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(54) A MOBILE FLOOD PROTECTION DEVICE FOR SEALING A DRAIN

(57) A mobile flood protection device (100) for sealing a drain, the device comprising a sealing element (130), a support element (110), and an elongated element (120), wherein:
the support element is arranged at a first end of the elongated element and is configured to be, in use of the mobile flood protection device, releasably engaged with a fixed structure, wherein the fixed structure is external to the mobile flood protection device,
the sealing element is arranged at a second end of the elongated element and comprises a reversibly expandable flexible unit, wherein the sealing element is configured to, in use of the mobile flood protection device, seal the drain,
the elongated element is arranged between the support element and the sealing element, such that the elongated element, in use of the mobile flood protection device, is configured to support the sealing element in a position against the drain, and wherein the reversibly expandable flexible unit is configured to, in use of the mobile flood protection device, be expanded such that the reversibly expandable unit is biased towards the drain, thereby sealing the drain.

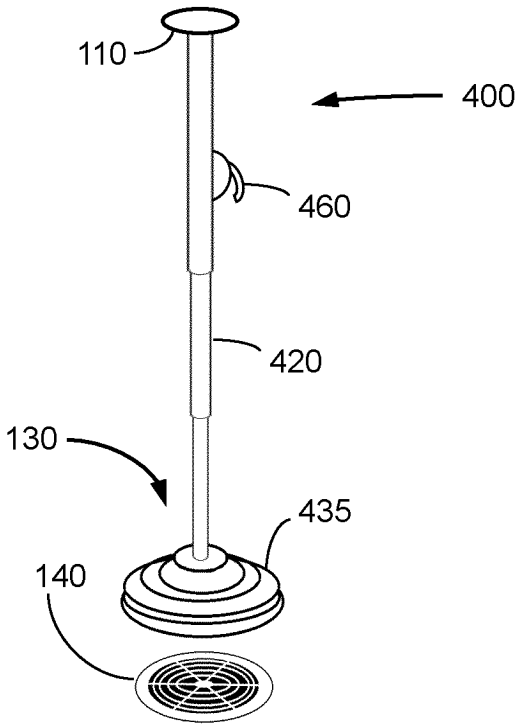

FIG. 4

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Description

TECHNICAL FIELD

[0001] The present inventive concept relates, in general, to a mobile flood protection device for sealing a drain.

BACKGROUND

[0002] In times of intense precipitation or other extraordinary circumstances, a sewer system can reach its capacity. This can result in water being forced upwards through the drains of a building, leading to flooding. Even a slight increase in pressure in the sewer line can cause the water to reverse its direction of flow and surge up through the drain, resulting in flooding and potential property damage.

[0003] Historically, to prevent such backflows, drains have been modified with permanent sealing mechanisms. One example of a permanent sealing mechanism comprises the use of clamping sleeves. The use of clamping sleeves requires installing or anchoring them in the ground next to the drain. Therefore, installing these sealing mechanisms, which may include retrofitting them into existing drains may not be a straightforward task. Moreover, the process can be quite costly, both in terms of the materials required and the labor involved. This makes it a less than ideal solution, particularly for systems that are already in place or for scenarios where cost sensitivity is a significant factor.

[0004] The challenges associated with these traditional methods underscore the need for a solution that is not only effective in preventing backflows but also easy to install and cost-effective.

SUMMARY

[0005] It is an objective of the present inventive concept to provide/enable an effective, easy-to-install, and cost-effective solution to prevent flooding due to drain backflows. It is a further objective of the present inventive concept to provide a robust flood protection solution that is adaptable to different building structures.

[0006] At least one of these and other objectives of the inventive concept are at least partly met by the invention as defined in the independent claim. Preferred embodiments are set out in the dependent claims.

[0007] According to a first aspect, there is provided a mobile flood protection device for sealing a drain, the device comprising a sealing element, a support element, and an elongated element, wherein:

the support element is arranged at a first end of the elongated element and is configured to be, in use of the mobile flood protection device, releasably engaged with a fixed structure, wherein the fixed structure is external to the mobile flood protection device,

the sealing element is arranged at a second end of the elongated element and comprises a reversibly expandable flexible unit, wherein the sealing element is configured to, in use of the mobile flood protection device, seal the drain,

the elongated element is arranged between the support element and the sealing element, such that the elongated element, in use of the mobile flood protection device, is configured to support the sealing element in a position against the drain, and wherein the reversibly expandable flexible unit is configured to, in use of the mobile flood protection device, be expanded, thereby sealing the drain. The reversibly expandable flexible unit may be configured to, in use of the mobile flood protection device, be expanded such that the reversibly expandable unit is biased towards, or presses against, the drain, thereby sealing the drain.

