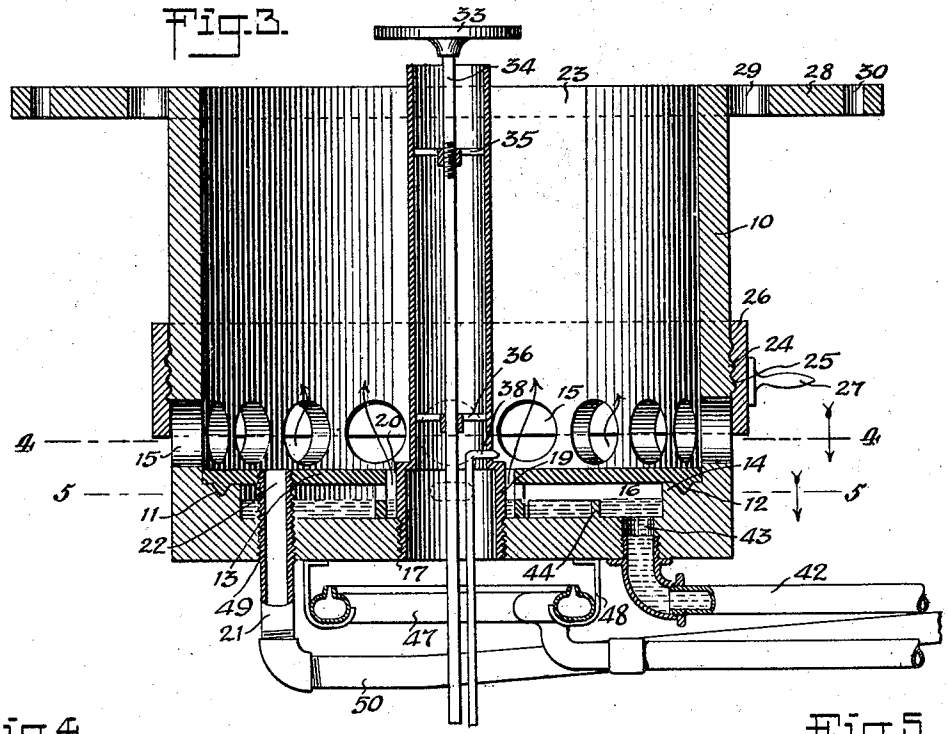


Fig. 4.

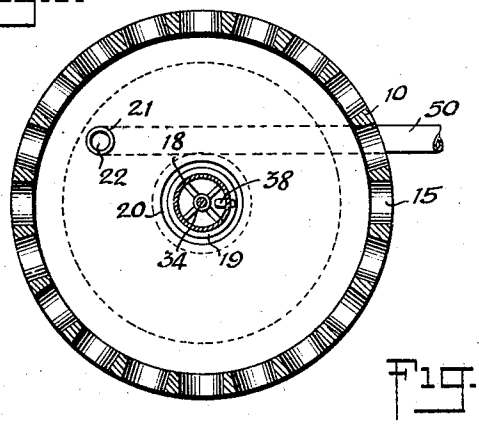


Fig. 5.

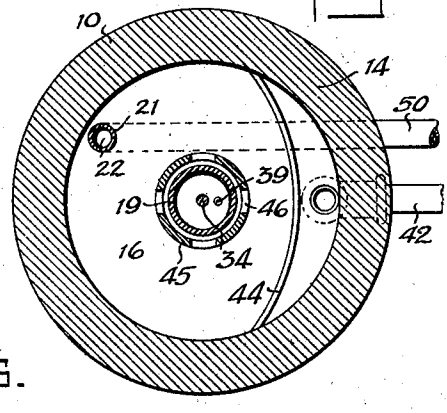
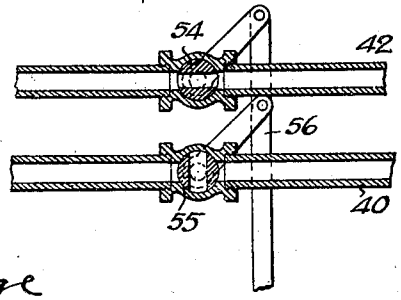


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN JOSEPH MILNES, JR., OF NEW YORK, N. Y.

OIL BURNER.

Application filed February 1, 1923. Serial No. 616,356.

To all whom it may concern:

Be it known that I, JOHN J. MILNES, Jr., a citizen of the United States, and a resident of the city of New York, Port Richmond, borough of Richmond, in the county of Richmond and State of New York, have invented new and useful Improvements in Oil Burners, of which the following is a full, clear, and exact description.

This invention relates to oil burners and was primarily designed as an oil burner for use in furnaces.

The general object of the invention is the provision of a simple and efficient burner which functions without the forming of a great amount of carbon thus eliminating the necessity for continual cleaning and allowing the operation of the burner without emitting clouds of dense smoke.

A further object of the invention is the provision of an oil burner provided with means for automatically shutting off the fuel supply when the burner ceases to operate.

