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(54) OUTDOOR FAUCET SYSTEM

(57) The invention relates to a outdoor faucet system (10) for preventing water damage in an outer wall (1) of a building, wherein the system (10) comprises:
-a adapter (11) arranged to sealingly connect to a inner pipe connector (5.3) of a pipe-in-pipe plumbing system wall box (5), the adapter (11) has a valve seat (11.1),
- a water pipe (12), arranged to extend through the wall (1), the water pipe (12) has in one end a wall mount flange (12.1) having a spout (12.2), in the opposite end the water pipe (12) is arranged to sealingly connect to the adapter piece (11),
- a valve stem (13) arranged in the water pipe (12), the valve stem (13) is operable from the wall mount flange (12.1) and further comprises a valve member (13.1) arranged so that the valve member (13.1) moves in and out of sealingly engagement with the valve seat (11.1) when the valve stem (13) is operated, and
- a wall box extender (14) arranged to surround the water pipe (12) and arranged to seal against the wall box (5) and to extend to the outside (3) of the wall (1).

The invention also relates to a method for installing the outdoor faucet system (10).

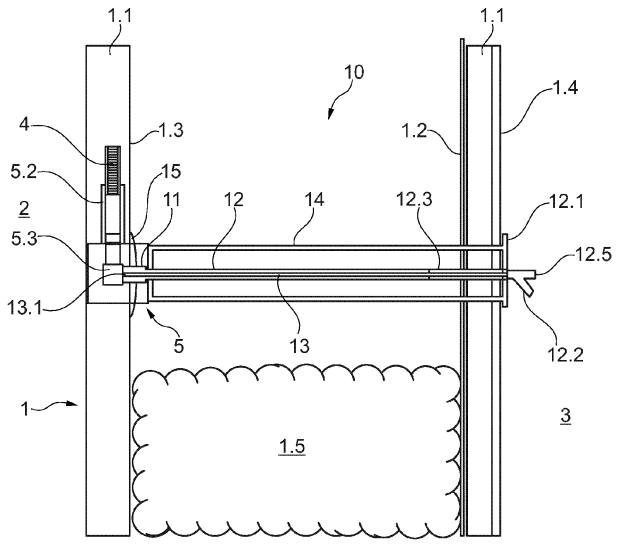

Fig. 5

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Description

Field of the invention

[0001] The invention relates to an outdoor faucet system for preventing water damage in a outer wall of a building.

Background of the invention

[0002] In parts of the world experiencing low temperatures during winter it is common with insulated building such as houses and homes to reduce the amount of energy needed to maintain comfortable temperatures inside during winter. An insulated building has outer walls that is more complex than a building that is not insulated. Outer walls of buildings in warm areas of the world can in many cases just be a layer of bricks or concrete covered with plaster, while an insulated building in Northern Europe such as Norway the outer walls are often wooden studwork with wooden cladding. Such wooden studwork wall is in many cases insulated with rock wool in between the studs. To prevent migration of moist from inside the house that can condensate inside the wall there is a vapor barrier in the outer wall on the inside relative to the insulation. It is also a wind barrier on the outside relative to the insulating layer to prevent cold air to blow into the insulation. To reduce the thermal bridged in such walls resulting from the studs that is less thermal insulating a second layer of insulation is filled in between laths that is secured to the studwork or to boards on the studwork. On the inside the wall is often covered with building boards such as plasterboard.

[0003] Since insulated buildings is more complex they are also more susceptible to water damage. Water that leaks into a insulated wall, floor or roof/ceiling does not dry straight away and can cause rot and or mold to develop. Also it is more expensive to fix a insulated wall that is damaged by a water leak. Since both the probability and the consequences of water damaged in a insulated wooden building is higher the total risk of water damage in such a building is higher. Due to this it is in some country's common with double walled plumbing, sometimes called pipe-in-pipe system. In for instance Norway it have been common to use pipe-in-pipe system since the late 90s.

[0004] Based on experience with leaks from traditional copper pipes, regulations were developed that applied to all new houses in Norway. The purpose of the regulation is to prevent water damage. The pipe-in-pipe system has been developed to meet the criteria in this regulation and is today practically standard in all new residential buildings in Norway. There is only a few providers of pipe-in-pipe systems and they are practically identical, since they have to be compatible to third party components such as faucets, showers, toilets etc..

[0005] A pip-in-pipe system has four main components: an inner water pipe, an outer pipe, wall boxes and a central distributor cabinet. The water flows through the inner water pipe, which is enclosed by the outer pipe. The wall boxes is connection points for faucets, showers, toilets, etc.. Each wall box is connected with pipe-in-pipe (a inner pipe enclosed by a outer pipe) to the central distribution cabinet so that any water leaks in the inner pipe is safely led away to the central distribution cabinet. The central distribution cabinet is placed in a room with a drain in the floor so leaking water entering the cabinet exits the cabinet onto the floor where it flows down in the drain.

