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(54) **SWIMMING POOL COVER SYSTEM**

(57) The invention relates to a swimming pool cover system, comprising a planar cover element, a holder for retractably accommodating the cover element and a drive connected to the holder for deploying and/or retracting the cover element from and in or on the holder, respectively, characterized by a cassette, to which at least the holder is mounted, wherein the cassette is to be deployed at a swimming pool in a pre-assembled state separate from the swimming swimming pool, with at least the holder mounted to the cassette.

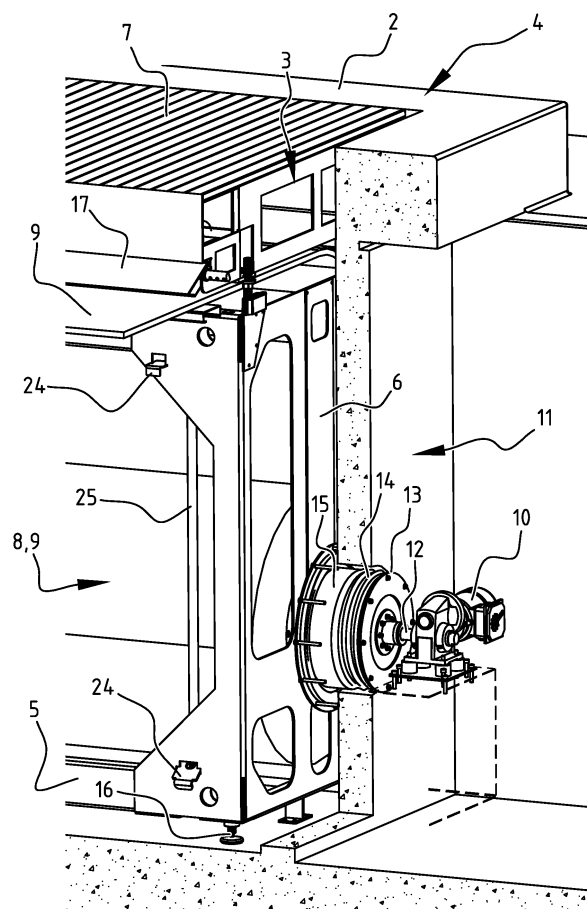


FIG. 3

Description

[0001] The present disclosure relates to a swimming pool cover system.

[0002] Conventional swimming pool cover systems comprise a planar cover element, a holder for retractably accommodating the cover element, and a drive connected to the holder for deploying and/or retracting the cover element from and in or on the holder, respectively.

[0003] Conventionally, in case of relatively large swimming pool cover systems, elements and components thereof are sequentially transported to a swimming pool under construction to be assembled on site, and depending on progress of construction of the swimming pool. This is cumbersome for the manufacturers of swimming pool cover systems and/or contractors hired for installing the swimming pool cover systems, but also for contractors working on the construction of swimming pools. Also, several times during installation, cranes may be needed and have to be transported to the swimming pool under construction for arranging heavy elements and components of the swimming pool cover system.

[0004] Here, reference is made to US-5761750 and EP-2497876, which relate to hot tub or jacuzzi cover systems, which come integrated with the jacuzzi or hot tub that is merely sized to sit in but not for swimming, and are transported as a complete product including the jacuzzi or hot tub and the integrated cover system.

[0005] In contrast the present disclosure relates to cover systems for full size swimming pools, for which cover systems are voluminous and heavy, and which were assembled at the poolside, in, near, or next to a full size swimming pool, in a modular fashion.

[0006] Here reference is made to cover systems for full size swimming pools according to for example US-2004/143896, and FR-3028543, which are acknowledged as prior art for the present disclosure, and relative to which at least the features in the characterising portion of the appended independent claim impart novelty thereto and involve an inventive step.

[0007] US 2004/0143896 A1 discloses a swimming pool cover comprising a cover drum with an enclosure. Drum is located outside of swimming on tracks. The system is powered by a hydraulic motor to deploy the swimming pool cover over the swimming pool.

[0008] FR 3028543 A1 discloses a pool cover for a swimming pool, comprising a carriage with an enclosure and a roller, placed on rails. When deploying the swimming pool cover over the swimming pool, the entire carriage moves over rails. Thus, as an objective, damage to the swimming pool cover due to friction is hopefully minimized.

[0009] GB 2508909 A discloses a heavy duty roller shutter designed to withstand impacts suitable for industrial applications, quite distinct from a swimming pool, comprising an enclosure with a roller on which the shutter itself is arranged. The shutter is guided by two guides on opposing ends of the industrial (moon) pool.

[0010] The inventors of the present disclosure have realised that an assembly of features according to the appended independent claim may define a considerable improvement, by deploying an additional feature of a cassette, by nature self-contained, to which at least the holder is mounted, wherein the cassette is transported as a whole to be deployed at a poolside of a full size swimming pool in a pre-assembled state, separate from the swimming swimming pool, with at least the holder mounted to the cassette. The cover can optionally also be arranged in or on the holder, and/or the drive may optionally also be mounted to the cassette. Main consideration is that in essence a working swimming pool cover system can be installed by placing the cassette in one pass. Thus travel costs for installers and interruption of ongoing swimming pool construction may be minimized, and a crane needs to be rented only once. None of the aforementioned publications discloses a pre-assembly of main components in the confines or framework of a self-contained cassette, for transportation and installation thereof in one pass.

[0011] There are many preferred embodiments within the scope of the present disclosure. Some of such preferred embodiments will be discussed herein below with reference to the appended drawing, relating to such preferred embodiments, and/or are defined in the appended dependent claims. Nevertheless, no features of the preferred embodiments in the below embodiment description or in the appended dependent claims are to be construed as limiting on the scope of the present disclosure, because the scope of the present disclosure is defined only by the appended independent claim to include obvious alternatives and the like.

[0012] In a preferred embodiment, the drive comprises an extended drive shaft, dimensioned to extend from the drive through a wall, separating a cover system space and a service space, to the holder, wherein the drive is arranged in the service space, where the extended drive shaft enables access to the motor in the service space adjacent the cover system space.

[0013] In an alternative or additional preferred embodiment, the swimming pool cover system further comprises a seal on a, or on the drive shaft of the drive.

[0014] In an embodiment with an extended drive shaft and a seal, the water seal comprises a clamp ring on the drive shaft adjacent the drive at or in the service space and a sleeve connected to the clamp ring and surrounding the drive shaft through the wall. This enables access for replacement or maintenance to the water seal from the service space.

[0015] In an additional or alternative embodiment, the swimming pool cover system further comprises at least three supports under the cassette. Three supports suffice for a sturdy positioning of the cassette. Such positioning can be in a well next to the swimming pool, or on a surface surrounding the swimming pool if the cassette is mounted on the surface, for example on a rail system. In such an embodiment preferably at least two of the feet are in

height adjustable. This allows for horizontal levelling of the cassette, regardless of whether the bottom of the well or the surface surrounding the swimming pool exhibit variations from being horizontal.

[0016] In an additional or alternative embodiment the swimming pool cover system further comprises at least one anchor to fix the cassette at a destination location adjacent a swimming pool. This is naturally only desirable, if the swimming pool cover system is to be immobilised, for instance in a well. In other embodiments, the swimming pool cover system may be mobile to be displaced toward and backward from an edge of the swimming pool.

[0017] In an additional or alternative embodiment, the cassette is defined by a profile frame assembly.

[0018] In an additional or alternative embodiment the cassette comprises a cover lid. Such a cover lid may essentially be intended exclusively to cover the cassette, or even the well, if the cassette is arranged in such a well. The cover lid can be removable or fixedly mounted to the cassette. In such an embodiment, the cover lid may preferably be hinged to the cassette. This allows the cover lid to be hinged open to allow access for maintenance or replacement of parts. Additionally or alternatively in an embodiment comprising a cover lid, the cover lid may define at least a bench seat.

[0019] In an additional or alternative embodiment, a retractable flap is arranged in a front of the cassette to selectively allow passage there through of the swimming pool cover in and out of the cassette. In an embodiment with a cover lid and such a flap, the flap may be arranged in a down turned portion of the cover lid. In an embodiment with a retractable flap, the flap may be hingedly mounted and connected to a flap drive for opening or closing the flap, respectively.

[0020] In an additional or alternative embodiment the swimming pool cover system further comprises a rail system in or on a support surface on which the pre-assembled cassette is arranged. This allows the cassette of the swimming pool cover system to be deployed in a mobile manner, for example for movement toward and backward from an edge of the swimming pool. A rail may exhibit the appearance of a chain, where wheels on the cassette as the appearance of cogwheels. In such an embodiment, a shield may be arranged on or over the rail system, and the cassette comprises wheels running over the rail system and a shield lift to locally expose the rail system to the wheels. This may serve to protect swimming pool guests from injury, if rails were left exposed.

[0021] Based on the above summary of function, features, elements, components, aspects and parts of the swimming pool cover system according to the present disclosure an embodiment description is provided herein below with reference to the appended drawing, wherein the same or similar features aspect, components and the like may be designated using the same or similar reference signs, notwithstanding their presence in distinct or different embodiments. In the drawing:

figure 1 shows a perspective view of a portion of a swimming pool with a swimming pool cover system according to the present disclosure arranged at a side of the swimming pool in a well;

figure 2 shows a perspective view of a cassette of the swimming pool cover system according to the present disclosure in the form of a profile frame;

figure 3 shows a representation of a connection between a holder for accommodating a cover element and a motor for driving the holder;

figure 4 shows a cross sectional view along line IV - IV in figure 1;

figure 5 shows an embodiment with a swimming pool cover system is arranged alongside an edge of a swimming pool where the swimming pool cover system exhibits the optional feature of rails;

figure 6 shows an embodiment of a rail shield and shield lifter;

figure 7 shows an alternative for the configuration of figure 3;

figure 8 shows a embodiment for coupling roll shaped holders of neighbouring cassettes or of a roll shaped holder to a motor or similar drive;

figures 9 - 13 show a further embodiment of a swimming pool cover system with competition lines attached thereto in the swimming pool;

figure 14 shows an alternative embodiment of a swimming pool cover system with a front element replacing a concrete wall of the swimming pool;

figures 15 - 18 show an alternative embodiment with respect to the flap or hatch and a drive thereof, relative to the embodiment of in particular figure 4; and figures 19 and 20 show a suspended embodiment of a swimming pool cover system.

[0022] Figure 1 shows a part of the swimming pool 1, surrounded by an edge surface 2 and at one edge of the swimming pool 1 a well 3 is provided. A swimming pool cover system 4 according to the present disclosure is inserted into the well. The swimming pool cover system 4, inserted into well 3, is shown in more detail in figure 2.

[0023] As shown in figure 2, swimming pool cover system 4 comprises a plurality of parallel elongate profile beams 5, which extends between end plates 6, with a roll shaped holder 8 in figure 3 on which a cover element 9 is rolled up. The beams 5 and end plates 6 form a profile frame assembly, defining a backbone of the cassette.

[0024] The roll shaped holder 8 is suspended in end plates 6 for driving rotation, using a drive, in particular an electric motor 10, as shown in figure 3. The holder 8 is connected to the motor 10, and at an end plate 6 opposite the motor 10 the holder is suspended in a bearing (not shown).

