(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 303 816**
A2

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **88110763.5**

(22) Date of filing: **20.01.84**

(51) Int. Cl.4: **E03B 9/08 , F16K 31/50 , F16K 1/02**

(30) Priority: **27.01.83 GB 8302193**
03.03.83 GB 8305953
28.04.83 GB 8311628
13.09.83 GB 8324409
24.11.83 GB 8331449

(43) Date of publication of application:
22.02.89 Bulletin 89/08

(60) Publication number of the earlier application in accordance with Art.76 EPC: **0 115 407**

(84) Designated Contracting States:
AT BE CH DE FR GB IT LI LU NL SE

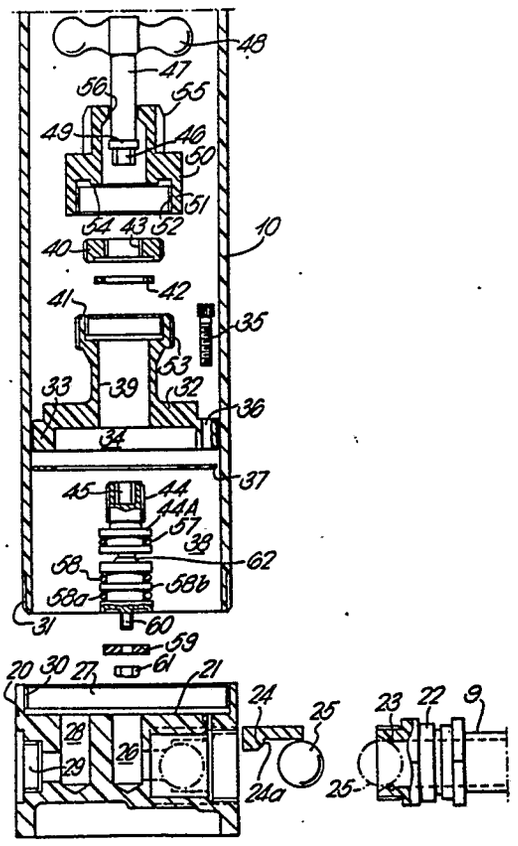
(71) Applicant: **E.V.S. (Valves) Limited**
Shortlands 22 Cambridge Road
Clevedon, Avon. BS21 7DN(GB)

(72) Inventor: **Evans, Gerald John**
Shortlands 22 Cambridge Road
Clevedon Avon. BS21 7DN(GB)

(74) Representative: **Calderbank, Thomas Roger et al**
MEWBURN ELLIS & CO. 2/3 Cursitor Street
London EC4A 1BQ(GB)

(54) Valve spindle.

(57) A valve spindle has a valve washer 59 at a lower end which acts as a valve closure member. The spindle is in two parts connected by a spigot and recess joint 62 which prevents rotation of the washer 59 in the valve seat when the upper part of the spindle is rotated to open or close the valve. Further seals 57,58,58a may be provided on both spindle parts.



EP 0 303 816 A2

VALVE SPINDLE

This invention relates to valve spindles and is particularly concerned with valve spindles of the type which carry a valve washer and which have peripheral seals.

This patent application is divided out of European Patent Application 84.300345.0 (published as EP-A-0115407) which discloses a combined stop-cock chamber and surface box installation. In the parent specification the lower part of the combined surface box and stop-cock assembly is provided with a stop-cock having a spindle of the kind to which the present invention is applicable.

In valve spindles which have peripheral seals and which carry a valve washer, the axial movement of the spindle necessary to cause the washer to contact a seating is usually accompanied by rotational movement of the spindle. This rotational movement of the spindle will normally cause the peripheral seals to rotate. This causes wear on the peripheral seals and an object of this invention is to provide a valve spindle in which the wear may be reduced and the operation of the spindle made more reliable.

In accordance with the present invention there is a valve spindle, carrying a valve washer at one end of the spindle which acts as a valve closure member, the spindle being in two parts connected by a joint, the joint permitting rotation of one spindle part relatively to the other part but which constrains the two parts to move together axially so as to move the valve washer in an axial direction, each of the two parts having at least one peripheral "O" ring seal.

Preferably, the joint between the spindle parts is of the spigot and recess type.

There may be two seals on the part of the spindle which carries the valve washer and one seal on the other part for example.

Preferably the spindle is of the type which is operable by engagement of a handle in its upper end, the handle being preferably in the form of a crutch handle carried by a combined dust-cap, locking ring and thread protector.

In the accompanying single drawing is shown, in section, an exploded view of a combined stop-cock valve base section and housing for a non-return ball valve, and including a stop-cock with a spindle embodying the present invention.

