

July 7, 1925.

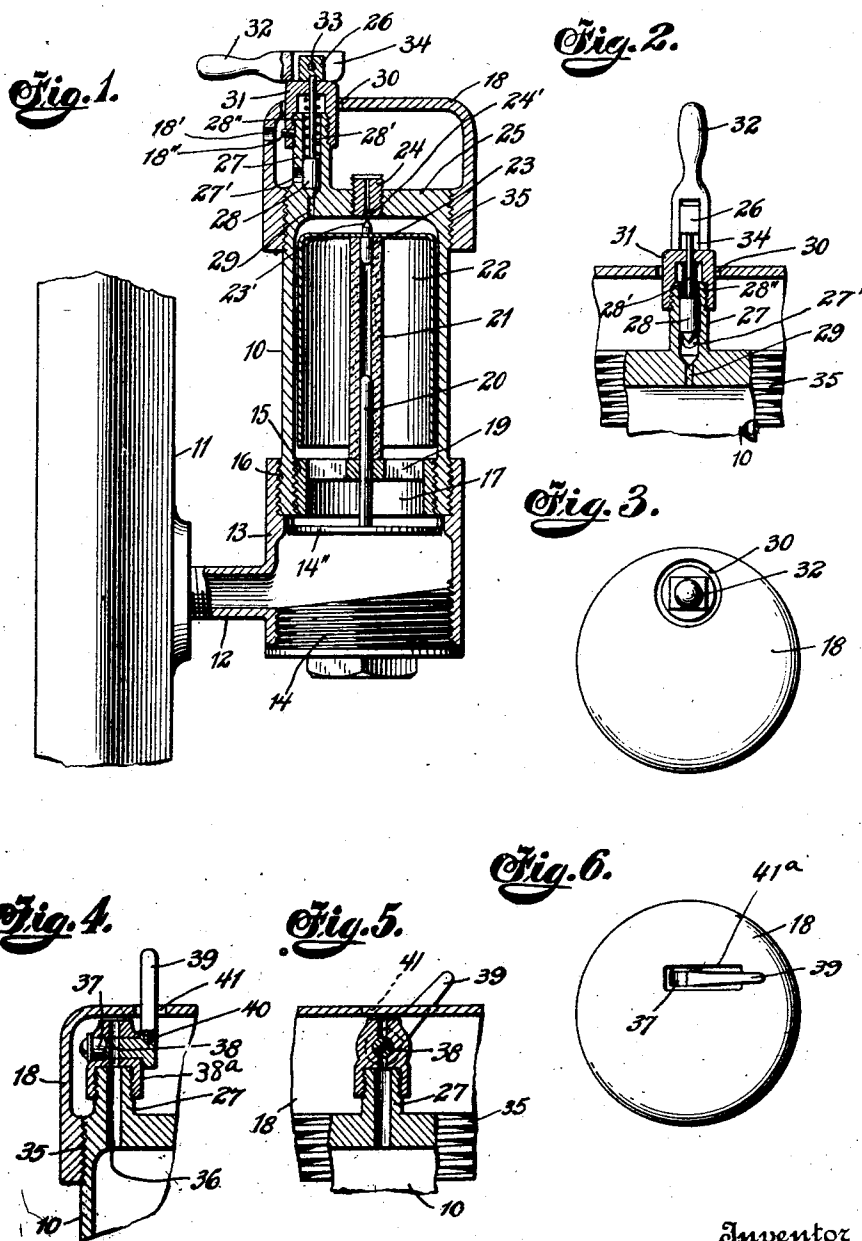
1,544,727

H. DEL MAR

VENT COCK

Filed April 11, 1923

2 Sheets-Sheet 1



Inventor  
 Harry Del Mar  
 By his Attorney,  
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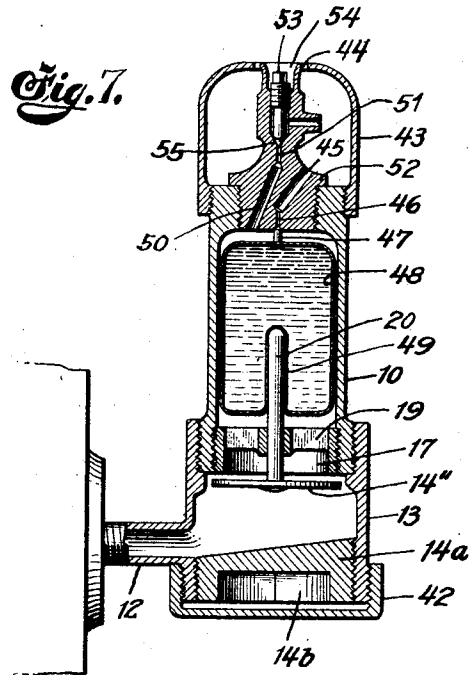


*Fig. 8.*

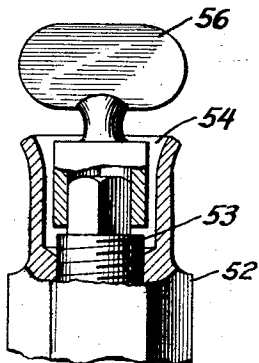
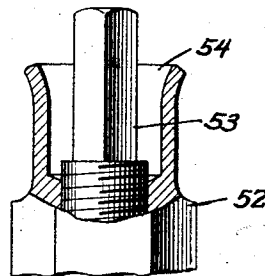


*Fig. 9.*



Harry Del Mar. Inventor

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## UNITED STATES PATENT OFFICE

HARRY DEL MAR, OF NEW YORK, N. Y.