[0025] A cover lid 7 is arranged on the cassette, which is defined in itself by the beams 5 and the end plates 6 with the holder 8 extending between the end plates 6. The cover lid 7 may be fixedly arranged on the cassette frame 5, 6, or may be hingedly attached thereto, and may

therefore of a part of the cassette or an addition thereto.

[0026] The cassette is formed by beams 5 and end plates 6 and encloses at least the holder which is mounted in the cassette or forms part thereof, wherein the cassette in its entirety is to be deployed at the swimming pool 1 in a pre-assembled state, shown in figure 2, with at least the holder mounted to or forming part of the cassette 5, 6.

[0027] Figure 3 shows a swimming pool wall 11. The drive or motor 10 comprises an extended drive shaft 12, dimensioned to extend from the drive through a wall 11, separating a cover system space to the left of the wall 11 and a service space to the right of the wall 11 in figure 3. More in particular, the extended drive shaft 12 extends from motor 10 to the holder 8. Consequently, the drive / motor 10 is arranged in the service space to the right of the wall 11, where the extended drive shaft enables access to the motor in the service space whilst the service space is adjacent to the cover system space.

[0028] The service space to the right of wall 11 in figure 3 is sealed from the cover system space to the left of wall 11 using a seal. Namely, the cover system space can be underwater, if the cover system space is in fluid communication with the swimming pool itself, and this is regularly the case.

[0029] This seal comprises a clamp ring 13 on the extended shaft 12, were a flexible hose 14 or bellows like element extends from the clamp ring 13 the left in the drawing of figures 3 and then flare is out for fluid tight connection to the wall 11, optionally using a flange 15. 3. Swimming pool cover system according to claim 1 or 2, further comprising a seal on a or the drive shaft of the drive.

[0030] Therefore, the water seal comprises clamp ring 13 on the drive shaft 12 adjacent the drive or motor 10 at or in the service space to the right of the wall 11 and a sleeve in the form of the flexible hose 14 or other bellows like element, connected to the clamp ring 13 and surrounding the drive shaft 12 through the wall 11.

[0031] Turning back to the representation of figure 2 it is noted that underneath the assembly of beams 5 and end plates 6, at least three supports 16 are provided. These supports 16 may have the form of a bolt, which can be screwed into or out of the cassette 5, 6, to provide for adjustment in case a support surface underneath the cassette is not perfectly horizontal, as shown in figure 4. Consequently supports 16 are adjustable in height.

[0032] Preferably, supports 16 are adjustable from above a top level of the well 3, to avoid that installers need to descend into well 3 after cassette 5, 6 is lowered into the well 3.

[0033] Further, the cassette 5, 6 comprises extendable elements, like anchor plates 24 in figures 2, 3 and 4. These anchor plates 24 are configured to be swivelled outward by operating screw rods 25, which extend upward from the anchor plates 24, whereby cassette 5, 6 is immobilised in well 3, after cassette 5, 6 is deployed in well 3. The screw rods 25 allow the anchor plates to

be extended outwards, after deploying the cassette 5, 6 in well 3, to clamp cassette 5, 6 tight in well 3, because screw rods 25 extend upward and can be operated from above the well 3, whereby the screw rods form a transmission. A similar configuration may be employed for height setting of the supports 16. Additionally or alternatively, for immobilising cassette 5, 6 in well 3, weights in the form of bricks, bolders and the like may be employed.

[0034] As an additional or alternative, the swimming pool cover system four in figure 2 could be provided further with at least one anchor (not shown) to fix the cassette at a destination location adjacent the swimming pool 1.

[0035] In the cross sectional view along line IV - IV in figure 1, a flap or hatch 17 is provided in a front surface of the cassette. This flap or hatch 17 allows for passage of the cover element 9. The flap or hatch 17 can form a part of the cassette and/or of the lid 7, in particular if the lid 7 has a turned down portion facing the water body of the swimming pool 1. Preferably, opening and closing of flap or hatch 17 is automated using actuator 26, which can be quite simple in the form of a small electric motor or the shown linear actuator 26, forming a flap or hatch drive and using a rod 27 as a transmission for relaying movement of the motor 26 to the flap or hatch 17. However, if well 3 is flooded with swimming pool water, an electrical embodiment to open / close the flap or hatch 17 is likely to require some or even excessive isolation from the water. In such a case, it may be preferable to employ a mechanical transmission either between the swimming pool cover 9 and the flap or hatch 17, or between roll shaped holder 8 or a disk on a side of roll shaped holder 8 and the flap or hatch 17, enabling the flap or hatch 17 to be closed when the swimming pool cover is completely withdrawn and opened when the swimming pool cover is about to be withdrawn from the well 3 and the cassette 5, 6.

[0036] As shown in figure 5, the does not need to necessarily be flat or planar, but to be curved to define, amongst others, for instance a cover lid or cover 11. As an example of such an embodiment, figure 5 shows that cover lid 11 defines at least a bench seat 18.

[0037] It is noted here, that the embodiment of figure 5 comprises a curved lid 7, which hides a frame allowing pre-assembly from sight. Further, the embodiment of figure 5 is one, where the cassette is not lowered into a well, but is arranged on a side surface 2 surrounding the actual swimming pool 1. Embedded in the side surface 2 is a rail system 19, over which the cassette like swimming pool cover system for in this embodiment can approximate or withdraw from an actual edge of the swimming pool. In a position closer to the edge of the swimming pool, a cover element 9 can be retracted from the interior of the swimming pool cover system 4 and deployed over the water body in the swimming pool 1.

[0038] The rail system 19 may have the form of chains 20, on which cogwheels 21 of cassette 4 in the embodiment of figure 5 engage for traction. However, to avoid

injury to swimming pool guests, a shield band 22 may be arranged over the chain-like rail. In such an embodiment, a shield lift in the form of at least the roles 23 in the embodiment of figure 6 can be provided, so that the cog-wheels 21 can engage the chain like rail, when desired, whereas the rail 20 can be covered and hidden from exposure to the outside to achieve this protective function.

[0039] Figure 7 exhibits an alternative embodiment for the flexible hose 14 or bellows like element in the configuration of figure 3. Therein, flange 15 is provided with a flare 28 having bolt holes 29. Drive shaft 12 comprises a flange 30, onto which a seal disk 31 can be bolted. Flange 30 has an internal seal on shaft 12 and is rotatable around the drive shaft 12. The disk is for example made of rubber, is oversized relative to the flare 28 and comprises screw or bolt holes for attachment to the flange 30 on the flange 30 of the drive shaft 12. In assembly, the disk 31 is arranged over the drive shaft 12 and bolted secure onto the flange 30. The disk is oversized in diameter $d+$ relative to diameter d of the flare 28, so that the disk 31 will cover the entire flare 28, even if the drive shaft 12 is not perfectly centrally aligned with a centre axis of the flange 15. A ring 32 is also provided and has bolt or screw holes 33 aligned with the bolt or screw holes on flare 28. The ring 32 may have the same diameter d as the flare 28, but could have a different diameter, but bolt or screw holes 33 pre-arranged in ring 32 (or later provided) must be in line with the bolt or screw holes on the flare 28. When the ring is arranged against the oversized disk, passages can be made in the outer periphery of the disk 31, bolts or screws may be inserted through holes 33, passages (not shown) made in outer periphery of disk 31 and into bolt or screw holes 29 to fix the ring 32 onto the flange 15 and clamp disk 31 in between. Thereafter a surplus of material of disk 31 may be cut off, and the motor may be connected to drive shaft 12.

[0040] Figure 8 exhibits an embodiment of connecting a roll shaped holder 8 to either of a motor 12 and a neighbouring roll shaped holder 8 (for example when neighbouring cassettes 5, 6 are to be drive using a single drive or motor and rotational drive of holders 8 of cassettes 5, 6 need to be coupled).

[0041] In this embodiment, each of the roll shaped holder 8 and the opposing roll shaped holder 8 or opposing motor 10 comprises a bus 34 having an accommodation in the form of a hole or recess 35. For coupling the roll shaped holder 8 on the left in figure 8 with any one of motor 10 and opposition roll shaped holder 8 to the right in figure 8, a block is inserted into the accommodations and distance is minimised. Thereafter the holder 8 to the left is driven by the holder 8 or motor 10 to the right in figure 8. The bus 34 provides room for suspending the roll shaped holder in the cassette 5, 6 and does not necessarily have to be embodied in the opposing holder 8 or the motor 10.

[0042] In figures 9 - 13, and embodiment of a swimming pool cover system 36 is shown wherein competition lines 37 are drawn in the swimming pool to define competition

lanes 38. It is noted that competition lines 37 may exert a pulling force of up to or more than 450 kg per line. Proper attachment is required to prevent the lines from releasing into the swimming pool.

[0043] Swimming pool cover system 4 is deployed in a well 3 in this embodiment, just as in the embodiment of figure 1. Suspensions 39 for lines 37 extend through and engage the cassette 5, 6. To this end, suspensions 39 comprise anchors 40 mounted to the well wall 43, brackets 42 engaging cassette beams 5, and connector rods 41 extending between brackets 42. Elongate coupling rods 44 with handles 45 are to be inserted from above through the top of the cassette 5, 6, to each engage both a competition line 37 and a connector rod 41. Couplings between the suspensions 39 and lines 37 may be simple pin-hole couplings 47, as depicted in figure 11.

[0044] Even in absence of the competition lines 37, anchors 40, connector rods 41 and beam 5 engaging brackets 42 improve immobilisation and fixation of the cassette 5, 6 in the well 3. It is noted that the line suspension 39 may even replace one or more of the previously described fixations for cassette 5, 6 in well 3.

[0045] Figure 14 exhibits a similar view as figure 4, but of a different embodiment, wherein a front plate 48 is attached to the cassette 5, 6 via spacers 51. The plate 48 may be a metal plate or even a prefabricated concrete slab, forming a barrier to the cassette 5, 6 or even closing off well 3 from the swimming pool, making a cast concrete wall of the well and constructed as a portion of the swimming pool superfluous, contributing to a simplified swimming pool construction. A seal 49 may be arranged around the circumference of the front plate 48, to close off the interior of a space defined by a step or shoulder 50, defined along a side of the swimming pool, on which the cassette 5, 6 is arranged. Therefore, a wall to define and enclose well 3 at a side of the swimming pool is omitted, and construction of the swimming pool may be simplified.

[0046] Figures 15 - 18 exhibit an augmented drive for the flap or hatch 17.

[0047] As a first additional feature, drive 26 for the flap or hatch 17 may be arranged in a separate compartment 52, which may preferably be a dry compartment, so as to prevent water from the swimming pool from influencing the workings of the drive 26, especially if the drive 26 is electric.

[0048] A rod 27 acting as a transmission axis extends between the drive 26 and a rotatable shaft 53, to which the flap or hatch 17 is attached for opening or closing the flap or hatch 17 upon actuation of the drive 26.

[0049] Additionally, a manual drive is provided in the form of a handle 54 attached to the rotatable shaft 54, for respectively closing and opening the flap or hatch 17 manually. The handle may be provided in addition to the drive 26 or as an alternative therefore (where no drive 26 is provided). In the representation of figure 17, with the handle 54 in an upward position, the flap or hatch 17 may be closed and with the handle in a down position in figure 18, the flap or hatch 17 may be open. However,

this may be reversed to only allow the handle to extend upward for opening the flap or hatch 17, if the swimming pool cover is deployed and the swimming pool is consequently not used for swimming, at which time an upward extending handle may pose a danger to swimmers.

