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Water Valve for Vanity Units and the like

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ABSTRACT

A water valve (20) is disclosed having a generally L-shaped housing (21) which has a handle (28) mounted on the housing to permit the valve to be moved between valve open and valve shut positions, a valve outlet (26) and a valve inlet (22) in communication via the housing, and the valve outlet taking the form of a male thread (27), the valve inlet taking the form of a swivel nut (24), and the handle (28) not being located opposite the valve inlet (22). A method of installing a water appliance, a water isolation valve installation, a kit of parts, and a pipework arrangement are also disclosed.

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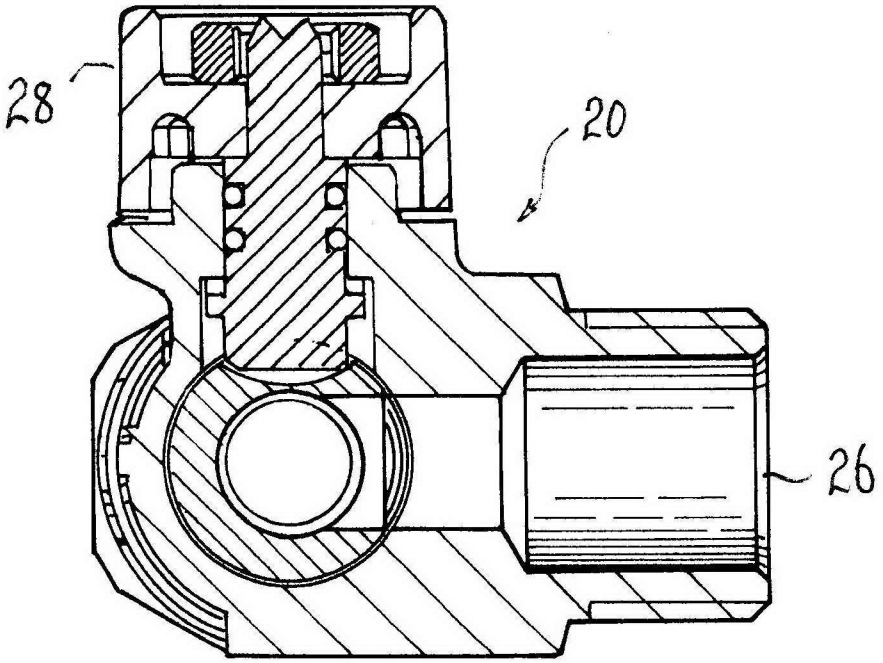

FIG. 7

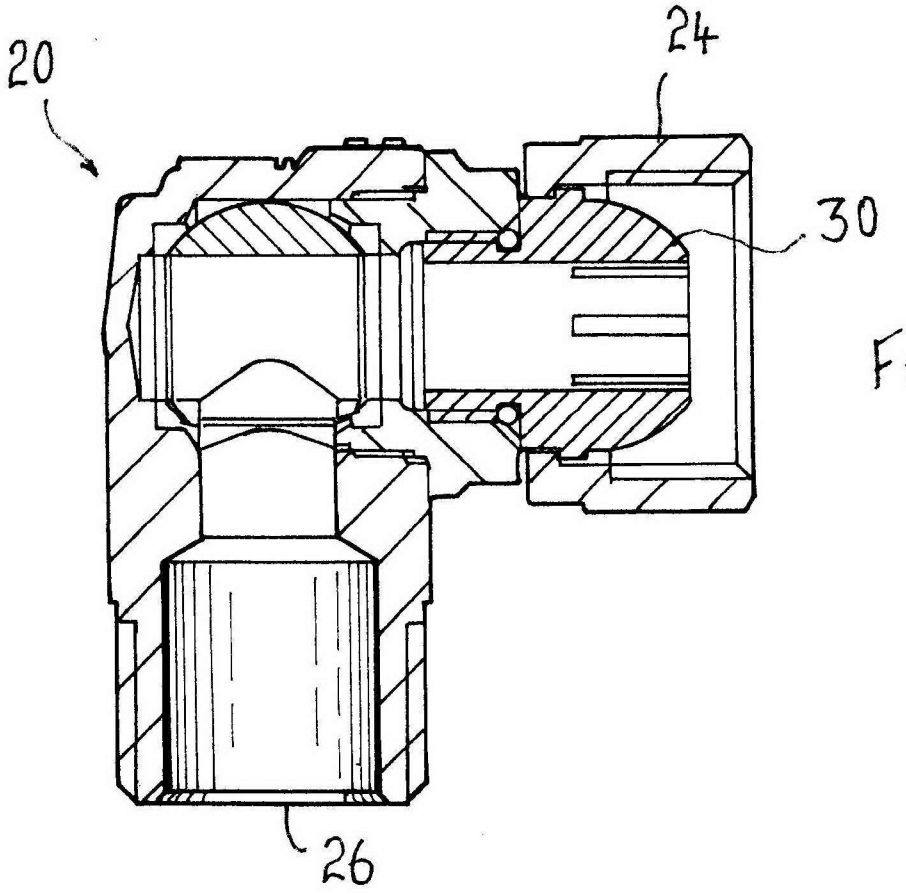

FIG. 8

Water Valve for Vanity Units and the like

Field of the Invention

The present invention relates to a water valve and, in particular, to a water valve which is an improvement in, or modification to, the gas valve disclosed in Australian Patent Application No 2021 200 124 in the name of the present applicant (Attorney Reference 5183BS-AU).

Background Art

Water has long been used in domestic and commercial premises for drinking, cooking, washing and cleaning. Similarly, gas has long been used in domestic and commercial premises as source of energy for cooking, heating and in former times lighting. Because gas is invisible, explosive and poisonous many regulations specifically relating to gas are in force in Australasia. Such regulations include Australia/New Zealand Standard AS/NZS 5601 and such standards are quite different from the standards and regulations governing water supply and reticulation such as AS/NZS 3500. For such reasons plumbers require an additional qualification in order to be qualified to act as gas fitters. It is also possible to qualify as a gas fitter without being a plumber.

