

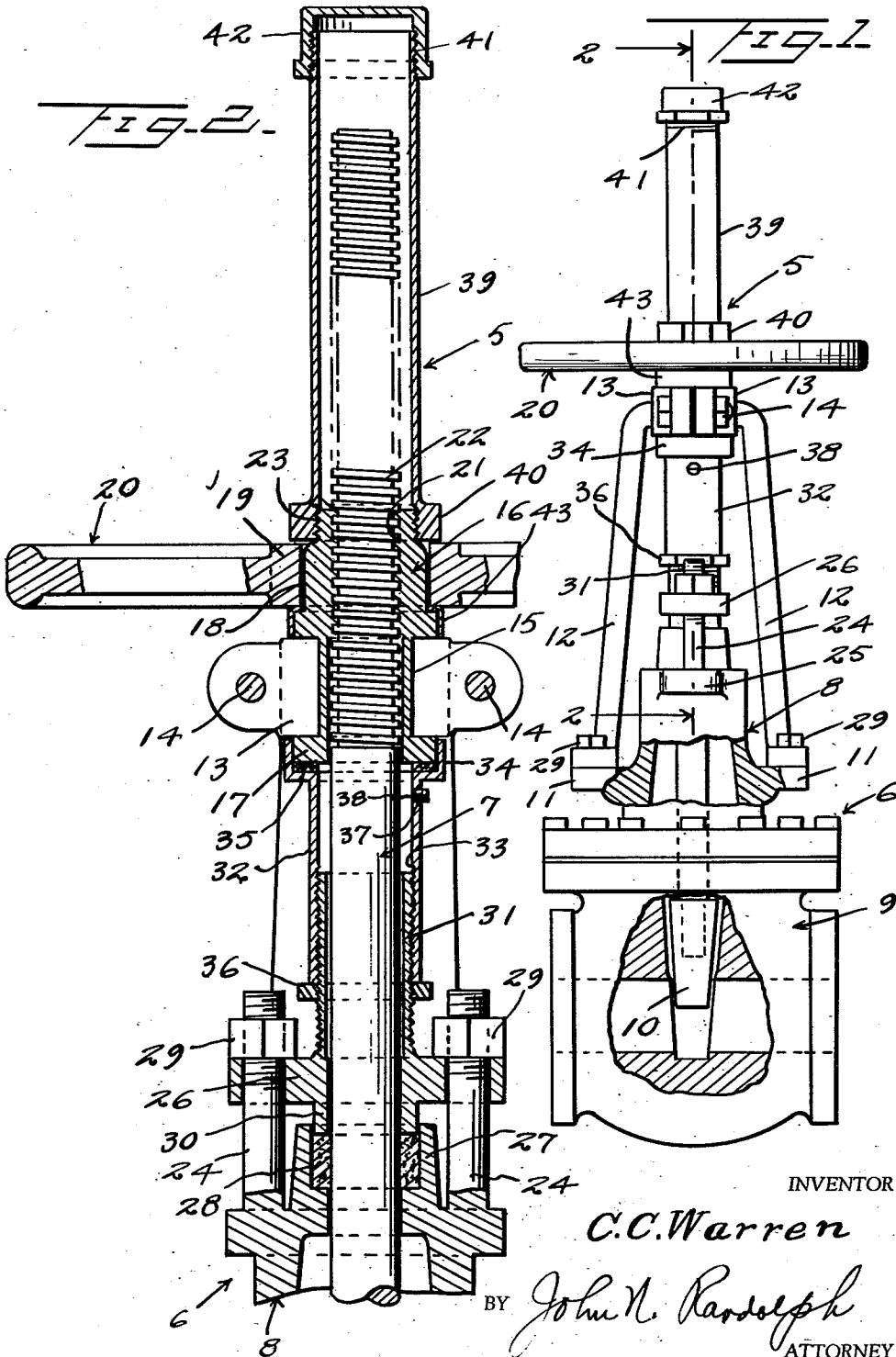
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SHIELD OR PROTECTOR FOR A VALVE STEM

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SHIELD OR PROTECTOR FOR A VALVE STEM

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1 Claim. (Cl. 137—382)

This invention relates to a novel form of shield or protector for enclosing the stem of a conventional type of rising stem valve and is readily adaptable for use on substantially all types of rising stem valves.