[0050] If competition lines 37 are arranged in the swimming pool, flap or hatch 17 is preferably kept closed, since it is of no use to have both the competition lines 37 and the swimming pool cover 9 in or on the water.

[0051] In figures 19 and 20 a suspended embodiment is shown of a suspended embodiment of a cassette based swimming pool cover system 55. Feet 16 in figures 2 - 4 are omitted, and cassette 5, 6 is suspended in well 3. To this end, the cassette further comprises suspensions 56, shown in most detail in figure 20. Suspensions 56 each comprise a bracket 57, attached to one or more than one of beams 5 of the swimming pool cover system 55. The brackets 57 are L-shaped, with a leg of L-shaped brackets 57 oriented sideways to suspend the cassette 5, 6 on shoulders of well 3. Preferably, adjustable feet 59 are provided at the free ends of the sideways legs of the brackets 57, to adjust orientation of the cassette 5, 6 in well 3, and prevent skewing of the cassette 5, 6. Bolts 60 are provided for adjustment of feet 59.

[0052] Advantageously, the suspended embodiment of figures 19, 20 is employed over the previous embodiments, since adjustment of brackets 57 (if adjustable) and / or feet 59 can be performed from above the well 3, without personnel having to descend into well 3 for adjusting feet 16.

[0053] Above, embodiments of the present disclosure are described in some detail, but such detail is not limiting on the scope of protection afforded to the present disclosure as defined in the appended claims. For example, pulleys may be used instead of the cogwheels in combination with rails in the form of chains, to achieve mobility of the cassette relative to the embodiment of figures 5 and 6. The cassette of figures 1 - 4 maybe in a dry well, a wet well, or simply in the swimming pool extending along a side edge thereof. The suspension described in relation to figures 19, 20 may alternatively be embodied as a simple cross beam, if opposing support shoulders of the well for accommodating the cassette are accurately opposite to support the cross beam in an accurately horizontal orientation, rendering a need for the described adjustment of the feet obsolete. These few alternatives are just illustrative of a few alternative embodiments, which go to show that the embodiment description above comprises considerable detail of the embodiments, which can all be altered and changed, without overstepping the bounds or borders of limits to the scope of protection under the present disclosure, which includes in most jurisdictions also obvious alternatives, also for the dependent claims.

Claims

1. Swimming pool cover system, comprising:

- 5 - a planar cover element;
- a holder for retractably accommodating the cover element; and
- a drive connected to the holder for deploying and/or retracting the cover element from and in or on the holder, respectively; and
- 10 - a cassette, to which at least the holder is mounted,

CHARACTERIZED IN THAT

15 the cassette is configured to be deployed at a swimming swimming pool in a pre-assembled state separate from the swimming swimming pool, with at least the holder mounted to the cassette.

20 **2.** Swimming pool cover system according to claim 1, wherein the drive comprises an extended drive shaft, dimensioned to extend from the drive through a wall, separating a cover system space and a service space, to the holder, wherein the drive is arranged in the service space, where the extended drive shaft enables access to the motor in the service space adjacent the cover system space.

25 **3.** Swimming pool cover system according to claim 1 or 2, further comprising a seal on a or the drive shaft of the drive.

30 **4.** Swimming pool cover system according to claims 2 and 3, wherein the water seal comprises a clamp ring on the drive shaft adjacent the drive at or in the service space and a sleeve connected to the clamp ring and surrounding the drive shaft through the wall.

35 **5.** Swimming pool cover system according to any one or more than one of the preceding claims, further comprising at least three supports under the cassette, wherein preferably at least two of the supports are adjustable in height, and further comprising a transmission configured to enable height adjusting of the supports from above the cassette.

40 **6.** Swimming pool cover system according to any one or more than one of the preceding claims, further comprising at least one anchor to fix the cassette at a destination location adjacent a swimming swimming pool, wherein preferably the cassette is arranged in a well and the anchor is oriented to any on or more than one of the bottom and at least one side of the well, and preferably further comprising a transmission configured to enable enforcement of the anchor from above the cassette.

45 **7.** Swimming pool cover system according to any one

or more than one of the preceding claims, wherein the cassette is defined by a profile frame assembly.

8. Swimming pool cover system according to any one or more than one of the preceding claims, wherein the cassette comprises a cover lid, wherein preferably the cover lid is hinged to the cassette, and may define at least a bench seat. 5
9. Swimming pool cover system according to any one or more than one of the preceding claims, wherein a retractable flap is arranged in a front of the cassette to selectively allow passage there through of the swimming swimming pool cover in and out of the cassette, wherein preferably the flap is arranged in a down turned portion of the cover lid. 10 15
10. Swimming pool cover system according to claim 9, wherein the flap is hingedly mounted and connected to a flap drive for opening or closing the flap, respectively, wherein the drive may be at least one of mechanical, electric, hydraulic, pneumatic and manual and arranged in a dry compartment next to the cassette. 20 25
11. Swimming pool cover system according to any one or more than one of the preceding claims, further comprising a rail system in or on a support surface on which the pre-assembled cassette is to be arranged, wherein a shield is preferably arranged on or over the rail system, and the cassette comprises wheels running over the rail system and a shield lift to locally expose the rail system to the wheels. 30
12. Swimming pool cover system according to any one or more than one of the preceding claims, further comprising a plurality of competition line suspensions, wherein preferably the competition line suspensions extend through the cassette to anchors at a swimming swimming pool wall, and the competition line suspensions may engage the cassette, preferably using couplings at free ends of the suspensions for engagement by the competition lines, such as quick release couplings, for example pen-hole couplings. 35 40 45
13. Swimming pool cover system according to any one or more than one of the preceding claims, further comprising a front plate attached to the cassette, wherein the front plate is preferably of at least one material from a group, comprising: concrete; metal, such as stainless steel, and the like. 50
14. Swimming pool cover system according to any one or more than one of the preceding claims, further comprising a suspension configure to suspend the cassette on sides of a well next to a swimming swimming pool for accommodating the cassette, wherein 55

preferably the suspension comprises an adjustment to prevent skewing of the cassette in the well, and wherein the suspension comprises brackets, having support feet to rest on shoulders of the well.

15. Swimming pool cover system according to claim 14, wherein at least the support feet are adjustable for mounting the cassette in the well of the swimming swimming pool without personnel having to descend into the well.

