W. & H. W. GOULD.

HOT WATER HEATING APPARATUS.

APPLICATION FILED OCT. 17, 1913.

1,289,734. Patented Dec. 31, 1918.

FIG. 1.

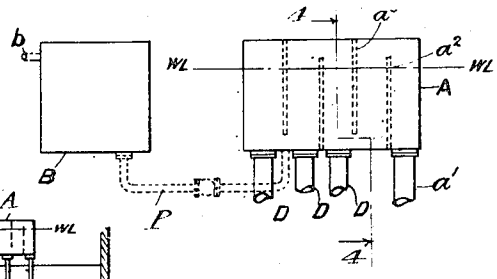


FIG. 4.

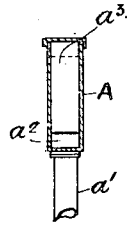


FIG. 2.

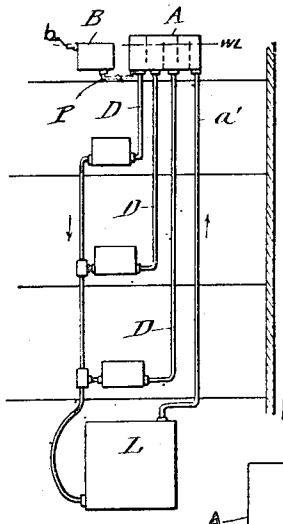


FIG. 3.

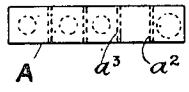


FIG. 5.

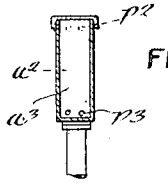


FIG. 6.

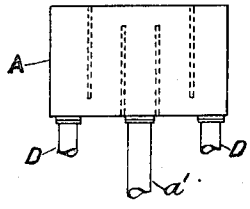
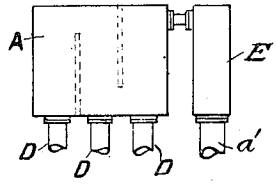


FIG. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM GOULD AND HERBERT WILLIAM GOULD, OF WILLESDEN, LONDON, ENGLAND.

HOT-WATER HEATING APPARATUS.

1,289,734. Specification of Letters Patent. Patented Dec. 31, 1918.

Application filed October 17, 1913. Serial No. 795,637.

To all whom it may concern:

Be it known that we, WILLIAM GOULD and HERBERT WILLIAM GOULD, subjects of the King of Great Britain, residing at 1 All Souls' avenue, Willesden, London, N. W., England, have invented new and useful Improvements in Hot-Water-Heating Apparatus, of which the following is a specification.

This invention relates to automatic systems of heating and circulating hot water, the object being to permit a heating system to be installed without regard to the position of the boiler or heating means and to simplify and reduce the cost of installation and accelerate and maintain an automatic and continuous circulation.

In carrying this invention into practice, instead of conveying the pipe from the boiler or heating means up through a tank to a point above the level of the water in the system, we subdivide the tank into two or more compartments by partitions or walls. These partitions are arranged or constructed so that the compartments communicate, the one with the other alternately, at a point above the level of the water in the system and below the level of the water.

In order that the invention may be clearly understood and easily carried into practice we have appended the accompanying drawings.

Figure 1 is a view showing in elevation one form of hot water distributing tank embodying our invention having applied thereto a cold water supply tank.

Fig. 2 shows the tank as it may be incorporated in a heating system.

Fig. 3 is a top plan view of the distributing tank.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1.

Fig. 5 is a view similar to Fig. 4, showing a modified partition cover structure.

Fig. 6 is an elevation of the distributing tank showing a slight modification.

Fig. 7 is an elevation of the distributing tank and supply tank showing a further modification.

Referring to Figs. 1 to 4 inclusive, A represents the hot water distributing tank and B the cold water feed tank which may be separate (as shown) or suitably combined with tank A. The tank A is provided with outlet or distributing pipe or pipes D through which the water passes to circulate through the radiators. The tank B may be fitted with the usual supply pipe b, the supply of water from the tank B to tank A passing through a pipe P, preferably connected to the underside of the tanks.

The tank A is subdivided into two or more compartments of the requisite size by dividing walls or partitions. The pipe a^1, through which the hot water passes from the boiler L to the tank A, communicates, as shown best in Fig. 1, with the compartment in the said tank A formed by the wall or partition a^2, which wall or partition either extends a certain distance above the level of the water in the system. Or the partition may extend to the full height of the interior of said tank A, and in the latter case a perforation or perforations P^2 is or are made in the said wall or partition a^2 at a point above the level of the water in the system, as shown in Fig. 5. The partition or wall a^3 in said tank A extends from the upper inner wall to within a short distance of the bottom or lower wall. Or this partition or wall a^3 may extend the full depth of the tank A, in which case a perforation or perforations p^3 is or are formed in said wall or partition a^3 near the lower part, as likewise shown in Fig. 5. There may be a number of these walls or partitions, each alternate one communicating with the succeeding compartment near the upper part and the intermediate ones communicating with the succeeding compartment near the lower part.

The operation of the system is as follows:—

When the system is filled with cold water, the level in all compartments of the tank A is at the point indicated by the dot and dash line W L in Fig. 1. The boiler L is then started up, and the water heated thereby rises in the pipe a^1 due to its lower density. When the water reaches the top of the partition a^2 it flows over into the space between the partitions a^2 and a^3, and as this passage is somewhat restricted, when the flow is sufficient the entire space above the original water level in the first two compartments becomes filled with water, the air which originally filled this space having been carried over by the water into the compartments beyond the partition a^3. From these latter compartments the water flows through the distributing pipes D to the radiators and thence back to the boiler, where

it is again heated and thus caused to rise through the pipe a^1 as before. In this way a continuous circulation is maintained.

It will be evident the pipe a^1 from the boiler or heating means may communicate with a medially disposed compartment in tank A having adjacent compartments on either side. In each case the dividing walls or partitions of such compartment communicate with the adjacent compartments at a point adjacent to the upper end of the tank, which will be above the level of the water in the system. An arrangement of this kind is shown by Fig. 6.

It will also be evident that pipe a^1 may communicate with an independent tank E, as shown by Fig. 7, such independent tank communicating, at a point above the level of the water in the system, with a distributing tank either with or without a dividing wall or partition or partitions. Or the independent tank may communicate with the pipes circulating the water throughout the system, at a point above the level of the water in the system. We are aware the use of the upper portion of the pipe leading from the boiler has been suggested for this purpose.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. In a hot water circulating system, the combination of a distributing tank formed with a plurality of vertical partitions dividing said tank into a plurality of compartments, said partitions having openings providing communication between said compartments alternately at the top and bottom of the tank, a supply pipe communicating with one of said compartments, and a plurality of distributing pipes leading from the bottoms of other of said compartments, there being only one distributing pipe leading from any one compartment.

2. In a hot water circulating system, the combination of a distributing tank formed with a plurality of vertical partitions dividing said tank into a plurality of compartments, certain of said partitions being secured to the upper wall of said tank and terminating above the lower wall thereof, and the remaining partitions being secured to the lower wall of said tank and terminating below the upper wall thereof, and arranged in alternate relation to the partitions secured to the upper wall, a supply pipe communicating with one outermost compartment, and a plurality of distributing pipes leading from the bottoms of all of the other compartments, except that compartment adjacent to the compartment with which the supply pipe communicates.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM GOULD.
HERBERT WILLIAM GOULD.

Witnesses:
H. W. DENTON-INGHAM,
O. J. WORTH.

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