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1,469,465

S. J. VELTON

SUPERHEATING OIL BURNER

Filed May 23, 1922

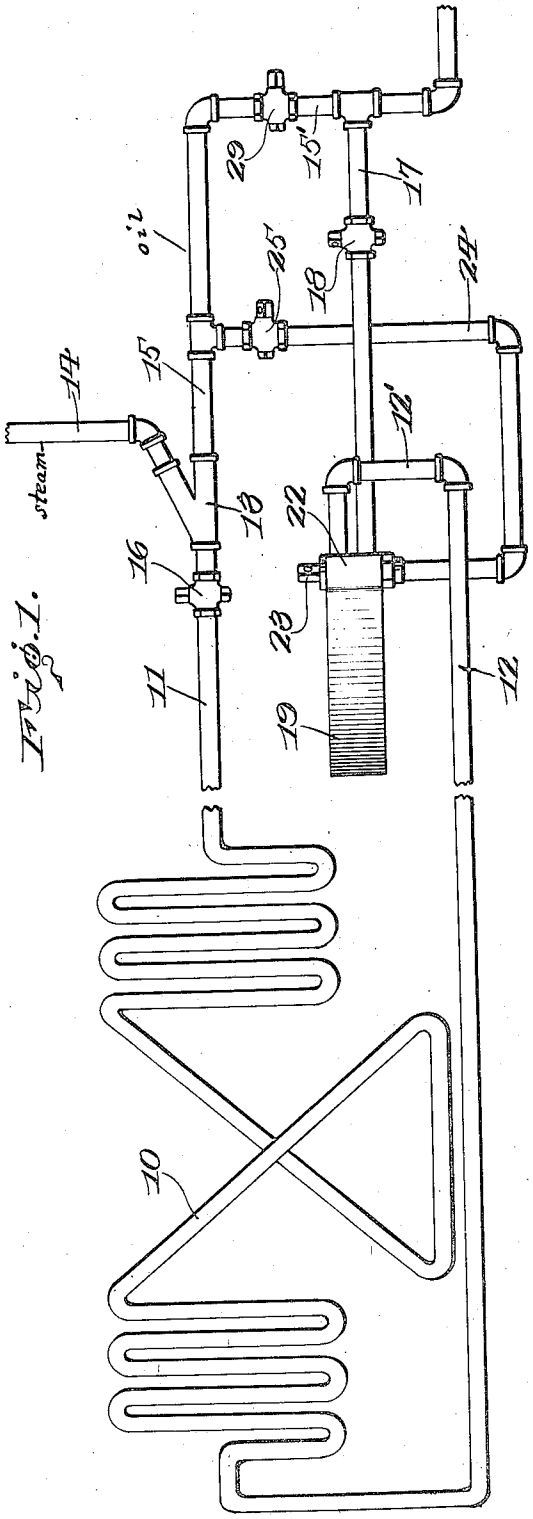


Fig. 1.

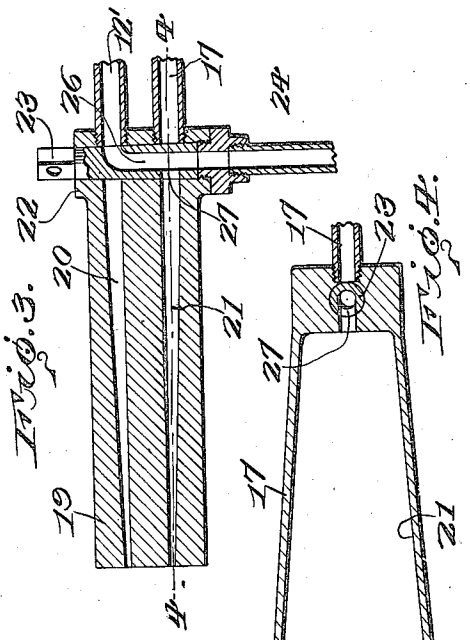


Fig. 3.

Fig. 4.

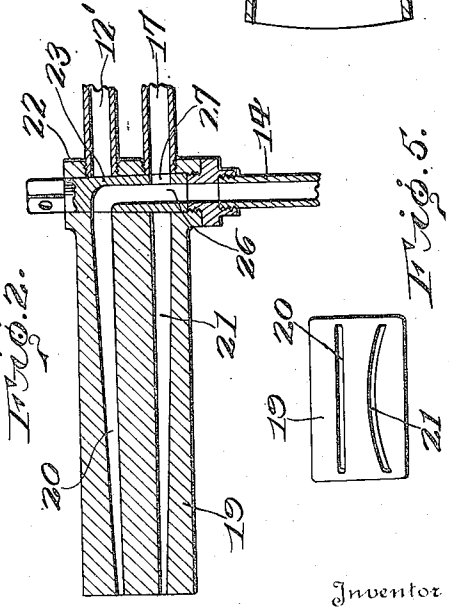


Fig. 2.

Fig. 5.

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UNITED STATES PATENT OFFICE.

STEVE JENAR VELTON, OF HOUSTON, TEXAS.

SUPERHEATING OIL BURNER.

Application filed May 23, 1922. Serial No. 563,053.

To all whom it may concern:

Be it known that I, STEVE J. VELTON, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Superheating Oil Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in heating devices for locomotive boilers, as well as for stationary boilers.

One object of the invention is to provide a device for superheating steam and oil before the same is discharged from the burner nozzle, against the heating coil.

Another object is to provide a device of this character so constructed and arranged that the burner may be cleaned of any sediment or cloggings, by direct action of live steam.

A further object is to provide a device of this character wherein the oil may be led through an emergency conduit, directly to the burner, should the superheating coil become damaged, and incapable of use.

Other objects and advantages will be apparent from the following description when taken in connection with the accompanying drawing.

