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- (54) Benævnelse: **Afløbsarmatur til badekar eller brusekabiner med gulvtilløb**
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The invention relates to a drain fitting, in particular for bathtubs and shower trays, comprising a drain housing that forms a drainage channel and an odour trap and comprises an inlet opening, a drain valve body that can be operated by means of an actuator, and a water supply channel for a bottom supply, comprising fastening means for fixing the drain housing to an opening in the base of a tub or sink, and comprising a cover arranged above the drain valve body, an inlet channel being connected to the water supply channel and opening above the drain valve body and below the cover.

A drain fitting of this type is known from EP 2 108 751 A2, filed by the applicant. In order to fasten the drain housing of said drain fitting to the underside of the bathtub, an annular fastening flange, which is mounted on the inner side of the edge of the opening in the base of the tub for this purpose, is used. The fastening flange comprises inwardly projecting bulges, in which bores for receiving fastening screws are arranged, which screws are screwed into threaded sleeves cast in the drain housing. A drain opening that can be closed by a valve body that can be raised and lowered is formed in the drain housing. The valve body comprises a discoid plug, which is provided with a handle on the top such that, once the cover has been taken off, the valve body can be removed from the drain housing from the inside of the tub for cleaning purposes. The drain opening which can be closed by the valve plug is in this case arranged coaxially with the opening in the base of the tub or with the fastening flange fixed there.

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The drain fitting known from EP 2 108 751 A2 has been proved successful in practice. However, it requires a relatively large drainage hole of for example approximately 90 mm in the base of the tub. Furthermore, a smaller structural height

(installation depth) of the drain fitting below the tub would generally be desirable.

CH 296 601 A describes a pipe system for supplying and
5 discharging a liquid to and from a container. The pipe system
comprises a connection piece that is connected to the opening
in the container from below, to which connection piece a drain
pipe and a supply pipe are connected and which is designed to
shut off the drain pipe by means of a closure peg. The
10 connection piece has an internal thread, into which a threaded
sleeve comprising a fastening flange is screwed.

DE 10 2006 018 018 A1 discloses a bathtub-overflow fitting
having a horizontal overflow chamber which is open above the
15 upper edge of the tub, and a drain housing, on the inlet
opening of which an internal thread is provided, into which a
threaded sleeve having a fastening flange is screwed in order
to fasten the drain housing to the tub.

20 The object of the present invention is to provide a drain
fitting of the type mentioned at the outset which is suitable
for standard bathtubs or tubs having a relatively small
drainage hole of for example approximately 52 mm in diameter,
allows for disassembly of the drain valve body from the tub
25 side and has a relatively low structural height.

This object is achieved by a drain fitting having the features
of claim 1.

30 The drain fitting according to the invention is characterised
in that the fastening means for fixing the drain housing to
the drainage hole in the tub are formed of an internal thread
provided in the drain housing on the inlet opening thereof and
of a threaded sleeve that can be screwed into said internal

thread and comprises a fastening flange, and in that the drain housing comprises an intermediate housing piece which is rotatably connected to the odour trap, the axis of rotation being arranged eccentrically to the central longitudinal axis of the threaded sleeve comprising the fastening flange.

The drain fitting according to the invention makes it possible to fill a bath tub or shower tray in a particularly quite manner as a result of its supply and inlet elements forming a bottom supply. Designing the water supply as a bottom supply and arranging it such that it is hidden provides new degrees of freedom for the design of the tub equipped therewith. Furthermore, costs can be saved by not using a conventional water supply fitting to be attached outside the bathtub. By using a threaded sleeve comprising a fastening flange in combination with an internal thread provided on the inlet opening of the drain housing as the fastening means, the inevitable reduction in the diameter of the tub drainage hole can be minimised, such that the remaining clear drainage hole diameter is still large enough to be able to disassemble the drain valve body through the drainage hole from the tub side for cleaning purposes. The eccentrically rotatable connection between the odour trap and the drain intermediate housing piece makes it possible to use the restricted installation space below the tub more effectively. This can also reduce the installation height of the drain fitting.

