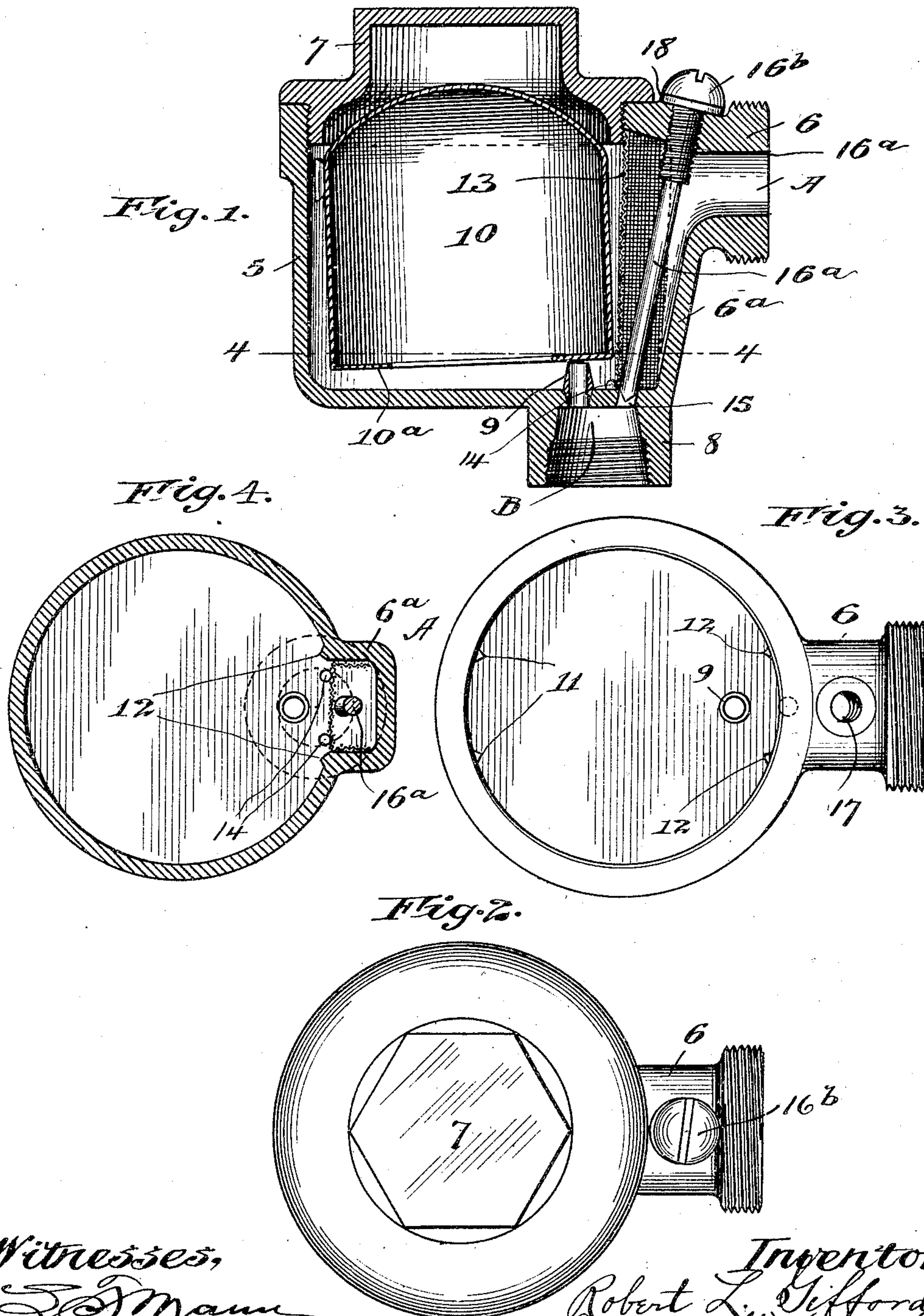


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DRAIN ATTACHMENT FOR STEAM HEATING SYSTEMS, &c.

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DRAIN ATTACHMENT FOR STEAM-HEATING SYSTEMS, &c.

