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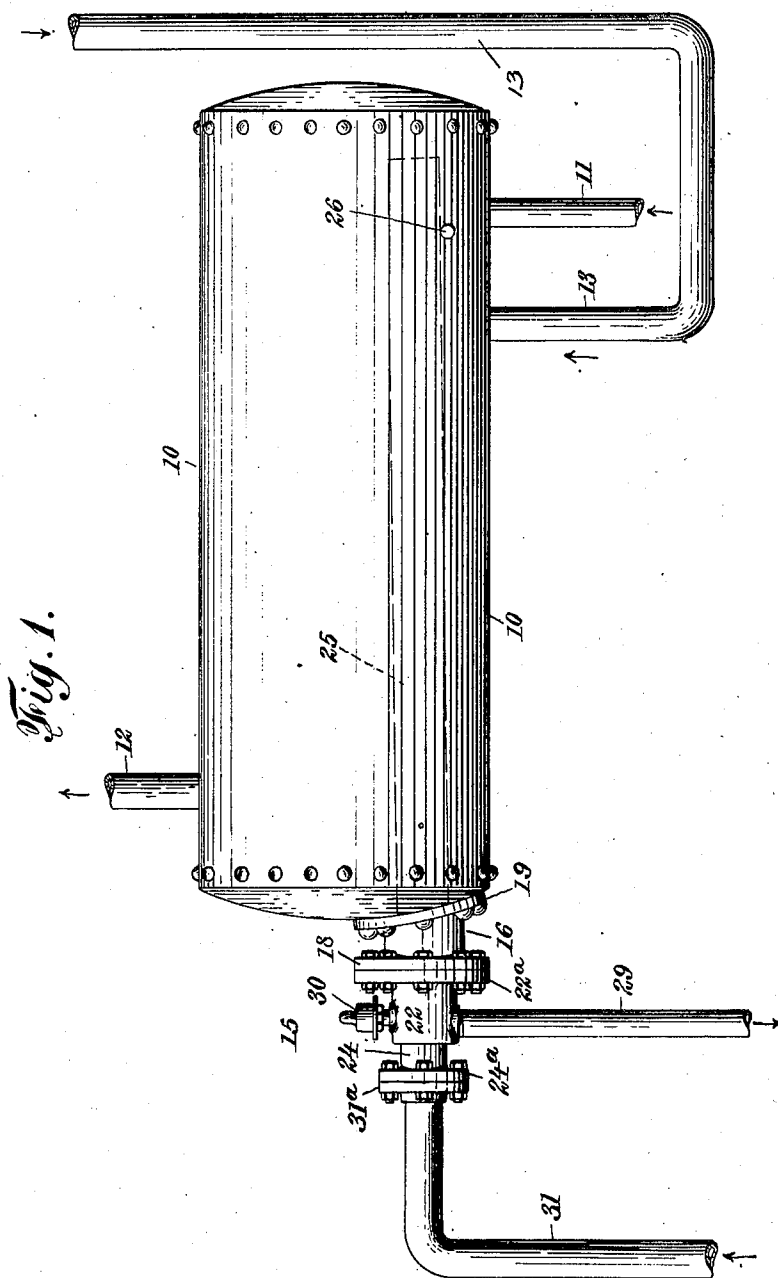
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1,607,152