At the bottom end of stop-cock chamber 10 is a. combined stop-cock valve base section 20 and housing for a non-return ball valve or check valve to prevent back siphonage. This base section 20 is preferably a moulded plastics housing and has a stop-cock valve seat which may be flat as shown or may be raised and/or shaped to produce swirl. In this particular embodiment the mains water supply is assumed to be coming from the right of the drawing and the mains water pipe 9 is fed into an adaptor 22 preferably made of plastics and also acting as part of the ball valve housing. The ball valve is trapped in a passage which provides limited movement between an 'O' ring 23 at one end of the passage and a shoulder 24 at the other end of the passage.

The shoulder 24 has a number of apertures in it for flow of water past the ball valve when the ball valve seats against the flange 24A on the shoulder.

If the mains supply fails or is reduced in pressure and there is a tendency for back flow or back siphonage of water from within the domestic water supply, the ball valve 25 will close on the seal 23 and prevent this back siphonage. In the drawing, the ball valve in its normal flow position is shown in dotted lines on the left and in its back siphonage prevention position it is shown in dotted lines against the seal 23 on the right. The incoming mains water flows through this ball valve assembly into a vertical passage 26 leading into a chamber 27. From the chamber 27, if the stop-cock is opened, the water flows through another vertical passage 28 and out of an aperture 29. The aperture 29 is adapted to receive an appropriate screwed in gland nut with a seal by which the outlet pipe going away to the services in the house may be attached to the housing.

The base section 20 has, around the chamber 27, a threaded flange 30 adapted to screw onto a corresponding, threaded extension 31 on the chamber 10.

Attached to the base section 20 is a headworks section 32 preferably moulded in plastic. This headworks section has at its lower end a flange 33 surrounding a space 34 which, when the headworks section is in placed forms part of chamber 27. The drawing illustrates one of the many methods of keeping the base section 20 and the headworks section 32 together using bolts 35 extending through holes 36 in the flange 33 and there is a headworks gasket 37 between the flange 33 and the stop-cock valve base seating 21.

A two-part spindle assembly 38 lies within a bore 39 in the headworks section 32 and is retained there by a collar 40 which has an external thread so as to be threaded into the flange 41 at the top of the headworks section, being sealed by a fibre seal 42. The collar 40 has an internal thread 43 which engages an external thread 44 on the upper part of the spindle assembly 38. The upper part of the spindle assembly 38 has an internal hexagon slot 45 adapted to receive a correspond-

ing hexagonal spanner 46 at the lower end of a crutch spindle 47. The crutch has a handle 48 and a flange 49 adjacent its lower end. The flange 49 and the handle 48 between them trap the crutch in a combined dust cap, locking ring and thread protector 50. This thread protector 50 has a flange 51 internally threaded at 52 to engage an external thread 53 on the flange 41 of the headworks section 32. The thread protector 50 also has an annular internal projection 54 which will bear against the collar 40 and act as a locking ring to hold the collar in place.

The thread protector has external splines 55 engageable by an appropriate tool so that it can be removed by unscrewing it thus bringing out the crutch handle and thread protector as a unit.

At the upper end the thread protector has a bore 56 which acts as a guide for the crutch handle spindle and keeps it upright when it is being used to turn the upper section of the spindle 38.

The two part spindle 38 which is joined in the middle by a spigot and recess joint 62 has preferably a single 'O' ring 57 on the upper spindle section 44A and two on the lower spindle or washer plate section 58B at point shown as 58 and 58A. On the bottom of the washer plate is a rubber washer 59 which is placed over a spigot 60 and held in position by a nut 61. By using the 'O' rings in this manner, it ensures that the water pressure in the service pipe never gets past the bottom 'O' ring 58A, when the valve is under the full water pressure. The principle of an 'O' ring is that the greater the pressure applied, the better the seal. Therefore, the valve should never leak via the headworks. The rubber washer 59 seats on the stop-cock valve seat. As can be seen from the drawing, when the handle 48 is turned spindle 38 will be caused to move up or down by engagement of thread 44 and thread 43. The upper spindle 44A with its seal 57 will rotate but the lower section of the spindle 58B with its two seals 58 and 58A will move up and down without rotating due to the spigot and recess joint.

