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(54) **SURF POOL AND COMPONENT SET FOR CONSTRUCTING A SURF POOL**

(57) A component set (100) for constructing a surf pool (1), comprising a plurality of identically configured reef components (10), each reef component (10) having a bottom side (11) configured to sit on a ground (2), a front side (12) defining a pool wall section (121) extending from the bottom side (11) to a top side (14) of the reef component (10), a back side (13) defining a first inclined mounting surface (131) that extends from the bottom side (11) to the top side (14) of the reef component (10); and a plurality of identically configured beach components (20), each beach component (20) having a top side (21) defining a beach ground section, a front side (22) defining a second inclined mounting surface (221) that extends from the top side (21) to a bottom side (24) of the beach component (20) and configured to sit on the first inclined mounting surface (131) defined by the back side (13) of the reef component (10), a lower side (23) defining a cavern wall section that extends from the bottom side (24) to the top side (21) of the beach component (20), thereby forming a cavern space (3) between the ground (2) and the beach component (20).

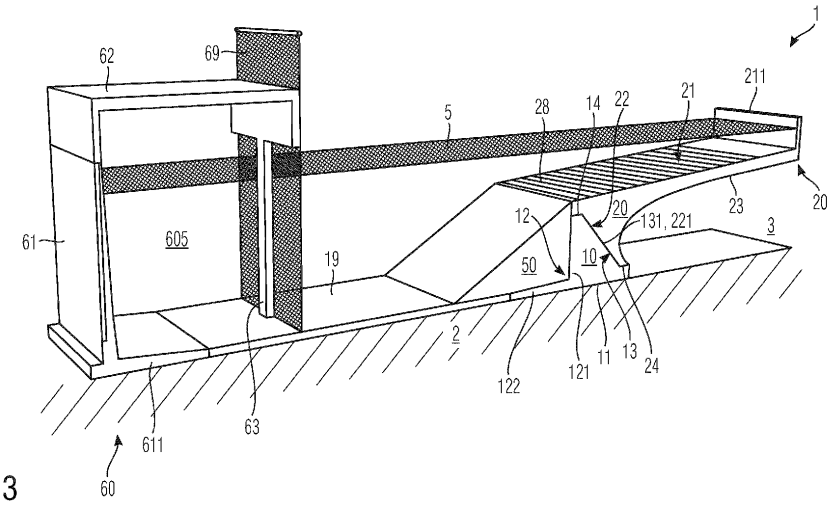

Fig. 3

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Description

TECHNICAL FIELD

[0001] This specification refers to embodiments of a component set for constructing a surf pool, in particular for constructing one or more pool walls of a surf pool. This specification also refers to embodiments of a surf pool.

BACKGROUND

[0002] Systems for generating a wave for surfing (or for other related sports or water activities) are described in, e.g., WO 2006/060866 A1, US 3,913,332 and WO 2010/059871A1.

[0003] Hence, instead of relying on natural waves caused by wind or waves caused by manned boats, it is desirable to produce a wave suitable for surfing (or other related sports or water activities) with a dedicated wave generating system.

[0004] Some wave generating system may be installed in a surf pool, others may be installed in a lake, in a pond, in a river or even at the sea in order to be able to reliably generate a wave anytime, with a defined characteristic and irrespective of unpredictable conditions like weather, water movement and/or boat traffic.

[0005] For example, a video available at https://www.youtube.com/watch?v=kPcQAxuvr6o (dated 28 October 2018) describes a massive cylindrical arrangement in a pond that is moved up and down to produce a wave for surfing.

[0006] An article summarizing characteristics of some of today's wave pools can be found under this link: https://surfd.eom/2020/02/a-list-of-the-best-wave-pools-in-the-world/.

[0007] Thus, there is a variety of different technical solutions known and already built related to specific means for wave generation. For example, a body travels through the water with a certain defined shape and bathymetry, or waves are created by moving foils submerged in the water.

[0008] A further surf pool is described in a video available at https://www.youtube.com/watch?v=Ag6LSb87OUw (dated 08 November 2017). There, it is proposed to move a submerged body along a linear direction for producing a surfing wave in a surf pool.

[0009] In order to ensure surfing anytime and anywhere, it is hence provided not only a wave generating system that can be installed in natural waters, but an entire surf pool that includes such wave generating system and that can be installed at various places, such that existence of natural waters is not a requirement for surfing anymore.

SUMMARY

[0010] It is an object of the present invention to provide means that facilitate construction of a surf pool.

[0011] According to an embodiment, a component set for constructing a surf pool comprises a plurality of identically configured reef components. Each reef component has a bottom side configured to sit on a ground, a front side defining a pool wall section extending from the bottom side to a top side of the reef component, a back side defining a first inclined mounting surface that extends from the bottom side to the top side of the reef component. The component set further comprises a plurality of identically configured beach components. Each beach component has a top side defining a beach ground section, a front side defining a second inclined mounting surface that extends from the top side to a bottom side of the beach component and configured to sit on the first inclined mounting surface defined by the back side of the reef component, a lower side defining a cavern wall section that extends from the bottom side to the top side of the beach component, thereby forming a cavern space between the ground and the beach component.

[0012] In accordance with another embodiment, a surf pool is constructed based on plurality of identically configured reef components and based on a plurality of identically configured beach components. Each reef component has a bottom side configured to sit on a ground, a front side defining a pool wall section extending from the bottom side to a top side of the reef component, a back side defining a first inclined mounting surface that extends from the bottom side to the top side of the reef component. Each beach component has a top side defining a beach ground section, a front side defining a second inclined mounting surface that extends from the top side to a bottom side of the beach component and configured to sit on the first inclined mounting surface defined by the back side of the reef component, a lower side defining a cavern wall section that extends from the bottom side to the top side of the beach component, thereby forming a cavern space between the ground and the beach component.

[0013] In accordance with embodiments described herein, the component set allows for a very low cost, time-efficient, flexible and modular construction of a surf pool. The components of the component set may be produced and then shipped to any place worldwide where the surf pool is to be constructed. The components of the component set allow for indoor installation of the surf pool as well as for outdoor installation, both above ground level as well as within a (dug) pit. The modular setup based on the pairs of a respective reef and beach component furthermore allows constructing a surf pool of arbitrary size at least in terms of width and length of the surf pool, the depth of the surf pool being defined by the total height of the respective reef/beach component pair. In addition, the cavern space formed between ground and the beach components can be used for accommo-

dating other facilities to be installed at a surf pool, such as locker rooms, changing rooms, sanitary facilities, storage areas, wellness and/or fitness areas, instructional/educational area, bouldering area or even commercial premises.

[0014] Those skilled in the art will recognize additional features and advantages upon reading the following detailed description, and upon viewing the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The parts in the figures are not necessarily to scale, instead emphasis is being placed upon illustrating principles of the invention. Moreover, in the figures, like reference numerals designate corresponding parts. In the drawings:

Fig. 1 schematically and exemplarily illustrates a perspective projection of a surf pool constructed based on a component set in accordance with one or more embodiments;

Fig. 2 schematically and exemplarily illustrates a horizontal projection of a section of a surf pool constructed based on a component set in accordance with one or more embodiments; and

Fig. 3 schematically and exemplarily illustrates a perspective projection of a section of a surf pool constructed based on one reef component and one beach component of a component set in accordance with one or more embodiments;

Fig. 4 schematically and exemplarily illustrates a perspective projection of a reef component and a beach component of a component set in accordance with one or more embodiments;

Fig. 5 schematically and exemplarily illustrates a perspective projection of further optional components of a component set in accordance with one or more embodiments;

Fig. 6 schematically and exemplarily illustrates a perspective projection of four reef components and four beach components of a component set in accordance with one or more embodiments;

Fig. 7 schematically and exemplarily illustrates a horizontal projection of a section of a surf pool constructed based on a component set in accordance with one or more embodiments;

Fig. 8 schematically and exemplarily illustrates a vertical cross-section of a section of a surf pool constructed based on a component set in accordance with one or more embodiments;

Fig. 9 schematically and exemplarily illustrates a perspective projection of a surf pool constructed based on a component set in accordance with one or more embodiments; and

Fig. 10 schematically and exemplarily illustrates three vertical cross-sections of a surf pool constructed based on a component set and installed in three different variants in accordance with one or more embodiments.

DETAILED DESCRIPTION

[0016] In the following detailed description, reference is made to the accompanying drawings which form a part hereof and in which are shown by way of illustration specific embodiments in which the invention may be practiced.

[0017] In this regard, directional terminology, such as "top", "bottom", "below", "front", "behind", "back", "leading", "trailing", "above" etc., may be used with reference to the orientation of the figures being described. Because parts of embodiments can be positioned in a number of different orientations, the directional terminology is used for purposes of illustration and is in no way limiting. It is to be understood that other embodiments may be utilized and structural or logical changes may be made without departing from the scope of the present invention. The following detailed description, therefore, is not to be taken in a limiting sense, and the scope of the present invention is defined by the appended claims.

[0018] Reference will now be made in detail to various embodiments, one or more examples of which are illustrated in the figures. Each example is provided by way of explanation, and is not meant as a limitation of the invention. For example, features illustrated or described as part of one embodiment can be used on or in conjunction with other embodiments to yield yet a further embodiment. It is intended that the present invention includes such modifications and variations. The examples are described using specific language which should not be construed as limiting the scope of the appended claims. The drawings are not scaled and are for illustrative purposes only. For clarity, the same elements or manufacturing steps have been designated by the same references in the different drawings if not stated otherwise.

