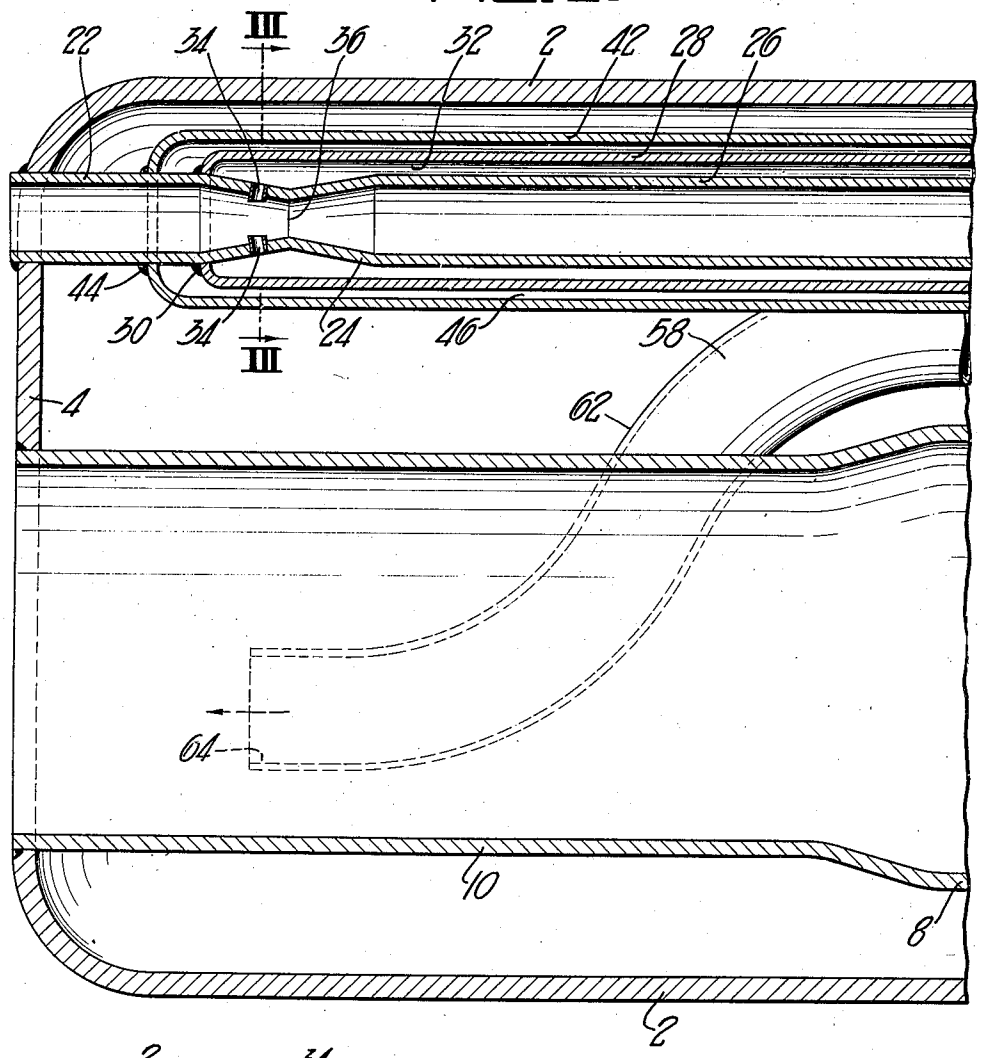
April 22, 1947. H. S. CRESS 2,419,336

OIL BURNER

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FIG. 1.



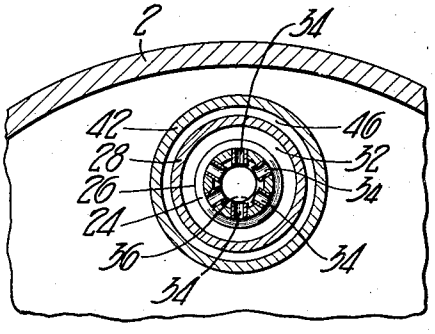


FIG. 3.