[0006] Between the inner water pipe and the outer pipe there is an annulus. This annulus is terminated at the wall box and exits in the central distribution cabinet. The pipe-in-pipe system is for the most standardized including the wall boxes. The wall boxes is usually prepared for being nailed or screwed to the side of a stud or lath inside the wall. The wall box has a standardized thread connection (usually a ½" female/internal threads connection) for connecting the faucets, showers, toilets or other water consumers. Surrounding this connection in the wall box is a circular collar extending about 3-7 cm out from the wall box.

[0007] After installation of the pipe-in-pipe system in a building the wall are closed off usually by various types of building boards. The boards a perforated using hole saw or similar so that there is a hole that the collar of the wall box fits into. The collar of the wall box extends into the plate so that water taps, toilets etc., can be connected to the pipe-in-pipe system after all the walls are closed. Any leaks that may occur between the wall box and a water tap will then be leaded into the room by the collar so that it is visible and it cannot leak into the wall. Most taps, toilets etc. are also in room with a drain in the floor so any leaks outside the pipe-in-pipe system will usually find its way down in a drain on a floor.

[0008] The existing pipe in pipe systems have reduced and almost eliminated the possibility for hidden leaks from the water supply into walls, floors, and ceiling since all the hidden pipes is double walled. There is however one exception and that is with outdoor faucets. Connection of outdoor faucets to a pipe-in-pipe system is not done to a wall box. The outdoor faucet is connected directly to the inner pipe of the pipe-in-pipe system and the outer pipe (or more precisely the annulus) is usually terminated using a rubber sleeve that seals around the inner pipe where the outer pipe ends.

[0009] The outdoor faucet are connected to the inner pipe after this sleeve. The pipe-in-pipe system is installed throughout the building on the inside of the insulation to avoid that the water freezes in the inner pipe. The valve of the faucet is located on the inside of the insulation and a pipe extends from the faucet valve to lead water to a spout on the outside of the building. The faucet valve can be operated from outside the building by operating a valve stem that extend through the water pipe and has a handle on the outside of the building or the valve stem can be operated using a key.

[0010] Such a outdoor faucet system is distinguished from other faucets in that the valve (valve seat and valve stem in combination) is arranged at a distance from the spout and the valve stem operator. The valve can then be arranged on the inside of the insulation while the spout is on the outside of the wall and also the valve can be operated from the outside. This is to be able to close of water so that there is no water under pressure that can freeze during winter and cause water damage.

[0011] A water leak inside the wall can however occur if the valve is not closed during winter. This can be the case if a garden hose on a hose reel is connected to the outdoor faucet. If a valve on the end of the garden hose is closed the owner/user will not realize that the valve of the outdoor faucet is still open and can accidentally leave it open during the winter.

[0012] The water pipe is often made of copper. Copper is an efficient conductor of heat, this lack of insulation through the copper water pipe can lead to a leak even if the faucet valve is closed and the valve is on the inside of the insulation. The water on the pressurized side of the faucet valve is cooled down so that it freezes and causes a leak in the valve or in the pressurized water pipe. Since a prior art faucet system is not connected to the pipe-in-pipe system via a wall box there is no second barrier that will prevent the leaking water from entering the inside of the wall or cause damage elsewhere.

[0013] Another issue with prior art outdoor faucets is that it condenses on the water pipe that extends between the valve and the spout through the wall. For instance if the outdoor faucet is used for watering outdoor during the summer over a longer time period, the condense my cause water damage inside the wall. The water inside the pipe is colder than the surrounding air and therefore there will be condensation on the pipe.

[0014] Replacement of a outdoor faucet can be needed. For instance if the valve is leaking so it is constantly dripping. This can happen if the valve member is not able to seal against the valve seat. It can be that the valve seat is worn out. Replace the outdoor faucet will require to open up the wall preferably on the inside since that is closest to where the valve is located. This causes a replacement job to be much more extensive than just the actual replacement of the faucet system. Sometimes it is solved by having a hatch in the wall where it is possible to access the faucet system. It is however in most cases not desirable to have a hatch in the wall, at least it limits the places where it is suitable to install such outdoor faucets.

Prior art:

[0015] EP4056769A1 relates to a leak-safe water tap system to be arranged through a wall of a building.

[0016] EP1666674A2 relates to a regulating and shut-off armature and method of its final assembly.

Object of the invention

[0017] It is an object of the invention to provide a solution that prevents water damage in building walls from outdoor faucets.

[0018] It is another object to provide a outdoor faucet system that is easy to install and/or to replace.