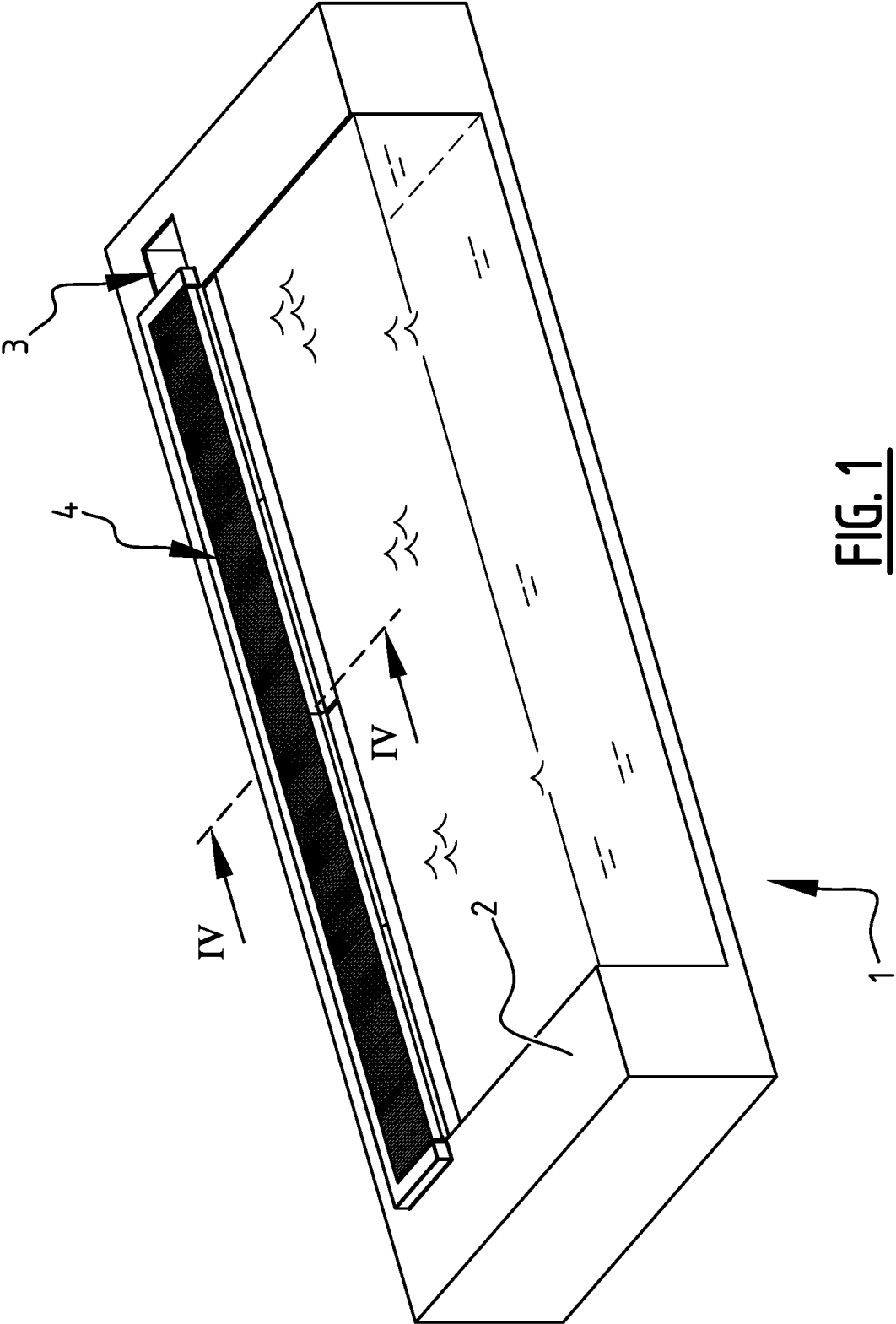


FIG. 1

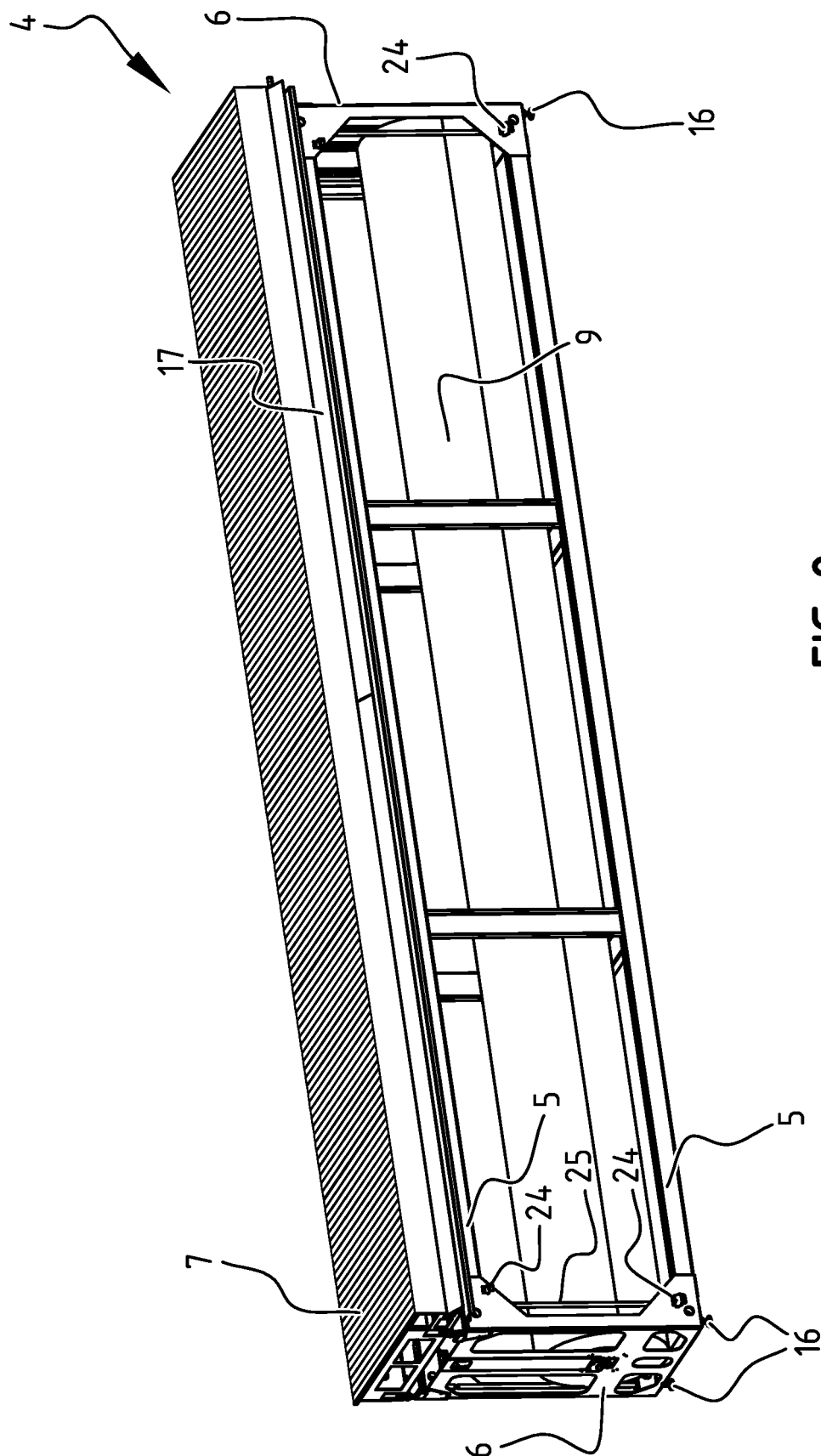


FIG. 2

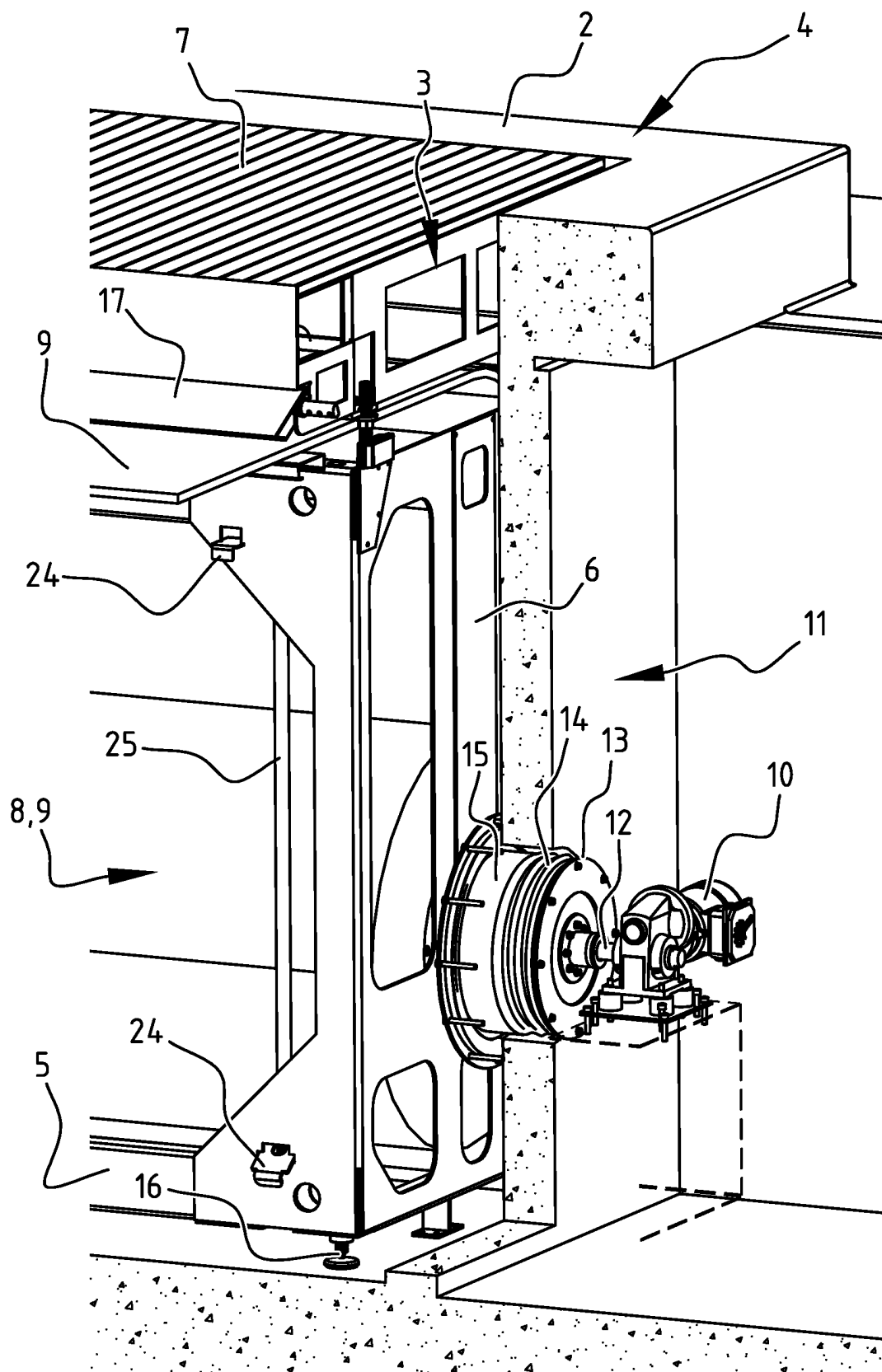


FIG. 3

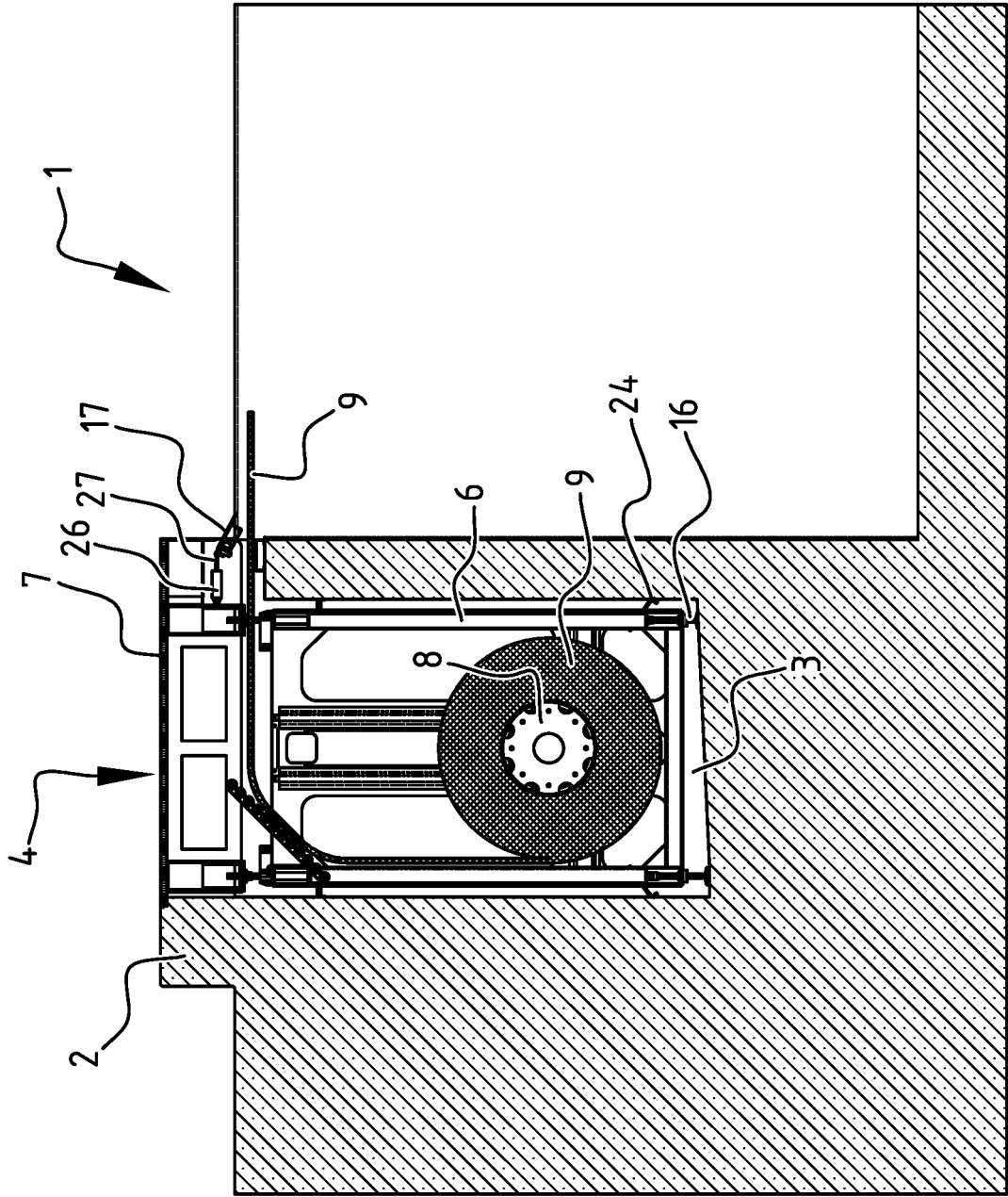


