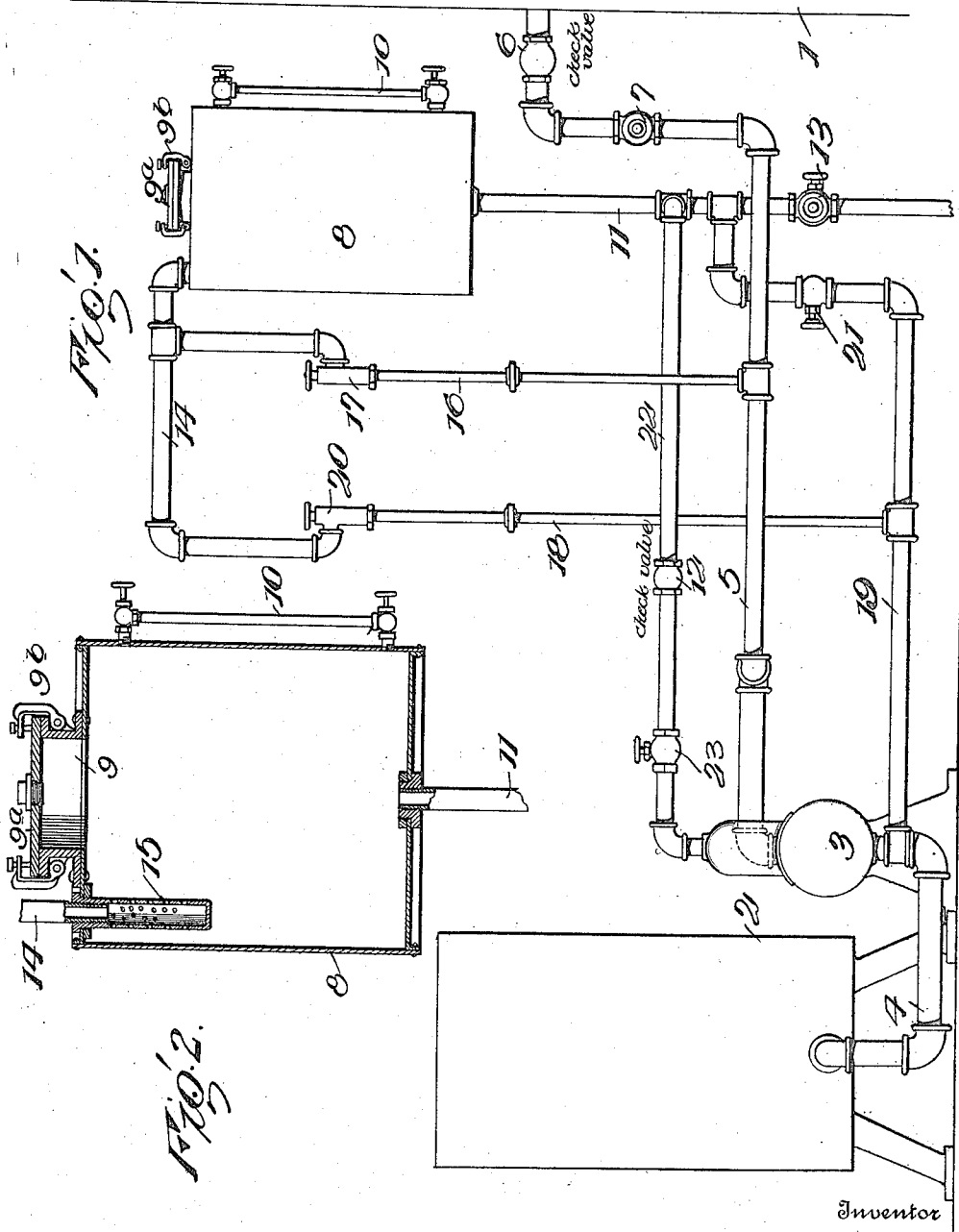


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BOILER COMPOUND FEEDER.
APPLICATION FILED JAN. 27, 1915.

1,165,608.

Patented Dec. 28, 1915.



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UNITED STATES PATENT OFFICE.

WILLIAM KUTH, OF CINCINNATI, OHIO.