[0008] The mobile flood protection device therefore enables effective sealing (e.g., a complete sealing, or a substantially complete sealing) of the drain. The drain may e.g., be a floor drain, a sink drain (e.g., a bathroom or restroom sink drain), or a fixture drain, and may for example be situated in a building, such as in a basement of a building. In the context of the present application, by the term drain it may be encompassed in principle any fixture, device, conduit, etc., for water or any other (e.g., waste) liquid to flow away from a first region to or towards a second region. The first region may for example be a room in a building, and the second region may for example be (e.g., a part of) a sewer system. The drain may be arranged in or at a floor, in or at a sink, or in or at a toilet, for example. By arranging the sealing element in the position against the drain, and releasably engaging the support element with a fixed structure, with the elongated element being arranged between the support element and the sealing element, a seal withstanding forces that arise from any water or other liquid flowing backward in a sewer line (or sewer pipe) during a flood is facilitated or enabled. The fixed structure is external to the mobile flood protection device and may for example be a wall, a ceiling, a beam or any other fixed structure in e.g., a building that may provide structural support to the support element.

[0009] The reversibly expandable flexible unit of the sealing element may be expanded and/or contracted. Advantageously, the reversibly expandable flexible unit may be expanded and/or contracted when the mobile flood protection device is arranged such that the sealing element is in the position against the drain. The expansion and/or contraction of the reversibly expandable flexible unit may therefore enable a better fitting of the mobile flood protection device in the position against the drain. For example because the support element in use of the mobile flood protection device is engaged with the fixed structure (e.g., pressed against the fixed structure), the expansion of the reversibly expandable flexible unit

may cause the bias of the reversibly expandable unit towards the drain.

[0010] As an example, the reversibly expandable flexible unit may be expanded when the sealing element is in the position against the drain, furthering the bias of the reversibly expandable unit towards the drain, and thereby strengthening the seal withstanding forces that arise from any water flowing backward in a sewer line.

[0011] The elongated element is configured to support the sealing element in the position against the drain. The elongated element is arranged between the support element and the sealing element, such that, in use of the mobile flood protection device wherein the sealing element is arranged in the position against the drain and the support element is releasably engaged with a fixed structure, the mobile flood protection device withstands forces that arise from any water flowing backward in a sewer line. The elongated element therefore enables the sealing element to be supported in the position against the drain, by the engagement of the releasably engaged support element, such that the mobile flood protection device may resist displacement when the sealing element is in the position against the drain. Consequently, the drain being sealed by the mobile flood protection device may remain sealed in use of the mobile flood protection device, even when displacement forces are exerted upon the mobile flood protection device by any water flowing backward in the sewer line.

[0012] The reversibly expandable flexible unit may be configured so as to be selectively inflatable and deflatable. The reversibly expandable flexible unit may therefore be selectively expanded or contracted by inflation or deflation, respectively. The reversibly expandable flexible unit may be inflated by an inflating substance such as a gas or a fluid. The gas may be e.g., air, helium, and/or nitrogen. Alternatively, the inflating substance may be a fluid, such as a hydraulic fluid, e.g., water, oil, water-oil emulsions, and/or synthetic fluids. Deflation is achieved by releasing or removing at least part of the inflating substance from the reversibly expandable flexible unit.

[0013] As stated before, the reversibly expandable flexible unit may be expanded in the position against the drain. Consequently, the reversibly expandable flexible unit may be inflated in the position against the drain. A pressure exerted against the drain by the reversibly expandable flexible unit may therefore be increased as a function of the expansion of the reversibly expandable flexible unit.

[0014] The reversibly expandable flexible unit may comprise a valve configured to selectively permit inflation and deflation of the reversibly expandable flexible unit. The valve is configured to withstand pressure and forces that arise from water flowing backward in a sewer line, exerted on the mobile flood protection device, such that when the valve is closed, in use of the mobile flood protection device, the reversibly expandable flexible unit is kept inflated whereby the sealing of the drain is maintained. The valve may be any kind of valve suitable for inflation and deflation.

[0015] The mobile flood protection device may comprise a pump releasably attached to another component of the device. The pump may for example be released, thereby providing easy access to means for inflating the reversibly expandable flexible unit. The pump may be e.g., a hand pump, a foot pump, an electric pump, a battery-operated pump, a double action pump, and/or a high-pressure air pump. The pump may for example be releasably attached to another component of the device by means of any suitable attachment means such as a pump mount or a pump holder.

[0016] The reversibly expandable flexible unit may be configured such that the reversibly expandable flexible unit, in use of the mobile flood protection device, at least partially extrudes into the drain. In sealing the drain, the reversibly expandable flexible unit, in use of the mobile flood protection device, may therefore at least partially extrude into the drain, such that pressure and forces that arise from water flowing backward in a sewer line may be resisted. When the mobile flood protection device is in use, a pressure may be exerted onto the drain by the reversibly expandable flexible unit. The reversibly expandable flexible unit may, at least in part due to the pressure exerted onto the drain, at least partially extrude into a set of openings of the drain.

