May 7, 1957 T. H. HARRISON 2,791,407

WATER AGITATING CIRCULATOR

Filed July 7, 1954

Fig. 1.

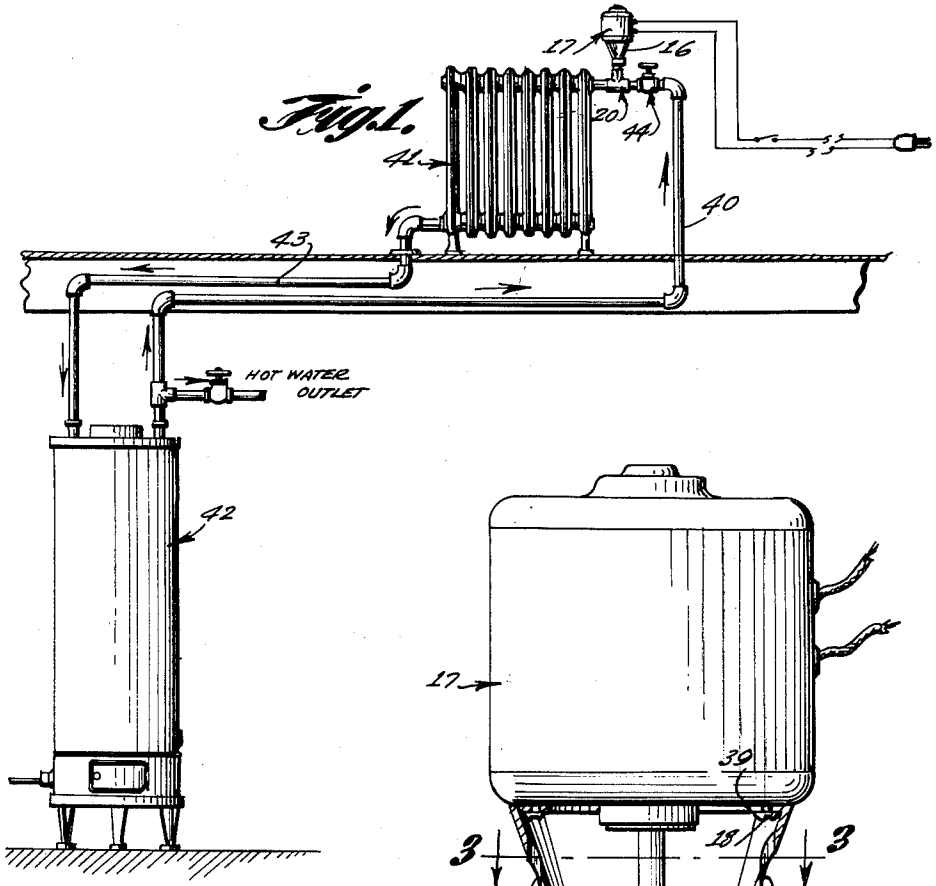


Fig. 2.

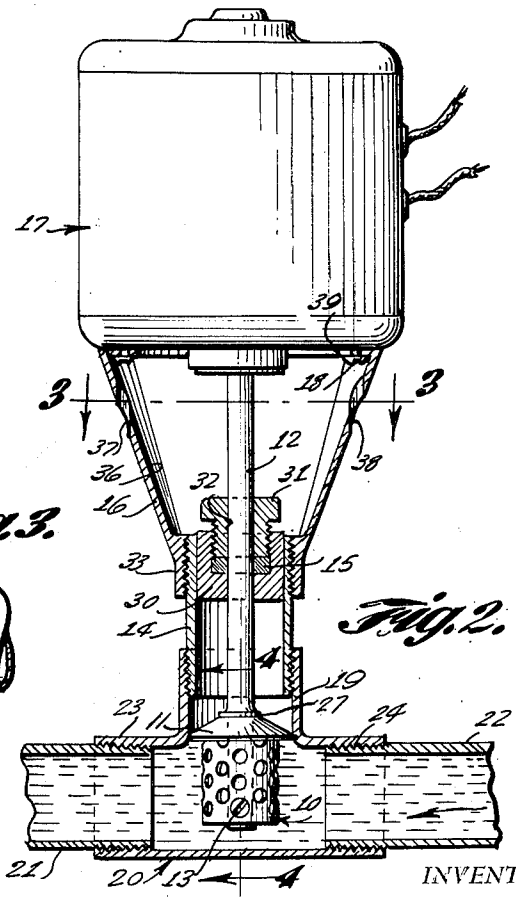


Fig. 3.

