Jan. 7, 1941. J. F. INGHAM 2,227,716

PIPE FITTING

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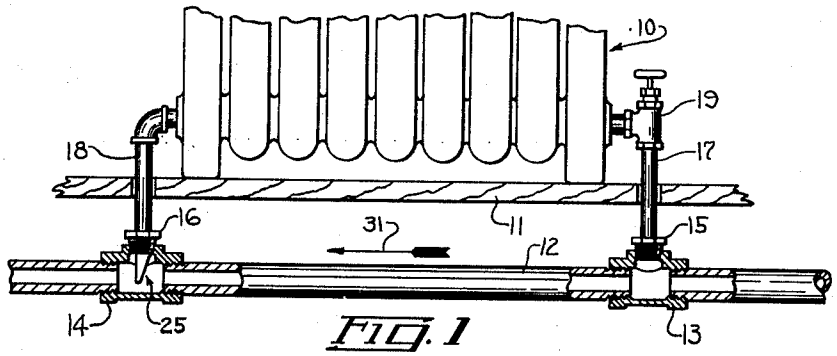


FIG. 1

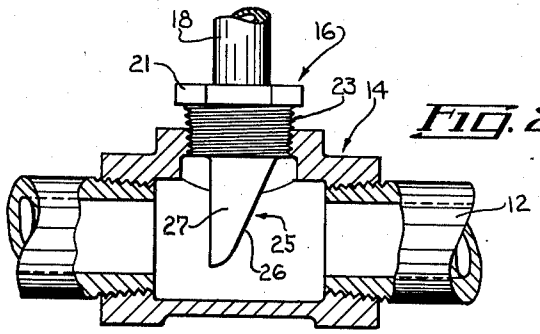


FIG. 2

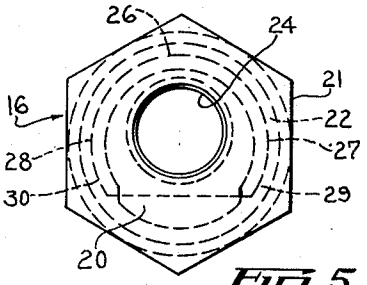


FIG. 5

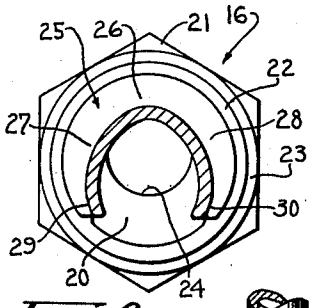


FIG. 6

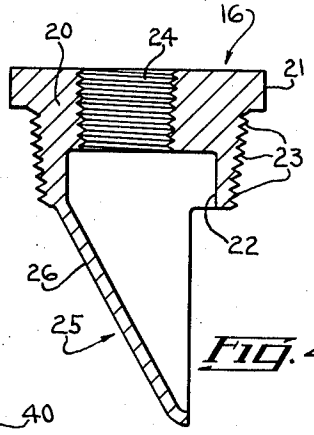


FIG. 4

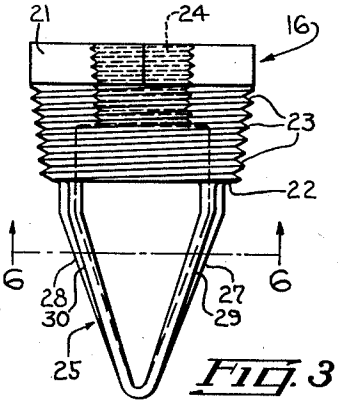


FIG. 3

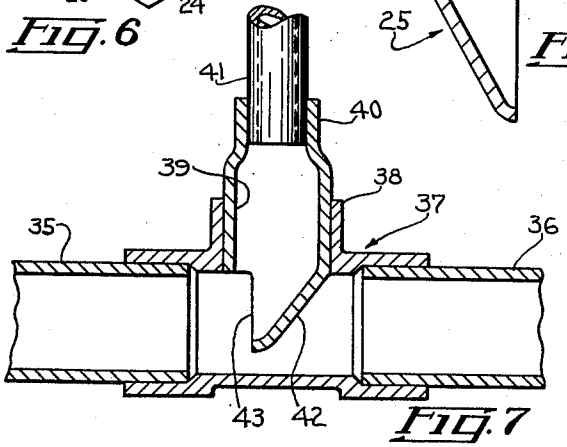


FIG. 7

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PIPE FITTING

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1 Claim. (Cl. 285—210)

This invention relates to new and useful improvements in pipe fittings and has particular relation to a fitting for use in a one or single pipe forced feed hot water heating system.

