

C. A. BAHRUTH.
VALVE.
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1,086,982.

Patented Feb. 10, 1914.

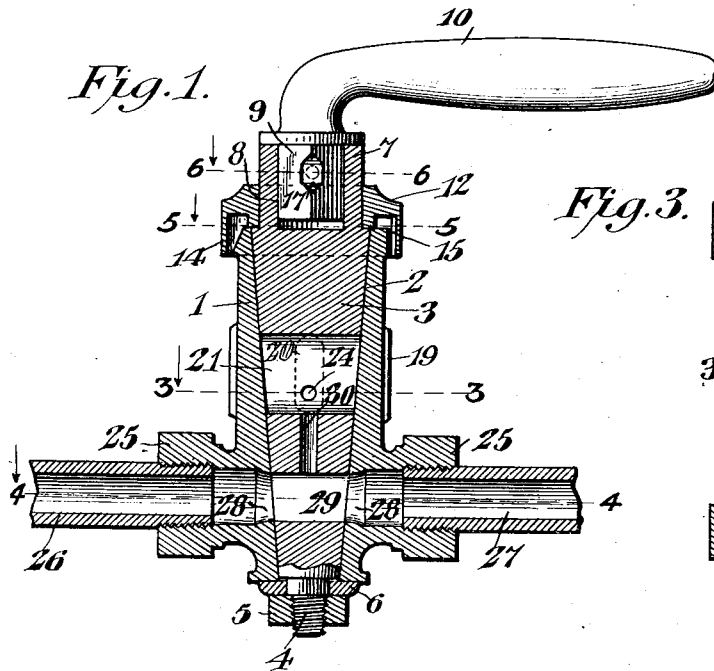


Fig. 3.

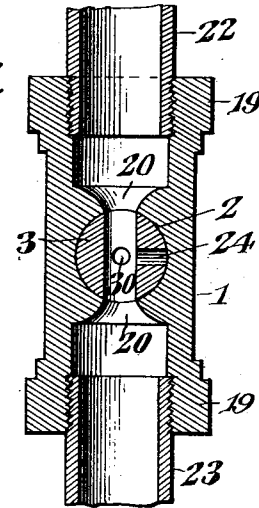


Fig. 2.

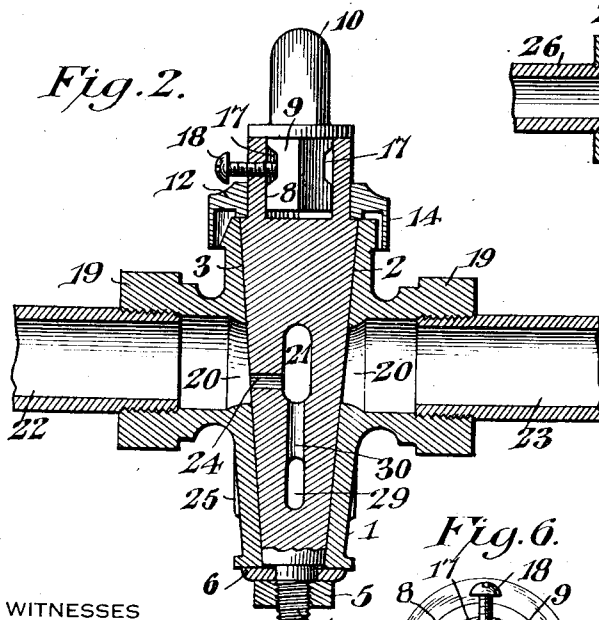


Fig. 4.

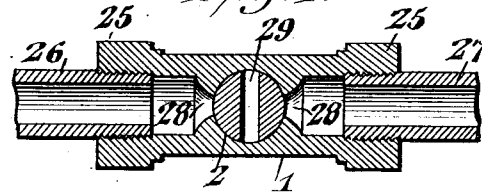


Fig. 5.

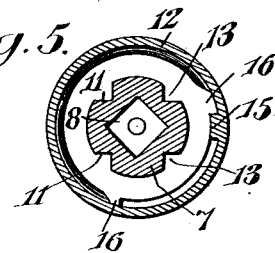
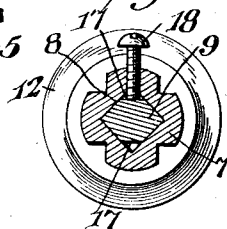


Fig. 6.