[0019] The term "horizontal" as used in this specification intends to describe an orientation substantially parallel to a horizontal surface of still water (cf. water level 5 in the drawings) in the surf pool.

[0020] The term "vertical" as used in this specification intends to describe an orientation which is substantially arranged perpendicular to the horizontal surface, i.e., parallel to the normal direction of the still water surface. E.g., heights and depths described herein may be extensions in parallel to the vertical direction, whereas lengths and widths described herein may be extensions perpendicular to the vertical direction.

[0021] Specific embodiments described in this specification pertain to a surf pool in which a wave for surfing is generated, e.g., by an artificial wave generating system for surfing waves and wakes.

[0022] Each of Figs. 1 to 10 schematically and exemplarily illustrates, in a simplified manner, some compo-

nents of a component set 100 for constructing a surf pool 1. Some of the drawings, e.g., Figs. 1, 2 and 9 illustrate sections of a substantially completely constructed surf pool 1.

[0023] If not stated otherwise, the description below of embodiments of the component set 100 and/or embodiments of the surf pool 1 applies to each of the drawings.

[0024] Referring to Fig. 1, at the surf pool 1, a drive arrangement (not illustrated) is installed, e.g., in a housing 600 formed by a plurality of housing components 60, which may form members of the component set 100. The drive arrangement is configured for generating a wave for surfing, such that a surfer 7 may surf on the generated wave.

[0025] In an embodiment, the drive arrangement is configured in accordance with one or more of the embodiments described in co-pending German patent application DE 10 2020 121 513.4 filed on 17 August 2020, the content of which is herein incorporated in its entirety. In another embodiment, the drive arrangement may be configured differently. For example, the drive arrangement comprises an unmanned body 9 (cf. Fig. 10) that is automatically moved through water along a track defined by the housing formed by a plurality of housing components 60.

[0026] For example, the surf pool 1 exhibits a substantially rectangular horizontal cross-section. E.g., at least one of the four pool walls defining the surf pool 1 with the substantially rectangular horizontal cross-section are constructed based on components of the component set 100. E.g., as illustrated in Fig. 1, three of the four walls are constructed based on components of the component set 100, whereas the fourth pool wall is formed by the housing 600 that houses the drive arrangement for generating the wave.

[0027] As also illustrated in Fig. 2, the surf pool 1 may exhibit a modular design. The modular design of the surf pool 1, e.g., at least its three pool walls, is achieved based on a plurality of equally configured component pairs, each component pair formed by a respective reef component 10 and a respective beach component 20, embodiments of being described with respect to Figs. 3 and 4:

[0028] The component set 100 for constructing the surf pool 1 hence comprises a plurality of identically configured reef components 10. Each reef component 10 has a bottom side 11 configured to sit on a ground 2, a front side 12 defining a pool wall section 121 extending from the bottom side 11 to a top side 14 of the reef component 10, and a back side 13 defining a first inclined mounting surface 131 that extends from the bottom side 11 to the top side 14 of the reef component 10. The component set 100 further comprises a plurality of identically configured beach components 20. Each beach component 20 has a top side 21 defining a beach ground section, a front side 22 defining a second inclined mounting surface 221 that extends from the top side 21 to a bottom side 24 of the beach component 20 and configured to sit on the first inclined mounting surface 131 defined by the back side 13 of the reef component 10, a lower side 23 defining a cavern wall section that extends from the bottom side 24 to the top side 21 of the beach component 20, thereby forming a cavern space 3 between the ground 2 and the beach component 20.

[0029] Regarding exemplary dimensions of the reef components 10 and the beach components 20, reference is made to Figs. 2 and 8.

[0030] Accordingly, a width w (cf. Fig. 2) of the respective beach component 20 can be identical to a width w of the respective reef component 10, wherein the width w may amount to at least 1 m and to no more than 10 m. E.g., width w amounts to 2.5 m. Thereby, the components 10, 20 may be easily transported by road, rail, boat or plane.

[0031] Furthermore, in an embodiment a length 12 of the top side 21 of the respective beach component 20 is greater than a length 11 of the bottom side 11 of the respective reef component 10, wherein a total length lt that is formed when the respective beach component 20 sits on the respective reef component 10 may amount to at least 5 m. E.g., the length 11 of the bottom side 11 of the reef component 10 amounts to some meters, such as 2 m, and the length 12 of the top side 21 of the beach component 20 amounts to 7 m.

[0032] In an embodiment, an area of the first inclined mounting surface 131 is identical to an area of the second inclined mounting surface 221 and amounts to at least 1 m^2.

[0033] A height h1 of the reef component 10, i.e., the distance between its top side 14 and its bottom side 11 along the vertical direction, may amount to some meters, such as 2 m. When mounted on the reef component 10, the top side 21 of the beach component 20 may extend in slightly inclined manner, as illustrated in Fig. 8, e.g., such that the height of the cavern space 3, i.e., a distance between the ground 2 and the lower side 23 of the respective beach component 20 is greater than the height h1 of the reef component 10.

[0034] The length lp1, lp2 (cf. Fig. 2) of the respective pool wall constructed based on the component set 100 may amount to at least the sum of the widths w of the pairs of reef components 10 and beach components 20 that are employed for forming the respective pool wall. That is, for forming the respective pool wall of the surf pool 1, the pairs of reef components 10 and beach components 20 are arranged laterally adjacent to each other. To this end, each reef component 10 may have a lateral side 15 configured to engage with a lateral side 15 of an adjacent reef component 10, and each beach component 20 may have a lateral side 25 configured to engage with a lateral side 25 of an adjacent beach component 20, as best illustrated in Fig. 4.

[0035] Further exemplary features of the component set 100 and its components will now be described in more detail:

In accordance with an embodiment, the purpose of the

reef component 10 maybe twofold: to be massive enough to counteract an outward pushing force of the water in the deep part of the pool 1 (i.e., the basin), and to act as a deadweight against the tipping moment of the cantilevered (or propped cantilever) form of the beach component 20.

[0036] In accordance with an embodiment, the beach component 20 is designed to have the form of a breaking wave so as to achieve a structural form factor dispersing the loads bearing upon it to the thicker outside edges, and to give stiffness, as in natures design for the corrugation of a seashell.

[0037] Regarding the reef component 10, the back side 13 may be opposite of the front side 12. The first inclined mounting surface 131 may extend from the top side 14 down to the bottom side 11 along an orientation towards an outermost section the surf pool 1.

[0038] Both the first inclined mounting surface 131 and the second inclined mounting surface 221 may be planar.

[0039] For mounting the beach component 20 onto the reef component 10, the second inclined surface 221 is attached to the first inclined surface 131.

[0040] For example, the component set 100 may comprise a plurality of equally configured coupling components 30, each coupling component being configured for fixing the first inclined mounting surface 131 of the respective reef component 11 to the second inclined mounting surface 221 of the respective beach component 20. The respective coupling member 30 may include a screw or bolt arrangement or any other fixing arrangement suitable for fixing the second inclined surface 221 to the first inclined surface 131. For example, at the respective reef component 10, a recess 125 is formed that allows for tightening of the coupling member, e.g., for tightening of a locking nut to secure the respective beach component 20 to the reef component 10 (cf. e.g., Fig. 6).

[0041] Referring to Fig. 6, the lateral side 15 of the reef component 10 may be profiled, e.g., at a transition between the lateral side 15 and the front side 12 of the reef component 10. Also, the lateral side 25 of the beach component 20 may be profiled, e.g., at a transition between the lateral side 25 and the top side 21 of the reef component 20. The profiled lateral sides 15, 25 may form channels 1515, 2525 with profiled lateral sides 15, 25 of the adjacently arranged reef component 10 and beach component 25, as illustrated in e.g. Fig. 6. These channels 1515 and 2525 may be employed for installation of a water-proof cover onto the front sides 12 and the top sides 21.

[0042] Referring to e.g., Fig. 6, in an embodiment, the top side 14 of the respective reef component 10 exhibits a profiled reception 141 configured to engage with a correspondingly configured profiled protrusion 241 formed at a transition between front side 22 and the top side 21 of the respective beach component 20. Likewise, in an embodiment, the bottom side 11 of the respective reef component 10 exhibits a further profiled reception 111 configured to engage with a further correspondingly configured profiled protrusion 223 formed at a transition between front side 22 and the lower side 23 of the respective beach component 20.

[0043] Each of the profiled reception 141, the further profiled reception 111, the correspondingly configured profiled protrusion 241 and the further correspondingly configured profiled protrusion 223 may exhibit a length identical to the widths w of the respective reef component and the respective beach component 20.

[0044] The profiled reception 141, the further profiled reception 111, the correspondingly configured profiled protrusion 241 allow for a secure mounting of the beach component 20 onto the reef component 10. In addition, to further secure the arrangement, said coupling members 30 may be employed.

[0045] In an embodiment, cf. e.g. Fig. 3, Figs. 6-8, the front side 12 of the respective reef component 10 further defines a pool ground section 122. E.g., the pool ground section 122 does not overlap with the top side 21 of the beach component 20 when the beach component 20 is mounted on the reef component 10 (cf., e.g., Fig. 3). The pool ground section 122 may interface with a main pool ground 19 (cf. Fig. 3), which may be natural ground or artificial ground.

