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WATER METER ATTACHING UNIT

BACKGROUND OF THE INVENTION



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Field of the Invention

The present invention relates to a water meter-attaching unit by which a water meter installed in a city water pipe of respective housing complexes, etc., can be simply attached and detached.

Description of the Prior Arts

Conventionally, in a city water pipe, a water meter is constructed so that a stopcock and a check valve are, respectively, connected to the stopcock (inlet) and check valve (outlet) thereof, wherein when replacing the water meter, a new water meter is caused to intervene between the primary side and the secondary side and is connected in the city water pipe after connection thereof with the stopcock and check valve is released.

However, there are many cases where once a water meter is removed between a stopcock and a check valve, the axial center of the connection portions with a water meter at the stopcock and check valve becomes out of alignment. Further, generally, since an installation space of a water meter is narrow in an housing complex, it is difficult for the inlet and outlet of the water meter to be connected to respective

connection ports of the stopcock and check valve again, wherein there arises a problem in that it becomes very cumbersome and takes much time to replace or newly attach all of the water meters attached in the respective houses in housing complex.

SUMMARY OF THE INVENTION

The present invention was developed in view of the above-described and other problems. The present invention is constructed of a unit including a stopcock and a check valve that, respectively, connect the inlet and outlet of a water meter, and a base for disposing and separating the corresponding stopcock and check valve on the axial line connecting the inlet and outlet of the water meter with an interval which is longer than the entire length of the water meter, wherein by fixing the stopcock and check valve on the base, the inlet and outlet of the water meter intervening between the stopcock and check valve are caused to match the outlet of the stopcock and the inlet of the check valve, a flexible tube in which a circular base portion that slides in the inner opening portion thereof so as to advance and retreat in a watertight state is provided in any one of the outlet of the stopcock and the inlet of the check valve, and the water meter can be easily caused to intervene between the stopcock and check valve and is connected therebetween by contracting

and extending the flexible tube.

In summary, since the present invention composes a unit 1 comprising a stopcock 2 and a check valve 3 that, respectively, connect an inlet M1 and an outlet M2 of a water meter M; and a base 4 for disposing said stopcock 2 and check valve 3 located on the axial line connecting the inlet M1 and outlet M2 of the water meter M with an interval, which is longer than the entire length of said water meter M, provided therebetween, the outlet 6 of the stopcock 2 and the inlet 31 of the check valve 3 can be simply positioned at the inlet M1 and outlet M2 of the water meter M by only setting the stopcock 2 and check valve 3 on the base 4, and since the stopcock 2, check valve 3 and water meter M can be compactly assembled, the entire unit 1 can be made compact.

Also, at the base attaching portions 10 and 34 at the outlet 6 side of the stopcock 2 and inlet 31 side of the check valve 3, the sides 25 and 35 thereof are formed to be circular, and circular collar portions 26 and 36 are formed thereat. Since seat portions 40, 40a for fitting the lower half circular portion of the base attaching portions 10, 34 in conjunction with the circular collar portions 26, 36, and fixing members 41, 41a for fitting the upper half circular portion of the base attaching portions 10, 34 in conjunction with the circular

collar portions 26,36, which are attached to the seat portions 40,40a by a tightening member BT, are provided on the base 4, the respective base attaching portions 10,34 can be pressure-fitted and held between the seat portions 40,40a and the fixing members 41,41a at fixed positions without any slippage. In addition, since the respective base attaching portions 10,34 can be turned in a provisionally fixed state where the tightening member BT is loosened, it is possible to direct the inlet 5 of the stopcock 2 and the outlet 6 of the check valve 3 to the connection ports of a city water pipe, respectively.

Further, since a flexible tube 29 in which the circular base portion 28 sliding in the inner opening portion 27 in a watertight state is inserted so as to advance and retreat is provided in any one of the outlet 6 of the stopcock 2 and the inlet 31 of the check valve 3, a water meter M can be disposed between the stopcock 2 and the check valve 3 without any hindrance by contracting the flexible tube 29, and it is possible to simply mount and connect a water meter M between the stopcock 2 and the check valve 3 by only connection the inlet M1 and outlet M2 of the water meter M to the outlet 6 of the stopcock 2 and the inlet 31 of the check valve 3, respectively, by extending the flexible tube 29.