BOILER-COMPOUND FEEDER.

1,165,608.

Specification of Letters Patent.

Patented Dec. 28, 1915.

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To all whom it may concern:

Be it known that I, WILLIAM KUTH, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Boiler-Compound Feeders, of which the following is a specification.

In the operation of boilers and particularly such as are designed for generating steam, the interior walls and surfaces become incrustated with scale and other deposits resulting from the impurities and minerals held in solution in the water. Moreover, under certain conditions the water foams and creates a noise. These features are objectionable and are obviated to a greater or less extent by adding chemicals to the water in the boiler. Such chemicals are most advantageously applied by being added to the feed water and it is the purpose of the present invention to provide means which admit of the chemical being added to the feed water in regulated quantity so as to obtain the best results and prevent any waste of the chemical.

A further purpose of the invention is the provision of means which may be readily adapted to any boiler and which admits of using a liquid or solid compound as the agent for preventing incrustation or the formation of scale and which will obviate foaming and the cause generally resulting in noise when the water is boiling.

A further purpose of the invention is the provision of means which admits of the tank or container holding the chemical being easily and quickly emptied of its contents when required, the arrangement being such as to admit of a forced circulation of the feed water through the tank so as to thoroughly cleanse the same.

A further purpose of the invention is the provision of an appliance involving a simple construction and arrangement of pipes and valves, thereby admitting of readily adapting the same to locations and varying conditions met with in the installation of the appliance.

The invention consists of the novel features, details of construction and combinations of parts which hereinafter will be more particularly set forth, illustrated in

the drawings hereto attached and finally claimed.

Referring to the drawings which illustrate an embodiment of the invention.

Figure 1 is a front view showing a boiler compound feeder embodying the invention in operative position; and Fig. 2 is an enlarged view of the tank or container for receiving the compound.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The numeral 1 designates a steam boiler furnace of any type, the same being illustrated to show the application of the invention.

The numeral 2 designates a heater for the feed water, such heater being supplied from any suitable source and the water being preliminarily heated therein in any desired way. A pump 3 is connected with the heater 2 or source of supply by means of a pipe 4. A feed water pipe 5 connects the pump 3 with the boiler 1 and supplies the feed water. A hand valve 7 and check valve 6 are located in the length of the pipe 5. In this arrangement the pump 3 draws the feed water from the tank 2 or other source of supply and forces the same through the pipe 5 into the boiler 1 when the valve 7 is open. This arrangement of parts may be of any well known construction.

A tank or container 8 is suitably arranged and is adapted to receive the chemical, compound, or other agent to be fed to the boiler for preventing incrustation, the formation of scale or foaming of the water. The container 8 may be of any capacity and disposed in any convenient position. An opening 9 is formed in the upper end of the container 8 and admits of supplying the chemical or other agent to the container. The opening 9 is protected by any suitable closure. A sight gage 10 of any type is connected with the tank 8 to admit of the level of the chemical therein being readily ascertained. A pipe 11 connects with the bottom of the tank 8 and is coupled directly to a waste pipe provided with a manually operable valve 13. A supply pipe 14 connects with the upper end of the tank 8 and extends therein a short distance, as indicated

at 15. The extension 15 of the pipe 14 is provided in its sides with minute openings or may be protected by means of a screen, thereby preventing particles passing from the tank 8 into the pipe 14.

A pipe 16 connects the pipe 14 with the pipe 5 and is provided in its length with a valve 17. By opening the valve 17, more or less, the amount of the chemical fed to the boiler may be regulated. A pipe 18 connects the supply pipe 14 with a pipe 19. A valve 20 in the length of the pipe 18, or disposed at the juncture of such pipe with the pipe 14, admits of controlling the communication between the container 8 and the pipe 19. The pipe 19 has connections at one end with the pipe 4 and the suction end of the pump 3 and at its opposite end with the pipe 11. A valve 21 is located in the length of the pipe 19. A pipe 22 connects the delivery end of the pump with the pipe 11. The pipe 22 is provided with a manually operable valve 23 and a check valve 12.

