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(54) A water meter and stopvalve block.

(57) A block for a water meter and stopvalve chamber system 1 comprising an inlet pipe coupling 26 and an outlet pipe coupling 28 communicating via a tortuous flow path through the block 20, a meter mount 44 and a stopvalve seat 42, wherein at least one of the inlet pipe coupling 26 and the outlet pipe coupling 28 is rotatable about an axis which is inclined to the axis of the pipe coupling itself such that, in use, an external pipe, when orientated at any one of a variety of angles to the block 20, may be readily connected to the rotatable pipe coupling. A block according to the invention enables a water meter and stopvalve chamber system to be installed far more quickly and efficiently than has been possible with prior art blocks and associated systems.

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A WATER METER AND STOPVALVE BLOCK

The present invention relates in general to underground water stopvalve chamber systems, and in particular to a block for a water meter and stopvalve chamber system. It will however be appreciated that the invention is equally applicable to a stopvalve block which does not incorporate a water meter mounting.

When installing underground chamber systems and connecting existing underground pipework to a stopvalve or stopvalve and water meter assembly within a chamber system, it is often very difficult to marry up the pipework to the chamber system. Indeed, the deeper underground the connections must be made, the harder it is to make the required connections unless a large hole is dug around the junction area. This problem arises because all known prior art water meter and stopvalve blocks have inlet and outlet pipe couplings which are permanently fixed and which have their orientations predetermined during manufacture. Accordingly, up until now, it has been necessary either to spend a considerable length of time working in cramped conditions re-aligning existing pipework to mate with the chamber block or to expend labour and energy digging a larger than necessary hole in the ground to provide ready access to the work area. It will of course be appreciated that both of these prior art alternatives are most unsatisfactory and inefficient.

Accordingly, the present invention has been devised to overcome the problem associated with the prior art systems and to enable an installer to complete his work more quickly and efficiently than has been possible in the past.

According to the present invention there is provided a block for a water meter and stopvalve comprising an inlet pipe coupling and an outlet pipe coupling communicating via a flow path through the block, wherein at least one of the inlet pipe coupling and the outlet pipe coupling is able to swing about an axis such that, in use, an external pipe, when orientated at any one of a variety of angles to the block, may be readily connected to the rotatable pipe coupling.

The advantages associated with a block according to the present invention are readily apparent to a man skilled in the art of installing underground stopvalve, or water meter and stopvalve, chamber systems. The applicants, who have been dealing in this field for many years, believe that the invention is a marked improvement over prior art blocks and will be readily accepted in the market place.

Preferably, the or each pipe coupling is able to swing between a first position which, in use, is substantially horizontal and a second position which, in use, is substantially vertical. This arrangement is preferred because in normal circumstances external pipework approaches the block either from below or from below and to one side of the block.

The pipe couplings are both preferably of the push-fit type and are attached to the remainder of the block by means of retaining rings.

Preferably the block includes a meter mount which is removable to obtain access to a non-return valve situated in the flow path within the block. This is advantageous because non-return valves used in water meter and stopvalve systems deteriorate with time and need to be replaced, and this feature of the present invention provides ready access to the non-return valve for such a purpose.

In a preferred embodiment, the meter mount has a preferential lock mechanism to prevent removal of the meter mount before a meter mounted thereon has been removed.

It is also preferred that the block includes a stopvalve seat which is adapted to receive a valve body including a valve plunger having a curved wall to direct, in use, the flow of water through the valve with minimal loss of water pressure. Clearly this is an improvement over prior art flat walled valve plungers, since it is advantageous to provide as high a water pressure as possible.

In its most preferred form, the block of the present invention is formed from moulded plastics and is adapted to mate with a telescopic guard pipe. Further, in one embodiment of the invention the block is formed in two parts, and includes a number of seals to provide a water-tight tortuous flow path therethrough.

A specific embodiment of the present invention is now described by way of example only with reference to the accompanying drawings, in which:

Figure 1 is a partially sectioned side view of a water meter and stopvalve chamber system incorporating a block according to the present invention with its outlet pipe coupling in a first position;

Figure 2 is a cross sectional side view of the chamber system shown in Figure 1 with the outlet pipe coupling in a second position.

With reference to the drawings, a water meter and stopvalve chamber system 1 comprises a surface box 2 incorporating a side flange 4 for transferring weight applied to the surface box 2 to the ground surrounding the chamber system, rather than to the remainder of the chamber system 1. A telescopic guard pipe includes an inner tube 6 and an outer tube 8. The inner tube 6 has ribs 10 on its outer surface which are engaged by an annular

seal 12 between the inner tube 6 and the outer tube 8. The seal 12 provides a friction fit between the inner tube 6 and the outer tube 8 which is sufficiently strong to retain the telescopic guard pipe in a chosen extended arrangement. The ribs 10 help in this regard.