SPECIFICATION forming part of Letters Patent No. 789,969, dated May 16, 1905.

Application filed July 1, 1904. Serial No. 214,956.

To all whom it may concern:

Be it known that we, ROBERT L. GIFFORD and GEORGE W. NISTLE, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Drain Attachments for Steam-Heating Systems and the Like, of which the following is a specification.

This invention relates to valves or traps employed for the purpose of automatically collecting and discharging air and water of condensation which accumulate in steam-heating systems and other apparatus; and the invention has for its particular object to provide a simple and improved automatic drain attachment for use in connection with vacuum systems of heating which shall not only withdraw the air and water of condensation at the same time that it provides an effective seal against the escape and waste of steam, but shall also be protected against the introduction of dirt and sediment that may be carried by the water at the same time that it provides a means of occasional discharge directly into the main outlet-passage of such dirt and sediment as seeks to enter the casing of the device.

A further object of the invention is to provide an improved means for guiding and limiting the tipping of the float in the float-chamber relatively to the discharge-nozzle.

To these ends our invention consists in a novel and useful construction of drain attachment for vacuum steam-heating systems, substantially as hereinafter described, and more particularly pointed out in the claims.

A drain attachment of the general class or type to which our invention relates is shown in Letters Patent to George W. Nistle, No. 691,796, granted January 28, 1902. The distinguishing feature of this patent resides in the combination, with a cylindrical valve-casing provided with a raised outlet-nozzle at its base eccentrically disposed, of a float-valve therein, the base of which rests upon said outlet-nozzle, contracting the discharge-orifice therethrough, but not quite closing the same,

owing to the slightly tipped or inclined position of the float within the casing. It has been found in practice that in time dirt and sediment entering the casing along with the steam may collect to such an extent as to interfere with the proper operation of the float relatively to the discharge-nozzle. Our present invention aims at overcoming this undesirable condition through the provision of means for excluding such dirt and sediment and causing the same to be discharged directly into the main outlet from the valve-casing.

Our invention in the most approved form thereof which we have as yet devised is illustrated in the accompanying drawings, wherein—

Figure 1 is a central vertical sectional view of the device in a plane centrally of the inlet and outlet passages. Fig. 2 is a top plan view thereof. Fig. 3 is also a top plan view with the cap, float, and plug-valve omitted; and Fig. 4 is a cross-sectional view on the line 4 4 of Fig. 1, the float being omitted.

Referring to the drawings, 5 designates a generally cup-shaped casing having on one side near its upper end an inlet-nozzle 6, by which it is attached to the radiator. The upper end of the casing is internally threaded to receive a closure in the form of a cap 7. The inlet-nozzle 6 has a downward extension 6^a, forming an integral laterally-projecting part of the wall of the casing 5 and conducting the inlet-passage A downwardly to the base of the casing.

8 designates the outlet-nozzle depending from the base of the casing and containing the upper end of the main drain-passage B.

9 designates a nipple that is set in the base of the casing directly above and in free communication with the main drain-channel B, and 10 designates a cylindrical hollow float substantially filling the chamber of the casing and provided with a centrally-apertured flat base 10^a. The nipple 9 is so situated with reference to the float 10 that the solid portion of the base 10^a always rests upon and partially covers the upper orifice of the nip-

ple in the lowest position of the float. This is effected by providing means within the casing whereby the float when at rest on top of the nipple is canted or inclined, so that its base is slightly out of a horizontal position, and consequently does not completely cover the upper end of the nipple. We find in practice that the best results are secured by a very limited inclination of the float from the vertical, creating a very narrow and restricted discharge-opening for the water of condensation through the nipple 9, and a simple means for thus limiting the tip of the float, as herein shown, consists of a pair of inwardly-projecting lugs 11, located on the inner wall of the casing near its upper end, cooperating with a pair of diametrically and diagonally opposite lugs 12 on the inner wall of the casing near the lower end of the latter and located on either side of the downwardly-extending portion of the inlet-passage A.

