

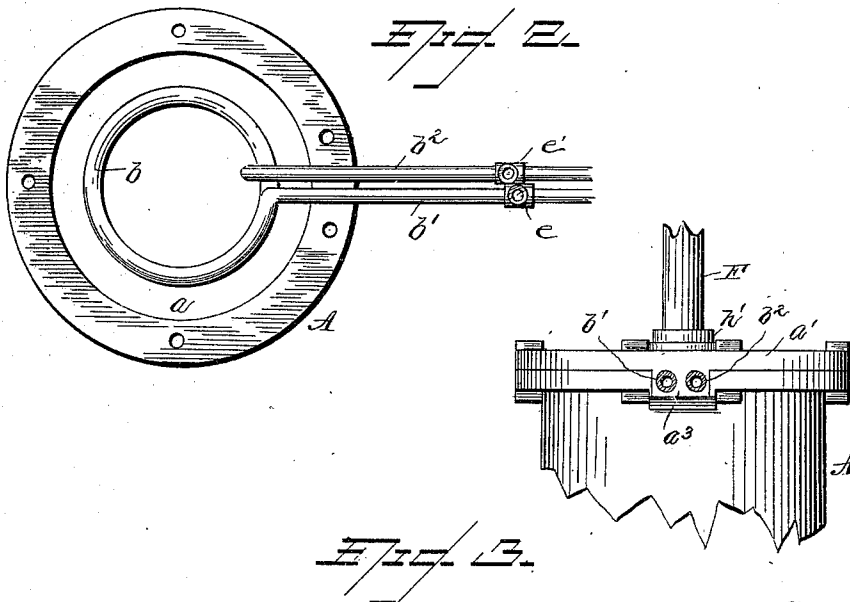
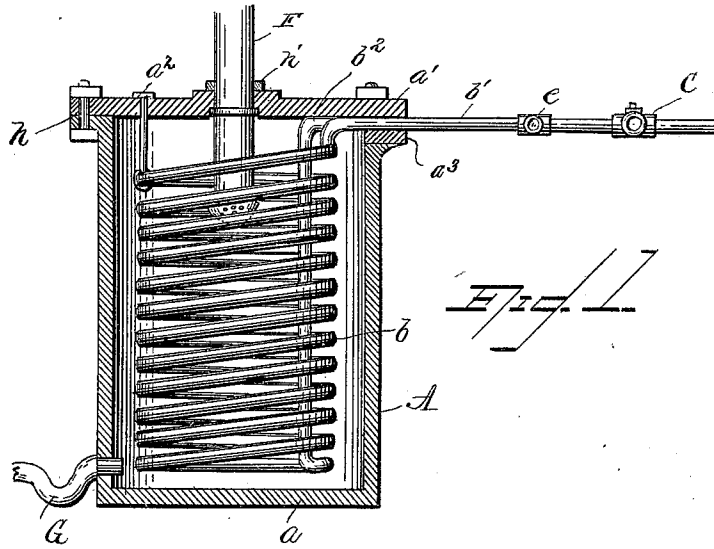
No. 672,555.

Patented Apr. 23, 1901.

W. L. HILL.
FEED WATER HEATER.

(Application filed Feb. 8, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

WILLIAM L. HILL, OF IOWA FALLS, IOWA.

FEED-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 672,555, dated April 23, 1901.

Application filed February 8, 1901. Serial No. 46,513. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. HILL, a citizen of the United States, and a resident of Iowa Falls, in the county of Hardin and State of Iowa, have invented a Steam-Boiler Feeder, of which the following is a specification.

This invention is an improvement in feeders for steam-boilers; and the object is to provide a simple and effective apparatus by which the feed-water is quickly heated on its way to the boiler, and being introduced into the boiler at a high temperature will not affect the steam-pressure, and consequently result in a saving of fuel.

With this object in view the invention consists in providing a closed cylinder in which is located a coiled pipe forming an intermediate part of the feed-water pipe, an injector forcing the water through the feed-pipe and its coil, and check-valves between the injector and coil and between the coil and boiler, together with a pipe entering the top of the cylinder to convey the exhaust-steam and discharge it upon the coils of the feed-pipe, and an outlet in the bottom of the cylinder.

The invention further consists in the peculiar construction of the cylinder and of the feed-water pipe, as well as the particular arrangement of parts comprising the invention, all as will be hereinafter fully described, and specifically set forth in the appended claim.

In the accompanying drawings, in which like letters of reference indicate like parts in both views, Figure 1 is a view illustrating my invention, a section of the cylinder being broken away to show the arrangement of the coiled pipe therein. Fig. 2 is a plan view of the cylinder, the top being removed.

Referring to said drawings, A designates a cylinder the lower end or bottom *a* of which is cast integral with the sides, and said cylinder is closed at its upper end by means of a removable covering-plate *a'*, bolted thereto, as shown. In this cylinder is located a coiled pipe *b*, forming an intermediate part of the feed-water pipe, a pipe *b'*, leading from the supply, being connected to one end of the coiled pipe, and a pipe *b²*, leading to the boiler, connected to the other end thereof. The pipe *b'* is provided with an injector C, of any approved pattern, for forcing the water through

the feed-pipe and its coil, and adjoining the coiled pipe said pipe *b'* has a check-valve *e* to prevent back pressure, a check-valve *e'* being also located in the section *b²* of the feed-pipe to prevent back pressure from the boiler.

Extending through the center of the covering-plate *a'* into the cylinder is a pipe F, which receives the exhaust-steam and discharges the same upon the coiled pipe for the purpose of heating the water therein. In order to facilitate the heating of the water, the end of said pipe F extends into the center of the coil and is provided with a nozzle. The steam which enters the cylinder through the exhaust-pipe F passes out through the trap or outlet-pipe G, located at the bottom of said cylinder. The top of the cylinder is supported by the pipe F, and the coil is suspended from said top by means of the pipes *b'* and *b²* and rod *a²*. This permits the cylinder proper to be readily removed for the purpose of cleaning. The pipes *b'* and *b²* pass through a projection *a³* of the top or cover *a'*, and the lower end of the coil is connected to the pipe *b²* by a vertical pipe extending upward through said coil at one side thereof.

It will be noted that by providing the coiled pipe *b* as an intermediate part of the feed-water pipe, confining said coil in a cylinder, and discharging the exhaust-steam directly on the coil the feed-water will be quickly heated in its passage through the coils and up the vertical pipe and will be introduced into the boiler at a high temperature. The device is very simple in its construction and arrangement of parts and forms a very effective means of heating the feed-water on its way to the boiler. A suitable packing-ring may be placed around the top of the cylinder below the cover and also around the pipe F where it enters said cover.

Having thus described my invention, I claim—

In a steam-boiler feeder, the combination, of the cylinder A closed at its lower end, a removable top *a'* having a projection *a³* at one side, pipes *b'* and *b²* entering said cylinder through the projection of the top, a coiled pipe located in the cylinder and connected at its ends to the pipes *b'* and *b²*, the lower end of the coil being connected to the pipe *b²* by

a vertical pipe extending upward through the coil, check-valves in the pipes b' and b^2 , and an injector in the pipe b' to force the feed-water through the coil; together with the exhaust-pipe F extending through the center of the removable top and adapted to support the same, and a rod suspended from the cover and connected to the coil opposite its connec-

tion with the pipes b' and b^2 , substantially as shown and for the purpose set forth.

WILLIAM L. HILL.

In presence of—

J. H. HEINEN,
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