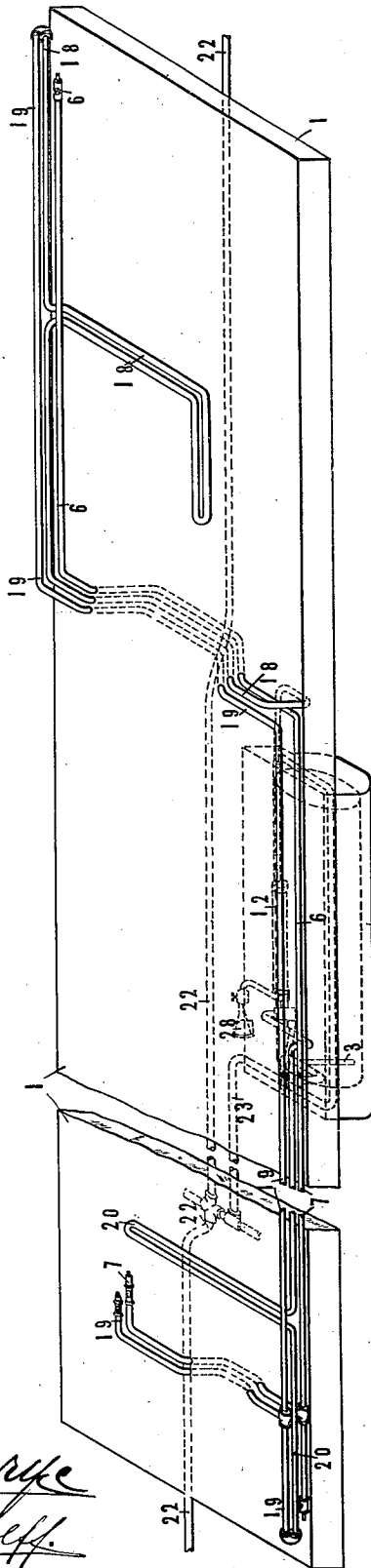
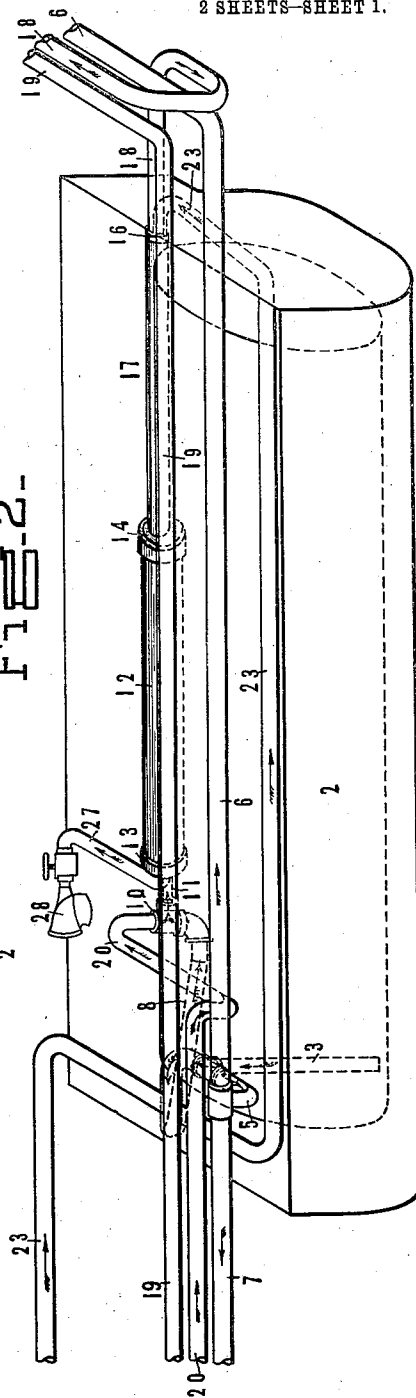


1,055,726.

2 SHEETS—SHEET 1.



211-11



~~WITNESSES~~

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HOT WATER SYSTEM.
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1,055,726.

Patented Mar. 11, 1913.