Moreover, since a polygonal side portion 30 the diameter of which is smaller than the outer diameter of the circular base portion 28 is continuously formed at the tip end side from the circular base portion 28 of the flexible tube 29, and the forward end faces 42,43 of one or both of the seat portion 40 and the fixing portion 41 are formed so as to match the polygonal side portion 30, the circular base portion 28 is brought into contact with the inside of the forward end face 43 of the fixing member 41 and is prevented from being detached where the flexible tube 29 is extremely extended, wherein, since the flexible tube 29 does not turn around the axis, no tool such as pliers is required in order for the flexible tube 29 not to turn when tightening or loosening the joint member U for connecting the flexible tube 29 and water meter M together, wherein it is possible to save such cumbersome work using such a tool.

The flexible tube 29 is prevented from being detached or turning by forming the seat portions 40,40a, which fix the base attaching portion 10 of the stopcock 2 to which the corresponding flexible tube 29 is attached, or the base attaching portion 34 of the check valve 3, and the forward end faces 42,43 of the fixing members 41,41a so that these match the polygonal side portion 30. Therefore, in comparison with

a case where means for preventing the fixing means of the base attaching portion 10 or the base attaching portion 34, to which the flexible tube 29 is attached, and the flexible tube 29 from being detached and turning are separately provided, the entire length of the base 4 can be shortened, wherein the unit 1 can be made further compact.

As described above, according to the invention, work for attaching a water meter M and works incidental thereto, and work for removing the water meter M can be simply carried out, and work efficiency can be remarkably improved.

Since the stopcock 2 is constructed so that the body 9 and base attaching portion 10 are connected to each other in a rotatable state, it is possible to simply direct the positions of the operation rods 23,24 protruding from the body 9 and the handle 24a to adequate directions.

And, since, at one connection end portion 11, a circular section 12 is provided on the inner circumference of the opening end, and at the same time, a tapered section 13 whose diameter is reduced toward the depth side continuously from the circular section 12 is provided, a recess groove 16 in which a C-shaped resilient ring 15 whose diameter may be expandable and contractible, is sinkable is provided on the circumference of the circular section 12, and simultaneously an inclined portion

17 is provided by diagonally cutting the ridge angle portion at the opening end side of the above-described connection end portion 11 at the opening end edge of the corresponding recess groove 16. Also, a tapered section 20, circular face 21 and recess groove 22 are provided at the other connection end portion 18 so as to match the above-described connection end portion 11, and the corresponding recess groove 22 is established to a depth so that the inner diameter side portion 15a of the ring 15 protruding from the recess groove 22 at one connection end portion 11 is internally brought into contact therewith where no external force operates on the C-shaped resilient ring 15. Therefore, the body 9 and the base attaching portion 10 can be connected to each other with a one-touch operation. In addition, where the body 9 and the base attaching portion 10 are attempted to be disconnected from each other after both body 9 and the base attaching portion 10 are connected together, since no external force operates in a direction of expanding the C-shaped resilient ring 15, the connection of both members 9 and 10 cannot be released, and also, since the above-described connection means of the body 9 and the base attaching portion 10 is not exposed to the outside of the water stop 2, there is no case where the ring 15 is erroneously removed during piping work.

Also, according to the above-described connection means, since the connection end portion 11 of the body 9 and the connection end portion 18 of the base attaching portion 10 are connected to each other so as to internally overlap each other, the entire length thereof can be comparatively shortened in comparison with a case where, for example, the body 9 is connected to the base attaching portion 10 by a union nut, coupling band, etc., wherein the unit 1 can be made more compact.

Since flanges 45,45a grounding the base installation plane GL, and anchor bolt insertion holes 46,46a protruding from the base installation plane GL and screw insertion holes 47,47a for fixing the base on the base installation plane GL with screws are provided at the corresponding flanges 45,45a, when installing the base 4, any one of the means for fixing the flanges 45,45a on the base installation plane GL with mortar, and means for fixing the flanges 45,46 on the base installation plane GL with anchor bolts or screws may be selected. The base 4 can be installed in compliance with various conditions of the base 4 installation portion, wherein the installation work can be facilitated, and practical effects thereof become remarkable.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a longitudinal sectional view of a water meter-attaching unit.

Fig. 2 is a plan view of the base.

Fig. 3 is an enlarged sectional view taken along the line A-A in Fig. 1.

Fig. 4 is an enlarged sectional view taken along the line B-B in Fig. 1.