Summary of the invention

[0019] The invention relates to a outdoor faucet system for preventing water damage in an outer wall of a building. The system comprises:

- a adapter arranged to sealingly connect to a inner pipe connector of a pipe-in-pipe plumbing system wall box,
- a water pipe, arranged to extend through the wall, the water pipe has in one end a wall mount flange having a spout, in the opposite end the water pipe is arranged to sealingly connect to the adapter piece,
- a valve stem arranged in the water pipe, the valve stem is operable from the wall mount flange, and
- a wall box extender arranged to surround the water pipe and arranged to seal against the wall box and to extend to the outside of the wall.

wherein the adapter has a valve seat, the adapter comprises a gasket on a inside arranged to seal against the water pipe when inserted into the adapter and further the valve stem comprises a valve member arranged so that the valve member moves in and out of sealingly engagement with the valve seat when the valve stem is operated.

[0020] The technical effect of the wall box extender is that it collects any leaking water from the water pipe and leads this water to the outside of the wall. In addition it also collects any water that have condensed on the outside of the water pipe and leads it to the outside of the wall.

[0021] The wall box extender is preferably flat or slightly sloped towards the outside of the wall. Preferably with an angle of 0-15° more preferred 0-10° and even more preferred 1-5°. This is to avoid water being trapped inside the wall box extender.

[0022] The water pipe is preferably flat or slightly sloped towards the outside of the wall, so that water is drained out from

the water pipe after the valve of the faucet is closed. Preferably with an angle of 0-15° more preferred 0-10° and even more preferred 1-5°.

[0023] The wall box extender is arranged to fit to any standard wall box. The wall box collar is usually connected to threads to the rest of the wall box. Therefor the wall box collar can easily be removed and replaced with the wall box extender equipped with the same threads as the wall box collar. Alternatively, the wall box extender can comprises at least one gasket such as a O-ring on the inside or on the outside and be sized so that it can be slided onto or into the wall box collar and seal against the wall box collar.

[0024] The wall box extender can be provided with an internal profile such as two grooves so that a special tool can be used to insert the wall box extender and screw it to fasten it to the wall box in case it is a threaded connection between the wall box extender and the wall box.

[0025] The wall box extender can also comprise a replaceable wall box extender adapter so that one that is suitable for the application and the exact type of wall box can be chosen.

[0026] The wall mount flange is preferably screwed to the wall by two stainless steel screws. Alternatively it is nailed or glued or fasten to the wall in other ways. It is the screws to the wall (or other means of fastening) that holds the water pipe in place and prevents it from being forced out of the adapter by the water pressure when the faucet valve is open.

[0027] The water pipe is preferably a section of straight pipe.

[0028] The gasket is preferably a O-ring even more preferably two O-rings. The O-ring(s) is preferably arranged in grooves inside the adapter.

[0029] The gasket /O-rings secures a water tight connection between the adapter and the water pipe.

[0030] A additional advantage of the gasket or O-rings(s) is that it breaks the thermal bridge between the outside (via the water pipe) and the pressurized water inside the adapter that is upstream from the valve seat. It reduces the possibility that this water freezes.

[0031] The water pipe can have a stinger section at the opposite end relative to the wall mount flange and that this stinger section is arranged to be pushed into the adapter so that it seals against a inner surface of the adapter.

[0032] The stinger can be slightly tapering toward the end to facilitate the entering of the adapter without scratching the sealing inside surface of the adapter.

[0033] The adapter can be deep enough to compensate for thermal expansion and any seals/gaskets/O-rings can also be arranged so that the water pipe can move slightly in and out of the adapter to compensate for thermal expansion and the like. Also, the exact length of the water pipe is not so critical when cutting it to a suitable length. The adapter can have a outer surface that fits in a socket wrench or other tool, so that a tool can be used to screw the adapter into the inner pipe connector of the wall box. This makes it possible to use a extender between a suitable socket and a socket wrench so that the adapter can be connected or disconnected to the wall box from the outside of the building.

[0034] An advantage due to the adapter is that the system can be easily replaced. It can then be replaced without having to open up the wall.

[0035] The water pipe can comprise a weak pipe section arranged to burst before the rest of the water pipe in case of frost shattering.

[0036] The weak pipe section can either be a section of the water pipe that has less wall thickness, a section made of a weaker material such as brass or a combination of these.

[0037] The wall mount flange can further comprise a drain hole arranged so that water leaking into the wall box will exit the wall box extender through the drain hole.

[0038] The interface between the end of the wall box extender and the wall mount flange can be sealed so that it is water tight. This can be done by having a gasket in between them. Such a gasket can be secured to the wall mount flange. Alternatively a sealing compound such as silicon can be applied to the interface between the wall mount flange and the wall box extender.