[0046] The pool ground section 122 may extend substantially horizontally. The pool wall section 121 may extend substantially vertically.

[0047] Furthermore, a part of the top side 21 and/or a part of the front side 22 of the beach component 20 may be arranged co-planar with the pool wall section 121 defined by the front side 12 of the reef component 10, e.g., so as to also define a vertically extending pool wall section.

[0048] With regards to the beach section 20, the lower side 23 may furthermore define a cavern ceiling section 232 confining the cavern space 3. The height h of the cavern space 3 may be the vertical distance between the cavern ceiling section 232 and ground 2. Said height may be dimensioned such that a person 8 may stand upright in the cavern space 3 (cf. Fig. 1, Fig. 9). The cavern ceiling section 232 may extend below the top side 21 of the beach component 20.

[0049] In an embodiment, the cavern wall section 231 of the cavern space 3 formed by the lower side 23 exhibits a convex shape that extends towards the second inclined mounting surface 221 (cf. e.g. Figs. 3, 6 and 8). Hence, the lower side 23 may have a shape corresponding to a section of a parable, wherein a vertex 239 of the parable section is part of the cavern wall section 231 and positioned in a region corresponding to a vertical projection of the bottom side 11 of the reef component 10 when the beach component 20 is mounted on the reef component 10. Such design may contribute to a stable arrangement of the pool wall formed by the reef and beach components 10, 20.

[0050] However, in another embodiment, the cavern wall section 231 of the cavern space 3 formed by the lower side 23 may exhibit another shape that extends

towards the second inclined mounting surface 221, e.g., a flat wedge shape, another linear shape or yet another shape. But, also in accordance with such other embodiment, also a vertex or, respectively, another edge/turning point of the cavern wall section 231 may be positioned in a region corresponding to a vertical projection of the bottom side 11 of the reef component 10 when the beach component 20 is mounted on the reef component 10.

[0051] In yet a further embodiment, as the top side 21 of the respective beach component 20 forming the beach ground section may at least partially be covered with water, the top side 21 may be equipped with an anti-slip cover 28 (cf. Fig. 6, illustrated for the two central ones of the four beach components 20, and Figs. 3-5). For example, in addition to such anti-slip cover 28 or as an alternative thereto, the surface of the top side 21 may be roughened and/or equipped with a plurality of recesses or protrusion to provide for anti-slip surface. Hence, for example, the upper surface of the top side 21 ma have a rougher texture, either through use of a coarse aggregate or through a textured moulding to allow for a firmer foothold under the water.

[0052] In yet a further embodiment, the top side 21 of the respective beach component 20 is equipped with a backwash barrier component 29, as illustrated in Figs. 1 and 8. The backwash barrier component 29 may be configured to prevent waves from travelling beyond the border of the surf pool 1. For example, the component set 100 comprises a plurality of such backwash barrier components 29. These backwash barrier components 29 may be provided separately or as an integrated part of the respective beach component 20.

[0053] Furthermore, in yet a further embodiment, the top side 21 may be terminated by a vertically extending pool boarder wall section 211. The pool boarder wall section 211 may interface with an environment of the surf pool 1, e.g., a landing stage area 70 (cf. Fig. 10) allowing surfers 7 to enter and leave the surf pool 1. The pool boarder wall section 211 may exhibit a height of several 10 cm, depending on the designated design of the surf pool 1.

[0054] In accordance with an embodiment, the component set 100 further comprises (cf. Fig. 5) one or more corner beach components 40. Each of the one or more corner beach component 40 has a first lateral side 45 configured to engage with both the lateral side 15 of the adjacent reef component 10 and a lateral side 25 of the adjacent beach component 20, when the adjacent beach component 20 sits on the adjacent reef component 10. Each of the one or more corner beach component 40 may further have a second lateral side 46 configured to engage with both the lateral side 15 of another adjacent reef component 10 of the component set 100 and the lateral side 25 of another adjacent beach component 20 of the component set 100, when the other adjacent beach component 20 sits on the other adjacent reef component 10. Each of the one or more corner beach component 40 may further have a top side 41 defining a further beach ground section, and a lower side 43 defining a further cavern wall section that extends from a bottom side 44 to the top side 41 of the corner beach component 20, thereby forming a further section of the cavern space 3 between the ground 2 and the lower side 43 of the corner beach component 40.

[0055] Exemplary embodiments of the corner beach component 40 are illustrated in each of Fig. 1, Fig. 2, Fig. 5, Fig. 7 and Fig. 9. Accordingly, the corner beach component 40 may be a two-part component having first subcomponent 40-a and a second subcomponent 40-b, each subcomponent 40-a, 40-b forming a respective half of the total turn defined by the corner beach component 40. The first subcomponent 40-a may be equally configured as the second subcomponent 40-b. In addition, the component set 100 may further include one or more corner reef components (not illustrated) configured in a similar manner as the reef components 10, i.e., such that the respective corner beach component 40 may be mounted onto the respective corner reef component.

[0056] Furthermore, also the top side 41 of the corner beach component may be terminated by a vertically extending pool boarder wall section 411. The pool boarder wall section 411 may interface with the environment of the surf pool 1, e.g., with said landing stage area 70 (cf. Fig. 10) allowing surfers 7 to enter and leave the surf pool 1.

[0057] Referring to Fig. 3, 7 and 8, shore components 50 may be provided. Each shore component 50 can be configured to engage with both the pool ground section 122 and the pool wall section 121 defined by the front side 12 of the respective reef component 10. The shore components 50 may be designed in accordance with a designated characteristic of the wave. The shore components 50 may be manmade components and may form a part of the component set 100. Alternatively, the shore components 50 may be made of natural materials, such as sand or rocks or other ground material.

[0058] The weight of the respective shore component 50 arranged on the pool ground section 122 may form a counter weight for the top side 21 of the beach component 20.

[0059] Additionally, it is of course possible to provide for support columns 27 (cf. Fig. 5) or other bearers/supports that are arranged between the lower sides 23 of the beach components 20 and ground 2, e.g., in case of beach components 20 having a very long (cf. 12 in Fig. 8) top side 21 and hence could be subjected to heavy weight caused by water above the top side 21.

[0060] Regarding installation of the drive arrangement for generating the wave, there are several possibilities: E.g., a central position of the drive arrangement / of the system for generating the wave within the surf pool 1 would allow for constructing each pool wall based on the plurality of reef and beach components 10, 20. In another embodiment, a housing 600 simultaneously accommodates such drive arrangement / system and forms one of the pool walls. E.g., to this end, referring to Fig. 3 and

5, the component set 100 may optionally comprises a plurality of equally configured housing components 60, wherein each housing component 60 may be configured to engage with at least one of the lateral side 15 of the reef component 10 and a lateral side 25 of the beach component 20 (as best illustrated in Fig. 7, and in Fig. 9, views (A) and (B)), and to at least partially house a system for generating a wave in the surf pool 1. For example, as illustrated in Fig. 7, and in Fig. 9, views (A) and (B), some of the support columns 63 may be mounted on the top side 21 of one of the beach components 21. Furthermore, the pool wall constructed based on the beach and reef components 10, 20 may partially be arranged with the space 605 defined by housing components 60.

[0061] An exemplary configuration of the housing 600 and the housing components 60 is illustrated in each of Fig. 1, 2, 3, 5, 7, 8, 9. For example, each housing component 60 comprises a pool wall member 61 emerging vertically from a base member 611. A ceiling member 62 extends horizontally above water level 5 and above the pool wall member 61. The ceiling member 62 is additionally supported by a support column 63. The wave generating system including the drive arrangement may be installed within the wave generator space 605 defined by pool wall member 61 and the cover member 62. In order to reduce the risk of objects or humans entering the wave generator space 605, a safety grid structure 69 may be provided at the support column 63. A larger housing component 68 may house parts of the drive necessary for moving the body 9 through water. A door 681 may allow authorized persons to enter the wave generator space 605, e.g., when maintenance work has to be carried out.

[0062] Each reef component 10 and each beach component 20 may be manufactured separately.

[0063] Mounting of the beach components 20 onto the reef component 10 may occur at the site where the surf pool 1 is to be constructed.

[0064] Each reef component 10 and each beach component 20 may be a respective monolithic component. E.g., for manufacturing the reef components 10 and the beach components 20, only two mouldings are needed, in accordance with an embodiment.

[0065] E.g., the reef components 10 and the beach components 20 may be made of steel, aluminum, of any other suitable alloy, a plastic material, or of another material, e.g., a concrete.

[0066] For further constructing of the surf pool 1, the pairs of installed reef components 10 and the beach components 20 may be covered with a water-proof cover. Said water-proof cover (not illustrated) may be fixed at said channels 1515/2525.

[0067] Furthermore, the pairs of installed reef components 10 and the beach components 20 may be equipped with further components to enhance user experience onsite.

