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(54) **SHOE WITH AN INTERCHANGEABLE HEEL**

(57) The invention provides a shoe (1) comprising a sole (10) and a heel (20', 20"). The sole (10) comprises a first sole part (110) and a second sole part (120) that are hinged to each other. A bracket element (150) is slideably arranged in the second sole part (120). A first end (151) of the bracket element (150) engages the first sole part (110) so that the angle (α', α") between the first sole part (110) and the second sole part (120) is adjustable by sliding the bracket element. The heel (20', 20") is releasably attachable to the second sole part (120). When being attached to the second sole part (120), the heel (20', 20") is rotatable about a rotation axis (D', D") from a first direction (R1) toward a second direction (R2). The heel (20', 20") comprises an engaging element (210', 210") to engage the bracket element (150) and, when rotating the heel (20', 20"), to displace the bracket element (150) in such a way that a first predetermined angle (α', α") is set between the sole parts (110, 120).

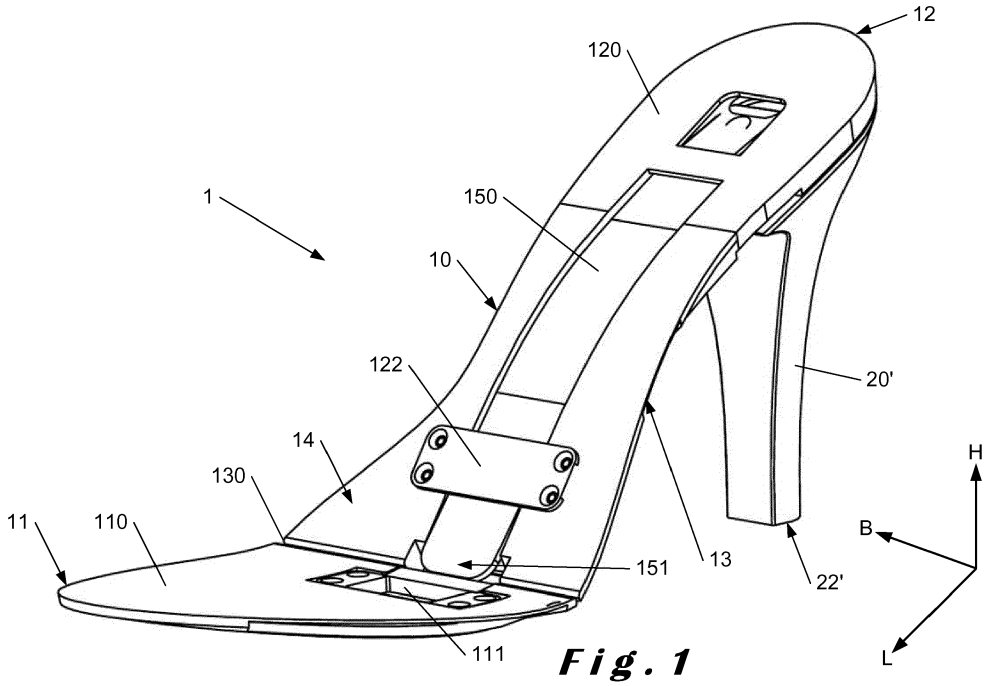

Fig. 1

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Description

Technical domain

[0001] The present invention relates to a shoe with an interchangeable heel. Furthermore, the present invention also relates to an assembly of the shoe in combination with several interchangeable heels.

Prior art

[0002] A shoe with an interchangeable heel is for instance known from GB 2538967 A. The sole of the shoe comprises a first sole part and a second sole part that are hinged to each other. A bracket element is slideably arranged in the second sole part. A first end of the bracket element engages the first sole part so that the angle between the sole parts is adjustable by sliding the bracket element. The interchangeable heel is releasably attachable to the second sole part. The heel is provided to be slid into the second sole part when attaching it to the second sole part. The heel comprises an engaging element arranged to engage the second end of the bracket element when sliding the heel into the second sole part, and to thereby displace the bracket element in such a way that a predetermined angle is set between the sole parts.

[0003] The disadvantage of the shoe of GB 2538967 A is that when sliding the interchangeable heel into the second sole part, a considerable force is required to be able to bring about the displacement of the bracket element, which thus makes interchanging the heel of the shoe more difficult.

Description of the invention

[0004] It is a goal of the present invention to provide a shoe with an interchangeable heel wherein the heel is attachable to the sole of the shoe with a minor effort.

[0005] This goal is realised by means of the shoe having the characteristics of the first independent claim.

[0006] Thereto, the present invention provides a shoe. The shoe comprises a sole. The sole comprises a first sole part, a second sole part and a bracket element. The first sole part and the second sole part are hinged to each other. Preferably, the first sole part and the second sole part are hingedly connected to each other. The bracket element is slideably arranged in the second sole part. A first end of the bracket element engages the first sole part so that by sliding the bracket element, the angle between the first sole part and the second sole part is adjustable. The shoe further comprises a heel. The heel has a first height. The heel is releasably attachable to the second sole part. When attaching the heel to the second sole part, the heel is rotatable about a predetermined rotation axis from a first direction toward a second direction. The heel comprises an engaging element arranged to engage the bracket element and, when rotating the heel from the first direction toward the second direction, to displace the bracket element in such a way that a predetermined first angle is set between the first sole part and the second sole part. The first angle is determined based on the first height.

[0007] The rotating motion allows the heel to be attached to the second sole part in a simple manner. Herein, the sole can advantageously be used as a lever to generate the necessary force to displace the bracket element over the desired distance without major effort, and to thereby set the angle between the first sole part and the second sole part to the first angle.

[0008] The shoe, and with it also the sole, extends along a longitudinal direction that corresponds to the longitudinal direction of the normal human foot. The shoe also extends along a width direction transverse to the longitudinal direction, said width direction corresponding to the direction going from a left side of a foot to a right side of a foot or vice versa. The shoe also extends along a height direction transverse to the longitudinal direction and the width direction, said height direction corresponding to the direction along the body of a person in a normal upright position.

[0009] The first sole part extends along the longitudinal direction from a first end of the sole over a distance that corresponds approximately to the length of the toes of the wearer of the shoe. The second sole part extends along the longitudinal direction from a second end of the sole over a distance that corresponds approximately to the length of the foot of the wearer of the shoe except for the toes. Herein, the respective distances naturally depend on the shoe size of the shoe. The sole has a top side on which the foot of the user of the shoe is supported when using the shoe. The sole has a bottom side facing the ground when using the shoe.

[0010] The heel is usually attached to the bottom side of the second sole part at the position of the second end of the sole, so as to support the heel of the foot of the user of the shoe. The heel extends along the height direction. A longitudinal direction of the heel coincides with the longitudinal direction of the shoe when the heel is attached to the second sole part of the shoe in its final position. At a first end along the height direction, the heel is arranged to be attached to the second sole part. At a second end along the height direction, the heel is arranged to be supported on a ground while using the shoe.

[0011] When attaching the heel to the second sole part, the heel is positioned in a first position in relation to the shoe, wherein the longitudinal direction of the heel coincides with the first direction. Then, the heel is rotated about the rotation axis over a certain angle until the longitudinal direction of the heel coincides with the second direction, being the longitudinal direction of the shoe.

[0012] In an embodiment of the shoe according to the present invention, the engaging element is provided with a first protrusion to engage the bracket element. The bracket element is provided with a first recess for receiving the first protrusion when the engaging element en-

gages the bracket element.

[0013] This embodiment offers the advantage that a connection can be realised in a simple and speedy manner between the engaging element and the bracket element to let them engage each other, simply by arranging the first protrusion in the first recess.

[0014] The shape of the first protrusion and the first recess can be adapted to each other to bring about the desired displacement of the bracket element when rotating the heel about the rotation axis from the first direction toward the second direction, for setting the first angle between the first sole part and the second sole part.

[0015] In an embodiment of the shoe according to the present invention, the first recess goes through the bracket element.

[0016] The first recess going through the bracket element offers the advantage that the first protrusion can be arranged all the way through the bracket element for engaging the bracket element. Thus, a strong engagement of the engaging element of the heel onto the bracket element is realised in a simple manner.

[0017] In an embodiment of the shoe according to the present invention, the first recess is an elongated recess extending along the first direction. The first direction intersects the longitudinal direction of the shoe. The first protrusion is positioned at a predetermined first distance from the rotation axis along the second direction. Preferably, the dimensions and the shape of the first protrusion are chosen so that the first protrusion fits precisely into the elongated first recess in the width direction of the first recess. This allows sliding of the first protrusion through the first recess along the first direction, but not in the width direction of the first recess or other directions different from the first direction.

[0018] This embodiment offers the advantage that when rotating the heel about the rotation axis from the first direction toward the second direction, the first protrusion directly presses against the wall of the first recess, and thereby pulls along and displaces the bracket element over the first distance. This displacement of the bracket element then, at the position of the first end of the bracket element, brings about the setting of the first angle between the first sole part and the second sole part. The elongated shape of the first recess here allows the rotation of the first protrusion about the rotation axis.

[0019] The elongated first recess further also allows the first protrusion to be positioned at different distances from the rotation axis along the second direction. This allows different heels to be realised in a simple manner which are able to set different angles between the first sole part and the second sole part.

[0020] In an embodiment of the shoe according to the present invention, the first direction is transverse to the longitudinal direction of the shoe, or, in other words, coincides with the width direction of the shoe.

[0021] In an embodiment of the shoe according to the present invention, the second direction coincides with the longitudinal direction of the shoe.

[0022] In an embodiment of the shoe according to the present invention, the first direction is transverse to the second direction.

[0023] This embodiment offers the advantage that the desired displacement of the bracket element can be realised in a speedy manner with a short rotating motion of the heel about the rotation axis over an angle of 45°.

