

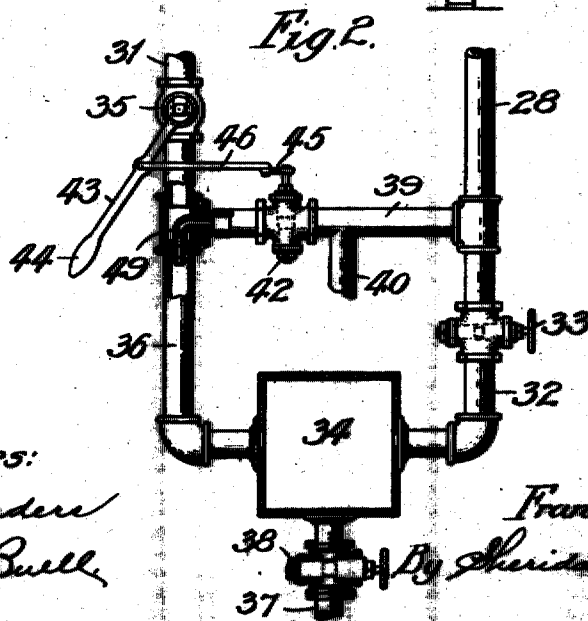
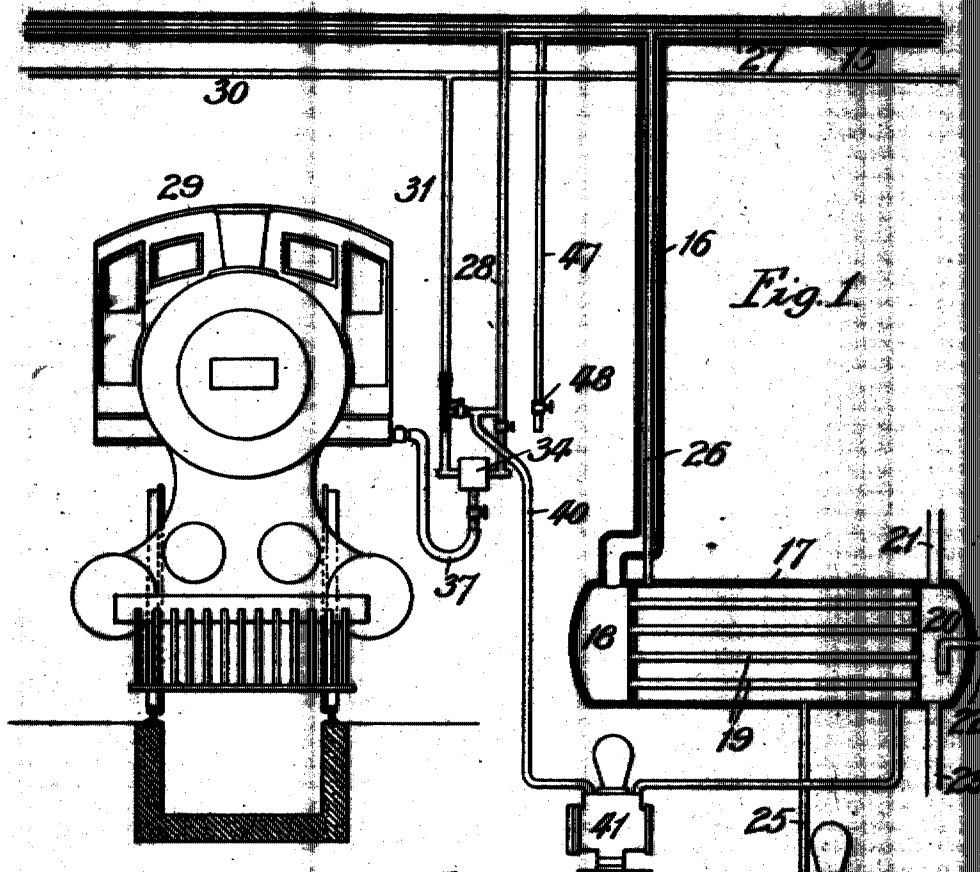
P. W. MILLER.

BOILER WASHOUT AND REFILLING SYSTEM.

APPLICATION FILED FEB. 17, 1909. RENEWED JULY 8, 1911.

1,001,293.

Patented Aug. 22, 1911.



Witnesses:
John Ender
Chas. Bull

Inventor:
Frank W. Miller

By Sheridan & Co.
Attys.

UNITED STATES PATENT OFFICE.

FRANK W. MILLER, OF CHICAGO, ILLINOIS.

BOILER WASHOUT AND REFILLING SYSTEM.

1,001,293.

Specification of Letters Patent.

Patented Aug. 22, 1911.

Application filed February 17, 1908, Serial No. 416,216. Renewed July 5, 1911. Serial No. 636,996.

To all whom it may concern:

Be it known that I, FRANK W. MILLER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Boiler Washout and Refilling Systems, of which the following is a specification.

The object of my invention is to provide an improvement in the connections for a system of piping adapted to lead wash water and feed water to a boiler.

I have illustrated my invention as applied to a locomotive boiler, but I desire to have it understood that it may be used for any steam boiler.