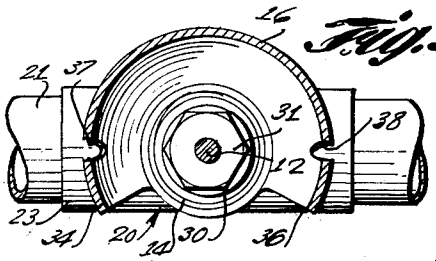
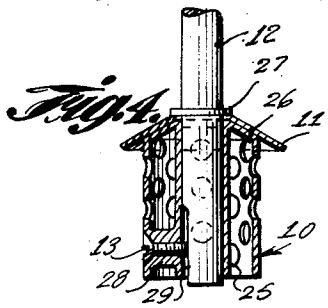


Fig. 4.



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WATER AGITATING CIRCULATOR

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3 Claims. (Cl. 259—108)

This invention relates to heating systems, particularly of the hot water type wherein heated water is circulated through radiators or the like, and in particular, a motor driven perforated cylinder adapted to be inserted in a fitting of a water pipe for agitating the water and thereby causing circulation of B. t. u.'s.

The purpose of this invention is to provide a circulator for hot and cold liquids in which the circulation of the liquid is a result of spinning a vertically positioned perforated cylinder in water or other fluid in a tube.

Various types of devices have been provided for agitating and circulating liquids particularly in heating and cooling systems, however, for certain installations it has been found advantageous to agitate the liquids instead of using a conventional pump for circulation whereby in agitating the liquids circulation of B. t. u.'s is obtained.

With this thought in mind, this invention contemplates a motor having a small housing with radially disposed arms suspended therefrom wherein the motor shaft is extended through the housing and with a perforated cylinder carried by the motor shaft and adapted to be positioned in a liquid-carrying pipe or tube with the lower end of the housing threaded into a fitting positioned in the pipe or tube.

The object of this invention is, therefore, to provide means for inserting or mounting a perforated cylinder in a liquid-carrying tube whereby rotation of the cylinder extended therefrom results in circulation of fluids through the tube.

Another object of the invention is to provide an agitating device for causing the circulation of fluids in a tube in which the device may readily be installed in a fitting positioned in the tube.

Another important object of the invention is to provide means for mounting a perforated cylinder in a tube for circulating a liquid in the tube in which the device is adapted to be used for hot and cold liquids, the agitation of the device retarding freezing of liquids in tubes and pipes.

A further object of the invention is to provide a device for agitating a liquid in a tube and thereby causing circulation of B. t. u.'s in which the device is of a simple and economical construction.

With these and other objects and advantages in view, the invention embodies a tube having a T-fitting installed therein with a nipple threaded in the branch of the T, with a motor and housing therefor carried by the nipple and with a perforated cylinder and deflecting baffle carried by the end of the motor shaft and positioned in the fitting of the tube.

Other features and advantages of the invention will appear from the following description taken in connection with the drawings, wherein:

Figure 1 is an elevational view illustrating the use of the agitating circulator, the device being positioned in a T at the intake end of a radiator, and the radiator being connected in a heating system.

Figure 2 is a side elevational view of the agitating circulator with the lower part of the device and also with a tube in which the device is positioned shown in section.

Figure 3 is a detail showing a sectional plan taken on line 3—3 of Figure 2 illustrating the connection of the nipple or tubular housing to the motor housing.

Figure 4 is a detail taken on line 4—4 of Figure 2 showing a vertical section through the perforated cylinder and baffle at the lower end of the motor shaft, the shaft being shown in elevation.