[0024] In an embodiment of the shoe according to the present invention, the second sole part comprises an attachment element arranged for attaching the heel to the second sole part.

[0025] The attachment element may be a separate element that is releasably attachable to the second sole part. The use of a separate attachment element is advantageous because the material properties of the attachment element can then be adapted to serving the function of the attachment element, which is the attachment of the heel to it, while for the rest of the second sole part other material properties can be chosen that are adapted to the use of the second sole part as a sole. However, the attachment element can also be an integral part of the second sole part.

[0026] In an embodiment of the shoe according to the present invention, the attachment element comprises at least two, preferably lateral, second protrusions. The heel comprises at least two, preferably lateral, third protrusions. The second protrusions and the third protrusions are positioned in such a way on the attachment element and the heel, respectively, that the third protrusions slide underneath the second protrusions when rotating the heel about the rotation axis from the first direction toward the second direction when attaching the heel to the second sole part. Herein, "sliding underneath" is meant along the height direction of the shoe, looking onto the bottom side of the sole.

[0027] This embodiment offers the advantage that the heel is attached to the second sole part in a simple manner when rotating the heel about the rotation axis from the first direction toward the second direction, while the same rotating motion simultaneously also causes the displacement of the bracket element for setting the first angle between the first sole part and the second sole part.

[0028] The use of the second protrusions and the third protrusions is also advantageous in correctly positioning the heel in relation to the second sole part for attaching the heel to the second sole part.

[0029] In an embodiment of the shoe according to the present invention, the attachment element comprises a fourth protrusion. The heel comprises a second recess. The fourth protrusion and the second recess are configured so that the fourth protrusion slides into the second recess after rotating the heel about the rotation axis from the first direction toward the second direction when attaching the heel to the second sole part.

[0030] This embodiment offers the advantage that the heel can be held in a simple manner in the position it is in when the heel is attached to the first sole part. Fixing the heel in this position allows unwanted rotation or dis-

engagement of the to be prevented while using the shoe, which is advantageous for safe use of the shoe.

[0031] In an embodiment of the shoe according to the present invention, the fourth protrusion is arranged on a resilient member allowing the fourth protrusion to be slid out of the second recess for detaching the heel from the second sole part.

[0032] The fourth protrusion being provided on the resilient member offers the advantage that the heel can be released from the position it is in when the heel is attached to the second sole part by a simple pushing or pulling motion on the resilient member, before initiating a reverse rotation about the rotation axis from the second direction toward the first direction for detaching the heel from the second sole part.

[0033] In an embodiment of the shoe according to the present invention, the first sole part comprises a receiving element arranged for receiving the bracket element when the first end of the bracket element engages the first sole part.

[0034] The receiving element may be a separate element that is releasably attachable to the first sole part. The use of a separate receiving element is advantageous because the material properties of the receiving element can then be adapted to serving the function of the receiving element, which is to allow it to be engaged by the bracket element, while for the rest of the first sole part other material properties can be chosen that are adapted to the use of the first sole part as a sole. However, the receiving element can also be an integral part of the first sole part.

[0035] In an embodiment of the shoe according to the present invention, the receiving element is provided with a first abutment. The first abutment is configured so that when positioning the first end of the bracket element against the first abutment, the first sole part is forced into the first angle in relation to the second sole part.

[0036] In an embodiment of the shoe according to the present invention, the heel is provided with a contact surface to be placed against the second sole part when attaching the heel to the second sole part. The contact surface is aligned under a predetermined third angle in relation to the height direction of the shoe. The third angle is determined based on the first height. The rotation axis is perpendicular to the contact surface.

[0037] Furthermore, the present invention also provides an assembly of the shoe according to the present invention and at least one additional heel. The at least one additional heel has a second height different from the first height. The at least one additional heel is releasably attachable to the second sole part. When attaching the at least one additional heel to the second sole part, it is rotatable about the rotation axis from a third direction toward a fourth direction. The at least one additional heel comprises an engaging element arranged to engage the bracket element and, when rotating the at least one additional heel from the third direction toward the fourth direction, to displace the bracket element in such a way that a predetermined second angle different from the first angle is set between the first sole part and the second sole part.

[0038] In an embodiment of the assembly according to the present invention, the third direction coincides with the first direction.

[0039] Having the third direction coincide with the first direction is advantageous for a uniform use of different heels with the same shoe.

[0040] In an embodiment of the assembly according to the present invention, the fourth direction coincides with the second direction.

[0041] Having the fourth direction coincide with the second direction is advantageous for a uniform use of different heels with the same shoe.

Brief description of the drawings

[0042] The invention will hereafter be further elucidated by means of the following description and in reference to the appended drawings.

Figure 1 shows an embodiment of a shoe according to the present invention with a high heel.
Figure 2 shows the shoe of Figure 1 with a low heel.
Figure 3 shows an exploded view of the shoe of Figure 1 without a heel.
Figure 4 shows the high heel of the shoe of Figure 1.
Figure 5 shows the low heel of the shoe of Figure 2.
Figure 6 shows the attachment element of the shoe of Figure 1.
Figure 7 shows a first step for attaching the low heel to the shoe of Figure 2.
Figure 8 shows a second step for attaching the low heel to the shoe of Figure 2.
Figure 9 shows a third step for attaching the low heel to the shoe of Figure 2.
Figure 10 shows the displacement of the bracket element when attaching the high heel to the shoe of Figure 1.
Figure 11 shows the displacement of the bracket element when attaching the low heel to the shoe of Figure 2.
Figure 12 shows the setting of the angle between the first sole part and the second sole part using the high heel with the shoe of Figure 1.
Figure 13 shows the setting of the angle between the first sole part and the second sole part using the low heel with the shoe of Figure 2.
Figure 14 shows a first step for detaching the low heel from the shoe of Figure 2.
Figure 15 shows a second step for detaching the low heel from the shoe of Figure 2.
Figure 16 shows a third step for detaching the low heel from the shoe of Figure 2.

Embodiments of the invention

[0043] The present invention will be described in what follows with respect to particular embodiments and with reference to certain drawings, but the invention is not limited thereto but only defined by the claims. The drawings shown here are only schematic and are non-limiting. In the drawings, the dimensions of certain parts may be exaggerated, meaning that the parts in question are not drawn to scale, and merely for illustrative purposes. The dimensions and the relative dimensions do not necessarily correspond to the actual reductions to practice of the invention.

[0044] Furthermore, terms such as first, second, third and the like in the description and in the claims are used for distinguishing between similar elements and not necessarily for describing a sequential or chronological order. The terms in question are interchangeable under appropriate circumstances and the embodiments of the invention can operate in other sequences than described or illustrated herein.

[0045] Moreover, terms such as "top", "bottom", "over", "under" and the like in the description and the claims are used for descriptive purposes and not necessarily for describing relative positions. The terms so used are interchangeable under appropriate circumstances and the embodiments of the invention described herein can operate in other orientations than described or illustrated herein.

[0046] The term "comprising" and derivative terms as used in the claims should not be interpreted as being restricted to the means listed thereafter; the term does not exclude other elements or steps. It should be interpreted as specifying the presence of the stated features, integers, steps or components as referred to, but does not preclude the presence or addition of one or more additional features, integers, steps or components, or groups thereof. Thus, the scope of an expression such as "a device comprising means A and B" is not limited to devices consisting only of components A and B. It means that with respect to the present invention, the only relevant components of the device are A and B.

[0047] Figure 1 shows a shoe 1 according to an embodiment of the present invention wherein a high heel 20' with a height h' is attached to the sole 10 of the shoe 1. Figure 2 shows the same shoe 1 as the shoe 1 shown in Figure 1 wherein a low heel 20" with a height h" is attached to the shoe 1. In Figure 3 an exploded view of the shoe 1 of Figures 1 and 2 is shown without the heel 20', 20". Figures 4 and 5 respectively show the high heel 20' of the shoe 1 as shown in Figure 1, and the low heel 20" of the shoe 1 as shown in Figure 2. Figure 6 shows an attachment element 140 by means of which the heel 20', 20" is attached to the sole 10 of the shoe 1. It should be noted that in the figures the whole shoe 1 is not shown, but rather only those parts of the shoe 1 that relate to the present invention. Thus, further features of the shoe 1 apart from these parts are not shown.

[0048] The shoe 1 extends along a longitudinal direction L. This longitudinal direction L corresponds to the direction along which a normal human foot extends along its length, i.e., going from the front of the foot toward the back of the foot or vice versa. The shoe 1 also extends along a width direction B which is transverse to the longitudinal direction L. The width direction B corresponds to the direction along which a normal human foot extends along its width, i.e., going from the left side of the foot toward the right side of the foot or vice versa. The shoe 1 also extends along a height direction H transverse to the longitudinal direction L and transverse to the width direction B. The height direction H corresponds to the direction along which a normal human foot extends along its height, i.e., going from the bottom side of the foot toward the top side of the foot, which is also the direction extending along the body of the person to whom the foot belongs in a normal upright position.

[0049] The shoe 1 comprises a sole 10 comprising a first sole part 110 and a second sole part 120 that are hingedly connected to each other via a hinge part 130. The first sole part 110 extends along the longitudinal direction L from a first end 11 of the sole 10 up to the hinge part 130. Here, the first sole part 110 extends under the toes of a wearer of the shoe 1. The second sole part 120 extends along the longitudinal direction L from a second end 12 of the sole 10, opposite to the first end 11 of the sole 10, up to the hinge part 130. Here, the second sole part extends under the foot of the wearer of the shoe from the back of the heel up to the toes. The sole 10 has a top side 13 on which the bottom side of the foot of the wearer of the shoe is supported when using the shoe 1. The sole 10 has a bottom side 14 facing toward the ground on which the shoe 1 is supported when using the shoe 1.

