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The Use
of
HOFFMAN VALVES
Make a Poor
Job Better
A
Good Job
Perfect
— — — — —



THE
HOFFMAN

— — — — —
A
Venting Valve
for
Every Service,
— — — — —

GEO. E. GILCHRIST CO.
106 High Street
BOSTON, MASS.

FOREWORD

FOR the past thirty years Mr. Geo. D. Hoffman, the designer and patentee of the valves described and illustrated herein, has been actively identified with the heating business in all its phases, and during the last fifteen years he has been devoting his entire thought and energies toward the development and production of venting devices for low-pressure steam heating systems. His great ambition during the past few years has been to design and place on the market dependable venting devices which would be absolutely non-adjustable and still automatic in the performance of the various functions for which they were designed.

The purpose of this catalogue is to describe the various Hoffman Venting Devices. A careful perusal will, we believe, convince the most skeptical that Mr. Hoffman has not only made a radical departure in the mechanical design of his valves, but has also made valves that are operative in the fullest extent of the word.

The Hoffman Siphon Air Valve

Automatic No. 1 Non-Adjustable

The Only "Perfect" Air Valve

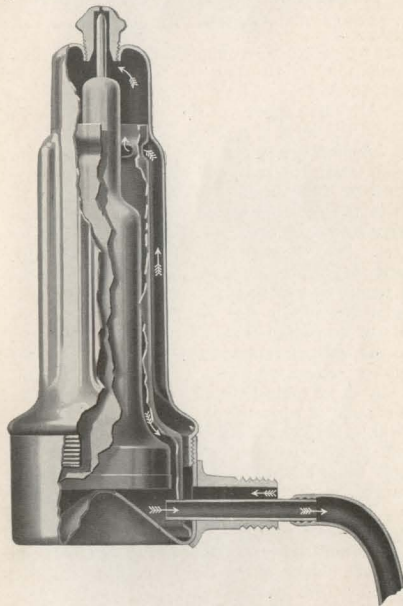
The sectional cut on the opposite page clearly shows the mechanical construction of this valve. The float shown in the cut is a sealed metal chamber having a flexible bottom. This sealed chamber contains a volatile or heat-sensitive fluid which vaporizes at a temperature of 190° Fahr., thus generating a pressure in the chamber which deflects the flexible bottom and closes the valve port by raising the float valve against its seat. Any temperature above 190° instantly closes the valve, but when the temperature drops below 190° the volatile fluid condenses and the valve opens. The fact that the valve is open at temperatures below 190° and closed at temperatures above 190° means that the heated air which collects in a hot radiator is as freely vented as cold air. This sensitiveness of the valve in distinguishing between live steam and heated air means full efficiency of the radiator whenever steam is maintained at the boiler.

Another function of the float is to take care of any sudden charge of water within the radiator. The instant water reaches the valve it closes tight against water leakage. The instant water drops away from the valve in the radiator, the siphon then automatically discharges the water into the radiator and the valve recommences venting.

It is a well known law in physics that water cannot be discharged from a sealed vessel without air taking its place.

The arrows on the sectional cut show direction of the flow of water through the siphon and direction of the flow of air into the valve. Please note that air entering the valve cannot pass through the water in the float chamber, but must enter through channels provided. Please also note that the outlets from these channels are above the water line in the float chamber. Therefore, when the valve opens, even though there may be water still left in the valve, the air passes out of the valve perfectly dry

without the slightest spit. The valve closes tight as often as water comes against it without the slightest leakage, but instantly opens also without the slightest leakage when water leaves the valve.



No. 1. List Price, ~~\$1.70~~ \$1.90

The Hoffman Siphon Air Valve perfectly and effectively distinguishes between steam and air, and between water and air, closing tight against steam or water, but freely venting all the air from the radiator, no matter whether the air is hot or cold.

The Hoffman Siphon Air and Vacuum Valve

Automatic No. 2 Non-Adjustable

The Only "Non-Adjustable" Air and Vacuum Valve

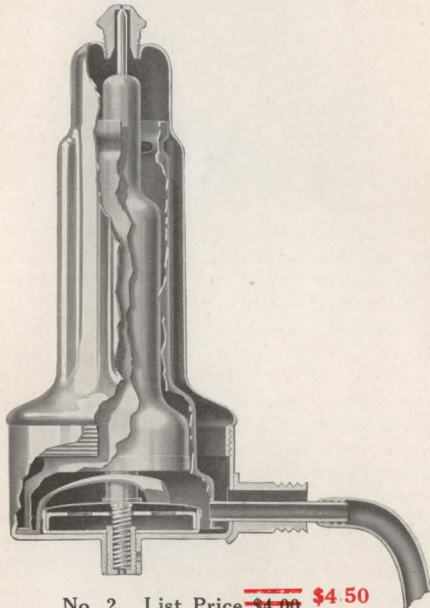
When a pressure of six ounces or more reaches this valve, it functions in every way the same as the Hoffman Siphon Air Valve and the description of the Hoffman Siphon Air Valve applies to this valve until the Vacuum feature of the valve is reached.

