

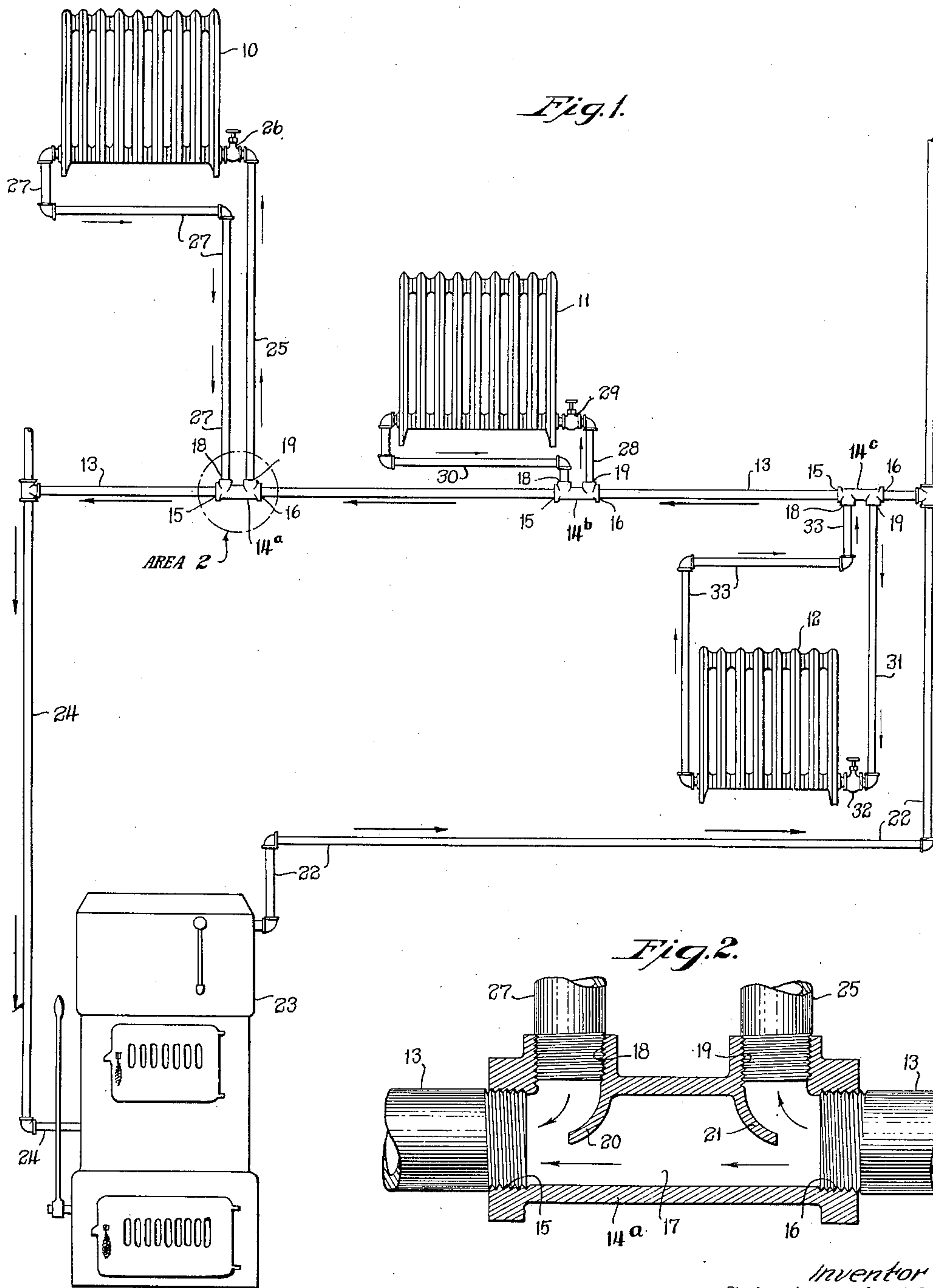
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DIVERSION-FITTING FOR HOT-WATER HEATING SYSTEMS

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DIVERSION FITTING FOR HOT-WATER
HEATING SYSTEMSSalvatore J. Follo, East Haven, Conn., assignor to
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1 Claim. (Cl. 138—37)

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The present invention relates to improvements in fittings for hot-water heating systems and relates more particularly to diversion-fittings for one-pipe hot-water heating systems, i. e., hot-water heating systems employing a single main pipe or duct to both supply hot water to radiators and to return the cooled water to the heater.