[0017] The reversibly expandable flexible unit may comprise a bellows. The bellows may comprise a flexible structure allowing it to expand and contract. The flexible structure is designed to be airtight, such that air can be held within the flexible structure, and be selectively manipulated. The bellows may further comprise seams. The seams may be reinforced such that the bellows is airtight and durable. The seams may be stitched, glued, or otherwise sealed to prevent air from escaping. The bellows may further comprise rigid panels, wherein the panels provide stability to the bellows, facilitating control over expansion and contraction of the flexible structure.

[0018] The reversibly expandable flexible unit may comprise a material that comprises one or more of a natural rubber, a synthetic rubber, and an elastic polymer. An enhanced flexibility of the reversibly expandable flexible unit is therefore facilitated or enabled. Natural rubber, synthetic rubbers, and elastic polymers may for example easily recover their original shape after having been exposed to deformation. Furthermore, natural rubber, synthetic rubbers, and elastic polymers have high tensile strength and are considered tough and resilient, as well as vibration dampening materials. Resistance to various elements is another advantage of these materials. Natural rubber, synthetic rubbers, and elastic polymers may for example be resistant to water, certain chemicals, and also offer resistance to cutting, tearing, wear, fatigue, temperature, ageing, and abrasion. Cost-effectiveness is another advantage, as natural rubber, synthetic rubbers, and elastic polymers tend to be cost-effective to produce.

[0019] The reversibly expandable flexible unit may be

detachably arranged at the second end of the elongated element. The reversibly expandable flexible unit may therefore be detached and attached at the second end of the elongated element. The mobile flood protection device may further comprise a set of distinct reversibly expandable flexible units configured to be detachably arranged at the second end of the elongated element. A more versatile mobile flood protection device is therefore enabled, as the ability to interchange the reversibly expandable flexible unit, from the set of distinct reversibly expandable flexible units, allows the mobile flood protection device to be adapted to different situations. As an example, the set of distinct reversibly expandable flexible units may comprise distinct reversibly expandable flexible units of different sizes and/or materials. Distinct reversibly expandable flexible units may therefore be adapted to fit specific drain sizes and/or drain models. Specific floor drains or fixture drains may e.g., have distinct sizes and/or materials, such that a distinct reversibly expandable flexible unit in the set of distinct reversibly expandable flexible units may fit a distinct drain size and/or material.

[0020] The elongated element may be configured to be extendable and retractable so as to permit adjusting a length of the elongated element, wherein the elongated element, in use of the mobile flood protection device, may be configured to be releasably locked such that the sealing element is supported in the position against the drain. The elongated element is therefore extendable and retractable, allowing for adjustability. The extendable and retractable elongated element can e.g., be adjusted to fit a distance between the drain and the fixed structure, wherein the distance may vary between different spaces in which the mobile flood protection device is desired or required to be used. When a desired length is achieved, the elongated element can be releasably locked, such that, in use of the mobile flood protection device, the elongated element is releasably locked in the position against the drain, sealing the drain. The ability to adjust the length and lock the elongated element in place makes the mobile flood protection device convenient to handle. In addition, the adjustability of the elongated element also enhances space efficiency. When not in use, the elongated element can be retracted, thereby saving space and facilitating easier storage and transport. Furthermore, extending the elongated element may cause the support element in use of the mobile flood protection device to be pressed against the fixed structure, facilitating for the expansion of the reversibly expandable flexible unit to cause the reversibly expandable unit to be biased towards the drain.

[0021] The elongated element may be configured to be extendable and retractable by means of a telescopic mechanism. The telescopic mechanism may enhance the adjustability of the mobile flood protection device. The telescopic mechanism may for example be a nested mechanism, wherein nested sections allow for smooth extension and retraction, a turning leadscrew mechanism, wherein a perforated cylinder seated around the leadscrew is turned to provide extension, a pulley-based mechanism, comprising pulleys to achieve extension and retraction, a linear mechanism, comprising a series of rigidly connected blocks, and/or a hydraulic mechanism, wherein hydraulic power is used for movement.

[0022] The sealing element may further comprise a plate, wherein the plate is configured to, in use of the mobile flood protection device, be arranged between the elongated element and the reversibly expandable flexible unit, such that the plate supports the reversibly expandable flexible unit in the position against the drain.

[0023] Consequently, the stability of the mobile flood protection device may be enhanced, reducing the risk of slippage or displacement, by the plate supporting the reversibly expandable flexible unit in the position against the drain.

