HOFFMAN VENTING VALVES *for* EVERY SERVICE

HOFFMAN VALVES

THE ONLY COMPLETE LINE
OF PERFECT VENTING VALVES

A HOFFMAN VENTING VALVE FOR EVERY SERVICE

HOFFMAN VENTING VALVES

FOR

EVERY SERVICE

MANUFACTURED BY

HOFFMAN SPECIALTY CO.

130 NORTH WELLS STREET

CHICAGO

NEW YORK
512 FIFTH AVENUE

LOS ANGELES
215 W. SEVENTH STREET

Foreword

There is no question but that the well informed architect, engineer and steamfitter will acknowledge that the heat service obtainable from a steam heating apparatus is largely dependent upon the proper operation of the air valve with which the apparatus is equipped. The air valve selected should, therefore, be so designed and constructed that it will, without thought or attention of the user, automatically free the radiator to which it is attached of *all air* without the slightest steam or water leakage. Such valves insure flexibility and economy of operation while air valves requiring adjustment are sure to sooner or later become leaky and inoperative and are always inimical to economy and efficiency (their use often resulting in damaged floors, walls and ceilings).

It has, however, in the past been customary to accept the troublesome air valve as an inherent defect of steam heating apparatus and treat the thought of an air valve that was automatic without adjustment and would not leak steam or water as a dream too idealistic to come true.

Five years ago, Mr. George D. Hoffman, the designer and patentee of all the Hoffman Venting Valves, contending that the "perfect" air valve was a possibility, place d on the market the No. 1 Hoffman Siphon Air Valve and claimed that it was absolutely automatic, absolutely non-adjustable, and that it would completely and fully perform its functions without steam or water leakage. This claim was backed by a guarantee of five years' satisfactory service or money back. It was a hard fight to make the trade realize that the long-hoped-for air valve had arrived, but the fact that nearly one million of these valves have been sold during the past five years, and that less than *One-Tenth of One Percent* of all valves sold have been returned for any cause, should be acceptable evidence to the most skeptical that the No. 1 Hoffman Siphon Air Valve has a virtue distinctly its own.

But in spite of the fact that the No. 1 Hoffman Siphon Air Valve fully met the need in its particular field, its use was limited to low pressure gravity steam heating systems. The success of the No. 1, however, naturally created a demand for a Hoffman Valve for other venting service and from time to time such other valves have been added to the line, until Hoffman Valves now form a complete line of Venting Valves with "A Venting Valve for Every Service."

This catalog has been prepared for the purpose of presenting in an attractive explanatory form the various types of *Hoffman Venting Valves* now in use.

The valves described herein are made entirely of metal, are automatic and non-adjustable and together make the only complete line of venting valves on the market.

HOFFMAN SPECIALTY CO.
CHICAGO.

October 1st, 1918

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Note.—All **HOFFMAN VENTING VALVES** are made entirely of metal. They are absolutely automatic in the performance of their functions.

The No. 1 Hoffman Siphon Air Valve

Made Entirely of Metal

Automatic, Non-Adjustable, Thermostatic

The Only "Perfect" Air Valve

Because

It is the only air valve which will *automatically* vent any radiator which can be vented manually by means of a pet cock and do it without steam or water leakage through the valve.

The sectional cut on the following page clearly shows the mechanical construction of the valve and the exterior cut shows its outward appearance.

SPECIAL CONSTRUCTION FEATURES

The Valve is made entirely of metal and each part is made of a special alloy best adapted for its particular purpose. All parts, with the exception of the float valve pin (1) which is made of Nickel Alloy, and the seat plug (2), which is turned from rod brass, are *drawn* brass, not cast, the drawn brass being much stronger and less liable to imperfections. The valve is made of five principal parts, the outer shell (3), the base (6), the inner shell (8), the float (9) and the siphon (10).

OUTER SHELL AND BASE

The outer shell (3) is peculiar in its form in that it has four projecting vertical bosses (4) stamped thereon. The bottom of the shell (5) is of larger diameter than its upper portion and is made with a threaded end, thus providing a screw joint to the base (6) to which is attached the radiator engaging nipple (7).

INNER SHELL

The inner lining or shell (8) is a brass tube which tightly engages the inner diameter of the outer shell (3) but is of slightly smaller diameter than the base (6). Its function is to convert the four vertical bosses (4) on the outer shell (3) into air passages from the nipple (7) to a point near the top of the valve.

THE FLOAT

The float (9) is a sealed metal chamber having a flexible bottom made of a special bronze and contains a volatile fluid.

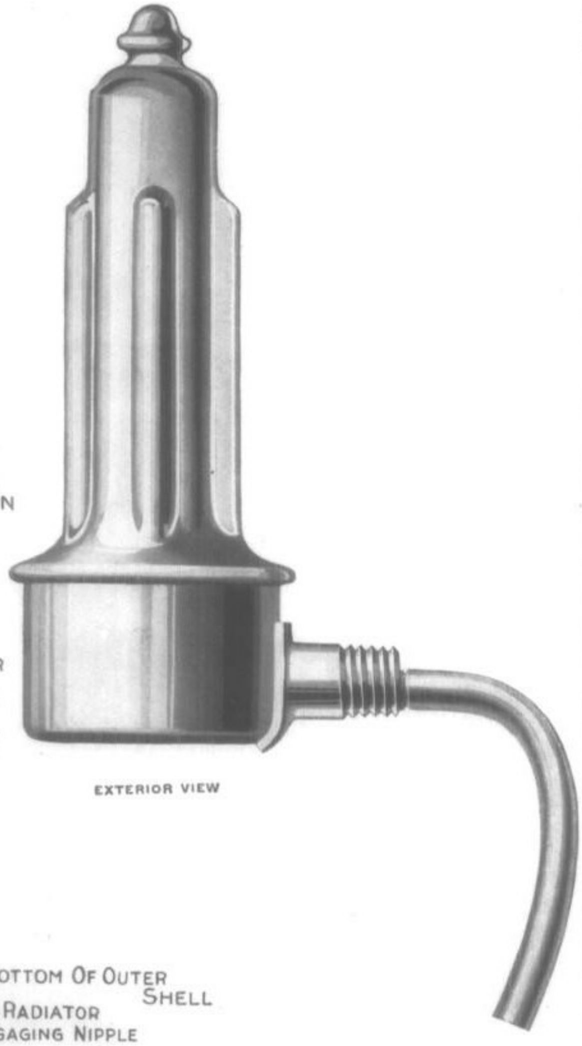
THE SIPHON

The siphon (10) is a brass tube connected by swivel joint (11) to a smaller brass tube which leads through the inner shell (8) to the inner, or float chamber

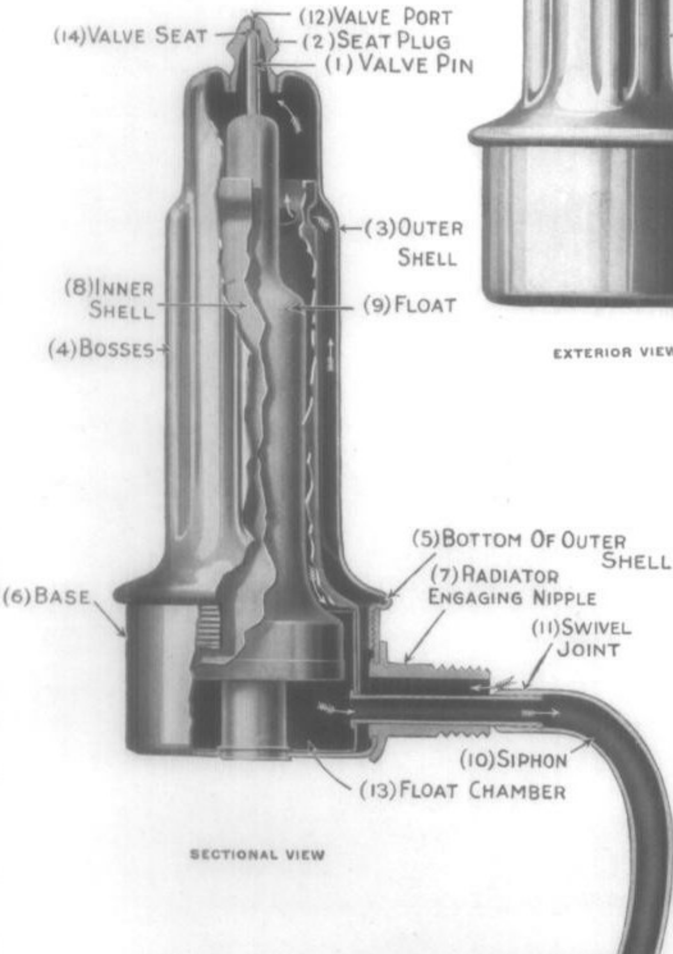
THE No. 1 HOFFMAN SIPHON AIR VALVE

FOR LOW PRESSURE GRAVITY STEAM SYSTEMS

Cuts show actual size



EXTERIOR VIEW



SECTIONAL VIEW

(13) of the valve, for the purpose of forming a water conduit from this inner chamber to the inside of the radiator.

OPERATION UNDER STEAM CONDITIONS

The valve is peculiar in its operation in that it positively distinguishes between steam, air and water. The volatile fluid in the float (9) vaporizes at a temperature a little less than steam, thus generating a pressure which deflects the flexible bottom and closes the valve port (12) by raising the float valve pin (1) against its seat (14). A slight fall in temperature at the valve causes the volatile fluid to condense, the float (9) drops and the valve resumes venting until steam reaches it, when it again instantly closes. The fact that the volatile fluid requires practically the temperature of steam to vaporize and make it an operative force, means that the heated air, which collects in the hot radiator, is as freely vented as cold air, because the vent port (12) of the air valve is either wide open or closed tight. Inasmuch as air is being constantly released in the radiator by the condensation of steam, 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.

OPERATION UNDER WATER CONDITIONS

Another function of the float (9) is to take care of any sudden charge of water within the radiator. It frequently happens that a radiator while venting "works water" and under this condition the water is liable to surge against the air valve. The No. 1 Hoffman Siphon Air Valve instantly closes and closes tight against water leakage. The seat of the valve pin (1) is so accurately ground that not a drop of water can pass through the valve and the valve remains closed as long as water remains against it. The instant the water in the radiator drops away from the valve, the siphon (10) automatically discharges the water in the valve back into the radiator and the valve resumes venting.

