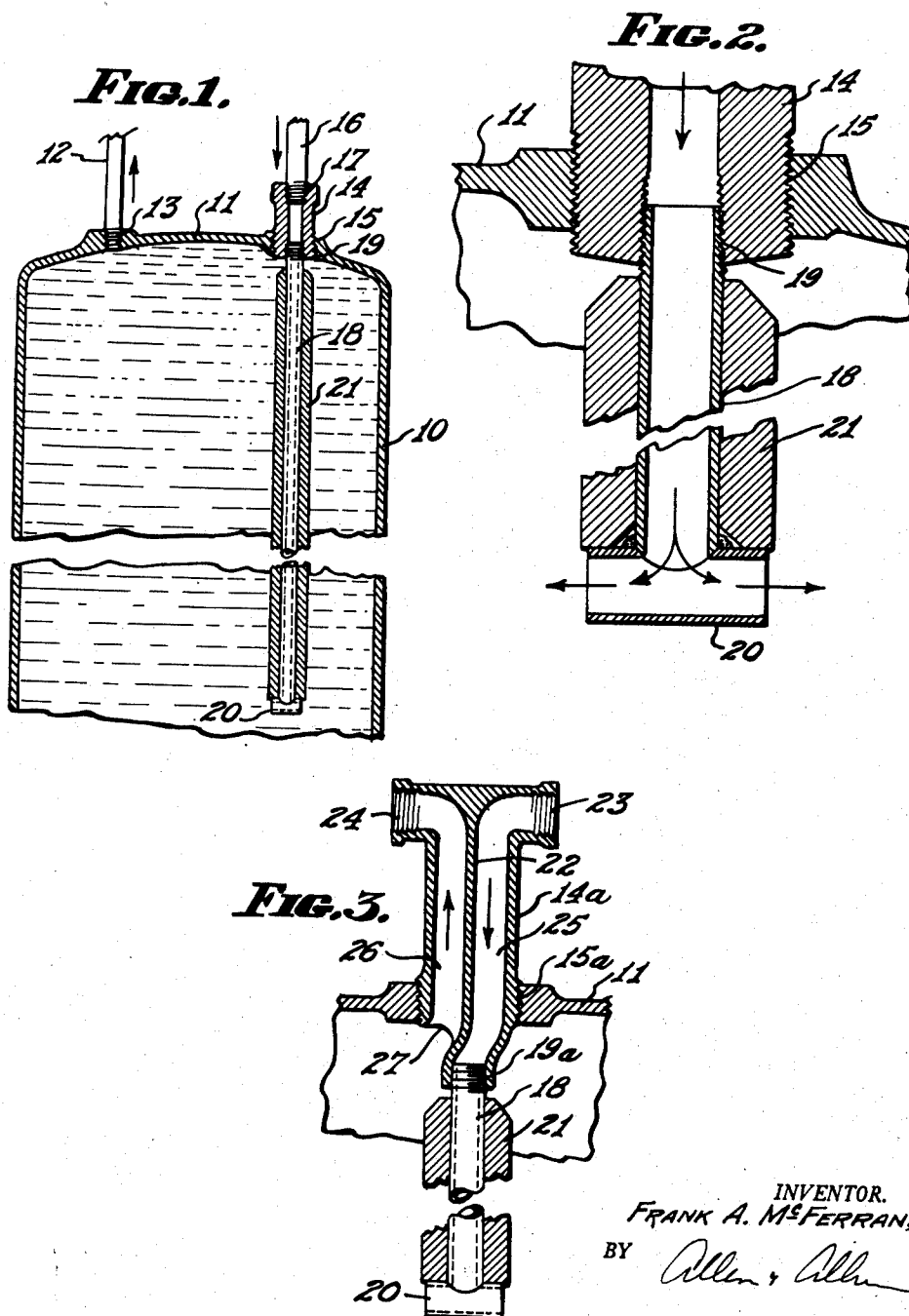


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F. A. McFERRAN
WATER HEATER FITTINGS
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WATER HEATER FITTINGS

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This invention relates to fittings for use in water heaters of the tank type. Such water heaters are usually provided with a fitting through which a cold water line enters the tank and to which there is generally secured a so-called infill pipe which extends substantially to the bottom of the water heater tank. There is also usually provided a fitting to which the hot water line is connected.

Depending upon conditions as to the materials used in the construction of the water heater and the pipes and depending upon the conditions of the water being used, more or less electrolysis will take place within a water heater, as a result of which the walls of the tank or the material of the infill pipe is attacked. Electrolysis has presented a very severe problem in the water heater industry and has necessitated far too frequent replacement of parts and sometimes of entire heaters.