Considerable difficulty is encountered in the operation of such valves due to the accumulation of dirt, grit and other foreign matter in the thread of the valve stem and particularly due to the accumulation of ice on such valve stems during cold weather. Additionally, it is substantially impossible to maintain proper lubrication to insure ease of operation and to prevent rusting.

Accordingly, it is a primary object of the present invention to provide a shield or protector of extremely simple construction which may be readily applied to the stems of such valves and which, in combination with conventional parts of the valve, will completely enclose the stem to exclude therefrom all dirt, grit, foreign matter and moisture.

Still a further object of the invention is to provide a protector capable of containing a lubricant by means of which the valve stem and the spool which it threadedly engages may be constantly maintained properly lubricated to insure maximum ease of operation.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawing, illustrating a presently preferred embodiment thereof, and wherein:

Figure 1 is a side elevational view, partly in vertical section, of a conventional type of rising stem gate valve showing the shield or protector applied thereto, and

Figure 2 is an enlarged vertical sectional view of the protector and upper portion of the valve, taken substantially along a plane as indicated by the line 2—2 of Figure 1.

Referring more specifically to the drawing, for the purpose of illustrating a preferred application and use of the shield or protector, designated generally 5 and comprising the invention, a conventional type of rising stem gate valve, designated generally 6, has been illustrated including a valve stem 7 which extends upwardly from the top section 8 of the valve casing 9 in which the gate valve 10 is slidably disposed. Said top section 8 is provided with oppositely disposed outwardly projecting ears 11 on which are secured the lower ends of a pair of frame members 12 which extend upwardly in converging relationship to one another and which are provided at their upper ends with corresponding bearing sections 13 which are detachably secured together by fastenings 14 to fit loosely around a restricted portion 15 of a valve spool 16 which is thus rotatably supported by the connected bearing sections 13. The spool 16 has a lower portion 17 disposed below the bearing sections 13 and has a noncircular external portion 18 located adjacent its upper end to snugly receive thereon the hub 19 of a handwheel 20 which is thereby keyed or connected nonrotatably to the spool 16 so that said spool will turn with the handwheel. The spool 16 has a bore extend-

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ing longitudinally therethrough the upper portion 21 of which is threaded to threadedly engage the upper threaded portion 22 of the valve stem 7, which extends through the spool bore. The spool 16 additionally includes a restricted externally threaded upper end 23 which normally receives a retaining nut, not shown, for retaining the handwheel 20 in engagement with the spool portion 18. The valve 6 also includes a pair of upstanding threaded studs 24 which rise from oppositely disposed outwardly extending projections 25 of the casing part 8 and on which is slidably mounted a packing gland 26 through which the valve stem 7 slidably extends. The packing gland 26 has a depending bottom portion which extends downwardly into an annular top portion 27 of the casing section 8 which contains packing 28 which surrounds the valve stem 7. Nuts 29 threadedly engage the upper ends of the studs 24 and bear on the upper side of the packing gland 26 for urging its depending portion 30 downwardly into the casing part 27 for compressing the packing 28 therein around the valve stem. The parts 7 to 30, inclusive, of the valve 6 constitute no part of the invention but have been illustrated and briefly described merely to afford a better understanding of the shield or protector 5.