[0039] In another aspect the invention relates to a method for installing the outdoor faucet system. The method comprises the steps of:

- inserting the wall box extender into a pre cut hole in the outside of the wall and secure the wall box extender to a pre installed wall box inside the wall,
- inserting the adapter into the inner pipe connector of the wall box from the outside of the building using a matching elongated tool,
- screwing the adapter to securing it to the inner pipe connector using said elongated tool from the outside of the building,
- cutting the water pipe and the valve stem to a length required for the water pipe and the valve stem to reach the adapter at the same time as the wall mount flange is in contact with the outside of the wall,
- inserting the water pipe having the valve stem with the valve member inside the water pipe into the adapter, and
- securing the wall mount flange to the wall on the outside of the building.

Description of the drawings

[0040]

Fig. 1 shows a prior art outdoor faucet system/kit.

Fig. 2 shows a valve stem with a valve member arranged to seals against a valve seat in a outdoor faucet system.

Fig. 3 shows a standard wall box for a pipe-in-pipe plumbing system (water supply plumbing)

Fig. 4 shows the wall box of fig. 3 disassembled into its main components.

Fig. 5 shows schematically an embodiment of the outdoor faucet system according to the invention. The outdoor faucet system is in Fig. 5 installed in an typical outer wall of a building.

Fig. 6 shows the adapter piece from the outdoor faucet system in Fig. 5 in a closer view.

Fig. 7 shows the wall mount flange having a spout and a drain.

Reference numbers	
1	Outer wall (of a building)
1.1	Lath
1.2	Wind barrier (in the wall)
1.3	Moisture barrier (in the wall)
1.4	Cladding on the wall
1.5	Insulation (in the wall such as rock wool)
2	Inside the building
3	Outside the building
4	Inner pipe of pipe-in-pipe system
5	Wall box (double pipe plumbing system wall box)
5.1	Wall box collar
5.2	Outer pipe termination sleeve
5.3	Inner pipe connector
6	Prior art outdoor faucet system
6.1	Water pipe (of prior art faucet system)
6.2	Valve stem (of prior art faucet system)
6.3	Valve member (of prior art faucet system)
6.4	Wall mount flange (of prior art faucet system)
6.5	Spout (of prior art faucet system)
6.6	Valve stem operator (of prior art faucet system)
6.7	Valve stem operator key (of prior art faucet system)
6.8	Connector (with a internal valve seat (of prior art faucet system))

(continued)

Reference numbers	
10	Outdoor faucet system
11	Adapter
11.1	Valve seat
11.2	Gasket (such as O-ring)
11.3	Threads
11.4	Hex screw head (or similar to hex)
12	Water pipe
12.1	Wall mount flange
12.2	Spout
12.3	Weak pipe section (can be made of brass for instance)
12.4	Drain hole (for letting out water that have leaked into the wall box extender)
12.5	Operation means (for operating the valve stem 13. i.e., moving it in and out to move the valve member 13.1 in and out of sealing engagement with the valve seat 11.1)
13	Valve stem
13.1	Valve member
	The valve seat 11.1 and the valve member 13.1 in combination constitutes the faucet valve or the valve of the faucet. For the prior art system it is the valve seat of the connector 6.8 and the valve member 6.3 that constitutes the faucet valve or the valve of the faucet.
14	Wall box extender
15	Moisture barrier sleeve

Description of preferred embodiments of the invention

[0041] In the following embodiments of the invention will be described with reference to the drawings (Fig.1 - 7).

[0042] Fig. 1 shows a typical prior art outdoor faucet system 6. This is an example of one of the most common systems in place in houses today. Such a system 6 typically comprises a water pipe 6.1 made of copper or another metal. The water pipe 6.1 has a wall mount flange 6.4 in one end and in the other end it has a connector 6.8 with an internal faucet valve. The water pipe 6.1 is cut to a length that fits the thickness of the wall. Water exits the water pipe 6.1 in a spout 6.5 at the wall mount flange 6.4. The faucet is open and closed by screwing a valve stem operator 6.6 that is pushing on a spring-loaded valve stem 6.2 having a valve member 6.3. The valve member 6.3 is then moved in and out of sealing engagement with the valve seat of the connector 6.8. The valve stem 6.2 and the valve member 6.3 is seen in Fig. 2. The valve stem operator 6.6 is in most cases a square bolt that can be rotated by a tool, or it can be operated using a valve stem operator key 6.7 as the one seen in Fig. 1. By rotating the valve stem operator 6.6 the valve stem 6.2 can be moved in or out to open or close the valve.