HEATER FOR HOT WATER STORAGE TANKS

Filed Sept. 2, 1921

2 Sheets-Sheet 1



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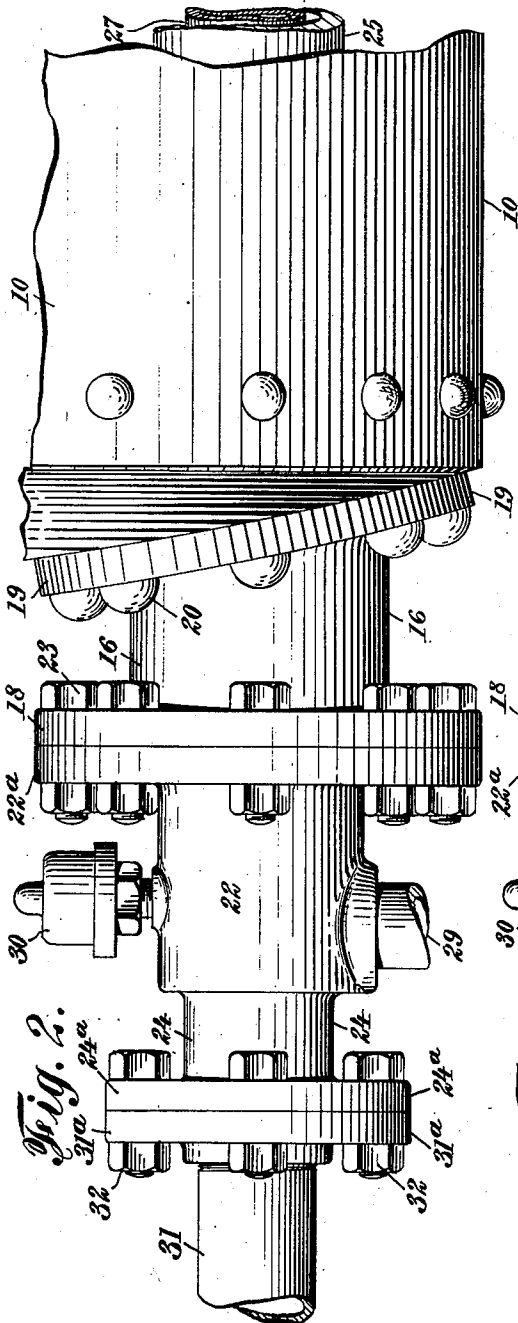
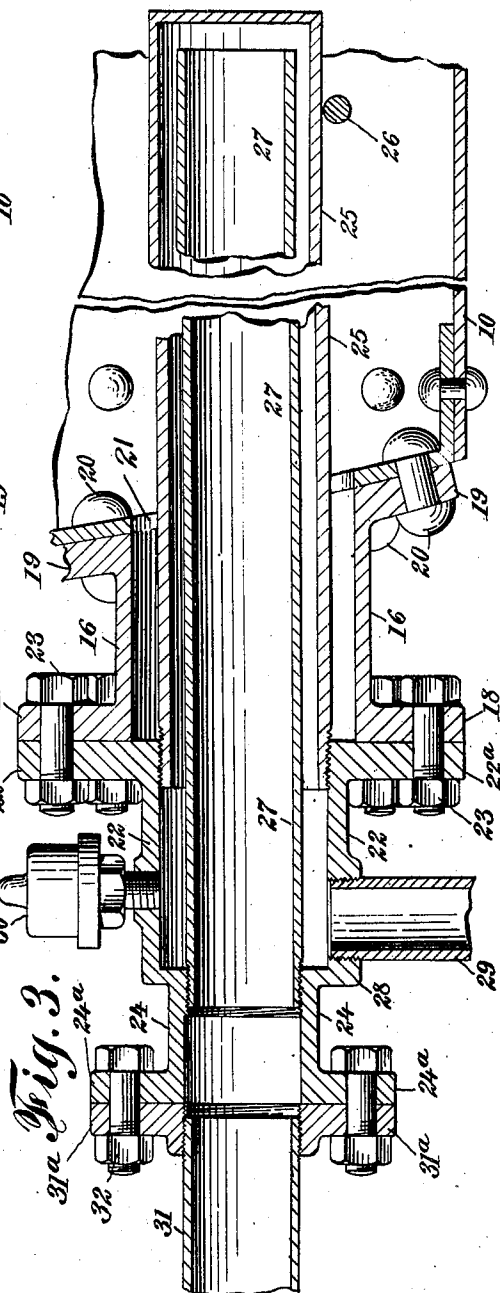
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HEATER FOR HOT WATER STORAGE TANKS

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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HEATER FOR HOT-WATER STORAGE TANKS.

Application filed September 2, 1921. Serial No. 498,051.

My invention relates to improvements in heating apparatus for containers, tanks and other receptacles designed to hold water or other fluids, and the same has for its object more particularly to provide a simple, efficient and reliable means whereby the fluid contained therein may be conveniently and quickly heated.

Further, said invention has for its object to provide a heating apparatus, employing steam as the heating medium, which will insure the rapid and efficient circulation of steam therethrough.

Further, said invention has for its object to provide an apparatus of the character specified which will dispense with the use of numerous tubes of small diameter having many bends, which invariably cause the same to become obstructed by corrosion or by condensation, or to become air-bound in different places.

Further, said invention has for its object to provide a heating apparatus of the character specified formed as a complete structure capable of being attached, as a unit to, or within a tank or container.

Further, said invention has for its object to provide a heating apparatus of the character described which may be readily removed as a unit from a tank or container in order to permit of the cleaning thereof or the removal of scale or incrustation therefrom.

Further, said invention has for its object to provide a heating apparatus which requires merely the cutting of a single opening in a tank or container in order to permit of the introduction and application of the heating element and the necessary connections therefor.

Further, said invention has for its object to provide a heating apparatus of the character specified having the inlet and outlet for the heating medium formed as a single fixture or part, and arranged closely together.

Other objects will in part be obvious and in part be pointed out hereinafter.

To the attainment of the aforesaid objects and ends my invention consists in the novel details of construction, and in the combination, connection and arrangement of parts hereinafter more fully described and then pointed out in the claims.

In the accompanying drawings forming

part of this specification, wherein like numerals of reference indicate like parts,

Figure 1 is a side elevation showing a hot water storage tank provided with one form of heating apparatus constructed according to, and embodying my said invention;

Fig. 2 is an enlarged side elevation of the heating apparatus, and

Fig. 3 is a central, longitudinal section thereof.

In said drawings 10 designates a hot water storage tank or container of the usual general form having a cold water inlet pipe 11, a hot water outlet or supply pipe 12, and a hot water return pipe 13. The supply pipe 12 and return pipe 13 are connected to, and communicate with the circulating system of a building.