While some items of hardware such as pipes and elbows are able to be used for both gas and water applications, in general many hardware items, and valves in particular, are differentiated according to whether they are intended for use with gas, or are intended for use with water. There are various structural and/or operational reasons for this.

For example, a major point of differentiation between gas and water valves is that valves for water are able to use jumper valves and ceramic disc quarter turn type valves which are unsuitable for control of gas flow. Because of this operational difference, an industry convention has arisen that valves for water have green or blue handles and valves for gas have yellow handles so as to provide a visual indication because a valve's interior construction is hidden by the valve housing.

Furthermore, some gas hardware items such as gas cylinders are provided with a left-hand thread rather than a right-hand thread as a safety measure in order to deter people

who are not gas fitters from assembling an installation including such left-hand thread devices.

Similarly, most O-rings used in water valves are not suitable for gas valves and visa versa. Other areas of differentiation between gas and water valves include the pressure rating which is required to pass certification, different testing procedures for gas valves and water valves, and different requirements for the torque required to operate the valve handle for gas valves and water valves. In addition, many plumbing installations plumbed for water suffer from water hammer, however, there is no equivalent problem for gas.

Still further, plumbers' sealing tape for sealing threaded water fittings is coloured white and is unsuitable for use with gas fittings since it is liable to deteriorate in contact with gas over time and therefore give rise to gas leaks. For this reason, gas fitters have a different type of sealing tape which is coloured yellow.

The above-mentioned Australian patent application is concerned with an isolation valve for gas cooktops. Generally speaking space within kitchens is limited because kitchen designers and architects wish to install as much equipment and as many modern appliances as possible. As a consequence, the installer of such a gas isolation valve almost always finds that the installation is cramped.

A cooker isolation valve also is useful during initial construction if various gas appliances such as a gas cooker, a gas hot water system, and so on are supplied at different times. If the cooker isolation valve is installed before any appliances are delivered, the gas supply can be turned on and tested, and the isolation valve then turned off before the gas cooker is delivered. After the gas cooker is connected, the isolation valve can then be turned on.

Hitherto a conventional in-line gas valve with a threaded inlet and outlet has been used as the isolation valve for gas cookers. The outlet of such an in-line gas valve is connected to the gas stove by a flexible hose known as an "easy hooker" flexible hose. The inlet of the in-line gas valve is connected to the male threaded pipe providing gas

to the cooker by means of conventional threaded plumbing fittings. Usually, such plumbing fittings involve the use of thread tape which requires some degree of skill on the part of the gas fitter lest there be too much tape, or too little tape, utilised.

The equivalent isolation valve for water is known as a cistern cock and is provided to enable the water supply to a toilet cistern to be isolated so that, for example, repairs to the cistern operating mechanism can be carried out. Also, such a cistern cock enables the water supply pipes to be installed and tested prior to the installation of prime cost items such as toilet pans and cisterns.

The cistern cock is directly connected to the water supply pipe, or a male threaded extension from the water supply pipe. The cistern cock is connected to the cistern by means of a flexible elastomeric tube or pipe, normally provided with stainless steel braiding on the outside. Such connection tubes incorporate a swivel nut which surrounds a rubber or elastomeric dome which has a central opening to permit the water pass through it, but is able to be sealed to a male thread because of the clamping action brought about by the swivel nut. Such connection tubes enable the use of sealing tape to be avoided.

Cistern cocks are also used in respect of basin installations. Generally, in respect of a toilet installation and in respect of some basin installations, space is not at a premium and cramping therefore does not arise. However, because bathrooms require tiled, or equivalent wet area, floors which are expensive, often space is at a premium and particularly space behind a vanity unit.

When one looks at a catalogue of a supplier of plumbing fittings, one cannot help but be impressed, often to the point of being overwhelmed, by the number and variety of items available for sale. It seems that every conceivable size and shape of plumbing fitting and valve is available for selection by intending customers. However, it is not the case that such catalogues display every desired article since specialised applications can, and do, arise.

Genesis of the Invention

The Genesis of the present invention is a desire to both fill such a product niche (and thereby expand the product range available to prospective purchasers to cater for specialised applications) and provide for an easier installation and replacement of water appliances by the plumber. In particular, there is a desire to avoid the need to use thread tape in water appliance installation.

Summary of the Invention

In accordance with a first aspect of the present invention there is disclosed a water valve comprising a generally L-shaped housing having a handle mounted on said housing to permit said valve to be moved between valve open and valve shut positions, with a valve outlet and a valve inlet in communication via said housing, and wherein said valve outlet comprises a male thread, said valve inlet comprises a swivel nut, and said handle is not located opposite said valve inlet.

According to second aspect of the present invention there is provided a method of installing a water appliance to connect same to a male thread of a water supply pipe via a water isolation valve as defined above utilising a flexible hose which terminates in a swivel nut fitting, said method comprising the steps of, in any order:
connecting said flexible hose to said threaded valve outlet, and
connecting said valve swivel nut to said water supply pipe male thread without the need to rotate said valve, thereby not placing said handle of said valve opposite said water supply pipe.

In accordance with a third aspect of the present invention there is disclosed a water isolation valve installation for a water appliance to be supplied water via a flexible hose which terminates in a swivel nut fitting, the supply being from a water supply pipe having a male threaded outlet, wherein said installation comprises a water isolation valve as defined above and having said swivel nut fitting of said flexible hose connected to the outlet of said water isolation valve, and having the swivel nut of said water isolation valve inlet connected to said water supply pipe, whereby said installation does not utilise sealing tape or require rotation of the isolation valve.

In accordance with a fourth aspect of the present invention there is disclosed a kit of parts comprising a pair of the above defined valves.

In accordance with fifth aspect of the present invention there is disclosed a pipework arrangement for interconnecting a water supply pipe with a cistern or tap having a male threaded connector, said arrangement comprising a valve interconnecting said cistern or tap with said water supply pipe, said valve being as defined above.

