Oct. 22, 1957 O. R. SIMMONS 2,810,395

NON-FREEZE SILL COCK

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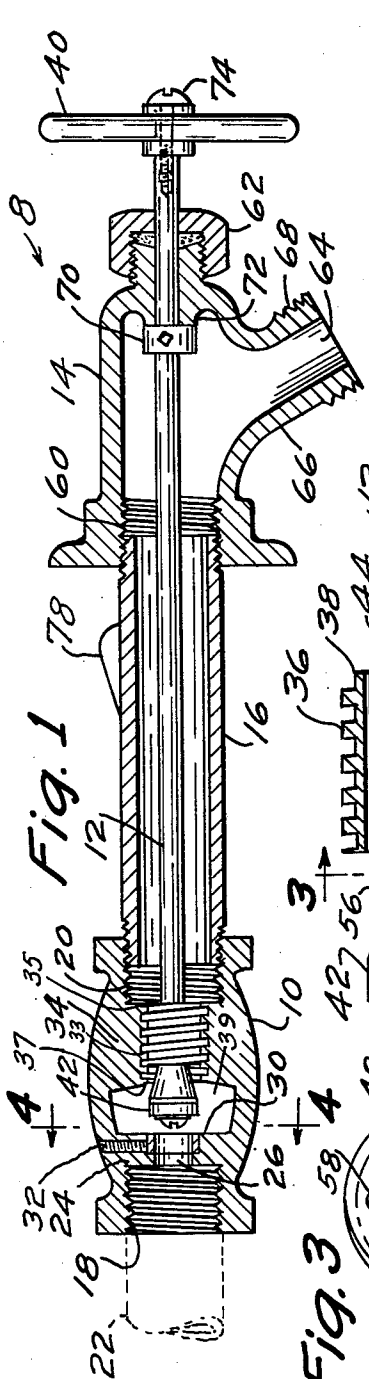


Fig. 1

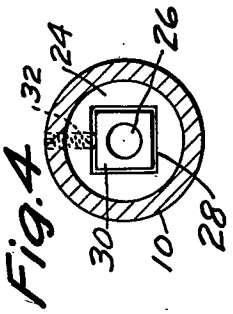


Fig. 4

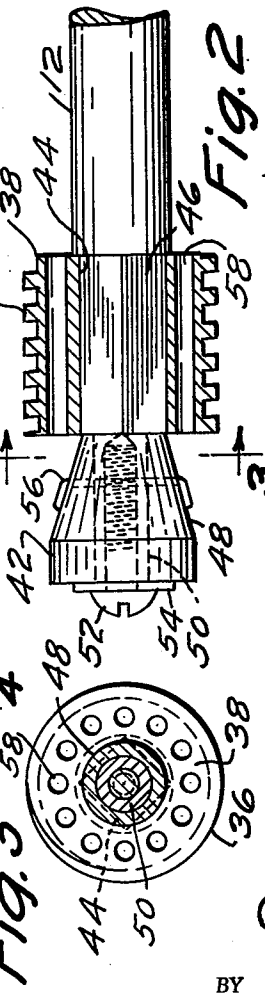


Fig. 2



Fig. 3

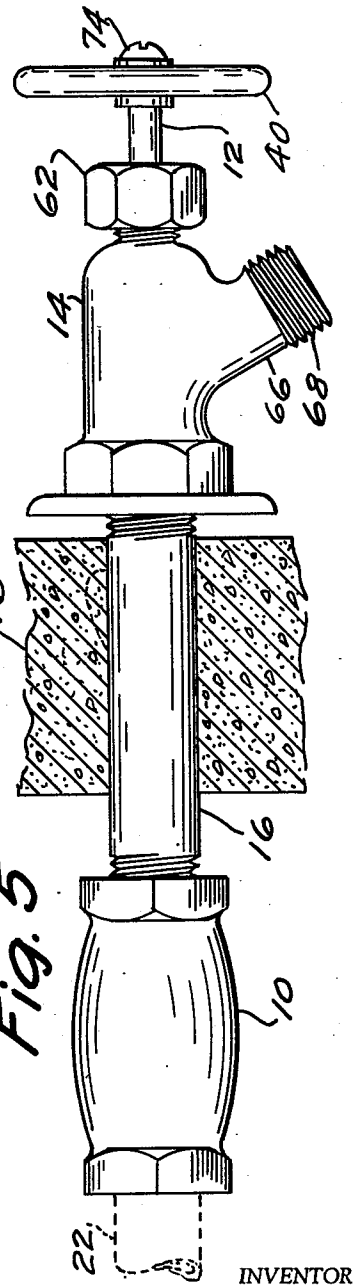


Fig. 5

INVENTOR

OSCAR R. SIMMONS

BY Arthur H. Sturges

ATTORNEY

United States Patent Office

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# NON-FREEZE SILL COCK

Oscar R. Simmons, Topeka, Kans.