[0050] The second sole part 120 further comprises a bracket element 150 that is arranged slideably along the longitudinal direction L in a dedicated slot 121 of the second sole part 120. The bracket element 150 extends in the second sole part 120 along the longitudinal direction L from a first end 151, which extends into the first sole part 110, to a second end 152, which extends to below the heel of the foot of the wearer of the shoe 1. Near the hinge part 130 of the sole 10, a cover plate 122 is attached to the second sole part 120 over the opening of the slot 120 for holding the bracket element 150 in the slot 121.

[0051] The bracket element 150 with its first end 151 engages the first sole part 110 in such a way that the displacement of the bracket element 150 along the longitudinal direction L rotates the first sole part 110 and the second sole part 120 in relation to each other about the hinge part 130. This allows the angle between the first sole part 110 and the second sole part 120 to be set by means of the displacement of the bracket element 150 in the second sole part 120 along the longitudinal direction L.

[0052] The engagement of the first end 151 of the bracket element 150 into the first sole part 110 is realised in the illustrated embodiment of the shoe 1 by allowing

the first end 151 of the bracket element 150 to contact a receiving element 111 provided to that end in the first sole part 110. The receiving element 111 is provided with an abutment 112" which is positioned in such a way in the receiving element 111 that when the first end 151 of the bracket element 150 presses against it upon the displacement of the bracket element 150, the first sole part 110 is forced into the angle α" in relation to the second sole part 120, as shown in Figure 13 or Figure 2. The receiving element 111 is also provided with an abutment 112' which is positioned in such a way in the receiving element 111 that when the first end 151 of the bracket element 150 presses against it upon the displacement of the bracket element 150, the first sole part 110 is forced into the angle α' in relation to the second sole part 120, as shown in Figure 12 or Figure 1.

[0053] In addition to its function of setting the angle between the first sole part 110 and the second sole part 120, the bracket element 150 also has a supporting function for the foot of the wearer of the shoe 1. To this end, the bracket element 150 is made from a sturdy material, such as for instance metal. For the supporting function, the bracket element 150 also has a predetermined curvature along the longitudinal direction L, which curvature is arranged to follow the curvature of the foot of the wearer of the shoe 1 along the longitudinal direction L.

[0054] The high heel 20' and the low heel 20" are releasably attachable to the bottom side 13 of the second sole part 120 at the position of the heel of the foot of the wearer of the shoe 1, i.e., near the second end 12 of the sole 10. In this position, the attachment element 140 is attached to the second sole part 120 by means of which the heel 20,' 20" is attachable to the second sole part 120.

[0055] The attachment of the low heel 20" to the second sole part 120 is shown in Figures 7-9. It should be noted that attaching the high heel 20' to the second sole part 120 takes place in the same way. In a first step, as shown in Figure 7, a contact surface 240', 240" of the heel 20', 20" is aimed toward the bottom side 13 of the second sole part 120 at the position of the attachment element 141. Herein, the heel 20', 20" is positioned so that the longitudinal direction L', L" of the heel 20', 20" coincides with a first direction R1, which in the embodiment shown coincides with the width direction B of the shoe 1. Then, the heel 20', 20" is pressed with its contact surface 240', 240" against the attachment element 140, and, as shown in Figure 8, rotated about a rotation axis D', D" perpendicular to the contact surface 240', 240". The heel 20', 20" is herein pivoted over an angle of 90° until the heel 20', 20", as shown in Figure 9, is positioned so that the longitudinal direction L', L" of the heel 20, 20" coincides with a second direction R2, which in the embodiment shown coincides with the longitudinal direction L of the shoe 1.

[0056] For attaching the heel 20', 20" to the second sole part 120, the attachment element 140 is provided with two lateral second protrusions 141 extending substantially along the width direction B of the shoe over a segment of a circle. To this end, the heel 20', 20" is provided with two lateral third protrusions 220', 220" extending substantially along the width direction B', B" of the heel 20', 20" over a segment of a circle. The positions of the second protrusions 141 and the third protrusions 220', 220" are chosen so that the third protrusions 220', 220" slide between the second protrusions 141 when placing the heel 20', 20" against the second sole part 120 in the first position, wherein the longitudinal direction L', L" of the heel 20', 20" coincides with the first direction R1, to then slide underneath the second protrusions 141 when rotating the heel 20',20" about the rotation axis D', D" toward the second position, wherein the longitudinal direction L', L" of the heel 20', 20" coincides with the second direction R2.

[0057] For holding the heel 20', 20" in the second position, the attachment element 140 is provided with a fourth protrusion 142 on a resilient member 143 which is part of the attachment element 140. To this end, the heel 20', 20" is provided with a second recess 230', 230". The fourth protrusion 142 and the second recess 230', 230" are positioned in such a way that when rotating the heel 20', 20" about the rotation axis D', D" the fourth protrusion 142 snaps into the second recess 230', 230" when positioned in the second position.

[0058] To then allow the heel 20', 20" to be released again from the second position, the fourth protrusion 142 first needs to be slid out of the second recess 230', 230". This is carried out as shown in Figure 14, by pressing the resilient member 143 on which the fourth protrusion 142 is located. For detaching the heel 20', 20" from the second sole part 120, the heel 20', 20", as shown in Figure 15, is rotated about the rotation axis D', D" from the second position toward the first position. In the first position, the heel 20', 20" can then, as shown in Figure 16, be released from the attachment element 140 and thus from the shoe 1.

[0059] In the shoe 1 according to the present invention, the displacement of the bracket element 150 in the second sole part 120 is realised when the heel 20', 20" is attached onto the second sole part 120 by means of an engaging element 210', 210" on the heel 20', 20" that engages the bracket element 150 in such a way that the rotating motion of the heel 20', 20" is converted into a sliding motion of the bracket element 150 along the longitudinal direction L.

[0060] In the shoe 1 according to the embodiment shown, the engaging element 210', 210" is provided with a first protrusion 211', 211" and the bracket element 150 is provided with a first recess 153. The engagement of the engaging element 210', 210" on the bracket element 150 is then realised by placing the first protrusion 211', 211" into the first recess 153.

[0061] The first recess 153 is an elongated recess through the bracket element 150 located in the vicinity of the second end 150 of the bracket element 150, and extending along the first direction R1. The first protrusion 211', 211" is positioned at a predetermined first distance

d', d" from the rotation axis D', D" along the second direction R2. At the high heel 20', the first protrusion 211' is placed more toward the first end 11 of the sole 10 in relation to the rotation axis D', as shown in Figure 5. At the low heel 20", the first protrusion 211" is placed more toward the second end 12 of the sole 10 in relation to the rotation axis D", as shown in Figure 6.

[0062] The first protrusion 211', 211" is shaped in such a way that the first protrusion 211', 211" fits precisely into the first recess 153 in the width of the first recess 153. This allows the first protrusion 211', 211", when placed into the first recess 153, to be slideable in the first recess 153 along the length of the recess 153 but not in other directions. When moved in one of these other directions, the first protrusion 211', 211" will press against the wall of the first recess 153, and thereby cause the displacement of the bracket element 150.

[0063] For the low heel 20", the displacement of the bracket element 150 is realised as shown in the Figures 7-9. When the heel 20" is positioned in the first position in relation to the second sole part 120, as shown in Figure 7, the first protrusion 211" lines up with the first recess 153, so that when the heel 20" is brought toward the second sole part, the first protrusion 211" slides in the first recess 153. When rotating the heel 20" about the rotation axis D" from the first direction R1 toward the second direction R2, as shown in Figure 8 and Figure 11, the first protrusion 211" will then press against the wall of the bracket element 150 that is located nearest to the second end 152 of the bracket element 150, and thereby slide the bracket element 150 in the direction of the second end 12 of the sole 10 up to the final position as shown in Figure 9. This will cause the bracket element 150 at the first end 151 to contact the abutment 112" of the receiving element 111, whereby the first sole part 110 is positioned into the angle α" in relation to the second sole part 120, as shown in Figure 13.

[0064] At the high heel 20', the displacement of the bracket element 150 is realised in a similar way, but due to the different positioning of the first protrusion 211', when rotating the heel 20' about the rotation axis D' from the first direction R1 toward the second direction R2, the first protrusion 211' will press against the wall of the first recess 153 which is located nearest to the first end 151 of the bracket element 150 and will thereby slide the bracket element in the direction of the first end 11 of the sole 10, as shown in Figure 10. This will cause the bracket element 150 at the first end 151 to contact the abutment 112' of the receiving element 111, whereby the first sole part 110 is positioned into the angle α' in relation to the second sole part 120, as shown in Figure 12.

[0065] Due to the hinged relation of the second sole part 120 to the first sole part 110, the second sole part 120, and in particular the portion of the second sole part 120 to which the heel 20', 20" is attached, forms a certain angle with a flat ground on which the first sole part 110 is supported. To allow the heel 20', 20" to adequately support the second sole part 120, depending on this angle between the second sole part 120 and the flat ground, the contact surface 240', 240" of the heel 20', 20" is aligned under a predetermined third angle γ', γ" in relation to the height direction H of the shoe 1. For the low heel 20" this predetermined third angle γ" is approximately equal to 90°, since, as shown in Figure 2, the second sole part 120 at the position of the heel 20" is substantially parallel to the ground. For the high heel 20', this predetermined third angle γ' is smaller than 90° to make the contact surface 240' follow the acute angle which the second sole part 120 forms at the position of the heel 20' in relation to the ground.