According to an advantageous embodiment of the drain fitting according to the invention, the drain valve body comprises a discoid plug, which is provided with a guide pin releasably connected thereto, the guide pin comprising an angled connecting end which is eccentrically connected to the plug. As a result, when the drain valve body is arranged eccentrically with respect to the threaded sleeve comprising

the fastening flange in order to reduce the installation height of the drain fitting due to the restricted space conditions, said valve body can be removed more easily from the tub side for cleaning purposes. The guide pin of the drain valve body is preferably non-rotatably guided in a guide of the drain housing in this case.

According to another advantageous embodiment of the drain fitting according to the invention, the fastening flange of the threaded sleeve is provided with fastening points on the top for releasably fastening the inlet channel. In this case, the fastening points are preferably formed of threaded sleeves connected to the fastening flange. The threaded sleeves attached to the top of the fastening flange can be used as handle or tool insertion points when screwing the threaded sleeve comprising the fastening flange into the drain housing.

According to another preferred embodiment of the drain fitting according to the invention, the inlet channel opens eccentrically on a discoid inner part which is enclosed by an annular outer part and is held in a positively engaged manner thereby, the outer part being provided with apertures or bores for receiving fastening screws that can be screwed to the fastening flange. This makes it easier to fix the inlet channel to the fastening flange. This is because, before screwing the threaded sleeve comprising the fastening flange into the inner thread of the drain housing, it is not possible to define in advance the angular position that the fastening points for fixing the inlet channel to the top of the fastening flange will take in relation to the central transverse axis of the inlet channel once the screwing process is complete. In this case, however, the annular outer part can be rotated independently of the inner part having the inlet channel, such that the apertures or bores in the outer part,

which have to be made to overlap the fastening points
(threaded sleeves) of the fastening flange, can be oriented in
relation to the transverse central axis of the inlet channel,
irrespective of the angular position of the fastening points
5 on the top of the fastening flange.

Other preferred and advantageous embodiments of the drain
fitting according to the invention are provided in the
dependent claims.

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The invention will be described in greater detail below on the
basis of the drawings which illustrate an embodiment and in
which:

15 Fig. 1 is a perspective view of a drain fitting according to
the invention with a cover, an overflow pipe and a drain pipe
bend, the cover being shown detached from the drain fitting;

Fig. 2 is a side view of the drain fitting in Fig. 1 without
20 an overflow pipe and without a drain pipe bend;

Fig. 3 is a sectional view of the drain fitting in Fig. 1 in
the vertical plane which cuts through the water supply
connection piece;

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Fig. 4 is a plan view of a portion of the drain housing having
a threaded sleeve that is screwed therein and comprises a
fastening flange;

30 Fig. 5 is a perspective view of a valve plug of the drain
fitting in Fig. 3;

Fig. 6 is a perspective exploded view of the valve plug in
Fig. 5;

Fig. 7 is a perspective exploded view of a two-part water inlet assembly;

5 Fig. 8 is a side view of the water inlet assembly in Fig. 7, comprising the cover according to Fig. 1; and

Fig. 9 is a plan view of the water inlet assembly in Fig. 7.

10 The drain fitting shown in the drawings is intended for bathtubs or shower trays which have a relatively small drainage hole having a diameter of for example approximately 52 mm. The drain fitting makes it possible to fill the tub from the bottom via its drainage hole. This type of filling is particularly quiet. In this case, the drainage hole is covered
15 by a removable cover (cover cap) 1, which leaves a drainage gap of several millimetres on the tub base in the assembled state (cf. Fig. 1 to 3).

20 The drain fitting comprises a drain housing 2 which comprises a portion 2.1 in the shape of a pipe connection piece and a low drainage channel 2.2 that is rotatably connected thereto. An ascending portion 2.3 is attached to the drainage channel 2.2, which portion ends in a drain connection piece 2.4 and is
25 preferably also rotatable relative to the drainage channel 2.2. Together with the low drainage channel 2.2, the portion 2.3 of the drain housing forms an odour trap. A waste bend 3 is connected to the drain connection piece 2.4.