FIG. 4

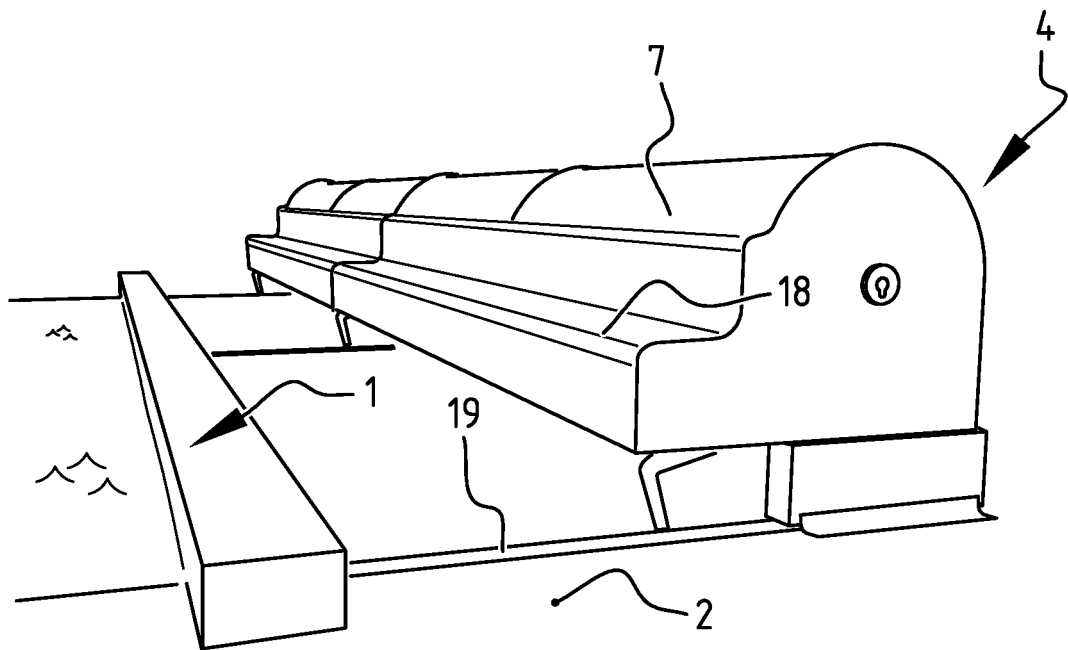


FIG. 5

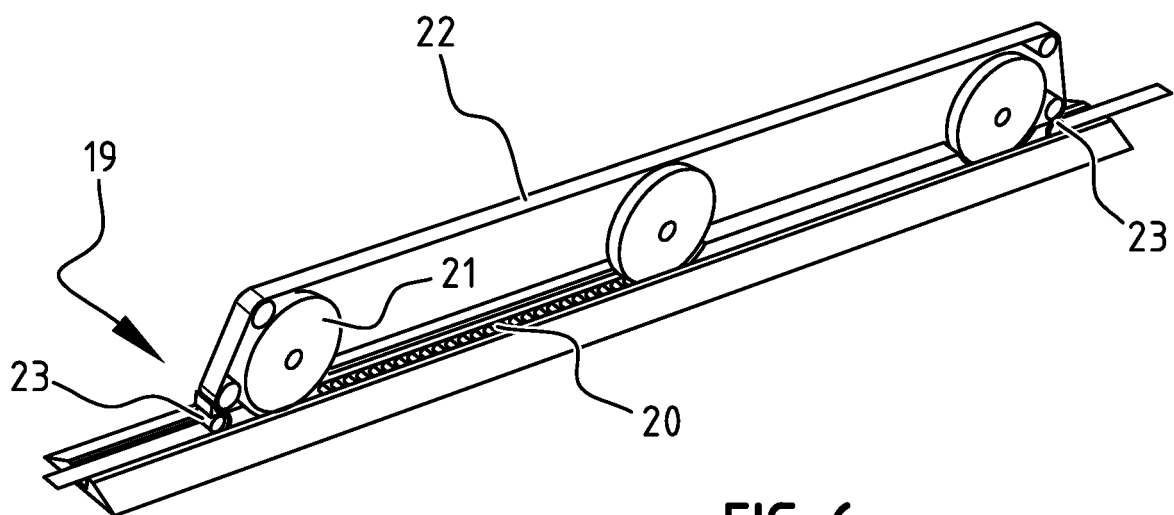


FIG. 6

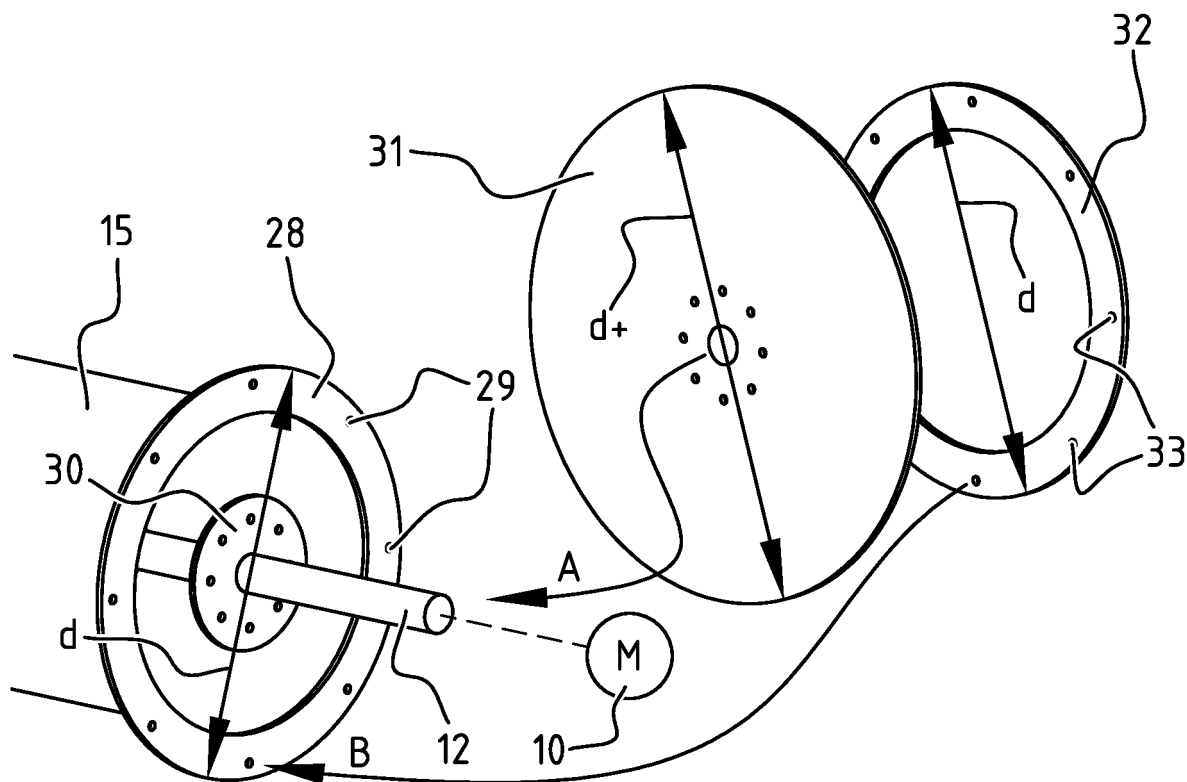


FIG. 7

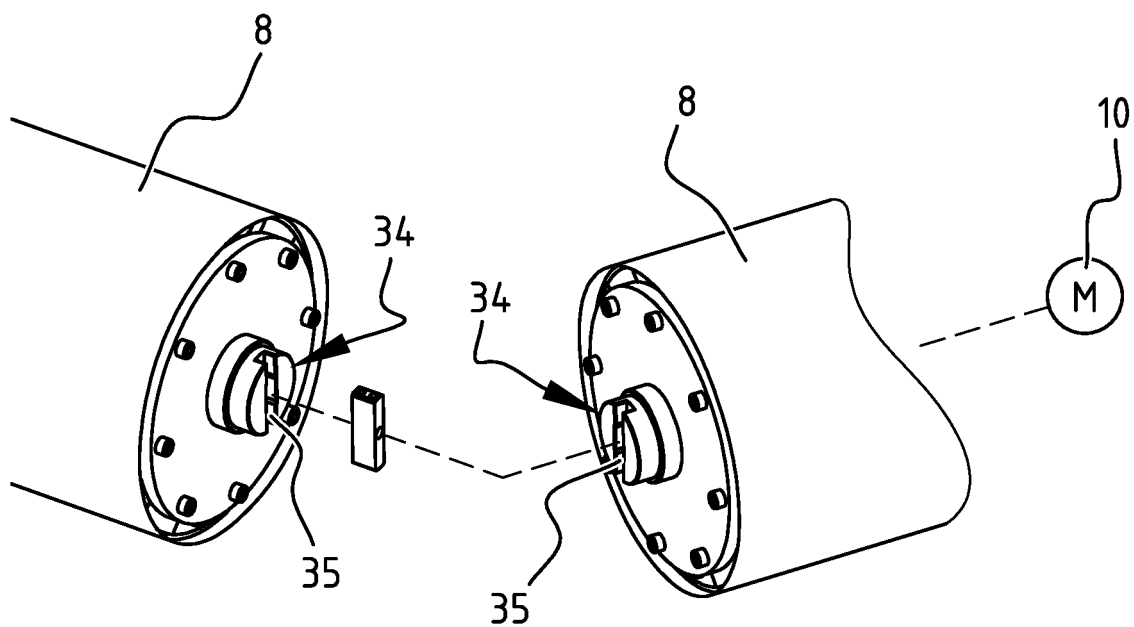