Brief Description of the Drawings

A preferred embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Fig. 1 is a schematic perspective view of a prior art cistern cock or isolation valve installation for a toilet cistern or a basin/vanity,

Fig. 2 is a perspective view of an isolation valve of a first embodiment,

Fig. 3 is a perspective view from the other side of the valve of Fig. 2,

Fig. 4 is a side elevation of the valve of Fig. 2 showing its outlet,

Fig. 5 is a side elevation from the other side of valve of Figs. 2-4 showing the valve outlet,

Fig. 6 is a plan view illustrating the valve of Figs. 2-4,

Fig. 7 is a cross-sectional view taken along the line VII-VII of Fig. 6,

Fig. 8 is a cross-sectional view taken along the line VIII-VIII of Fig. 4, and

Fig. 9 is a cutaway perspective view showing the valve of Figs. 2-8 installed behind a bathroom vanity unit.

Detailed Description

As seen in Fig. 1, a water supply pipe 1 (illustrated in broken lines) protrudes from a wall 2 and presents a male thread. The water supply pipe 1 is often located adjacent a floor 4 or other surface of the building. The pipe 1 is plumbed in during the construction of the building and is thus installed long before the installation (or re-installation) of a toilet or basin/vanity (not illustrated in Fig. 1). When the toilet or basin is to be installed, a connection tube or hose 5 termed an “easy hooker” or

connection hose has one end (not illustrated) connected to the toilet (cistern inlet) or basin (tap(s) inlet(s)). The size of the inlet(s) on the toilet or basin is normally DN15mm (half inch) and this determines the size of the upstream components such as the connection hose 5, isolation valve 10 and water supply pipe 1.

The connection hose 5 is formed from flexible material, such as an elastomer, which is covered with stainless steel braiding. Two identical fittings are swaged to either end of the hose 5. One of these fittings 7 is connected to the other end 6 of the hose 5. The fitting 7 comprises a loose nut 9 with an interior female thread and a rubber or elastomer dome having a through passage which leads to the interior of the hose 5. The fitting 7 is dimensioned to connect with the male thread 13 of the outlet 14 of the isolation valve or cistern cock 10. The internal diameter of the through passage of the rubber dome of the fitting 7 is approximately 7mm.

The isolation valve or cistern cock 10 has a handle 12 which faces away from the wall 2. Whilst this is both visually apparent and physically accessible, the handle 12 occupies a significant volume at a significant distance away from the wall 2.

The isolation valve 10 has a threaded female inlet 15 which is connected to the supply pipe 1 by means of rotating the whole isolation valve 10 about the longitudinal axis of the supply pipe 1. Normally there is sufficient distance between the supply pipe 1 and the floor 4, however, this is not always the case (in which event an elbow or equivalent fitting is required). An important aspect of the female threaded inlet 15 is that in order to connect the male thread of the water supply pipe 1, and the female thread of the valve inlet 18, the plumber needs to utilise conventional water thread tape (not illustrated). Either too much, or too little, thread tape can result in water leaks, so the use of thread tape at all is to be avoided if possible.

Turning now to Figs. 2-8, the isolation valve 20 of the preferred embodiment is illustrated. The valve 20 has a housing 21, an inlet 22 formed by a swivel nut 24, an outlet 26 having a male thread 27, and a handle 28. Within the housing 21 is located a conventional ball (not illustrated) and preferably a substantially conventional pivoted flap (not illustrated) which constitutes a one-way valve which permits water to flow

only from the inlet 22 to the outlet 26. An arrow (not illustrated) is often cast into the housing 21 in order to indicate this one-way direction of flow.

Fig. 9 illustrates in cutaway fashion a typical confined space available for the isolation valve 20. As seen in Fig. 9, the building has a wall 2 which is covered by a tiled splashback 43 which abuts a vanity top 44 into which are let a basin 41 and tap(s) 42. Underneath the top 44 and illustrated in dashed lines is a cupboard 49. Located on one side wall of the cupboard 49 are an upper track 46 and a lower track 47 which support a drawer (not illustrated in Fig. 9). On the other side wall of the cupboard 49 are another upper track 46 and lower track 47 all of which are not illustrated in Fig. 9 so as to not over burden the drawing.

As illustrated in Fig. 9, the isolation valve 20 is connected to the water supply pipe by engaging the swivel nut 24 with the male thread of the supply pipe. This can be done without having to rotate the isolation valve 20 and therefore this connection can be made even if there is very little room between the water supply pipe and the floor 4. The swivel nut 24 can be provided with a gasket or washer, or alternatively with an interior rubber or elastomeric sleeve surrounding a brass dome 30 (Fig. 8). In either case, the swivel nut 24 compresses the washer or rubber against the water supply pipe 1 in order to create the desired seal.

Similarly, the loose nut 9 of the connection hose 5 can be engaged with the male thread 27 of the outlet 26. Both the connection to the inlet 22 and the outlet 26 of the valve 20 can be accomplished without the need for sealing tape. Therefore, the creation of these two joints in a manner which does not leak, in practice, can be guaranteed.

Utilising the prior art valve or cistern cock 10, access to the male thread of the water supply pipe is achieved by removing the vanity drawer so that the plumber can reach into the cupboard 49 in order to carry out the necessary installation. In the prior art (not illustrated) this involves applying sealing tape to the male thread 3. The next step is connecting the female inlet 15 of the cistern cock 10 to the male thread 3 and rotating the cock 10 to achieve the desired degree of tightness and simultaneously the

correct orientation of the cock 10. Finally, the hose 5 is connected to the valve 10 using the fitting 7.

This cumbersome prior art activity carried out in the confined space of the cupboard 49 is to be contrasted with the situation using the valve 20 of Figs. 2 - 8 as illustrated in Fig. 9. First of all, no sealing tape is required. The valve inlet 22 is connected directly to the male thread of the water supply pipe by means of the swivel nut 24. This automatically positions the handle 28 with the desired orientation, i.e. perpendicular to the axis of the water supply pipe. It is necessary only to hold the valve 20 in its desired orientation whilst tightening the nut 24 in order to ensure that the outlet 26 of the valve 20 has the desired orientation. Then the hose 5 is directly connected to the male thread 27 of the outlet 26 of the valve 20. That is, no valve rotation and no sealing tape are required.