30 A connection piece 2.5 for connecting an overflow pipe 4 is integrally moulded on the side of the pipe connection piece-shaped portion 2.1 of the drain housing 2. The overflow pipe 4 is connected to an overflow housing (not shown) that is arranged below the upper tub edge and is fixed to an overflow

opening (not shown) formed in the tub wall. The overflow opening is covered on the inside of the tub by a rotatable rosette (not shown), which functions as an actuation element for a drain valve integrated in the drain housing 2. The rotatable rosette is coupled to a Bowden cable (not shown), the bottom end of which is connected to a lever mechanism that is used to raise or lower a valve body 5 of the drain valve. Fig. 2 shows a lever 7 attached to a rotary shaft 6, which lever comprises a slot 7.1 for mounting the Bowden cable.

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The pipe connection piece-shaped portion 2.1 of the drain housing is rotatably connected at its upper end to an intermediate housing piece 2.6, which on the top thereof comprises a short pipe connection piece 2.7 that in turn comprises a circumferential flange 2.8 at its upper end, by means of which the drain housing 2 is fixed to a drainage hole of a bathtub. The axis of rotation 8 of the pipe connection piece-shaped housing portion 2.1 on the intermediate housing piece 2.6 extends eccentrically to the pipe axis 9 of the upper short pipe connection piece 2.7 that extends through the drainage hole. The distance between the axes 8 and 9 is denoted by X in Fig. 3. The intermediate housing piece 2.6 consists of a relatively planar housing portion which has an oval outer contour when viewed from above (cf. Fig. 4).

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The pipe connection piece 2.7 is provided with an inner thread 10, into which a threaded sleeve 11.1 comprising a fastening flange 11 can be screwed in order to fix the drain housing 2 to the underside of the bathtub. In this case, the threaded sleeve 11.1 penetrates the drainage hole of the bathtub, the edge of the drainage hole being clamped between the annular fastening flange 11 of the threaded sleeve 11.1 and the flange 2.8 integrally moulded on the pipe connection piece 2.7. In order to seal off the drainage hole of the tub and the drain

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housing 2, said flange (2.8) is provided with an annular profile seal 12 made of rubber or the like, which is arranged between the flange 2.8 of the drain housing and the fastening flange 11, and is pressed onto the bottom edge of the drainage hole so as to form a seal.

The drain housing 2 is provided with a drain valve at the transition from the intermediate housing piece 2.6 to the pipe connection piece-shaped portion 2.1. A valve seat 2.9 for the valve body 5 is formed in the intermediate housing piece 2.6. The drain valve body 5 comprises a discoid plug 5.1 and a guide pin 5.2 attached to the underside thereof. A sleeve-shaped guide 2.10 for receiving the guide pin 5.2 connected to the plug 5.1 is integrally moulded on the valve seat 2.9. The guide 2.10 extends from the intermediate housing piece 2.6 as far as to the pipe connection piece-shaped portion 2.1. The longitudinal axis of the guide 2.10 or of the guide pin 5.2 extends coaxially with the axis of rotation 8 of the pipe connection piece-shaped portion 2.1 of the drain housing. An adjustment screw 5.3 is provided at the bottom end of the guide pin 5.2 and is used to adjust the length of the guide pin 5.2 and the lift height of the valve plug 5.1.

The valve plug 5.1 is releasably connected to the guide pin 5.2. For this purpose, the guide pin 5.2 comprises a cranked or angled connecting end 5.4 which is connected to the plug 5.1 by means of a screw 13. A sleeve-shaped handle 5.5 is attached to the top of the plug 5.1, the longitudinal axis 14 of which handle is arranged eccentrically to the centre of the discoid plug 5.1 or to the longitudinal axis 15 of the guide pin 5.2. The distance between the axes 14 and 15 is denoted by X_1 in Fig. 3. The axis 15 corresponds to the axis of rotation 8 of the housing portion 2.1.