[0068] As explained above, for forming the respective pool wall of the surf pool 1, the pairs of reef components 10 and beach components 20 are arranged laterally adjacent to each other. To this end, each reef component 10 may have said lateral side 15 configured to engage with the lateral side 15 of the adjacent reef component 10, and each beach component 20 may have said lateral side 25 configured to engage with a lateral side 25 of the adjacent beach component 20, as best illustrated in Fig. 4. To provide for a corner of the pool wall, e.g., a 90° turn, said corner beach components may be employed. Depending on the design of the surf pool 1 and the configuration of the drive arrangement for generating the wave in the surf pool 1, one or more or each of the pool walls of the surf pool 1 may be constructed based on the components of the component set 100 described herein. E.g., when a drive arrangement for generating the wave in the surf pool 1 is installed in a central region of the surf pool 1, each pool wall may be constructed based on the components of the component set 100 described herein. In another embodiment, as exemplarily illustrated in each of Fig. 1, Fig. 2, Fig. 7 and Fig. 9, the drive arrangement is installed in the housing 600 that forms one of the pool walls of the surf pool 1, wherein the three other pool walls of the surf pool 1 having the rectangular horizontal cross-section are formed based on the components of the component set 100 described herein.

[0069] Fig. 10 illustrates three variants of installation of the surf pool 1. For example, in accordance with variant (1), the surf pool 1 is installed within a dug pit. That is, a pit may be dug, and the reef components 10 and the beach components 20 may be arranged within the pit such that the pool ground 19 is below ground level of the environment and such that the water level 5 is substantially co-planar with ground level, similar to a real pond. In that example, the cavern space 3 may be filled with ground material.

[0070] In accordance with variant (2), the surf pool 1 is constructed above ground 2. That is, the surf pool 1 constructed based on the component set 100 described herein must not necessarily be inlet into a pit. The surf pool 1 constructed based on the component set 100 described herein may even be installed indoor (cf. variant (3)) within a hall 90 such that using the surf pool is entirely independent of environmental circumstances, like bad whether (rain, wind and/or low temperatures).

[0071] Spatially relative terms such as "under", "below", "lower", "over", "upper" and the like, are used for ease of description to explain the positioning of one element relative to a second element. These terms are intended to encompass different orientations of the respective device in addition to different orientations than those depicted in the figures. Further, terms such as "first", "second", and the like, are also used to describe various elements, regions, sections, etc. and are also not intended to be limiting. Like terms refer to like elements throughout the description.

[0072] As used herein, the terms "having", "containing", "including", "comprising", "exhibiting" and the like are open ended terms that indicate the presence of stated

elements or features, but do not preclude additional elements or features.

[0073] With the above range of variations and applications in mind, it should be understood that the present invention is not limited by the foregoing description, nor is it limited by the accompanying drawings. Instead, the present invention is limited only by the following claims and their legal equivalents.

LIST OF REFERENCE SIGNS

[0074]

1 surf pool
100 component set

10 reef component
11 reef component bottom side
111 profiled reception
12 reef component front side
121 pool wall section
122 pool ground section
125 recess
13 reef component back side
131 first inclined mounting surface
14 reef component top side
141 profiled reception
15 reef component lateral side
1515 channel formed between adj acent reef components

19 pool ground

2 ground

20 beach component
21 beach component top side
211 vertically extending pool boarder wall section 211
22 beach component front side
221 second inclined mounting surface
223 profiled protrusion
23 beach component lower side
231 cavern wall section
232 cavern ceiling section
239 vertex
24 beach component bottom side
241 profiled protrusion
25 beach component lateral side
2525 channel formed between adjacent beach components
27 support column
28 anti-slip cover
29 backwash barrier component

3 cavern space

30 coupling member

40 corner beach component
40-a first subcomponent
40-b second subcomponent
41 corner beach component top side
411 vertically extending pool boarder wall section
43 corner beach component lower side
44 corner beach component bottom side
45 corner beach component first lateral side
46 corner beach component first lateral side

5 water level

50 shore component

60 housing component
600 housing
605 wave generator space
61 pool wall member
611 base member
62 ceiling member
63 support column
68 larger housing component
681 door
69 safety grid structure

7 surfer
70 landing stage area

8 person

9 unmanned body for wave generation
90 hall

Claims

1. A component set (100) for constructing a surf pool (1), comprising

- a plurality of identically configured reef components (10), each reef component (10) having
  - ◦ a bottom side (11) configured to sit on a ground (2),
  - ◦ a front side (12) defining a pool wall section (121) extending from the bottom side (11) to a top side (14) of the reef component (10),
  - ◦ a back side (13) defining a first inclined mounting surface (131) that extends from the bottom side (11) to the top side (14) of the reef component (10); and

- a plurality of identically configured beach components (20), each beach component (20) having
  - ◦ a top side (21) defining a beach ground section,

◦ a front side (22) defining a second inclined mounting surface (221) that extends from the top side (21) to a bottom side (24) of the beach component (20) and configured to sit on the first inclined mounting surface (131) defined by the back side (13) of the reef component (10),
◦ a lower side (23) defining a cavern wall section (231) that extends from the bottom side (24) to the top side (21) of the beach component (20), thereby forming a cavern space (3) between the ground (2) and the beach component (20).

2. The component set (100) of claim 1, wherein the top side (14) of the respective reef component (10) exhibits a profiled reception (141) configured to engage with a correspondingly configured profiled protrusion (241) formed at a transition between front side (22) and the top side (21) of the respective beach component (20).

3. The component set (100) of claim 1 or 2, wherein the bottom side (11) of the respective reef component (10) exhibits a further profiled reception (111) configured to engage with a further correspondingly configured profiled protrusion (223) formed at a transition between front side (22) and the lower side (23) of the respective beach component (20).

4. The component set (100) of one of the preceding claims, wherein the lower side (23) furthermore defines a cavern ceiling section (232) confining the cavern space (3).

5. The component set (100) of one of the preceding claims, wherein the cavern wall section (231) formed by the lower side (23) exhibits a convex shape that extends towards the second inclined mounting surface (221).

6. The component set (100) of claim 5, wherein the lower side (23) has a shape corresponding to a section of a parable, wherein a vertex (239) of the parable section is part of the cavern wall section (231) and positioned in a region corresponding to a vertical projection of the bottom side (11) of the reef component (10) when the beach component (20) sits on the reef component (10).

7. The component set (100) of one of the preceding claims, wherein each of the reef components (10) and each of the beach components (20) is monolithic.

8. The component set (100) of one of the preceding claims, wherein the front side (12) of the respective reef component (10) further defines a pool ground section (122).

9. The component set (100) of claim 8, further comprising

- a plurality of equally configured shore components (50), each shore component (50) being configured to engage with both the pool ground section (122) and the pool wall section (121) defined by the front side (12) of the respective reef component (10).

10. The component set (100) of one of the preceding claims, further comprising

- a plurality of equally configured coupling components (30), each coupling component being configured for fixing the first inclined mounting surface (131) of the respective reef component (11) to the second inclined mounting surface (221) of the respective beach component (20).

11. The component set (100) of one of the preceding claims, wherein:

- the top side (21) of the respective beach component (20) is equipped with an anti-slip cover (28); and/or
- the top side (21) of the respective beach component (20) is equipped with a backwash barrier component (29); and/or
- the respective reef component (10) has a lateral side (15) configured to engage with a lateral side (15) of an adjacent reef component (10); and/or
- the respective beach component (20) has a lateral side (25) configured to engage with a lateral side (25) of an adjacent beach component (20); and/or
- the cavern space (3) between the ground (2) and the bottom side (23) of the respective beach component (20) exhibits a height (h) of at least 1.5 m; and/or
- a width (w) of the respective beach component (20) is identical to a width (w) of the respective reef component, the width (w) amounting to at least 1 m and to no more than 10 m; and/or
- a length (12) of the top side (21) of the respective beach component (20) is greater than a length (11) of the bottom side (11) of the respective reef component (11), and wherein a total length (lt) that is formed when the respective beach component (20) sits on the respective reef component (10) amounts to at least 5 m; and/or
- an area of the first inclined mounting surface (131) is identical to an area of the second inclined mounting surface (221) and amounts to

at least 1 m^2.

12. The component set (100) of one of the preceding claims, further comprising

- a corner beach component (40), wherein the corner beach component (40) has
  - a first lateral side (45) configured to engage with both a lateral side (15) of the reef component (10) and a lateral side (25) of the beach component (20), when the beach component (20) sits on the reef component (10),
  - a second lateral side (46) configured to engage with both a lateral side (15) of another reef component (10) of the component set (100) and a lateral side (25) of another beach component (20) of the component set (100), when the other beach component (20) sits on the other reef component (10),
  - a top side (41) defining a further beach ground section;
  - a lower side (43) defining a further cavern wall section that extends from a bottom side (44) to the top side (41) of the corner beach component (20), thereby forming a further section of the cavern space (3) between the ground (2) and the lower side (43) of the corner beach component (40).

13. The component set (100) of claim 12, wherein the corner beach component (40) is a two-part component having first subcomponent (40-a) and a second subcomponent (40-b), each subcomponent (40-a, 40-b) forming a respective half of the total turn defined by the corner beach component (40).

14. The component set (100) of one of the preceding claims, further comprising:

- a housing component (60), wherein the housing component (60) is configured to:
  - engage with at least one of a lateral side (15) of the reef component (10) and a lateral side (25) of the beach component (20), and
  - at least partially house a system for generating a wave in the surf pool (1).

15. A surf pool (1), the surf pool (1) being constructed based on at least a plurality of reef components (10) and a plurality of beach components (20) of a component set (100) of one of the preceding claims.