Referring now to the drawings wherein like reference characters denote corresponding parts, the improved agitating circulator of this invention, includes a perforated cylinder **10** having a baffle **11** at the upper end and secured on the lower end of a vertically disposed motor shaft **12** with a set screw **13**, a nipple **14** providing a housing and having a packing gland **15** in the upper end and a bracket **16** secured to a motor **17** with screws **18** and in the lower end of which the nipple **14** is threaded.

As illustrated in Figure 2, the nipple **14** provides the housing and with the lower end threaded into a branch connection **19** of a fitting **20**, such as a T, the cylinder **10** is adapted to extend into an area between sections **21** and **22** of a tube whereby the cylinder is positioned in the path of a liquid passing through the tube. The section **21** is threaded into a hub **23** of the fitting **20** and the section **22** is threaded into a hub **24** at the opposite side of the fitting.

The cylinder **10** is provided with a hub **25** that is bored to receive the lower end of the shaft **12** and the hub is connected to the upper end of the cylinder with an inclined section **26**. The shaft is provided with a collar **27** against the lower surface of which the baffle **11** and upper end of the hub of the cylinder **10** are held with the set screw **13** which is threaded in a section **28** in one side of the cylinder and which extends into a keyway or slot **29** in the lower end of the shaft.

The upper end of the nipple **14**, which provides the housing, is formed with a plug **30** in which the packing gland is positioned, and a nut **31** having a shank **32** is threaded into the upper end of the plug to provide take-up means for the packing gland.

The upper end of the nipple **14** is threaded into a hub **33** forming the lower end of the bracket **16** and, as shown in Figures 2 and 3, the wall of the bracket terminates at the points **34** and **35** providing an open area **36** in one side. The wall of the bracket is provided with screw driver bit receiving openings **37** and **38** by which the screws **18**, which extend through a flange **39**, are inserted and removed from the motor.

With the agitating device formed as illustrated, particularly in Figure 2, the agitator **10** is installed in the supply connection **40** of a radiator **41**, the supply connection extending from a hot water tank **42** and the tank being connected to the radiator with a return connection **43**. The supply connection may be provided with a valve **44** and a T **20** in which the agitating cylinder **10** is positioned is installed between the valve **44** and the radiator.

By this means liquid in pipe **40** or in a tube into which the perforated cylinder **10** extends is agitated upon rotation of the cylinder and circulation is caused by B. t. u.'s generated thereby. The baffle **11** prevents circulation of the liquid through the housing **14** to the packing gland thereby relieving the connecting parts of excessive pressure.

It will be understood that modifications, within the scope of the appended claims, may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

1. An agitating circulator comprising a housing, a

bracket extended from one end of the housing, a motor carried by the bracket, said motor having a shaft, and said shaft extending through the housing, a perforated cylinder carried by the extended end of the shaft, a tube having a branch connection extended from one side and in which one end of the housing is positioned, said perforated cylinder being positioned in the tube, and a conical-shaped baffle carried by the motor shaft and positioned in the branch connection and between the perforated cylinder and housing.

2. In an agitating device, the combination which comprises a nipple having threaded ends, a packing gland positioned in one end of the nipple, a bracket extended from the end of the nipple in which the packing gland is positioned, a motor carried by the bracket, a shaft extended from the motor through the packing gland and nipple, a tube having liquid therein, a T-fitting in said tube, and a perforated cylinder secured to the extended end of the shaft extended from the motor, the end of the nipple opposite to that in which the packing gland is positioned being threaded into a side connection of the fitting in the tube having a liquid therein whereby the perforated cylinder is positioned in the liquid and rotation of the perforated cylinder agitates the liquid.

3. In an agitator, the combination which comprises a nipple having threaded ends and providing a housing, a

packing gland positioned in one end of the nipple, a bracket extended from and threaded on the end of the nipple in which the packing gland is positioned, a motor mounted on the bracket, a shaft extended from the motor through the packing gland and nipple, a tube having a T therein, the end of the nipple opposite to that in which the packing gland is positioned being threaded into the T of the tube, a perforated cylinder carried by the extended end of the shaft and positioned in the tube, and a conical-shaped baffle mounted on the shaft and positioned between the perforated cylinder and nipple.

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