FIG. 8

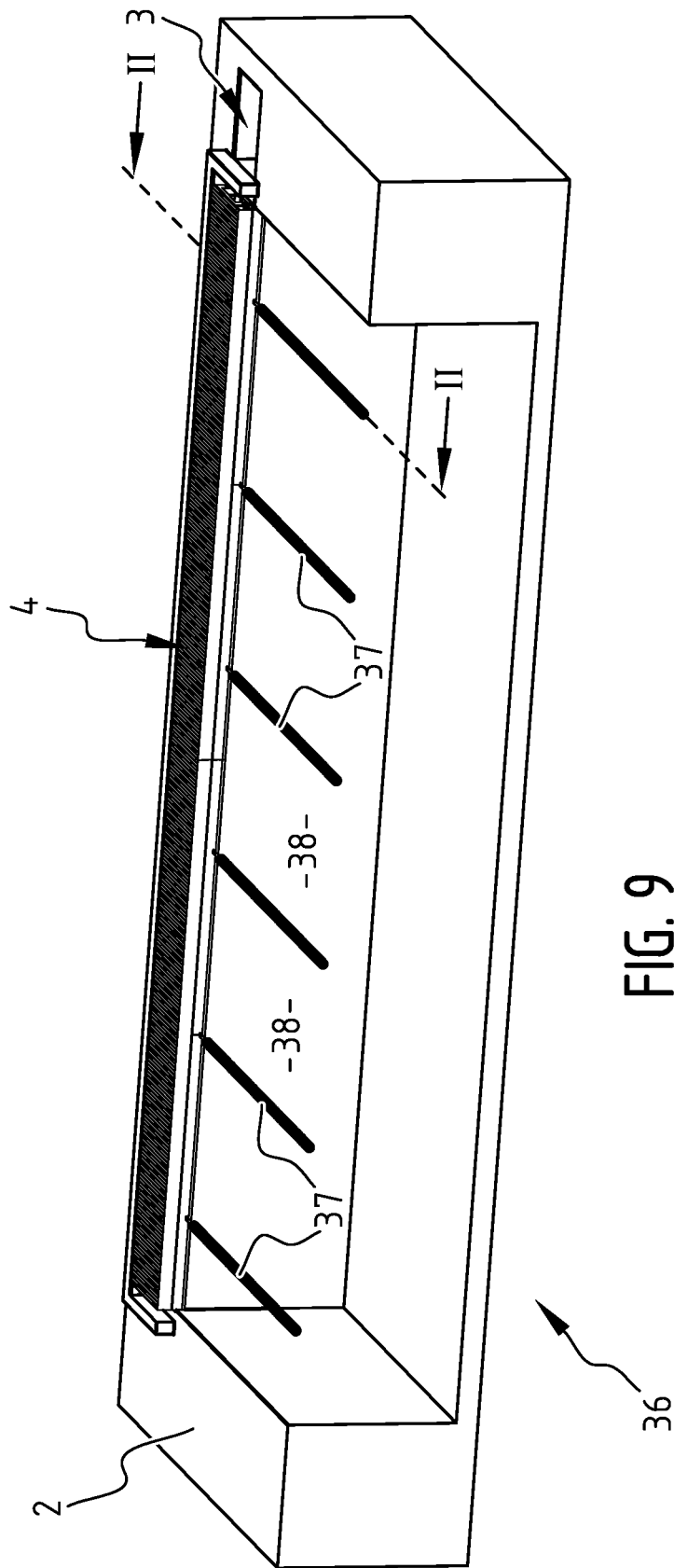


FIG. 9

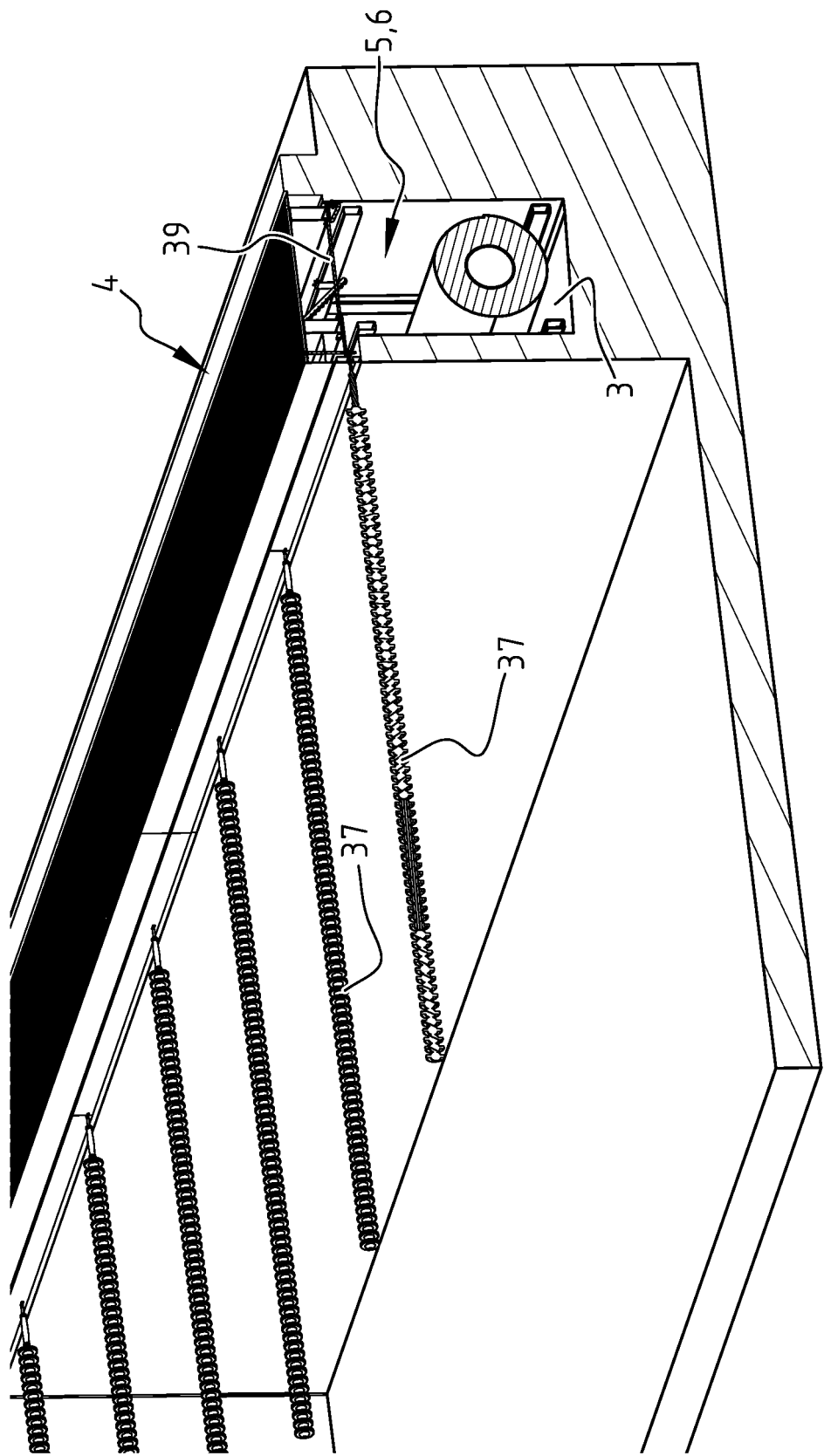
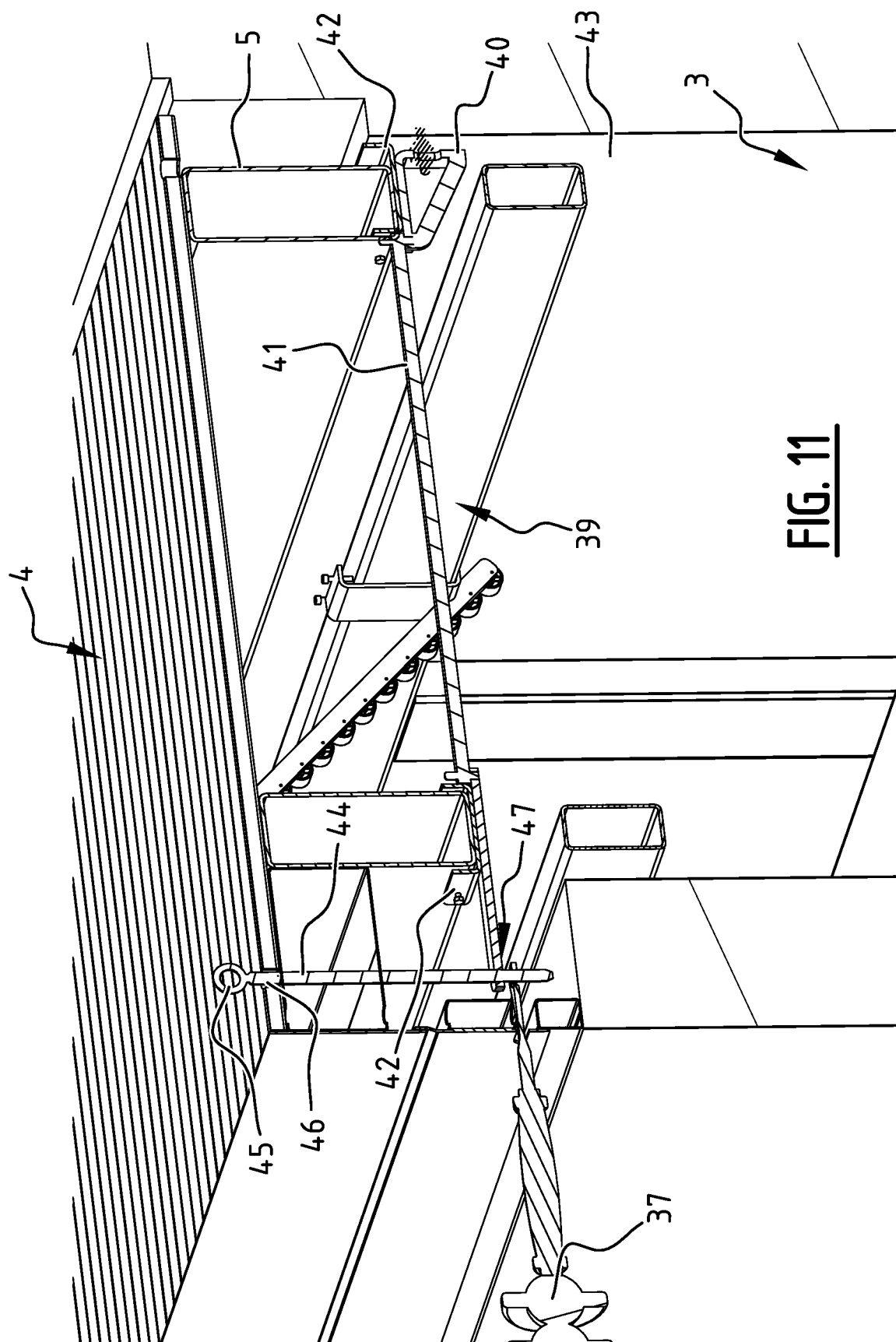
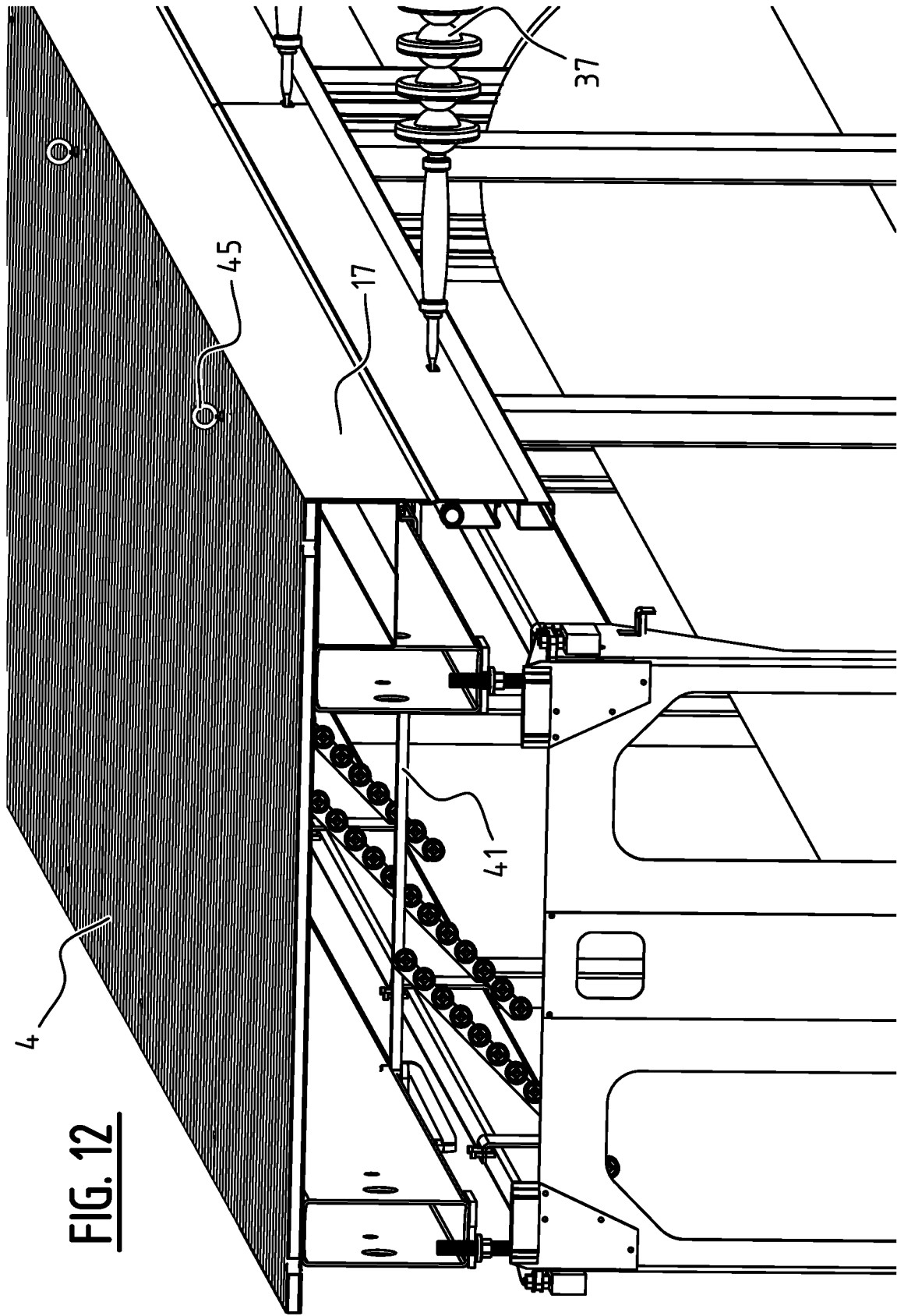