The plug 5.1 comprises a bore that is flush with the handle 5.5 and into which the upper end 5.6 of the cranked guide pin 5.2 is inserted (Fig. 6). The upper end 5.6 of the guide pin 5.2 is provided with a threaded bore 5.7. The sleeve-shaped handle 5.5 that protrudes perpendicularly from the plug 5.1 comprises an inner shoulder, which is used as a support surface for the head of the screw 13, for example of a hexagon socket screw, which is screwed into the threaded bore 5.7 of the guide pin. The guide pin 5.2 is formed as a polygon and is guided in the guide 2.10 of the drain housing 2 such that it cannot rotate. For cleaning purposes, the valve plug 5.1 can therefore be separated from the guide pin 5.2 on the tub side by loosening the screw 13, and can be removed from the drain housing 2 by grasping the handle.

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The drain housing 2 comprises a water supply channel (overflow channel) 2.11. The water supply channel is connected to a connection piece 2.12 which is integrally moulded on the intermediate housing piece 2.6 and used to connect a water supply line (not shown). The water supply channel 2.11 extends transversely to the connection piece 2.12 and opens above the valve seat 2.9 and below the short pipe connection piece 2.7 of the intermediate housing piece 2.6. The water supply channel 2.11 is arranged at a radial spacing from the inner thread 10 of the short pipe connection piece 2.7. Fig. 3 also shows that the water supply channel 2.11 ends at an axial spacing from the threaded sleeve 11.1 comprising the fastening flange 11.

30 An inlet channel 16 which, in the assembled state, opens above the fastening flange 11 and below the cover 1 is connected to the water supply channel 2.11. In the assembled state, the inlet channel 16 is inserted or pushed into the water supply channel 2.11. The water supply channel 2.11 and the inlet

channel 16 have an elliptic or oval cross-sectional profile (cf. Fig. 4 and 9).

5 The inlet channel 16 is provided on the outside thereof with an annular groove 16.1, into which a sealing ring is inserted. Alternatively, the water supply channel 2.11 may also be provided with an annular groove and a corresponding sealing ring on its inside.

10 A disc-shaped inlet piece 16.2 is attached to the inlet channel 16. The inlet piece 16.2 extends transversely to the longitudinal axis of the inlet channel 16 and is formed in multiple parts, preferably in two parts. Said piece comprises a discoid inner part 16.21 and an annular outer part 16.22,
15 which surrounds the inner part 16.21 and, when in the assembled state, fixes it in a positively engaged manner. The inlet channel 16 is formed integrally on the discoid inner part 16.21 and opens on the top thereof. The mouth 16.25 is close to the periphery of the inner part 16.21.

20 The annular outer part 16.22 comprises spacers 16.26 on its underside, via which spacers said outer part is supported, in the assembled state, on the fastening flange 11 of the threaded sleeve 11.1 screwed to the drain housing 2. In
25 addition, the outer part 16.22 is provided with depressions 16.23 and apertures or bores arranged therein for receiving, in a positively engaged manner, fastening screws 17 which can be screwed to the fastening flange 11. For this purpose, the fastening flange 11 is provided on its top with fastening
30 points 11.2 for releasably fastening the inlet channel 16. The fastening points 11.2 consist of threaded sleeves connected to the fastening flange 11.

When screwing the threaded sleeve 11.1 comprising the fastening flange 11 into the drain housing 2, it is not always possible to accurately predict the angular position that the fastening points 11.2 for fixing the inlet channel 16 to the top of the fastening flange 11.2 will take in relation to the transverse central axis 18 of the inlet channel 16 once the screwing process is complete. However, the annular outer part 16.22 can be rotated independently of the inner part 16.21, meaning that the apertures or bores 16.23 in the outer part 16.22, which have to be made to overlap the fastening points 11.2 of the fastening flange 11, can be aligned independently of the uncertain angular position (?) of the fastening points 11.2 in relation to the transverse central axis 18 of the inlet channel 16 (cf. Fig. 4 and 9).

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The discoid inner part 16.21 and the annular outer part 16.22 form a water inlet assembly, it being possible to fix the inner part 16.21, at its outer periphery, to the inner periphery of the outer part 16.22 in a positively engaged manner. For this purpose, the inner part 16.21 comprises a peripheral shoulder on its outer periphery, which shoulder cooperates with a peripheral shoulder on the inner periphery of the annular outer part 16.22. Detachment of the inlet channel 16 from the water supply channel 2.11 due to the water pressure is prevented by means of this positive engagement and as a result of screwing the outer part 16.22 to the fastening flange 11.

