

No. 789,739.

PATENTED MAY 16, 1905.

F. W. JACKSON.
MEANS FOR HEATING LIQUID FUEL.
APPLICATION FILED MAY 9, 1904.

Fig. 1.

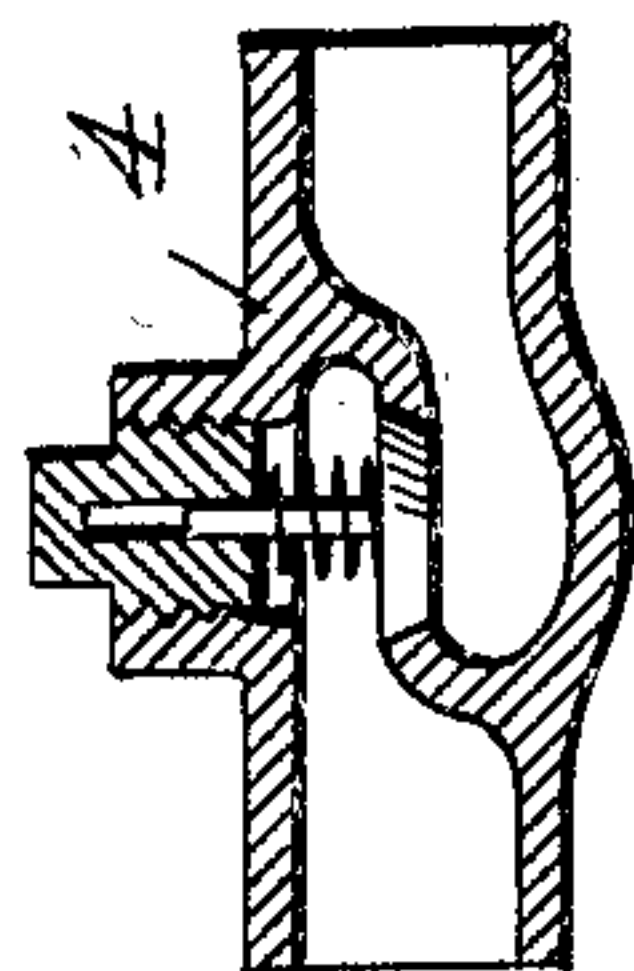
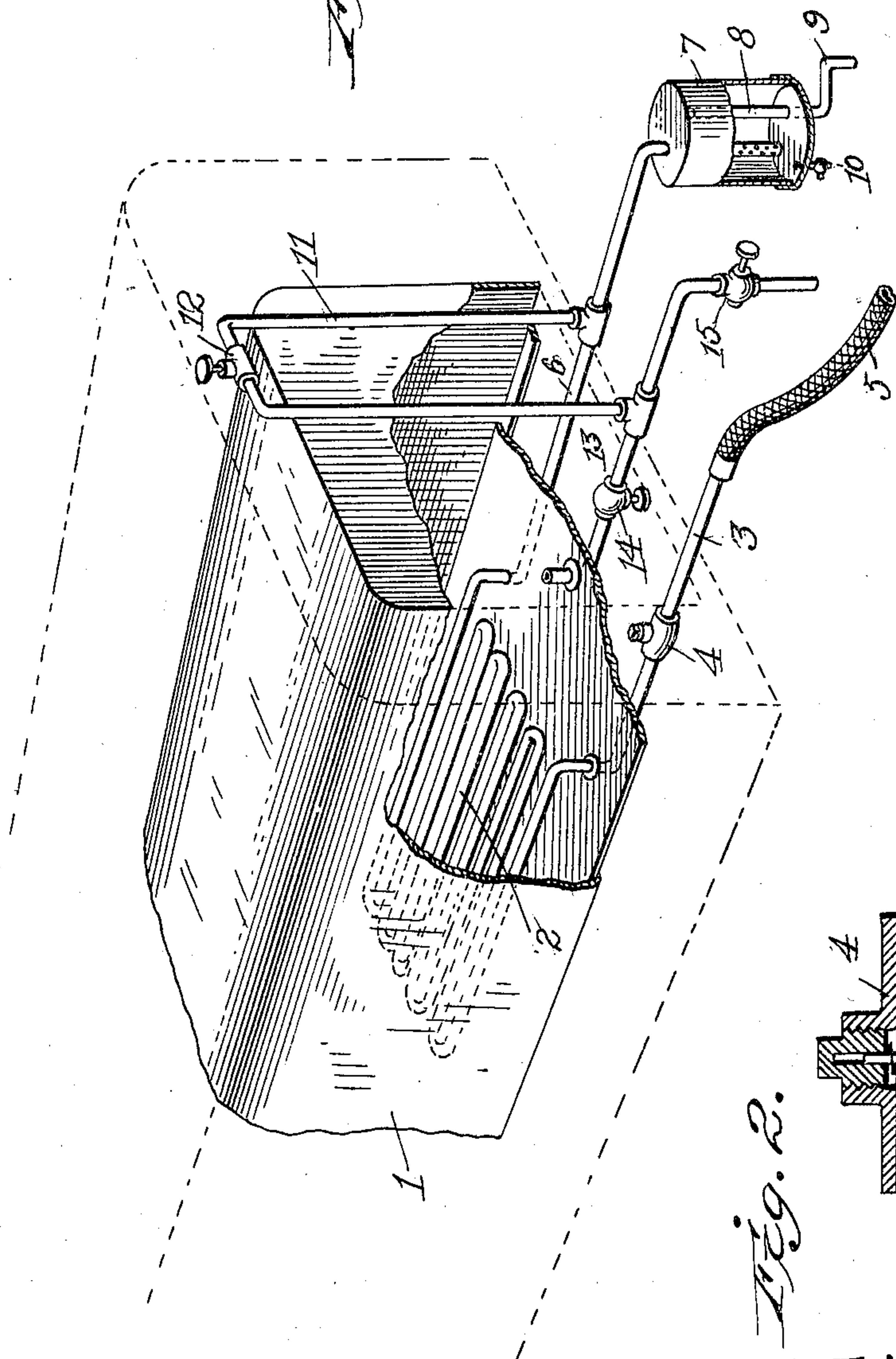