[0043] Fig. 3 shows a standard wall box 5 for a pipe-in-pipe system. The wall box 5 comprises an inner pipe connection 5.3 surrounded by a wall box collar 5.1. The inner pipe connector 5.3 can be seen inside the wall box collar 5.1 in Fig. 3 or by itself in Fig. 4 where the wall box 5 is disassembled. The outer pipe of the pipe-in-pipe system is terminated in an outer pipe

termination sleeve 5.2. The wall box 5 is secured to studs or lath 1.1 inside the wall before closing the walls with building boards or similar. When the room is finished and the interior such as toilets, faucets, showers etc. is to be mounted it can easily be connected to water by connecting it to the inner pipe connector 5.3. The wall box is covered up by building boards, but the wall box collar is protruding into the building board preferably more or less flush with the inside of the wall 1.

[0044] In fig. 5 an embodiment of the outdoor faucet system 10 according to the invention is showed. In fig. 5 it is installed in an outer wall 1 of a building. The system 10 comprises a adapter 11, a wall box extender 14, a valve stem 13 having a valve member 13.1 and a water pipe 12 having a wall mount flange 12.1 with a spout 12.2 and a operation means 12.5 for operating a valve stem 13 by moving it axially inside the water pipe 12.

[0045] The adapter 11 can have threads 11.3 so that it is arranged to be screwed into a inner pipe connector 5.3 of a wall box 5. The adapter 11 comprises a valve seat 11.1 and at least one gasket 11.2, preferably one or more O-rings on the inside. The adapter can have an outer surface like a hex screw head 11.4 , so that a socket wrench can be used to screw it in and unscrew it.

[0046] The water pipe 12 is arranged to sealingly connect to the adapter 11. Preferably the water pipe 12 is inserted into the adapter 11 where there is at least one O-rings 11.2 that seals against the water pipe 12. In the other end the water pipe 12 has the wall mount flange 12.1 with the spout 12.2. The wall mount is arranged to be fasten to the outside 3 of the wall preferably by screws. With the wall mount flange 12.1 connected to the wall 1 the water pipe 12 is prevented from being pulled out off or off the adapter 11. The water pipe 12 further comprises the operator means 12.5 for operating a valve stem 13 to open and close for water.

[0047] The valve stem 13 is arranged inside the water pipe 12 and stretches from the operator means 12.5 and to the valve seat 11.1. The valve stem 13 has the valve member 13.1 that is arranged to open and close for water by being put in and out of sealingly engagement with the valve seat 11.1. The valve stem 13, with the valve member 13.1, can function and be operated in the same way as for a prior art faucet system 6 such as the one described above with reference to Fig. 1 and 2.

[0048] The wall box extender 14 is arranged to be connected to the wall box 5, either by replacing the wall box collar 5.1 which for some pipe-in-pipe systems has a screw connection to the rest of the wall box 5, or connected to the wall box collar 5.1 as a extension. If it is as an extension it can comprise O-rings on the inside or outside and slid onto or inside the wall box collar 5.1. The wall box extender 14 is arranged to seal against the wall box 5 in one end and against the wall mount flange 12.1 in the other end.

[0049] In addition a moisture barrier sleeve 15 can be installed. This sleeve 15 is arranged to seal against the wall box extender 14 and the moisture barrier 1.3, so that air can not flow through the penetrated moisture barrier 15 along the wall box extender 14.

[0050] The installation process for the system 10 can be as follows:

- Connect the adapter 11 and the wall box extender 14 to the wall box 5. Fasten the wall box to the inner lath 1.1 of the wall 1 so that the wall box extender 14 extends from the wall box 5 and out through a pre cut circular hole in the outer wooden cladding 1.4.

[0051] The inside 2 of the wall can now be finished by closing it with plaster boards (for instance).

- If the wall box extender extends out from the wall on the outside 3 cut the wall box extender so that it is flush with the outside 3 of the wall 1.

- Measure the depth from the outside 3 of the wall 1 and to the adapter 11. Cut the water pipe 12 and the valve stem 13 to the required length.

- Insert the water pipe 12 with the valve stem 13 inside the water pipe 12 into the wall box extender 14. Push the water pipe 12 into the adapter 11 so that the O-ring(s) 11.2 are sealing against the water pipe 12.

- Fasten the wall mount flange 12.1 to the outside 3 of the wall 1 preferably using screws.

[0052] The inside of the wall mount flange 12.1 can have a gasket that is arranged to seal against the end of the wall box extender 14. Alternatively a sealing compound such as silicon can be applied to the interface between the wall mount flange 12.1 and the wall box extender 14. It is however not essential that the interface between the wall mount flange 12.1 and the end of the wall box extender 14 is water tight, since any leaks into the wall box extender 14 anyway will be lead to the outside 3 of the building.

[0053] Replacement of a leaking faucet valve can easily be done by following the method below:

- Unscrewing the screws that holds the wall mount flange 12.1.