The function of any air valve is to vent the radiator of air when steam enters it, and then close when steam fills the radiator. But when steam pressure goes off, and the steam in the radiator begins to cool and condense, the ordinary air valve opens and allows air to return into the radiator. Since it has taken fuel to get up the pressure necessary to push the air out of the radiator, it is a common sense proposition to keep it out after this is done. The Hoffman Siphon Air and Vacuum Valve freely permits the air to be vented from the radiator at any pressure above six ounces, automatically closing against the emission of steam or water, and then in addition automatically closes against the ingress of air through the valve into the radiator when the pressure goes off.

It will be noted by a glance at the sectional cut on the opposite page that the valve outlet is normally closed, the float pin being held tight against its seat by the upward pressure of a small bronze diaphragm in the bottom of the valve. The port in the bottom of the valve leads to this diaphragm chamber and is always open, so that any pressure within the valve tends to deflect the diaphragm. The upward tension of this diaphragm is so adjusted that it requires at the most not over six ounces to deflect it, and as the float follows the diaphragm downward, the valve port opens. Temperature has nothing to do with this function of the valve. Pressure opens it, and lack of pressure closes it.

The Hoffman Siphon Air and Vacuum Valve when cold is normally closed, but opens as soon as pressure above six ounces reaches it. It closes instantly if water comes

against it, preventing any water leakage through the valve. It opens instantly when water, which has closed it, drops away from it, without water spit. It closes the instant steam reaches it. When pressure goes off, this valve instantly and automatically closes against the ingress of



No. 2. List Price ~~\$4.00~~ \$4.50

air into the radiator through the valve. It lets all the air out of the radiator without steam or water leakage, and once out, it keeps it out. It is absolutely automatic in all its functions, and is therefore the "Last Word" in Automatic Air Valves.

32 year 25 of

The Hoffman "Air Line" Valve

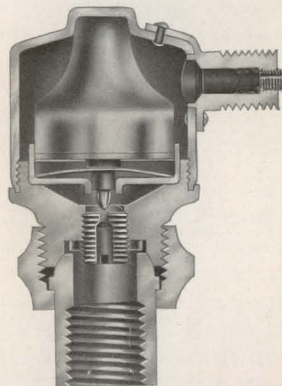
Automatic No. 3 Non-Adjustable

For Drip or Vacuum Air Line Service

The Hoffman "Air Line" Valve is an Automatic and Non-Adjustable air line valve. The sectional cut on the opposite page clearly shows the mechanical construction of the valve. The expansible medium is a volatile or heat-sensitive fluid which is contained in a sealed metal chamber having a flexible bottom. This flexible bottom is made out of phosphor bronze, the toughest metal known, and this is the expansible member of the valve. It will be noted that this sealed metal chamber rests on a rivet-headed valve pin, which in turn is supported by a flat phosphor bronze spring. The tension of this spring is just sufficient to hold the rivet-headed valve open and in close but free contact with the flexible bottom of the sealed metal chamber. It also holds the chamber itself against the top of the housing. The valve port is therefore always open when the valve is cold for the free passage of air, but as soon as steam reaches the valve, the volatile fluid in the sealed metal chamber vaporizes, which generates a sufficient pressure to deflect the flexible bottom of the chamber against the rivet-headed valve, pushing it to its seat and thus closing the valve port tight against the passage of steam into the line. When the temperature at the valve reaches 190° Fahr., the volatile vapor condenses and the diaphragm or flexible bottom reacts and opens the valve. As long as steam is against the valve, it remains closed, but the instant steam ceases, it is wide open for the free passage of air. The port is either wide open or closed tight.

The sectional cut also shows a channel screw in the radiator nipple of the valve. The function of this screw

is to enable the fitter to "balance" the system by giving him means to positively control the velocity of the steam as it enters each particular radiator. Screwing in the screw decreases the size of the inlet into the valve, thus decreasing the velocity of the steam, while screwing out the screw increases it.



No. 3. List Price, ~~\$1.90~~ **\$2.50**

The use of the Hoffman "Air Line" Valve enables the fitter to install a job with just the right amount of steam for every radiator. The valves are absolutely automatic and non-adjustable.

Nipple connection for radiator $\frac{1}{8}$ " iron pipe thread.
Air Line connection $\frac{1}{4}$ " iron pipe thread.