In the drawing:

Figure 1 is a plan view of the oil and steam heating system,

Figure 2 is an enlarged vertical longitudinal sectional view through the burner, with the valve in position to permit oil being drawn to the burner without passing through the heating coil.

Figure 3 is a sectional view of the burner similar to Figure 2, but showing the valve in position to cause a flow of steam, only, for the purpose of cleaning out the burner.

Figure 4 is a horizontal longitudinal sectional view through the burner, on the line 4—4 of Figure 3.

Figure 5 is an end view of the burner nozzle, looking into the mouth of the nozzle.

Referring particularly to the accompanying drawing, 10 represents a heating coil, which is adapted to be disposed within a fire-box, beneath a boiler, and which has its ends 11 and 12 extending in parallel relation therefrom. Connected to the end 11 is a Y-coupling 13, to one branch of which is connected the pipe 14, leading to a source of steam supply, while a pipe 15 is connected to the other branch, and leads to a source of oil supply. In the end 11, between the coil and the coupling, is a cut-off valve 16. The pipe 15 has an angularly extending leg 15′, and in this leg is connected a pipe 17 which leads to the rear end of the burner, which will be later more clearly described. In the pipe 17 is a cut-off valve 18.

The burner comprises a forwardly flaring body 19, having the upper and lower longitudinal passages 20 and 21 therethrough, and in the rear end of the body there is formed a vertical tubular portion 22, in which is rotatably disposed the valve plug 23. Leading from the pipe 15, and connected to the lower end of this tubular portion 22, is a pipe 24, and in this pipe, adjacent the pipe 15, is a cut-off valve 25. Into the rear side of the portion 22 are connected the pipe 17, and the extension 12′ of the coil end 12, the former registering with the rear end of the upper passage 20, while the latter registers with the lower passage 21. Formed longitudinally through the valve plug 23 is a bore 26, the lower end of which is disposed to receive steam from the pipe 24, while the other end turns laterally for alternate registration with the pipe 12′, and the passage 20. Adjacent the lower end of the plug 23 there is formed a port 27, which is arranged to register with the pipe 17 and the lower passage 21. In the pipe 17, between the burner and the pipe leg 15′, is a cut-off valve 18, which serves to cut off the flow of steam or oil to the burner.

When the system is in proper working order, the valve 18 is closed, as is also the valve 25, the valves 16 and 29 being open. The valve is turned into the position shown in Figure 3, with the upper end of the passage 26 registering with the pipe 24, and the port 27 registering with the inner end of the lower passage 21, of the burner. The valve 16 being open, steam flows from the pipe 14, through the Y-coupling 13, through the coil 10, and into the bore 26, through the upper end thereof, and thence out through the port 27, to the lower passage 21, of the nozzle. The burning fuel, at the mouth of the passage 21 is directed against the coil 10, so that the same is highly heated. The

passage of steam through the coupling 13, creates suction which draws oil through the pipes 15 and 15′, which oil mixes with the steam and passes through the coil, to be superheated, before passing through the burner.

When the valve 23 is in the position shown in Figure 2, the valves 16, and 29 are closed, while the valves 18 and 25 are open. Steam then flows back through the lower branch of the coupling 13, through the pipe 24, into the lower end of the bore 26, of the valve 23, which draws oil directly from the oil supply, through the pipe 17, and the port 27, the steam and oil mixing and passing out through the upper passage 20, of the burner nozzle. In this position, the coil 10 is completely cut off, in the event that the same leaks, or needs repairs, or for other reasons.

When it is desired to clean the burner, and especially the upper passage 20, the valves 18 and 29 are closed, and the valves 16 and 25 opened, with the valve 23 in the position of Figure 2. Steam then flows through the coil and through the burner. When the lower passage 21 is to be cleaned, the valve 23 is set into the position of Figure 3, with the valves 18, 25, and 29, closed, and the valve 16, open. Steam then flows through the coil, and down through the valve 23, to the passage 21, through the port 27. In each of the instances just mentioned the valves which permit flow of oil are cut off.

What is claimed is:

1. A steam and oil burning system comprising a superheating coil, a burner, connections between the coil and the burner, an oil conduit, a steam conduit connected with the oil conduit and with the coil, cut-off valves in the oil and steam conduits, and a valve in the burner adapted to be moved into controlling positions relative to the positions of the cut-off valves, for cutting out the coil and for controlling the flov steam and oil.

2. A steam and oil burning system comprising a superheating coil, a burner, a steam conduit, an oil conduit, a valve in the burner, one end of the coil being connected with the burner, the steam conduit being connected with the coil and with the burner, valves in the conduit, the burner having an oil burning passage and a combined steam and oil burning passage.

3. A steam and oil burning system comprising a valve, a superheating coil, a steam conduit connected with one end of the coil, the other end of the coil being connected with the burner, an oil conduit connected with the steam conduit, a valve between the steam conduit and the coil, a valve in the burner, a plurality of passages in the burner valve, a conduit between the oil conduit and the burner valve, a valve in the last-named conduit, and a valved conduit between the oil conduit and the burner valve.

4. In a superheating oil system, a superheating coil, a burner having oil and steam, and oil burning passages, a steam conduit, the ends of the coil being connected to the steam conduit and to the burner, an oil conduit having connection with the steam conduit and with the burner, a valve in the burner for controlling flow of fluid to the passages, a conduit between the oil conduit and the valve, and valves in the conduits for opening and closing movement in cooperative relation to the opening and closing movement of the burner valve whereby to control the individual flow of oil and steam through the valve and coil, and the combined flow thereof through the burner and coil.

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

STEVE JENAR VELTON.

Witnesses:
Mrs. Myrtle McAlister,
Eva Gorin.