2 SHEETS—SHEET 2.

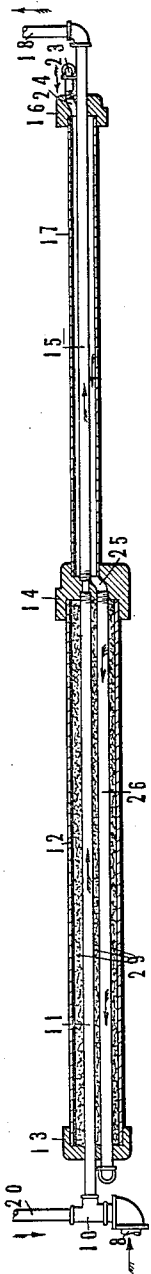


Fig. 3-

Fig. 5-

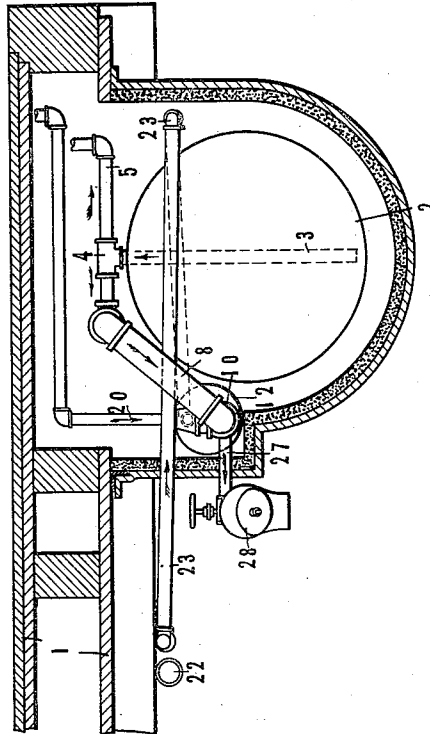
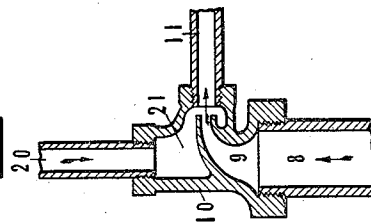


Fig. 4-



WITNESSES

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UNITED STATES PATENT OFFICE.

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HOT-WATER SYSTEM.

1,055,726.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Application filed November 18, 1908. Serial No. 463,146.

To all whom it may concern:

Be it known that I, ROBERT M. DIXON, a citizen of the United States, residing at East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Hot-Water Systems, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a system for heating water, and more particularly for heating toilet water for railroad cars.

One of the objects thereof is to provide a system of this character in which the water may be kept warm for some time after the car has been detached from the original heat-supplying means.

Another object of the invention is to provide means in a system of this type, whereby the water will be prevented from freezing.

Another object is to provide apparatus of the above nature which will be simple in construction and cheap to manufacture, and which will be efficient and reliable in operation.

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

The invention accordingly consists in the features of construction, combinations of elements and arrangements of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, wherein is shown one of various possible embodiments of the invention, Figure 1 is a perspective view showing various parts of the system in position with relation to the car; Fig. 2 is an enlarged detailed view of the water receptacle and the parts adjacent thereto; Fig. 3 is a longitudinal section through heating jackets showing the manner of heating the water; Fig. 4 is a vertical section of a fitting; and Fig. 5 is an end view of a water tank showing the connections thereto.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Referring to the drawings, 1 indicates the floor of the car to the under side of which a tank or receptacle 2, adapted to contain

water, is secured in any suitable manner. 55 The water is drawn from the bottom of the tank by means of the pipe 3 which passes out at the top of the tank to a T or other suitable coupling 4 at which point the flow of the water is divided, the cold water passing through the piping 5 to the pipes 6 and 7 through which it is led to the toilets at the ends of the car. The water for the hot water supply passes from the T 4 to the pipe 8 which communicates with a passage 9 formed in the lower portion of the fitting 10, which may be termed the "director" fitting, said passage being preferably curved as shown to direct the water into the pipe 11 which is surrounded by a suitable casing or jacket 12 secured within the heads 13 and 14, as clearly shown in Fig. 3. The water then passes through the pipe 15 which is preferably supported within the heads 14 and 16 and surrounded by a jacket 17, the cross-section of which is preferably smaller than the cross-section of the jacket 12. Upon leaving the pipe 15 the water is then led through the piping 18 to the toilet at one end of the car, 80 then by the piping 19 to the toilet at the opposite end of the car, from which it returns through the piping 20 to chamber 21 in the upper portion of the director fitting 10. There is thus provided a complete system of piping through which the hot water circulates, the water which returns through the piping 20 mingling with the water flowing from the tank 2 through the pipe 8.

