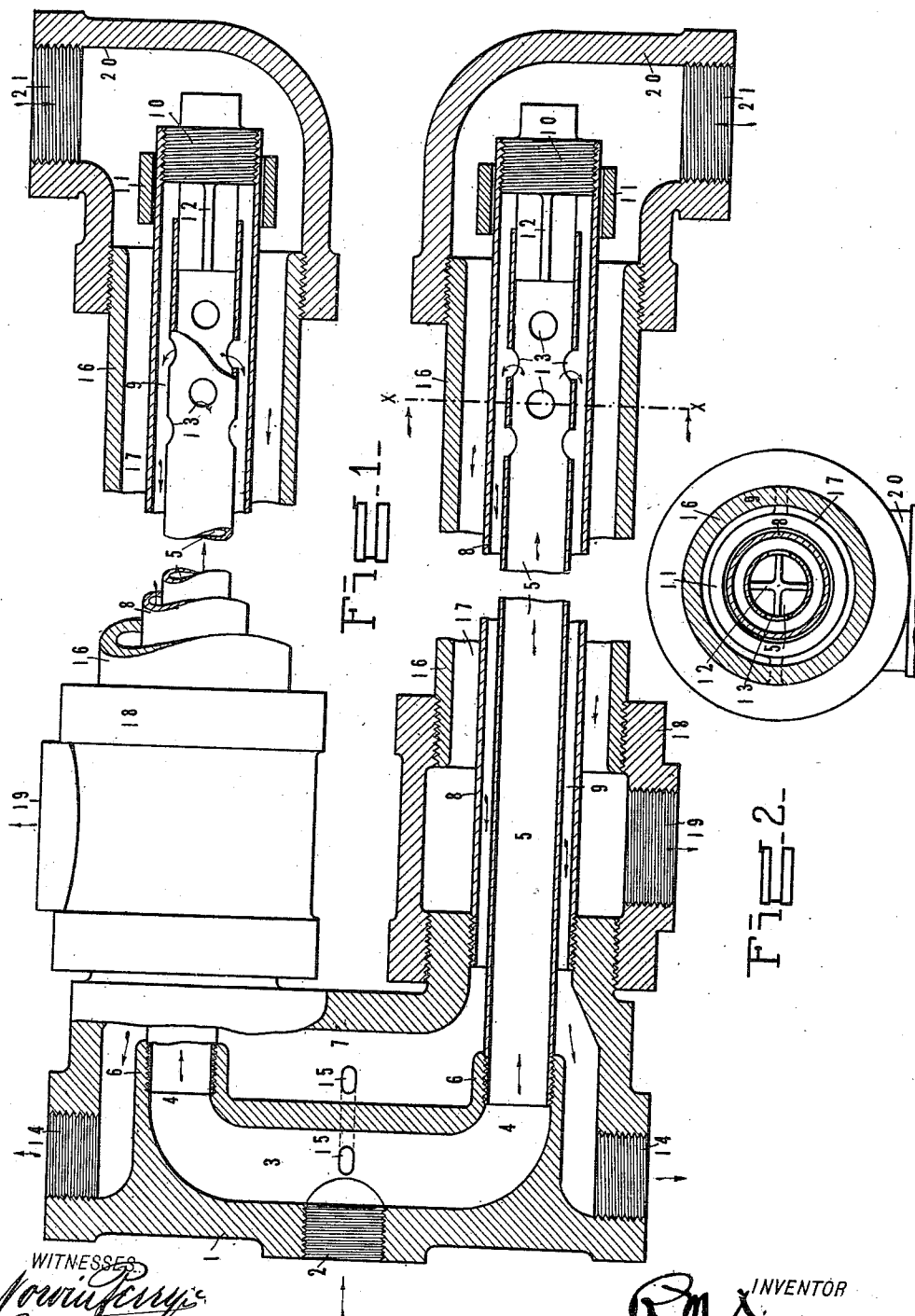


R. M. DIXON.
STEAM JACKET.
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STEAM-JACKET.

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Specification of Letters Patent.

Patented June 6, 1911.

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To all whom it may concern:

Be it known that I, ROBERT M. DIXON, a citizen of the United States, residing at East Orange, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Steam-Jackets, of which the following is a specification.

This invention relates to car heating apparatus, and more specifically to steam jackets.

One of the objects thereof is to provide a simple, strong and practical piece of apparatus for heating a water system on a car from steam, characterized by efficient and powerful action and compact structure.

Another object is to provide a device of the above type in which the formation and travel of bodies of vapor in the water system is reduced to a minimum.

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 arrangement 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 drawing, wherein is shown one of various possible embodiments of this invention, Figure 1 is a plan view shown largely in section, in order to disclose the structure more clearly. Fig. 2 is a cross-section taken substantially on the line X—X of Fig. 1.

Similar reference characters refer to similar parts throughout both views of the drawing.

In order that certain features of this invention may be the more readily and fully understood, it may here be noted that in the use of apparatus of the general nature of that with which this invention deals, compactness of structure and such disposition of the parts, as to fit in with the piping of the car without distorting the same from its most efficient arrangement, is of prime importance. It may also be noted that it is highly important to so form and dispose the members which are subject to wide variations of temperature as to permit free expansion and contraction without straining their joints, and also to so proportion and

mount all members as to adapt them to withstand the severe jarring and vibration incident to practical use. Another feature of importance lies in the arrangement of water passages in such manner as to prevent the formation of large bubbles with a consequent pounding in the water system. These and other advantageous features are attained in constructions such as that hereinafter described.