The problem of electrolysis has been attacked in the past by the provision of a rod of magnesium or similar metal which is inserted into the tank and subjected to the action of the electrolysis which takes place, and it has been found that magnesium acts preferentially in such a situation in that the magnesium is attacked and consumed rather than the material of the tank or the piping. The magnesium rod was generally inserted in the tank by means of a third fitting, and periodically the magnesium rod is replaced by a new rod.

It is an object of the present invention to combine the magnesium rod with at least the cold water fittings and, according to one embodiment, with both fittings wherein a single fitting takes care of the cold water inlet, the hot water outlet and the magnesium.

It is another object of my invention to provide a structure as outlined above which will be extremely simple both from the assembly standpoint and from the manufacturing standpoint. It is yet another object of the invention to provide such a structure wherein the magnesium can readily be replaced as it is consumed and whereby a greater volume of magnesium is presented to the interior of the water tank than has been possible in the past.

Yet another object of the invention involves the elimination of one or more tappings in the tank, whereby tank costs and the possibility of leakage at the tappings, are reduced.

These and other objects which I shall describe in more detail hereinafter or which will be apparent to one skilled in the art upon reading

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these specifications, I accomplish by that certain construction and arrangement of parts of which I shall now describe certain exemplary embodiments.

Reference is made to the drawings forming a part hereof and in which:

Figure 1 is a fragmentary central vertical cross-sectional view through a water tank of a hot water heater showing one embodiment of the invention.

Figure 2 is a fragmentary enlarged cross sectional view of the fitting of Figure 1 which constitutes a part of the invention.

Figure 3 is a view similar to Figure 2 of a modification.

Briefly, in the practice of my invention I provide a fitting in the nature of a bushing having threaded engagement in the top wall of the water heater tank. Means are provided for attaching to the outer end of the bushing at least the cold water line. An infill pipe is removably attached to the inner end of the bushing and the infill pipe extends nearly to the bottom of the tank and terminates in an element constituting a shoulder. The magnesium instead of being in rod form is provided in tubular form having an internal diameter such that it will fit over the infill pipe and having an external diameter such that it will pass through the threaded opening in the top of the water heater tank.

Referring now more particularly to the drawings, I have shown a water heater tank generally at 10. The tank has a top wall 11, and in the example of Figure 1 a hot water outlet pipe is indicated at 12, having threaded engagement with the top wall 11 of the tank, as indicated at 13. At 14 I provide a bushing which has threaded engagement in the top wall 11 of the tank as indicated at 15. The cold water line 16 is threaded into the outer end of the bushing as at 17 and an infill pipe 18 is threaded into the lower or inner end of the bushing as indicated at 19. The infill pipe 18 in the particular embodiment shown terminates at its lower end in a T 20, but it will be understood that any terminus providing a shoulder for the support of the magnesium tube will be satisfactory. I prefer the use of a T fitting because it gives a better distribution of cold water at the bottom of the tank.

The magnesium, instead of being in rod form, is provided in the form of a tube 21. The tube is of such internal diameter that it fits snugly over the infill pipe 18 and is supported by the shoulder or T 20. The outside diameter of the

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magnesium tube 21 is of such size that it will pass through the threaded hole in the top wall 11 of the tank.

From what has been said above it will be clear that if it has been determined that the magnesium tubing has been consumed or if it is desired to determine the status of the magnesium tubing, the water line 16 may be disconnected from the bushing 14 and the bushing 14 may be unscrewed from the water tank whereupon the entire unit including the bushing, the infill tube and the magnesium tube may be withdrawn through the hole in the top wall 11 of the water heater tank. If it is found that the magnesium tubing is substantially consumed, the infill tube 18 may be unscrewed from the bushing 14 and a new magnesium tube may be slipped over the infill tube which may then again be secured to the bushing 14. The entire unit can then be inserted in the water tank and the bushing 14 firmly screwed in place. It will of course be understood that the infill tube may be separable, whereby it would be unnecessary to unscrew it from the bushing 14, and that the structure described is exemplary only.

By the use of magnesium tubes a much greater volume of magnesium is provided than with the conventional rod. It will also be noted that manufacturing expense will be reduced because it will be unnecessary to provide a fitting for the magnesium rod. Because of the greater volume of magnesium provided maintenance costs will be lowered because it will take much longer to consume the larger volume of magnesium.