## VENT COCK.

Application filed April 11, 1923. Serial No. 631,284.

*To all whom it may concern:*

Be it known that I, HARRY DEL MAR, a citizen of the United States, and a resident of the city, county, and State of New York, have invented a new and useful Improvement in Vent Cocks, of which the following is a full, clear, and exact description:

My invention relates to improvements in vent cocks for radiators and similar things which are used to permit the air to escape from the radiator as the steam comes in. There are many of these vent cocks or valves; and practically none are satisfactory. They are very apt to become inoperative either through a collection of dust in them; the accumulation of rust; or for other reasons, and they almost invariably get out of adjustment. When this occurs the devices are generally useless because almost always the parts in which the difficulty lies are inaccessible. My invention is intended to overcome these difficulties, and produce a vent cock for the purpose stated which can be applied to a radiator or the like in the usual way, which will work automatically to permit the escape of air; which also has a manually operated valve to provide quick relief or air escape when desired, which is not likely to get out of order; and which is constructed in such a way that if any difficulty does occur, the working parts are easily accessible and also easily renewable. With these ends in view, and with the general object of making an efficient and reliable vent cock, my invention consists of certain improvements which will be hereinafter clearly described and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar reference characters indicate corresponding parts in all the views.

Figure 1 is a central vertical section of my improved device as applied to a radiator column.

Figure 2 is a detail sectional view showing the air relief valve in open position.

Figure 3 is a plan of the device.

Figure 4 is a detail sectional view showing another form of air valve in open position.

Figure 5 is a sectional view at right angles to Figure 4 and showing the air valve closed.

Figure 6 is a plan view of the device

with the modified valve shown in Figures 4 and 5.

Figure 7 is a detail vertical section of a modified form of the vent cock.

Figure 8 is a broken detail view partly in section showing means for operating the valve illustrated in Figure 7, and

Figure 9 is a view similar to Figure 8 but with the valve stem modified in form.

The body 10 of the structure is intended to be connected to a column 11 of a radiator or the like, and the connection is made by means of a nipple 12 on the hollow base 13 of the valve casing. The bottom of this base of the valve casing is closed by a screw plug 14, and it will be observed that when the plug is screwed up tight it will be in the position shown in Figure 1, and the plug is inclined on top so that the back of the plug top is higher than the part near the radiator, and the water of condensation or otherwise in the valve casing, will follow the inclined top of the plug into the lower part of the nipple 12; and so back to the radiator. Immediately above the steam inlet or nipple 12 is a splasher plate 14<sup>1</sup> which has a tendency to prevent water from rushing up into the body of the valve casing. This splasher plate 14<sup>1</sup> can be supported in many ways, but I have shown it suspended from a hollow plug 17 which screws into the interior of the body 10 as shown at 15; while the base 13 is screw threaded as shown at 16 to fit the outer part and lower end of the body.

The hollow plug or collar 17 carries a transverse spider 19, and this is centrally pierced to receive the guide pin 20 which extends from the splasher plate 14<sup>1</sup> up through the plug and into the extension rod 21. This rod is preferably hollow, and is made of compositions common to the art which expands rapidly when heated.

At its top the expansion rod receives a guide pin 23 on the under side of the top of the float 22, which is hollow, open at the bottom, and in cross section is similar in shape to the body 10 which it nearly fills, leaving an opening between itself and the body for the passage of air.

On the top of the float is a valve 23<sup>1</sup> which fits in the valve seat 24 in the top of the body 10, this seat being provided with a central opening and screw threaded as shown at 24, so that it may be readily screwed into place.

The air cock is provided with a dome 18 at the top which screws to the body 10 as shown at 35, and the air passing through the seat 24, enters the dome and passes out through the opening 30. The top 25 of the body 10 is provided with a hollow upwardly extending neck 27 having a side port 27<sup>1</sup> and connecting with the interior of the body 10 through a port 29. This is closed by a hand valve 28 which moves up and down in the neck 27, and has a stem 28<sup>1</sup> extending upward through the cap 31, this passing through the opening 30 above referred to, and being screwed to the neck 27 as shown. The cap is also held against displacement by a screw 18<sup>11</sup> which passes through the cap and engages the neck 27, and an opening 18<sup>1</sup> is provided opposite the screw and through the wall of the dome 18, in order that the screw may be easily reached. The valve 28 is normally closed by the compression spring 28<sup>11</sup> which encircles the stem 28<sup>1</sup>. At its upper end the stem 28<sup>1</sup> which extends through the cap 31, connects with a head 26 which is pivoted as shown at 33 in the fork 34 of the handle 32.