Fig. 2.

Witnesses

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MEANS FOR HEATING LIQUID FUEL.

SPECIFICATION forming part of Letters Patent No. 789,739, dated May 16, 1905.

Application filed May 9, 1904. Serial No. 207,072.

To all whom it may concern:

Be it known that I, FREDERICK W. JACKSON, a citizen of the United States, residing at Needles, in the county of San Bernardino and State of California, have invented new and useful Improvements in Means for Heating Liquid Fuel, of which the following is a specification.

This invention relates to apparatus for burning liquid fuel, and it is especially applicable to oil-burning locomotives. Inasmuch as the oil is usually thick and heavy, the oil-tank is provided with a steam-heated coil of pipe for the purpose of rendering the oil more liquid, so that it will flow readily to the burners. Provision is also made for turning the steam directly into the oil when desired in order to effect a quicker heating.

My improvements aim to prevent the oil from getting into the heating-coil, avoid waste of oil, keep the oil more free from the water of condensation when direct heating is employed, simplify the piping and valves so that the most inexperienced fireman cannot make a mistake, use less steam, prevent injuring the track by the exhaust from the coil, and guard against the bursting of the heater-hose by careless handling of the valves.

In the accompanying drawings, Figure 1 is a diagrammatic perspective view of my improved system of heating-pipes, and Fig. 2 is a section of the check-valve.