Fig. 5 is an enlarged sectional view of a stopcock.

Figs. 6 are enlarged sectional views showing a connected state between the body of a stopcock and a base attaching portion, wherein (a) is a view showing a connection completed state between the body and the base attaching portion, and (b) is a view showing a state where, after connection is completed, the body and the base attaching portion are drawn in a direction of separating them from each other.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Hereinafter, a description is given of one embodiment of the present invention on the basis of the accompanying drawings.

Fig. 1 is a longitudinal sectional view of a water meter-attaching unit 1 according to the invention.

The unit 1 is composed of a stopcock 2 and a check valve 3 that, respectively, connect an inlet M1 and an outlet M2 of

the water meter M, and a base 4 for disposing and separating the corresponding stopcock 2 and check valve 3 on the axial line connecting the inlet M1 and outlet M2 of the water meter M with an interval which is longer than the entire length (distance between the inlet M1 and outlet M2) of the water meter M.

The stopcock 2 is an angle-type ball stopcock with a sub cock, in which a flow path from its inlet 5 and outlet 6 is formed so that the direction of the inlet 5 is orthogonal to that of the outlet 6, wherein a straight flow path communicating with the inlet 5 is provided, a body 9 in which spherical valve bodies that serve as a sub cock 7 and a main plug 8 are continuously formed in the straight flow path in order from the inlet side is connected to the base attaching portion 10 in which an elbow-type flow path communicating with the outlet 6 is formed, in a state where these are rotatable with each other.

A connection end portion 11 of the body 9 is provided with a circular section 12 at the inner circumference of the opening end, and a tapered surface 13 is formed so that the diameter thereof is reduced toward the depth side continuously from the corresponding circular section 12. A diameter-reduced circular section 14 is provided continuously from the minimum

diameter portion of the corresponding tapered section 13.

An annular recess groove 16 having the same depth as the diameter of the cross-section of a C-shaped resilient ring 15 is provided on the circumference of the circular section 12, so that the C-shaped resilient ring 15 whose diameter is able to be enlarged and reduced is made sinkable, and at the same time, an inclined section 17 is provided by notching the ridge portion at the opening end side of the connection end portion 11 at the edge of the opening portion of the corresponding groove 16.

The connection end portion 18 of the base attaching portion 10 is provided with a diameter-reduced circular section 19, a tapered section 20, a circular section 21 and an annular recess groove 22 each corresponding to the connection end portion 11 of the body on the outer circumference, and the diameter-reduced circular section 19 has an O-ring P attached into an O-ring groove recessed on its circumference.

The recess groove 22 is set to a depth by which the inner diameter side portion 15a (half-circular half-sectional surface of the ring 15) of the ring 15 protruding from the recess groove 16 at the connection end portion 11 of the body 9 is internally brought into contact in a state where no external force is applied to the C-shaped resilient ring 15.

And, where the connection end portion 18 of the base attaching portion 10 is inserted into the connection end portion 11 of the body 9, the inner diameter side portion 15a of the ring 15 protruding from the recess groove 16 of the corresponding connection end portion 11 is gradually pressed into the recess groove 16 of the connection end portion 11 of the body 9 along the tapered section 20 of the connection end portion 18 of the base attaching portion 10, wherein the ring 15 is once enlarged so that the same is sunk into the recess groove 16 by the circular section 21 which is continuous from the tapered section 20, and the ring 15 is reduced to an initial state where no external force is applied thereto when the recess grooves 16 and 22 correspond to each other. Then, the ring 15 is accommodated so that the inner diameter side portion 15a of the ring 15 is internally brought into contact with the recess groove 22, whereby engagement of the body 9 with the base attaching portion 10 can be secured by the ring 15, and these can be made rotatable. Further, these are caused to communicate with a spherical valve body that serves as a sub cock 7 and a main cock 8, and it is possible to freely establish the protrusion directions of operation rods 23 and 24 for opening and closing the valve body, which protrudes outside the body 9.

The inclined section 17 secured at the recess groove 16 of the body 9 has the following functions.