[0024] The plate may comprise a set of segments, wherein the plate is collapsible, such that the plate is configurable to be collapsed by altering positions of at least a subset of the set of segments. The collapsible plate enhances the storage efficiency of the mobile flood protection device when not in use. When collapsed, the device occupies less space, making it more convenient to store. The collapsible plate maintains its stability when not collapsed, and, in use of the mobile flood protection device, provides robust support to the reversibly expandable flexible unit in the position against the drain. This combination of compact storage and reliable performance further enhances the inherent practicality and versatility of the mobile flood protection device.

[0025] The sealing element further comprises a sealing strip, wherein the sealing strip is arranged on the reversibly expandable flexible unit, such that the sealing strip, in use of the mobile flood protection device, together with the reversibly expandable flexible unit contributes to the sealing of the drain. The sealing strip provides an extra layer of protection and stability, thereby strengthening the seal in withstanding forces that arise from any water flowing backward in drain.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] The above, as well as additional objects, features and advantages of the present inventive concept, will be better understood through the following illustrative and non-limiting detailed description, with reference to the appended drawings. In the drawings like reference numerals will be used for like elements unless stated otherwise.

Fig. 1 is a schematic illustration of a mobile flood protection device according to an embodiment of the present invention.

Fig. 2 is a schematic illustration of a mobile flood protection device according to an embodiment of the present invention.

Fig. 3 is a schematic illustration of a mobile flood

protection device according to an embodiment of the present invention.

Fig. 4 is an exemplifying illustration of a mobile flood protection device according to an embodiment of the present invention.

Fig. 5 is a schematic illustration of a mobile flood protection device according to an embodiment of the present invention.

Fig. 6 is an illustration of the reversibly expandable flexible unit at least partially extruding into the drain in accordance with an embodiment of the present invention.

Fig. 7a is an illustration of the sealing element comprising a sealing strip in accordance with an embodiment of the present invention.

Fig. 7b is an illustration of the sealing element comprising a sealing strip in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION

[0027] In cooperation with attached drawings, the technical contents and detailed description of the present invention are described thereinafter according to preferable embodiments, being not used to limit the claimed scope. This invention may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided for conveying the scope of the invention to the skilled person.

[0028] Fig. 1, Fig. 2, Fig. 3 and Fig. 5 illustrate the mobile flood protection device 100; 200; 300; 500 schematically. The device comprises a support element 110, an elongated element 120; 520, and a sealing element 130. The mobile flood protection device of Fig. 1, Fig. 2, Fig. 3 and Fig. 5 is in a position against a drain 140. The drain 140 may for example be situated in a building, such as in a basement of a building. The support element 110 is releasably engaged with a fixed structure 170, external to the mobile flood protection device. The fixed structure 170, may e.g., be a wall, a ceiling, a beam or any other fixed structure in the building that may provide structural support to the support element. A reversibly expandable flexible unit 135; 235 is also illustrated. As previously mentioned, the expansion of the reversibly expandable flexible unit may cause accumulation of pressure 180 at the second end of the mobile flood protection device.

[0029] The mobile flood protection device is illustrated being arranged such that the sealing element is in a position against the drain 140. The reversibly expandable flexible unit 135; 235 may e.g., have a spheroidal or discoidal geometry and may be expanded and/or contracted. The expansion 137 of the reversibly expandable flexible unit 135 is illustrated in Fig. 1 and Fig. 5. As the reversibly expandable flexible unit 135; 235 expands in the position against the drain, the reversibly expandable unit 135; 235 is biased towards the drain, thereby sealing the drain 140. By the reversibly expandable unit 135; 235 being biased towards the drain, the reversibly expandable unit 135; 235 may withstand forces that arise from any water flowing backward up a sewer line to the drain 140.

[0030] The elongated element 120; 520 enables the sealing element 130 to be supported in the position against the drain 140, by the engagement of the releasably engaged support element 110, such that the mobile flood protection device 100; 200; 300; 500 may resist displacement when the sealing element 130 is in the position against the drain 140.

[0031] The reversibly expandable flexible unit 135; 235 may be configured to be selectively expanded and contracted e.g., by inflation and deflation, respectively. Fig. 2, Fig. 3 and Fig. 5 illustrate the reversibly expandable flexible unit 135; 235 comprising a valve 210 configured to selectively permit inflation and deflation of the reversibly expandable flexible unit 135; 235. The valve 210 may be any kind of valve suitable for inflation and deflation. The reversibly expandable flexible unit 135; 235 may be inflated by an inflating substance such as a gas or a fluid.

[0032] Fig. 3 illustrates the mobile flood protection device comprising a pump 350 releasably attached to another component of the device, with the other component in the illustrated embodiment being the elongated element 120 in Fig. 3. Fig. 3 illustrates the pump being releasably attached to the device by means of pump holder 355. The pump 350 may be e.g., a hand pump, a foot pump, an electric pump, a battery-operated pump, a double action pump, a high-pressure air pump.