The Hoffman Junior Quick Vent Air Valve

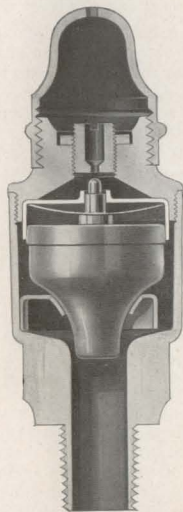
Automatic No. 4 Non-Adjustable

For Quick Vent Service where Water is not a Factor

This valve is designed to meet a demand for Quick Vent Service at the end of basement heating mains, the top of risers, or any indirect radiators or stacks or blasts or "Vento" coils or stacks, where there is little or no liability of water coming against the air valve. The valve closes tight against steam emission, but remains wide open for the free passage of air. *It does not close against water.*

The sectional cut on the opposite page clearly shows the mechanical construction of the valve. The expansible medium is a volatile or heat-sensitive fluid, which is contained in a sealed metal chamber having a flexible top. This flexible top is made of phosphor bronze, the toughest metal known, and this is the expansible member of the valve. The rivet-headed valve-pin is kept in close but free contact with this flexible top by means of a flat phosphor bronze spring. The valve port is therefore only open when the valve is cold for the free passage of air, but as soon as steam reaches the valve, the volatile fluid in the sealed metal chamber vaporizes and generates a sufficient pressure to expand the flexible diaphragm against the valve-pin, pushing it to its seat and thus closing the valve port tight against the emission of steam. A slight fall in temperature at the valve causes the volatile fluid to con-

dense. The flexible diaphragm reacts and the valve opens. As long as steam is against the valve, it remains



No. 4. List Price, ~~\$2.40~~ \$2.80

closed, but the instant steam ceases, it is wide open for the free passage of air.

The shank of this valve is $\frac{1}{4}$ " iron pipe thread.

The Hoffman Quick Vent "Float" Air Valve

Automatic No. 5 Non-Adjustable

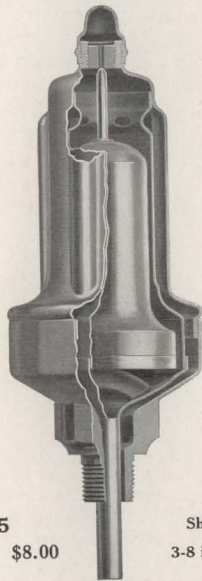
For Quick Vent Service where it is desired to Control or Prevent the Emission of either Steam or Water through the Valve

This valve is designed to meet a demand for Quick Vent Service at the end of heating mains which are so close to the water line that water may come against the valve. It is also specially designed for quick venting of Blast or "Vento" coils or stacks. It is also designed for any Quick Vent Service where water is liable to come against the valve, and where it is desired to check the passage of the water through the valve. A glance at the sectional cut on the opposite page clearly shows the mechanical construction of the valve. The float performs a double function. When water comes to the valve the float instantly rises and closes the valve port against any possible leakage of water through the valve. The float is a sealed metal chamber having a flexible bottom. This chamber contains a volatile or heat-sensitive fluid which vaporizes at a temperature of 190° Fahr., or above. This generates a pressure in the float chamber, which deflects the flexible bottom against its rest, and thus closes the valve by lifting the valve-pin to its seat. When steam is against the valve it is closed tight, but the instant steam ceases, the volatile vapor condenses, the diaphragm reacts and the valve opens wide for the free emission of any air that may be against it.

In taking care of water surges against the valve, the valve functions in every way the same as the Hoffman Siphon Air Valve. In other words, an examination of the sectional cut will disclose the two separate and distinct channels, one for air, the other for water. As the water is discharged from the valve back into the pipe line through the siphon tube, air enters the valve at the top through the air channels provided. The valve closes tight the instant water comes against it and opens wide the instant water drops away from it, without the slightest water spit or leakage in either case. It distinguishes positively between air and steam, freely venting the air from the pipe, coil or stack, no matter whether this air is

hot or cold, and it also instantly distinguishes between water and air, closing tight against water leakage, but opening wide for free passage of air the instant water drops away from it.

It is Automatic, Non-Adjustable and Dependable in all the functions it is designed to meet.



No. 5

List Price, \$8.00

Shank Thread

3-8 inch Iron Pipe

SPECIAL NOTE. The vent port of this valve is 1-16 inch in diameter, and the valve will function perfectly up to 10 pounds pressure. Where it is desired to use this valve for venting vapor systems at the end of the air line, the vent port of the valve is made 1-4 inch. The use of this valve in connection with vapor heating systems positively prevents loss of water through the air line and makes such jobs "fool proof."

