W. H. JONES.

HEATING SYSTEM.

APPLICATION FILED APR. 2, 1907.

1,040,548. **Patented Oct. 8, 1912.**

Fig. 1.

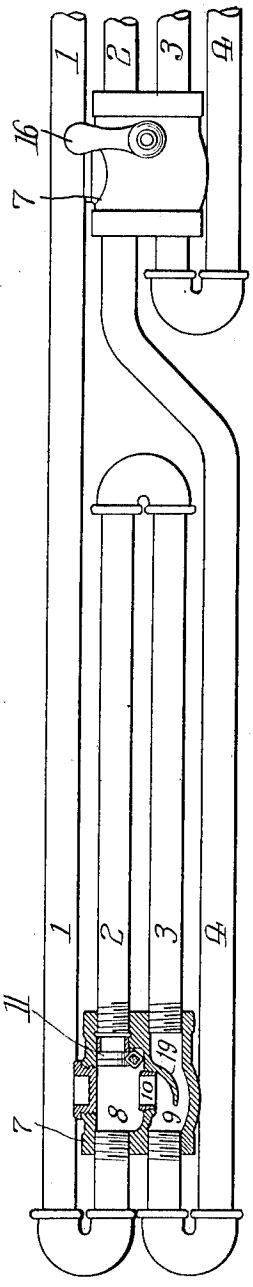


Fig. 3.

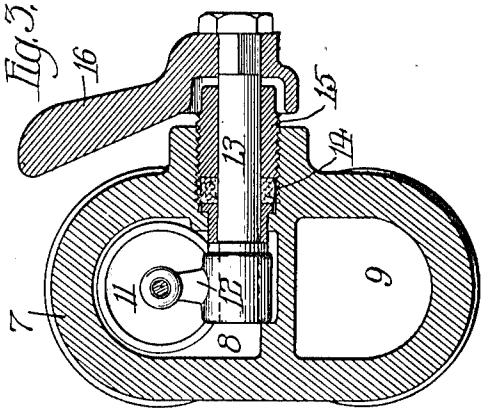
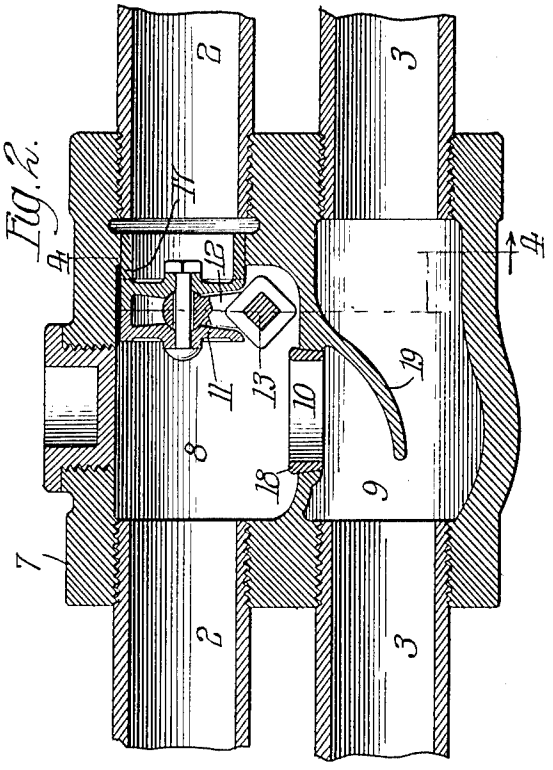


Fig. 2.



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HEATING SYSTEM.

1,040,548. Specification of Letters Patent. Patented Oct. 8, 1912.

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To all whom it may concern:

Be it known that I, WILLIAM H. JONES, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Heating Systems, of which the following is a specification.

My invention relates to heating systems employing either steam or hot water as the heating medium and consists in a system capable of such control that a portion of its radiating surface, such for instance as its pipes, may be cut out of service without interrupting the operation of the remainder of the radiating pipes and without rendering the same liable to explosion or injury in any respect, with the result that the temperature may be readily controlled and the system kept in continual operation.

My new system of heating finds particular advantage and utility on railway cars, especially sleeping cars, where it is desirable to materially reduce the temperature at night without cutting out the entire heating system of the car. In the present instance, I accomplish this result by providing in the piping of the heating system of the car one or more valve mechanisms which, under normal conditions, permit of the usual operation of the system as a whole by allowing the heating medium, steam or water, to circulate through all of the heat radiating pipes but which, when operated, are arranged to short circuit them, so to speak, and thereby render some of them inactive.

According to my invention, by the provision of two valve mechanisms, the parts of the heating system on both sides of the body or main portion of an ordinary sleeping car may be separately regulated in the manner already explained and by the provision of additional valve mechanisms such control may be extended to the parts of the heating system in the smoking room, drawing room and state rooms of such a car. Moreover, my heating system may be installed to advantage in compartment cars and combined compartment and observation cars, with the result that the temperature of each compartment and of the observation section may be independently controlled.

For convenience in description, I have illustrated my invention as applied to railway cars and will proceed to describe the same in connection therewith. Moreover, while the heating medium may be either steam or hot water, I will refer to the same as hot water which, in the usual heating systems of railway cars is heated indirectly by the steam in a train pipe from the locomotive, although it may be heated by a heater located in the car.