Said shield or protector 5 includes an externally threaded nipple 31 which is supported on the packing gland 26 loosely around the valve stem 7 and which is secured to said packing gland permanently in any suitable manner as by welding. A lower sleeve 32 has an internally threaded lower portion 33 which threadedly engages on the upper portion of the nipple 31. The sleeve 32 has an enlarged upper end 34 in which the lower end 17 of the spool 16 turnably fits. An annular gasket 35 seats in the bottom of the sleeve enlargement 34 in contact with the lower end of the spool portion 17. A jamb nut 36 threadedly engages the nipple 31 below the sleeve 32 and is advanced upwardly against the lower end of said sleeve to retain the sleeve in different adjusted positions on the nipple. The upper portion of the sleeve 32 loosely surrounds a portion of the stem 7 and contains a filling port 37, through which a lubricant, not shown, may be supplied to said sleeve 32 and nipple 31 for lubricating the lower portion of the stem 7 which extends through said parts. The filling port 37 is normally closed and sealed by a removable plug 38.

The shield or protector 5 also includes an elongated upper sleeve 39 which is disposed loosely around the threaded stem portion 22 which extends upwardly from the spool 16. Said upper sleeve 39 has an externally enlarged lower end 40 forming a nut which is internally threaded to engage the threaded upper spool portion 23 for attaching the upper sleeve 39 detachably to the spool 16 for rotation therewith and for additionally providing a retaining nut for maintaining the handwheel 20 in engagement nonrotatably with the spool portion 18. The upper end of the upper sleeve 39 is externally threaded as seen at 41 to receive thereon a threaded cap 42, by which the upper end of the sleeve is closed and sealed above the upper end of the valve stem 7. The cap 42 is removable for filling the sleeve 39 with a lubricant, not shown, by which the upper portion of the valve stem is lubricated and by which the lubricant can be conveyed by the thread of said valve stem to the threaded bore portion 21 of the spool 16. The protector 5 also includes a collar 43 which surrounds the spool portion disposed between the bearing sections 13 and the handwheel 20.

From the foregoing it will be readily apparent that the shield or protector 5 will cooperate with the conventional parts of the valve 6 to completely enclose the rising valve stem 7 and to maintain the threaded part 22 of the valve stem properly lubricated so that the spool 16 may turn

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freely thereon when the handwheel 20 is manually engaged for revolving said spool in either direction to cause an upward or downward movement of the stem 7 for moving the gate valve 10 to and from open and closed positions. It will also be apparent that the shield or protector 5 will prevent any dirt, foreign matter or moisture coming in contact with the valve stem to insure proper operation of the valve at all times.

Various modifications and changes are contemplated and may obviously be resorted to, without departing from the spirit or scope of the invention as hereinafter defined by the appended claim.

I claim as my invention:

The association with a valve actuating mechanism including a frame, a valve spool journaled in said frame and having a threaded bore and an externally threaded outer end, a handwheel detachably mounted on the valve spool over said outer end and nonrotatably engaging a part of the valve spool, a packing gland supported by the frame in alignment with and spaced from the valve spool, and a valve stem extending slidably through the packing gland and having a threaded portion extending through and threadedly engaging in the valve spool bore; a protector comprising a nipple having an end secured to the packing gland, said nipple being externally threaded and extending from the packing gland toward an inner end of the valve spool, an inner sleeve having an internally threaded end threadedly engaging the nipple, said inner sleeve extending from the other end of the nipple and having an

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enlarged opposite end in which the inner end of the valve spool swivelly fits, said nipple and inner sleeve fitting loosely around the portion of the valve stem disposed between the packing gland and valve spool, an elongated outer sleeve disposed around and extending to a point beyond the end of the valve stem which projects from the outer end of the valve spool and in which said valve stem end is loosely disposed, and a removable cap closing and sealing the outer end of the outer sleeve, said outer sleeve having an internally threaded inner end threadedly engaging the threaded outer end of the valve spool for supporting the outer sleeve loosely around the outer portion of the valve stem, said inner end of the outer sleeve being externally enlarged and provided with wrench lands to form a nut for retaining the handwheel positioned on the valve spool, said nipple, sleeves and cap cooperating with the valve spool to completely enclose and seal the part of the valve stem disposed beyond the packing gland.

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