Claims

1. A shoe (1) comprising:

   a sole (10), wherein the sole (10) comprises a first sole part (110), a second sole part (120) and a bracket element (150), wherein the first sole part (110) and the second sole part (120) are hinged to each other, wherein the bracket element (150) is slideably arranged in the second sole part (120), wherein a first end (151) of the bracket element (150) engages the first sole part (110) so that the angle (α', α") between the first sole part (110) and the second sole part (120) is adjustable by sliding the bracket element (150); and

   a heel (20', 20"), wherein the heel (20', 20") has a first height (h', h"), wherein the heel (20', 20") is releasably attachable to the second sole part (120), wherein the heel (20', 20"), when being attached to the second sole part (120), is rotatable about a predetermined rotation axis (D', D") from a first direction (R1) toward a second direction (R2), wherein the heel (20', 20") comprises an engaging element (210', 210") arranged to engage the bracket element (150) and, when rotating the heel (20', 20") from the first direction (R1) toward the second direction (R2), to displace the bracket element (150) in such a way that a predetermined first angle (α', α") is set between the first sole part (110) and the second sole part (120).

2. The shoe (1) according to the previous claim, wherein the engaging element (210', 210") is provided with a first protrusion (211', 211") to engage the bracket element (150), and wherein the bracket element (150) is provided with a first recess (153) for receiving the first protrusion (211', 211") when the engaging element (210', 210") engages the bracket element (150).

3. The shoe (1) according to the previous claim, wherein the first recess (153) goes through the bracket

element (150).

4. The shoe (1) according to claim 2 or 3, wherein the first recess (153) is an elongated recess extending along the first direction (R1), which intersects the longitudinal direction (L) of the shoe (1), wherein the first protrusion (211', 211") is positioned at a predetermined first distance (d', d") from the rotation axis (D', D") along the second direction (R2).

5. The shoe (1) according to the previous claim, wherein the first direction (R1) is transverse to the longitudinal direction (L) of the shoe (1).

6. The shoe (1) according to claim 4 or 5, wherein the second direction (R2) coincides with the longitudinal direction (L) of the shoe (1).

7. The shoe (1) according to any of the claims 4-6, wherein the first direction (R1) is transverse to the second direction (R2).

8. The shoe (1) according to any of the previous claims, wherein the second sole part (120) comprises an attachment element (140) arranged for attaching the heel (20', 20") to the second sole part (120).

9. The shoe (1) according to the previous claim, wherein the attachment element (140) comprises at least two second protrusions (141), wherein the heel (20', 20") comprises at least two third protrusions (220', 220"), wherein the second protrusions (141) and the third protrusions (220', 220") are positioned in such a way on the attachment element (140) and the heel (20', 20"), respectively, that the third protrusions (220', 220") slide underneath the second protrusions (141) when rotating the heel (20', 20") about the rotation axis (D', D") from the first direction (R1) toward the second direction (R2) when attaching the heel (20', 20") to the second sole part (120).

10. The shoe (1) according to claim 8 or 9, wherein the attachment element (140) comprises a fourth protrusion (142), wherein the heel (20', 20") comprises a second recess (230', 230"), wherein the fourth protrusion (142) and the second recess (230', 230") are configured so that the fourth protrusion (142) slides into the second recess (230', 230") upon rotating the heel (20', 20") about the rotation axis (D', D") from the first direction (R1) toward the second direction (R2) when attaching the heel (20', 20") to the second sole part (120).

11. The shoe (1) according to the previous claim, wherein the fourth protrusion (142) is arranged on a resilient member (143) that allows the fourth protrusion (142) to be slid out of the second recess (230', 230") for detaching the heel (20', 20") from the second sole part (120).

12. The shoe (1) according to any of the previous claims, wherein the first sole part (110) comprises a receiving element (111) arranged for receiving the bracket element (150) when the first end (151) of the bracket element (150) engages the first sole part (110).

13. The shoe (1) according to the previous claim, wherein the receiving element (111) is provided with a first abutment (112), wherein the first abutment (112) is configured so that when positioning the first end (151) of the bracket element (150) against the first abutment (112), the first sole part (110) is forced into the first angle (α', α") in relation to the second sole part (120).

14. The shoe (1) according to any of the previous claims, wherein the heel (20', 20") is provided with a contact surface (240', 240") to be placed against the second sole part (120) when attaching the heel (20', 20") to the second sole part (120), wherein the contact surface (240', 240") is aligned under a predetermined third angle (γ) in relation to the height direction (h', h") of the shoe (1), wherein the rotation axis (D', D") is perpendicular to the contact surface (240', 240").

15. An assembly of the shoe (1) according to any of the previous claims and at least one additional heel (20', 20"), wherein the at least one additional heel (20', 20") has a second height (h', h") different from the first height (h', h"), wherein the at least one additional heel (20', 20") is releasably attachable to the second sole part (120), wherein the at least one additional heel (20', 20"), when being attached to the second sole part (120), is rotatable about the rotation axis (D', D") from a third direction (R1) toward a fourth direction (R2), wherein the at least one additional heel comprises an engaging element (210', 210") arranged to engage the bracket element (150) and, when rotating the at least one additional heel (20', 20") from the third direction (R1) toward the fourth direction (R2), to displace the bracket element (150) in such a way that a predetermined second angle (α', α") different from the first angle (α', α") is set between the first sole part (110) and the second sole part (120), wherein, preferably, the third direction (R1) coincides with the first direction (R1) and/or the fourth direction (R2) coincides with the second direction (R2).