On its underside, the cover 1 comprises a projection 1.1 which can be inserted in a positively engaged and/or frictionally engaged manner into a recess or depression 16.24 in the discoid inner part 16.21. The cover 1 can also be releasably connected to the inner part 16.21 by the projection 1.1 on the cover 1 being designed as a threaded bolt and the depression

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16.24 being provided with a corresponding inner thread or a cast threaded sleeve.

In the assembled state, the cover (cover cap) 1, together with
5 the two-part inlet piece 16.2, delimits a radially extending
annular gap. The discoid inner part 16.21 and the annular
outer part 16.22 of the inlet piece 16.2 each comprise
projections 16.5, 16.6 on the top thereof, which projections
are arranged in a ring and are spaced apart from one another
10 substantially uniformly within each ring. The projections 16.5
distributed over the periphery delimit a plurality of radial
water outlet openings 19. The projections 16.5, 16.6 produce a
star-shaped water jet pattern when the tub starts to be filled
via the bottom supply of the drain fitting. The drain fitting
15 makes it possible to fill a bathtub with water and to empty
the bathtub filled with water. The discoid inlet piece 16.2
produces a tiered separation of the water supply from the
drain. The water supply region is positioned above the water
drainage region in this case.

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Patentkrav

5 1. Afløbsarmatur, især til badekar, med et afløbshus (2), der danner en afløbskanal (2.2) og en vandlås, og som har en indløbsåbning, et afløbsventillegeme (5), der kan betjenes ved hjælp af et aktuatorelement, og en vandtilløbskanal (2.11) til et gulvtilløb, med fastgørelsesmidler til fastgørelse af afløbshuset til en karbund- eller kummebundåbning, og med en afdækning (1), der er anbragt over afløbsventillegemet (5), hvor der til vandtilløbskanalen (2.11) er tilsluttet en indløbskanal (16), der udmunder over afløbsventillegemet (5) og under afdækningen (1), **kendetegnet ved, at** fastgørelsesmidlerne er dannet af et indvendigt gevind (10), der er tilvejebragt i afløbshuset (2) ved dets indløbsåbning, og en gevindmuffe (11.1), der kan skrues derind i og omfatter en fastgørelsesflange (11), og at afløbshuset (2) omfatter et husmellemstykke (2.6), der er forbundet drejeligt med vandlåsen, hvor rotationsaksen (8) er anbragt excentrisk i forhold til den langsgående midterakse (9) af gevindmuffen (11.1), der omfatter fastgørelsesflangen (11).

20 2. Afløbsarmatur ifølge krav 1, **kendetegnet ved, at** afløbsventillegemet (5) omfatter en cirkelskiveformet prop (5.1), der er forsynet med en dermed frigørligt forbundet føringsstift (5.2), hvor føringsstiften (5.2) har en vinklet forbindelsesende (5.4), der er forbundet excentrisk med proppen (5.1).

3. Afløbsarmatur ifølge krav 2, **kendetegnet ved, at** føringsstiften (5.2) er ført drejningssikkert i en føring (2.10) af afløbshuset (2).

25 4. Afløbsarmatur ifølge et af kravene 1 til 3, **kendetegnet ved, at** gevindmuffens (11.1) fastgørelsesflange (11) på oversiden er forsynet med fastgørelsessteder (11.2) til frigørlig fastgørelse af indløbskanal (16).