The water is heated by means of steam 90 from the locomotive or other source of supply, which passes through the train pipe 22 which runs throughout the length of the train, each car being provided with a branch 23 leading to the interior of the jacket 17 through the passage 24 formed in the head 16, the steam being thus caused to pass into and through said jacket and in contact with the water pipe 15. After passing through this jacket the steam is then led through a suitable passage 25 formed in the head 14 to a pipe 26 which extends through the larger of the jackets and is connected to a pipe 27 which communicates with a suitable steam trap 28. It will thus be understood that 105 when the main train pipe 22 is connected to a suitable supply of steam the water within the pipes 11 and 15 will be kept hot and

ready for use. In order to insure the water being kept warm for some time after the supply of steam has been cut off there is placed within the jacket 12 and preferably surrounding the water pipe 11 and steam pipe 26 a suitable substance 29 which has the property of rapidly absorbing and retaining heat. In practice it has been found that calcium chlorid possesses this property to a high degree, as such substance crystallizes at a temperature of about 82 degrees, and when heated above this temperature becomes a liquid and absorbs heat rapidly, thereby storing up a quantity of heat which, after the steam has been cut off, will be imparted to the water within the pipe 11 until the temperature of the substance again falls to about 82 degrees, at which point it again assumes its crystallized form. In order to prevent the heated water from being forced back into the tank on account of its expansion, the diameter of the pipe 8 which leads from the tank 2 to the director fitting 10 is greater than the diameter of the pipe 11, being preferably of about twice that of the latter pipe. The increased area of the pipe 8 will, therefore, permit any expansion of the water to be taken up before it reaches the T 4.

In arranging the piping throughout the car the piping through which the cold water flows is preferably placed as shown in close proximity to the hot water pipes, by means of which the water in said cold water pipes is kept from freezing.

It will be seen from the above description that I have provided a system by means of which the water supplied to the toilets in cars may be heated and at the same time heat may be stored up to maintain said water in heated condition after the steam supply has been disconnected.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a system of the class described, in combination, a system of piping through which a fluid is adapted to circulate, a heater operatively associated with said pip-

ing, a conduit connected to a source of supply of a heated medium and to said heater for conveying said medium to said heater whereby the fluid circulating through said piping will be heated, a jacket surrounding said piping, heat storing material contained therein, and means communicating with said heater for conveying the heating medium therefrom into operative relation to said storing material.

2. In a system of the class described, in combination, a system of piping through which a fluid is adapted to circulate, a jacket surrounding said piping and adapted to be connected to a source of supply of a heated medium, whereby the fluid circulating in said piping will be heated, a second jacket surrounding said piping, heat storing material contained therein, and a means communicating with said first jacket for conveying the heated medium therefrom into operative relation to the material in said second jacket.

3. In a system of the class described, in combination, a system of piping through which a fluid is adapted to circulate, a jacket surrounding said piping and adapted to be connected to a source of supply of a heated medium, whereby the fluid circulating in said piping will be heated, a second jacket surrounding said piping, heat storing means contained therein, and a pipe positioned within said second jacket and communicating with said first jacket for conveying the heated medium from said first jacket into operative relation to said heat storing material.

4. In a system of the class described, in combination, a system of piping through which a fluid is adapted to circulate, means adapted to be connected to a source of supply of a heated medium for conveying the said medium into close relation to said piping to heat the fluid circulating therein, means comprising heat storage material surrounding a section of said pipe in advance of said first means, and means in conductive relation to said storage material through which the heated medium travels after its passage through said first means, whereby the storage material will be heated by the residual heat of said heated medium.

In testimony whereof I affix my signature, in the presence of two witnesses.

ROBERT M. DIXON.

Witnesses:

E. E. ALBEE,
JOHN T. CLARK.