Coming now to the main feature of the invention, 13 designates a screen, which may preferably consist of finely-woven wire and which is located at the entrance of the inlet-passage A to the interior of the float-chamber, being of sufficient extent to guard the entire opening from top to bottom of the casing, the screen being conveniently secured at its upper end by the cap 7 and at its lower end resting against a pair of upstanding lugs 14 on the base of the casing, the sides of the screen being conveniently carried inwardly of the side walls of the inlet-nozzle 6 and its downwardly-inclined extension 6^a, as plainly shown in Fig. 4. This screen, while admitting the steam and air to the float-chamber, arrests any dirt and sediment that may be carried by the incoming fluid and deposits the greater part of the latter on the bottom of the casing back of the screen. It is desirable to get rid of this sediment as it accumulates, and for this purpose we provide a discharge-aperture 15 in the base wall of the casing directly back of the screen, this aperture leading directly into the main drain-channel B and being controlled by a plug-valve 16, which has a threaded shank 16^a and a screw-head 16^b, said plug-valve being operative through an internally-threaded aperture 17, Fig. 3, formed through the wall of the inlet-nozzle 6, the head 16^b being turned down against a washer 18 to form a steam-tight joint for the plug-valve. When this valve is in the position shown in Fig. 1, the discharge-aperture 15 is entirely closed, and any entering dirt or sediment accumulates behind the screen and around the lower end of the plug-valve. At occasional periods, when it is desired to free the valve-casing of these accumulations, the plug-valve is turned back sufficiently to expose the opening, and thereupon the exhaust, acting through the main drain-passage B, quickly draws such sediment out of the casing, whereupon the escape-aperture

15 may be again quickly closed by a few turns of the plug-valve.

It will thus be seen that our invention provides a simple means for keeping the main float-chamber comparatively free from dirt and sediment and at the same time provides for the easy withdrawal of such foreign matter as seeks to enter the float-chamber with the incoming fluids.

It is evident that the particular form and construction of the invention as herein shown might be modified to some extent by those skilled in the art without departure from the operative principle of the device or any lessening of its benefits. Hence we do not limit the invention to the exact form and construction of attachment as shown and described, except to the extent indicated in specific claims.

We claim—

1. A radiator attachment for exhaust heating systems comprising a casing having an inlet-passage from the radiator and a discharge-passage to the exhaust, a float in said casing, a drain-nipple disposed eccentrically in the base of said casing and communicating with said discharge-passage, said nipple constituting the sole support for the base of said float, and guiding-lugs on the wall of said casing normally engaging said float and serving to limit its tipping movement whereby to finely regulate the discharge-orifice of said nipple, substantially as described.

2. A radiator attachment for exhaust heating systems comprising a casing having an inlet-passage from the radiator and a discharge-passage to the exhaust, a float in said casing, a drain-nipple inserted in a tapered socket in the base of said casing and communicating with said discharge-passage, said nipple constituting the sole support for the base of said float, and diagonally oppositely located guiding-lugs on the wall of said casing normally engaging said float and serving to limit its tipping movement when resting upon said nipple, substantially as described.

3. A radiator attachment for exhaust heating systems comprising a casing having a lateral inlet-passage from the radiator, a discharge-passage to the exhaust, and a discharge-aperture for sediment formed through the base of the casing and connecting said inlet and discharge passages, a drain-nipple in the base of said casing also communicating with said discharge-passage, a float in said casing controlling the upper orifice of said drain-nipple, a screen across the opening of said inlet-passage to the chamber of the casing, and a valve controlling said sediment-discharge aperture operable externally of the casing, substantially as described.

4. A radiator attachment for exhaust heating systems comprising a casing having an inlet-opening communicating with the interior of said casing throughout the entire height of

the latter, a discharge-passage to the exhaust,
and a discharge-aperture for sediment formed
through the base of the casing and connecting
said inlet and discharge-passages, a float in said
5 casing, a removable drain-nipple seated in the
base of said casing and communicating with
said discharge-passage, a screen disposed sub-
stantially coincident with the inner orifice of
said inlet-passage, and a plug-valve behind

said screen controlling said sediment-dis- 10
charge aperture and operable externally of
the casing, substantially as described.

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