It is a well known law of physics that water cannot be discharged from a sealed vessel without air taking its place. When the siphon (10) discharges water from the No. 1 Hoffman Siphon Air Valve the air passes, as indicated by the arrows in the sectional cut, into the valve through the separate passages provided for it, by means of the inner shell (8) and the four bosses (4) on the outer shell (3), which are formed into conduits because of the glove fit between the outer shell (3) and the inner shell (8) above the base (6).

Other arrows indicate the flow of water out through the siphon (10). It will be seen that air entering the valve cannot pass through the water in the float chamber (13) but must enter through conduits provided. The outlets from these conduits being above the water line in the float chamber (13), the air passes out of the valve without the slightest spit.

No matter how many times the water surges against and into the No. 1 Hoffman Siphon Air Valve, the sealed metal float (9) rides the water like a cork and closes the valve before the slightest drop can get by. It closes and opens as the water comes and goes without the slightest leakage and as it also promptly and efficiently distinguishes between steam and air, venting all the air and stopping all steam, it is the PERFECT VENTING VALVE.

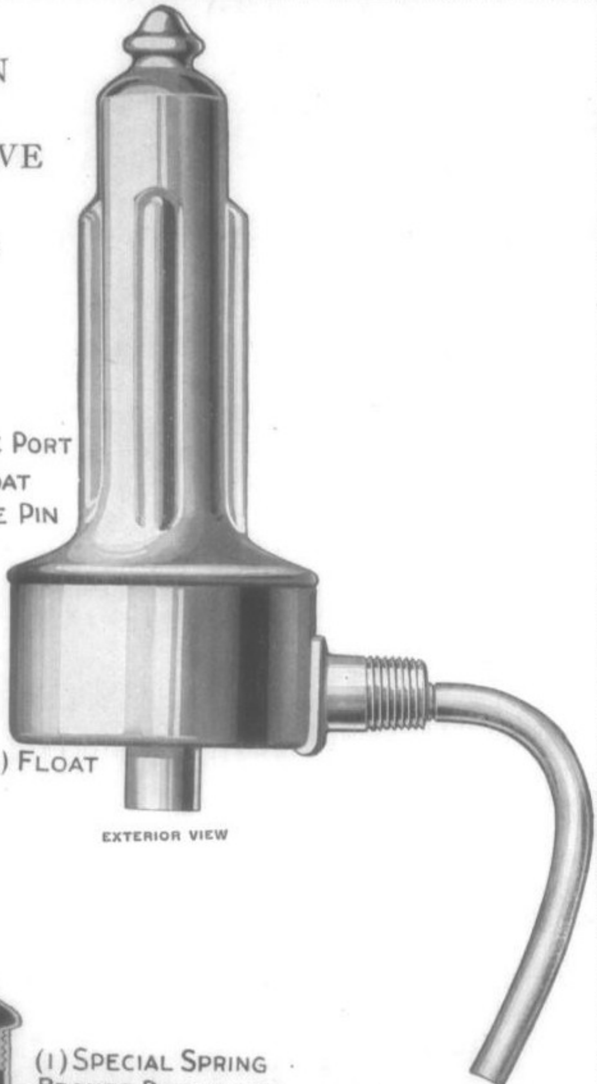
LIST PRICE, $1.90

HOFFMAN VALVES

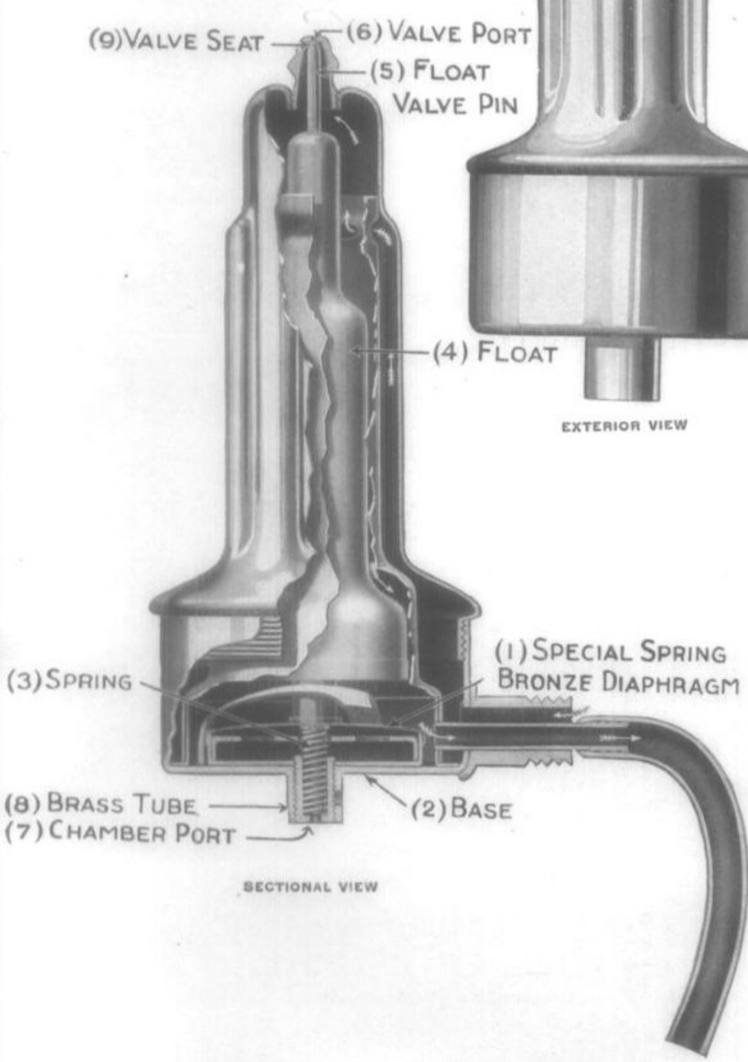
THE No. 2 HOFFMAN SIPHON AIR AND VACUUM VALVE

FOR LOW PRESSURE GRAVITY VACUUM SYSTEMS

Cuts show actual size



EXTERIOR VIEW



SECTIONAL VIEW

The No. 2
Hoffman Siphon Air and Vacuum Valve

Made Entirely of Metal

Automatic, Non-Adjustable, Thermostatic

The Only "Non-Adjustable" Air and Vacuum Valve

Will not only automatically vent any radiator which can be manually vented by a pet cock and do it without steam or water leakage, but will also prevent the return of air to the radiator through the valve.

The sectional cut on the opposite page clearly shows the mechanical construction of the valve and the exterior cut shows its outward appearance.

SPECIAL CONSTRUCTION FEATURE

The special construction feature of the No. 2 valve is a small chamber at the bottom of the valve. The top of this chamber is covered by a special spring bronze diaphragm (1) and the bottom is fitted with a brass tube (8) which passes through the base (2) of the valve. This tube contains a spring (3) which bears against the diaphragm (1) and aids it to support the float (4).

SPECIAL OPERATIVE FEATURES

The operation of the No. 2 Hoffman Siphon Air and Vacuum Valve under steam and water conditions is exactly the same as the No. 1 valve.

By reason of the upward tension of the special spring diaphragm (1) the float (4) is normally raised and the float pin (5) is held tight against its seat (9). The port (7) through the outer end of the chamber tube (8) is always open to atmosphere allowing any pressure above six ounces within the valve to deflect the diaphragm (1). The upward tension of the diaphragm (1) is so adjusted that it requires at the most not over six ounces to deflect it, and when deflected the float (4) follows, thus opening the valve. Temperature has nothing to do with *this function* of the valve. Pressure opens it, and lack of pressure closes it.

The No. 2 Hoffman Siphon Air and Vacuum Valve when cold opens as soon as internal pressure above six ounces reaches it, thus allowing air to be vented from the radiator. It closes instantly by flotation if water comes against it, preventing any water leakage through the valve. It opens instantly without water spit when the water in the radiator drops away from it. It closes the instant steam reaches it. When pressure goes off, the valve instantly and automatically closes against the ingress of air through the valve into the radiator, the valve port closing tighter and tighter as vacuum increases in the radiator because of the upward atmospheric pressure against the lower diaphragm. 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.

LIST PRICE, $4.50

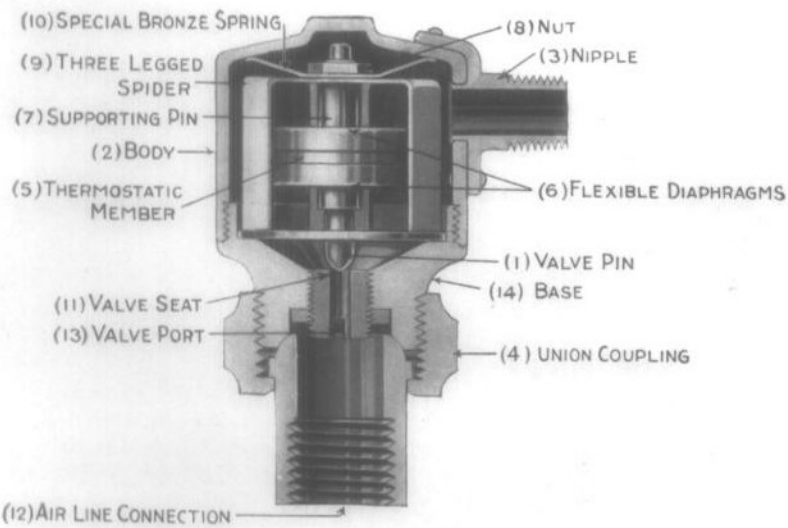
HOFFMAN VALVES

THE No. 3 HOFFMAN AIR LINE VALVE

FOR PAUL SYSTEMS,
DRIP OR AIR LINE SERVICE

Cuts show actual size

EXTERIOR VIEW



SECTIONAL VIEW

The No. 3 Hoffman "Air Line" Valve

Made Entirely of Metal

Automatic, Non-Adjustable, Thermostatic

For Drip or Vacuum Air Line Service

The sectional cut on the opposite page clearly shows the mechanical construction of the valve and the exterior cut shows its outward appearance.

SPECIAL CONSTRUCTION FEATURES

The Valve is made entirely of metal and each part is made of special alloy best adapted for its particular purpose. All parts, with the exception of the valve pin (1) which is made of Nickel Alloy, are made of drawn and rod brass, not cast, the drawn and rod brass being much stronger and less liable to imperfections.