In the drawings Figure 1 is a view illustrating two of my valve mechanisms as embodied in the compartment car heating system and showing one of the valve mechanisms in section; Fig. 2 another section of the valve similar to that in Fig. 1 but on a larger scale; and Fig. 3 a cross section taken on the irregular line 4—4 of Fig. 2.

The same reference characters indicate corresponding parts in the several views of the drawings.

A suitable arrangement of piping for embodying my invention is shown in Fig. 1 of the drawings, which represents four pipes connected by return bends, such as would be adapted to heat a single compartment of an ordinary sleeping car. The hot water passes downwardly from the flow pipe 1 successively through the pipes 2, 3 and 4, and thence to the right and upwardly to a similar pipe 2 of another set of pipes in an adjoining compartment, whence in similar manner it passes downwardly through pipes 3 and 4, and so on, for as many sets of pipes and compartments as may be included in the system. In order to provide for reducing the heating effect in any single compartment or other portion of the car, I have provided in each compartment a valve mechanism 7 so constructed and located with respect to the pipes that it will practically short circuit the pipes 2 and 3 and cause the water to flow from the pipe 4 of one compartment to the corresponding pipe 4 of the next adjacent compartment and so on. In this manner, one half of the heating surface of each compartment may be cut out of service without interrupting the working of the system. It will be understood that the ends of the car may, If desired, be likewise provided with the valve mechanism 7 with similar results.

The valve mechanism, as herein shown, comprises a casing having connections with the pipes 2 and 3, and interposed in the length thereof and near their coupled or connected ends and opposite their return bends, leaving, however, a portion of said pipes 2 and 3 always in the line of circulation and never cut off by the valve mecha-

nism as hereinafter made apparent. The casing is provided with a chamber or passage 8 normally connecting the two portions of pipe 2 and permitting the hot water to circulate in the usual manner already described, and the same is also provided with a chamber or passage 9 connecting the two portions of pipe 3 and adapted to communicate with the other chamber through a port 10. Within the chamber 8 is arranged a valve 11 carried on the end of an arm 12 which is itself mounted on the inner end of a rock shaft 13. This rock shaft extends through one side of the valve casing and through a packing 14 and its packing nut or gland 15 and is provided at its outer end with a suitable operating handle 16. The valve, which is arranged to rock in an arc of 90°, has seating faces on its opposite sides and in one position is adapted to fit upon the seat 17 as shown in Fig. 2, thereby interrupting the circulation through the pipe 2 and opening communication between the left hand ends of the pipes 2 and 3, and in the other position to fit upon the seat 18 at port 10 thereby closing said port and causing the water to circulate in the usual or normal manner throughout the full lengths of pipes 2 and 3. By preference, I provide the chamber 9 immediately below port 10 with a depending curved flange or deflector 19 pointing in the direction of circulation for deflecting the current when the port 10 is open as shown.

According to my construction the valve mechanism serves to cut out the main portions of the pipes 2 and 3 from the circulating system when the valve is in the position shown in Fig. 1, for instance, but it does not cut off communication thereof with the system as the valve merely closes the front end of this portion of the pipe 2, leaving the corresponding end of the pipe 3 open to the main circulating system. In other words the valve mechanism is arranged to cut out the main portions of pipes 2 and 3 from the line of circulation of the hot water or heating fluid without cutting off their communication with the heating system, the circulation being in a general downward direction. As a result of this construction, the water is not trapped or confined in these portions of pipes 2 and 3 when they are cut off from the line of circulation as described and consequently the expansion of the water is provided for and prevented from breaking the pipes or opening the joints and thereby causing leakage thereat.

It will be evident that by means of the valve mechanism, the pipes 2 and 3, practically to their full extent, can be cut out of service without stopping the circulation of the system which will continue through the hot water pipe 1 and the return pipe 4. In this manner the amount of heating or radiating surface is reduced practically one half. The compartments being provided with their own valve mechanisms can thus be independently regulated as to temperature, inasmuch as each of the valve mechanisms is operable separately and regardless of the operation or non-operation of any of the others.

I claim:

1. The combination with a circulating system and the heating pipes 2 and 3 communicating therewith, of a valve mechanism for cutting said heating pipes out of service comprising a casing having through passages communicating with both of said pipes and said system, and a port forming a communication between said passages, and a double seating valve normally closing said port to cause circulation through said pipes 2 and 3 but arranged to close the outlet end of the passage communicating with pipe 2 and simultaneously open such port without closing the pipe 3 or cutting off its communication with the system.

2. The combination with a circulating system and the heating pipes 2 and 3 communicating therewith, of a valve mechanism for cutting said heating pipes out of service comprising a casing having through passages communicating with both of said pipes and said system, and a port forming a communication between said passages, and a swinging valve 11 normally closing said port but arranged to be swung to a position to close the outlet end of the passage communicating with the pipe 2 and to thereby open the port, a rock shaft and arm in the casing on which said valve is mounted, and a handle for operating the shaft.

3. The combination with a circulating system and the heating pipes 2 and 3 communicating therewith, of a valve mechanism for cutting said heating pipes out of service comprising a casing having through passages communicating with both of said pipes and said system, and a port forming a communication between said passages, and a double seating valve normally closing said port to cause circulation through said pipes 2 and 3 but arranged to close the outlet end of the passage communicating with pipe 2 and simultaneously open such port, said casing having a depending flange 19 arranged below said port and pointing in the direction of the flow of the heating fluid.

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Witnesses:
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