FIG. 10





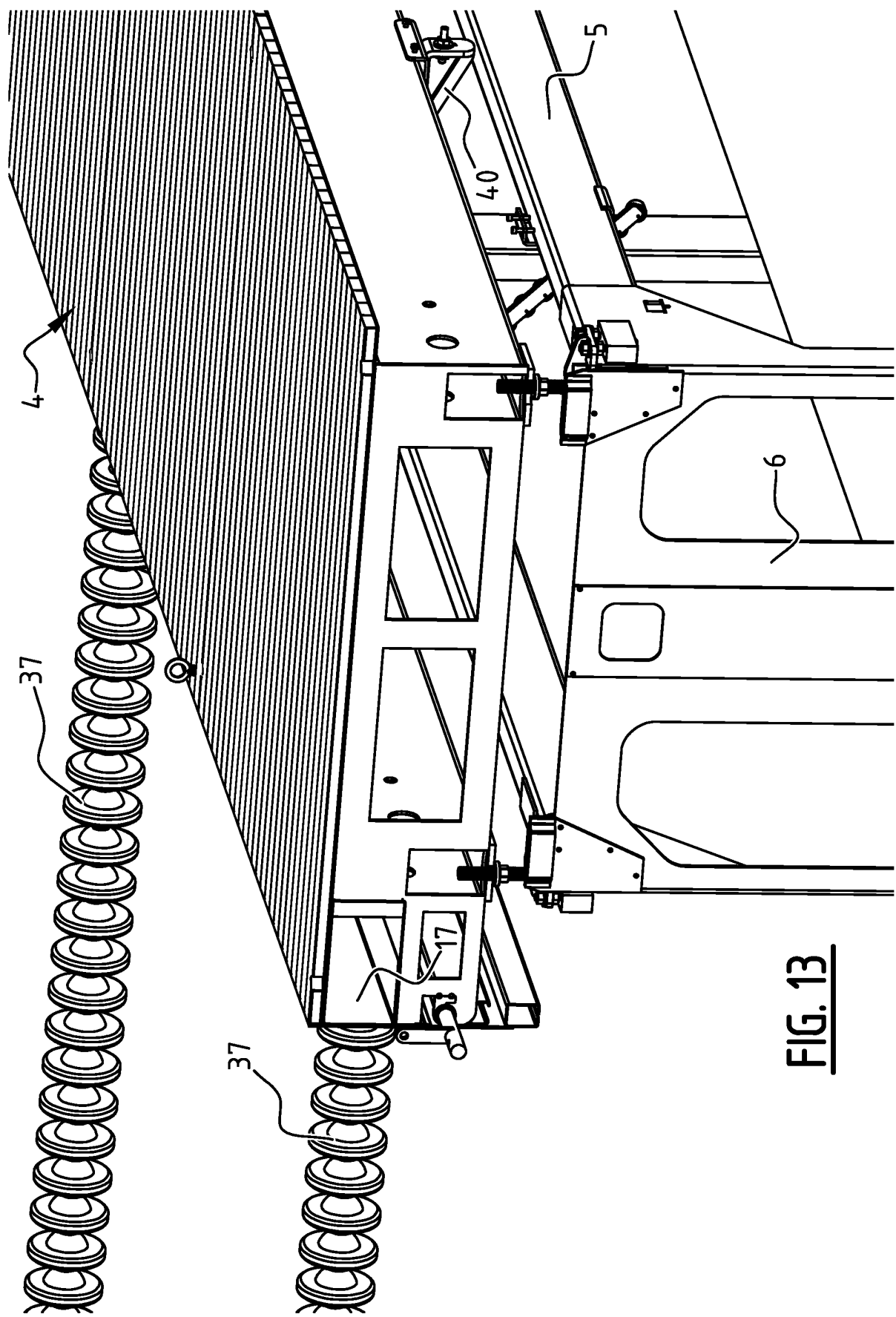


FIG. 13

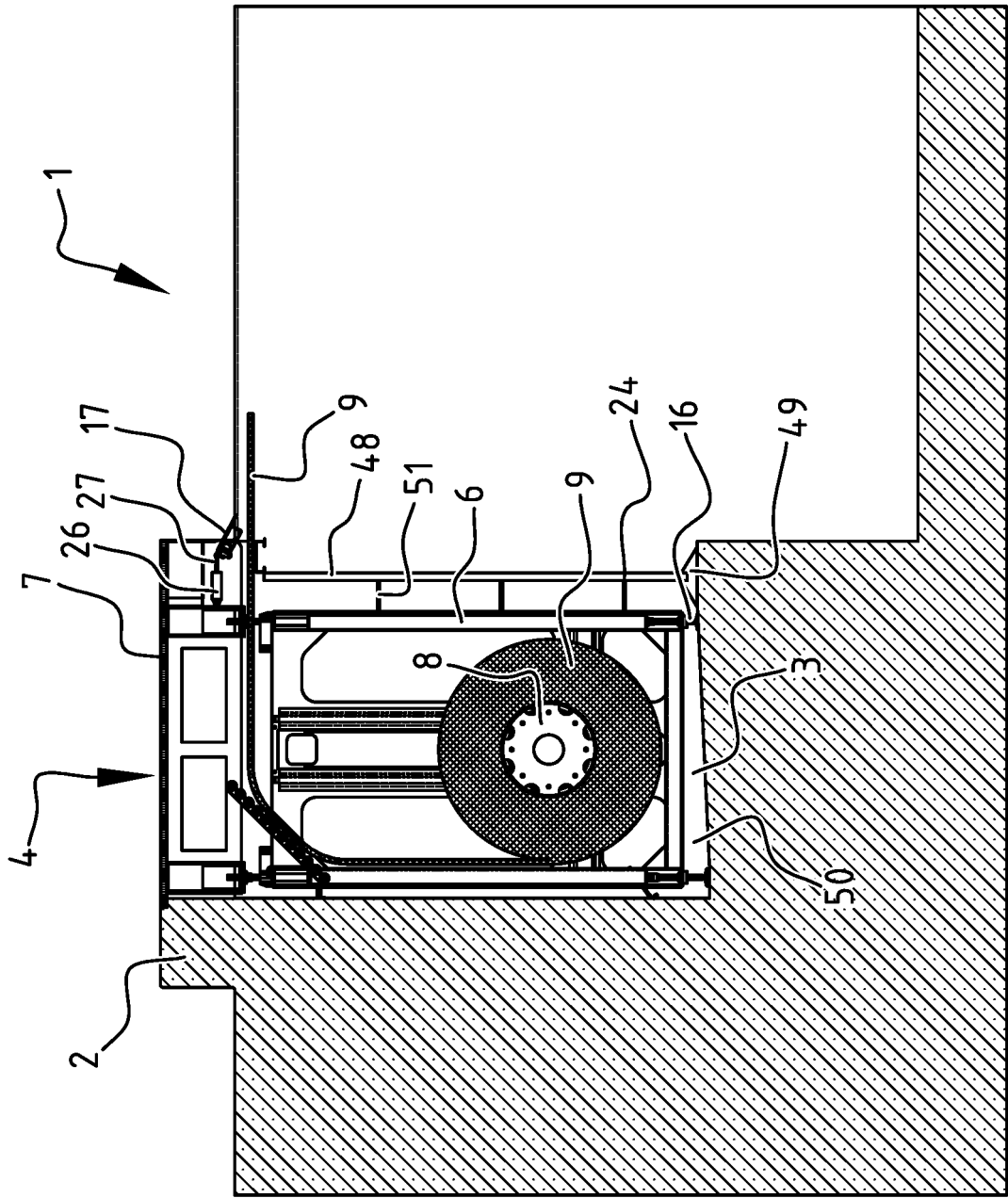


FIG. 14

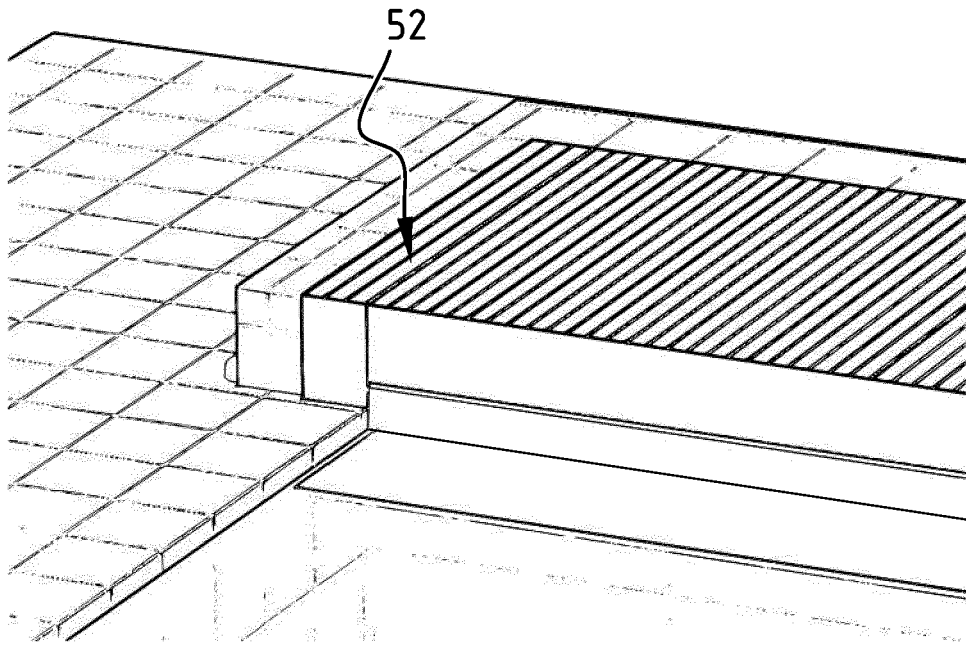


FIG. 15

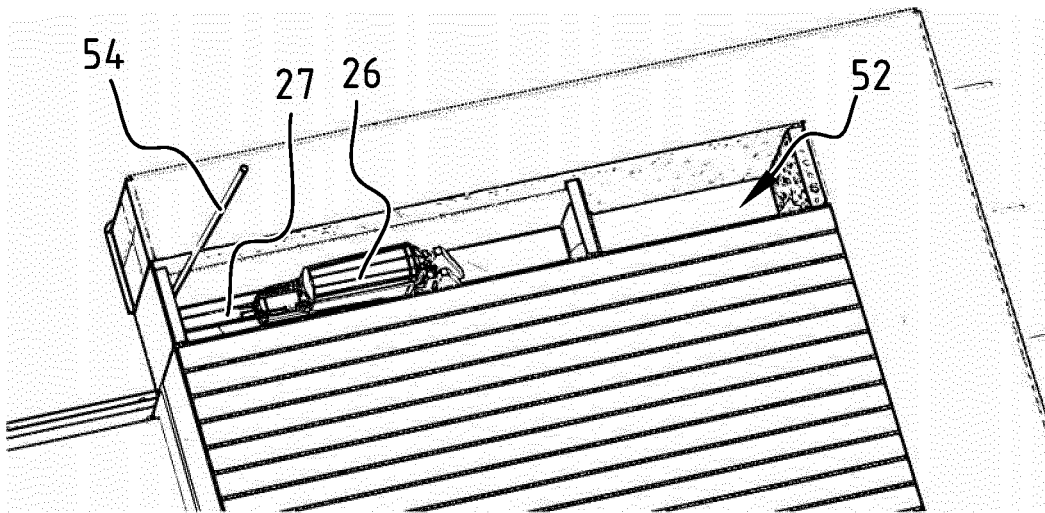