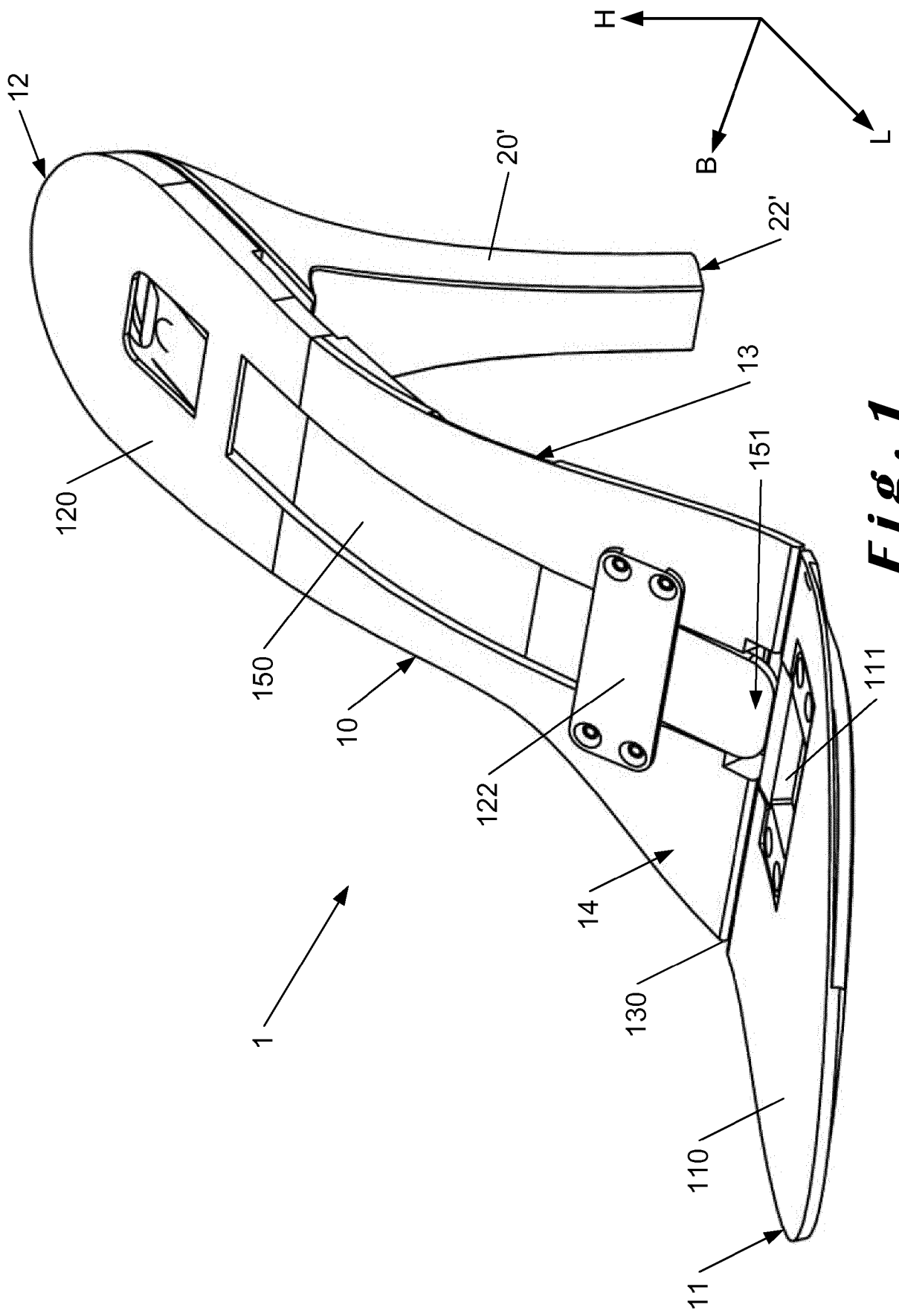

Fig. 1

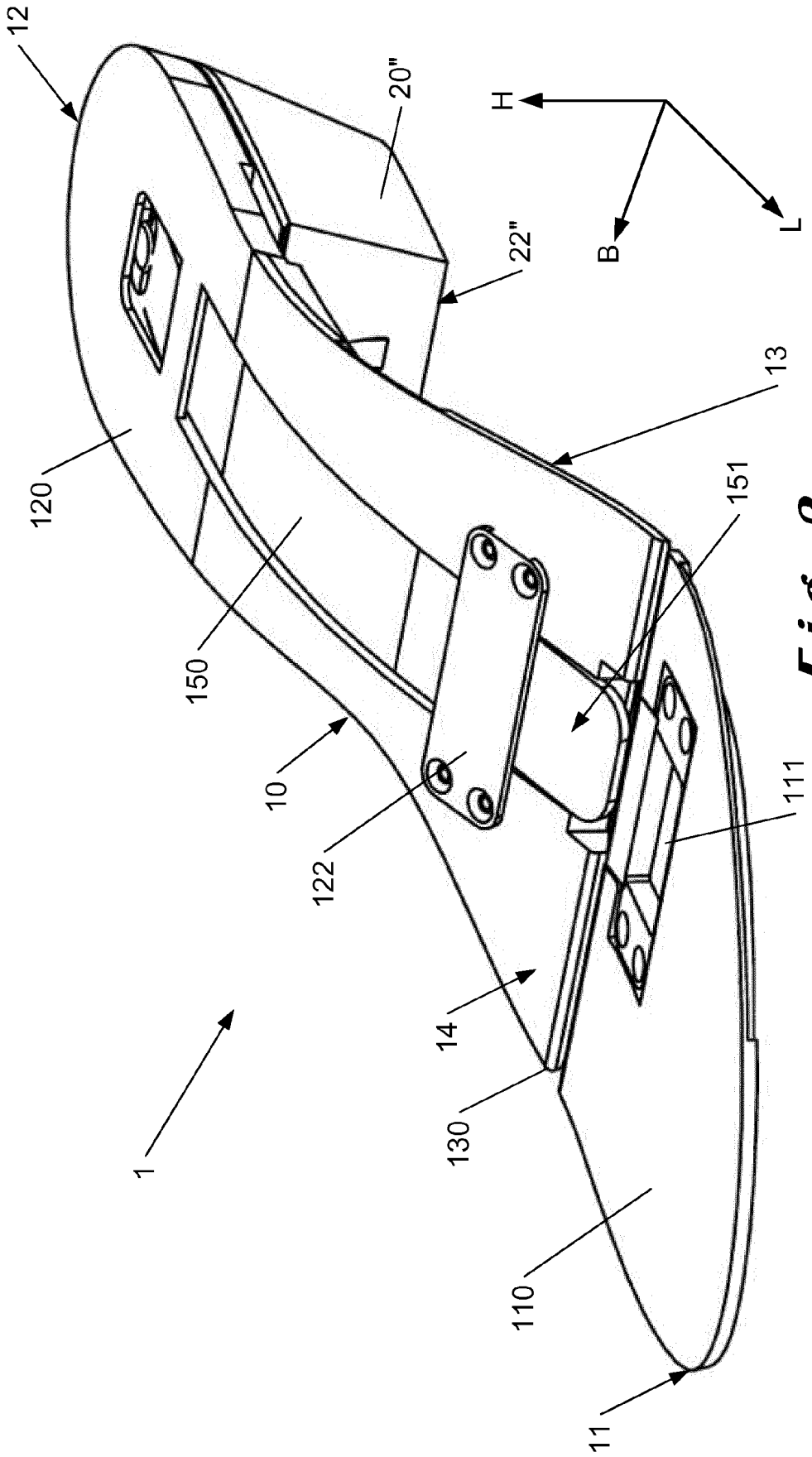

Fig. 2

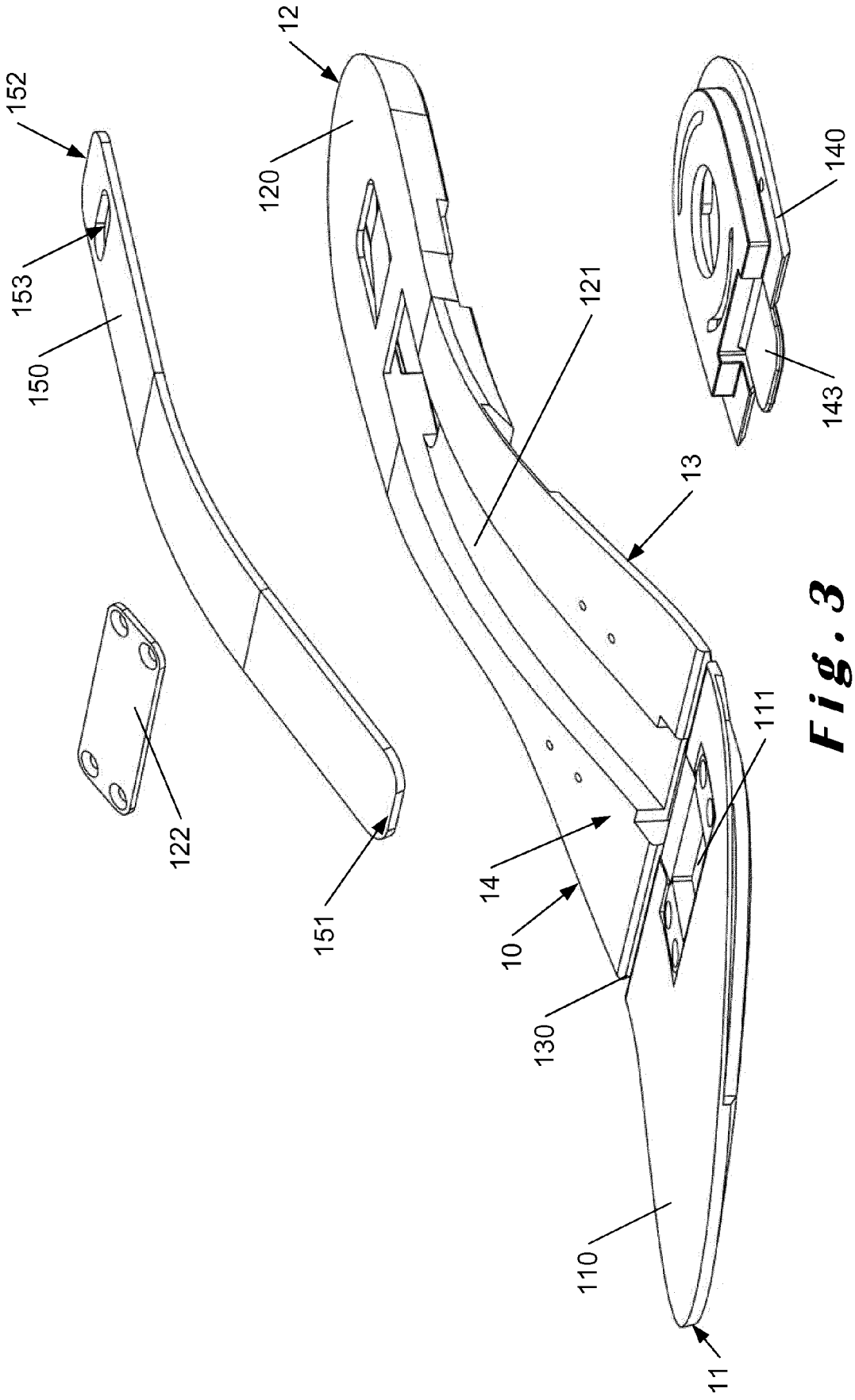

Fig. 3

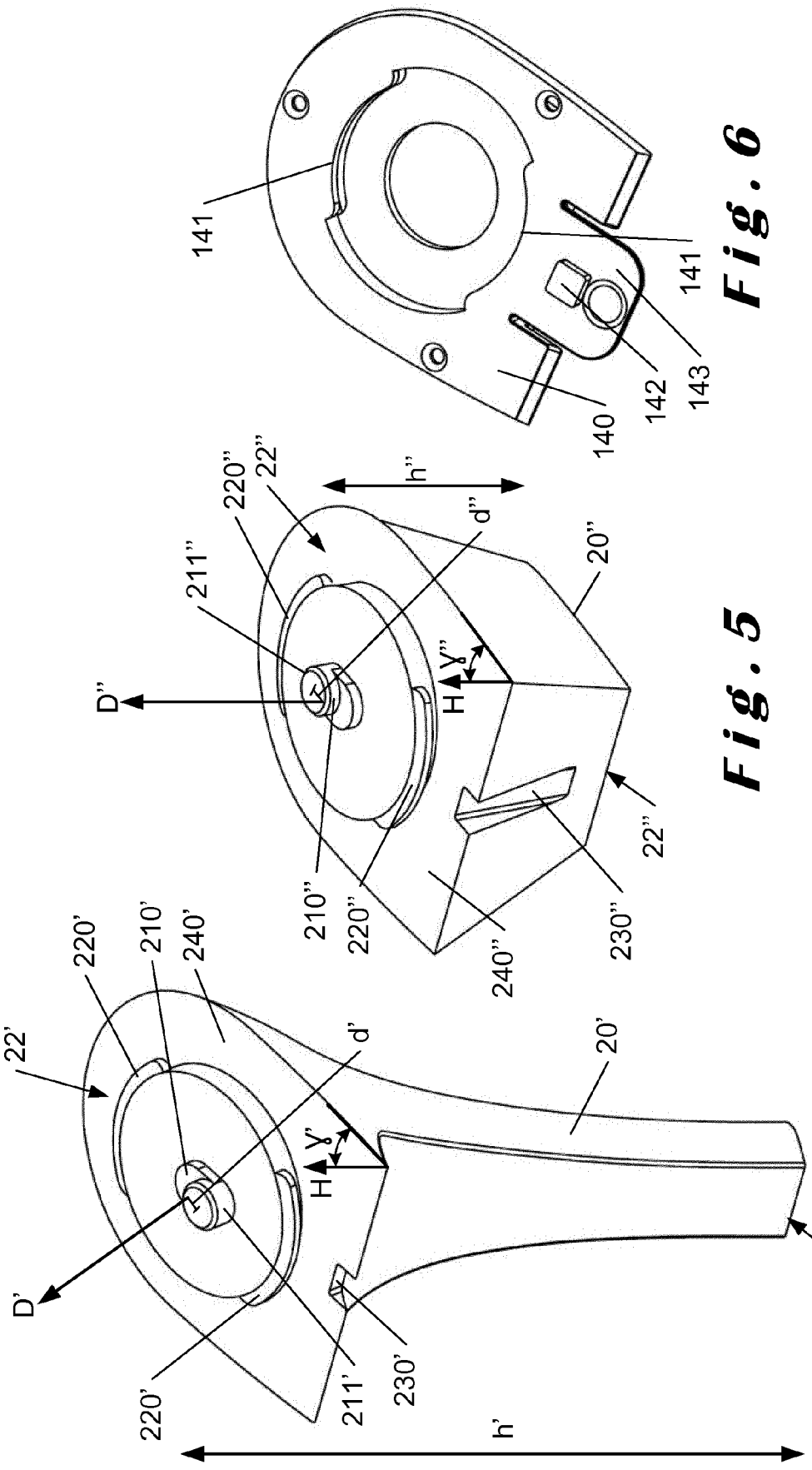