Most importantly, the handle 28 is not aligned with the water supply pipe 1 as is the case with the handle 12 of the prior art arrangement illustrated in Fig. 1. As a consequence, the handle 28 and valve 20 do not foul the back of the drawer which runs along the tracks 46, 47. As a result, a drawer of longer length, and thus increased volumetric capacity, can be provided.

The foregoing describes only one embodiment of the present invention and modifications, obvious to those skilled in the gas fitting art, can be made thereto without departing from the scope of the present invention. For example, the features and advantages disclosed in one facet of the invention may be utilised, *mutatis mutandis*, in other facets of the invention.

For example, the invention is also applicable to taps or valves having a ceramic disc. Similarly, valves intended for use with hot water can have the handle 28 coloured red, or provided with a red indicator whilst valves intended for use with cold water can have the handle 28 coloured blue, provided with a blue indicator. Preferably two such valves, one with a red handle or red indicator, and one with a blue handle or blue indicator, are sold together in a kit form.

Furthermore, it should be understood that the present applicants have a very detailed knowledge of the Australian plumbing and gas fitting industries. Accordingly, the reference to prior art valves or fittings referred to herein, does not necessarily mean that other persons in the plumbing industry are aware of this prior art, nor does it mean that such prior art is sufficiently well known to constitute common general knowledge in the plumbing industry.

The term "comprising" (and its grammatical variations) as used herein is used in the inclusive sense of "including" or "having" and not in the exclusive sense of "consisting only of".

CLAIMS

1. A water valve comprising a generally L-shaped housing having a handle mounted on said housing to permit said valve to be moved between valve open and valve shut positions, with a valve outlet and a valve inlet in communication via said housing, and wherein said valve outlet comprises a male thread, said valve inlet comprises a swivel nut, and said handle is not located opposite said valve inlet.

2. The water valve as claimed in claim 1 wherein the axis of said handle rotation is substantially perpendicular to the longitudinal axis of the valve inlet.

3. The water valve as claimed in claim 1 or 2 and including a one-way valve mechanism located between said valve inlet and valve outlet and positioned within said housing.

4. The valve as claimed in any one of claims 1 - 3 wherein the male thread on said valve outlet is dimensioned to connect with a swivel nut of a flexible connection hose.

5. The valve as claimed in claim 4 wherein both said inlet and said outlet have a size of DN15 (half inch).

6. The valve as claimed in any one of claims 1-5 wherein the valve is dimensioned to operate in conjunction with a vanity unit.

7. The valve as claimed in any one of claims 1- 6 and certified for water.

8. The valve as claimed in any one of claims 1 – 7 wherein said valve comprises a ball valve.

9. The valve as claimed in any one of claims 1-8 wherein said handle has a generally cylindrical body and an operating lever and wherein said cylindrical body of said handle contains indicia indicating the on and off status of the

valve.

10. A method of installing a water appliance to connect same to a male thread of a water supply pipe via a water isolation valve as claimed in any one of claims 1- 9 utilising a flexible hose which terminates in a swivel nut fitting, said method comprising the steps of, in any order:
connecting said flexible hose to said threaded valve outlet, and
connecting said valve swivel nut to said water supply pipe male thread without the need to rotate said valve, thereby not placing said handle of said valve opposite said water supply pipe.

11. The method as claimed in claim 10 and carried out without the use of sealing tape.

12. The method as claimed in claim 10 or 11 wherein said water appliance comprises a cistern or a tap.

13. A water isolation valve installation for a water appliance to be supplied with water via a flexible hose which terminates in a swivel nut fitting, the supply being from a water supply pipe having a male threaded outlet, wherein said installation comprises a water isolation valve as claimed in any one of claims 1-9 and having said swivel nut fitting of said flexible hose connected to the outlet of said water isolation valve, and having the swivel nut of said water isolation valve inlet connected to said water supply pipe, whereby said installation does not utilise sealing tape or require rotation of the isolation valve.

14. The water isolation valve installation as claimed in claim 13 wherein said water supply pipe is located within a cupboard or equivalent enclosure of a bathroom vanity unit.

15. A kit of parts comprising a pair of valves as claimed in any one of claims 1-9.

16. The kit of parts as claimed in claim 15 wherein the handle of one valve is a different colour, or has a different coloured indicator from the handle, or indicator, of the other valve.

17. The kit of parts as claimed in claim 16 wherein said two colours are red and blue.

18. A pipework arrangement for interconnecting a water supply pipe with a cistern or tap having a male threaded connector, said arrangement comprising a valve interconnecting said cistern or tap with said water supply pipe, said valve being as claimed in any one of claims 1-9.