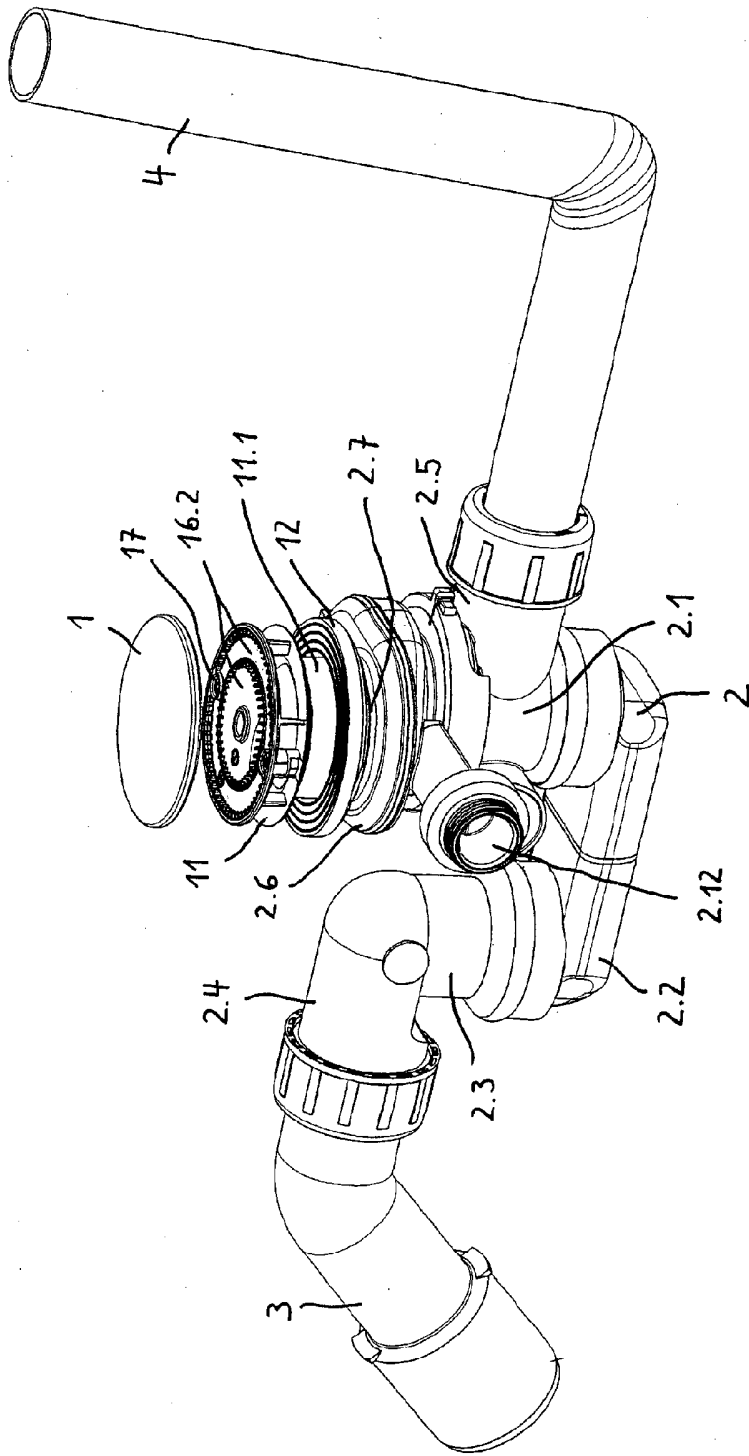
30 5. Afløbsarmatur ifølge krav 4, **kendetegnet ved, at** fastgørelsesstederne (11.2) er dannet af gevindmuffer, der er forbundet med fastgørelsesflangen (11).

35 6. Afløbsarmatur ifølge et af kravene 1 til 5, **kendetegnet ved, at** indløbskanalen (16) udmunder excentrisk ved en cirkelskiveformet inderdel (16.21), der er omgivet af en ringformet yderdel (16.22) og holdes formssluttende deri,

hvor yderdelen (16.22) er forsynet med gennembrydninger eller boring til optagelse af fastgørelsesskruer (17), der er forsynet med fastgørelsesflangen (11).

- 5 **7.** Afløbsarmatur ifølge krav 6, **kendetegnet ved, at** den ringformede yderdel (16.22) på sin underside er forsynet med afstandsholdere (16.26), der understøttes på fastgørelsesfladen.
- 10 **8.** Afløbsarmatur ifølge krav 6 eller 7, **kendetegnet ved, at** den ringformede yderdel (16.22) og/eller den cirkelskiveformede inderdel (16.21) på oversiden er forsynet med fremspring (16.5, 16.6), der er anbragt fordelt omkring omfanget.
- 15 **9.** Afløbsarmatur ifølge et af kravene 6 til 7, **kendetegnet ved, at** afdækningen (1) på undersiden har mindst et fremspring (1.1), der form- og/eller friktionsluttende kan indføres i en udsparring eller fordybning (16.24) af den cirkelskiveformede inderdel (16.21).