- Pulling out the water pipe 12 with the valve stem 13 and the valve member 13.1.
- Unscrew and remove the adapter 11 using a suitable hex key with an extension and a spanner or a specially adapted tool made for reaching the adapter from the outside 3 and for screwing out the adapter 11.
- Insert and fasten the adapter 11 of the replacement faucet system 10 using the same tool as in the previous step.
- Insert the water pipe 12 having the valve stem 13 with the replacement valve member 13.1 into the wall box extender 14 and push it into the adapter 11. (if desirable the same water pipe can be re-used)
- Fasten the wall mount flange 12.1 to the outside of the wall 1.

Claims

1. A outdoor faucet system (10) for preventing water damage in an outer wall (1) of a building, wherein the system (10) comprises:

- a adapter (11) arranged to sealingly connect to a inner pipe connector (5.3) of a pipe-in-pipe plumbing system wall box (5),
- a water pipe (12), arranged to extend through the wall (1), the water pipe (12) has in one end a wall mount flange (12.1) having a spout (12.2), in the opposite end the water pipe (12) is arranged to sealingly connect to the adapter (11),
- a valve stem (13) arranged in the water pipe (12), the valve stem (13) is operable from the wall mount flange (12.1), and
- a wall box extender (14) arranged to surround the water pipe (12) and arranged to seal against the wall box (5) and to extend to the outside (3) of the wall (1),

wherien the system is **characterized in that** the adapter (11) has a valve seat (11.1), the adapter (11) comprises a gasket (11.2) on a inside arranged to seal against the water pipe (12) when inserted into the adapter (11) and further the valve stem (13) comprises a valve member (13.1) arranged so that the valve member (13.1) moves in and out of sealingly engagement with the valve seat (11.1) when the valve stem (13) is operated.

2. The outdoor faucet system (10) according to claim 1, wherein the water pipe (12) has a stinger section in a opposite end relative to the wall mount flange (12.1) and that this stinger section is arranged to be pushed into the adapter (11) so that it seals against an inner surface of the adapter (11).

3. The outdoor faucet system (10) according to claim 1 or 2, wherein the water pipe (12) comprises a weak pipe section (12.3) arranged to burst before the rest of the water pipe in case of frost shattering.

4. The outdoor faucet system (10) according to any of the preceding claims, wherein the wall mount flange (12.1) further comprises a drain hole (12.4) arranged so that water leaking into the wall box extender (14) will exit through the drain hole (12.4).

5. A method for installing the outdoor faucet system (10) according to any of the claims 1-4, wherein the method comprises the steps of:

- inserting the wall box extender (14) into a precut hole in the outside (3) of the wall (1) and secure the wall box extender (14) to a pre installed wall box (5) inside the wall (1),
- inserting the adapter (11) into the inner pipe connector (5.3) of the wall box (5) from the outside (3) of the building using a matching elongated tool,
- screwing the adapter (11) to secure it to the inner pipe connector (5.3) using said elongated tool from the outside (3) of the building,
- cutting the water pipe (12) and the valve stem (13) to a length required for the water pipe and the valve stem to reach the adapter (11) at the same time as the wall mount flange is in contact with the outside (3) of the wall (1),
- inserting the water pipe (12) having the valve stem (13) with the valve member (13.1) inside the water pipe (12) into the adapter (11), and
- securing the wall mount flange (12.1) to the wall (1) on the outside (3) of the building.