Dated this 8th day of February 2024

ZETCO VALVES PTY LTD

By
FRASER OLD & SOHN
Patent Attorneys for the Applicant

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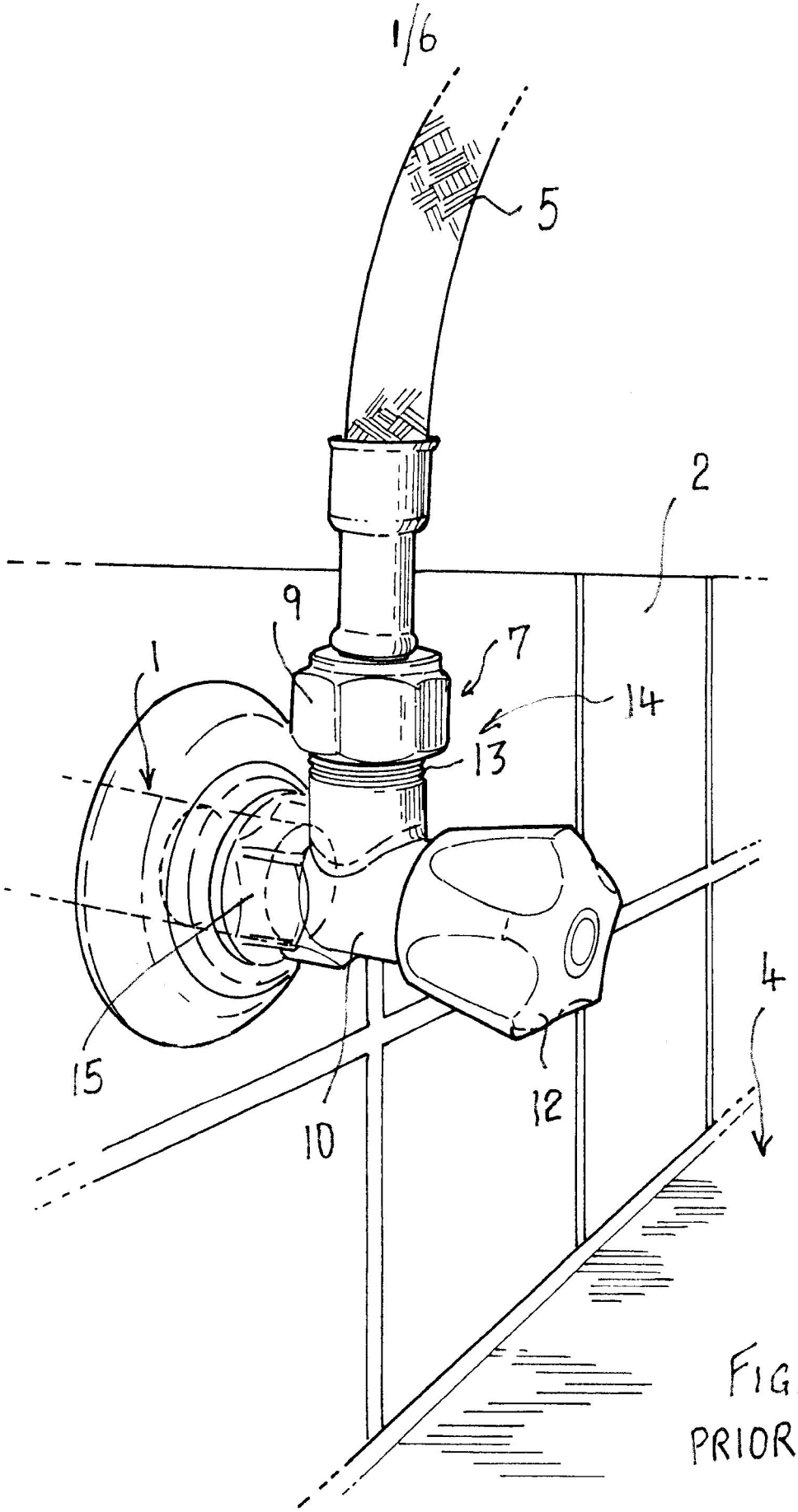

FIG. 1
PRIOR ART

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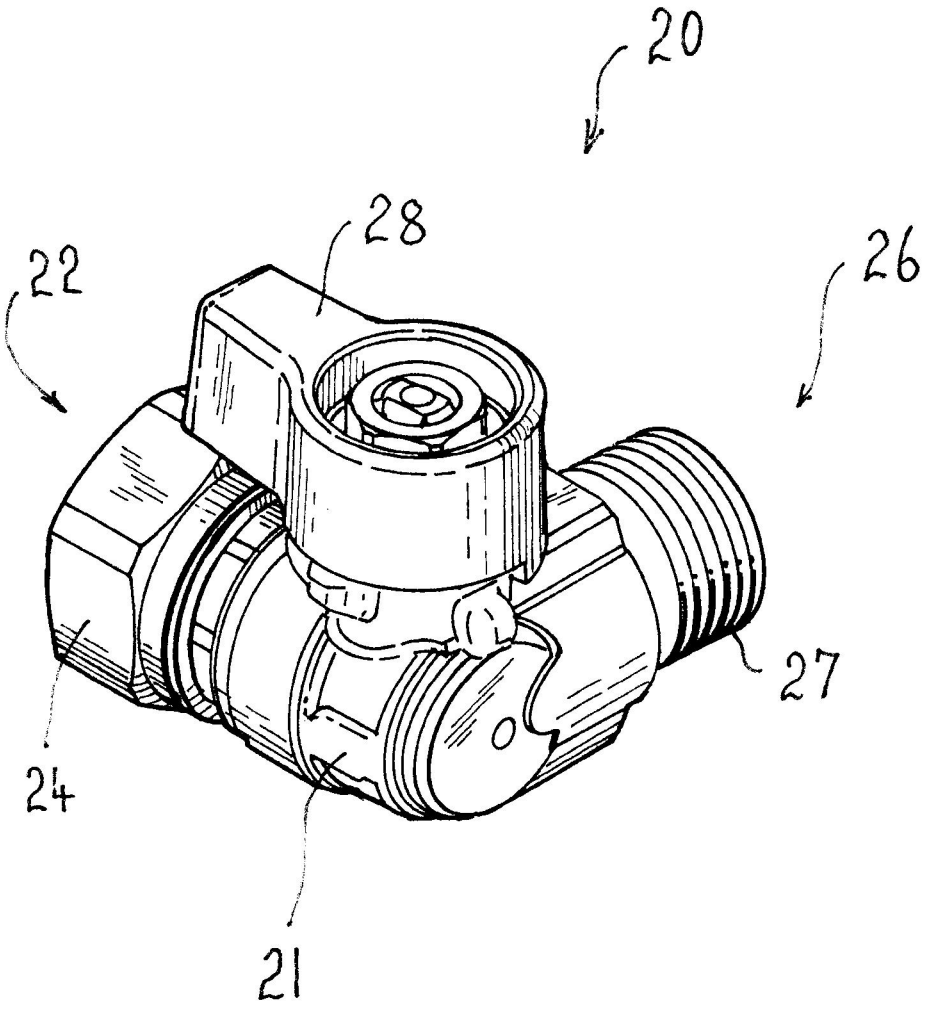