One of the main objects of the present invention is to provide a single unitary diversion-fitting which may serve to conduct a main stream of hot water or the like, and at the same time serve to divert a portion of such main stream to a radiator and to return the diverted water back into the said main stream.

Another object of the present invention is to provide a simple, reliable and effective fitting of the character referred to which may be produced at a low cost for manufacture.

A further object of the present invention is to provide a superior diversion-fitting for heating systems of the character described having a construction and arrangement whereby the fitting will perform its function regardless of which end is connected to the inlet portion of a main.

With the above and other objects in view, as will appear to those skilled in the art from the present disclosure, this invention includes all features in the said disclosure which are novel over the prior art.

In the accompanying drawings, in which certain modes of carrying out the present invention are shown for illustrative purposes:

Fig. 1 is a schematic elevational view of a one-pipe hot-water heating system in which is included a plurality of fittings embodying the present invention; and

Fig. 2 is a broken view on an enlarged scale of the area 2 of Fig. 1, with the fittings shown in central-longitudinal section and the pipes or ducts in elevation.

For the purpose of making clear a typical use of the present invention, there is shown in Fig. 1 a one-pipe hot-water heating system which includes radiators 10, 11 and 12 respectively located at different elevations with respect to a main-pipe 13.

For purposes of illustration, the radiator 10 may be viewed as being located on the second floor of a building, the radiator 11 may be viewed as being located upon the main floor or first floor of such a building while the radiator 12 may be viewed as being located in the basement or cellar.

Interposed in the main-pipe 13 are three (more or less) corresponding diversion-fittings each

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generally designated by the reference character 14 with the added superscript *a*, *b* and *c*.

Each of the diversion-fittings is formed at its respective opposite ends with internally-threaded main-outlet and main-inlet passages respectively designated by the reference characters 15 and 16. The passages 15 and 16 are interconnected by a main-passage 17 extending lengthwise of the fitting.

Laterally intersecting the main-passage 17 adjacent the main-outlet passage 15 is a diversion-return passage 18 which, in the instance shown, is also internally threaded, for purposes as will hereinafter appear.

Also laterally intersecting the main-passage 17 but adjacent the main-inlet passage 16 of the fitting, is a diversion-outlet passage 19 also internally threaded, in the instance shown.

Projecting laterally inwardly into the main-passage 17 adjacent the side of the diversion-return passage 18 remote from the main-outlet passage 15, is a diverting-lip or -projection 20. The said diverting-lip or -projection is inclined toward the main-outlet passage 15 and partially overlaps the inner end of the diversion-return passage 18.

Also projecting laterally inwardly into the main-passage 17 from a point adjacent the side of the diversion-outlet passage 19 remote from the main-inlet passage 16, is a diverting-lip or -projection 21 which is inclined toward the said main-inlet passage 16 in a direction opposite from the inclination of the diverting-lip 20. As shown, the diverting-lip 21 partially overlaps the inner end of the diversion-outlet passage 19.

In the instance shown, the main-pipe 13 is connected at one end into a supply-pipe 22 leading from a heater 23. The opposite end of the main-pipe 13 is connected into a main-return pipe 24 leading to the heater 23 just referred to.

Threaded into the diversion-outlet passage 19 of the diversion-fitting 14*a* is a feed-pipe 25 leading to the radiator 10 and having a control-valve 26 interposed therein. Connecting the opposite end of the radiator 10 to the diversion-return passage 18 of the diversion-fitting 14*a* is a return-pipe 27.

Threaded into the diversion-outlet passage 19 of the diversion-fitting 14*b* is a feed-pipe 28 leading to the radiator 11 and having a control-valve 29 interposed therein. The opposite end of the radiator 11 is connected by means of a return-pipe 30 to the diversion-return passage 18 of the said fitting 14*b*.