WITNESSES

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VALVE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CLARENCE A. BAHRUTH, a citizen of the United States, residing at Arkansas City, in the county of Cowley and State of Kansas, have invented a new and useful Valve, of which the following is a specification.

This invention has reference to improvements in valves, and is designed more particularly for use by plumbers in connection with water systems as a combined cut off and drain valve for the system.

In a water system installed in a building, usually a dwelling, it is customary to have cold water pipes supplying various apparatus throughout the building, and also hot water pipes fed from a hot water boiler receiving water from the cold water system and supplying it to the distributing pipes of the hot water system. The cut-off valve is usually located at some low point where the water supply pipe enters the building, so that the supply may be cut off at such entering point. Such cut off valves are customarily provided with a small bleeding passage placed in communication with the house side of the system when the valve is in the cut off position, so that the house system of water pipes will slowly drain and thereby empty the pipes, so that in the event of the house or building being unoccupied during freezing weather, freezing of the pipes is avoided. The ordinary cut off valves do not, however, provide for the draining of the hot water system, which is supplied from the hot water boiler through the top thereof and while the cold water system becomes drained without trouble through the bleeding side of the cut off valve, it is necessary to separately drain the hot water system, and this is sometimes overlooked and material damage results should freezing occur.

The valve of the present invention retains the characteristics of the ordinary cut off main supply valve with the additional feature of another valve structure forming an extension of the first-named valve and controlling a drain system connected with a hot water side of the house system in such manner that when the main supply valve is turned to the cut off position the cold water side will bleed into a system controlled by the second valve structure or continuation

and the latter will bleed the hot water system, thus by the simple act of turning the main supply valve to the off position, the entire house system of both the cold and the hot water side will drain and the water thus drained out of the system may pass to a sewer or other means of disposal of such water. Moreover, the drainage means for the hot water side of the system is made relatively large to provide for quick drainage, since it is not at all uncommon in house systems to have a very much larger proportion of water constantly in the hot water side than in the cold water side, and while a small bleeding passage is sufficient for the cold water side, a much larger duct is needed for the hot water side to drain it within a relatively short time. In dwelling houses it may be that it is desirable to leave the house vacant during freezing weather, and perhaps during extreme cold, and in such instance it is necessary to allow the fire furnishing the heat for the hot water side of the system to die down and go out before the system is drained in order to prevent accidents. If the small bleeding ducts usually employed were depended upon for the bleeding of the hot water system it might be that the water would chill and even freeze before the drainage of the pipes was anywhere near completed, and for this reason the present invention provides for a much more rapid drainage of the hot water side than is customary for the cold water side, and this drainage system also receives all the drainage from the cold water side, so that it is made relatively large.

The invention will be best understood from a consideration of the following detailed description, taken in connection with the accompanying drawings forming a part of this specification, with the further understanding that while the drawings show a practical form of the invention, the latter is not confined to any strict conformity with the showing of the drawings, but may be changed and modified so long as such changes and modifications mark no material departure from the salient features of the invention.

In the drawings:—Figure 1 is a central longitudinal section through the valve on the line of the hot water drainage parts. Fig. 2 is a section similar to Fig. 1, but taken at

right angles to the plane of the section of Fig. 1. Fig. 3 is a section on the line 3—3 of Fig. 1 with distant parts omitted. Fig. 4 is a section on the line 4—4 of Fig. 1 but showing the hot water draining valve in the closed position. Fig. 5 is a detail section on the line 5—5 of Fig. 1. Fig. 6 is a detail section on the line 6—6 of Fig. 1.