[0033] Fig. 4 is an exemplifying illustration of a mobile flood protection device 400. The reversibly expandable flexible unit comprises a bellows 435. The bellows 435 is designed to be airtight, such that air can be held within the bellows, and be selectively manipulated. The mobile flood protection device enables effective sealing of the drain 140. The drain may e.g., be a floor drain or a fixture drain. Drain 140 of Fig. 4 exemplifies a floor drain.

[0034] The elongated element 420 is extendable and retractable, to permit adjusting a length of the elongated element. The elongated element 420 is configured to be releasably locked by a mechanism 460. Fig. 4 illustrates a telescopic mechanism, wherein nested sections allow for smooth extension and retraction of the elongated element 420.

[0035] Fig. 5 illustrates a mobile flood protection device 500 comprising an elongated element 520 being configured to be extendable and retractable by means of a telescopic mechanism. The telescopic mechanism illustrated in Fig. 5 is a turning leadscrew mechanism 525. A perforated cylinder seated around the leadscrew 525 may be turned, enabled e.g., by wheel 560, to provide the extension and/or retraction functionality. Extending the elongated element 420; 520 may cause the support element 110 in use of the mobile flood protection device to be pressed against the fixed structure 170, facilitating for the expansion of the reversibly expandable flexible unit

135 to cause the reversibly expandable unit 135 to be biased towards the drain 140, sealing the drain 140.

[0036] In sealing the drain 140, the reversibly expandable flexible unit may at least partially extrude into the drain. Fig. 6 illustrates a zoomed in view of the reversibly expandable flexible unit 135 extruding into the drain 140, with portions of the reversibly expandable flexible unit 135 extruding into the drain 140 being indicated at 610 in Fig. 6. When the mobile flood protection device is in use, a pressure may be exerted onto the drain 140 through the reversibly expandable flexible unit 135, such that the reversibly expandable flexible unit 135 at least partially extrudes into a set of openings of the drain 140.

[0037] Fig. 3, Fig. 5 and Fig. 7a illustrate the sealing element 130 comprising a plate 340. The plate 340 is arranged between the elongated element 120; 520 and the reversibly expandable flexible unit 135, such that the plate 340 supports the reversibly expandable flexible unit 135 in the position against the drain 140. The stability of the mobile flood protection device 100; 200; 300; 400; 500 may be enhanced, reducing the risk of slippage or displacement, by the plate 340 supporting the reversibly expandable flexible unit 135 in the position against the drain 140. The plate may e.g., be manufactured in molded plastic with a threaded connection on the side where the elongated element is attached, such that the elongated element may be connected to the plate by screwing it into the threaded connection. The plate 340 may comprise a set of segments (not seen in the illustrations), wherein the plate is collapsible, such that the plate is configurable to be collapsed by altering positions of at least a subset of the set of segments. The plate may therefore comprise two or more segments that can be folded together when the mobile flood protection device 100; 200; 300; 400; 500 is not in use.

[0038] Fig. 5 also illustrates the expansion 137 of the reversibly expandable flexible unit 135. In addition, Fig. 5 illustrates adjustability of the mobile flood protection device, wherein the elongated element may be retracted and the reversibly expandable flexible unit may be expanded such that the plate 340 is adjusted to an alternate location 545.

[0039] Fig. 7a and Fig. 7b illustrate a sealing strip 790 being arranged on the reversibly expandable flexible unit 135. The sealing strip 790 provides an extra layer of protection and stability, thereby strengthening the seal in withstanding forces that arise from any water flowing backward in drain 140.

[0040] In the above the inventive concept has mainly been described with reference to a limited number of examples. However, as is readily appreciated by a person skilled in the art, other examples than the ones disclosed above are equally possible within the scope of the inventive concept, as defined by the appended claims.

Claims

1. A mobile flood protection device for sealing a drain, the device comprising a sealing element, a support element, and an elongated element, wherein:

   the support element is arranged at a first end of the elongated element and is configured to be, in use of the mobile flood protection device, releasably engaged with a fixed structure, wherein the fixed structure is external to the mobile flood protection device,
   the sealing element is arranged at a second end of the elongated element and comprises a reversibly expandable flexible unit, wherein the sealing element is configured to, in use of the mobile flood protection device, seal the drain,
   the elongated element is arranged between the support element and the sealing element, such that the elongated element, in use of the mobile flood protection device, is configured to support the sealing element in a position against the drain, and wherein the reversibly expandable flexible unit is configured to, in use of the mobile flood protection device, be expanded such that the reversibly expandable unit is biased towards the drain, thereby sealing the drain.

2. The device according to claim 1, wherein the reversibly expandable flexible unit is configured so as to be selectively inflatable and deflatable.