The inner guard pipe 6 may be extended in length by the addition of a second inner guard pipe which mates with the first guard pipe via a bayonet lock comprising a male portion 14 and a female portion 16.

A housing 18 for the block 20 is provided at the lower end of the outer guard pipe 8 by means of a bayonet lock or a friction fit. A seal 22 is provided between the housing 18 and the outer pipe 8 to prevent the ingress of mud and water when the chamber system is in situ.

The water meter and stopvalve block comprises a plastics moulded body formed in two halves 24a, 24b. The input pipe coupling 26 and output pipe coupling 28 are of the push-fit type designed to receive external pipes which may approach the block either from below or from one side of the block. Each pipe coupling 26,28 is held on to its respective half of the body 24 of the block 20 by means of retaining rings 30. The retaining rings are also manufactured from plastics material and include water-tight seals 32.

In position, the inlet pipe coupling 26 and the outlet pipe coupling 28 are each able to rotate about an axis which is inclined to the axis of the respective pipe coupling, such that the pipe couplings themselves can face a number of different directions to receive external pipework approaching from such directions. In particular, the inlet pipe coupling rotates about an axis which corresponds to the axis of its retaining ring, and the outlet pipe coupling does likewise with respect to its own retaining ring. In general, a pipe coupling rotates about an axis which is perpendicular to the contact surface between the pipe coupling 26,28 and the body 24 of the block 20. Also, it will of course be appreciated that the angle of each pipe coupling to its axis of rotation may be different to that shown in the accompanying drawings (which is substantially 45°), and may be selected for a specific application when manufacturing the ports.

A tortuous flow path is formed between the inlet pipe coupling 26 and the outlet pipe coupling 28 through the body 24 of the block 20. This flow path may be closed by means of a stopvalve plunger 34 which is controlled by a spindle 36 driven by a key (not shown) inserted by a user through the top of the chamber system 1. The body 38 of the stopvalve and the spindle 36 incorporate an arrangement whereby the headwork of the stopvalve cannot be removed simply by turning the stopvalve key. This prevents unintentional removal of the stopvalve headgear.

The plunger 34 includes a curved wall at its lower end to direct, when water is passing through the block 20, the flow of water with minimal loss of water pressure. The plunger 34 also includes a seal 40 which closes the tortuous flow path when the plunger 34 is lowered on to its corresponding seat 42.

The body 24b of the block 20 includes a water meter mount 44 which is removable to allow access to a non-return valve 46. The water meter mount 44 includes a preferential lock mechanism to prevent removal of the meter mount before a meter (not shown) mounted thereon has been removed. The meter mount 44 is designed to accept a concentric flow path meter or a blanking cap (if a meter is not required). The meter mount 44 includes a screw thread on its outer surface for mating with a corresponding screw thread on the inside surface of body 24b.

In use, water flows through annular passageway 48 into the water meter (not shown) and out of the meter through aperture 50 and on past non-return valve 46 to the outlet pipe coupling 28.

A base unit 52 may be attached to the bottom of a chamber system to provide a footing for the system as a whole. Such a base unit 52 enables the inlet and outlet pipe couplings 26,28 to rotate about an axis inclined to the axis of the respective pipe coupling so that external pipework approaching the block 20, either from below or from the side or from any position in between, may be readily attached to the pipe coupling.

When transporting a water meter and stopvalve chamber system incorporating a block according to the present invention, the block 20 and housing 18 may be detached as a unit from the telescopic guard pipe, inverted and inserted into the guard pipe so that the block 20 is hidden within the inner tube 6 of the guard pipe. This arrangement is made possible by the shape and size of the block 20 and housing 18, and enables the whole chamber system to be packed into a very neat and compact unit whilst protecting the block 20 from damage during transit.

It will of course be understood that the present invention has been described above purely by way of example, and that modifications of detail can be made within the scope of the invention.

Claims

1. A block for a water meter and stopvalve comprising an inlet pipe coupling and an outlet pipe coupling communicating via a flow path through the block, wherein at least one of the inlet pipe coupling and the outlet pipe coupling

is able to swing about an axis such that, in use, an external pipe, when orientated at any one of a variety of angles to the block, may be readily connected to the pipe coupling.

2. A block as claimed in claim 1, wherein the or each pipe coupling can swing between a first position which, in use, is substantially horizontal and a second position which, in use, is substantially vertical.