Claims

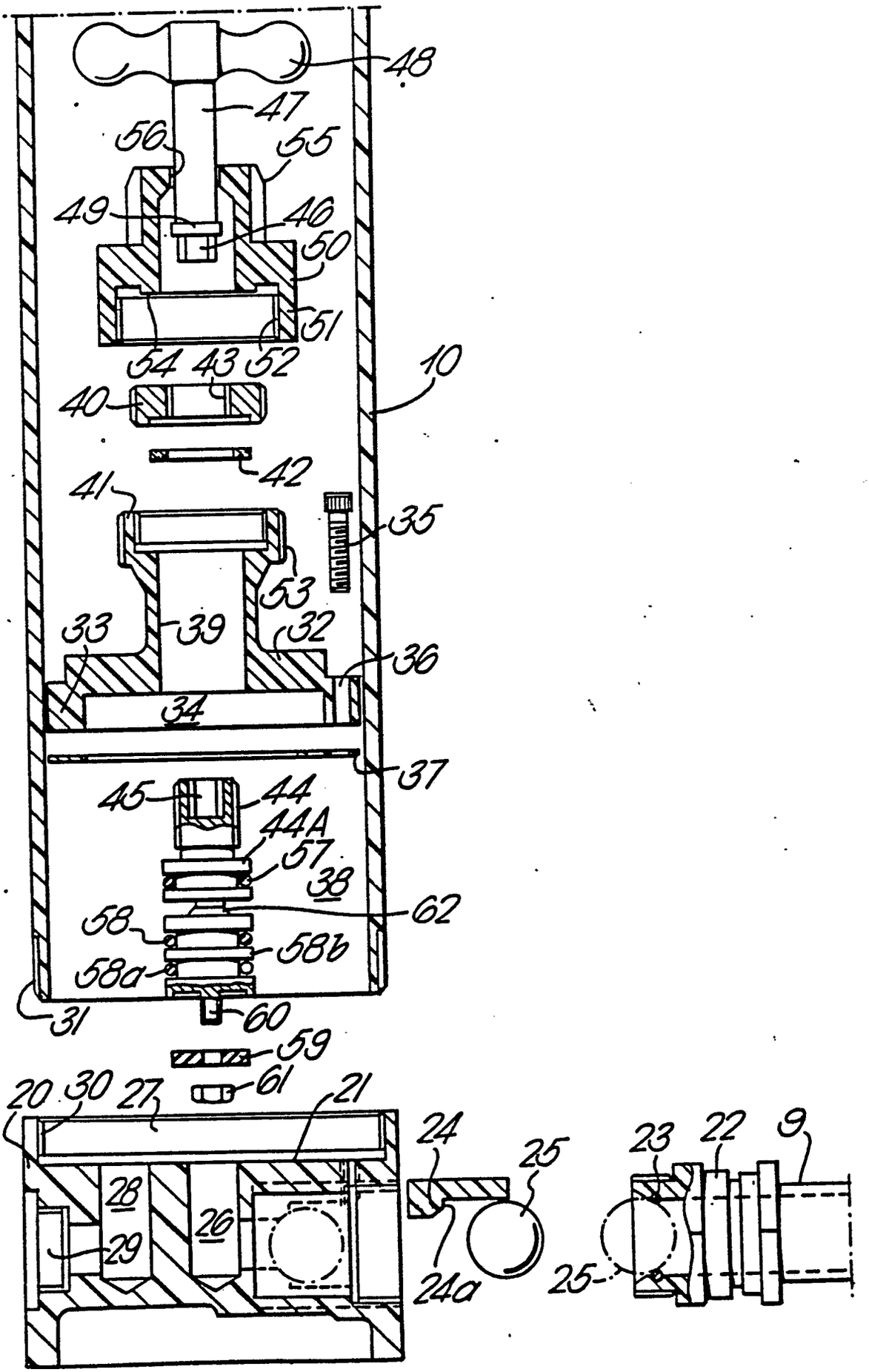
1. A valve spindle, carrying a valve washer (59) at one end of the spindle which acts as a valve closure member, the spindle being in two parts connected by a joint (62), the joint (62) permitting rotation of one spindle part relatively to the other part but which constrains the two parts to move together axially so as to move the valve washer (59) in an axial direction, each of the two parts having at least one peripheral "O" ring seal (57,58).

2. A valve spindle according to claim 1 in which the joint (62) between the spindle parts is of the spigot and recess type.

3. A valve spindle according to any preceding claim and in which there are two seals (58,58a) in the part of the spindle which carries the valve washer and one seal (57) on the other part.

4. A valve spindle, according to any preceding claim, of the type which is operable by engagement of a handle in its upper end, the handle being in the form of a crutch handle (48) carried by a combined dust-cap, locking ring and thread protector (50).

5. A valve spindle according to any preceding claim and in which the washer (59) is located at one end of the two part spindle.


48
47
56
55
49
46
50
51
54
43
52
10
40
42
41
35
53
33
39
32
36
34
37
45
44
44A
57
38
62
58
58b
58a
31
60
59
61
20
30
27
21
24
25
23
22
9
28
26
29
24a
25