That is, where the body 9 and the base attaching portion 10 are pulled in directions whereby they separate from each other in a state where both the body 9 and the base attaching portion 10 are connected to each other as described above, a force whereby the respective ridge angle portions X (one ridge angle portion of the recess groove 16 is not illustrated because an inclined portion 17 is formed) of the opening portion edges of both recess grooves 16 and 22 presses the ring 15 in vertically opposed directions enlarges the diameter of the ring 15 so that the ring 15 is sunk into the recess groove 16 of the body 9 unless the inclined portion 17 is formed as in Fig. 6(a), and it is therefore conceived at this time that the body 9 is separated from the base attaching portion 10. However, if the inclined portion 17 is provided at the recess groove 16, since a reaction force wherein the outer diameter side portion 15b of the ring 15 presses the inclined portion 17 operates, as described in Fig. 6(b), in a direction orthogonal to the inclined plane, that is, inwardly of the recess groove 22 of the base attaching portion 10, the ring 15 does not enlarge its diameter so that the ring is sunk into the recess groove 16, wherein the stopcock 2, in which the body 9 and the base

attaching portion 10 are once connected to each other and integrated together, is prevented from being divided into the body 9 and the base attaching portion 10.

The outlet 6 side (the portion orthogonal to the body 9) of the base attaching portion 10 of the stopcock 2 has a side 25 circularly formed, and has a circular collar portion 26 protruded therefrom.

The outlet 6 of the base attaching portion 10 is provided with a straight flexible tube 29 into which a circular base portion 28 sliding in the inner opening portion 27 in a watertight state is inserted so as to advance and retreat.

In the flexible tube 29, the circular base portion 28 is provided with O ring grooves, which are recessed at the circumference thereof, and an O ring P is inserted into the respective O ring grooves. At the tip end side of the circular base portion 28, a polygonal side portion 30, which is smaller than the outer diameter of the circular base portion 28 (in the illustrated example, which is internally brought into contact with the circular base portion 28), is continuously formed by an appointed length, and a flange on which a packing S is fixed is provided on the end face of the opening portion at the tip end of the flexible tube 29. At the same time, a joint member U such as a union nut, etc., to be connected with

the inlet M1 of the water meter M is provided at the tip end of the flexible tube 29.

Further, although, in the illustrated example, a handle 24a is attached to only the operation rod 24 of the main cock 8, a handle (not illustrated) is adequately attached to an operation rod 23 of the sub cock 7.

Also, the stopcock 2 may not be the ball type stopcock constructed as described above, but may be a stopcock having other construction. In addition, the base attaching portion 10 of an elbow type is illustrated above. However, it may be a straight type, and the connection end portions 11 and 18 between the body 9 and the base attaching portion 10 may be of mutually inverted structures, that is, such a structure may be employed, in which the connection end portion 11 of the body 9 is inserted into the connection end portion 18 of the base attaching portion 10.

The check valve 3 is formed to be angular so that the flow path at the inlet 31 thereof is orthogonal to that of the outlet 32 thereof, and a valve body 33 that prevents a reverse flow from the secondary side to the primary side is internally provided in a straight flow path communicating with the inlet 31, thereby forming a base attaching portion 34. Also, a flange to which a packing S is attached is provided at the end surface

of the opening portion of the inlet 31, and a joint member U such as a union nut, etc., to be connected to the outlet M2 of the water meter M is provided at the inlet 31.

In addition, the base attaching portion 34 provided at the inlet 31 side of the check valve 31 has its side 35 circularly formed, and has a circular collar portion 36 protruding therefrom.

Further, the check valve 3, the outlet 32 side of which is angular to be bent like an elbow, is illustrated. However, such a type in which the flow path between the inlet 31 and the outlet 32 is straightly formed may be employed.

Also, in the present embodiment, a flexible tube 29 is provided at the outlet 6 of the stopcock 2. However, the flexible tube 29 may be attached to the inlet 31 of the check valve 3. In this case, the outlet 6 of the stopcock 2 protrudes from the circular collar portion 26, and a joint member U is attached to the tip end thereof.

The base 4 includes a parallelepiped intermediate member 37 which is long in its left and right directions, inclined plane sections 38 and 38a which are inclined upward continuously from the left and right sides of the corresponding intermediate member 37, and erect walls 39 and 39a which are erect from the extremely upper part of the corresponding

inclined portions 38 and 38a.

Seat portions 40 and 40a that fit the lower half circular portions of the base attaching portions 10 and 34 are recessed in conjunction with the circular collar portions 26 and 36 of the stopcock 2 and check valve 3 in the erect walls 39 and 39a. Roughly semi-arcuate fixing members 41 and 41a, which fit the upper half circular portion of the base attaching portions 10 and 34 and are attached to the seat portions 40 and 40a by a tightening member BT composed of a hexagonal socket head bolt, are provided on the corresponding seat portions 40 and 40a in conjunction with the circular collar portions 26 and 36.