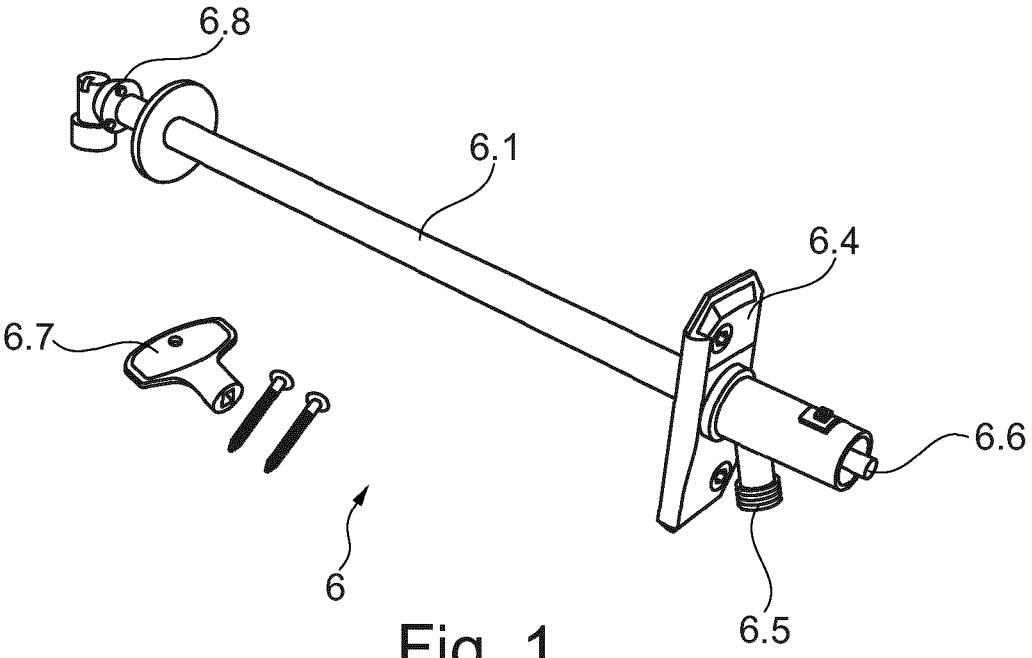

Fig. 1

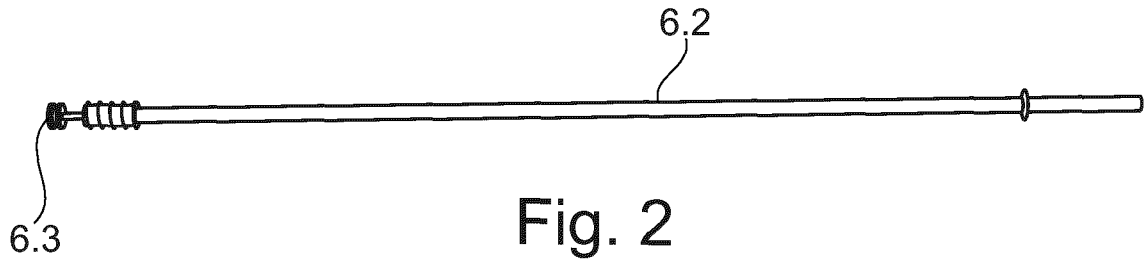

Fig. 2

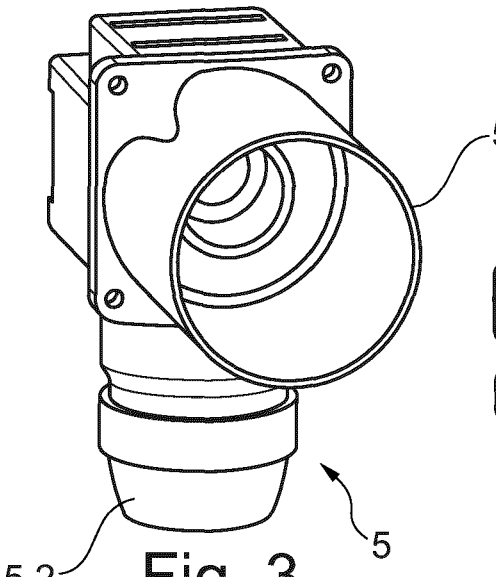

Fig. 3

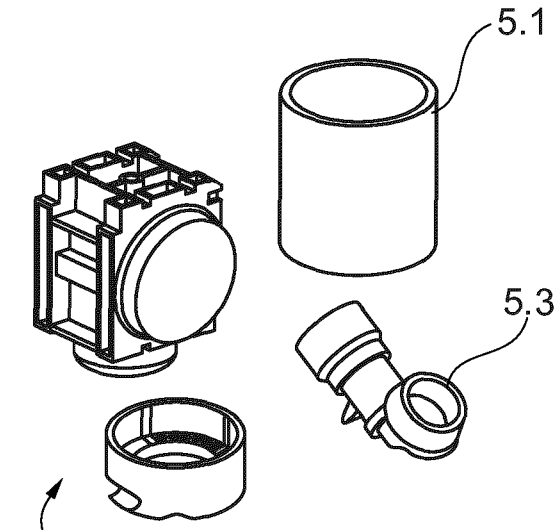

Fig. 4

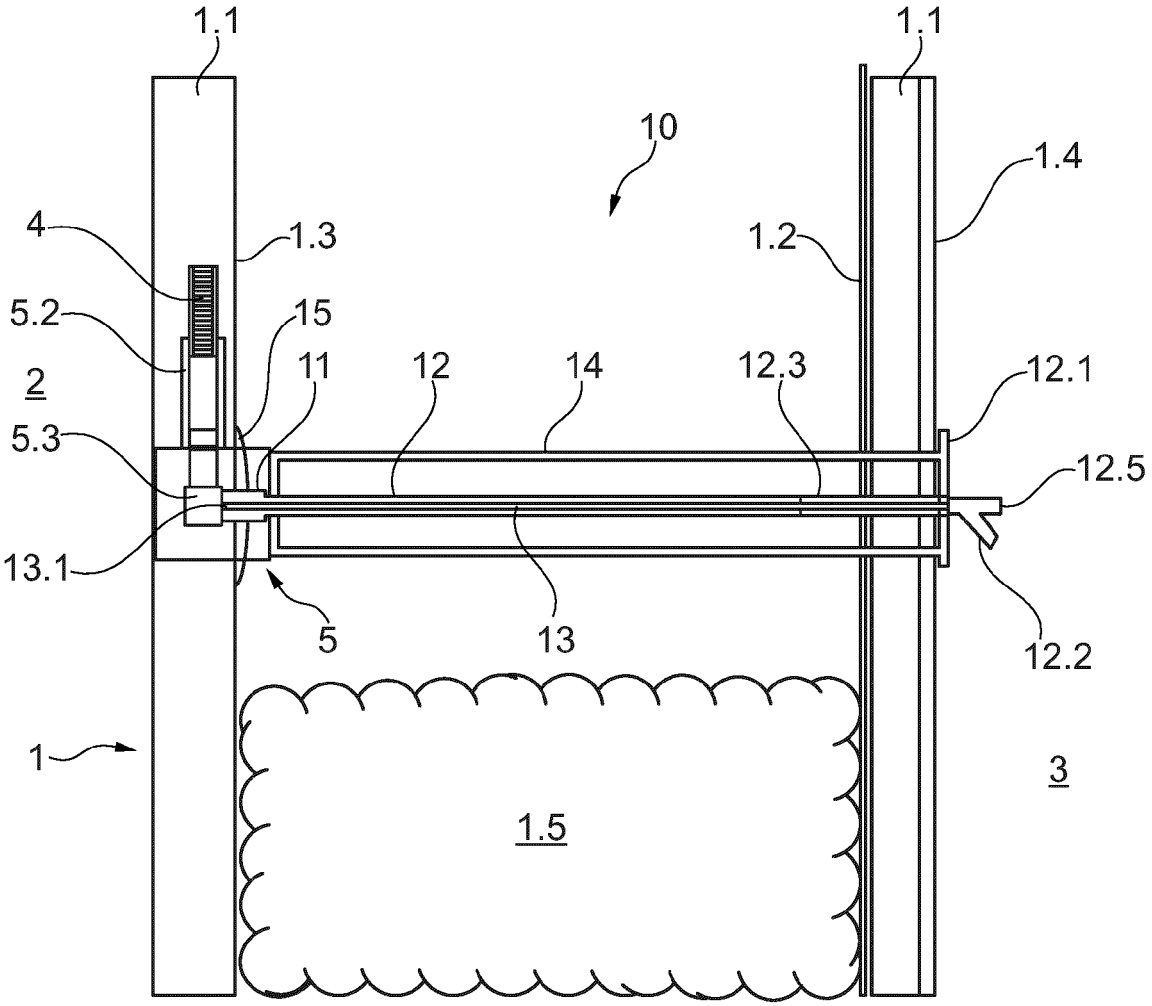

Fig. 5

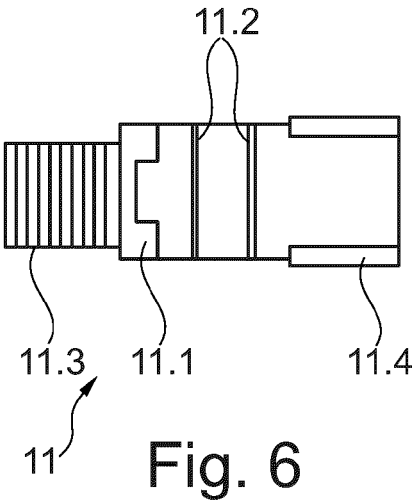

Fig. 6

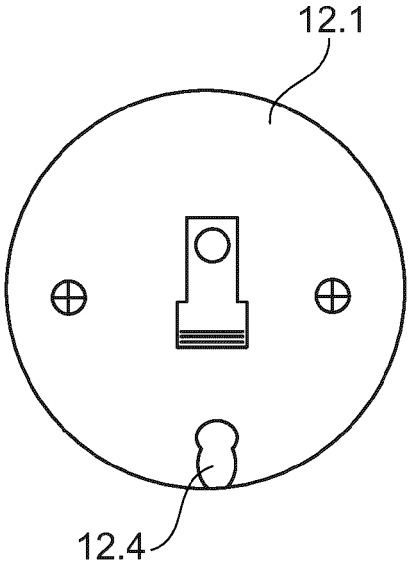

Fig. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 24 18 5941

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 4 056 769 A1 (NIELSEN CLAUS ROSAGER [DK]) 14 September 2022 (2022-09-14) * figures 1, 2a, 3, 6d, 6e * -----	1-5	INV. E03B9/02

TECHNICAL FIELDS SEARCHED (IPC)

E03B

The present search report has been drawn up for all claims

1

Place of search	Date of completion of the search	Examiner
Munich	28 November 2024	Flygare, Esa

CATEGORY OF CITED DOCUMENTS

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28-11-2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 4056769 A1	14-09-2022	NONE	

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- EP 4056769 A1 **[0015]**
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