No. 847,446. PATENTED MAR. 19, 1907.

J. A. STROM.

EXPANSION DRUM.

APPLICATION FILED AUG. 14, 1905.

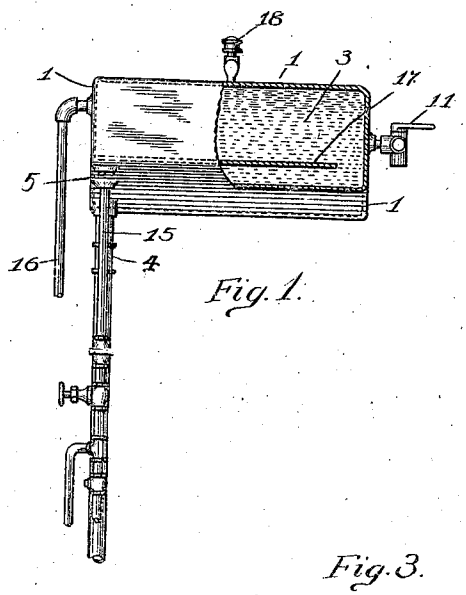


Fig. 1.

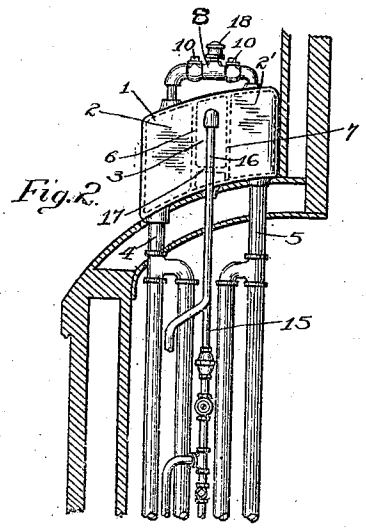


Fig. 2.

Fig. 3.

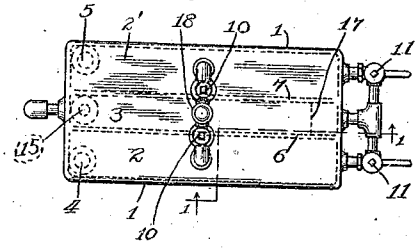


Fig. 4.

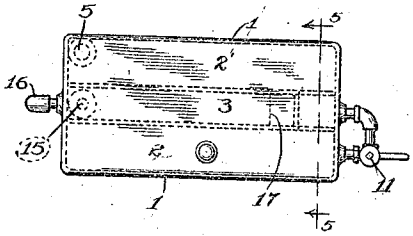
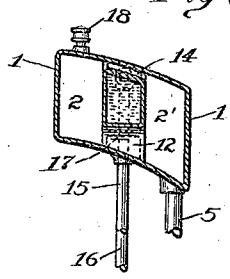


Fig. 5.



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EXPANSION-DRUM.

No. 847,446. Specification of Letters Patent. Patented March 19, 1907.

Application filed August 14, 1905. Serial No. 274,045.

To all whom it may concern:

Be it known that I, JOHN A. STROM, a citizen of the United States, residing at Pullman, county of Cook, and State of Illinois, have invented certain new and useful Improvements in an Expansion-Drum, of which the following is a description.

My improvement relates to that portion of hot-water heating systems known as "expansion-tanks."

The object of my improvement is to combine with an expansion-tank a convenient place for the storage of hot water not in the heating system and with means for introducing a part of this water when desired into the heating system.

To this end my improvement consists in the novel construction, arrangement, and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the accompanying drawings, wherein like or similar reference characters indicate like or corresponding parts, Figure 1 is a side elevation of my device and connecting-pipes with a portion broken away, substantially as indicated by line 1 1 of Fig. 3. Fig. 2 is an end elevation of my device and connecting-pipes. Fig. 3 is a top plan view. Fig. 4 is a top plan view of a slightly-modified form of my device, and Fig. 5 is a section taken substantially on line 5 5 of Fig. 4.

The present invention relates primarily to an arrangement whereby may be confined in a novel manner an expansion-drum and hot-water chamber, and though not limited to any particular system is advantageously susceptible of use in connection with both double-coil and single-coil heating systems, each of which is well known in the art to which the invention relates and may be briefly described as follows: A double-coil heating system comprises two or more separate coils of pipe arranged to be acted upon by the heating medium, one of said coils for the radiators upon each side of the car or the like and being separate and independent of each other and connected to separate expansion-drums. The single-coil system, on the other hand, includes but a single coil arranged to be acted upon by the heating medium and connected with the radiators and thence with an expansion-drum.

In the preferred form of my device a shell 1 is provided, divided by two walls into two outer compartments constituting expansion-chambers and an inner compartment constituting a warming-chamber. The form shown in Figs. 1, 2, and 3 is particularly adapted for a double-coil heating system, and for this purpose the three entirely separate chambers are provided, the chambers 2 and 2′ being connected to the circulating-pipes 4 and 5 of the heating systems in the usual or any preferred manner and the chamber or reservoir 3 to the water system for supplying water to the washbowls, lavatories, &c. In the preferred form these chambers are separated from each other by the substantially vertical parallel partitions or walls 6 and 7, extending the entire length and height of the chambers, the reservoir 3 being preferably positioned between the partitions and the chambers 2 and 2′ being positioned one at each side of the reservoir 3, as shown.

Obviously, if preferred, the well-known fittings usually employed upon expansion-drums of this character may be attached; but I prefer to equip my device in the manner shown in the drawings, Figs. 1, 2, and 3— that is, in place of employing a safety-valve upon each chamber 2 and 2′ to connect these chambers by means of a suitable pipe 8 and attach a single safety-valve 18 to the pipe or adjacent part to care for any undue increase in pressure.