Fig. 4

Fig. 5

Fig. 6

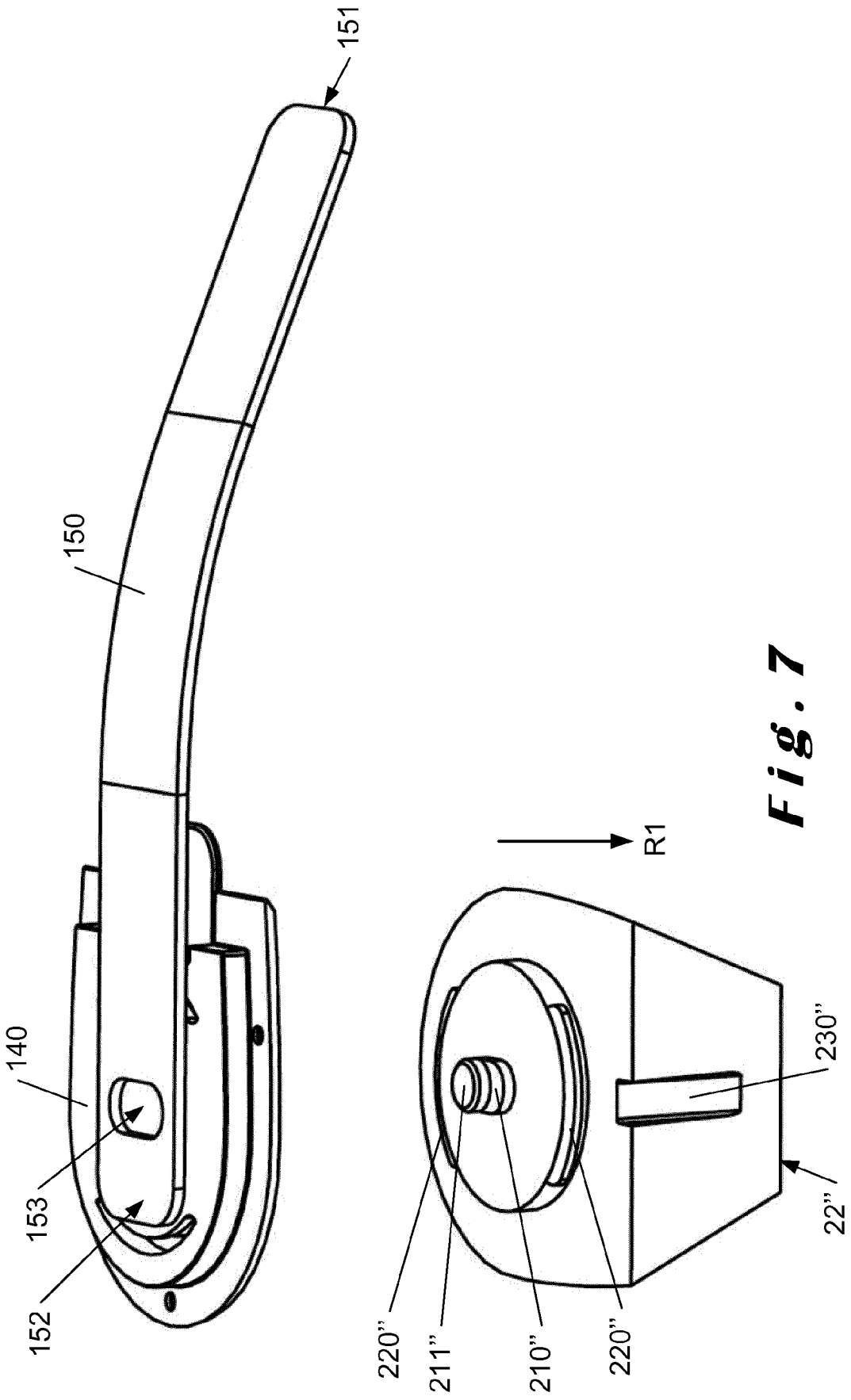

Fig. 7

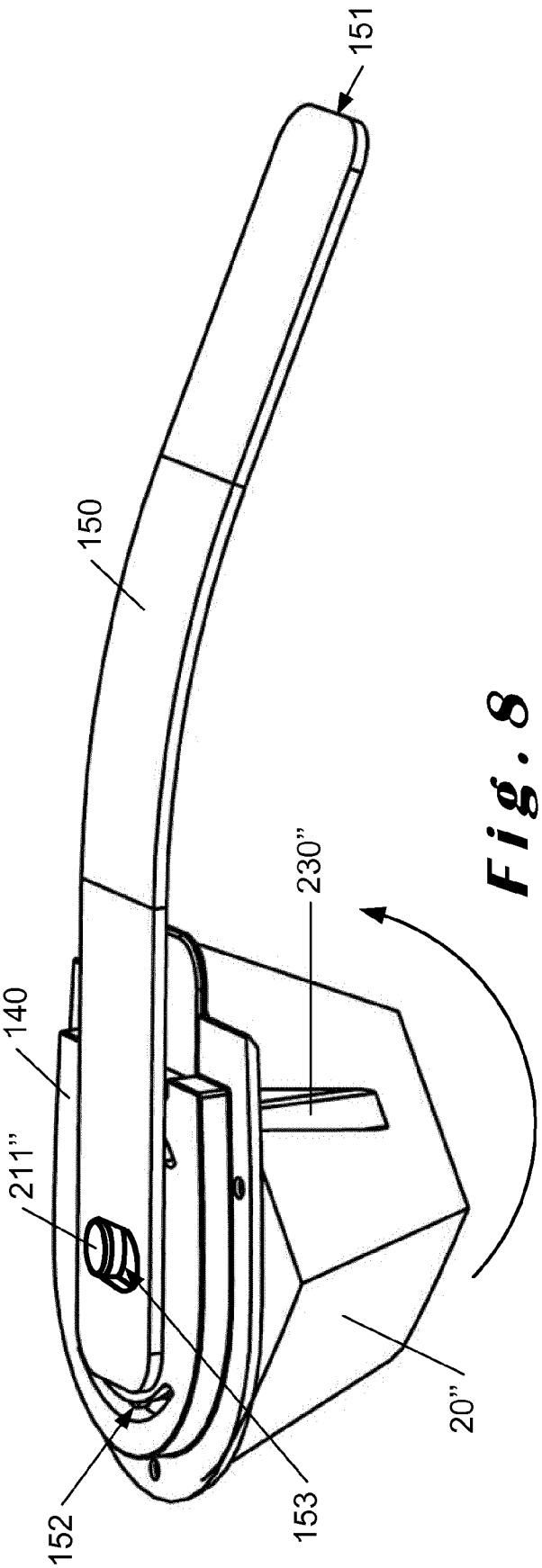

Fig. 8

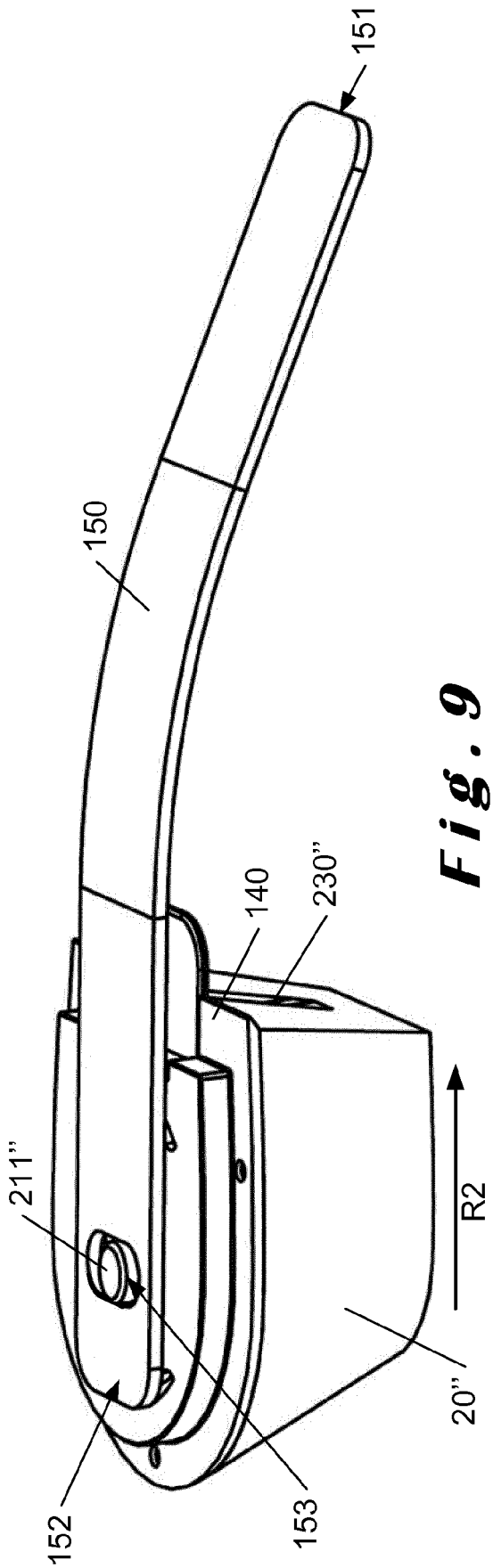

Fig. 9