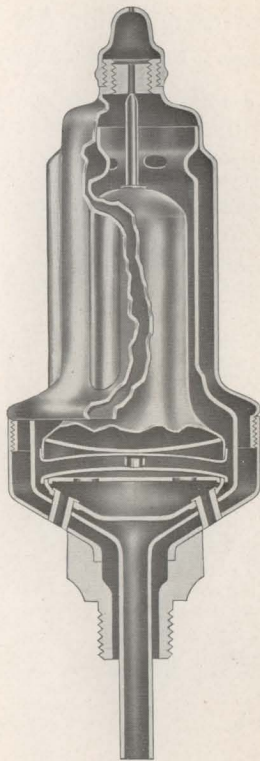
The Hoffman Quick Vent "Float" Air and Vacuum Valve

Automatic No. 6 Non-Adjustable

This valve is designed to perform the same service as the Hoffman Quick Vent "Float" Air Valve, but it also prevents the return of air to the radiator, stack, or line to which it is connected when pressure ceases at the valve.

The description of the Hoffman Quick Vent "Float" Air Valve applies to this valve until the vacuum feature of the valve is reached. It will be noted by a glance at the sectional cut on the opposite page that the valve outlet is normally closed, the float pin being held tight against its seat by the upward pressure of the bronze diaphragm in the bottom of the valve. The air ports on each side of the bottom portion of the valve lead to this diaphragm chamber, and as these ports are always open, any pressure within the valve tends to deflect the diaphragm. The upward tension of this diaphragm is so adjusted that it requires at the most not over four ounces to deflect it, and as the float follows the diaphragm downward, the valve port opens. Temperature has nothing to do with this function of the valve. Pressure opens it, and lack of pressure closes it.

The Hoffman Quick Vent "Float" Air and Vacuum Valve, when cold, is normally closed, but opens as soon as pressure above four ounces reaches it. It closes instantly if water comes against it, preventing any water leakage through the valve. It opens instantly when water, which has closed it, drops away from it without water spit. It closes the instant steam reaches it. When pressure goes off, this valve instantly and automatically closes against the ingress of air through the valve into the pipe line or stack to which it is connected. It lets all the air out without steam or water leakage, and once out, keeps it out. It is absolutely automatic in all its functions.



No. 6. List Price, \$12.00
Shank Thread 3-8 inch Iron Pipe

The Hoffman Junior Air Valve

Automatic No. 7 Non-Adjustable

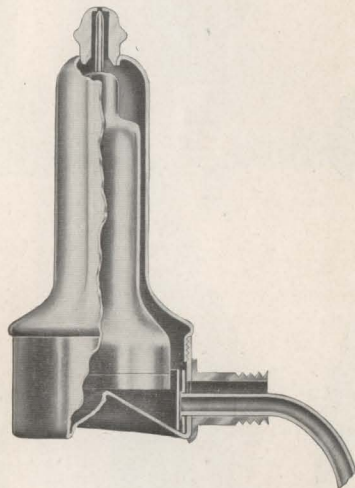
This valve is designed to meet the demand for a medium-priced NON-ADJUSTABLE, AUTOMATIC air valve.

The float is a sealed metal chamber and performs two functions, closing the valve port against water leakage by flotation and closing the port against steam leakage by expansion.

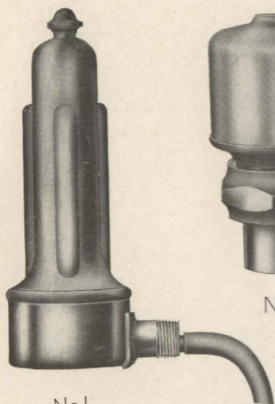
The bottom of the float is a flexible diaphragm, made of phosphor bronze, and this is the expansible member of the valve.

The float chamber contains a small amount of volatile or heat-sensitive fluid, which vaporizes at a temperature a little less than steam. When steam comes in contact with the chamber, the internal pressure thus generated deflects the diaphragm against its resting place, which raises the float valve to its seat and closes the valve port. A slight fall in temperature at the valve condenses the vapor in the float, and the diaphragm reacts, thus opening the valve.

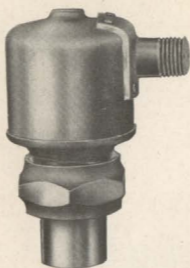
The Hoffman Junior Air Valve is in every way a dependable valve for the venting of low-pressure steam-radiators.



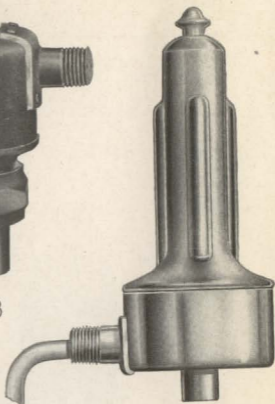
No. 7. List Price, ~~\$1.20~~ **\$1.40**



No.1



No.3



No.2

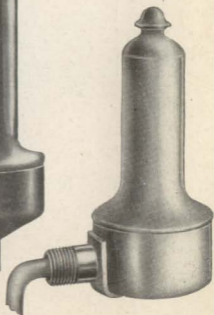


No.4



No.

5



No.7