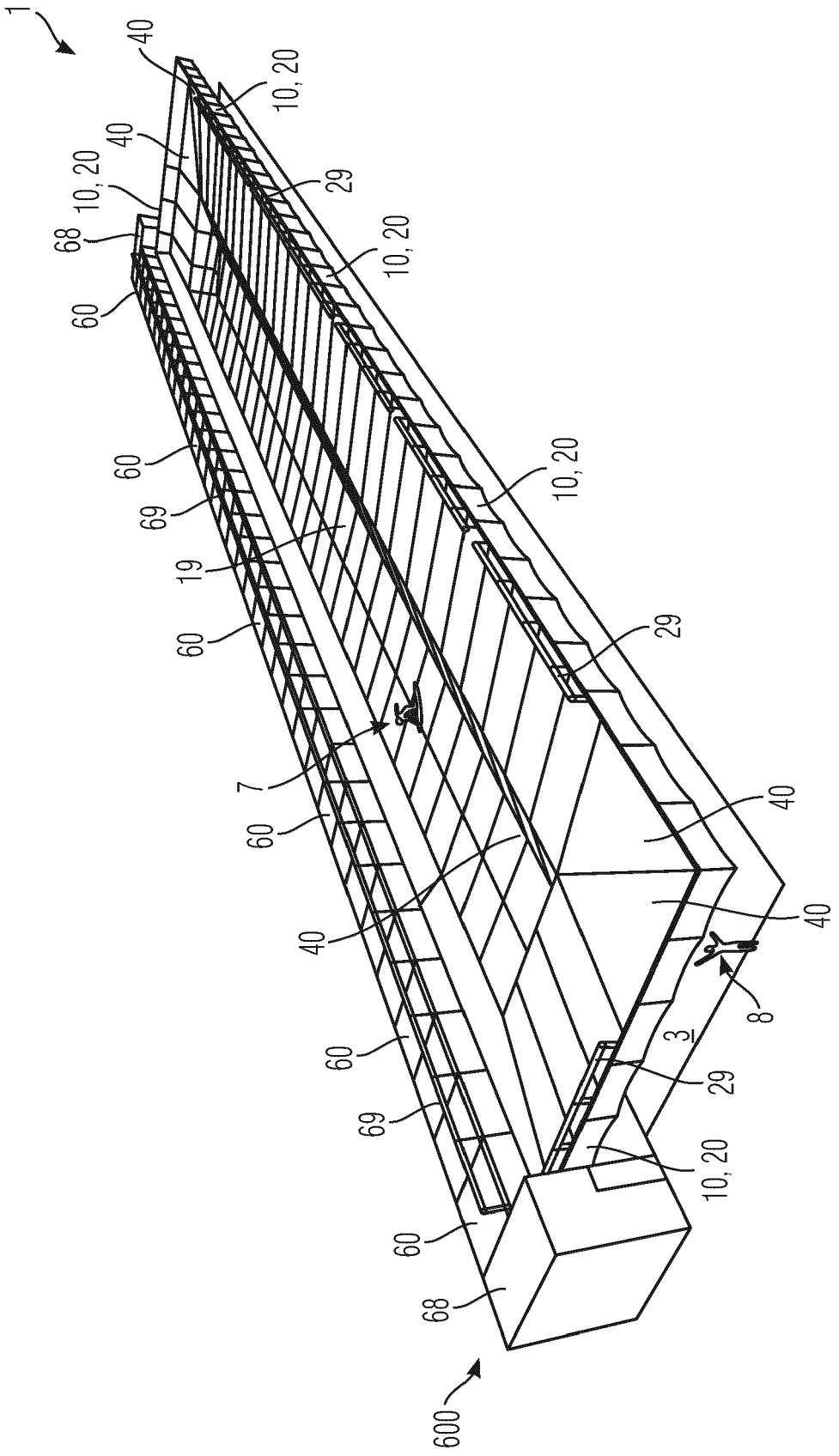
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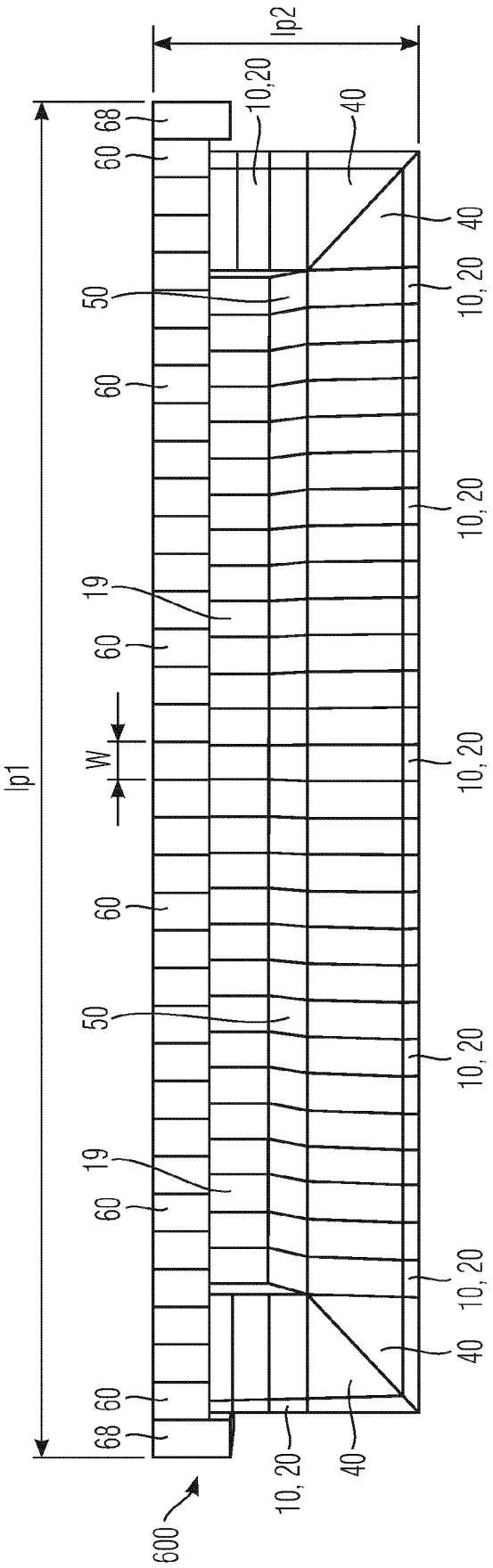
Fig. 1



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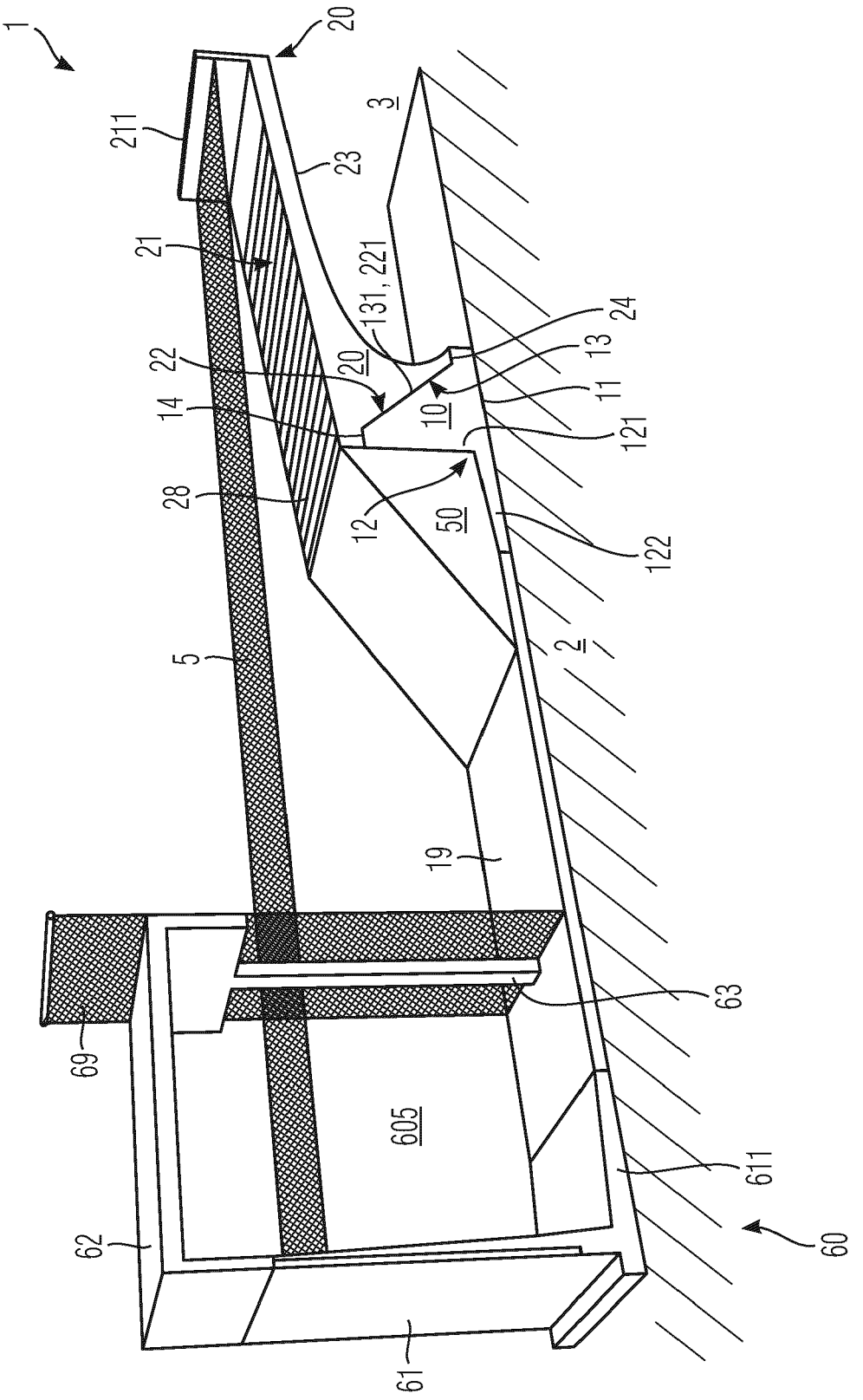
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Fig. 3