FIG. 2

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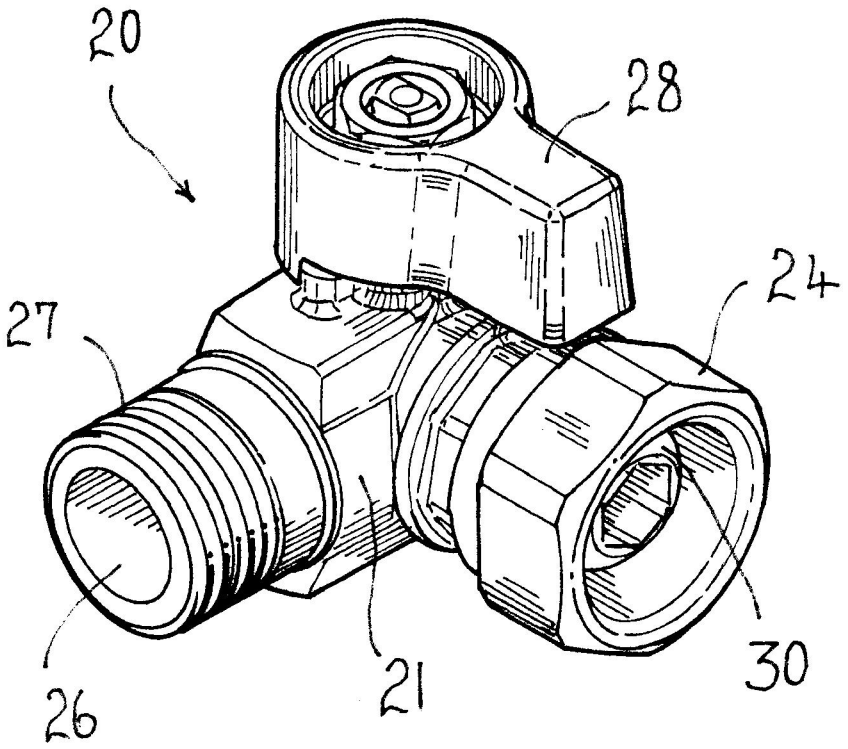

FIG. 3

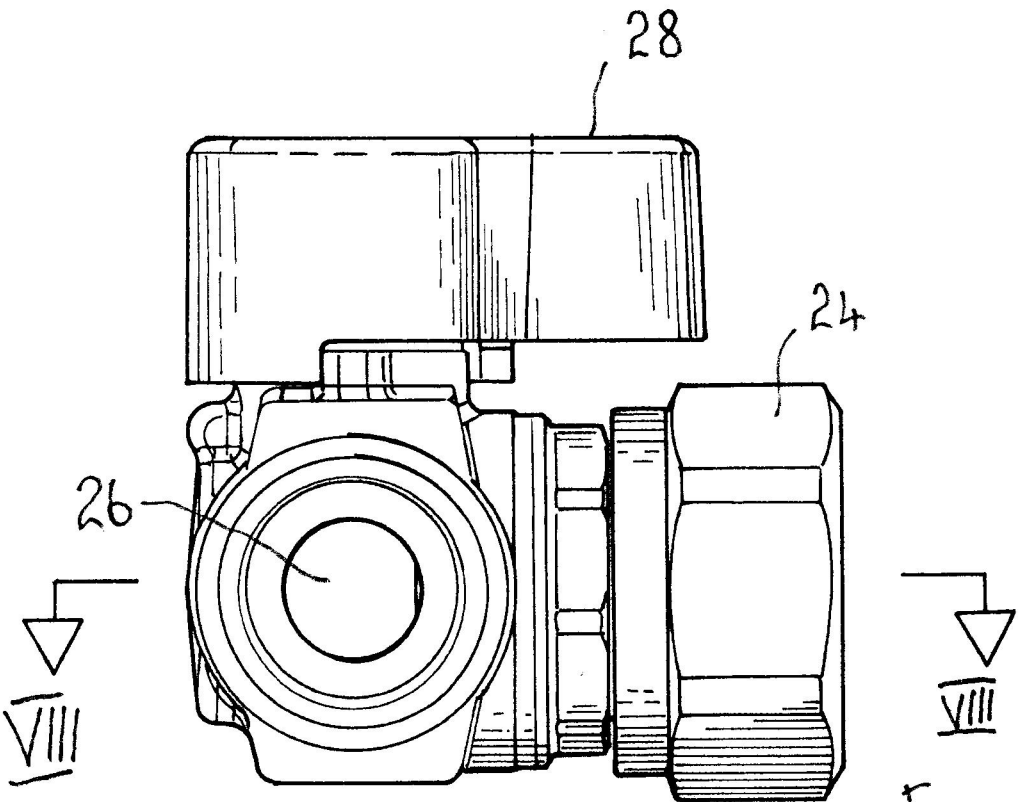

FIG. 4

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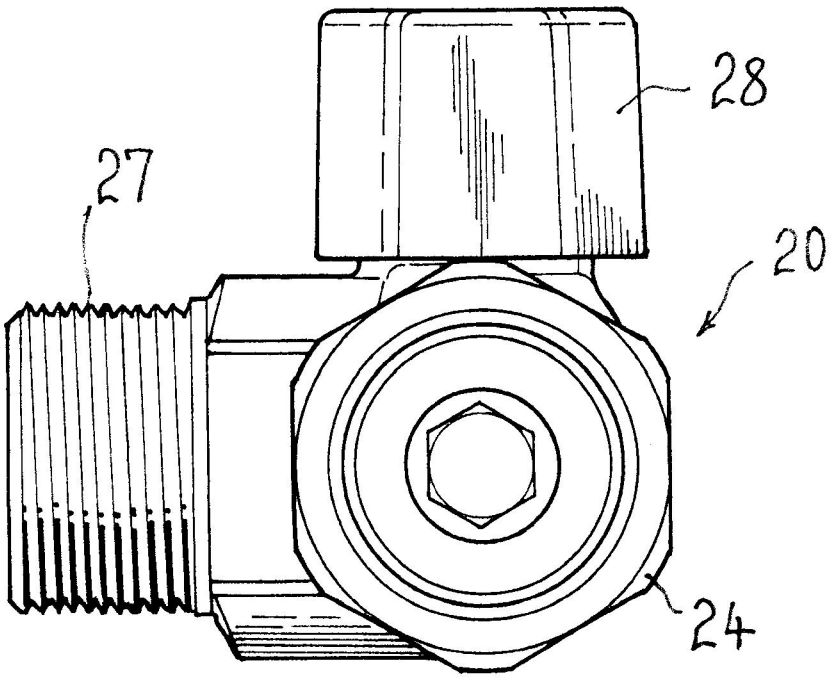