3. A block as claimed in claim 1 or claim 2, wherein the pipe couplings are of the push-fit type and are attached to the remainder of the block by means of retaining rings.

4. A block as claimed in any preceding claim, including a meter mount which is removable to obtain access to a non-return valve situated in the flow path within the block.

5. A block as claimed in claim 4, wherein the meter mount has a preferential lock mechanism to prevent removal of the meter mount before a meter mounted thereon has been removed.

6. A block as claimed in any preceding claim, including a stopvalve seat which is adapted to receive a valve body including a valve plunger having a curved wall to direct, in use, the flow of water through the valve with minimal loss of water pressure.

7. A block as claimed in any preceding claim which is formed from moulded plastics.

8. A block as claimed in any preceding claim which is adapted to mate with a telescopic guard pipe.

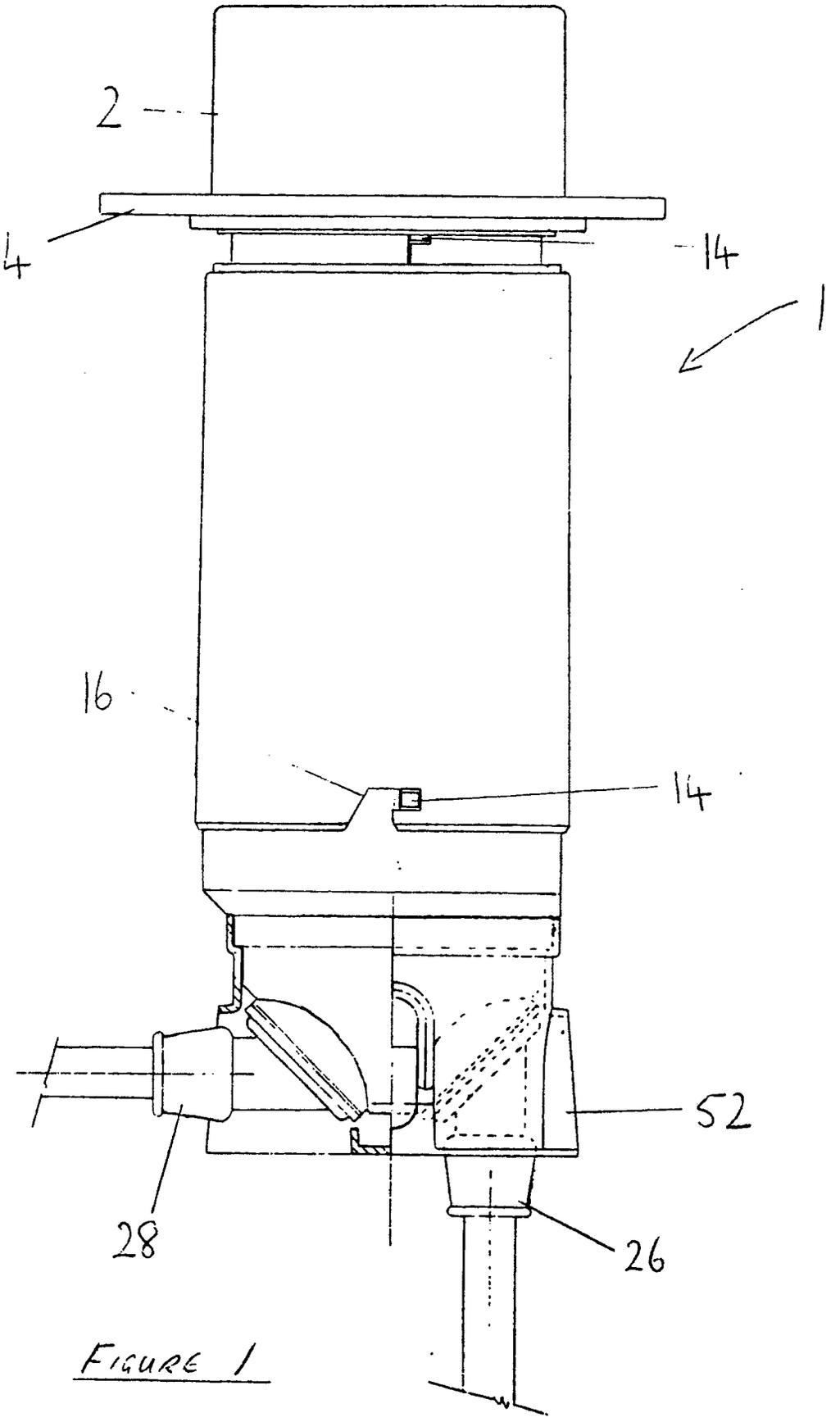

FIGURE 1

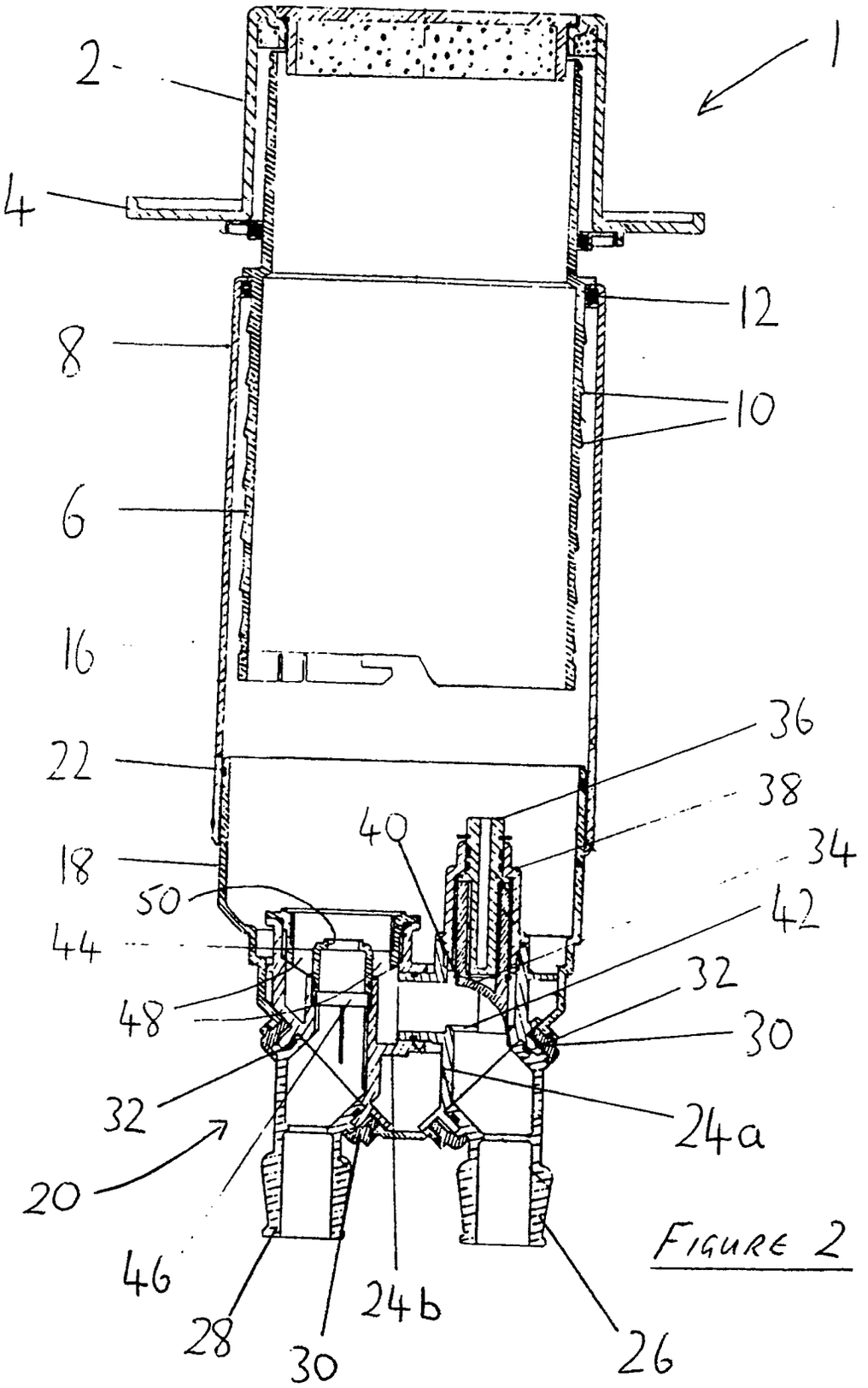
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FIGURE 2

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 31 2620

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	WO-A-8 704 203 (SZABO) * Page 5, paragraph 2; page 7, paragraph 3; figures 1,2 *	1,2	E 03 B 7/07
A		4,6,7	
A	US-A-4 804 206 (WOOD et al.) * Figures 1,2 *	3	
A	DE-C-5 683 98 (HERTEL) * Whole document *	1	
X	GB-A-2 156 022 (BOKOR) * Figure 1; claim 1 *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

E 03 B
E 03 C
F 16 L

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	01 March 91	HANNAART J.P.

CATEGORY OF CITED DOCUMENTS

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