The body (2) is a heavy drawn shell and the nipple (3), which is pierced, threaded and specially formed to meet the contour of the body shell (2), is riveted and soldered to it. The base (14), union coupling (4) and air line connection (12) of the valve are made from rod brass, and when these several parts are assembled they make the *strongest air line valve on the market.*

The thermostatic member (5) of the valve is a hermetically sealed chamber, the top and bottom of which are fitted with flexible diaphragms (6) made of special spring bronze. Tightly riveted and soldered to the center of the top diaphragm is the supporting pin (7) and to the bottom diaphragm the Nickel Alloy valve pin (1). The supporting pin (7) is locked fast by means of a nut (8) to the three-legged spider (9) and the thermostatic chamber (5) is thereby held in proper position. Surmounting the spider (9) and held thereto by means of the nut (8) which fastens the chamber to the spider (9), is a special bronze spring (10) which takes up lost motion between the top of the spider (9) and the valve body (2).

OPERATION

The valve is permanently adjusted at the factory and is always open when the valve is cold, for free passage of air or water, should water come to it, but as soon as steam reaches the valve the volatile fluid in the sealed metal chamber (5) vaporizes, generating a sufficient pressure to distend the flexible diaphragms (6) on the top and bottom of the chamber (5) thus pushing the valve pin (1) to its seat (11) and closing the valve port (13) tight against the passage of steam into the lines.

When the temperature at the valve drops slightly below that of steam the volatile vapor in the sealed metal chamber condenses and the diaphragms (6) react, thus opening 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 (13) is either wide open or closed tight.

The No. 3 Hoffman Air Line Valve is simple in construction but marvelous in results.

Its use insures a hot radiator, but a cold air line. It is absolutely automatic and non-adjustable.

Nipple connection (3) for radiator, ⅛-inch iron pipe thread.

Air line connection (12) is ¼-inch iron pipe thread.

LIST PRICE, $2.50

HOFFMAN VALVES

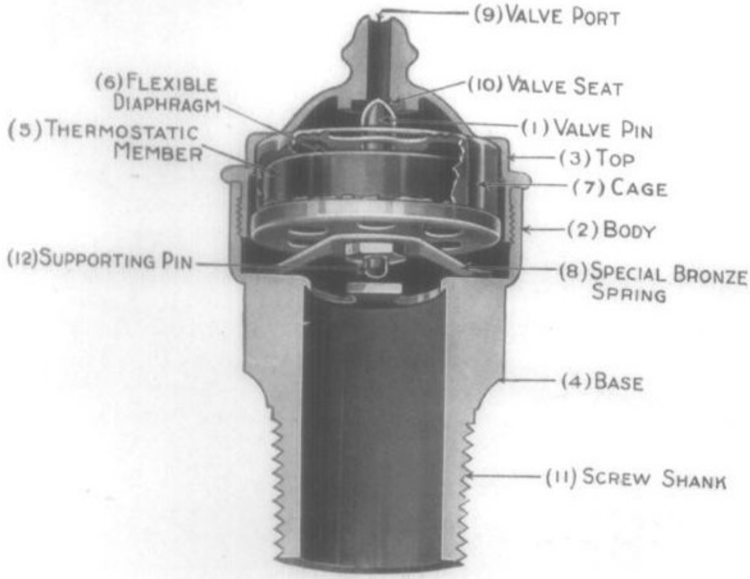
THE No. 4 HOFFMAN JUNIOR QUICK VENT AIR VALVE

FOR MAINS, RISERS, VENTO STACKS, BLAST COILS, ETC.

DOES NOT CLOSE AGAINST WATER

Cuts show actual size

EXTERIOR VIEW



SECTIONAL VIEW

The No. 4 Hoffman, Jr. Quick Vent Air Valve

Made Entirely of Metal

Automatic, Non-Adjustable, Thermostatic

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 in connection with indirect radiators, or stacks, or blast 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 and the exterior cut shows its outward appearance.

SPECIAL CONSTRUCTION FEATURES

The No. 4 valve is made entirely of metal and each part is made of special alloy best adapted for its particular purpose. All parts with the exception of the valve pin (1), which is made of Nickel Alloy, are made of drawn and rod brass and not cast brass, the drawn and rod brass being much stronger and less liable to imperfections.

The body (2) and top (3) of the valve are heavy drawn shells. The base (4) and threaded shank (11) are made from one piece of solid brass rod and the body shell (2) is soldered to the base (4) with hard solder, making a construction that will withstand all kinds of hard usage.

The thermostatic member (5) of the valve is a hermetically sealed chamber. The top and bottom of this chamber are each fitted with a flexible diaphragm (6) made of special spring bronze. Tightly riveted and soldered to the center of the top and bottom diaphragms (6) respectively is the Nickel Alloy valve pin (1) and a supporting pin (12). As shown in the sectional cut the thermostatic chamber (5) is assembled in a cage (7) which in turn as a separate unit is placed in the valve body (2), being held in place by the pressure of the body against a flat special bronze spring (8) which is rigidly fastened to the bottom of the cage (7). This method of construction insures that the thermostatic movement of both diaphragms (6) will be collectively imparted to the valve pin (1) which is guided by a close fitting opening through the top of the cage (7), thus insuring a perfect closure of the valve port (9) when steam reaches the valve.

OPERATION

The valve is permanently adjusted at the factory and is always open when the valve is cold for the free passage of air or water, should water come to it, but the instant steam reaches the valve the volatile fluid in the sealed metal chamber vaporizes, generating a sufficient pressure to distend the flexible diaphragms (6) on the top and bottom of the chamber, thus pushing the valve pin (1) to its seat (10) and closing the valve port (9) against the passage of steam. A slight fall in temperature at the valve causes the volatile vapor to condense, the flexible diaphragms (6) to react and the valve to open. 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 (9) is either wide open or closed tight.

The use of the No. 4 Hoffman Junior Quick Vent Valve keeps mains and risers free from air and equalizes the heating of all radiators.

Stops steam but *does not stop water.* The standard screwshank (11) of this valve is ¾-inch iron pipe thread, but when required it can be furnished with ¼-inch shank without extra charge.

LIST PRICE, $2.80

HOFFMAN VALVES

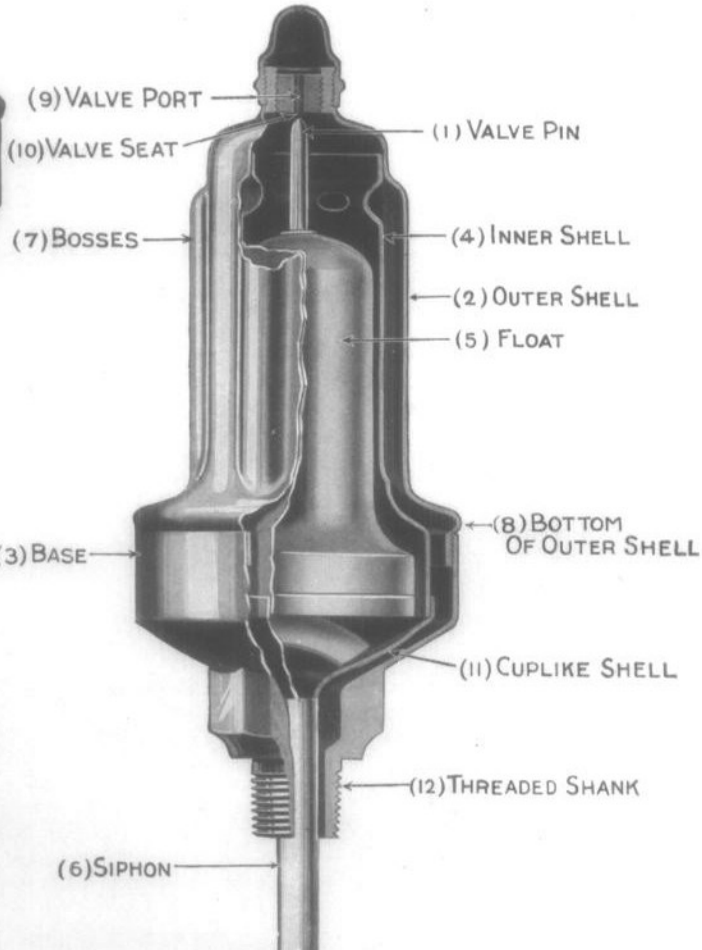
THE No. 5 HOFFMAN QUICK VENT FLOAT AIR VALVE

FOR MAINS, RISERS, VENTO STACKS, BLAST COILS, ETC.

STOPS WATER AS WELL AS STEAM

Cuts show ⅔ actual size

EXTERIOR VIEW



SECTIONAL VIEW

The No. 5
Hoffman Quick Vent Float Air Valve

Made Entirely of Metal

Automatic, Non-Adjustable, Thermostatic

For Quick Vent Service in Connection with Large Heating Mains, Blast or "Vento" Coils or Stacks, Where Both Steam and Water Conditions Must Be Met and Controlled.

The sectional cut on the opposite page clearly shows the mechanical construction of the valve and the exterior cut shows its outward appearance.

SPECIAL CONSTRUCTION FEATURES

The No. 5 Hoffman valve is made entirely of metal, and each part is made of special alloy best adapted for its particular purpose. All parts, with the exception of the valve pin (1) which is made of Nickel Alloy, are made of drawn and rod brass, and not cast brass, the drawn and rod brass being much stronger and less liable to imperfection.

The valve is made of five principal parts, the outer shell (2), the base (3), the inner shell (4), the float (5) and the siphon (6).

OUTER SHELL AND BASE

The outer shell (2) is peculiar in its form in that it has four vertical projecting bosses (7) and the bottom is of larger diameter than its upper portion. It is made with a threaded bottom end, thus providing a screw joint to the base to which it is attached. The bottom of the base (3) is made from heavy hexagonal rod brass as shown in the cut, terminating in a shank threaded with 3/8-inch iron pipe thread.

INNER SHELL

The inner lining or shell (4) is a brass tube which tightly engages the inner diameter of the outer shell (2) but is of slightly smaller diameter than the base (3).