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1 Claim. (Cl. 137—360)

This invention relates to valves for out-of-door hydrants and the like particularly of the type where the valve stem is adapted to extend through an elongated sleeve, such as may be embedded in a concrete wall, and where the valve is actuated by a hand wheel or handle on the extended end of the sleeve, and in particular this invention includes means for constructing the valve elements and operating means therefor whereby the manufacturing cost is reduced to a minimum and the life of the valve actuating parts is extended indefinitely.

The purpose of this invention is to provide an improved sill cock which when extended through a concrete wall may readily be actuated and repaired from the exterior of the wall.

For out door use and particularly in localities where the temperature drops below freezing it is necessary to shut off the water supply at a protected point and in numerous instances it is inconvenient to reach such a point to turn the water on and off. For this reason valves are often positioned at one point and the hand wheels or handles for operating the valves are positioned at a remotely situated point, such as on the opposite side of a concrete wall, and when installations are made in concrete walls it is essential that they be formed so that they may be repaired from one side of the wall.

For this reason valve stems of conventional sill cocks are extended so that they are comparatively long and in substantially all valves of this type the quick threads for actuating the valve elements are integral with the stems. In order to insure continuous operation of the valve element the quick threads are formed of a diameter larger than that of a conventional stem and for this reason it is necessary to cast a long stem with an enlarged portion for the threads thereon, or turn the stem from a large steel rod or shaft, which requires time and also a considerable waste of material.

With this thought in mind this invention contemplates an improved method of providing threads on a valve stem where an elongated stem is required, wherein the size of the stem is not increased and whereby the threads are positively secured to the end of the stem.

The object of this invention is, therefore, to improve the construction of valve stems for use in out-of-door hydrants, sill cocks, and the like, wherein the quick threads for operating a valve element are removably mounted on the valve stem.

Another object of the invention is to provide a threaded element for operating a valve in which the threaded element is positioned on a square section of a valve stem so that the possibility of dropping a key for holding the element to a stem is obviated.

Another important object of the invention is to provide a non-freeze sill cock assembly in which all water drains from the outer portion of the valve.

A further object of the invention is to provide a sill cock in which the valve parts may readily be removed and replaced.

A still further object is to provide an improved non-freeze sill cock in which the valve body is provided with a removable seat.



And a still further object of the invention is to provide an improved sill cock which is of a simple and economical construction.

With these and other objects and advantages in view the invention embodies a valve body having a removable valve seat therein and having a section of reduced diameter with quick threads therein spaced from the valve seat, an elongated sleeve threaded in one end of the body, a nozzle on the extended end of the sleeve, a stem extended through the sleeve and nozzle and extended into the valve body, a threaded element positioned on a square section of the stem, a valve member carried by the end of the stem, and a hand wheel positioned on the end of the stem extended from the nozzle.

Other features and advantages of the invention will appear from the following description taken in connection with the drawings, wherein:

Figure 1 is a longitudinal section through the improved sill cock showing the valve in the open position, and showing the valve stem, hand wheel, valve element, and quick threaded element in elevation.

Figure 2 is a detail illustrating the mounting of the quick threaded element or bushing on the valve stem, the bushing being shown in section and the other parts in elevation, and the parts being shown on an enlarged scale.

Figure 3 is a cross section through the valve element taken on line 3—3 of Figure 2.

Figure 4 is a cross section taken on line 4—4 of Figure 1 showing the removable valve seat in the valve body, the seat being shown on an enlarged scale for the purpose of illustration.

Figure 5 is a section through a wall showing the improved sill cock installed therein, the parts of the sill cock being shown in elevation.

While one embodiment of the invention is illustrated in the above-referred-to drawings, it is to be understood that they are merely for the purpose of illustration and that various changes in construction may be resorted to in the course of manufacture in order that the invention may be utilized to the best advantage according to circumstances which may arise, without in any way departing from the spirit and intention of the device, which is to be limited only in accordance with the appended claim. And while there is stated the primary field of utility of the invention it remains obvious that it may be employed in any other capacity wherein it may be found applicable.

In the accompanying drawings, and in the following specification, the same reference characters are used to designate the same parts and elements throughout and in which the numeral 8 refers to the invention in its entirety, numeral 10 indicating the valve body, numeral 12, the valve stem, numeral 14 the nozzle and numeral 16 a tubular member or sleeve connecting the nozzle to the valve body.

Although the valve body is illustrated as adapted to be used with screw fittings it will be understood that it may also be provided for flanged fittings, and in the design shown the body is provided with a continuous bore having an internally threaded socket 18 in one end and a similar internally threaded socket 20 in the other. The end of the body in which the socket 18 is provided is adapted to be threaded on a supply pipe, as indicated by the broken lines 22, and a transverse partition 24, spaced from this end and provided with an inlet opening 26 provides a seat for the valve. The partition is provided with a recess 28 as shown in Fig. 4, in which a valve seat 30 having flat sides, is secured with a set screw 32, and the flat sides of the insert forming the valve seat are so dimensioned that the insert 30 passes through the threads of the solid portion 34 of the body.