3. The device according to claim 2, wherein the reversibly expandable flexible unit comprises a valve configured to selectively permit inflation and deflation of the reversibly expandable flexible unit.

4. The device according to any one of the preceding claims, further comprising a pump releasably attached to another component of the device.

5. The device according to any one of the preceding claims, wherein the reversibly expandable flexible unit is configured such that the reversibly expandable flexible unit, in use of the mobile flood protection device, at least partially extrudes into the drain.

6. The device according to any one of the preceding claims, wherein the reversibly expandable flexible unit comprises a bellows.

7. The device according to any one of the preceding claims, wherein the reversibly expandable flexible unit comprises a material that comprises one or more of a natural rubber, a synthetic rubber, and an elastic polymer.

8. The device according to any one of the preceding

claims, wherein the reversibly expandable flexible unit is detachably arranged at the second end of the elongated element.

9. The device according to any one of the preceding claims, wherein the elongated element is configured to be extendable and retractable so as to permit adjusting a length of the elongated element, and wherein the elongated element, in use of the mobile flood protection device, is configured to be releasably locked such that the sealing element is supported in the position against the drain.

10. The device according to claim 9, wherein the elongated element is configured to be extendable and retractable by means of a telescopic mechanism.

11. The device according to any one of the preceding claims, wherein the sealing element further comprises a plate, wherein the plate is configured to, in use of the mobile flood protection device, be arranged between the elongated element and the reversibly expandable flexible unit, such that the plate supports the reversibly expandable flexible unit in the position against the drain.

12. The device according to claim 11, wherein the plate comprises a set of segments, and wherein the plate is collapsible, such that the plate is configurable to be collapsed by altering positions of at least a subset of the set of segments.

13. The device according to any one of the preceding claims, wherein the sealing element further comprises a sealing strip, wherein the sealing strip is arranged on the reversibly expandable flexible unit, such that the sealing strip, in use of the mobile flood protection device, together with the reversibly expandable flexible unit contributes to the sealing of the drain.

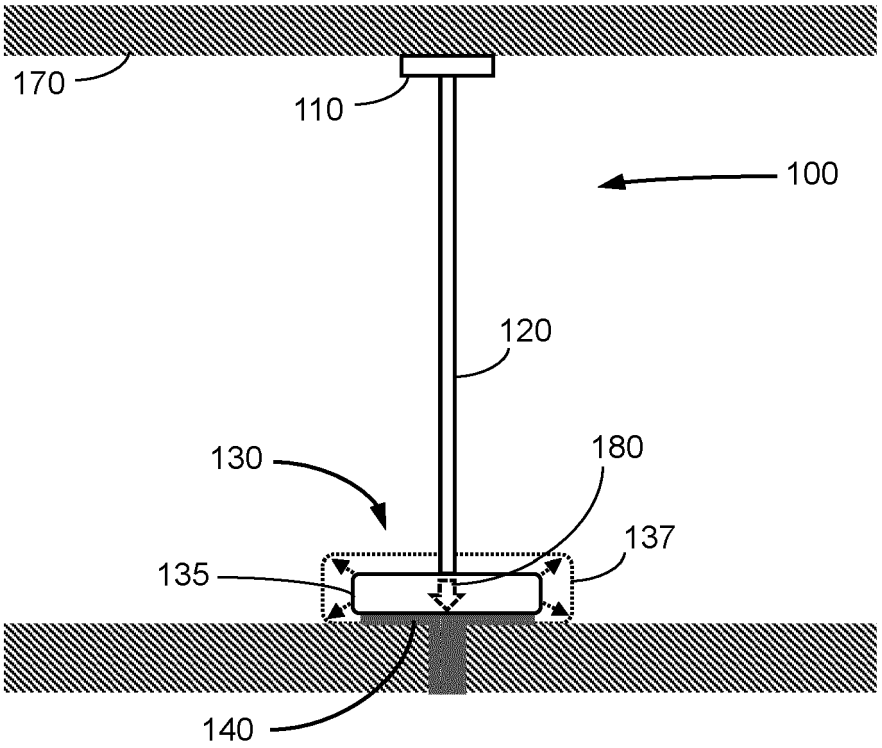
170
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FIG. 1