Referring to the drawings there is shown a shell or casing 1 constituting the body member of the valve having a longitudinal taper bore 2, in which is fitted by a ground joint a taper plug 3, this plug being similar in shape to, but considerably longer than the taper plugs of cut off valves as customarily constructed. At the smaller end the plug 3 is formed with an axially threaded continuation 4 as is customary, and to this continuation 4 there is applied a nut 5 and washer 6 interposed between the nut and the corresponding small end of the plug, so that the plug may be maintained in snug fit with the taper bore of the casing and yet be free to be turned. At the large end the plug 3 is provided with an axial socket extension 7, which socket extension has an axial entering cavity or socket 8 preferably of square cross section, although not necessarily so, and this socket is designed to receive a similarly shaped part 9 of a lever handle 10 suitably bent so that the handle may be employed to turn the plug about its longitudinal axis in the usual manner. The exterior of the socket extension 7 may be substantially cylindrical and is formed at appropriate points with longitudinal grooves 11 shown as of triangular cross section, but not of necessity of such cross section. Applied to the extension 7 is a cap 12 with a central opening having lugs 13 directed toward the center of the opening and shaped to engage in the grooves 11, so that the cap may be slipped upon the stem 7 and will turn therewith because of the engagement of the lugs 13 in the grooves 11. The cap 12 is formed with a skirt 14 of a length to embrace the casing about the larger end of the plug, and on the interior of this skirt there is an inwardly directed boss 15 in the path of which are spaced stop members 16 formed on the exterior of the casing at the end embraced by the skirt 14. The boss 15 and stops 16 determine the turning movement of the plug 3, which turning movement is customarily through an arc of about ninety degrees. The portion 9 of the handle 10 is formed at appropriate points with indentations 17 to be engaged by a set screw 18 extending through the slot extension 7 at an appropriate point, this screw besides serving to hold the handle in place also serves to retain the cap 12 in place.

At appropriate points the casing 1 is formed with diametrically opposite necks 19, and in line with these necks the walls of the casing have elongated ports 20 opening into

the bore 2, while the plug 3 has a diametric passage 21 of a size and shape to match the ports 20, such passage being customarily elongated in the direction of the longitudinal axis of the plug.

The necks 19 are suitably threaded to receive pipes 22, 23, one of which, say the pipe 23, is connected up to a source of water supply, such as a street main, the valve structure being usually located at some low point in the building to be supplied with water and close to the wall of the building through which a service pipe is carried. The pipe 22 may be taken as indicative of the pipe by which water is directed from the valve to both the cold water and hot water systems of the building and through which the cold water may drain, but not the hot water, since the usual installations are such that the hot water will not drain through the main service pipe back to the cut off valve. Providing for the drainage of the cold water system the plug 3 is formed with a small bleeding port 24 in position to be moved into alinement with the port 20 communicating with the house pipe 22 when the passage or port 21 through the plug 3 is in the cut off position, which position is transverse to the longitudinal center line of the necks 19.

At a point closer to the small end of the elongated plug 3 than the necks 19 the casing 1 is formed with other diametrically disposed necks 25 entered by respective pipes 26, 27, and these necks open through the ports 28 into the bore of the casing 1, while the plug 3 is formed with a through port or passage 29, so located as to be moved into coincidence with the ports 28 or into a position at substantially right angles to the first position, thus cutting off communication between the ports 28 and the port 29. The port or passage 21 is in communication with the port or passage 29 through a duct 30 which may be of a size corresponding to the size of the bleeding port 24 and in the structure shown this duct 30 is in the longitudinal axis of the plug 3. The two ports 21 and 29 are therefore in constant communication.

The ports 21 and 29 are parallel one with the other and are in the same diametric plane of the plug but the necks 19 and 25 are in planes displaced by substantially ninety degrees, so that when the port 21 is in coincidence with the ports 20, as shown in Fig. 3, in which position the port 24 is blanked by the walls of the bore, the port 29 is at right angles to the ports 28 and therefore communication between these ports is cut off by the walls of the plug. When the pipes 26 and 27 are in communication through the ports 28 and 29, as shown in Fig. 1, the pipes 22 and 23 have the plug interposed between them with the ports 21 at right angles to the center line of the pipes 22 and 23, although the pipe 22 communi-

cates with the port 21 through the bleeding port 24 and the port 21 is in communication with the port 29 through the duct or passage 30 and the port 29 is under these circumstances in line with the ports 28, so that the pipes 26 and 27 are in free communication with each other through the port 29 and the pipe 22 is in communication with the port 29 and therefore with the pipes 26 and 27 through the bleeding port 24, the main port 21 and the passage 30.