The portion 34 is provided with a bore 33 having square or quick threads therein, as shown in Figures 1 and 2, in which coacting threads 36 on a bushing 38 mesh whereby with the bushing rotated by a hand wheel 40 on the extended end of the valve stem 12 a disc 42 on the inner end of the valve stem is moved toward, or away from the valve seat 30. The square threads of the bore 33 extend from the socket 20 at the outer end 35 of the bore to a cavity 39 between the inner end 37 thereof and the socket 18.

The bushing 38 is provided with a square opening 44 that is fitted on a square section 46 of the stem 12 whereby rotation of the bushing with the stem is assured, and the bushing is held on the section 46 with a frustro-conical spacer 48 which, with the disc 42 is secured on a stud 50 extended from the inner end of the valve stem, by a screw 52 which is threaded in the stud. A washer 54 is positioned between the head of the screw and disc and the parts are retained in assembled relation with a soft wire pin 56, the ends of which are bent over, as shown in Figure 2.

The bushing 38 is provided with radially disposed openings 58 which provide free passage of fluid through the valve structure.

One end of the tubular member 16 is threaded in the socket 20 of the valve body 10 and the other in threads 60 of the nozzle 14. The nozzle is provided with a packing gland 62 and an outlet opening 64 is provided in a tubular extension 66 on the lower side. The outer surface of the extension 66 is provided with threads 68.

The valve stem 12 is provided with a set collar 70 that is positioned to engage a boss 72 in the nozzle to limit opening movement of the valve. The hand wheel 40 is retained on the extended end of the valve stem with a screw 74. The set collar or detent 70 is adjusted to locate the valve head or disc 42 in relation to the seat 30 to compensate for the length of the tubular member 16.

With the parts formed and assembled in this manner the improved non-freeze or frost proof sill cock of this invention, which is particularly adapted for use in a concrete wall may be mounted in the forms of a wall with the tubular member 16 positioned to extend through the body of a wall, as indicated by the numeral 76, and as shown in Figure 5. The valve body 10 and nozzle 14 are threaded on the ends of the tubular member, and to prevent the tubular member turning in the wall, the tubular member may be provided with lugs 78. The valve elements are assembled in the tubular member and valve body, and with the nozzle removed the valve elements may readily be installed, removed, and replaced.

From the foregoing specification it will become apparent that the invention disclosed will adequately accomplish the functions for which it has been designed and in an economical manner, and that its simplicity, accuracy, and ease of operation are such as to provide a relatively inexpensive device considering what it will accomplish, and that it will find an important place in the art to which it appertains when once placed on the market.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Changes in shape, size and arrangement of details and parts, such as come within the purview of the invention claimed may be resorted to in actual practice, if desired.



Having now described the invention that which is claimed to be new and desired to be procured by Letters Patent is:

In a sill cock, the combination which comprises a substantially cylindrical valve body having a continuous bore with internally threaded sockets in inlet and outlet ends and having a transverse partition spaced inwardly from the inlet end and a substantially solid intermediate portion spaced inwardly from the outlet end, said valve body having a cavity between the intermediate portion and transverse partition and said partition having an opening therethrough and a recess with flat sides in the surface facing the cavity, a valve seat also having flat sides positioned in the recess of the partition, the flat sides of the valve seat coacting with the flat sides of the recess preventing turning of the valve seat, a tubular member threaded in the internally threaded socket in the outlet end of the valve body, a nozzle having a downwardly extending outlet extending from one side threaded on the extending end of the tubular member, a valve stem extending from the cavity in the valve body through the tubular member and nozzle and having a handle on the end extending from the nozzle, the stem having a section with flat sides on the end extending into the valve body and a stud having an internally threaded bore extending from said section, the said intermediate portion of the valve body having an internally threaded bore, a bushing having a centrally disposed opening with flat sides extended longitudinally therethrough positioned on the section of the valve stem having flat sides, the flat sides of the bushing being substantially of the same dimension as the flat sides of the stem and the flat sides of the bushing corresponding with the flat sides of the stem whereby the flat sides of the bushing and stem coact to prevent the stem rotating without turning the bushing, said bushing having threads on the peripheral surface and the threads of the bushing being in meshing relation with the threads of the intermediate portion of the valve body, the bushing having spaced longitudinally disposed openings extending therethrough and said openings being positioned between the threads in the periphery and the centrally disposed opening therethrough whereby passage is provided for fluid through the valve body with the valve open, a frusto-conical-shaped spacer on the stud extended from the section of the valve stem having flat sides, said spacer being mounted with the small end dimensioned to pass into the internally threaded intermediate portion of the valve body to permit complete opening of the valve, and a valve disc secured on the extending end of the stud by a screw threaded in the internally threaded bore thereof and positioned to coact with the valve seat for closing the valve, the distance between opposed flat sides of the valve seat being less than the inside diameter of the threads in the intermediate portion of the valve body whereby the valve seat may be removed and replaced through said intermediate portion of the valve body.

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