15 denotes the heating apparatus as a whole comprising a tubular attaching member 16 having a normal flange 18 at one end, and an oblique flange 19 at its opposite end which is conformed to, and secured by suitable means such as the rivets 20 to the rounded end of the tank 10, surrounding an opening 21 therein which corresponds in diameter with the opening in said attaching member 16.

22 denotes a tubular coupling provided at one end with a flange 22^a adapted to be secured by bolts 23 to the corresponding normal flange 18 of the attaching member 16, and at its opposite end with a reduced portion 24 having a flange 24^a at its outer end.

The larger portion or body of the coupling 22 is interiorly threaded to receive the threaded, open end of a tube 25 of smaller diameter than the opening in the attaching member 16. The tube 25 extends into the tank or container 10 to a point adjacent to the opposite end thereof, and has its closed inner end supported upon a transverse bar or rod 26 whose ends are secured in the opposite walls of the tank. Within the smaller portions of the coupling 22 is secured the threaded outer end of a tube 27, which is smaller than the tube 25 into which it extends freely, and terminates adjacent to the closed end of said tube 25.

The larger portion or body of the coupling member 22 is provided in its under side with a threaded boss 28 to which is secured one end of the condensation or return pipe 29 leading to the boiler, and upon its upper

side said larger portion or body is provided with an automatic air vent 30.

31 denotes a live steam pipe extending from the steam space of a boiler, and provided with a flange 31^a whereby said pipe is secured to the flange 24^a by bolts 32.

The operation of the apparatus is generally obvious. It is merely necessary to note that the live steam enters through pipe 31 and passes into the pipe 27, and the condensation leaves the outer cylindrical member or tube 25 by way of the outlet or return pipe 29 connected thereto.

It is to be noted particularly that the apparatus as a whole, including the supply and return pipes for the heating medium and the condensate, consists of a unitary structure requiring but a single opening in the container to accommodate the same, and a single securing means whereby to attach the same to the container.

Having thus described my said invention, what I claim and desire to secure by Letters Patent is:—

1. An apparatus of the character described comprising a coupling member, and means for securing the same to a container; said coupling member comprising a hollow, cylindrical body, a flange at one end, and a reduced tubular end at the other end thereof, a flange on said reduced end, an inlet in said reduced end adapted to be connected with a source of heat supply, an outlet and a relief valve in said body, an elongated, hollow, cylindrical member having an open and a closed end and secured at its open end within said body, and a tube of smaller diameter than said hollow, cylindrical member disposed within and substantially co-extensive therewith and secured at its outer end within said coupling member at the junction of the body and the reduced end thereof, and communicating directly with the inlet in said reduced end, substantially as specified.

2. An apparatus of the character described comprising a coupling member embodying a hollow, cylindrical body, a flange at one end, and a reduced, tubular end at the other end thereof, a flange on said reduced end, an inlet in said reduced end, adapted to be connected with a source of heat supply, an outlet and a relief valve in said body, an elongated, hollow, cylindrical member having an open and a closed end and secured at its open end within said body, a tube of smaller diameter than said hollow, cylindrical member disposed within and substantially co-extensive therewith and secured at its outer end within said coupling member at the junction of the body and the reduced end thereof and communicating directly with the inlet in said reduced end, a cylindrical section, of larger diameter than said hollow, cylindrical member, having a nor-

mal flange at one end adapted for securement to the body of said coupling member, and an oblique flange at its other end, adapted for securement to a container, substantially as specified.

3. An apparatus of the character described comprising a container having an opening therein, a tubular section secured at one end to said container around said opening, a hollow coupling member, means for detachably securing said coupling member to the outer end of said tubular section, tubular members carried by and projecting from said coupling member and extending through said tubular section into said container; one of said tubular members being disposed within the other of said tubular members and having open outer and inner ends; and the outer of said tubular members having an open outer end and a closed inner end, an inlet in said coupling member communicating with one of said tubular members at the outer end thereof, an outlet in said coupling member communicating with the other of said tubular members at the outer end thereof, pipes detachably secured to said inlet and said outlet; said coupling member and said tubular members being removable as a unit upon the detachment of said pipes from said coupling member, and means permitting the individual detachment of said tubular members from said coupling member upon the removal of the unit from the container, substantially as specified.

4. An apparatus of the character described comprising a container having an opening therein, a tubular section having a flange at one end secured to said container around said opening, a flange at the opposite end of said tubular section, a hollow coupling member having a flange thereon, means for detachably securing the adjacent flanges of said coupling member and said tubular section together, tubular members carried by and projecting from said coupling member and extending through said tubular section into said container; one of said tubular members being disposed within the other of said tubular members and having open outer and inner ends; and the outer of said tubular members having an open outer end and a closed inner end, an inlet pipe detachably secured to said coupling member and communicating with one of said tubular members at the outer end thereof, and an outlet pipe detachably secured to said coupling member and communicating with the other of said tubular members at the outer end thereof, substantially as specified.

Signed at the city of Buffalo, Erie county, in the State of New York, this first day of June, one thousand nine hundred and twenty-one.

LEWIS W. EGGLESTON.