My present invention relates generally to plumbing systems. More particularly it relates to a novel improved arrangement and remote control valve device for not only completely draining all pipes inside the house, but also all the pipe connections within the building walls, as well as for a positive cut-off of all water supply at the exterior of the building wall and below the ground level and the frost line at the point of connection with the main water supply line before it feeds in through the usual eight to eighteen inches of building wall and pipe therein into the house plumbing line.

Prior to this invention, to drain a house water system, the main water supply could only be cut off within the house, i.e., inside the exterior building wall, and the usual drain plugs then removed to drain the water from the interior piping. However, the sections of pipe inside the exterior building wall do not drain, but remain full of water as they are not cut-off from the main supply line and if the weather should be cold enough the water in these wall-mounted pipe sections and connections will freeze, burst the pipe and cause damage and require repair or replacement.

It is an object of the invention to provide novel means, whereby the main water supply line buried below ground level and the freeze line may be cut off outside the building wall before it enters the building through the wall.

Another object is to provide a novel unit comprising a valve and remotely positioned operating handle, said valve seating in the end of an elongated pipe section extensible through the thickness of a building wall for coupling with the main water supply line buried below the freeze line in the ground, which is operable within the building.

A further object is to provide in a novel remote cut-off unit a replaceable valve seat adapted to be removed and readily replaced from inside the building wall without disturbing the pipe connections either within or outside the wall.

A further object is to provide a valve that is self-compensating for wear as it is used.

Still another object is to provide a valve formed with a replaceable and self-adjusting head portion.

The above and other objects and advantages of my invention will appear more fully hereinafter from a consideration of the detailed description which follows, taken with the accompanying drawings wherein three embodiments of my invention are illustrated. It is to be understood that the drawings are for the purpose of illustration only and are not intended to define the limits of my invention. Reference should be had to the appended claims to determine the limits or scope of the invention.

In the drawings wherein like reference characters refer to like parts throughout the several views:

Figure 1 is a cross section view of a section of building wall of standard thickness, illustrating a cross section view of one embodiment of my invention mounted therein;

Figure 2 is a second embodiment of valve structure utilizable; and

Figure 3 is a third embodiment of the valve structure. Referring in detail to the drawing and first with particular reference to Figure 1, there is illustrated a building wall A extending below a ground level B and with a main water supply pipe line 10 buried in the ground below the frost line. Coupled to the outlet end of the line 10 is a coupling element 11, which is suitably coupled by welding or shrink-fitting within the end bore thereof to the end 12 of the outer diameter or circumference of my novel combination drain and remote cut-off unit C.

The unit C includes a body with a globe portion 13 formed with an interiorly threaded water supply outlet nipple 14. In this nipple is connected the end of any suitable water pipe 15, which leads off as is well known to the usual house water piping, not shown. Radially displaced from the nipple 14 is a drain opening defined by exteriorly threaded drain nipple 16, which may be closed by an internally threaded cap 17 or other means, such as a water valve or petcock operable for draining such the pipe system 15 inside the house.

Extending from the globe part 13 of the body from inside the wall A to the outside thereof, is a reduced elongated tubular portion, such as the cylinder or tube 18 with the previously referred to interiorly threaded end 12, which is coupled to the exterior water supply pipe line 10 buried in the ground below the water freeze line outside the wall A. Fixed within the end 12 of the cylinder 18 is a bushing 19, including a valve seat 20, a key wrench hexagonal socket 21 and an exteriorly threaded circumference 19a. The valve seat 20 coacts with a valve 22 formed on the end of a valve actuator shaft 23, which shaft extends longitudinally through the complete unit C from an operating handle 24 inside the wall A to the main water line 10 outside wall A.

The valve actuator shaft 23 extends through a packing gland assembly 25, which is threaded into a bearing nipple 26, which is internally threaded so as to rotatably and reciprocably mount a threaded bearing sleeve or bushing 27 keyed to the valve shaft 23.

As illustrated in Figure 1, the handle 24 and the globe portion 13 with the drain 16 and lead in nipple 15 are all inside the building wall A. The wall engaging part of the globe 13 may be formed with a stop in the form of an annular abutment or shoulder 28, and at this shoulder the globe 13 reduces into the elongated tube or cylinder 18. This tube 18 is longer than the thickness of the wall A to permit the valve end 12 of the tube to be coupled to the main water line 10 outside the wall A below the ground level freeze line.

The valve actuator shaft 23 and its valve head 22 are centered with respect to the bore of the tube 18 and the bore of the valve bushing 19 by suitable centering means, such as radially extended pins 29 formed from the shaft or otherwise affixed thereto. The respective ends 30 of these pins engage the interior bore of the tube 18 and the ends are preferably rounded to reduce friction and permit greater freedom of turn when the valve is being actuated from the handle 24.