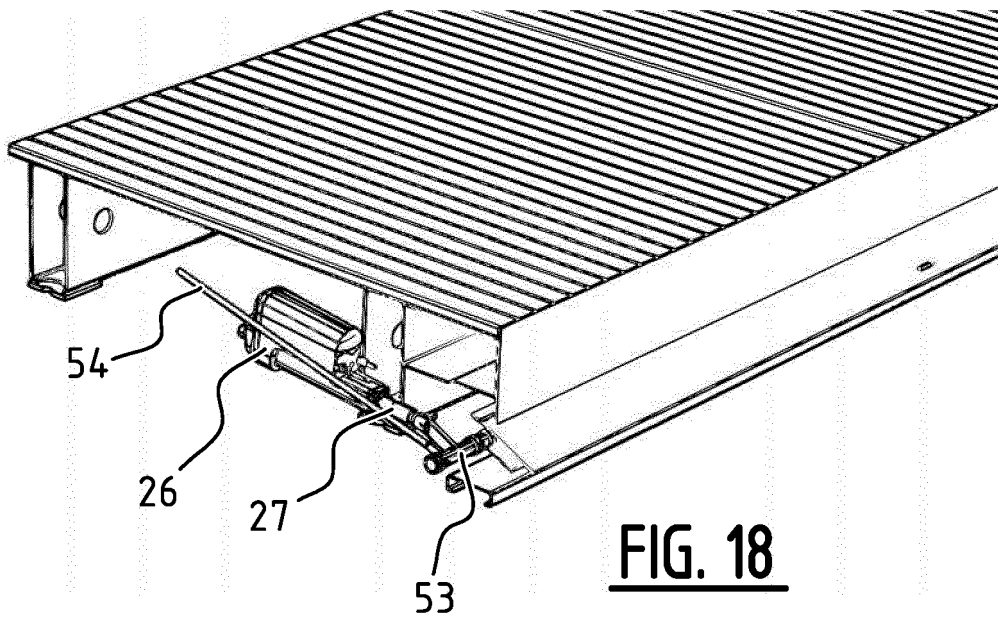
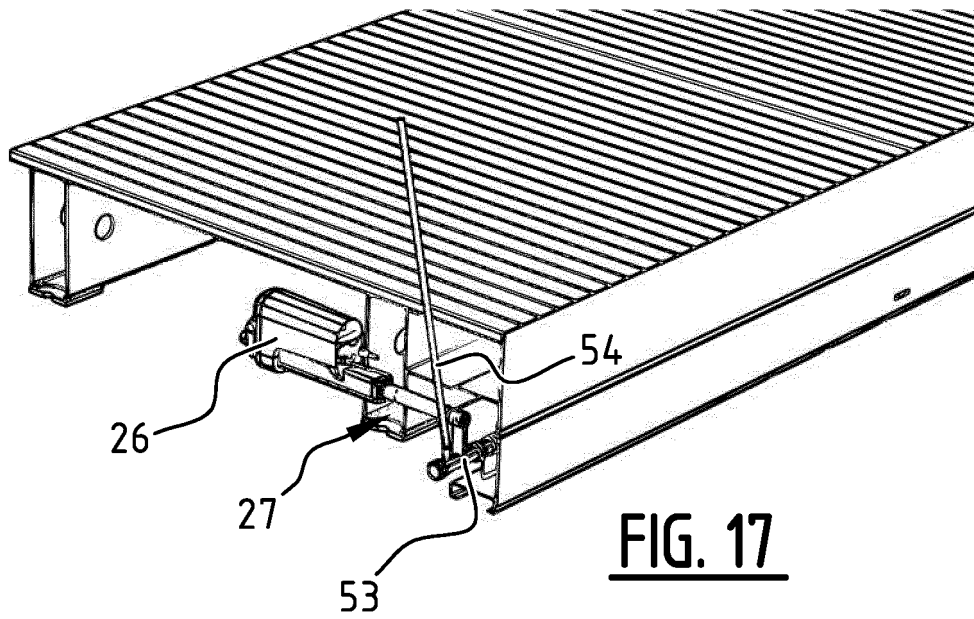
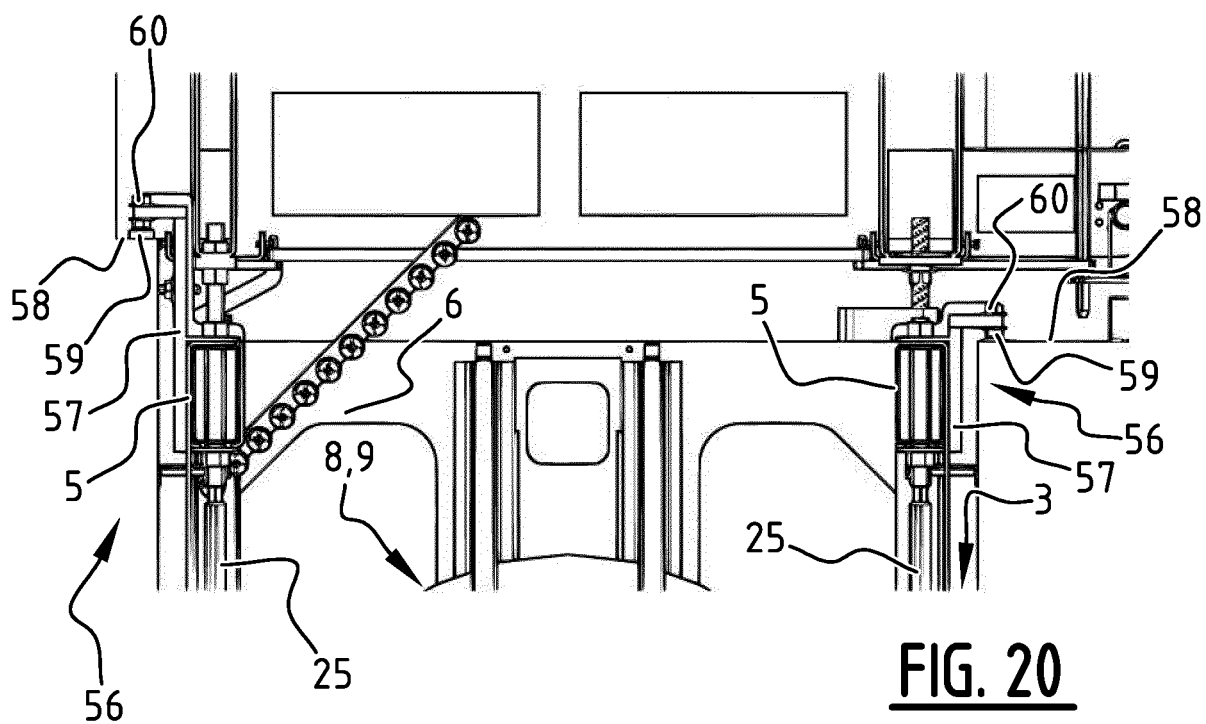
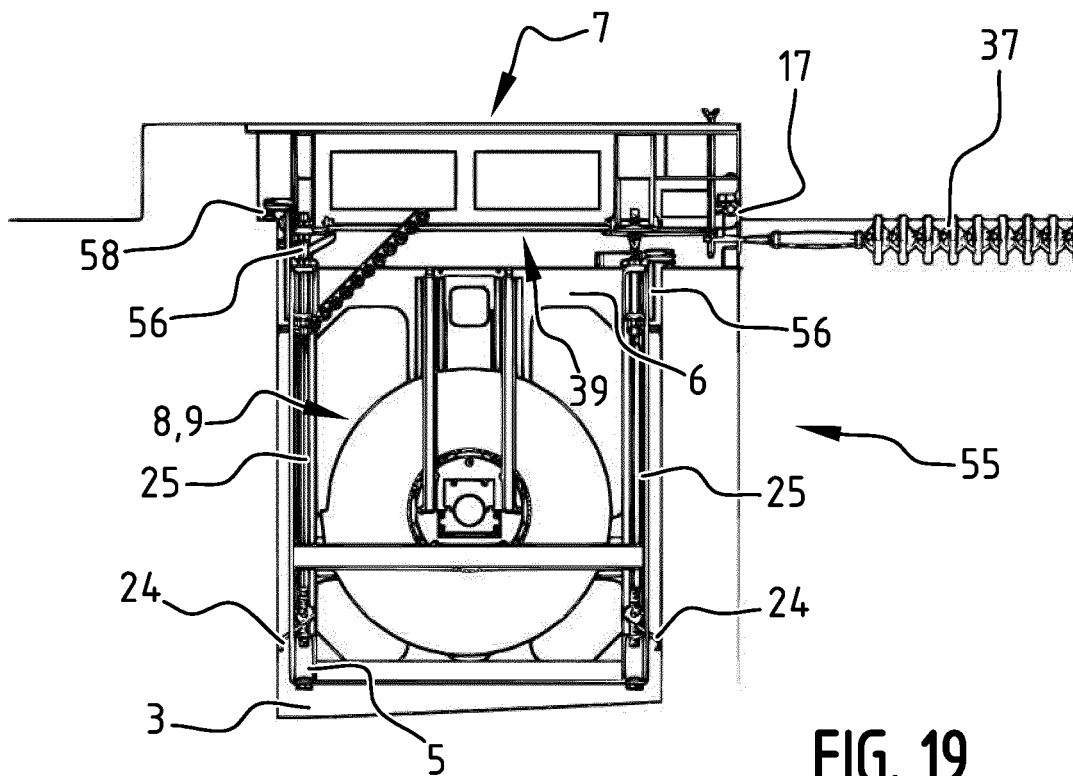


FIG. 16







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