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W. VOELPEL, E. SUCHERT & A. OEKEL.

HOT WATER APPARATUS.

APPLICATION FILED SEPT. 23, 1902.

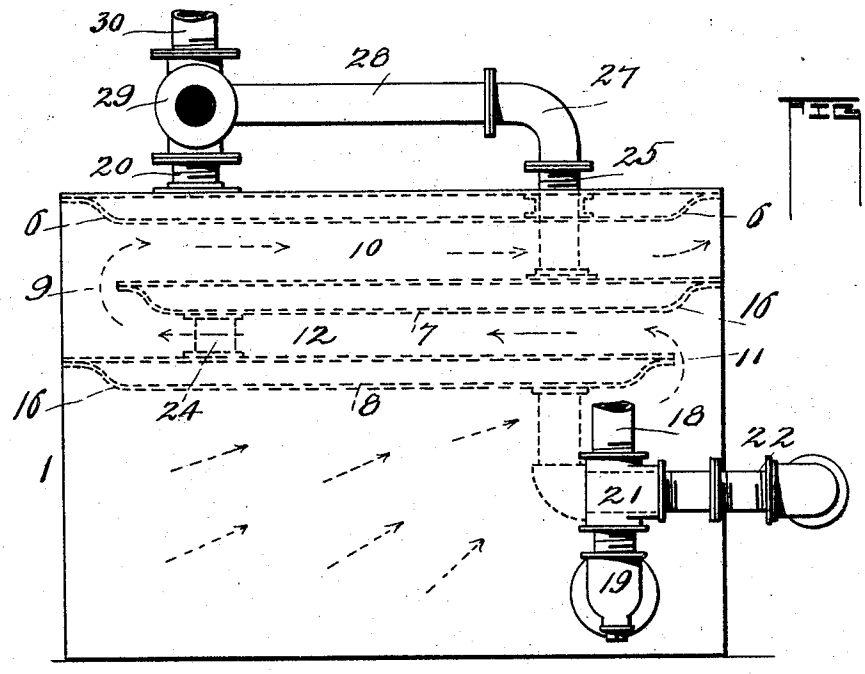


FIG. 1

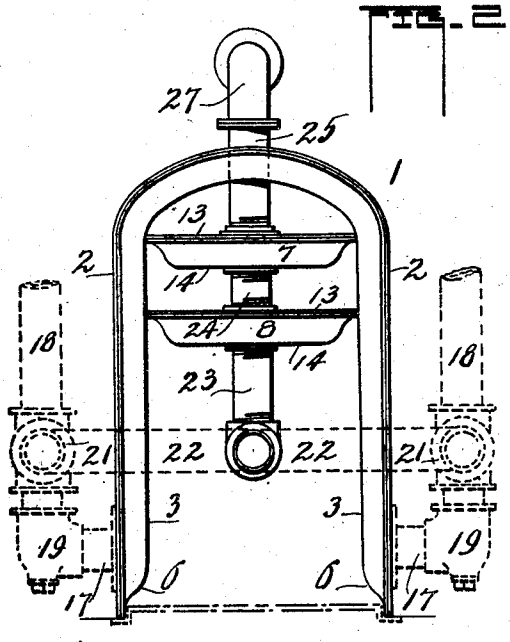


FIG. 2

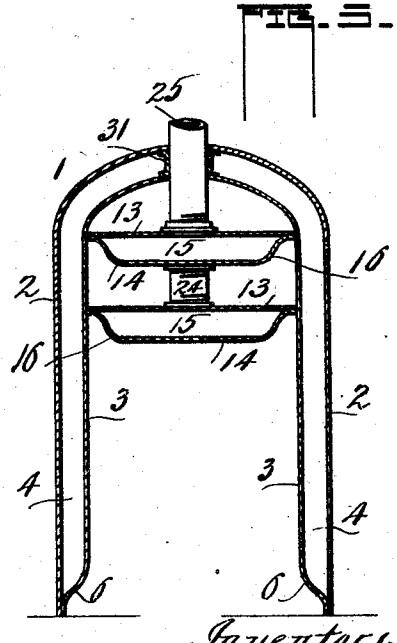


FIG. 3

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WILLIAM VOELPEL, ERNST SUCHERT, AND ALBIN OEKEL, OF MORTON, ILLINOIS, ASSIGNORS TO MORTON MANUFACTURING COMPANY, OF MORTON, ILLINOIS.

HOT-WATER APPARATUS.

No. 795,948. Specification of Letters Patent. Patented Aug. 1, 1905.

Application filed September 23, 1902. Serial No. 124,570.

To all whom it may concern:

Be it known that we, WILLIAM VOELPEL, ERNST SUCHERT, and ALBIN OEKEL, citizens of the United States, residing at Morton, in the county of Tazewell and State of Illinois, have invented certain new and useful Improvements in Hot-Water Apparatus; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has reference to a hot-water heater, and has for its object to simplify and economize in the construction of such apparatus.

A further object of the invention is a hot-water heater of the type found in our application bearing Serial No. 91,645, filed January 28, 1902; and it consists, essentially, of a saddle-boiler having a water-chamber and a pair of water-jackets or pans disposed between the walls of the boiler and lying one above the other in such a manner that the product of combustion from the fire-box will pass through the rear of the boiler, return between the pans or water-jackets to the front end of the boiler, and again to the rear end between the upper pan and the top wall of the boiler, and a further object is the arrangement and connection of the flues or pipes with the chamber of the boiler and the jackets or pans supported thereby, all of which is hereinafter more fully described, and illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a view in elevation of the saddle-boiler, the flues connected therewith and the pans between the walls thereof shown in dotted lines. Fig. 2 is a view from the rear of Fig. 1 with certain flues or pipes shown in dotted lines. Fig. 3 is an elevation in cross-section through the boiler and its pans or water-jackets.