HOFFMAN VALVES

The bottom of this inner shell (4) fits into a cuplike shell (11) of slightly smaller dimensions than the base (3), which in turn terminates into a siphon tube (6) which is likewise of smaller diameter than the inner diameter of the shank and projects a short distance beyond it. The function of these inner and cuplike shells (4 and 11) is to convert the space between the cuplike shell (11) and the base (3) and the four vertical bosses (7) on the outer shell (2) into air passages from the threaded shank (12) to a point near the top of the valve.

FLOAT

The float (5) is a sealed metal chamber having a flexible bottom made of a special bronze and contains a volatile fluid.

SIPHON

The siphon (6) is a brass tube which is connected to the cuplike shell, thus giving a water conduit from the inner or float chamber of the valve into the pipe line or coil to which the valve is connected.

OPERATION UNDER STEAM CONDITIONS

The valve is peculiar in its operation in that it positively distinguishes between steam, air and water, the volatile fluid in the float (5) vaporizing at a temperature a little less than steam, thus generating a pressure which deflects the flexible bottom and closes the valve port (9) by raising the float valve pin (1) against the seat (10). A slight fall of temperature at the valve causes the volatile vapor to condense, the float (5) to drop and the valve to resume venting until steam reaches it, when it again instantly closes. The fact that the volatile fluid requires practically the temperature of steam to vaporize and make it an operative force, means that the heated air which collects in the pipe line or coil is as freely vented as cold air, because the vent port (9) of the air valve is either wide open or closed tight. Inasmuch as the air is being constantly released by the condensation of steam this sensitiveness of the valve in distinguishing between live steam and heated air means that the air is fully and completely eliminated from the pipe line or coil to which the valve is attached whenever steam is maintained at the boiler.

OPERATION UNDER WATER CONDITIONS

Another function of the float (5) is to take care of any sudden charge of water. The No. 5 Hoffman Quick Vent Float Air Valve instantly closes, and closes tight, against water leakage. The seat of the valve pin (1) is so accurately ground that not a drop of water can pass through the valve, the valve remaining closed as long as water remains against it. The instant, however, that water drops away from the valve, the siphon (6) automatically discharges the water in the valve back into the line, and the valve resumes venting.

It is a well known law in physics that water cannot be discharged from a sealed vessel without air taking its place. When the siphon (6) discharges the water from the No. 5 Quick Vent Float Air Valve the air passes as indicated by the arrows in the sectional cut, into the valve through the separate passages provided for it by means of the inner shell (4) and the four bosses (7) on the outer shell (2) which are formed into conduits because of the glove-fit between the outer shell (2) and the inner shell (4) and the space between the cuplike shell and base (3).

Other arrows indicate the flow of water out through the siphon (6). It will be seen that the air entering the valve cannot pass through the water in the float chamber but must enter through the conduits provided. The outlet from these conduits being above the water line in the float chamber the air passes out of the valve without spit.

Where it is desired to use a quick vent air valve under conditions where water of condensation is liable to come against the valve, the No. 5 Hoffman Quick Vent Float Air Valve should always be specified as it is the one perfect venting valve for such service.

Where pressures above three pounds are liable to come to the valve, the port (9) is 1/16-inch. Where the pressure is three pounds or less, the valve port (9) is 3/16-inch.

The standard port (9) of this valve is 1/16-inch, and unless otherwise specified, the 1/16-inch port valve will be furnished.

The shank (12) thread is 3/8-inch, iron pipe.

LIST PRICE, $8.00

HOFFMAN VALVES

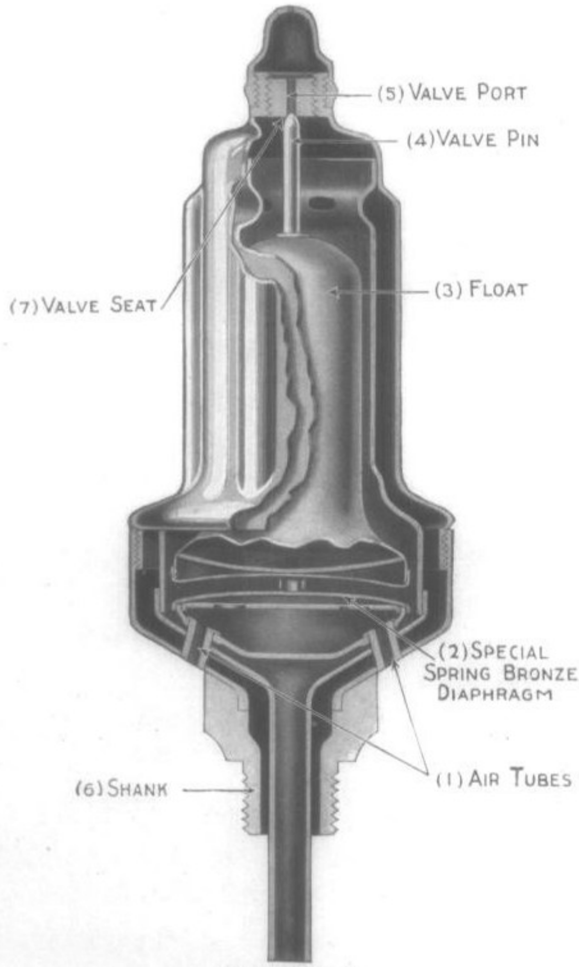
THE No. 6 HOFFMAN QUICK VENT FLOAT AIR AND VACUUM VALVE

FOR VAPOR, VACUUM, MODULATING AND GRAVITY VACUUM SYSTEMS

Stops Steam and Water and Stops the Return of Air

Cuts show ⅔ actual size

EXTERIOR VIEW



SECTIONAL VIEW

The No. 6 Hoffman Quick Vent Float Air and Vacuum Valve

Made Entirely of Metal

Automatic, Non-Adjustable, Thermostatic

The No. 6 Hoffman Quick Vent Float Air and Vacuum Valve is designed to meet the demand for quick vent service in connection with large heating mains, vapor heating systems, blast or "Vento" coils or stacks, where both steam and water conditions must be met and controlled, and where it is desired to positively prevent the return of air through the valve.

The sectional cut on the opposite page clearly shows the mechanical construction of the valve and the exterior cut shows its outward appearance.

SPECIAL CONSTRUCTION FEATURE

The special construction feature of the No. 6 Valve is a chamber in the bottom of the valve. The top of this chamber is covered by a special spring bronze diaphragm (2). Two air tubes (1), one on each side of the bottom portion of the valve, lead into this chamber, and as these air tubes (1) are always open, any pressure within the valve tends to deflect the diaphragm (2). The upward tension of this diaphragm (2) is so adjusted that it requires at the most not over four ounces to deflect it.

SPECIAL OPERATIVE FEATURES

The operation of the No. 6 Hoffman Quick Vent Float Air and Vacuum Valve under steam and water conditions is exactly the same as the No. 5 valve.

By reason of the upward tension of the spring bronze diaphragm (2) the float (3) is normally raised and the float pin (4) is held tight against its seat (7). The air tubes (1) through the outer side of the bottom of the valve are always open to the atmosphere so that any pressure within the valve tends to deflect the diaphragm (2). The upward tension of this diaphragm (2) is so adjusted that it requires at the most not over four ounces to deflect it, and when deflected the float (3) follows, thus opening the valve. Temperature has nothing to do with this function of the valve. Pressure opens it and lack of pressure closes it. It lets the air out without steam or water leakage and once out it keeps it out. It is absolutely automatic, non-adjustable and dependable in all the functions it is designed to perform.

Where pressures above three pounds are liable to come to the valve the port (5) is 1/16-inch. For vapor vacuum heating jobs, where the pressure is three pounds or less the valve port (5) is 3/16-inch. By confining the maximum pressure to three pounds or less this valve meets every requirement demanded by the three-in-one system of heating, viz: pressure, vapor, vacuum. The standard port (5) of this valve is 3/16-inch, and unless otherwise specified the 3/16-inch port valve will be furnished.

The shank (6) thread is 3/8-inch iron pipe.

LIST PRICE, $12.00

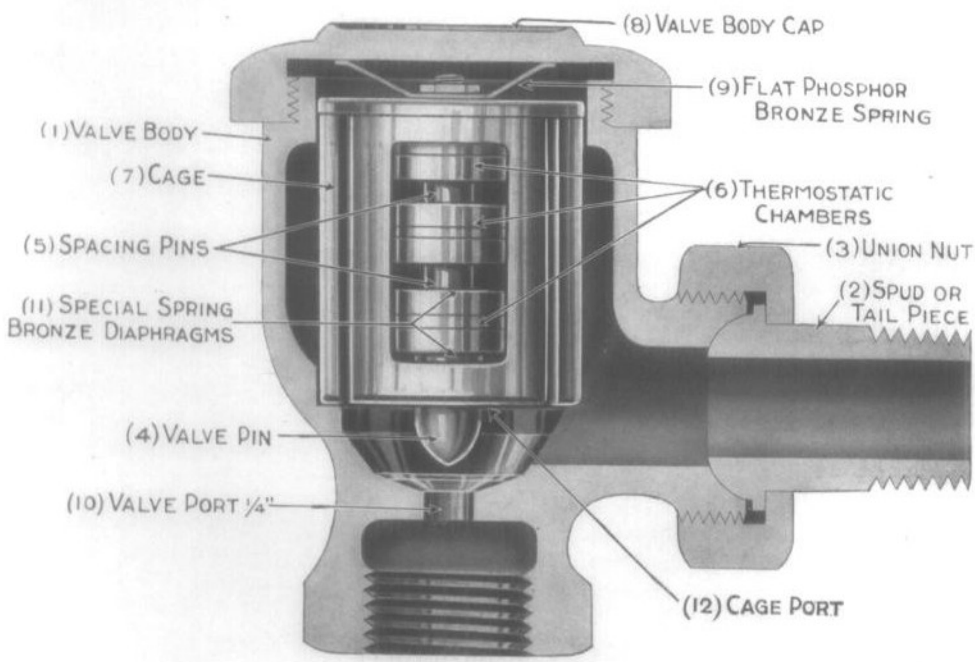
HOFFMAN VALVES

THE No. 8 HOFFMAN RETURN LINE VALVE

FOR VAPOR, VAPOR VACUUM, MODULATING AND VACUUM SYSTEMS

Cuts show No. 8 valve, actual size

EXTERIOR VIEW



SECTIONAL VIEW

Hoffman Return Line Valves

Nos. 8 and 9

Made Entirely of Metal

Automatic, Non-Adjustable, Thermostatic

For Vacuum or Vapor Return Line Service

The sectional cut on the opposite page clearly shows the mechanical construction of the valve and the exterior cut shows its outward appearance.