Another object of the invention is the provision of a burner provided with auxiliary means for causing the vaporization of the fuel so as to facilitate the setting of the burner in operation, particularly when the atmospheric temperature is low.

These objects are accomplished by providing a casing in the lower portion of which is an oil well having a baffle extending across the same, mounting above the oil well an annular plate so as to provide a combustion chamber above the oil well, mounting concentric with the oil well and combustion chamber an air pipe having an enlarged base, which in conjunction with the annular plate forms an opening the shape of a hollow circle, establishing communication between the oil well and combustion chamber, connecting with the oil well means for supplying fuel, locating below a gas burner for assisting in vaporization, and connecting with the combustion chamber a drain pipe which conveys fuel from the burner to a means for shutting off fuel supply when the burner is not in operation.

These and other objects of the invention will be more clearly understood from the following detailed description and accompanying drawings.

Figure 1 is a vertical section through a furnace, showing a side elevation of the burner;

Figure 2 is a horizontal section along the line 2—2, Figure 1;

Figure 3 is a vertical section through the burner, disclosing its construction;

Figure 4 is a horizontal section through the burner along the line 4—4, Figure 3;

Figure 5 is a vertical section through the burner along the line 5—5, Figure 3, showing a top plan view of the oil well;

Figure 6 is a vertical section along the line 6—6, Figure 2, showing the valves.

Referring to the above-mentioned drawings, the invention includes a casing 10, in the lower portion of which an oil well 16 is formed and separated from a combustion chamber 23 provided in the upper portion of the casing by an annular plate 13. The annular plate 13 seats on a shoulder 14 extending circumferentially about the casing and having a circumferential groove 11 formed therein for receiving a circumferential bead 12 integral with the annular plate. Extending through the wall of the casing 10, establishing communication between the combustion chamber 23 and the atmosphere is a circumferential line of openings 15. In order to control the flow of air through these openings a ring 26 having an internal thread 25 is rotatably mounted on an external thread 24 provided on the casing 10. Attached to the ring 26 and serving as a means for adjusting the same is a handle 27. Integral with the upper edge of the casing 10 is an annular plate 28 having a plurality of air openings 29 therein, said openings being located in a circle. A plurality of openings 30 are also provided in the plate 28 so that it may be attached to the annular plate 31 located in the bottom of the furnace pot 32.

An air pipe 18 having an enlarged circular base 19, the lower end of which is threaded, is mounted in a threaded opening 17 in the bottom of the casing 10. The enlarged base 19 extends slightly higher than the annular plate 13 and in conjunction with said annular plate forms an annular opening 20, establishing communication between the oil well 16 and the combustion chamber 23. This air pipe allows air to be forced upward to complete the combustion as the

gases reach the upper end of the air pipe. A spreader 33 carried by a rod 34 is mounted above the air pipe 18. The rod 34 is carried by spiders 35 and 36 mounted in the air pipe 18. This spreader may be adjusted from beneath the furnace pot by means of a handle 37 attached to the lower end of the rod 34. A pilot light 38 projects through the wall of the air pipe 18 near its enlarged base. This pilot light is connected by means of a pipe 39 with a gas main 40. In order to control the operation of the pilot light a valve 41 is located in the pipe 39.

A fuel supply pipe 42 leads through an opening 43 into the oil well 16. In order to provide for an even distribution of the oil throughout the oil well 16, a curved baffle 44 is formed integral with the bottom of the oil well and encloses a crescent-shaped area, into which the pipe 42 leads, between itself and the wall of the oil well. The baffle in conjunction with a portion of the wall of the oil well thus forms a container which upon flooding distributes the oil evenly through the remainder of the oil well. A ring 45 having a plurality of openings 46 therein is mounted in the oil well in line with the inner edge of the annular plate 13. In order to vaporize the oil supplied to the oil well 16 a burner 47 connected to the gas main 40 is mounted beneath the oil well by means of brackets 48 depending from the casing 10. This burner is very necessary in cold weather to provide a means for quickly setting the burner in operation.

A pipe 21 projects through openings 49 in the bottom of the casing 10 and an opening 22 in the plate 13. Connected to this vertical pipe is a pipe 50 which curves upward until its outer end is approximately in line with the upper end of the pipe 21. These pipes are provided to carry away the oil when the burner is flooded. A valve 51 is provided in the fuel supply pipe 42 and is operated by a lever 53. Suspended from the lever 53 is a container 52 located to receive the oil from the pipe 50. Thus, if the burner ceases to function and oil continues to be supplied to the burner through the oil supply pipe 42, the oil is conveyed from the burner by means of the pipe 50 and emptied into the container 52. When the container becomes partially filled it operates the lever 53, closing the valve 51 and thus shutting off the supply of oil. A valve 54 is also mounted in the fuel supply pipe 42 in line with a valve 55 mounted in the gas main 40. These valves 54 and 55 are connected to a common lever 56 so that they may be operated together.

The burner is supported in the furnace pot 32 by attaching the annular plate 28 to the annular plate 31. As shown in Figure 1, the furnace has a water jacket 57 which serves as a means for heating water. This burner might be used for a number of different purposes.