Referring now to Fig. 1 of the accompanying drawing, there is shown a casting 1 provided with a steam inlet port 2 which leads to a steam chamber 3. This steam chamber is provided with a pair of outlets 4 each leading to a spur tube 5 threaded within a shoulder 6. Also formed in the casting 1 is a drip chamber 7, leading to which are the spur tubes 8 which jacket or inclose the tube 5 and provide an annular space 9 therebetween. The outer ends of tubes 8 are closed by plugs 10 and may be slidably supported within the guides 11. Formed on the inner end of each plug 10 is a winged guide 12, best shown in Fig. 2 of the drawing, which enters the inner tube 5 and supports the same, permitting free expansion thereof. This guide provides a substantially free opening for steam to pass from the outer end of the tube 5 into the jacketing tube 8, this action being facilitated as by the ports 13.

By the above means the steam which enters at 2 is divided into two columns which pass in parallel through the tubes 5, and thence outwardly into the annular spaces 9 wherein it is largely condensed, giving up its heat to the outer tubes 8. The waste steam and water of condensation are thus returned from each heating element to the common chamber 7 from which they may pass as through the drip ports 14 to any desired point. There are also provided, if desired, in the bottom of the steam and drip chambers, small drain openings 15 for the purpose of removing the water of condensation directly at this point. About these two heating members, rigidly and strongly mounted in a single casting and yet permitted the freest expansion and contraction, and affording a large heating surface and a maximum of compactness, there is positioned suitable piping adapted to carry the water

or brine of the heating system of the car. This piping preferably comprises a pair of casings or drums 16, each of which fits closely about the tube 8, so as to provide a narrow annular space 17, and each of which is preferably threaded at its respective ends to take into a fitting 18 mounted upon the casting 1 and provided with a port 19 and an elbow 20 provided with a port 21. With this form of piping the water is forced in a thin annular sheet about each tube 8, and in this manner the formation and travel of bubbles is largely avoided.

The operation of the apparatus should be largely obvious from the above description, but it may be noted that the steam in passing through the course above outlined is brought directly into contact with a large radiating surface, and this surface, although of small diameter, is not unduly extended in length as it takes the form of separate elements. These elements, moreover, are not only self-draining, but being rigidly mounted upon a single casting, are always positively held in such relation one to another as results in the most efficient action. The water, moreover, may be brought, as above noted, in thorough contact with each of these elements throughout its entire length, and is thus quickly and powerfully acted upon by the same.

It will be seen that there is provided a piece of apparatus of the simplest and cheapest construction, and which is, nevertheless, although of powerful and efficient action, so formed and disposed as to consume but small space and fit in well with the piping of the car, and is yet of such form and construction as to meet the most severe demands of practical use.

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 drawing shall be interpreted as illustrative and not in a limiting sense.

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

1. A steam heater for a water circulating system comprising a casting having formed therein a steam chamber provided with a steam inlet and a pair of outlets, said casting having also formed therein a drip chamber provided with an outlet and a pair of inlets substantially concentric with respect to said first outlets, a pair of substantially parallel spur tubes secured to said casting and leading from the outlets of said steam chamber, said tubes being open at their outer ends, a pair of gravity drained spur jacketing tubes respectively positioned

about each of said first tubes and secured to said casting at said inlets to said drip chamber, whereby steam is led from said steam chamber out through said inner tubes in parallel and the drip is returned between said inner and outer tubes to said drip chamber, and piping about both of said tubes and positioned in said water circulating system and adapted to lead water in contact with the outer surface of said second tubes.

2. A steam heater for a water circulating system comprising a casting having formed therein a steam chamber provided with a steam inlet and a pair of outlets, said casting having also formed therein a drip chamber provided with an outlet and a pair of inlets substantially concentric with respect to said first outlets, a pair of substantially parallel spur tubes secured to said casting and leading from the outlets of said steam chamber, said tubes being open at their outer ends, a pair of gravity drained spur jacketing tubes respectively positioned about each of said first tubes and secured to said casting at said inlets to said drip chamber, whereby steam is led from said steam chamber out through said inner tubes in parallel and the drip is returned between said inner and outer tubes to said drip chamber, and piping about both of said tubes and positioned in said water circulating system and adapted to lead water in contact with the outer surface of said second tubes, said piping extending closely about each of said outer tubes whereby the formation of bubbles between the same is prevented.

3. A steam heater for a water circulating system comprising a plurality of drums each having water and steam spaces, and a fitting or casting formed to supply steam to said steam spaces and to receive and discharge the drip therefrom, the water spaces of said drums being out of communication with one another and each adapted to be brought into communication with an independent circuit of said water circulating system.

4. A steam heater for a water circulating system comprising a casting having formed therein a steam chamber provided with a steam inlet and a pair of outlets, said casting having also formed therein a drip outlet and a pair of drip inlets substantially concentric with respect to said first outlets, a pair of substantially parallel spur tubes secured to said casting and leading from the outlets of said steam chamber, said tubes being open at their outer ends, a pair of gravity drained spur jacketing tubes respectively positioned about each of said first tubes and secured to said casting at said drip inlets, whereby steam is led from said steam chamber out through said inner tubes

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Washington, D. C."