SPECIAL CONSTRUCTION FEATURES

The valve body (1), spud or tail piece (2), and union nut (3) are made of cast brass while the thermostatic parts (6), with the exception of the valve pin (4) which is made of Nickel Alloy, and the spacing posts (5), which are made of rod brass, are made entirely of drawn brass and special spring bronze. A radical departure has been made in the construction of the Hoffman Return Line Valve inasmuch as the thermostat is made of three chambers (6), each chamber having as its top and bottom a special spring bronze diaphragm (11) so arranged that the collective thermostatic movement of the six diaphragms (11) is imparted to the valve pin (4), thus insuring a full quarter inch movement of this valve. The three thermostatic chambers (6) are joined together in the center and are made collectively operative by having an opening through the center connections between the chambers (6). These chambers (6) are then suspended to the top of the cage (7), the valve pin (4) being rigidly attached to the bottom diaphragm (11). This method of construction insures that the thermostatic travel or movement of the chambers (6) will be absolutely vertical, and the valve pin (4) being also guided by the port (12) in the bottom of the cage (7) insures the proper seating of the valve pin (4). The housing, or cage (7), of the thermostatic chambers (6) is not in any way attached to the valve body (1), it being held in place by the pressure of the valve body cap (8) against a flat phosphor bronze spring (9) which is rigidly attached to the top of the cage (7). The Hoffman Return Line Valve has a full quarter inch travel to its valve port (10). To get this movement thermostatically, however, meant either the use of a single diaphragm of large diameter or of two or more diaphragms of small diameter. It is a well known law in mechanics that pressure increases in proportion as the area increases and the basis of the calculation is one square inch of area. A chamber which is sealed with a flexible diaphragm and subjected to an internal pressure multiplies the square inch pressure against the diaphragm as its area increases. A three-inch diameter having 7.068 square inches of area multiplies the pressure per square inch by this figure, i. e., 7.068, and thereby increases the pressure strain on the metal of the diaphragm to just that extent. If increase in area increases the pressure strain, decrease in area must likewise decrease the pressure strain. In designing the thermostatic chamber (6) of the Hoffman Return Line Valve this fact was kept in mind and the net area of the diaphragm (11) was made exactly one inch. Reducing the size of the diaphragm, the diaphragm movement, or travel, was correspondingly shortened and to overcome this lack of movement or travel, three chambers (6) with a flexible diaphragm (11) top and bottom to each chamber, making six diaphragms in all, were assembled in a cage or container (7) in such a manner that the movement or travel of the diaphragms (11) under thermostatic action was collectively imparted to the valve controlling the outlet port (10) of the valve proper. This gives a travel of a full quarter of an inch of the port controlling valve, and insures a free and unobstructed passage of the water from the radiator into the line, thereby minimizing the liability of dirt interfering with the proper operation of the valve.

In most thermostatic devices the expansible chamber is almost entirely filled with the volatile fluid, which vaporizes at a predetermined temperature. When this predetermined temperature is reached the internal pressure strain in the expansible chamber increases very rapidly as the temperature increases, in obedience to the well-known law in physics that when a liquid vaporizes it increases its volume over seventeen hundred times. There is, however, another law in physics, though not so well known, i.e., that a gas when subjected to a rising temperature, increases its volume only 1-491 part for each degree Fahr. added to the temperature. In designing the Hoffman Return Line Valve this latter law was kept in mind, and the thermostatic chambers (6) are charged under vacuum with so small a quantity of volatile fluid that when the temperature of 195° Fahr. is reached all of the liquid is vaporized into a gas which fills the vacuum in the chambers *without exerting pressure* against the diaphragms. As the temperature increases the internal pressure increases in obedience to the law governing the expansion of gas.

No. 8 Hoffman Return Line Valve is the ½-inch size, and is made in angle, straightway and right and left hand offset patterns. When straightway or offset patterns of this valve are wanted it should be so stated on the order or specifications. The No. 9 Hoffman Return Line Valve is the ¾-inch size, and is made in the angle pattern only.

The standard port of all No. 8 ½-inch valves is ¼-inch. The standard port of the No. 9 ¾-inch valve is ⅜-inch.

SPECIAL OPERATIVE FEATURES

The Hoffman Return Line Valve positively distinguishes between steam, air and water, freely passing the air and water but stopping the steam. It is non-adjustable. The thermostatic parts are interchangeable and may be shifted from one valve body to another of the same size without affecting the proper operation of the valve. Under atmosphere conditions the thermostat is set to expand at 200 degrees Fahr. Therefore, when steam, under atmosphere conditions (i. e., no pressure) but with a temperature of 212 degrees reaches the valve the thermostat fully and completely expands, tightly closing the exhaust port of the valve.

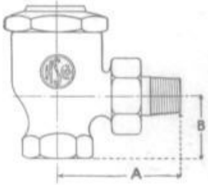
Steam pressure and steam temperature always travel together, that is, as the steam pressure increases the steam temperature rises. This rise in steam temperature tends to increase the internal pressure against the diaphragms by increasing the expansion of the volatile vapor inside of the thermostatic chamber, but inasmuch as the external steam pressure, which increases as the steam temperature rises, tends to collapse the diaphragms the net internal pressure against the diaphragms remains constant, no matter whether the pressure is atmosphere or 100 pounds above. Steam temperature at any given pressure always closes the valve, but a drop of 10 or 12 degrees in the temperature of the condensation or air at the valve opens it for the free passage of this condensation or air.

The maximum capacity of the No. 8 ½-inch Hoffman Return Line Valve is 200 square feet of cast iron radiation, while the maximum capacity of the No. 9 ¾-inch Hoffman Return Line Valve is 600 square feet of cast iron radiation. The above capacity figures are very conservative, as the real capacity of the valves is determined almost entirely by the temperature and pressure of the water at the valve, a low temperature (i. e., 25° below the temperature of the inflowing steam), plus a high pressure, very materially increasing the capacity of the valve over the above figures.

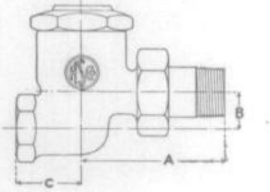
In determining the valve capacity for blast coils the condensing power of such coils should be calculated on the basis of being four to six times greater than radiator cast iron surface. The minimum outside temperature determining which factor to use.

HOFFMAN VALVE MEASUREMENTS

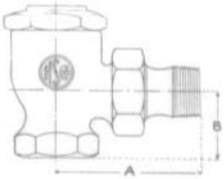
No. 8 ANGLE



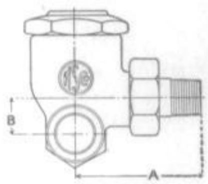
No. 8 STRAIGHTWAY



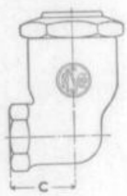
No. 9 ANGLE

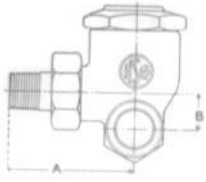


No. 8 RIGHT AND LEFT OFFSETS



RIGHT HAND





LEFT HAND

DATA AND LIST PRICES

STYLE	SIZE	MAXIMUM CAPACITY SQUARE FEET	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	LIST PRICE
No. 8 Angle	½″	200	$2\frac{23}{32}$″	$1\frac{9}{32}$″		$6.00
No. 8 Straightway . .	½″	200	$2\frac{23}{32}$″	$\frac{25}{32}$″	$1\frac{13}{32}$″	6.00
No. 8 Offset . . .	½″	200	$2\frac{23}{32}$″	$\frac{25}{32}$″	$1\frac{10}{32}$″	6.00
No. 9 Angle	¾″	600	$3\frac{6}{32}$″	$1\frac{11}{32}$″		8.00

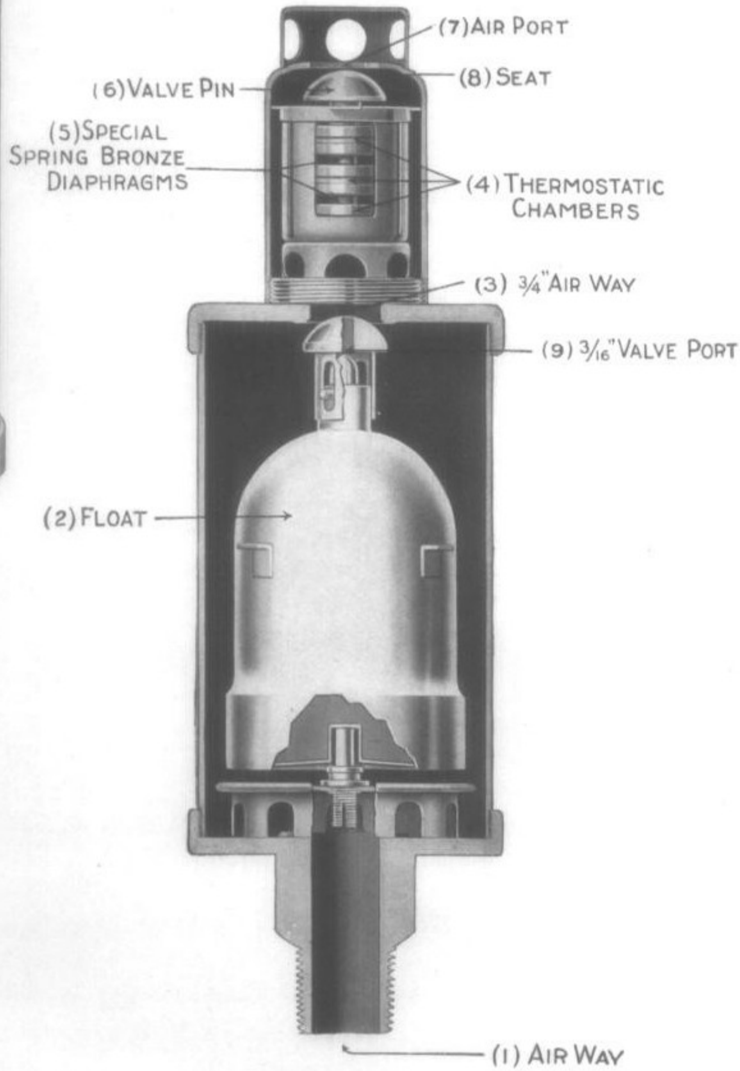
THE ONLY PERFECT THERMOSTATIC RADIATOR STEAM TRAP

THE No. 10 HOFFMAN VAPOR VALVE

FOR VENTING LARGE MAINS ON GRAVITY STEAM AND RETURN LINES ON VAPOR HEATING SYSTEM

Cuts show ½ actual size

EXTERIOR VIEW



SECTIONAL VIEW

The No. 10 Hoffman Vapor Valve

Made Entirely of Metal

Automatic, Non-Adjustable, Thermostatic

The sectional cut on the opposite page clearly shows the mechanical construction of the valve while the exterior cut shows its exterior appearance.