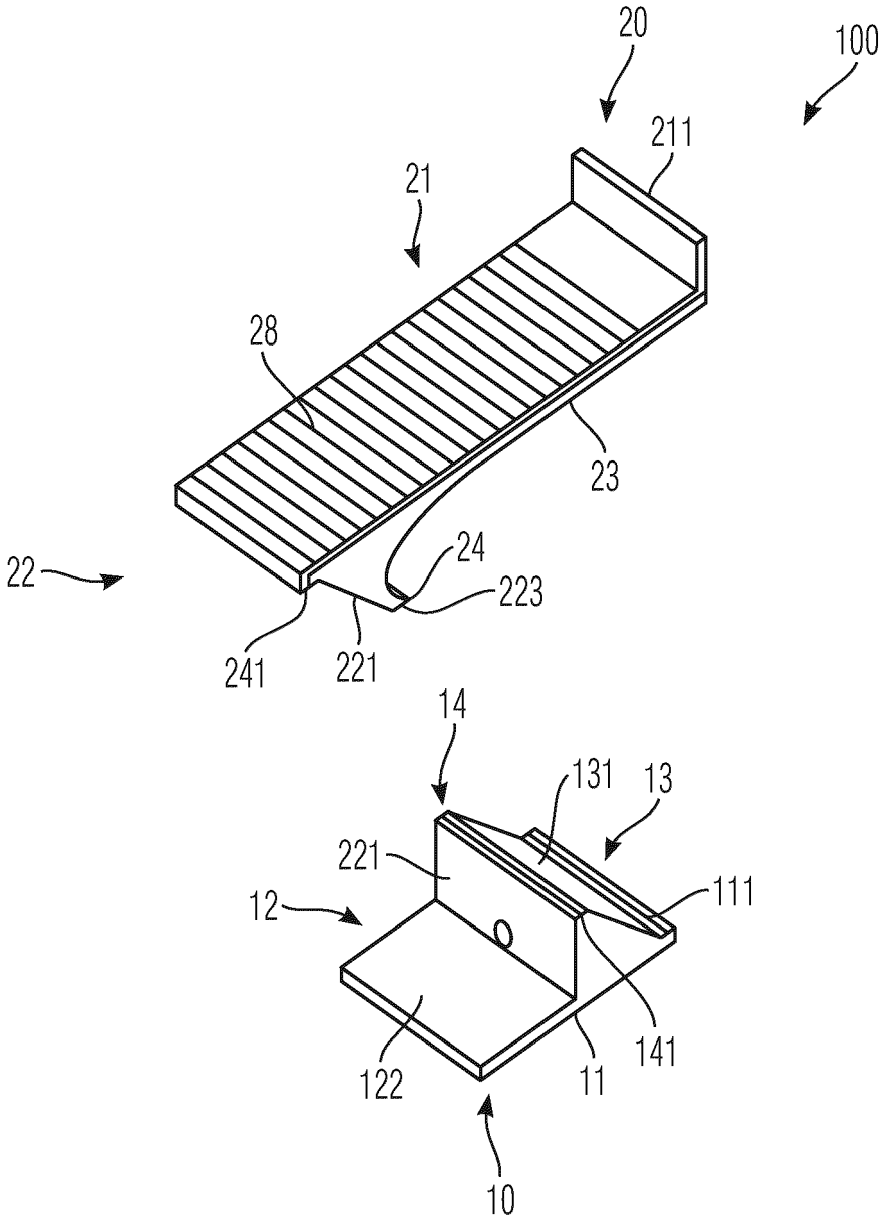
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Fig. 4

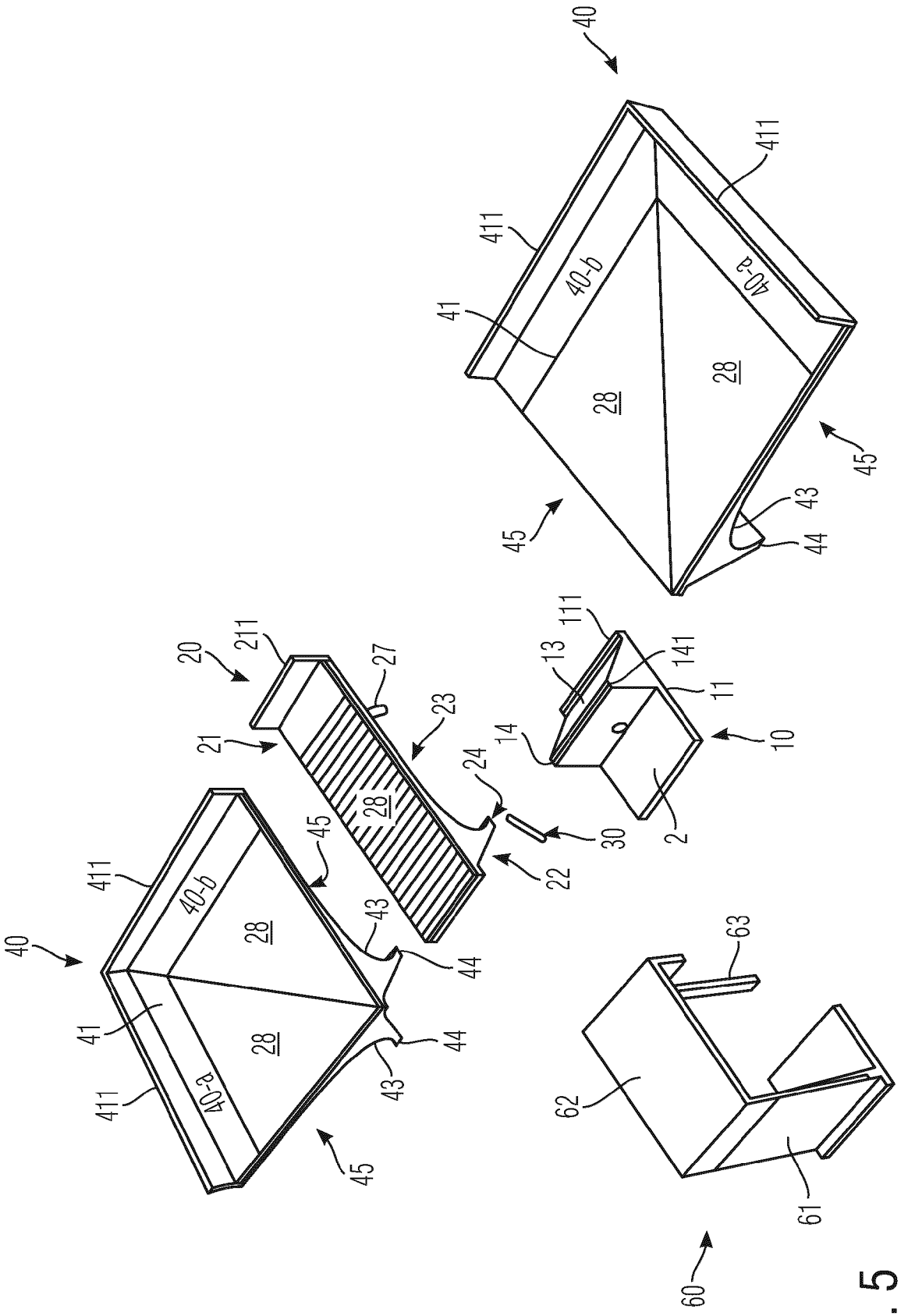
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Fig. 5