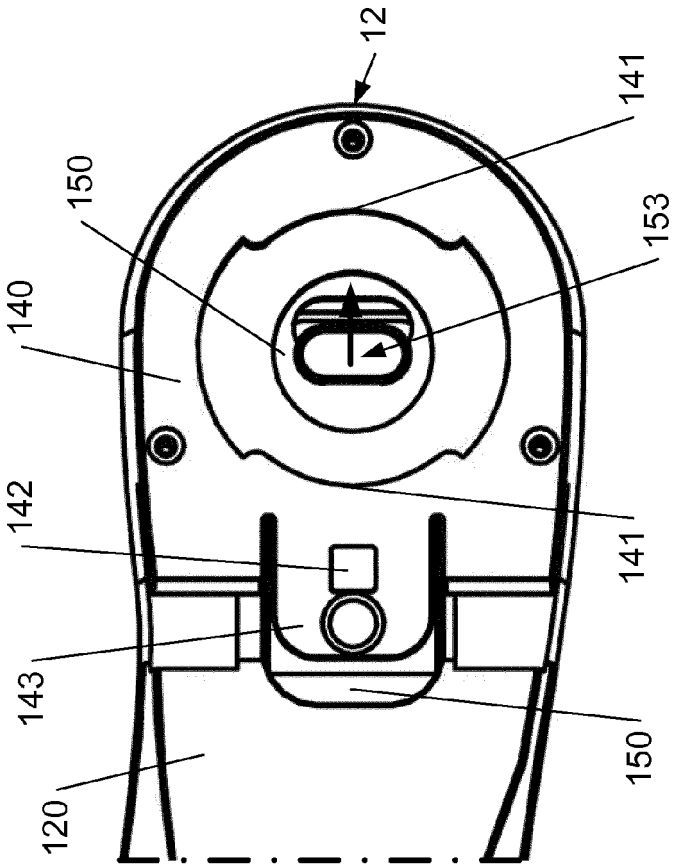
12
141
150
153
140
142
141
143
150
120

Fig. 11

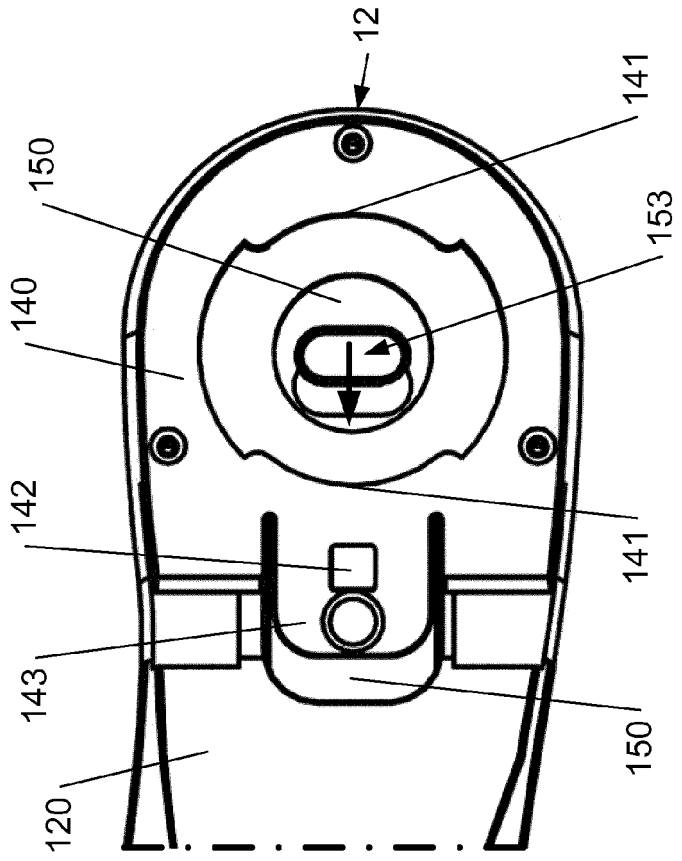
12
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Fig. 10