SPECIAL CONSTRUCTION FEATURES

The No. 10 Hoffman Vapor Valve is especially designed to fully and completely meet the demand for a large port automatic air valve in connection with vapor heating. The diameter of the airway (1) is ¾-inch and this diameter is maintained through the valve. It is essentially important in connection with vapor heating that there be no back pressure in the air line due to a restricted air port in connection with the venting appliance at the end of the return air line, and in designing the No. 10 Hoffman Vapor Valve this thought was kept constantly in mind. While in a correctly designed and operated vapor heating job the pressure at the boiler is never supposed to exceed 8 ounces, sometimes, generally due to the carelessness on the part of the operator, the boiler pressure does exceed 8 ounces and under such conditions water is liable to flood the venting valve. To meet this possible condition the No. 10 Hoffman Vapor Valve is equipped with a large buoyant float (2) which instantly and positively closes the valve port (3) when water reaches the valve. The defect in large port air valves heretofore has been that the float when once raised to its seat by a flood of water would remain there after the water receded. The cause of this is the force known as "velocity head" due to pressure. As long as pressure is maintained such a valve remains closed and there can be no further air relief from the system until there is a marked reduction in the pressure. Where the air port is over ¼-inch in diameter a pressure as low as 3 ounces will hold the ordinary float valve to its seat.

A glance at the sectional cut of the No. 10 Hoffman Vapor Valve will show how this defect is fully and successfully remedied by equipping the float (2) with a double port valve, the larger valve closing the ¾-inch airway (3) in the valve proper and the smaller valve closing a 3/16-inch port (9) which passes through the center of the ¾-inch valve. The 3/16-inch port (9) is normally always closed, the ¾-inch valve resting on top of the 3/16-inch valve.

A further glance at the sectional cut shows the thermostatic member (4) of the valve surmounting the float chamber. The thermostatic member (4) consists of three chambers, each chamber having as its top and bottom a special spring bronze flexible diaphragm (5) so arranged that the collective thermostatic movement of the six diaphragms (5) is imparted to the valve pin (6) which is attached to the upper diaphragm (5). Sufficient movement is thus insured so that when steam reaches the valve the port (7) is closed, thus preventing the passage of steam through the valve.

The three thermostatic members (4) are joined together in the center and are made collectively operative by having an opening through the center connection between the chambers.

The thermostatic member is of same construction as the No. 8, except that its pin is designed to close the ¾-inch port.

OPERATION

The valve is permanently adjusted at the factory and is 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 thermostatic chamber (4) vaporizes, generating a sufficient pressure to distend the flexible diaphragms (5) on the top and bottom of these chambers (4), thus pushing the valve pin (6) to its seat (8) which closes the valve port (7) tight to the passage of steam.

When water comes to the No. 10 Hoffman Vapor Valve the float (2) rises and closes the ¾-inch airway (3) and inasmuch as the 3/16-inch port (9) is already closed, both the airway (3) and port (9) are closed by this float action against the passage of water through the valve· When water drops away from the valve the float (2) follows with the receding water, instantly opening the 3/16-inch port (9) thus relieving the air through this port. Under pressure conditions of not exceeding 1 pound, this relief through the 3/16-inch port (9) permits the ¾-inch valve to drop and thereby restores the valve to normal service conditions, i.e., the ¾-inch airway (3) again being open through the valve. In case the pressure is over 1 pound and does not exceed 5 pounds the 3/16-inch valve is operative and the 3/16-inch port (9) is fully open, and due to the higher pressure causing greater air velocity, this size port is ample to freely vent the system.

The No. 10 Hoffman Vapor Valve distinguishes positively between air, steam and water, freely venting the air no matter whether this air is hot or cold but instantly closing against the passage of steam. It also closes tight against water leakage when water comes against the valve but opens wide for the free passage of air at pressure less than 1 pound and opens its 3/16-inch port (9) the instant water drops away from it at pressures of 5 pounds or less.

It is automatic, non-adjustable and dependable in all the functions it is designed to meet.

LIST PRICE, $25.00

The Hoffman Equalizing Loop

Automatic, Non-Adjustable

Its Use Makes Vapor Heating Safe

Because It

Insures a constant unvarying boiler water line by maintaining a fixed pressure differential of 10 oz. between the main steam line and the return air line of a "*Vapor Heating System*," when the boiler pressure is above 10 oz.

No cracked boiler sections where the "Hoffman Equalizing Loop" is used.

The sectional cut on the following page clearly shows the mechanical construction of the Equalizing Loop and the exterior cut shows its outward appearance.

SPECIAL CONSTRUCTION FEATURES

The Hoffman Equalizing Loop is made entirely of metal, without moving parts or mechanical device of any kind. The upper part of the loop, as shown in the accompanying sectional cut, is made of a special casting having a diaphragm just above the lower side inlet, which divides the loop into upper and lower chambers.

This special casting is lengthened by means of a 2-inch iron pipe, the bottom of which is capped with a 2 x ½-inch reducer, which in turn is sealed with a ½-inch brass plug, which is easily removable for draining and cleaning the loop of sediment, etc.

The upper and lower side openings of the loop are tapped for 1¼-inch iron pipe. The upper and lower chambers are connected by means of two ½-inch brass pipes which are screwed into the diaphragm, the bottom end of one of these pipes (No. 2), being slotted vertically, with its upper end extending above the diaphragm to the center of the upper side opening. The upper end of the other pipe (No. 1) being flush with the top of the diaphragm. The upper opening in the special casting is sealed with a 2-inch plug.

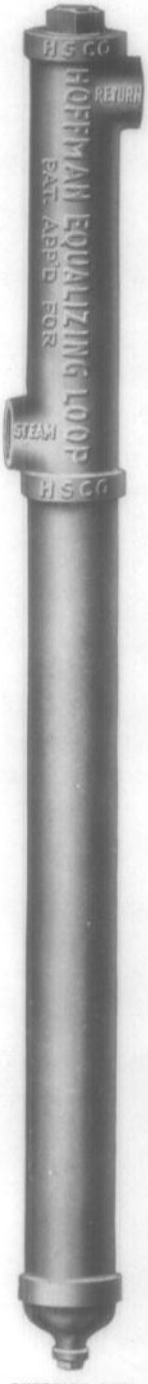
OPERATION OF THE HOFFMAN EQUALIZING LOOP

The operation of the Hoffman Equalizing Loop is peculiar, inasmuch as it absolutely maintains an unvarying water line in the boiler, independent of boiler pressure, that is, no matter whether the boiler pressure is 8 oz. or 5 lbs., the water line in the boiler will maintain at a constant level. It also maintains, when the boiler pressure is more than 10 oz., a fixed pressure difference of 10 oz. between the main steam line from the boiler and the main air return line from the radiators. In other words, the pressure in the steam main is always 10 oz. ahead of the pressure in the return line when the boiler pressure is above 10 oz. The maintenance of

THE HOFFMAN EQUALIZING LOOP

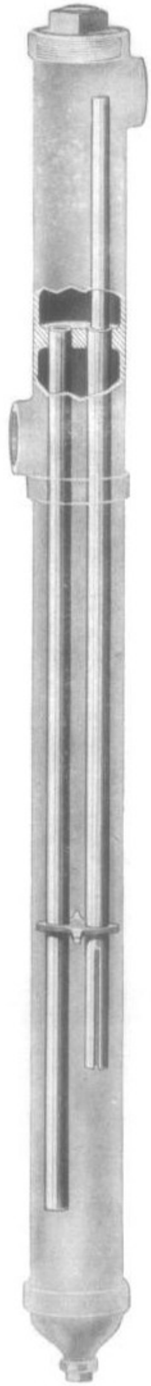
FOR VAPOR HEATING

Cuts show approximately ¼ actual size



EXTERIOR VIEW

Length over all, 31 inches.
Distance between steam and return openings 6¼ inches.
Steam and return openings tapped 1¼ inch.



PHANTOM VIEW
SHOWING INTERIOR

this pressure difference between the steam main and the return line insures a continuous flow of steam into and through the radiators. It also means that should an out-of-service radiator be put into service when the boiler pressure is 1 lb. or over, that this radiator will heat just as quickly under boiler pressures of 1 lb. or over as it will when boiler pressure is maintained at 8 oz., because the pressure at the inlet valve is 10 oz. more than the pressure at the outlet valve.

The illustrations on pages 36, 37, and 38 show different ways in which the Hoffman Equalizing Loop may be installed.

The lower or steam connection to the loop must always be directly connected either to the boiler or to the steam main, with the pitching towards the loop. The upper or return connection of the loop must always be connected to a vertical return line, and this connection should be at least 1 inch below the steam line to which the loop is connected, so when the condensation from the steam line flows into the loop, it will pass from the lower chamber into the upper chamber of the loop, and thence directly into the vertical return, by gravity.

THE OPERATION OF THE LOOP IS AS FOLLOWS:

As steam flows through the lines connected to the loop, a certain amount of condensation flows with it, gradually filling the loop. As the pressure, however, begins to build up, the water is pushed down in the loop, passing from the lower chamber into the upper chamber through the ½-inch pipes, and over-flowing from this chamber into the vertical return line.