In a manner similar to the diversion-fittings 14*a*

and 14b, the diversion-fitting 14c has threaded into its diversion-outlet passage 19 a feed-pipe 31 which leads downwardly to the radiator 12 and has interposed therein a control-valve 32. The opposite end of the radiator 12 is connected by means of a return-pipe 33 to the diversion-return passage 18 of the diversion-fitting 14c.

Now when hot water or other suitable heating fluid passes from the boiler 23 through the supply-pipe 22, it will enter the adjacent end of the main-pipe 13. Part of the stream will pass directly through the main-passage 17 of the diversion-fitting 14c, while a portion thereof will be diverted into the feed-pipe 31 by the diverting-lip 21 of the diversion-fitting 14c. The diverted portion of the stream will thus flow through the radiator 12 and thence through the return-pipe 33 back into the diversion-return passage 18 of the diversion-fitting 14c, where it will be diverted in the general direction of the main stream by the diverting-lip 20 of the said diversion-fitting.

The stream of water or the like will now continue through the main-pipe 13 and will enter the diversion-fitting 14b through the main-inlet passage 16 thereof, where a portion of the stream will continue directly onwardly through the main-passage 17 of the said diversion-fitting. A portion of the stream entering the fitting 14a will, however, be diverted upwardly by the diverting-lip 21 of the diversion-fitting in question, into the feed-pipe 28 and will continue onwardly through the radiator 11. The diverted portion of the stream will, after passing through the radiator 11, pass through the return-pipe 30 back into the diversion-return passage 18, where it will be caused to join the main-stream by the diverting-lip 20 of the diversion-fitting 14b.

The portion of the hot water returning into the diversion-fitting 14b from the return-pipe 30 will combine with the portion of the stream flowing directly through the main-passage 17 and will pass outwardly through the main-outlet passage 15 of the said diversion-fitting 14b and into the adjacent portion of the main-pipe 13 and will enter the main-inlet passage 16 of the diversion-fitting 14a.

Promptly after entering the main-inlet passage 16 of the diversion-fitting 14a, a portion of the stream of hot water will pass directly onwardly through the main-passage 17 of the said diversion-fitting, while a portion thereof will be diverted upwardly into the feed-pipe 25 by the diverting-lip 21. After passing through the radiator 10, the diverted portion of the stream just referred to will flow through the return-pipe 27 back into the diversion-return passage 18 of the diversion-fitting 14a where (in a slightly cooler condition) it will rejoin the portion of the stream going through the main-passage 17 and, together therewith, will flow outwardly through the main-outlet passage 15 of the diversion-fitting 14a. After leaving the diversion-fitting 14a, the stream

will flow into the main-pipe 13 and will flow through the main-return pipe 24 back to the heater 23 for being reheated and again passing through the system.

In the manner above described and in accordance with the present invention, a single unitary fitting is provided which serves to conduct a portion of a main stream of hot water and to both divert and provide for the return of a fractional part of such stream, without requiring complex assemblies of a great number of diverting-elbows or the like.

Instead of internally threading the passages 15, 16, 18 and 19, the same may be left smooth for the reception of smooth-ended tubes. Such tubes may be soldered in place in a manner well understood in the art, to provide so-called "sweat-joints."

The invention may be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claim are intended to be embraced therein.

I claim:

As a new article of manufacture, an integral one-piece diversion-fitting for one-pipe hot-water heating systems having a main-inlet passage, a main-outlet passage and a main-passage interconnecting the same; the said diversion-fitting also having a diversion-outlet passage and a diversion-return passage both laterally intersecting the said main-passage; the diversion-fitting being further provided with two oppositely-sloping diversion-lips disposed transversely of said main-passage, said lips comprising cylindrical surfaces of revolution formed integrally with one side of said diversion-outlet passage and one side of said diversion-return passage respectively and arranged to project laterally substantially halfway across the said main-passage the free ends of said transversely disposed lips being terminated at the intersections of the longitudinal axis of said main-passage with the longitudinal axes of said diversion-outlet passage and said diversion-return passage respectively to respectively divert hot water out of and back into the said main-passage of the diversion-fitting.

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