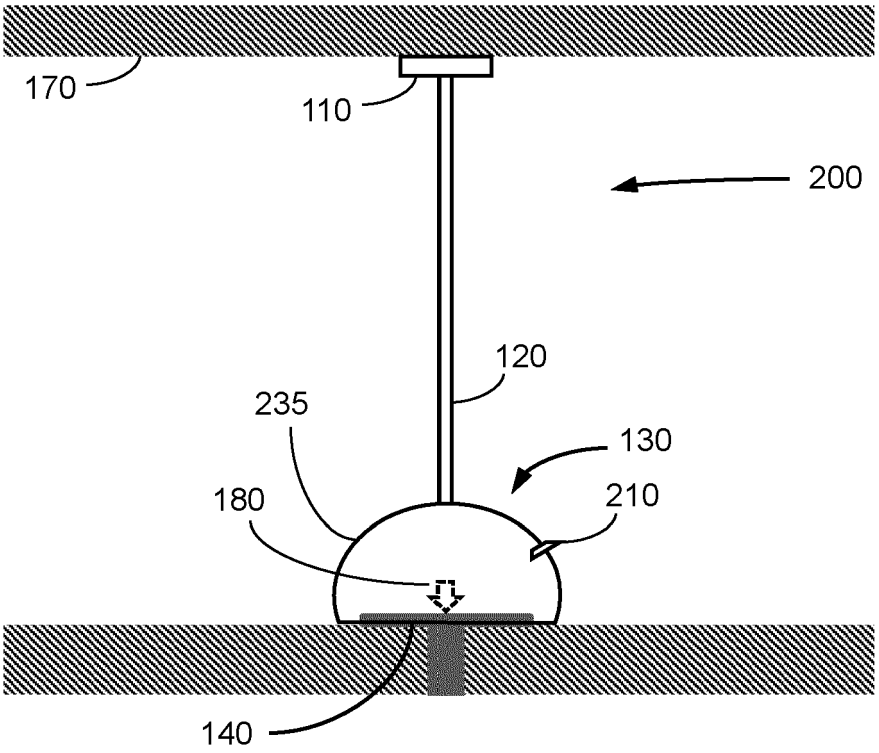
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FIG. 2

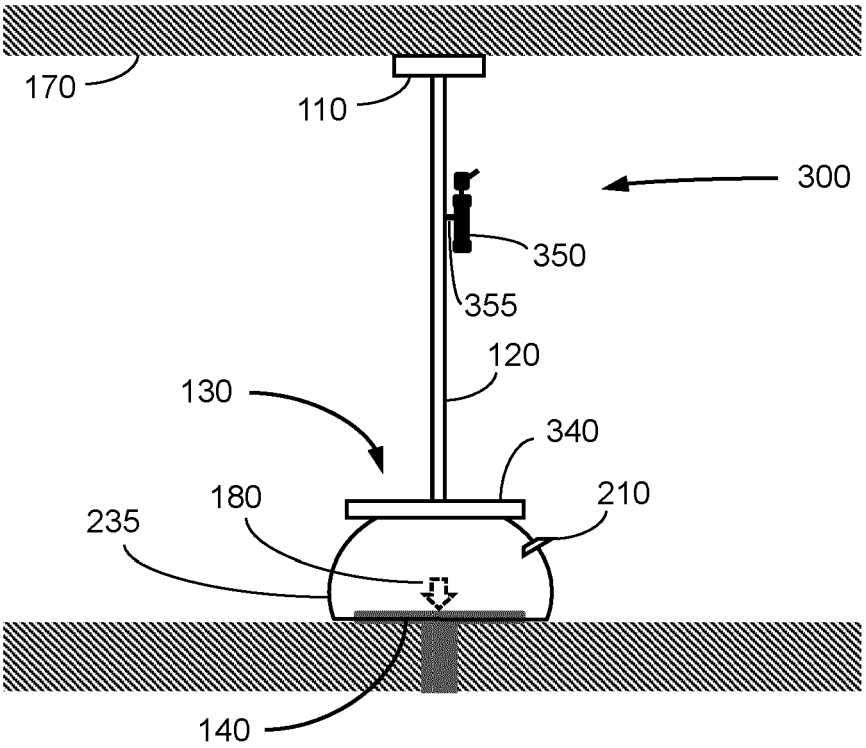
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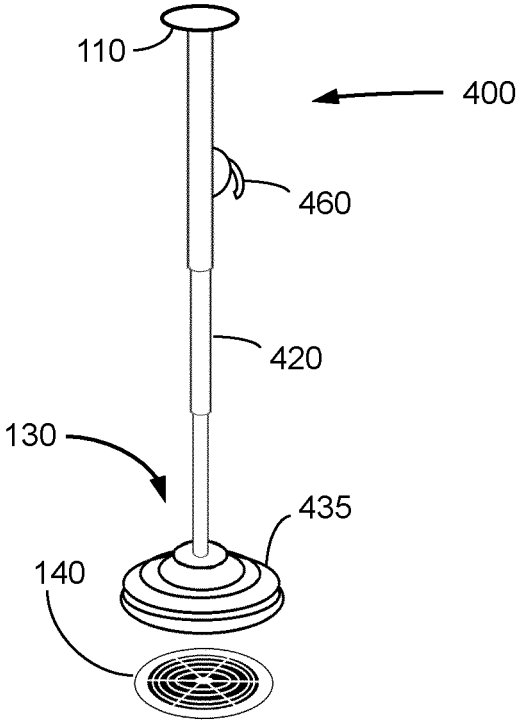
FIG. 3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435
140