From the foregoing, it is believed clear that by turning the handle 24 bushing 27 is caused to rotate and travel linearly to thereby impart reciprocation to valve actuator shaft 23, and its operatively associated valve 22. Thus the valve 22 may be closed or opened at the exterior of the wall A to control the water supply from pipe line 10.

For example, when the water is to be cut off the valve 22 is seated to cut off the water and the drain plug or cap 17 may now be removed to drain the system including all water in the wall mounted tube 18 as well. Thus there is no water inside the walls of the house to freeze under any conditions, as it is cut off by the valve 22 remotely positioned below the ground freeze line outside.
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the house, usually at a depth of approximately three to four feet.

The fact that the globe portion 13 is made larger than the bore of tube 18, and also because the bore of tube 18 is relatively larger than the bore of the inlet pipe 10, there is no appreciable reduction in flow when the valve is open.

The valve bushing 19 may become worn with use, and accordingly it is made removable and replaceable by means of an elongated key wrench, not shown, engangeable with the hexagonal socket 21. The removal of the valve bushing is accomplished by first cutting off the street water supply and then removing the valve shaft gland 25 and bearing sleeve 27 with the shaft 23, after which the key wrench may be extended through the unit body into the socket 21 for its removal. Preferably the valve seat bushing is made of non-corrosive material, such as brass, stainless steel and the like.

A second form of valve and valve seat bushing is illustrated in Figure 2, wherein the valve head 30 includes the usual washer 31 and holding bolt 32, and the valve is a flange or collar 33. Otherwise the structure is substantially the same as in Figure 1, and such like parts are given the same numerals with a sub-reference "a."

A third form of valve with a valve seat bushing is illustrated in Figure 3. In this embodiment, the valve head 34 is removable and is held loosely in a socket 35 formed in the end of actuator shaft 23b, by means of turned over flange 36.

With this mounting of the valve head 34, it is permitted to be turned with the actuator shaft 23b when said shaft is turned and while the head is free of the valve seat 20b. However, when the head is in contact with the seat it is guided and held against turning even though the shaft 23b may still be rotated for small number of turns. This non-turning in the seat prevents excessive wear of the valve head 34 and permits the head to be made of a synthetic plastic or other hard plastic material in lieu of metal.

Without further description it is believed that the foregoing is sufficiently complete, clear, concise and exact in terms to enable any person skilled in the art to practice this invention. However, it is to be expressly understood that although only three forms of my invention are described and illustrated in detail, that other parts, arrangements and combinations of parts, which may now occur to others are likewise intended to be covered hereby. To determine the scope of the invention, reference should be had to the appended claims.

What is claimed is:

1. A cut-off and drain unit for plumbing systems comprising a body having a hollow globe portion with a drain outlet and water outlet nipple disposed inside a building wall, an elongated cylinder extendable through said wall with the bore thereof in communication with the interior of said globe portion, said cylinder having a valve seat in the end of the elongated bore remote from said globe portion, a hollow boss formed from the globe portion, a rotatable and reciprocable mounting for a valve shaft in the bore of the boss, a closure for said drain nipple, an elongated valve actuator shaft projecting from outside said globe portion through said boss bore to adjacent said valve seat, said valve being keyed in said mounting and being rotatable and reciprocable therewith, a valve on the end of said shaft in the cylinder bore adjacent said valve seat, a coupling means on the end of said cylinder for coupling to a water supply pipe at a point exterior of said wall and below the frost line, and manual means for moving said shaft to open and close said valve.

2. The cut-off and drain unit described in claim 1, wherein said valve seat is of less external diameter than the internal diameter of said cylinder for said coupling means, having a valve Seat in the end of the elongated bore remote from through the opposite end of the cylinder and wherein said cylinder is coupled to said water supply pipe.

3. The cut-off and drain unit described in claim 1, wherein said valve seat is formed in an exteriorly threaded bushing threadably mounted in the valve end of the said cylinder, said bushing including an axially aligned hexagonal socket adapted to be engaged by a socket type wrench for removal and replacement thereof.

4. A building wall mounted cut-off and drain unit for connecting to a water supply pipe buried below the water freeze level, comprising a tube extending through the wall and projecting from both the interior and exterior sides thereof, said tube being coupled to a buried water supply pipe beyond the exterior side of the wall, a remotely controlled valve connected to a water supply pipe at an exteriorly coupled end, a hollow globe portion connected to the portion of the tube projecting from the interior side of the wall with a main pipe connection and a drain means, shaft means extending through said globe portion and said container tube carrying said valve means on the end thereof, and means for moving said shaft to open or close said valve means to cut-off the water from said water supply pipe projecting from the globe portion on the interior side of the wall.

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