The objects and advantages of the invention will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawing wherein satisfactory embodiments of the invention are shown. However, it is to be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claim.

In the drawing:

Fig. 1 is a view partly in elevation and partly in section showing the fitting of the invention associated with a radiator and a main according to the teaching of the invention;

Fig. 2 is an enlarged view showing the fitting incorporated in a main, the fitting being shown in side elevation and as connected in a T, the latter being shown in longitudinal section;

Fig. 3 is a front elevational view of the fitting alone;

Fig. 4 is a vertical central sectional view of the fitting;

Fig. 5 is a top plan view of the fitting;

Fig. 6 is a transverse sectional view taken as along the plane of the line 6—6 in Fig. 3; and

Fig. 7 is a sectional view of a modification, showing the invention as incorporated in a copper fitting mounted in a copper T.

Referring in detail to the drawing and at first to Figs. 1 through 6, at 10 is shown the lower portion of a radiator resting on a floor 11 below which passes a hot water main 12. The main 12 is a part of a one pipe forced feed hot water heating system. Connected in the main 12 are T fittings 13 and 14 in the branch outlets of which are threaded bushings 15 and 16 respectively. A branch 17 from the bushing 15 constitutes the lead or feed pipe to the radiator from the main while a similar branch 18 constitutes the return from the radiator to the main through the bushing 16 and the T fitting 14. Branch 17 is equipped with any or the usual cut-off valve 19.

The fitting or bushing 16 is of special construction. As shown it comprises a cylindrical body including an outer plug-like portion 20 having a hexagonal flange 21 to be engaged by a wrench or the like for the turning of the bushing. Also, the body includes an inner skirt-like portion 22. Inwardly of the flange 21 the said skirt-like portion 22 is externally screw threaded as at 23. An internally threaded branch opening 24 is formed in the plug-like portion 20 of the fitting and obviously is for the purpose of connection of the branch 18 or a similar branch.

Projecting from the inner end of the body of the bushing and in fact from the inner end of the skirt portion 22 is a hood generally designated 25. This hood is here shown as cast integral with the skirt portion of the bushing or fitting and as far as is now known must have its outer edge contiguous with a portion of the inner end of said skirt portion. Hood 25 includes a rear wall 26 tapering forwardly from its juncture with the inner end of the skirt to the inner end of the hood whereby such wall 26 may also be considered as forming the bottom wall of the hood.

In addition to the tapered rear wall 26 the hood includes side walls 27 and 28 flaring forwardly from the said rear wall and integral with the latter as shown best in Fig. 6. Forwardly of the center of the branch opening 24 the edge portions 29 and 30 of the said side walls 27 and 28 are directed inwardly or toward one another for a short distance and such portions being at but a slight angular relation to the main portions of said walls and being relatively short do not come into close relation with one another and thus the front end of the hood is left open.

Attention is directed to the fact that side walls 27 and 28 are in converging relation to one another and incline toward one another as they recede from the body or skirt portion of the bushing 16. Thus the hood 25 is open at its front but at its rear and sides is tapered or flared with little if any flat surface.

The fitting 16 of the invention is used only in the return pipe from the radiator or from a riser or the like. In Fig. 1 the arrow 31 indicates the direction of flow of the hot water in the main 12. Hot water will seek position at the upper side of the main and will naturally move upwardly through the T fitting 13, bushing 15 and branch pipe 17 to the radiator, returning to the main from the radiator through the branch pipe 18. Water circulating through the main passes about the hood 25 and the latter having its walls tapered and flared as above described will offer little if any resistance to such passage of the water.