FIG. 4

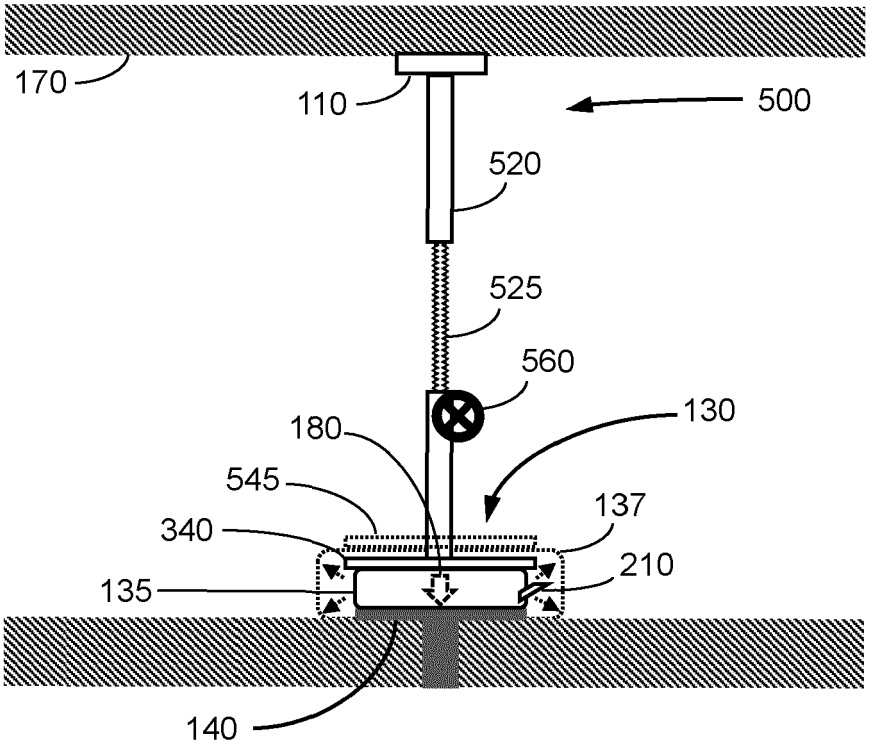

FIG. 5

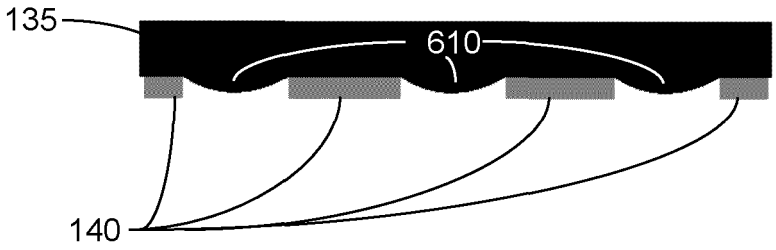

FIG. 6

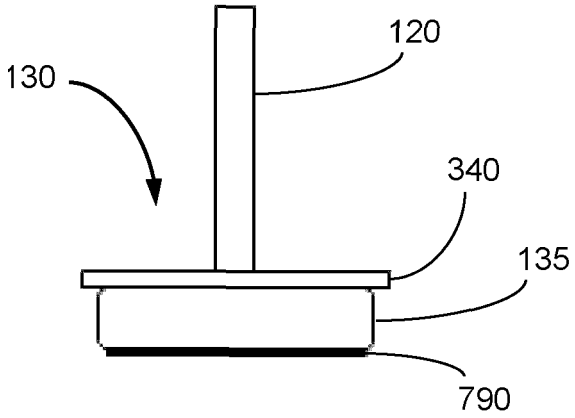

FIG. 7a

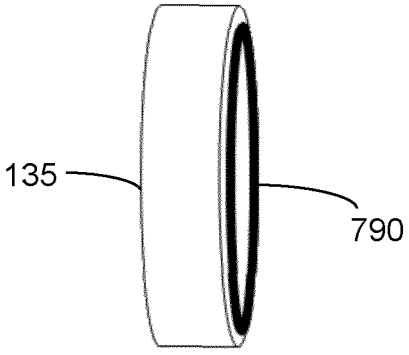

FIG. 7b

Europäisches Patentamt
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EUROPEAN SEARCH REPORT

Application Number
EP 25 15 1208

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	* figures 1-3 *	2,3,7-12	
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E03F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	23 May 2025	Flygare, Esa

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 25 15 1208

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82