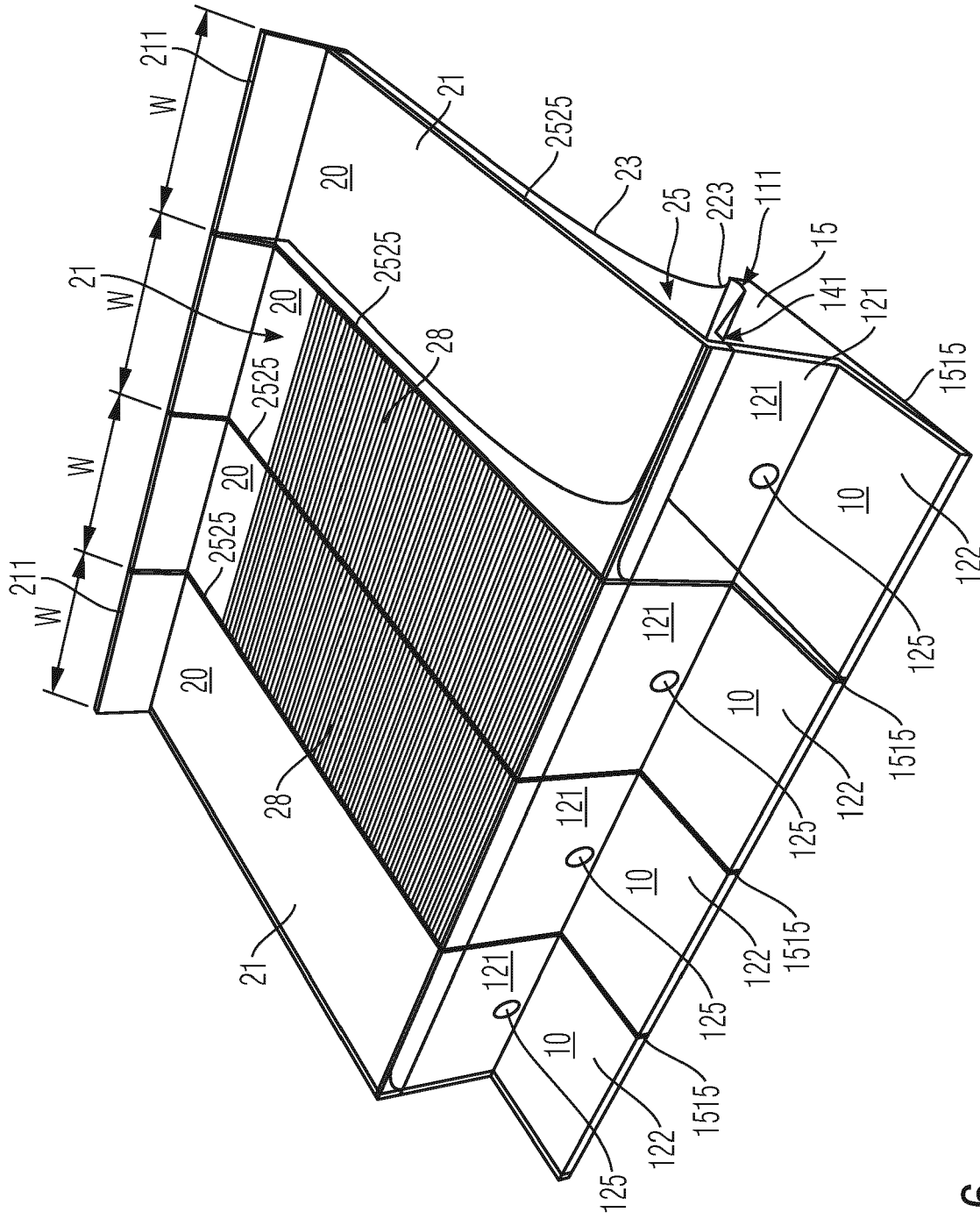
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Fig. 6

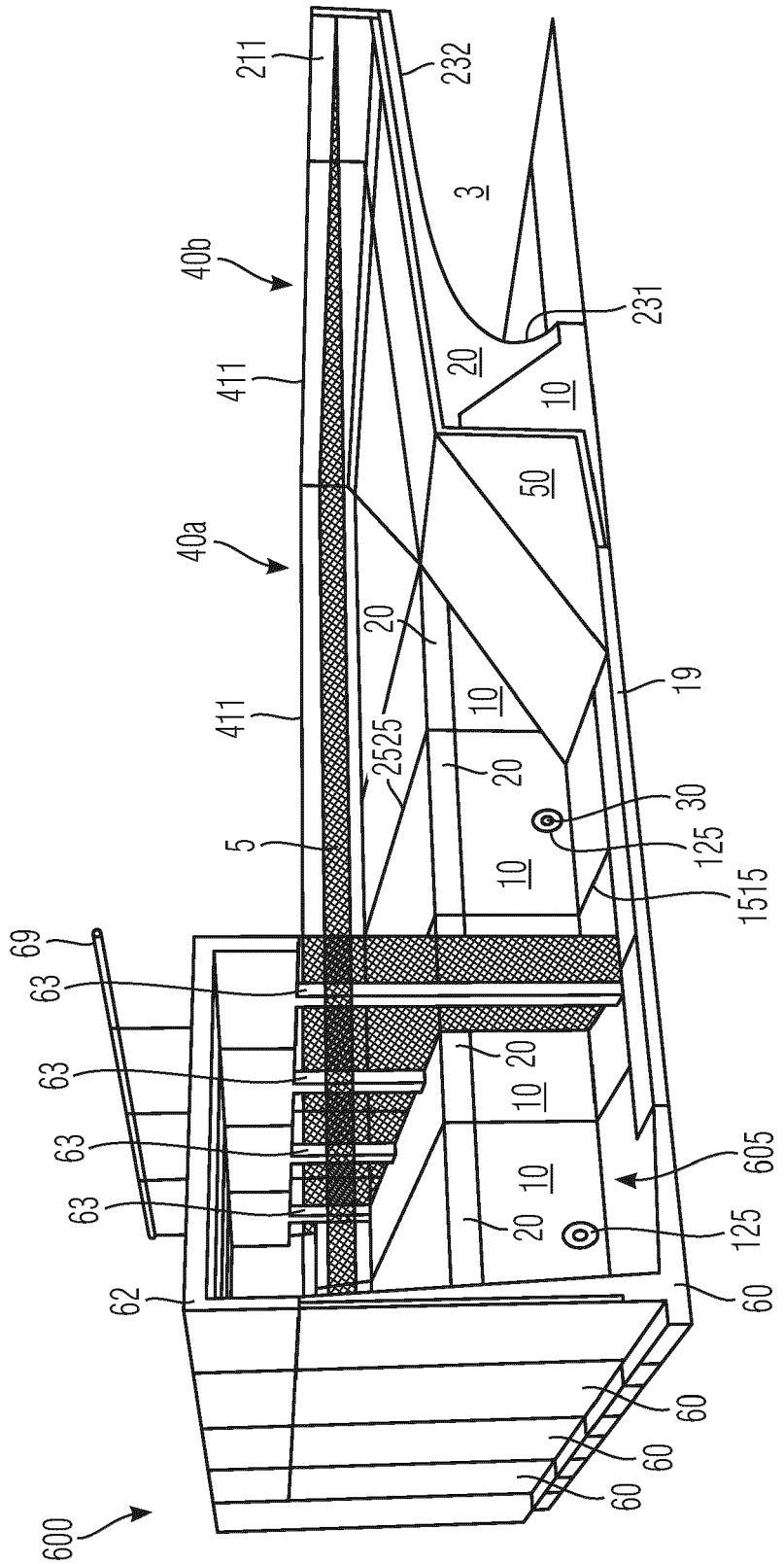
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Fig. 7