The chemical, compound or other like agent to be fed to the boiler is placed in the tank or container 8, such tank being supplied with water from the pump 3 by means of the pipes 22 and 11. When charging the tank 8 with water the valve 23 is opened and said valve remains open as long as the boiler is being fed with the chemical or other agent, the check valve 12 serving to hold the pressure in the tank and said pressure should be just enough to carry the chemical to and into the supply pipe 14 with a natural flowing action. When the fires are to be banked and circulation of water stopped, the valve 21 is opened and the tank may then be pumped out, its contents passing through the pump and the pipe 5 into the boiler so that none of the chemical is lost. The valve 21 is closed at all other times. When the supply of chemical is consumed, the valves 21 and 23 are closed and the valve 13 opened so that the container 8 may be washed out and any mud or sediment which may have collected therein may drain into a sewer or other waste receptacle. When the valve 7 in the pipe 5 is opened and the valve 21 closed the water is drawn into the pump through the pipe 4 and forced therefrom through the pipe 5 into the boiler 1. By opening the valve 17 more or less and closing the valve 20 the solution is drawn from the tank 8 in regulated quantity and is mixed with the feed water in the pipe 5 and supplied with such feed water to the boiler 1. If scale should form in the pump, the valve 17 is closed and the valve 20 opened, whereupon the chemical will be drawn through the pipe 19 into the pump and thence passed through the feed water pipe 5 to the boiler. Unless the pump is to be cleaned of scale, however, the valve 20 is closed and the valve 17 opened as it is desirable to have the chem-

ical passed to the boiler with its full strength as nearly as possible.

It is observed that the pipes 5 and 19 may be of any size larger than the pipes 16, 18 and 22. The valves 17 and 20 being of the needle variety compel the feed water to pass through the pipe 5 and the chemical from the tank 8 to pass through the pipe 19 when the circulation is through the pipe 5 or the pipe 19.

The feed opening 9 of the tank 8 is covered by means of a suitable closure 9^a which is preferably secured in place by means of clamp fastenings 9^b, the arrangement being such as to admit of the closure being readily removed or quickly placed in position and made secure.

It will be understood from the foregoing, taken in connection with the accompanying drawings that the invention provides an appliance whereby the chemical may be fed to a boiler in regulated quantity along with the feed water, such appliance also admitting of the tank containing the chemical being drained or washed by a forced circulation of the feed water therethrough. It is further noted that the invention is of such a nature as to admit of various changes in the construction and arrangement of the parts in the installation and adaptation of the same to meet varying conditions, hence such changes are contemplated within the scope of the invention as defined in the claims.

Having thus described the invention what is claimed as new is:—

1. In means for supplying a chemical to a boiler and in combination with a feed water pipe, and means for forcing circulation connected with said pipe, a tank for receiving the chemical, a pipe connecting the upper portion of the tank with the feed water pipe and provided in its length with a controlling valve, a pipe connected with the bottom of the tank, and means for connecting said last-mentioned pipe with the opposite sides of the means for forcing circulation whereby the tank may be drained or may be charged with water under pressure.
2. An apparatus for feeding water and chemical to a boiler including a source of water supply, and means for forcing the water, said apparatus comprising in combination a feed water pipe, a container for the chemical, a supply pipe connected with the upper portion of the container, a pipe connecting the supply pipe with the feed water pipe and having a valve in its length, and a pipe connecting the supply pipe with the means for forcing water and having a valve in its length.

3. An apparatus for supplying a chemical and water to a boiler, the same comprising a pump, a feed water pipe between the pump and boiler, a container for the chemical, a

drain pipe leading from the bottom of the
container, a pipe connecting the drain pipe
with the inlet side of the pump and having
a valve in its length, a pipe connecting the
5 upper portion of the container with the feed
water pipe and having a valve in its length,
a pipe connecting the upper portion of the
container with the inlet side of the pump
and having a valve in its length, and a pipe
10 connecting the outlet side of the pump with

the drain pipe and provided in its length
with a cut-off valve and a check valve, the
check valve being between the cut-off valve
and the drain pipe.

In testimony whereof I affix my signature 15
in presence of two witnesses.

WILLIAM KUTH. [L. S.]

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