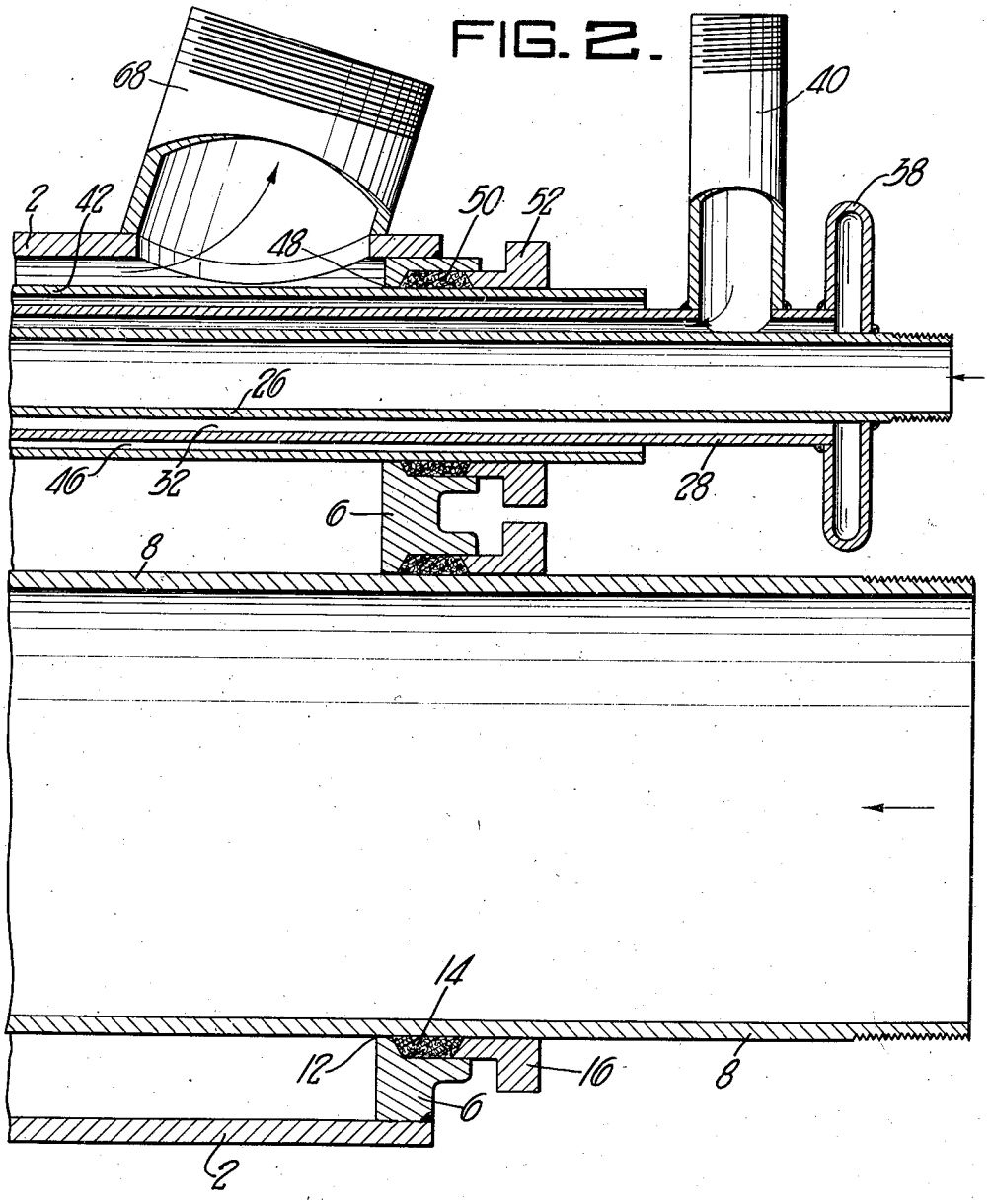
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FIG. 2.



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UNITED STATES PATENT OFFICE

2,419,336

OIL BURNER

Howard S. Cress, Duluth, Minn., assignor to The American Steel and Wire Company of New Jersey, a corporation of New Jersey

Application March 6, 1944, Serial No. 525,218

2 Claims. (Cl. 299—140)

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This invention relates to an oil burner, especially for use in open hearth furnaces.