The instant, however, the boiler pressure reaches 10 oz., the water in the lower chamber is sufficiently displaced to partially uncover the slot in the slotted pipe (No. 2), and the steam which has been displacing the water in the lower chamber, passes through this slot to a point above the water level in the upper chamber, and from thence through the vertical return line to the air valve located on the top of this line. This valve, being thermostatic, is instantly closed by the temperature of the steam, and by this action changes the return line from an open line to a closed one, thus tending to build up the pressure in this line as boiler pressure increases. At this point in the operation of the loop, if for any reason, the pressure in the steam main tends to show a greater difference than 10 oz. over the return line, instantly the water column which is being maintained in the loop by the water of condensation and which is constantly on guard in maintaining a pressure difference of 10 oz. in the steam main over the return line, is pushed further down in the lower chamber of the loop, thereby uncovering a larger opening in the slotted pipe which permits an increased volume of steam to be passed into the return line, thus checking the increase in the differential. If, on the other hand, the difference between the two lines becomes less than 10 oz., the water in the upper chamber of the loop, which is held there by the 10 oz. differential, flows back into the lower chamber through pipe (No. 1), thus sealing the slot in pipe (No. 2), until the differential again stands at 10 oz. The continued sealing of the slot in pipe (No. 2) cuts off the steam flow into the return line, and also its contact with the thermostatic air valve, which then opens, thus changing the return line from a closed line back to an open one.

Because of this water column in the loop, so long as the boiler pressure is above 10 oz., the difference in pressure between the two lines is exactly 10 oz. no matter whether the boiler pressure is 1 lb. or 10 lbs.

This 10 oz. differential causes the water to stand in the vertical return line at the boiler just 17 inches higher than the water line in the boiler, and the water loss from the boiler is measured by the quantity contained in the vertical return pipe to a height of 17 inches.

To obtain a proper service from a vapor heating job equipped with the Hoffman Equalizing Loop, it is necessary to use in conjunction therewith, a thermostatic return line valve on the return end of each radiator or heating unit, the thermostatic member of which is in the steam chamber of the valve and subject to the conditions in the radiator, and also to use a highly sensitive air relief valve on the discharge end of the return line, a valve that will instantly distinguish between steam and air, stopping the passage of steam, but freely permitting the outward passage of air from the system. For such service we recommend the Hoffman No. 10 Vapor Valve, as this valve has a full $\frac{3}{4}$-inch port, being large enough to pass all air coming to it, without back pressure.

A vapor heating job equipped with a No. 8 Hoffman Return Line Valve on the return end of the radiator, with the Hoffman No. 10 Valve on the air return line, and a Hoffman Equalizing Loop between the main supply and return lines, will give the user maximum heat efficiency, because pressure conditions at the boiler will in no way affect the water line of the boiler, and the apparatus, therefore, can be run under vapor or pressure conditions, according to the demands of the weather.

The use of Hoffman Specialties in connection with Vapor Heating Systems, make such systems *Safe*, *Effective* and *Economical*.

LIST PRICE, $35.00

Heating with Steam

It has long been a recognized fact that steam was the ideal heating agent, due to its expansive force, velocity, and flexibility, but the two stumbling blocks to its successful utilization have been AIR AND CONDENSATION (water). The condensation problem has always been regarded as the simpler of the two disturbing factors, as the proper care of the condensation resolves itself to a question of simply proportioning the pipe capacity to the condensation volume, and so grading the pipe line that the water flow will be unobstructed to its destination.

The rate of condensation being known (i. e., from 1-5 to 1-3 of a pound of water per foot of radiation per hour in 70 deg. air), the determination of the volume of condensation and, in turn, the size of the pipe to carry it is merely a question of mathematics, i. e., multiplying the condensation rate per square foot of radiation by the number of square feet of radiation involved.

THE BIG STUMBLING BLOCK to the successful utilization of steam as a heating agent has always been, and always will be—air. Air and steam are two distinct, separate bodies and cannot occupy the same space at the same time. When the apparatus is cold, it is full of air, and this air must be displaced before steam can be circulated and its heat utilized. The fact that no steam heating apparatus can be a success without some form of air relief in connection with each individual heating unit has had the effect of stimulating the designing and marketing of air relief devices or valves, but due to the fact that most of such valves have not been equipped with a thermostatic member sufficiently sensitive to a thermal change as to quickly distinguish between the temperature of steam and the temperature of air, the records show failures far outnumbering the successes.

The writer of this article, who is also the designer of all Hoffman valves, however, did recognize the fact after a long and varied experience that an air venting valve in connection with a low pressure steam heating apparatus must be so designed that the thermostatic member will quickly and effectively distinguish between steam and air, freely passing all of the air that might come to it, but stopping the passage of steam.

The thermostatic member of all Hoffman valves is set at 195 deg., which means that the thermostat is inoperative at temperature below 195 deg., there being no movement whatever, but as soon as a temperature of 195 deg. or higher reaches a Hoffman valve, it closes and stops the passage of steam.

The necessity of having the thermostatic member of an air relief valve sensitive to a slight temperature change will be acknowledged when the fact that steam, when air is being exhausted from the heating unit by steam pressure, almost always reaches the air valve, and closes it before all of the air is vented. The fact also that air is being constantly released in the radiation by the condensation of steam means that, unless the thermostatic member of the valve is sensitive to a slight temperature change, that air will be trapped in the heating unit and, therefore, the full efficiency of this heating unit will not be utilized.

Hoffman valves, each and every one of them, are so designed that the thermostatic member instantly detects the slightest bit of air in the heating unit to which it is connected, and opens wide for the free passage of this air, but thermostatically closes again, however, the instant steam touches it. THIS MEANS FULL EFFICIENCY OF EVERY INCH OF RADIATING SURFACE.

There is a Hoffman Valve for every venting service in connection with low pressure steam heating, and each valve is supreme in its particular field.

HOFFMAN VALVES

Vapor Heating

THERE is no question but what vapor heating is today being given more serious consideration by those interested in heating than any other known system. The term "vapor heating," however, is in a sense, a misnomer, because vapor heating is really nothing more or less than low pressure steam heating, the pressure being registered in ounces instead of pounds.

All vapor heating systems are two-pipe, i. e., having a steam inlet into and a condensation outlet from each radiator. Hot water pattern radiators are used and almost always each radiator is valved with a quick opening modulating feed valve connected to the radiator at the top, while the bottom end of the radiator is valved either with a thermostatic return line valve, a water sealed elbow, or an impulse check valve.

Unprejudiced engineering thought, however, is practically a unit in stating that better and more economical results are obtained in connection with vapor heating systems by using a thermostatic valve on the return end of the radiator instead of a water sealed elbow or check valve.

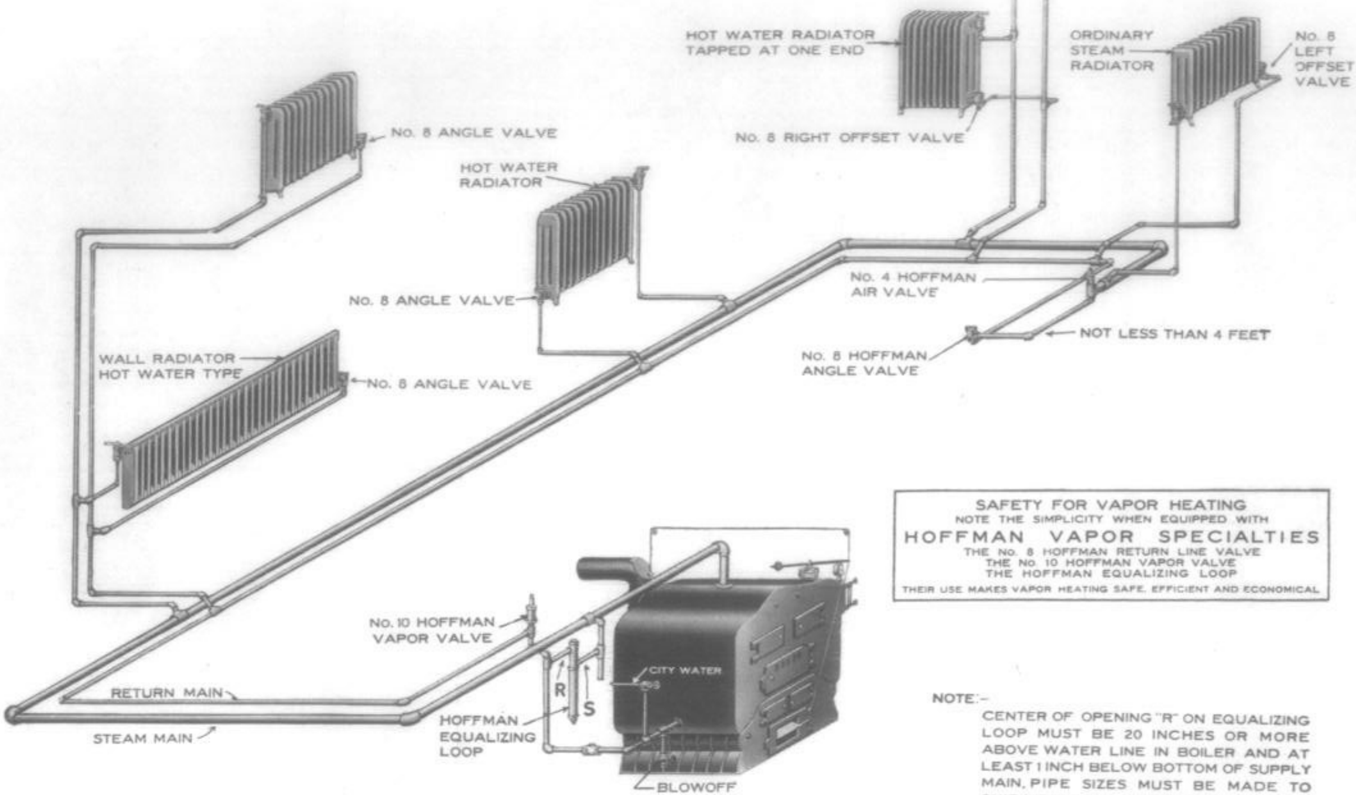
The function of a thermostatic return line valve is to distinguish promptly between steam, air and water, freely passing both air and water, but closing tight against the passage of steam entering the return line.

Where such valves are used, radiation as a heating unit, may be figured on the same basis and according to the same rule employed in estimating the amount of steam radiation necessary to heat a given space. Where check valves or water sealed elbows are used on the return end of the radiator, it is necessary to increase the size of the radiator from 25% to 50% beyond the amount necessary where thermostatic return line valves are used.