In the application herein we have not thought it necessary to show the wall or casing of masonry, as we make no claim upon the walling up of the boiler and for the further reason that it is shown to a greater or less extent in the application above referred to. It is understood that the front wall of the boiler abuts with a metal front having doors for admission to the interior of the boiler, as in the application shown, and the rear wall thereof with the rear masonry or wall inclosing the rear of the boiler.

In the drawings, 1 refers to a saddle-boiler having the outer and inner walls 2 and 3, the inner wall separated from the outer wall to form a water-chamber 4, conforming substantially to the wall thereof. The free ends of the walls 2 and 3 are connected by being riveted or in any other suitable manner, the wall 4 at its outer edges being bent in at 6 for the purpose of connecting the walls, which is fully illustrated in the figures.

7 and 8 indicate suitable pans or water-jackets having engagement longitudinally with the side walls of the inner wall 3 of the boiler. The upper pan has its front wall removed inward a short distance from the front of the boiler to provide a passage 9, and the rear wall of said pan is flush with the rear walls of the saddle, and this pan lies below the upper wall of the boiler in such a manner as to provide a longitudinal passage-way or flue 10. The pan 8 lies a suitable distance parallel with and beneath the pan 7, having its forward wall flush with the front walls of the boiler. The rear wall thereof is removed a suitable distance from the rear walls of the boiler to provide a passage-way 11, which communicates with the fire-box or a chamber formed by the grates and the lower wall of the pan 8, and the placing of the pan 8 in the manner shown provides between the same and the lower wall of the pan 7 a passage-way or the flue 12, and all combustion from the fire-box will pass through the passage 11, along the flue 12, through the passage 9, and return through the passage 10 and up and out through a stack communicating with this flue of the boiler. The pans or water-jackets 7 and 8 consist of the upper and lower walls 14 and separated from each other to form the water-chambers 15. The side and end walls of said chambers are provided by suitably bending the wall 14 at points 16 and riveting or otherwise connecting the free ends of the plates 13 and 14, as herein shown.

The means which we employ for supplying, delivering, and returning the water to the boiler and pans or water-jackets is through the oppositely-disposed feed-pipes 17, entering upon opposite sides and at or near the rear end of the saddle-boiler, these pipes connected with pipes 18 through couplings 19,

and the said couplings have depending extensions through which the original supply of water is fed to the boiler, passing through the pipes 17 and into the chamber 4, which will circulate up and around the same and pass into a hot-water-feed pipe 20, connected with the top of the chamber 4 and at the forward end of the boiler, as shown in Fig. 1. The pipes 18 are each provided with the T-couplings 21, to which are connected the short pipes 22, communicating with a common coupling, to which is also connected a pipe 23, which communicates with the chamber 15 of the pan or water-jacket 8 at or near the rear end thereof, and thus as the original supply of water is forced into the boiler through the coupling 19 it will also pass through the couplings 21 into the pipes 22, thence into the pipe 23 and the chamber 15 of the pan 8, and circulating through the pan 8 passes through a short pipe 24, communicating with both of the chambers 15 of the pans 7 and 8, and passing through the pan 7 enters a pipe 25, connected therewith at or near the rear end thereof, and the pipe 25 passes up through the walls of the boiler and the chamber thereof at 26 and by a coupling 27 is connected with a feed-pipe 28, connected with a coupling 29, with which is also connected the pipe 20, and from the coupling 29 extends a main lead 30. Where the pipe 25 passes through the chamber of the boiler 1 we provide a tight joint 31, placed in the chamber 4 in the manner shown, engaging the inner walls thereof and encircling the pipe 25, reference being had to Figs. 1 and 3.

It will be noticed by the peculiar construction and arrangement of the boiler that the heat from the fire-box is applied direct upon the sides of the boiler and upon the body of the pans by the arrangement of the returned flues and intermediate the same and the upper wall of the boiler in whose chambers 4 and 15 15 is retained the water to be heated, which insures quick heating of the water and immediate circulation of the water. The main feed-pipes 20 and 25, which communicate, respectively, with the chamber of the boiler and the chambers of the pans, are coupled with the hot-water leader 30, and the water passing through these pipes, which are suitably connected with radiators of a building to be heated, is returned from said radiators into the boiler and pans by the return-pipes 18 and reënter the boiler and pans, as is apparent, all the waste being replaced through the extensions of the couplings 19.

By the arrangement of the pipes 23 and their couplings, the short pipe 24, connecting the pans, and the pipe 25 at its couplings we are enabled to support the pans in the manner shown within the boiler and beneath the upper wall thereof and beneath the fire-box without any additional support.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. A hot-water heater comprising a saddle-boiler having a plurality of walls spaced apart to provide a water-chamber, a plurality of pans disposed longitudinally between the walls of the boiler and lying one above the other to provide a tortuous passage-way or flue, each of said pans being spaced from the boiler-wall for the greater portion of their depth, whereby the heat is caused to circulate along the side and end walls of the pans throughout their length.

2. A hot-water heater comprising a saddle-boiler having a plurality of walls spaced apart to provide a water-chamber, a plurality of pans disposed longitudinally between the walls of the boiler to provide a tortuous flue, each of said pans comprising an upper wall secured at one end and both sides to the inner wall of the boiler and a lower wall spaced from said upper wall and bent upward at its ends and sides and secured to said upper wall, whereby a passage-way is provided between the sides of said pans and the inner wall of the boiler.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM VOELPEL.
ERNST SUCHERT.
ALBIN OEKEL.

Witnesses:
CHRISTIAN MAY,
CARL VOELPEL.