The stopcock 2 and check valve 3 are established so that the outlet 6 (flexible tube 29) of the stopcock 2 and the inlet 31 of the check valve 3 are positioned on the same axial line in a state where the stopcock 2 and the check valve 3 are installed on the seat portions 40 and 40a.

And, a thin rubber plate R is adhered to the fitting plane between the seat portions 40 and 40a and the fixing members 41 and 41a, between the fixing members 41 and 41a and the base attaching portions 10 and 34, and the thin rubber plate R is adhered to function as a turn stopper of the base attaching portions 10 and 34 when the tightening member BT is completely tightened.

And, a polygonal port 44 corresponding to the polygonal side portion 30 is formed on the seat 40 that fixes the connection end portion 10 of the stopcock 2 having a flexible tube 29 provided, or the connection end portion 34 of the check valve 3 (the connection end portion 10 in the illustrated example) or one or both of the forward end faces 42 and 43 (in the illustrated example, only at the forward end face 43 of the fixing member 41) of the fixing member 41.

Flanges 45 and 45a that are grounded to the base installation plane GL composed of concrete are provided at the left and right sides of the lower part of the base 4, and at the same time, the corresponding flanges 45 and 45a are provided with anchor bolt insertion holes 46 and 46a protruding from the base installation plane GL and screw insertion holes 47 and 47a by which the base 4 is fixed on the base installation plane GL.

Next, a description is given of actions of the water meter-attaching unit 1.

When fixing the base 4 on the base installation plane GL, fixing means may be selected in compliance with the attaching conditions.

For example, where the existing water meter M is replaced, work space is narrow because a city water pipe has already been

installed, wherein it is inconvenient to newly provide anchor bolts in the base installation plane GL. Therefore, holes are drilled by a drilling tool on the base installation plane corresponding to the screw insertion holes 47 and 47a..., which are provided in the flanges 45 and 45a, and a plug (not illustrated) for screwing a screw in the corresponding hole is inserted in the holes and screws (not illustrated) which are inserted into the screw insertion holes 47 and 47a, wherein the base 4 is fixed on the base installation plane GL.

Where the base 4 is newly installed, since work space is comparatively wider before a city water pipe is installed than in the above-described case, the anchor bolts can be easily provided in the base installation plane GL, wherein after the anchor bolts are studded in the base installation plane GL corresponding to the anchor bolt insertion holes 46 and 46a secured in the flanges 45 and 45a, bolts (not illustrated) protruding from the base installation plane GL are inserted into the anchor bolt insertion holes 46 and 46a and are tightened by nuts, whereby the base 4 is fixed on the base installation plane GL.

In addition to the above-described method for fixing the base 4, the flanges 45 and 45a can be fixed on the base installation plane GL with mortar.

When installing the stopcock 2, check valve 3 and water meter M in a city water pipe (not illustrated) after the base 4 is fixed on the base installation plane GL by any one of the above-described three methods, first, the base attaching portions 10 and 34 of the stopcock 2 and check valve 3 and the lower half circular portions of the circular collar portions 26 and 36 are, respectively, disposed on the seat portions 40 and 40a, the upper half circular portions thereof are, respectively, covered by the fixing members 41 and 41a, and the tightening member BT is loosely tightened, wherein these members are provisionally fixed in a state where the respective base attaching portions 10 and 34 are loosely provided between the seat portions 40, 40a and the fixing members 41, 41a.

In the provisionally fixed state, since the respective circular collar portions 26 and 36 are loosely provided between the seat portions 40, 40a and the fixing members 41, 41a, the base attaching portions 10 and 34 are able to turn centering around the axial line thereof. However, movement thereof in the axial line direction is regulated by the respective circular collar portions 26 and 36, and the stopcock 2 and check valve 3 are positioned at the left and right sides of the base 4.

In such a state, by adequately turning the stopcock 2

and check valve 3, respectively, the inlet 5 of the stopcock 2 and the outlet 32 of the check valve 3 are directed so as to match the respective connection ports of a city water pipe, and are provisionally fixed by a union nut (not illustrated) for connection.