The one great problem confronting the heating engineer who desires to design for his client a vapor heating system is the difficulty of so controlling the draft dampers of the boiler that pressure will be positively maintained at all times within a limited pressure range, the range being determined by the height of the return line above the water line in the boiler, as this height determines the extreme range of pressure which can be carried on the boiler without flooding the return lines with condensation and thereby depleting the water reserve in the boiler. Of course, a positive control of the fire will insure a proper control of the pressure, but it is generally conceded that this is a very difficult problem. The turning off of several radiators means a demand for less steam, which in turn means a demand for less fire service, and this fire service must be instantly checked or the pressure is going to rise above the danger point. Cleaning out and refreshing the fire in case there is a sudden change of outside temperature will also involve what might be called a fire head which is very hard to control by dampers, but unless it is controlled there is danger of carrying pressure beyond a safe limit.

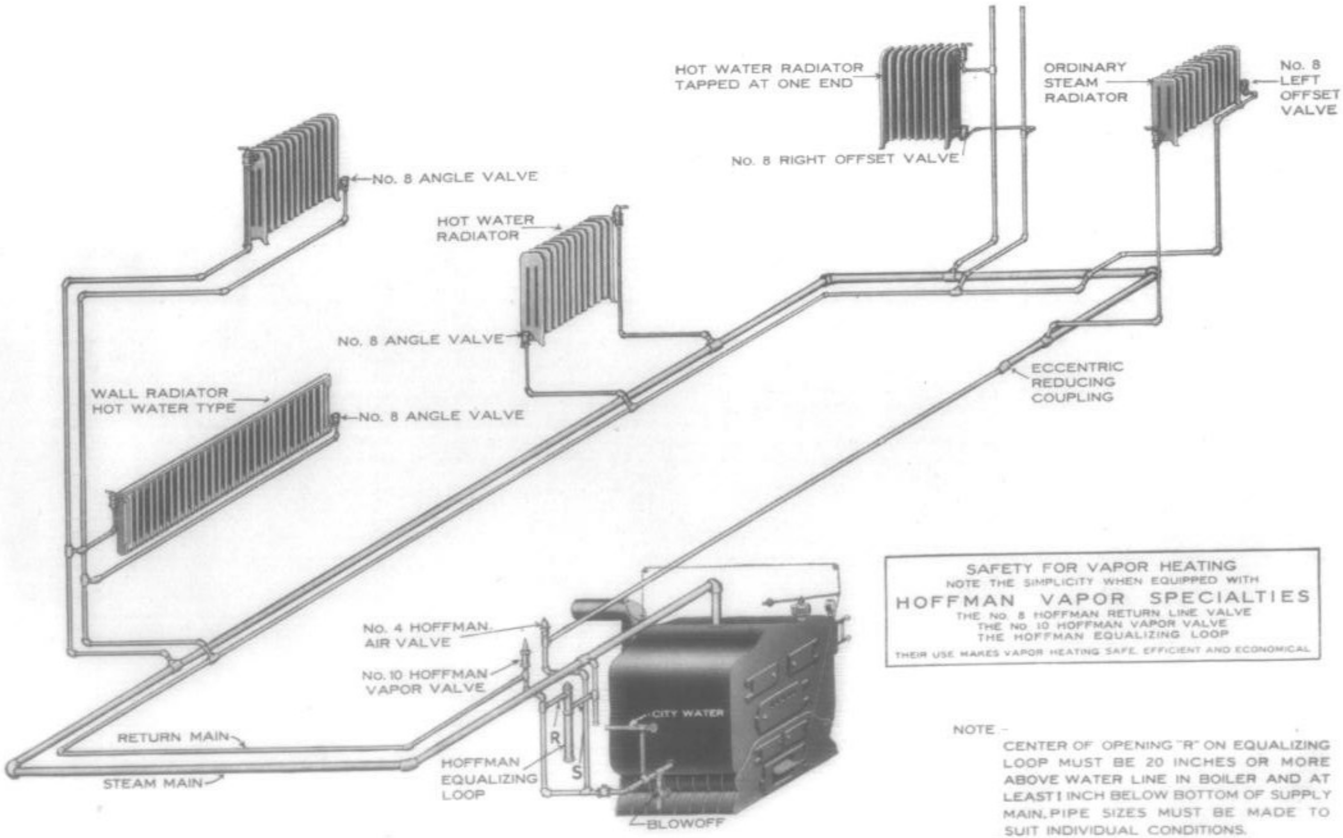
VAPOR HEATING IS THE IDEAL SYSTEM—no question about it—but in order to obtain *maximum heating efficiency* from such a system it is absolutely necessary to use *the hot water type of radiator, a sensitive boiler control,* adapted to control the dampers of the boiler under ounces of pressure, *a modulating radiator valve,* connected to the top of each radiator and adapted to control the amount of steam for the service required *a thermostatic valve or trap* (such as the HOFFMAN No. 8 RETURN LINE VALVE) on the return end of each radiator, *a sensitive air venting valve* (such as the HOFFMAN No. 10 VAPOR VALVE) on the discharge end of the return line, and lastly, some simple protective device (such as the HOFFMAN EQUALIZING LOOP), which will *absolutely insure condensation return to the boiler independent of boiler pressure.*

This company does not advocate or sell any special patented system of Vapor Heating. We do, however, earnestly call special attention of the prospective user, the designing engineer, and the installing steam fitter, to the vapor heating specialties manufactured by this company which are fully and completely described in this catalogue, the collective use of which we know will make vapor heating SAFE, EFFICIENT and ECONOMICAL.



SAFETY FOR VAPOR HEATING
NOTE THE SIMPLICITY WHEN EQUIPPED WITH
HOFFMAN VAPOR SPECIALTIES
THE No. 8 HOFFMAN RETURN LINE VALVE
THE No. 10 HOFFMAN VAPOR VALVE
THE HOFFMAN EQUALIZING LOOP
THEIR USE MAKES VAPOR HEATING SAFE, EFFICIENT AND ECONOMICAL

NOTE:—
CENTER OF OPENING "R" ON EQUALIZING LOOP MUST BE 20 INCHES OR MORE ABOVE WATER LINE IN BOILER AND AT LEAST 1 INCH BELOW BOTTOM OF SUPPLY MAIN. PIPE SIZES MUST BE MADE TO SUIT INDIVIDUAL CONDITIONS.



SAFETY FOR VAPOR HEATING
NOTE THE SIMPLICITY WHEN EQUIPPED WITH
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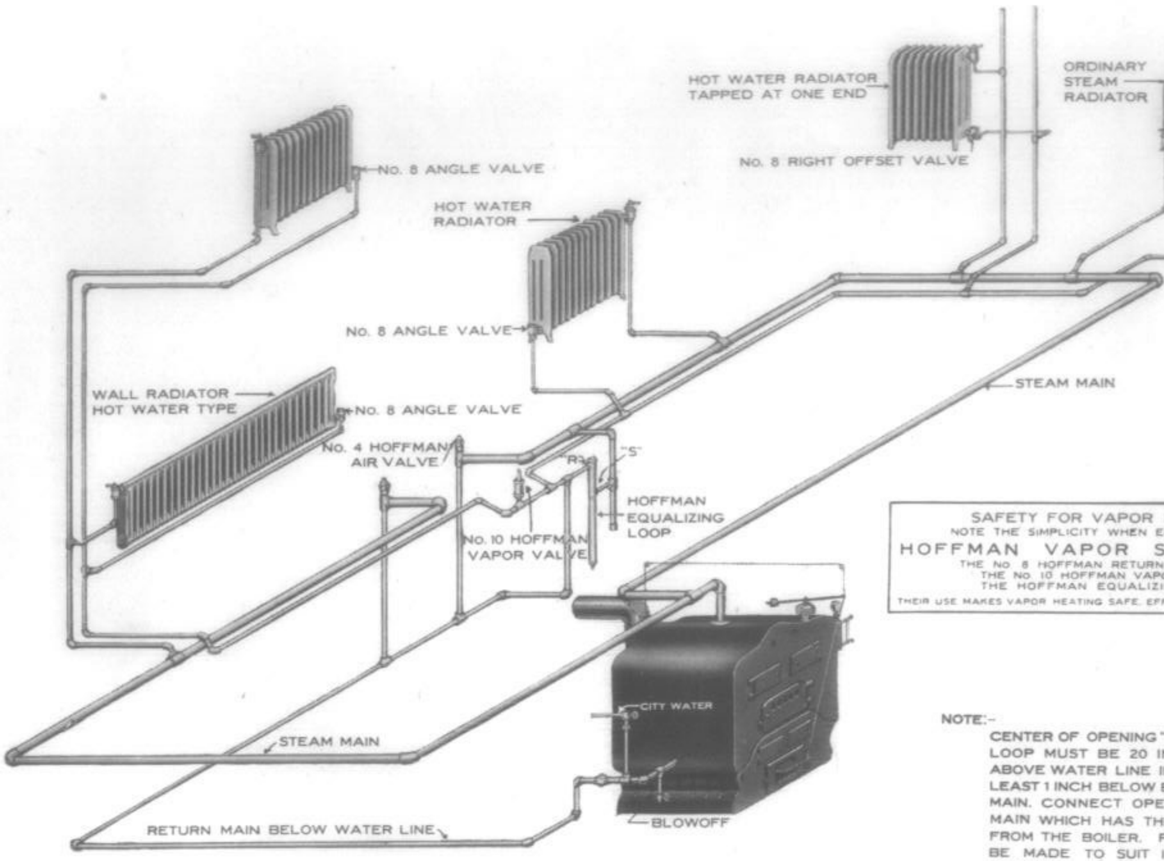

SAFETY FOR VAPOR HEATING
NOTE THE SIMPLICITY WHEN EQUIPPED WITH
HOFFMAN VAPOR SPECIALTIES
THE No. 8 HOFFMAN RETURN LINE VALVE
THE No. 10 HOFFMAN VAPOR VALVE
THE HOFFMAN EQUALIZING LOOP
THEIR USE MAKES VAPOR HEATING SAFE, EFFICIENT AND ECONOMICAL

NOTE:– CENTER OF OPENING "R" ON EQUALIZING LOOP MUST BE 20 INCHES OR MORE ABOVE WATER LINE IN BOILER AND AT LEAST 1 INCH BELOW BOTTOM OF SUPPLY MAIN. CONNECT OPENING "S" TO THE MAIN WHICH HAS THE SHORTEST RUN FROM THE BOILER. PIPE SIZES MUST BE MADE TO SUIT INDIVIDUAL CONDITIONS.