FIG. 1



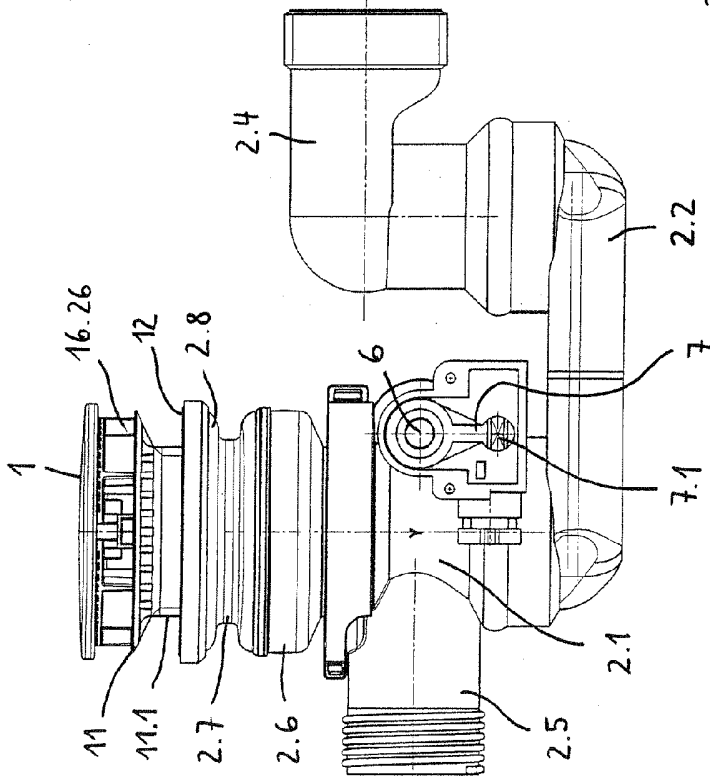
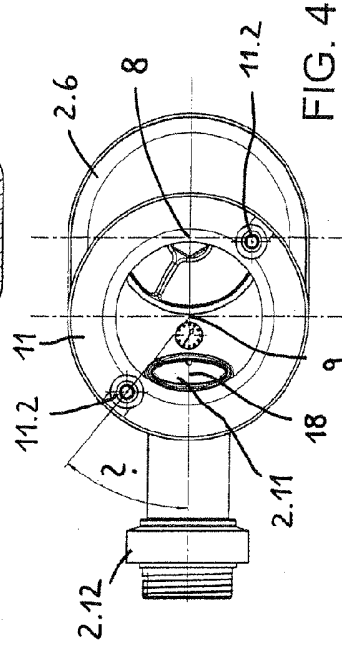
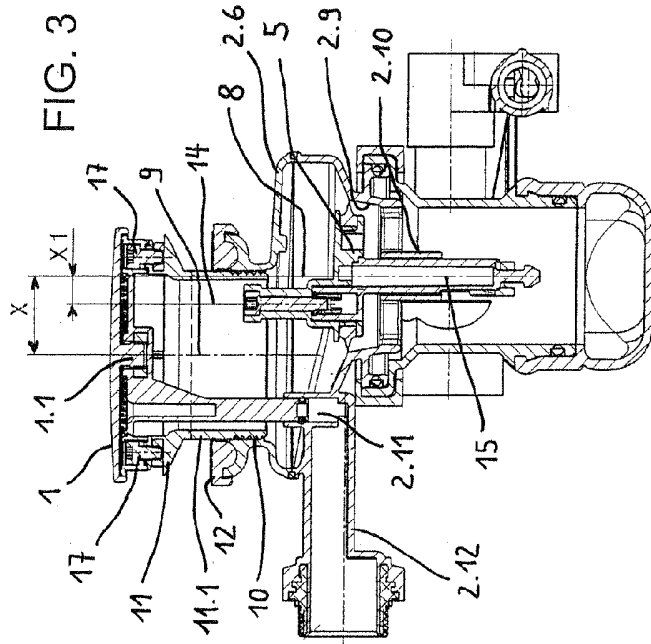


