J. G. GRIERSON.

ECCENTRIC BUSHING FOR STEAM RADIATORS.

APPLICATION FILED MAY 5, 1919.

1,346,403. **Patented July 13, 1920.**

Fig. 1.

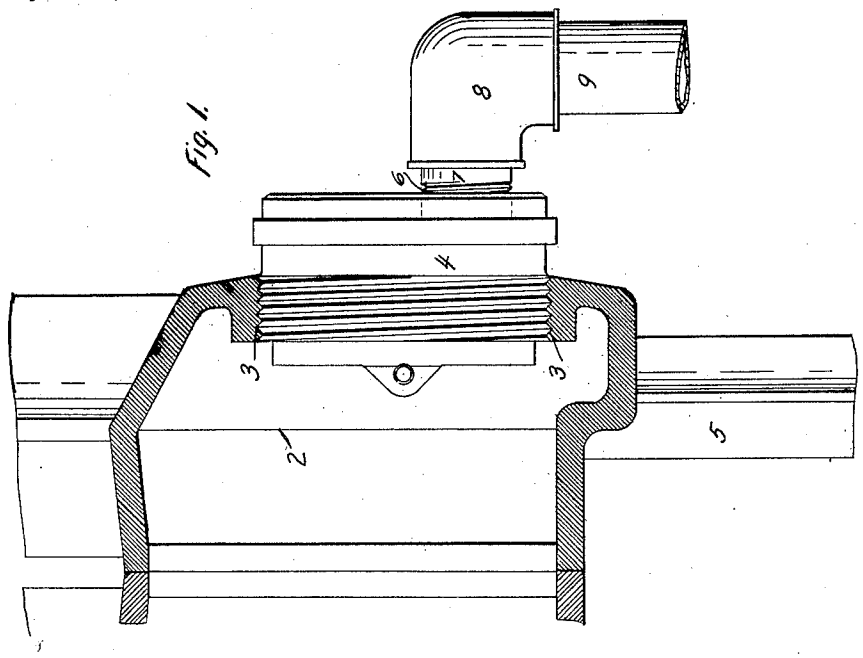


Fig. 2.

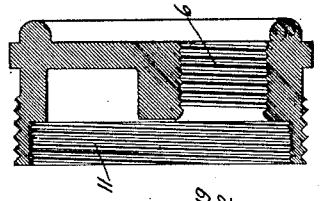


Fig. 3.

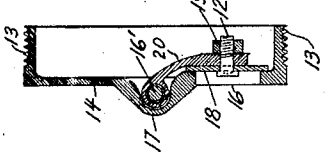
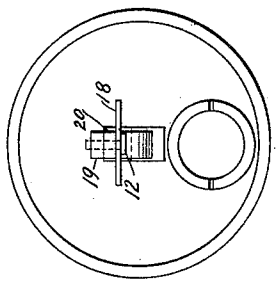


Fig. 4.



INVENTOR
JOHN G. GRIERSON

BY Jno. Wright

ATT'Y.

UNITED STATES PATENT OFFICE.

JOHN G. GRIERSON, OF RICHMOND, CALIFORNIA.

ECCENTRIC BUSHING FOR STEAM-RADIATORS.

1,346,403. Specification of Letters Patent. Patented July 13, 1920.

Application filed May 5, 1919. Serial No. 294,946.

To all whom it may concern:

Be it known that I, JOHN G. GRIERSON, a citizen of the United States, residing at Richmond, in the county of Contra Costa and State of California, have invented new and useful Improvements in Eccentric Bushings for Steam-Radiators, of which the following is a specification.

Radiators of all makes, so far as I am aware, are tapped with a two inch hole at the bottom and are bushed down, that is, into the two inch hole is screwed a two inch bushing having a smaller hole to which is attached a pipe leading from the radiator. These bushings may be either what is called "straight bushings," that is, with the small hole in the axis of the bushing, or eccentric, with the small hole at the bottom of the bushing. The latter is preferable where two pipes are used, because it lets out all the water of condensation in the radiator, whereas, with the central bushing, the water can accumulate in the radiator until it rises to the bottom of the small hole in the bushing, thus leaving water in the radiator all the time.

One object of the present invention is to provide an improvement in these eccentric bushings which, when the steam supply to the radiator is shut off on account of its becoming too hot, or for other reasons, will prevent steam from the return pipe to the main entering the radiator through said eccentric bushing.

A further invention resides in the means which I have adopted for preventing the clicking noise which at present is caused by variations in the pressure of the steam.