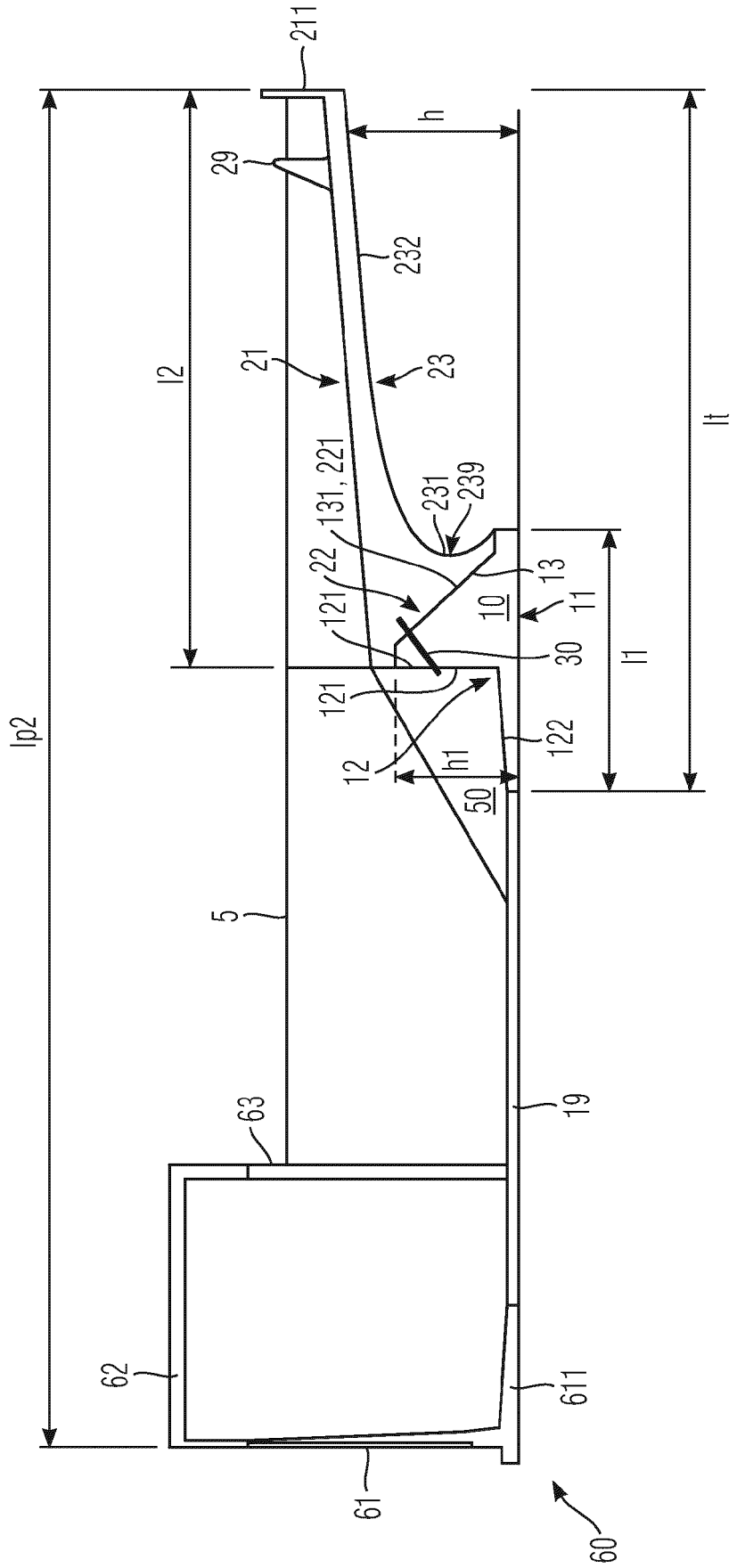
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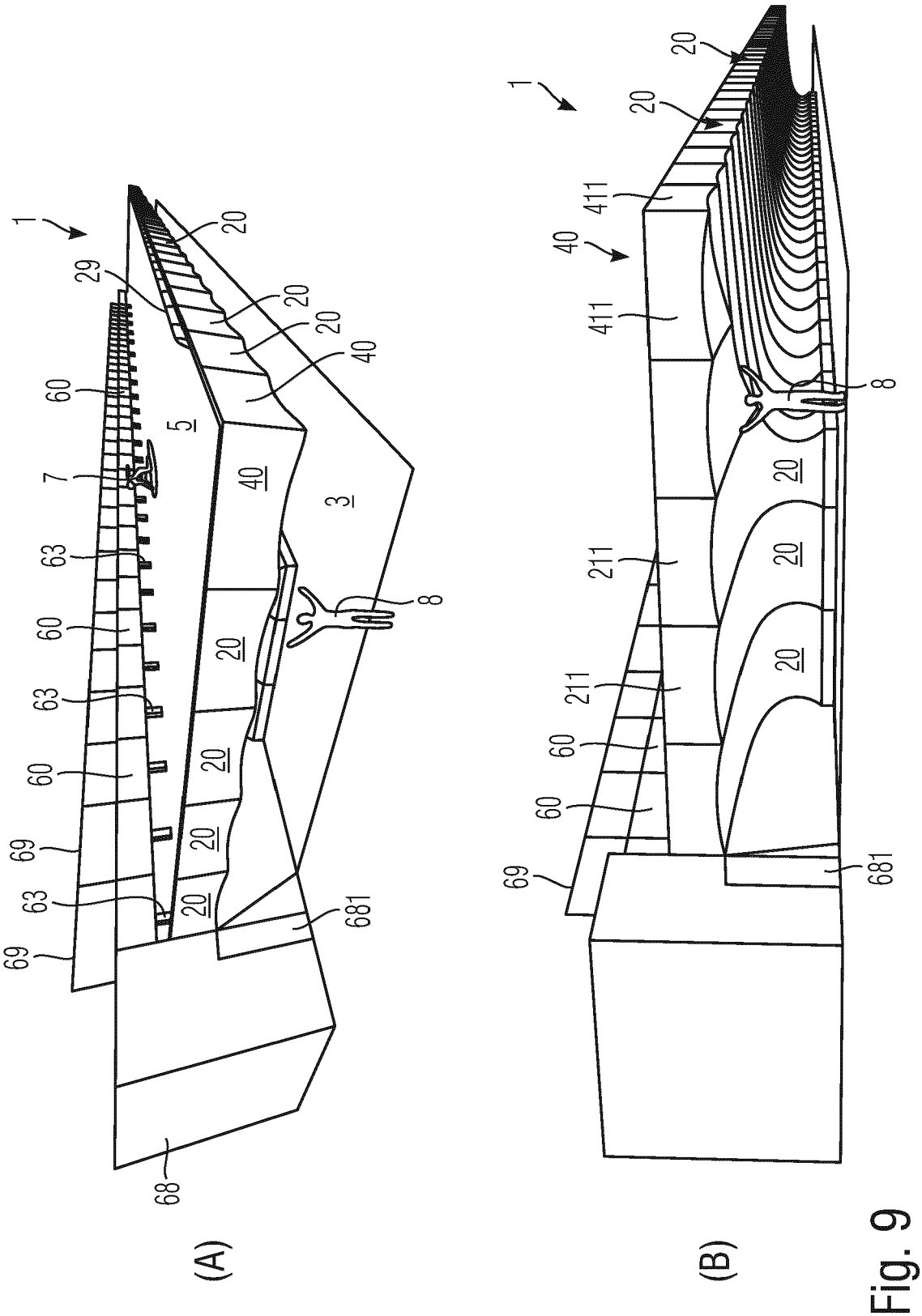
Fig. 8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(B)

Fig. 9

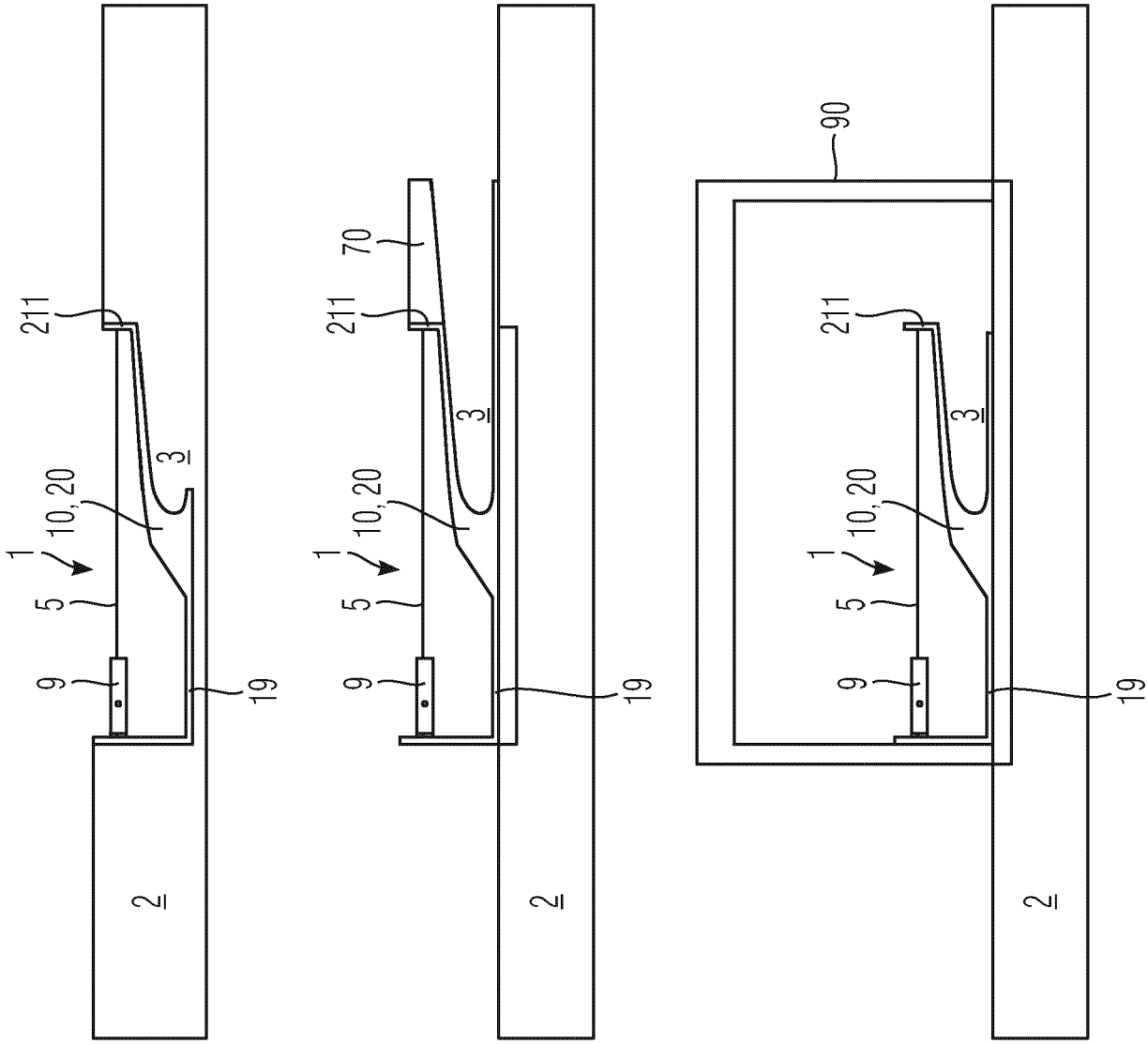

Fig. 10

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EUROPEAN SEARCH REPORT

Application Number
EP 21 20 4546

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2009/151064 A1 (MLADICK RICHARD [US] ET AL) 18 June 2009 (2009-06-18) * paragraphs [0041], [0043], [0049]; figures 9,11,17 *	1-15	INV. E04H4/00
A	WO 00/05464 A1 (ADQUEST PTY LTD AS TRUSTEE FOR [AU]; WALDON BRIAN VICTOR [AU]) 3 February 2000 (2000-02-03) * figure 9 *	1-15	
A	US 2017/043267 A1 (HILL KENNETH DOUGLAS [US]) 16 February 2017 (2017-02-16) * figures 4d, 8a, 8b, 23 *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC) E04H A63B

1 The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	25 February 2022	Decker, Robert

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25-02-2022

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- DE 102020121513 **[0025]**