Also, as regards the stopcock 2, the body 9 is turned with respect to the base attaching portion 10 so that the operation rods 23, 24 and handle 24a are caused to protrude in an appointed direction. After that, the union nut, by which the stopcock 2, check valve 3 and city water pipe are provisionally connected to each other, and the tightening member BT are completely tightened.

In addition, in order to connect the stopcock 2 and check valve 3 to a city water pipe even if a stopcock 2 and a check valve that are not angularly bent but are straight types, are used, it is necessary that an elbow pipe is connected to the inlet 5 of the stopcock 2 and the outlet 32 of the check valve 32, respectively. Therefore, when provisionally fixing these, it becomes necessary that the stopcock 2 and check valve 3, which are provisionally fixed, are turned so that connection ports of the elbow pipes coupled to the inlet 5 side of the stopcock 2 and the outlet 32 side of the check valve 3 are caused to match the connection port of a city water pipe.

Next, a water meter M is caused to intervene and is connected between the stopcock 2 and the check valve 3, which are fixed on the base 4.

With respect to such a connection, a water meter M is disposed between the stopcock 2 and the check valve 3, and the flexible tube 29 is elongated to an adequate length, wherein respective joint members U provided at the flexible tube 29 and the inlet 31 of the check valve 3 are screwed in the inlet M1 and outlet M2 of the water meter M.

Since the circular base portion 28 is formed to be larger than the diameter of the polygonal side portion 30 with respect to the elongation of the flexible tube 29, the circular base portion 28 is brought into contact with the inside (the surrounding of the polygonal port 44) of the forward end face 43 of the fixing member 41 to prevent the same from being detached.

When screwing in the joint member U, since the base attaching portions 10 and 34 of the stopcock 2 and check valve 3 are placed between the seat portions 40, 40a and the fixing members 41, 41a, turning thereof is not permitted. And since the flexible tube 29 is not permitted to turn because the polygonal side portion 30 is made to agree with the forward end face 43 of the fixing member 41. Therefore, the joint member

U can be screwed in by being simply tightened by a wrench or the like without holding the flexible tube 29 and the check valve 3 by pliers or the like so that these do not turn.

WHAT IS CLAIMED IS:

1. A water meter attaching unit comprising a stopcock and a check valve that, respectively, connect an inlet and an outlet of a water meter; and a base for disposing said stopcock and check valve located on the axial line connecting the inlet and outlet of the water meter with an interval, which is longer than the entire length of said water meter, provided therebetween; wherein respective base attaching portions of the stopcock at the outlet side and the check valve at the inlet side have sides circularly formed, and have circular collar portions protruded; a seat portion for fitting a lower half circular portion of the base attaching portion along with the circular collar portion, a fixing member for fitting the upper half circular portion of the base attaching portion along with the circular collar portion and being attached to the seat portion by a tightening member are provided on said base; a flexible tube into which a circular base portion sliding in an inner opening portion in a watertight state is inserted so as to advance and retreat is provided at any one of the outlet of said stopcock and the inlet of said check valve; a polygonal side portion which is smaller than the outer diameter of said circular base portion is continuously formed at the tip end side of said circular base portion of said flexible tube; and

the forward end plane of one or both of said seat portion and fixing member is formed so as to match the polygonal side portion.

2. The water meter attaching unit as set forth in Claim 1, wherein said stopcock is formed so that its body and portion to be attached to the base are rotatably connected to each other, one of the connection end portions has a circular section provided on the inner circumference at an opening end, and has a tapered section provided thereon, which is composed so as to cause its diameter to be reduced inwardly continuously with said circular section; an annular recess groove in which an expandable and retractable C-shaped resilient ring is disposed so as to be sinkable is provided on the circumference of the circular section; and simultaneously a ridge angular portion at the opening end side of said connection end portion at the opening edge of said annular recess groove is diagonally notched to provide an inclined portion, and the other connection end portion has a tapered section, a circular section and an annular recess groove each corresponding to said connection end portion provided on the outer circumference thereof, and said annular recess groove is set to a depth by which an inner diameter side portion of a ring protruding from the annular recess groove at one connection end portion is

internally brought into contact therewith in a state where any external force does not operate on the C-shaped resilient ring.

3. The water meter attaching unit as set forth in Claim 1 or 2, wherein flanges grounded to the base installation plane are provided on the base, and an anchor bolt insertion hole protruding from said base installation plane and a screw insertion hole for screwing the base on the base installation plane are provided on said flanges.