In the accompanying drawing, Figure 1 is a broken vertical section of a lower portion of a radiator equipped with my improvement, certain parts being shown in side elevation; Fig. 2 is a vertical section through an eccentric bushing detached; Fig. 3 is a vertical section through a valve support detached; Fig. 4 is an inside view of said valve support, with the parts in a different position than those shown in Fig. 3.

Referring to the drawing, 1 indicates a column of a radiator, communicating with its companion column, not shown, through an intermediate chamber 2, and supported upon legs 5, only one being here shown. Into the outer end of the intermediate chamber 2 is screwed, as shown at 3, a cylindrical bushing 4 having a threaded opening 6 in its lowest portion. Into said threaded opening 6 is screwed a short pipe 7, connecting through an elbow 8 with a return pipe 9. The inner end of said cylindrical bushing is internally threaded, as shown at 11, and screwed thereinto is a crown-flange 13 extending from a disk or valve carrier 14, formed with an opening 16 in its lower portion, and which can, therefore, by properly screwing the crown flange into the thread 11 of the bushing, be made to register with the opening 6 in said bushing. Closing the opening 16 is a circular valve or disk 11 which is centrally connected, by a bolt 12 and nut 13 thereon, to the lower end of a hanger 14, the upper end of which swings on a transverse pin 16′ and is in the cavity of a central extension 17 of the disk out of the plane thereof, said pin being mounted in the sides of said cavity. It will be observed that the weight of the disk 18 hangs on the opposite side of the spring 16^2 to the pin 16′, therefore, tending to automatically close said disk against the opening 16, but the pressure against the side of said opening is very light, on account of the distance of the pin 16 from the vertical plane through said opening being very small. Consequently, the disk offers scarcely any resistance to the flow of water therethrough.

I thus provide an eccentric bushing equipped with a valve which will permit all the water of condensation in the radiator to flow outward into the return pipe 9, while preventing any return of steam through said pipe 9 into the radiator, when the regular steam supply is shut off.

A further improvement in my invention consists in forming in the seat of the check-valve a small notch or groove. The object of providing this minute groove or passageway is the following. If the radiator has been in use for a sufficient length of time, and the steam is shut off therefrom, there will be formed a vacuum condensation of the steam. I have found that during the formation of this vacuum, there is a tendency for the check-valve to vibrate to and from its seat. It is seldom the case that a single radiator is used in a heating system, but practically always there are other radiators in use in the same system. The flow of water and steam by the return pipes to the boiler is not precisely uniform, but is,

to a certain extent, intermittent or irregular, so that when any radiator is closed to the ordinary supply of steam, there is an intermittent pull upon the check-valve tending to open it against the pull produced by the partial vacuum caused within the radiator and tending to close the check-valve. This pull may momentarily overcome the pull caused by the vacuum, causing the check-valve to open slightly, thereby permitting air from within the radiator to flow for a minute interval of time through the check-valve, whereupon the check-valve immediately returns to its seat, until the pull by the steam in the return pipes again overcomes the pull by the partial vacuum in the radiator, whereupon the action is repeated. In this way, a clicking noise is produced. I eliminate this clicking noise by the above improvement, or by providing a small perforation in the check-valve itself.

I claim:—

1. In a device of the character described, a cylindrical bushing adapted to be screwed into the lowermost portion of a radiator, closed at one end and open at the other, and having a threaded hole in the lower portion of said closed end, a pipe screwed into said hole, the cylindrical portion of the bushing being internally threaded at the open end, a disk having an externally threaded crown flange, screwed into said internally threaded bushing and having an opening in its lowermost portion, and a check-valve comprising a disk adapted to be seated against the edge of said opening, and a hanger to the lower portion of which said latter disk is attached, said hanger pivotally depending from a portion of the first-named disk on the side of the vertical plane through said opening opposite to said second-named disk.

2. In a device of the character described, the combination of a bushing closed at one end and open at the other and having a hole through its closed end, a pipe communicating with said hole, a valve carrier having a crown flange screwed to the open end of the bushing and having a hole registering with the first-named hole and a check-valve on said carrier for closing the hole in the carrier.

3. A bushing for steam radiators comprising a cylindrical body closed at one end and open at the other end, said open end being externally and internally threaded, said closed end having a screw threaded pipe receiving opening therein, a valve carrier turned in the internal screw threads and closing said open end, said disk having an opening therein registering with the opening in said closed end, and a check valve on said carrier controlling the opening therein.

JOHN G. GRIERSON.