In Figure 3 I have shown a modification wherein the hot water outlet is also combined into the same fitting. Fundamentally the device of Figure 3 is based upon the same principles as that of Figures 1 and 2. The infill tube and the magnesium tube and T fitting are identical to those described in connection with Figures 1 and 2 and have been given the same reference numerals. The bushing has here been indicated at 14a and it is threaded into a hole in the top wall 11 of the water heater tank as at 15a. In this particular case however the bushing 14a provides two independent passageways and therefore has a partition element 22. The upper end of the bushing 14a may be conveniently formed as 18 having the orifices 23 and 24, one communicating with each of the passageways through the bushing. The passageways are indicated at 25 and 26.

That passageway which is to be cold water inlet passageway (in Figure 3 indicated at 25) is extended somewhat beyond the terminus of the passageway 26 and is diverted laterally toward the passageway 26 so as to bring the lower orifice of the passageway 25 substantially on the axis of the fitting 14a as indicated at 19a. By virtue of the extension of the orifice 19a below the terminus of the passageway 26, the orifice 27 of the passageway 26 is in no way restricted. Thus in the example of Figure 3 cold water enters through the orifice 23 and passes through the passageway 25 to the infill tube 18. The hot water exits through the orifice 27, the passageway 26 to the hot water line which is connected to the orifice 24. Since the terminus of the cold water passageway to which the infill tube is connected is substantially co-axial with the bushing 14a, the device operates in the same way as described above in connection with Figures 1 and 2, i. e. if the hot and cold water lines are disconnected from the orifices 23 and 24 the entire

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unit including the bushing 14a, the infill tube 18, magnesium tube 21 and T 20 can be unscrewed and withdrawn through the threaded hole in the top 11 of the water heater. The magnesium tube 21 may be inspected and replaced in the same manner as described above.

From the foregoing description it is believed that the invention will be clear to those skilled in the art, and it will certainly be understood that numerous minor modifications may be made without departing from the spirit thereof. I therefore do not intend to limit myself in any manner other than as set forth in the claims which follow.

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

1. A water heater fitting comprising a tubular bushing externally threaded for engagement in a threaded hole in a wall of a water heater, said bushing having means at its outer end for the attachment of a water line, and having removably attached, at its inner end, a pipe for passage of water to said fitting, said pipe adapted to extend to near the bottom of a water heater to which said fitting may be secured, said pipe terminating at its lower end in a portion constituting a shoulder, and a tube of sacrificial metal surrounding said pipe and extending substantially the entire length thereof, supported on said shoulder, and having an outside diameter less than the inside diameter of the threaded hole in the wall of said water heater.

2. In combination in a water heater, a tank, a threaded hole in a wall of said tank, a tubular bushing threadedly engaged in said hole, means at the outer end of said bushing for the attachment of a water line, a pipe for the passage of water to said bushing removably attached to the inner end of said bushing, said pipe terminating at its lower end in a portion constituting a shoulder, and a tube of sacrificial metal surrounding said pipe and extending substantially the entire length thereof, supported on said shoulder, and having an outside diameter of such size that it can pass through said threaded hole.

3. A water heater fitting comprising an externally threaded tubular bushing having internally a longitudinal imperforate partition and having at each end two orifices communicating respectively with the interior of said bushing on opposite sides of said partition to provide two separate passageways therethrough, means at one end of said bushing for the attachment of a water line to each of said orifices, an infill pipe removably secured to one of the orifices at the other end of said bushing, said pipe terminating at its other end in a portion constituting a shoulder, and a tube of sacrificial metal surrounding said pipe and extending substantially the entire length thereof, supported on said shoulder, and having an outside diameter less than the root diameter of the threaded portion of said bushing.

4. The structure of claim 3, wherein that passageway terminating in the orifice to which said infill pipe is secured is extended beyond the orifice of the other of said passageways and is diverted laterally toward said other passageway, said orifice to which said infill pipe is secured thus being disposed substantially axially of said bushing.

5. A fitting according to claim 1 wherein said

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portion constituting a shoulder comprises a T-fitting secured to the end of said infill pipe.

6. A fitting according to claim 3, wherein said portion constituting a shoulder comprises a T-fitting secured to the end of said infill pipe.

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Number
1,321,235
1,471,784
1,608,709
2,401,546
2,459,123

5

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date	Number
759,380	Kane	May 10, 1904	10 1,366

6

Name	Date
McCann	Nov. 11, 1919
Engelhard et al.	Oct. 23, 1923
Mills	Nov. 30, 1926
Brown	June 4, 1946
Bates et al.	Jan. 11, 1949

FOREIGN PATENTS

Country	Date
Great Britain	of 1877