FIG. 5

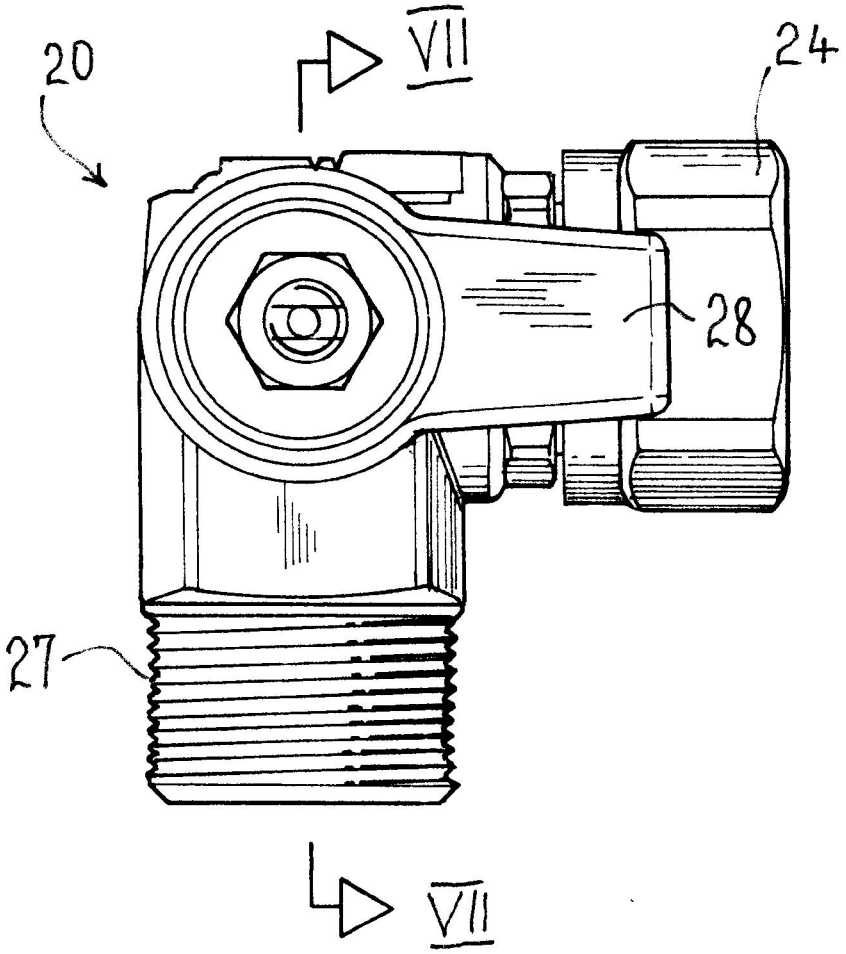

FIG. 6

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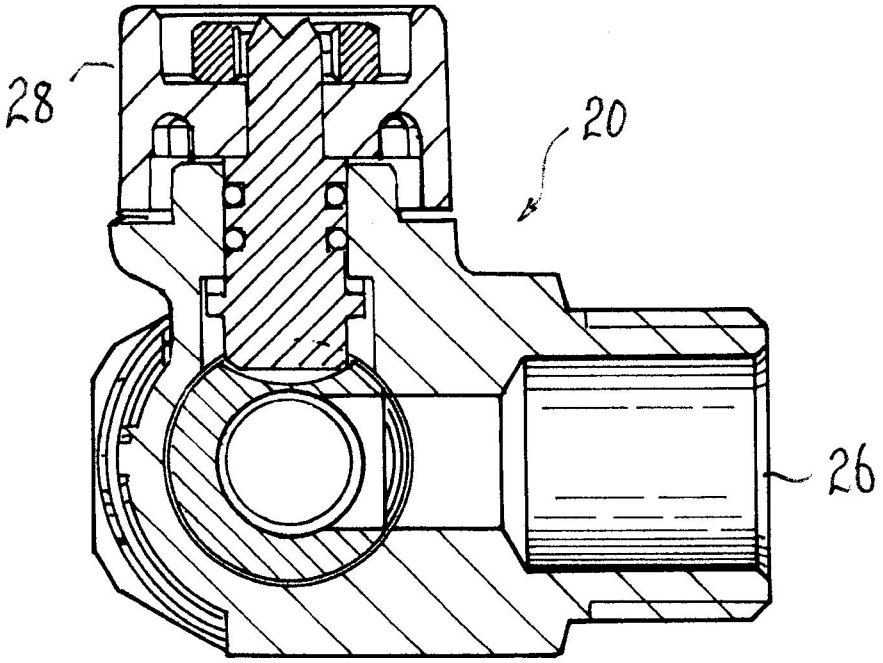