Thus it will be seen that in case quick and additional relief is wanted for the escape of air, one can lift the handle 32 against the tension of the spring 28<sup>11</sup>, thus raising the valve 28 and permitting the air to pass out through the ports 29—27<sup>1</sup>, and the openings 18<sup>1</sup> and 30. It will also be noted that normally the air and the steam behind it will pass upward into the valve casing, and as the air escapes and the steam comes in, the heat will expand the expansion rod 21, raise the float 22, and close the valve 23<sup>1</sup> thereby preventing the escape of steam. It will be further noted that the whole structure can be easily taken apart and cleaned, or worn or defective parts replaced by new ones.

In Figures 4 to 6 I have shown a modified form of air valve, and in this case the neck 27 has a larger bore 36 extending longitudinally through it, and a transverse valve 38 is arranged to rotate in the cap 38<sup>a</sup> of the neck, and is operated by a handle 39 extending through the slot 41 in the dome 18, the handle being connected to the valve as at 40. Thus by moving the handle back and forth, the valve 38 may be opened or closed.

In Figures 7 to 9 I have shown a modified form of the structure. The lower part is as already described except that the plug 14<sup>a</sup> has a wrench socket 14<sup>b</sup> in the bottom, and the lower end of the base is covered by a screw cap 42. As shown in these figures the body 10 has a detachable air dome 43 at the top with a vent opening 44 therein, and a diagonal duct 45 in the top plug 52 communicates with the duct 46 extending vertically through the lower part of said plug, and this one closes by a valve 47 on the top of the float 48. The float 48 is hollow and is filled

with liquid. It has a socket 49 in the bottom riding on the pin 20 which is as already described. The plug 52 also has a quick relief vent or duct 50 therein communicating with a duct 51 in which seats a valve 55 on the lower end of the stem 53 which screws into the upper part of the plug 52. This as illustrated has a squared end which can be turned by a key 56 or the like, and an opening 54 in the top of the plug 52 provides for the insertion of the key. If desired the shank of the stem 53 can be projected above the top of the dome as in Figure 9, so that the wrench can be applied to it.

In the modified form of the valve the air passes upward through the spider 19 around the float 48 and in through the ducts 46 and 45 of the steam dome, and out through the opening 44 around the plug 52. If quick relief is sought, the valve 55 is opened and the air passes out through the ducts 50 and 51. Normally the valve 55 is closed, and when air enters the cock, it passes upward and outward around the float 48 and through the ducts 46 and 45, but when steam enters, it boils the liquid in the float 48, which expands upwardly and closes the valve 47 so as to shut off the air outlet.

It will be seen that in both forms I have parts which are easily accessible, and which likewise can be easily separated for repairs or renewal.

I claim:—

1. A vent cock comprising a casing having a base portion with an inlet nipple, said base portion forming a substantial chamber within it and being openable substantially its full diameter at the bottom, and a body portion detachably secured to the base portion and having through the top an automatic vent and a manually controlled vent, a splash plate held in the upper part of the base chamber and between it and the body part of the casing, a stem rising from the splash plate into the body of the casing, and a float guided on the stem and nearly filling the body part of the casing, said float having a valve on its upper end to close the automatic air vent.

2. A vent cock comprising a base portion having an inlet nipple and forming a substantial chamber within it, a plug closing the lower part of the base and having an inclined top pitched to drain into the inlet nipple, a body portion of the casing detachably secured to the base and having in the top an automatic air vent and manually controlled air vent, a splash plate between the chamber of the casing and the body part of the casing, a guide pin rising from the splash plate into the casing body, a float guided on the pin, and a valve in the float to close the aforesaid automatic vent.

3. A vent cock comprising a three part casing, to wit, a base portion having an in-

let chamber and a removable plug at the bottom, a body portion detachably secured to the base portion and having an automatic air vent and a manually controlled air vent 5 through the top, and an air dome detachably secured to the body portion and opening to the outer air, a splash plate in the upper part of the inlet chamber, a pin on the splash plate rising into the body part of the casing, 10 and a float guided on the aforesaid pin and nearly filling the body portion of the casing, said float having a valve thereon to close the aforesaid automatic vent. 15

having an inlet nipple and a bottom closing plug, a body portion detachably connected to the base portion and having an automatic air vent and a manually controlled air vent through the top, a spider detachably secured in the lower end of the body portion, a 20 splash plate supported from the spider and having a pin extending upward into the body of the casing, and a float guided on the aforesaid pin, said float having a valve thereon to close the aforesaid automatic vent. 25

4. A vent cock comprising a base portion

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