Where it is desired to prevent the equalization of pressure between the chambers, check-valves 10 10 or equivalent means may be provided in the pipe 8 between the safety-valve and each tank, each opening toward the safety-valve.

In place also of the usual means of introducing water into the heating system I prefer to arrange suitable piping to couple the filling cocks or valves 11 11 on the chambers 2 and 2′ to the reservoir 3, so that when either system requires an addition to its water-supply the filling-valve 11 for that system may be opened, permitting hot or warm water from the reservoir 3 to enter the expansion-drum connected to that particular system, thus providing not only a very convenient means for refilling the heating system from the regular water-supply of the car, but providing warm water for that purpose, for even when the supply of water in a heating system is nearly exhausted the expansion-drum is filled with steam or hot vapor, and thus kept hot.

In the form shown in Figs. 4 and 5 my device is shown particularly adapted for use

with a single-coil system. In this form the chambers 2 and 2′ are connected by the passage 12 shown at one end of the chambers, and, if preferred, a second passage 14 may be provided near the top of the chambers to equalize the water-level in the two chambers. In this case obviously a single safety-valve may be mounted directly upon the top of either chamber to guard against excessive pressure. Also a single filling-cock 11 is all that is necessary, and this is preferably connected in the manner shown in Fig. 4.

Preferably the water from the supply-tank enters the reservoir 3 by means of the pipe 15 and is drawn off for use in the various wash-bowls, &c., through the pipe 16 and by contact with the walls or partitions 6 and 7 tends to correspond in temperature with the water in the chambers 2 and 2′. To prevent cooler water upon entering the reservoir 3 from passing directly out at the pipe 16, a horizontally-extending baffle-plate 17 or equivalent means may be arranged in the reservoir between the inlet and outlet openings and terminating short of one of the ends of the reservoir, so that water entering the reservoir must pass to the opposite end around the baffle-plate and thence back to the outlet, thus passing twice the length of the reservoir and becoming thoroughly associated with and of a temperature corresponding to that in the reservoir.

In the drawings I have shown my device of a suitable form for mounting upon the roof of a passenger-coach for use in connection with its heating system; but it is obvious that the shape of the shell is quite immaterial and that my device may be used to equal advantage in connection with any heating system, either high or low pressure, where it is desired to store a supply of hot water.

Having thus described my improvement, it is obvious that various immaterial modifications may be made in my device without departing from the spirit of my invention. Hence I do not wish to be understood as limiting myself to the exact form and construction shown.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the kind described, a shell divided by parallel walls into two outer compartments constituting expansion-chambers, and an inner compartment constituting a warming-reservoir, and independent pipe connections for the said compartments.

2. In a device of the kind described, a shell divided by vertical parallel walls into two outer compartments constituting expansion-chambers, and an inner compartment constituting a warming-reservoir, a single safety-valve connected and common to both expansion-chambers, and suitable pipe connections for the said compartments.

3. In a hot-water heating system, in combination, a pair of compartments constituting expansion-chambers, a storage warming-reservoir for hot water not in the heating system, arranged between, and connected to, the compartments, independent pipe connections for the reservoir and chambers, and means for introducing a part of the water from said warming-reservoir into said expansion-chambers.

4. In a hot-water heating system, a shell divided by substantially vertical parallel walls into two outer compartments constituting expansion-chambers, and an inner compartment constituting a warming-reservoir, the latter having a horizontal partition terminating short of one of its ends, said partition being adapted to give an indirect course to the water passing through the reservoir, and suitable pipe connections for the respective compartments.

5. In a device of the kind described, a shell divided by substantially parallel walls into two outer compartments, constituting a pair of expansion-chambers, and an inner compartment constituting a warming-reservoir, a baffle-plate within said reservoir, said reservoir being provided with an inlet and outlet positioned on opposite sides of said plate, and suitable pipe connections for the several compartments.

6. A device of the kind described comprising a shell divided to form a plurality of expansion-chambers, and a warming-reservoir for water not in the circulating system, unconnected circulating-pipes leading to the respective chambers, the warming-reservoir having valved communication with the respective chambers whereby water from the warming-reservoir may pass into either of said chambers.

7. In a device of the kind described, a shell divided by walls into two outer compartments constituting expansion-chambers, and an inner compartment constituting a warming-reservoir, suitable pipe connections for the several compartments, and means for discharging fluid from said reservoir directly into said outer compartments at will.

8. In a device of the kind described, a shell divided by walls into two outer compartments constituting expansion-chambers, and an inner compartment constituting a warming-reservoir, a baffle-plate within said reservoir said reservoir being provided with an inlet and outlet positioned on opposite sides of said plate, and a connection between said outer compartments, suitable pipe connections to the several compartments, and means for discharging a fluid from the reservoir into said outer compartments at will.

9. In a device of the kind described, a pair of compartments constituting expansion-chambers, and an inner compartment located between the expansion-chambers constituting a warming-reservoir, means for connect-

ing said expansion-chambers to a heating system, and said reservoir to a water-supply system, whereby the water in said supply system is heated by its proximity to said expansion-chambers while in said reservoir, and a communication between said expansion-chambers and reservoir for introducing water acted upon by the expansion-chambers thereinto.

10. A device of the kind described comprising a shell divided by parallel walls into two outer compartments constituting expansion-chambers, and an inner compartment constituting a warming-reservoir, the warming-reservoir being provided with suitable means for connecting the same with a water-supply system, and the expansion-chambers having suitable means for connecting the same to a heater, whereby the contents of the reservoir are heated by the radiation of the expansion-space.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN A. STROM.

Witnesses:
CHARLES I. COBB,
BURTON U. HILLS.