FIG. 7

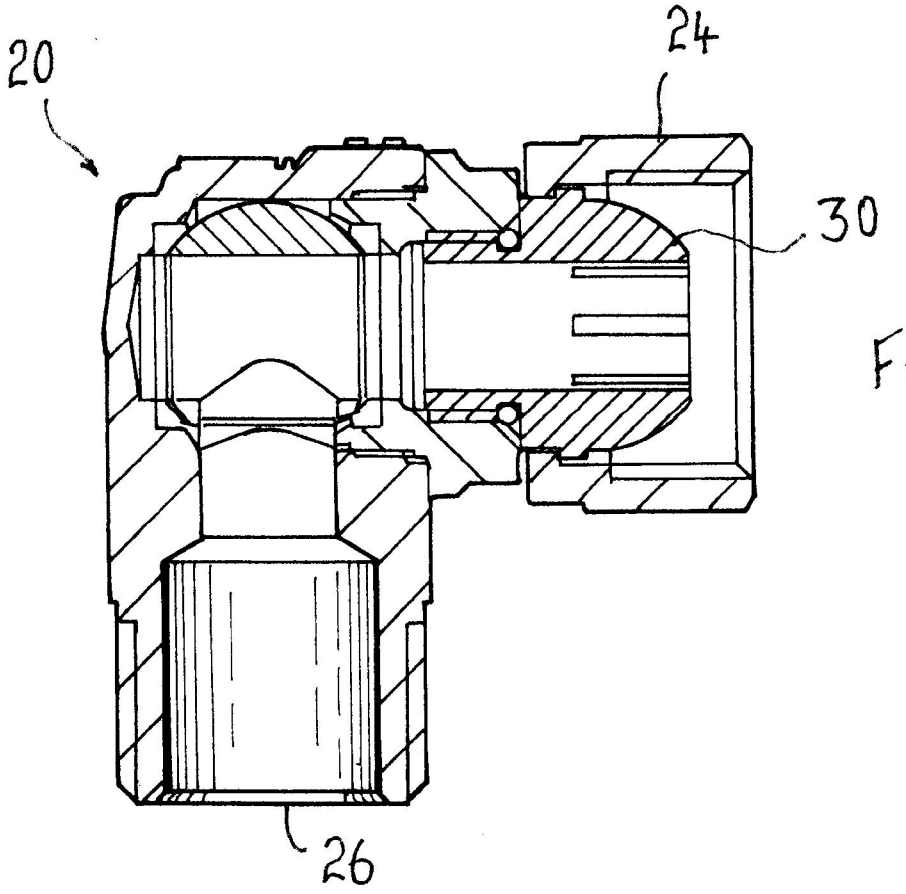

FIG. 8

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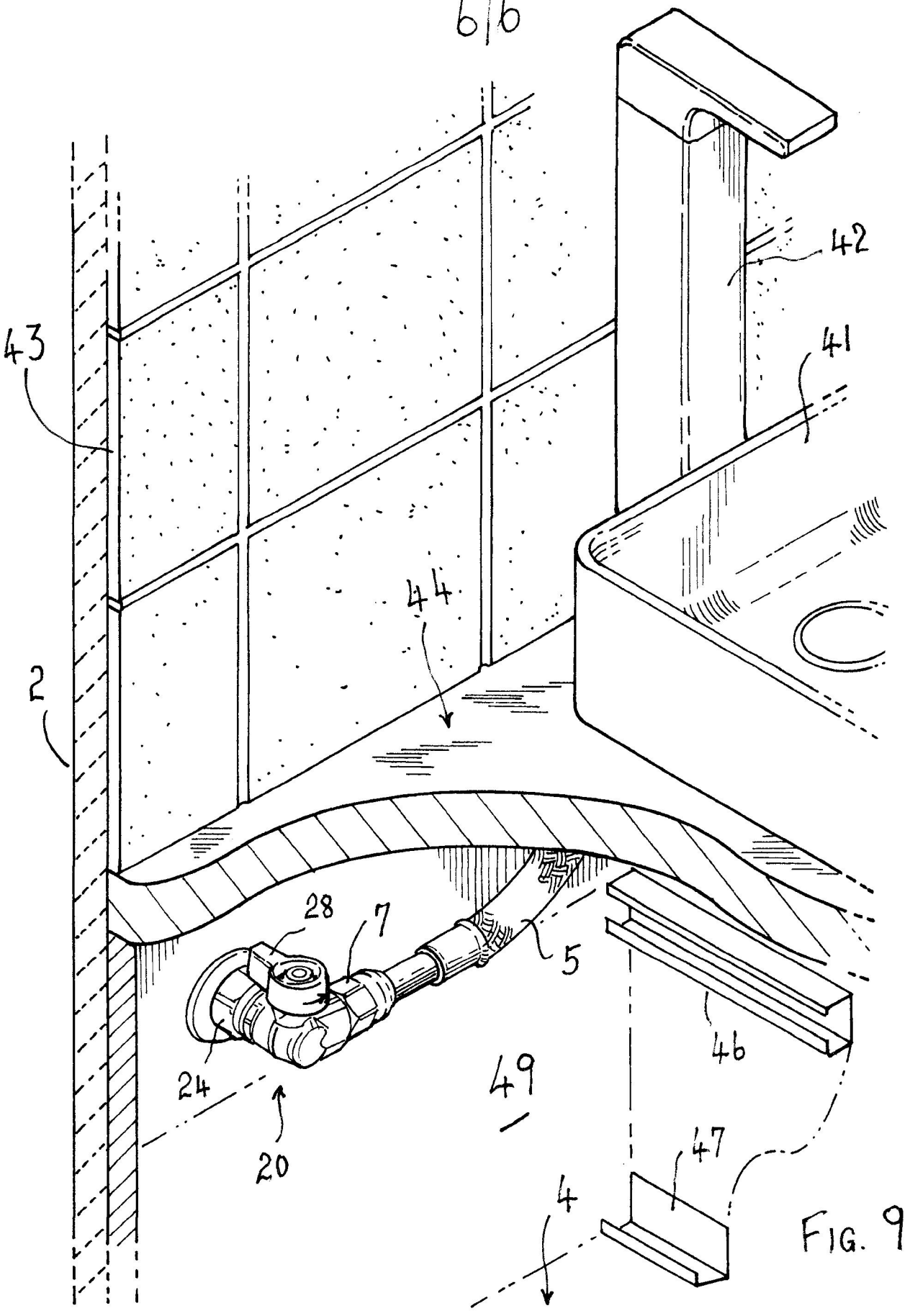

FIG. 9