In use and operation the valve 51 is normally open and to start the burner the lever 56 is manipulated to close the valve 54 and open the valve 55 allowing a supply of gas to the burner 47 which initially heats the base of the casing 10, after which the lever 56 is manipulated to close the valve 55 and open the valve 54 whereby the oil is supplied to the well 16. The oil coming in contact with the heated base of the casing 10 will be vaporized and will pass up through the annular opening 20 where it is ignited by means of the pilot light 38. The vaporized oil passes up into the combustion chamber in a jet the shape of a hollow circle as spaced from the air pipe 18, since the base of the air pipe which defines the inner edge of the opening is of greater diameter than the remainder of the air pipe. Air is forced up through the air pipe 18 and is directed outward by the spreader 33. This prevents the flame from impinging on the spreader and serves to spread it outward from the air pipe 18. Thus during the process of combustion the flame does not impinge on any metal parts and this eliminates the forming of carbon in the burner. Air for supplying oxygen for the combustion in the combustion chamber enters through the openings 15 in the casing 10. The process of combustion is completed at the top of the air pipe where a further supply of oxygen is provided.

In supplying the oil to the oil well the oil first enters the container formed by a portion of the wall and the baffle 44. As this container floods, the oil is distributed evenly throughout the remainder of the oil well, thus giving approximately an even depth of oil throughout the greater portion of the oil well.

I would state in conclusion that while the illustrated example constitutes a practical embodiment of my invention, I do not limit myself strictly to the exact details herein illustrated since manifestly the same can be considerably varied without departing from the spirit of the invention as defined in the appended claims.

Claims:

1. An oil burner of the character described, comprising a casing enclosing an oil well and a combustion chamber located above the oil well, an annular plate mounted in the casing separating said oil well and combustion chamber, an air pipe mounted in the casing and extending upward through said oil well and combustion chamber, the base of said air pipe being larger than the remainder of the pipe, forming in conjunction with the annular plate an opening the shape of a hollow circle, leading from the oil well into the combustion chamber, said

opening being spaced from the wall of the upper portion of the air pipe, a spreader adjustably mounted in said air pipe, and means for vaporizing the oil associated with said oil well.

2. In an oil burner of the character described including an oil well, a combustion chamber and an annular plate separating the oil well from said combustion chamber, an air pipe extending upward through said oil well and combustion chamber, said pipe having an enlarged base mounted concentric with the annular plate forming an opening the shape of a hollow circle establishing communication between the oil well and the combustion chamber, said opening being spaced from the wall of the upper portion of the air pipe.

3. An oil burner of the character described comprising an oil well, means for supplying oil to said oil well, means for vaporizing the oil in the oil well, a combustion chamber located above said oil well, an air pipe extending vertically through said combustion chamber, the oil well and combustion chamber being connected by an opening the shape of a hollow circle, the internal diameter of said opening being greater than the external diameter of the upper portion of the air pipe, and a flame spreader positioned above said air pipe for directing the current of air and the flame outward so as to space the flame from the air pipe.

4. In an oil burner of the character described including an oil well and a combustion chamber, means for delivering vapor from said oil well to the combustion chamber in a jet the shape of a hollow circle, comprising an annular plate separating the oil well from the combustion chamber, and an air pipe, the base of which is of greater diameter than the upper portion, said pipe being mounted concentric with said annular plate forming an opening between the oil well and the combustion chamber the shape of a hollow circle, the internal diameter of the opening being greater than the external diameter of the upper portion of the pipe.

5. An oil burner of the character described including an oil well, means for supplying oil to said oil well, means for vaporizing oil in the oil well, means for automatically shutting off the supply of oil to the oil well when the burner is not in operation, a combustion chamber located above the oil well, said oil well being connected with the combustion chamber by an opening the shape of a hollow circle, and an air pipe extending vertically upward through said oil well and combustion chamber, the upper portion of said air pipe being of less diameter than the internal diameter of said opening so that the jet of vapor projected into the combustion chamber is spaced from said air pipe.

6. In an oil burner of the character described, an oil well, a combustion chamber located above said oil well, an air pipe extending upward through the oil well and combustion chamber, the oil well and combustion chamber being connected by an opening the shape of a hollow circle concentric with the air pipe and having an internal diameter greater than the external diameter of the upper portion of the air pipe.

7. An oil burner of the character described, comprising an oil well, means for supplying oil to said oil well, means for evenly distributing the oil supplied to said oil well, means for automatically shutting off the supply of oil when the burner is not in operation, means for vaporizing the oil in the oil well, a combustion chamber positioned above the oil well and communicating with the same through an opening the shape of a hollow circle, an air pipe having an enlarged base which defines the inner edge of said opening shaped like a hollow circle thus spacing the opening outside of the upper portion of the air pipe, a spreader adjustably mounted in the air pipe for directing a current of air outward, and a pilot light extending upward into said air pipe for igniting the gas when the burner is set in operation.

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