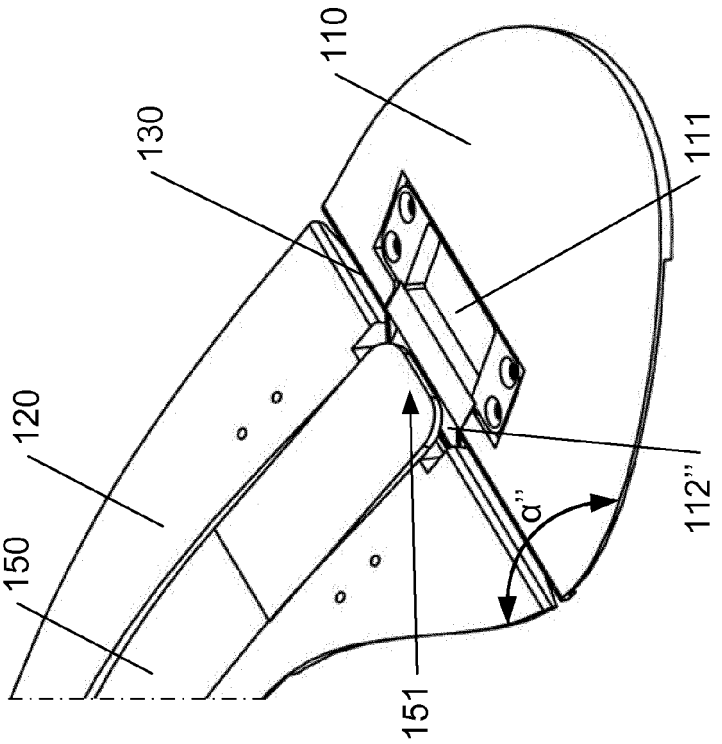

Fig. 13

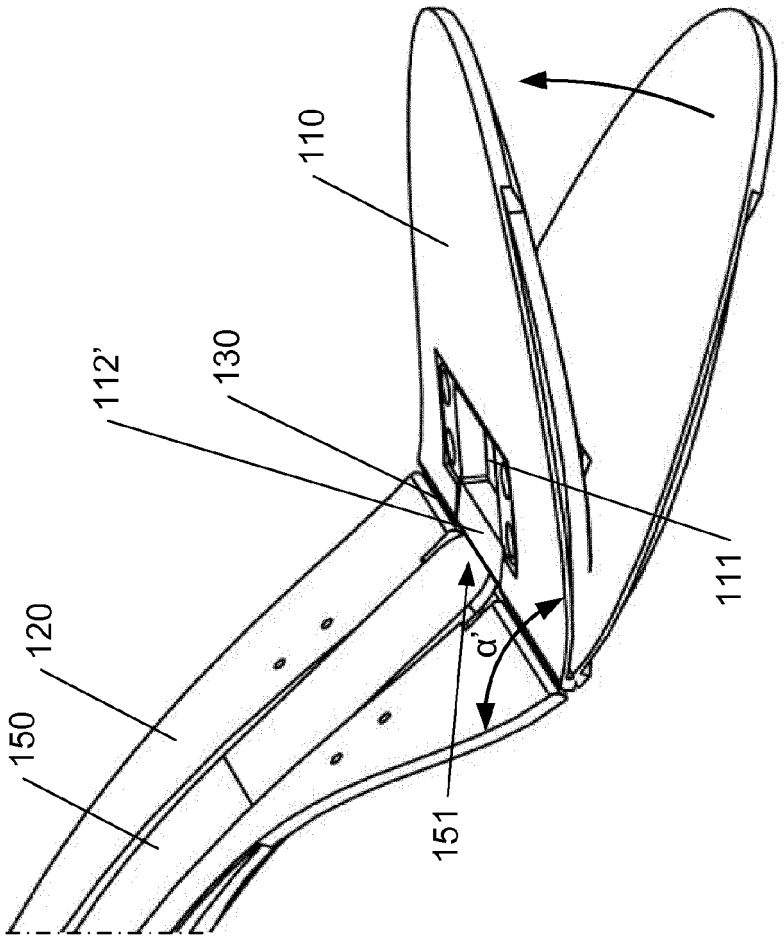

Fig. 12

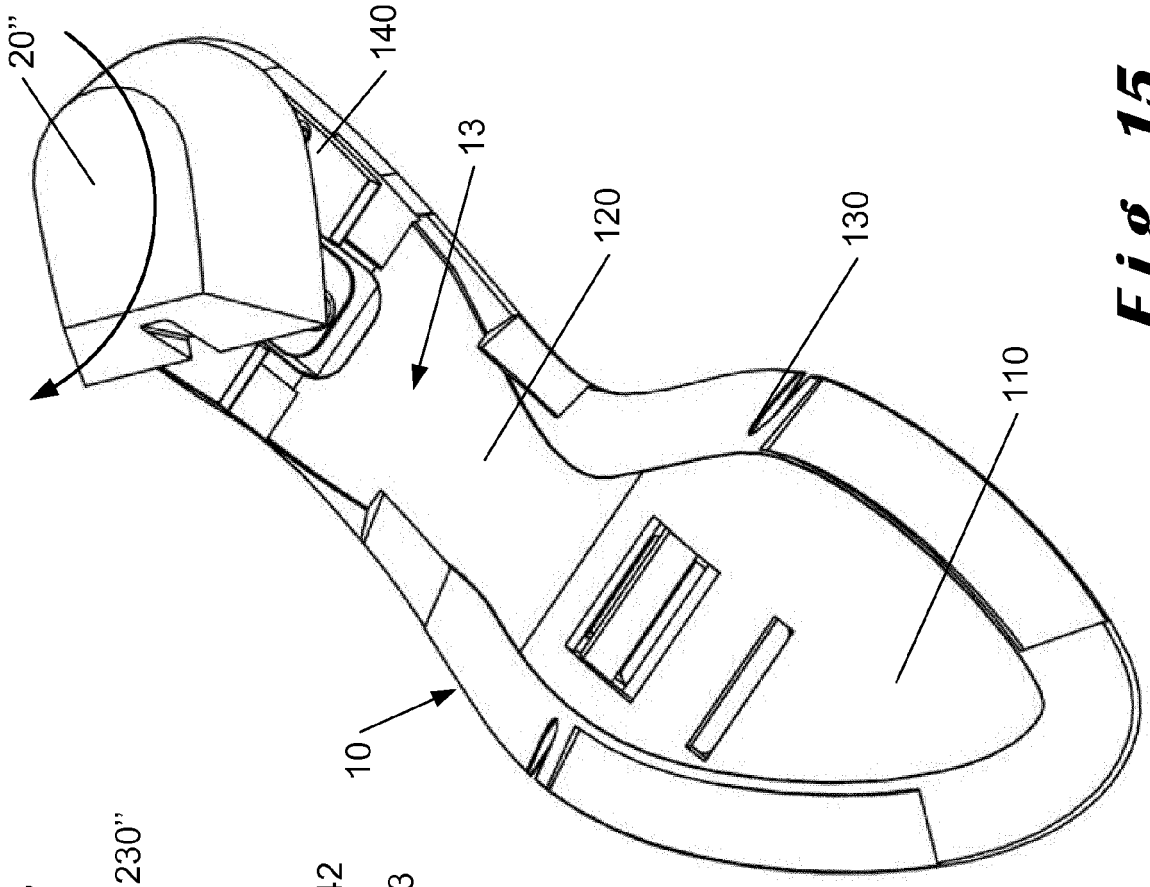

Fig. 15

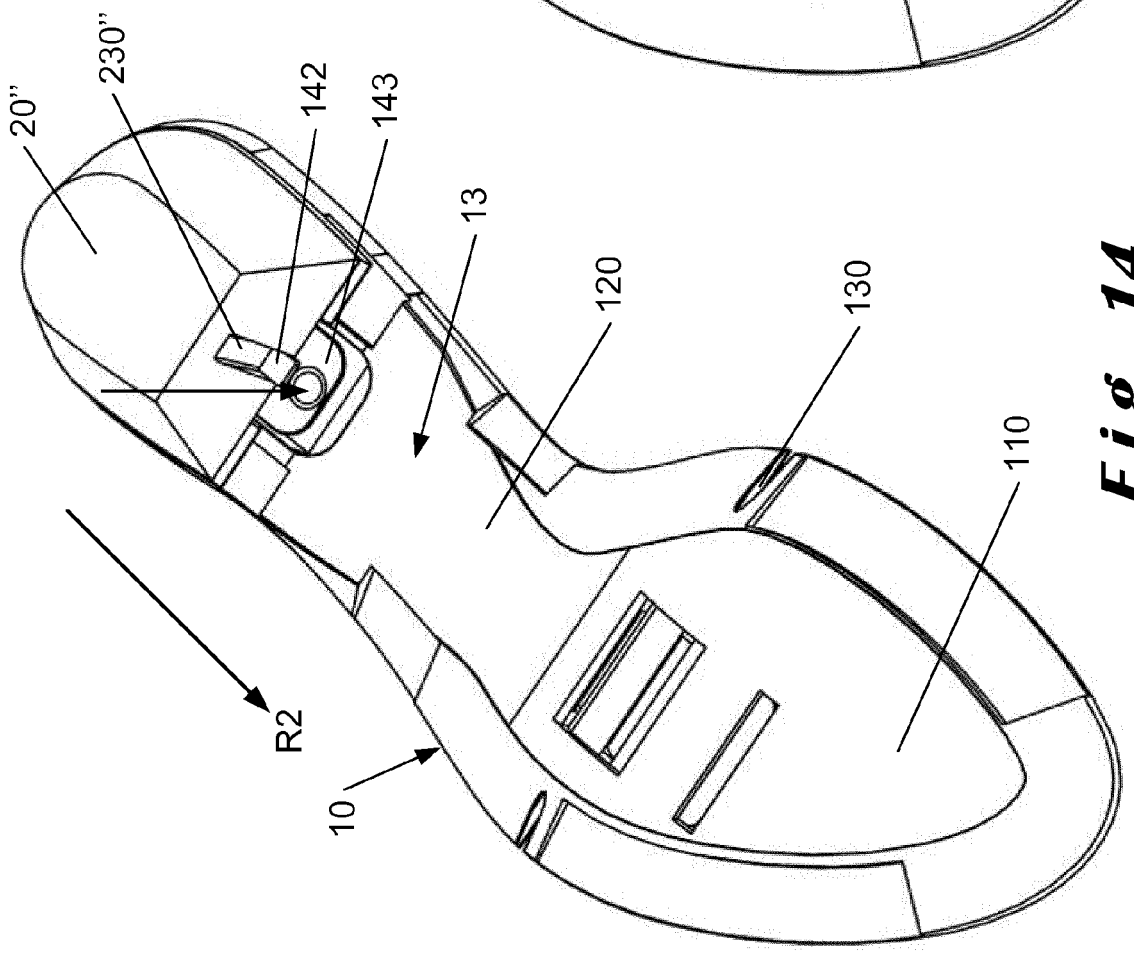

Fig. 14

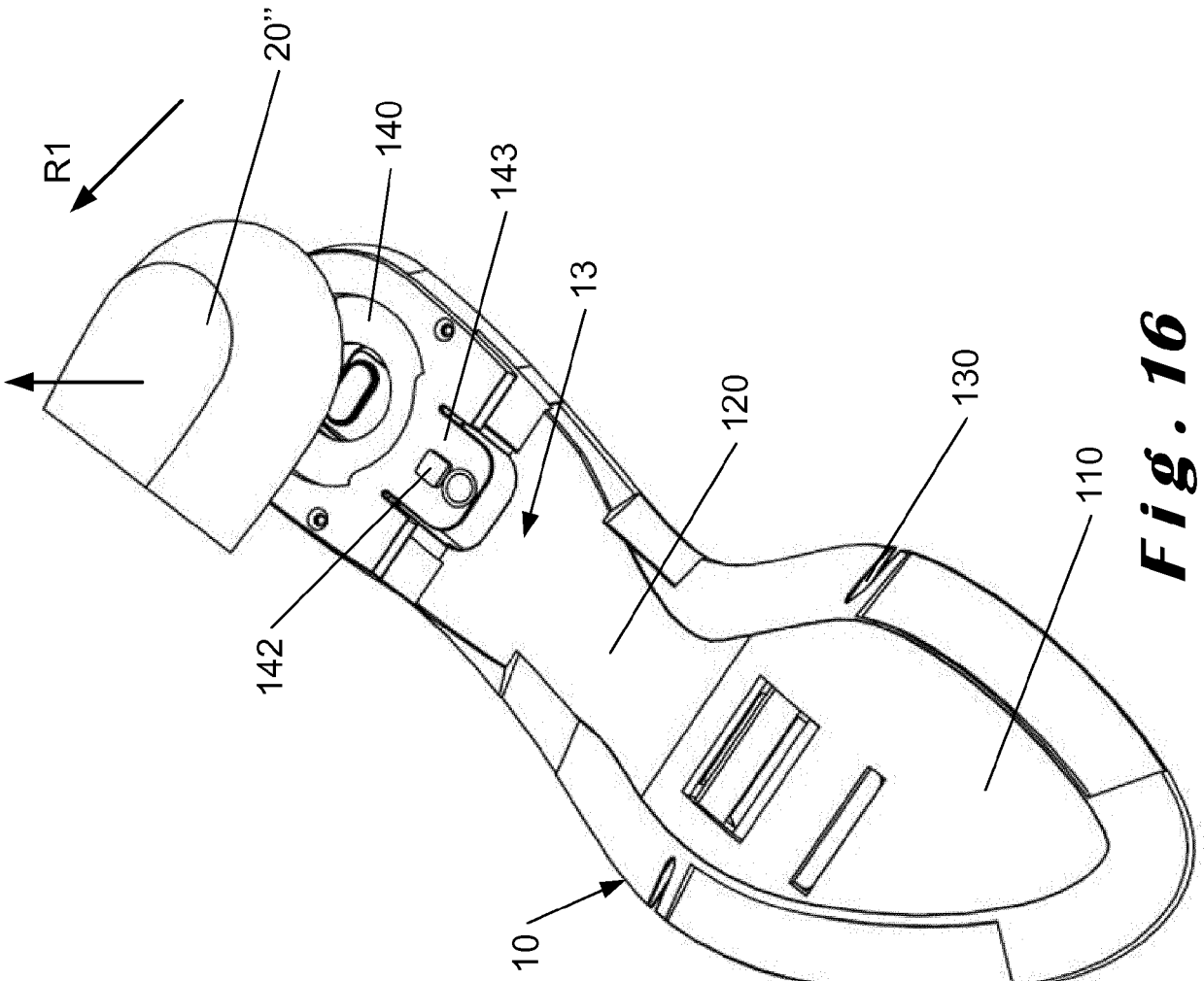

Fig. 16

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EUROPEAN SEARCH REPORT

Application Number
EP 18 19 7585

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	17 December 2018	Claudel, Benoît

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L : document cited for other reasons

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