In the drawings the water-tank is shown in dotted lines with the smaller oil-tank 1 inside of it; but this arrangement is not essential, and, in fact, in many locomotives the oil-tank is located outside the water-tank. The oil-tank is shown partly broken away to disclose the pipe connections. In the lower part of the oil-tank is the heater-coil 2, which connects at one end with the steam-supply pipe 3, provided with a check-valve 4 and connected by a flexible hose 5 with a pipe on the engine taking steam from the boiler and provided with a suitable stop-valve. The boiler and its pipe and valve are not shown, as they are well-known parts of such a system. The other end of the coil 2 is connected with a pipe 6, which is permanently open to the atmosphere, preferably through a muffler. In

Fig. 1 the muffler is shown as consisting of a closed vessel 7, into which the pipe 6 enters through its upper end, the depending portion of the pipe inside the vessel being perforated with fine holes. An exhaust-pipe 8 has its open upper end near the top of the vessel and passes down through the bottom of the vessel, terminating in an elbow 9, having an opening, preferably about a quarter of an inch in diameter. If desired, the muffler may have a petcock 10 for draining it.

For direct heating the steam is taken, preferably, from the pipe 6 through an upright loop or arch 11, rising several inches above the top of the oil-tank. This branch pipe is provided with a stop-valve 12 and leads to a pipe 13, which enters the bottom of the oil-tank. This pipe has a stop-valve 14, which is normally open, being closed only in case of accident to the system to keep the oil from escaping. The pipe 13 has also a stop-valve 15, which is normally closed and is used only to drain off from the oil-tank any water that has collected therein by condensation of the steam used for the direct heating.

The operation of my improved system is as follows: When steam is turned on at the boiler, it flows through the check-valve 4 into the coil 2 and thence into the muffler and out through the pipe 8. In the former systems there was no direct exhaust to the atmosphere, so that unless great care was used the pressure in the coil 2 and pipe 3 would sometimes rise to such a point as to burst the heater-hose 5. This involved considerable delay in replacing the hose and considerable expense also, because this grade of hose is costly. With my system such an accident cannot occur. If it is desired to use the direct-heating method of heating, the stop-valve 12 is opened, and by reason of the height of the arch 11 only dry steam will pass to the pipe 13. There is therefore much less likelihood of water collecting in the oil-tank, since none will be carried over through the arch 11. Moreover, as the top of the arch is about six inches above the top of the oil-tank the oil cannot follow back from the pipe 13 into the coil, as happens when this arch is not used and the direct-heating valve is left open.

It will be observed that the muffler is arranged below the level of the heating-coil, so that all condensation drains into said muffler, thus keeping the coil dry and hot.

5 Having thus described my invention, what I claim is—

1. The combination with an oil-tank for a locomotive, of a heating-coil therein, a steam-supply pipe for said coil connected by a flexible hose with the locomotive-boiler, a check-valve in the supply-pipe between said hose and said coil, a pipe rising from the exhaust end of said coil and entering the tank, and a muffler connected with the exhaust end of said
10 coil and arranged below the level thereof.

2. The combination with an oil-tank for a locomotive, of a steam heating-coil therein, an arched branch pipe rising from the exhaust end of said coil to a point above the oil in said
20 tank, the discharge end of said arched pipe opening into the lower part of said tank, and a stop-valve in said arched pipe.

3. The combination with an oil-tank for a

locomotive, of a steam heating-coil therefor, a drain-pipe opening into the bottom of said
25 tank, stop-valves in said drain-pipe, an arched pipe connected with the exhaust end of said coil and with said drain-pipe and rising above the level of the oil, and a stop-valve in said arched pipe.

4. The combination with an oil-tank for a locomotive, of a steam heating-coil therein having a permanently-open exhaust, a drain-pipe for said tank having two stop-valves, an arched pipe rising from the exhaust end of
35 said coil and connected with said drain-pipe between the two stop-valves, and a stop-valve in said arched pipe.

In testimony whereof I have signed my name to this specification in the presence of two sub-
40 scribing witnesses.

FRED. W. JACKSON.

Witnesses:

O. P. HART,
R. S. CHENEY.