The pipe 26 may be considered as communicating with a low point of the hot water side of the house system of water pipes, say, with the bottom of the usual hot water boiler, or a low point in the cold water pipe leading to the usual waterback of the stove employed in the house and the pipe 27 may be considered as communicating with a sewer or other disposal means for waste water.

Suppose the plug is in the position indicated in Fig. 3, then water may flow freely through the pipe 23 to the pipe 22 by way of the port 21 and the water system of the house be thereby constantly supplied. In this position of the parts the port 29 is closed to the pipes 26 and 27, as indicated in Fig. 4 and communication from the hot water side of the system to the drain is cut off.

Suppose that it is desirable to drain the water system of the house, then the valve is turned so that communication between the pipes 22 and 23 is cut off by the portion of the plug containing the port 21, in which case the parts are in the position shown in Fig. 1 where the lever handle 10 may be in line with the pipes 26 and 27, thus indicating that the port 29 is now in communication with these pipes. Water in the system will flow through the pipe 26 and ports 28 and 29 to the pipe 27, and be conveyed thereby to the sewer or other means of disposal, it being understood, of course, that the valve structure of the present invention is located at a low point, as is customary. The pipe 26 if in communication with a low point on the hot water system of the house, and being of relatively large size, though not of such large size as the service pipe, will permit the water in the hot water side of the system to rapidly drain. At the same time the bleeding port 24 being in communication with the pipe 22 and also with the port 29 causes the draining of the cold water side of the system, but this cold water side being usually of much less capacity than the hot water side, need not drain so rapidly and will find ample escape through the passage 30 into the common drain pipe 27. By the simple act of turning the valve from the open to the cut off position so far as the main supply is concerned, the entire water service system of the house or building is

put into draining communication with a waste pipe by which the water from all parts of the system may find escape so that the system is thoroughly drained, and, therefore, effectively protected from damage by frost.

What is claimed is:—

1. A compound drain valve provided with an elongated casing, a plug valve member therein having ports therethrough separated in the direction of the length of the plug and in communication longitudinal of the plug, one of the ports through the plug having a bleeding passage or port leading therefrom in a direction substantially at right angles thereto and to the longitudinal axis of the plug, and the casing being provided with pairs of pipe receiving necks displaced one from the other in the direction of the length of the casing and matching the ports through the plug, the necks of each pair being in diametric alinement one with the other and the necks of one pair being arranged at substantially right angles to the necks of the other pair.

2. A valve comprising an axially elongated casing having pairs of pipe receiving necks with the necks of each pair in diametric alinement and the necks of one pair at substantially right angles to those of the other and displaced longitudinally of the casing, a plug valve in the casing having ports therethrough in parallel relation one to the other and transversely of the longitudinal axis of the plug and separated in the direction of the longitudinal axis a distance equal to the like separation of one pair of necks from the other, the ports through the plug being in permanent communication through a passage longitudinal of the plug, and said plug having at its larger end an axial socket continuation, a handle adapted to the socket for turning the plug, and a cap member carried by the socket and embracing the corresponding end of the casing, said cap member and casing having coacting stop members for limiting the turning movement of the plug, and the cap member and socket extension having coacting parts for causing rotation of the cap member with the plug.

3. A valve structure provided with an elongated plug valve member having diametric ports therethrough spaced apart in the direction of the longitudinal axis of the plug member and provided with a connecting passage extending longitudinally of the plug member, one of the ports having a passage leading therefrom through the walls of the plug at substantially right angles to the length of the port and to the longitudinal axis of the plug, the other port member being of larger cross-sectional area than either the port leading from the first-named port member or the passage connecting the first-

named port members, and said valve structure being provided with a casing seating the plug valve and having two pairs of diametrically disposed necks, the necks of one
5 pair being at substantially right angles to the necks of the other and spaced apart lengthwise of the casing corresponding to the spacing of the first-named ports through the plug, the necks of one pair being re-
10 lated in cross sectional area to those of the

other corresponding to the relative cross-sectional area of the first-named ports through the plug.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CLARENCE A. BAHRUTH.

Witnesses:

NEWELL BEKER,
W. D. KREAMER.