FIG. 2

FIG. 4

FIG. 3

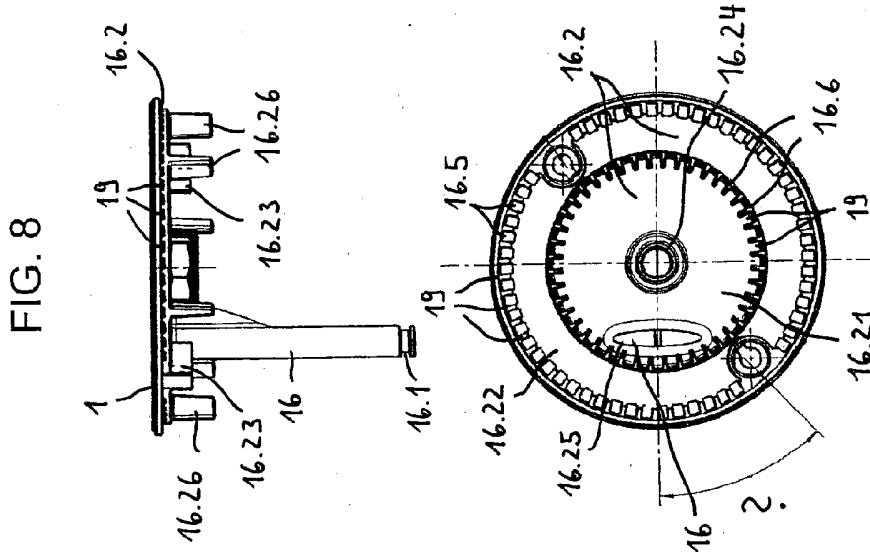
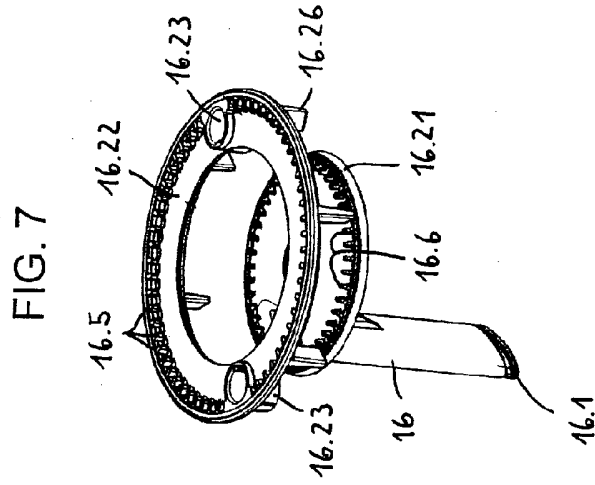
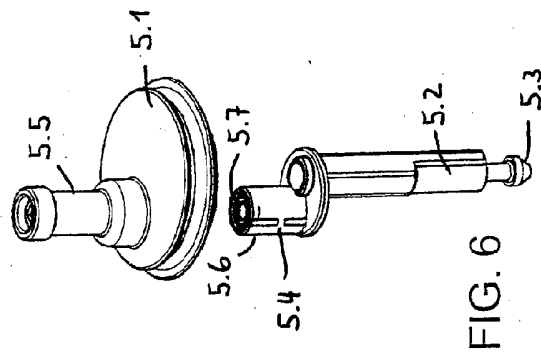
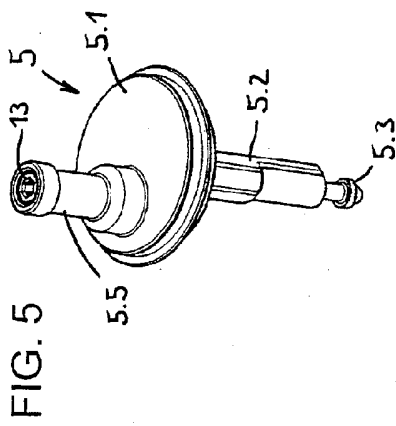


FIG. 9