The invention relates to the means for controlling the relative proportion of hot and cold water supplied to the boiler.

In washing locomotive boilers in the round-house it is important to avoid sudden or extreme changes of temperature because the unequal contractions and expansions set up thereby are liable to strain the rivets or other parts and thus seriously damage the boiler. Hence it becomes desirable to arrange the valves controlling the wash water supply pipes so that it shall be impossible to turn cold water into the boiler after the hot has been blown off therefrom. In addition to this it is desirable to arrange a simultaneous control for both the hot and cold water conduits so that the water may be mixed with a minimum necessity for care on the part of the attendant. When it is considered that the labor of washing a boiler is easier for the operators by using cold water, it becomes obvious that there is a temptation to lighten their labor in this way at the expense of the boiler. The men who ordinarily do the work of boiler washing in the round-houses are not highly skilled or highly paid operatives and for this as well as the other reasons I believe that there is great advantage in employing my invention so as to make it impossible for them to damage the boiler by the use of cold water.

Referring to the drawings—Figure 1 is an elevation showing my improved system, and Fig. 2 is an elevation of a detail thereof on an enlarged scale.

A main pipe 15 extends through the roundhouse passing near each of the engine stalls and has branches 47 with connections 48 by which the dirty water in the boiler may be blown off into the conduit 15. The

conduit 15 delivers the blow-off water into the branch 16 and thence into the head 18 of the heat transferring apparatus 17. This has a plurality of tubes 19 extending between the two heads 18 and 20, and the blow-off water passes from the head 18 through tubes 19 into the head 20. From the latter, steam may escape through the pipe 21; hot water may be drawn off for further use through the pipe 22, or the hot water may be sent to the sewer through the pipe 23. A cold water supply pipe 25 leads into the drum 17 around the tubes 19. An outlet from this drum is afforded by the pipe 26 which passes along the axis of the pipe 16 into the main pipe 27, which is in the axis of the conduit 15. At each locomotive stall a branch 28 is taken off leading to the locomotive 29. A cold water main 30 extends through the roundhouse with a branch 31 at each locomotive stall. The hot water pipe 28 leads through a valve 33 and a branch 32 to the mixing chamber 34, and the cold water pipe 31 leads through a rotary valve 35 and pipe 36 to the same mixing chamber. From this mixing chamber a pipe 37 leads through the valve 38 to the locomotive. Above the mixing chamber 34 is a cross pipe 39 with a rotary valve 42 therein connecting the hot water pipe 28 and the cold water pipe 31. From this cross pipe a branch 40 leads to a pump 41 and thence to the drum 17. The arm 43 on the valve 35 has a handle 44 and is connected by a link 46 to the arm 45 of the valve 42. The cross pipe 39 delivers into the pipe 36 by means of a nozzle 49.

The blow-off water from the various locomotives in the roundhouse is delivered into the conduit 15 and thence finds its way through the branch 16 through the heat transferring apparatus 17, where it gives up heat to the water delivered by the pump 24 into the space surrounding the tubes 19. The water thus heated goes into the main 27, and by the principle of counterflow may be made nearly as hot as the blow-off water from the boiler. When it is desired to wash the boiler it is imperative that the water should not be cold else it will cause unequal contraction of the boiler shell and consequent damage. Therefore, the valve 35 in the cold water pipe and the valve 42 in the branch from the hot water pipe are connected in the manner that has been described, so that any effort to open the cold

water valve must necessarily open the hot water valve to a considerable extent. Thus it is never possible for a workman to use water that is too cold for washing the boiler. The nozzle 49 and the mixing chamber 34 secure thorough intermingling of the hot and cold water. But when it is desired to put hot water alone into the boiler, as in refilling it, this may be done by opening the valve 33. The pump 41 keeps the water in the hot water main circulating, so that the water in the branch pipe 28 shall not become cold.

It will be seen that I have provided a system by which it is impossible to supply cold water to the boiler without the admixture of a sufficient amount of hot water to modify its temperature to a desirable extent, but it is possible at any time to supply hot water without mixing in the cold water.

I claim:

1. In a system for supplying water to a boiler, the combination with a hot water supply conduit leading to the boiler, of a cold water supply conduit also leading to the boiler, a cross conduit connecting said

hot and cold water conduits, a valve in said hot water conduit intermediate of said cross conduit and the boiler, and valve mechanism for controlling the flow through the cold water conduit and simultaneously controlling the flow of hot water through said cross conduit to the cold water conduit.

2. In a system for supplying water to a boiler, the combination with a mixing chamber, of a conduit leading from said chamber to a boiler, a hot water supply conduit communicating with said chamber, a cold water supply conduit also communicating with said chamber, a cross conduit connecting said hot and cold water conduits, a valve in said hot water conduit intermediate of the cross conduit and said chamber, and valve mechanism for permitting the flow of cold water to said chamber simultaneously with the flow of hot water through said cross conduit to the cold water conduit.

FRANK W. MILLER.

Witnesses:

GEO. L. WILKINSON,
ANNA L. SAVOIE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