As the water passes the hood a Venturi action will be set up about the hood whereby a suction-like or drawing action will be impressed on the open front of the hood. This will facilitate or

accelerate the movement of water through the hood and obviously increase the flow through the radiator.

It is noted that the internal diameter of the skirt portion 22 of the fitting 16 is considerably larger than the diameter of the branch opening 24 into which the connecting pipe 18 is threaded and thus is much larger in diameter than that of the internal diameter of any pipe threaded into such opening. Therefore at the discharge end of such return pipe there is an area of increased diameter into which the pipe discharges; thus the pipe does not discharge against any pressure. In other words this arrangement provides a zone of low pressure into which the return pipe discharges.

The tapered or inclined rear (and bottom wall) 26 together with the side walls 27 and 28 provides a construction preventing water moving through the main 12 from entering the bushing or fitting 16. By the time such water passes the side walls 27 and 28 the water is beyond the center of the bushing or fitting and being forced along will not enter the open side of the hood. In fact the action of the water forced through the main will and does result in the above mentioned venturi action on the said open side of the hood whereby movement of water from the radiator through the hood is accelerated.

In addition to the fact that the upper or outer end of the hood extends more than one-half way around the lower or inner end of the skirt whereby the open side of the hood is beyond the center of the bushing or fitting the branch opening 24 may be, and in the drawing is, located eccentrically of the fitting. That is such branch opening is located rearwardly of the center of the fitting whereby to have the open side of the hood located forwardly of the foremost edge portion of the said branch opening. This further insures that water from the main will not pass upwardly through the fitting and into the return branch pipe 18.

The rear wall 26 being located and tapered as shown and the side walls 27 and 28 being flared but arranged to converge as they recede from the lower or inner end of the skirt 22 the lower or inner end portion of the hood is rather pointed. With this arrangement the flow of water by the hood is facilitated as above explained and in addition through the described construction there will be no appreciable blocking of the water main when the fitting is threaded in an additional turn or the like should the threads of the branch opening of the T fitting 14 be cut to an extra depth. The short inwardly directed portions 29 and 30 of the side walls 27 and 28 additionally serve to prevent the entrance of water into the hood through the open side thereof when the water is being circulated in the usual manner in the main. These inwardly directed wall portions are, it is noted, located in advance of the center of the fitting 16.

Referring now to Fig. 7 there sections 35 and 36 of a main are connected with a T fitting 37. All these parts have smooth interior and exterior surfaces and are the usual construction of copper tubing and a copper T fitting. In the branch outlet 38 of the fitting 37 is mounted a cylindrical body 39, also of copper and soldered or otherwise secured in the said outlet. This body or bushing 39 has its outer portion 40 reduced in diameter to receive the return tube 41 from a radiator in a construction involving all copper piping. Projecting from the inner end of the body or bushing 39 is a hood 42 of the same construction and for the same purpose as the hood 25 above described.

Hood 42 has the tapered rear wall and the flared and converging side walls the same as hood 25 and the same construction is involved since the hood 42 is for the same purpose as the hood 25. Preferably the hood 42 is integral with the bushing body 39 and therefore is also of copper. It is noted that the open side 43 of hood 42 is forwardly of the forward edge of the return tube 41.

Having thus set forth the nature of my invention, what I claim is:

In a fitting having a main passage and a branch passage, a cylindrical body adapted to have a pipe connected thereto through the outer end thereof secured in said branch passage, a hood projecting from the inner end of said body into said main passage, said hood comprising a hollow structure open at its front side and including rear and side walls forming continuations of said body and integral with the walls thereof, said rear wall tapering forwardly from its juncture with the body across the axial center line of the body to the free end of the hood, and said side walls flaring forwardly from the rear wall and converging toward the lower end of the hood from the inner end of the body whereby the flow of fluid through the main passage tends to create a suction effect in the branch passage for facilitating flow therethrough.

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