It is an object of my invention to improve the atomizing portion of an oil burner.

This and other objects will be more apparent after referring to the following specification and attached drawings, in which:

Figure 1 is a longitudinal sectional view of the front end of the burner;

Figure 2 is an extension of Figure 1 showing the rear part of the burner; and

Figure 3 is a cross sectional view on the line III—III of Figure 1.

Referring more particularly to the drawings, the reference numeral 2 indicates the hollow body or jacket of the burner within which the cooling water is contained. This body may be made from a standard 12 inch pipe 11 feet long having a plate 4 welded to the front end, and a plate 6 welded to the rear end. A gas supply line 8 made from a standard 6 inch pipe extends longitudinally through the body 2 and terminates in a burner head 10 at the forward end of the body, the burner head merely being a 5 inch pipe welded to the pipe 8 and to the plate 4. The pipe 8 passes through an opening 12 in the plate 6 and is sealed by means of packing 14 which is held in place by the packing gland 16.

Spaced from the pipe 8 is an atomizing oil burner head 22 of the orifice type welded to the front wall 4 and having its rear end 24 welded to the steam supply pipe 26 which is made from a standard 1 inch pipe. Surrounding the pipe 26 is a standard 1½ inch pipe 28 which is welded to the burner head 22 at 30, the space between the pipes 26 and 28 forming a passageway 32 for the oil. A plurality of tubes 34 are arranged around the periphery of the burner head 22 at a point on the discharge side of the orifice 36, the ends of these tubes being spaced from the center line of the burner head a distance equal to the radius of the orifice. The steam and oil pipes 26 and 28 are connected at the rear end of the burner by means of the expansion joint 38. Oil is supplied to the pipe 28 through the line 40. Surrounding the tube 28 is a standard 2 inch pipe 42 which is welded to the burner head 22 at 44, the space 46 between the tubes 28 and 42 protecting the oil from the cooling effects of the cooling water. The rear end of the pipe 42 passes through an opening 48 in the wall 6 and is sealed therein by means of packing 50 which is held in place by the packing gland 52.

A water cooling supply pipe 58 is bent downwardly around the periphery of the body 2 as shown at 62 in Figure 1 and discharges its water through the end of pipe at 64. The water is discharged from the body through the pipe 68.

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It will be understood that the burner may operate on gas alone, on oil alone, or on both at the same time. Coke oven or other fuel gas is delivered through the pipe 8 to the burner head 10 where it ignites. Oil or tar, which are to be considered interchangeable here and elsewhere in the specification and claims, enters the passageway 32 between the pipes 26 and 28 and is discharged through the pipes 34 into the path of the steam which enters the pipe 26. The oil is kept at its proper viscosity at all times since it is insulated from the cooling water by the air space 46 and is heated by the steam in pipe 26. Due to the projection of the pipes 34 into the burner head, thorough mixing of the steam and oil is assured and the oil is not driven back against the walls of the burner head. The mixing of the steam and oil is started some distance from the end of the burner head which assures combustion taking place almost immediately as the mixture leaves the end of the burner, this providing a flame which projects from the burner head to the center of the furnace and prevents the rapid burning out of the end wall. Relative movement between the pipes 26 and 28 due to the difference in temperature is absorbed by the expansion joint 38, thus preventing breaking of the joint between the pipes.

While one embodiment of the invention has been shown and described, it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

I claim:

1. An oil burner comprising a steam supply line, an orifice type burner head attached to said supply line, an oil supply line surrounding said steam line, and a plurality of tubes extending from the oil line into the burner head between the orifice and the discharge of the head, the discharge ends of said tubes being spaced from the center line of said head a distance substantially equal to the radius of said orifice.

2. An oil burner comprising a steam supply line, an orifice type burner head attached to said supply line, said orifice being of a smaller diameter than the inside diameter of the steam supply line and the walls of said burner head sloping outwardly from the orifice toward both the inlet and discharge end of said head, an oil supply line surrounding said steam line, said burner head having a plurality of openings therein ar-

ranged around the periphery thereof between the orifice and the discharge of the head for admitting oil to said burner head.

HOWARD S. CRESS.

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