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(54) Support and grip device

(57) A support and grip device (1), particularly for protective shields and the like. The device (1) comprises a receptacle (2) which accommodates a forearm (3) of a user, according to a predefined configuration, and a handle (4), which faces and is proximate to the receptacle (2) and has at least one portion (5) that can be held by the user to grip the shield (6) and the like. According to the invention, the at least one portion (5) of the handle (4) is arranged substantially along a direction that is inclined, i.e., forms an angle other than zero, with respect to a reference straight line. The reference straight line is parallel to the plane for anchoring to the shield (6) and perpendicular to the axis defined by the forearm (3). More specifically, the forearm (3) defines this axis when it is in the predefined configuration and is accommodated in the receptacle (2), with the hand (7) holding the handle (4), in a manner that conforms to the posture of the hand (7), according to ergonomic criteria.

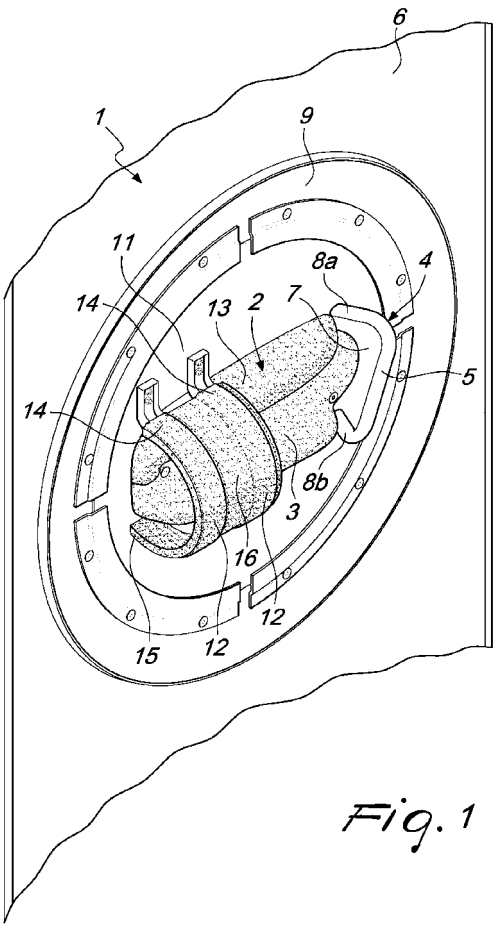

Fig. 1

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Description

[0001] The present invention relates to a support and grip device.

[0002] As is known, a shield is generally used by armed forces or police forces to protect themselves in clashes that may occur during the normal execution of their duties, and in particular during scuffles, assaults, as well as if objects, including contusive objects, are thrown, and in case of gunshots, hand-to-hand combat weapons and the like.

[0003] The shield is substantially constituted by a plate that has, in the side directed toward the user, two handles, one designed to accommodate the arm of the user, the other designed to be gripped by the hand of the user.

[0004] In this manner the shield is supported completely by a single arm, leaving free the other arm, and in particular the other hand, to hold a weapon, if any.

[0005] The panel is made of materials that have the characteristic of withstanding impacts and cuts, and according to requirements it may be concave or convex, with a transparent or opaque surface.

[0006] One of the main problems of protective shields is that they have a significant weight, which causes in the user, often forced to stand for long periods of time while supporting the shield, tension of the muscles and of the joints of the upper limbs and therefore considerable fatigue.

[0007] The aim of the present invention is to solve the above mentioned problems, by proposing a support and grip device that reduces the fatigue and tension of the upper limbs.

[0008] Within this aim, an object of the invention is to propose a support and grip device that imposes a correct posture of the forearm and of the hand to the user.

[0009] Another object of the invention is to propose a support and grip device that is versatile and can be used on the different types of shield currently commercially available.

[0010] A further object of the present invention is to provide a support and grip device that has modest costs, is relatively easy to provide in practice and is safe in use.

[0011] This aim and these and other objects are achieved by a support and grip device, particularly for protective shields and the like, comprising a receptacle for accommodating a forearm of a user, according to a predefined configuration, and a handle, which faces and is proximate to said receptacle and has at least one portion that can be held by the user to grip the shield and the like, **characterized in that** said at least one portion of said handle is arranged substantially along a direction that is inclined with respect to a reference straight line, said reference straight line being parallel to the surface for anchoring to the shield and perpendicular to the axis defined by the forearm, when the forearm is accommodated in said receptacle, for the grip of the handle by the user in a manner that conforms to the posture of the hand according to ergonomic criteria.

[0012] Further characteristics and advantages of the invention will become better apparent from the description of two preferred but not exclusive embodiments of the support and grip device according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a top perspective view of the device according to the invention in its first embodiment;
Figure 2 is a top perspective view of the device according to the invention in its second embodiment;
Figure 3 is a front view of the device of Figure 2;
Figure 4 is a front view of the device of Figure 2 with different positions of use illustrated in broken lines;
Figure 5 is a top view of the device of Figure 2;
Figure 6 is a side view of the device of Figure 2.

[0013] With reference to the figures, a support and grip device, particularly for protective shields and the like, is generally designated by the reference numeral 1.

[0014] The device 1 comprises a receptacle 2, in which a forearm 3 of a user is intended to be accommodated, according to a predefined configuration, and a handle 4, which faces and is proximate to the receptacle 2 and has at least one portion 5 that can be held by the user to grip the shield 6 and the like.

[0015] In this predefined configuration, as shown in Figure 2, the forearm 3 of the user faces and is proximate to the plane for anchoring to the shield 6, and is coupled thereto at the receptacle 2, in which it is intended to be accommodated, with the hand 7 holding the portion 5 of the handle 4.

[0016] The receptacle 2 and the portion 5, which are substantially aligned, can accommodate the forearm 3 in a single position (as shown more clearly hereinafter), which indeed defines such predefined configuration (visible in the accompanying figures), in which the axis of the forearm 3 is aligned with the already mentioned receptacle 2 and portion 5.

[0017] In particular, the axis of the forearm 3 is parallel to the plane for anchoring to the shield 6, so that when the user moves the shield 6 to a defensive position, i.e., when the shield 6 is arranged substantially so as to cover the trunk of the user, the axis of the forearm 3 is substantially parallel to the ground.

[0018] According to the invention, the at least one portion 5 of the handle 4 is arranged substantially along a direction that is inclined, i.e., so as to form an angle other than zero, with respect to a reference straight line.

[0019] The reference straight line is parallel to the surface for anchoring to the shield 6 and perpendicular to the axis defined by the forearm 3.

[0020] More specifically, as already noted, the forearm 3 defines such axis when it is in a predefined configuration and is accommodated in the receptacle 2 with the hand 7 holding the handle 4, in a manner that conforms to the posture of the hand 7 itself, according to ergonomic criteria.

[0021] The arrangement of the handle in a manner that conforms to the posture of the hand 7 makes it possible to reduce the fatigue of the user, as well as the tension on the joints of the hand 7, forearm 3 and arm, due to the prolonged support of the weight of the shield 6, which vice versa an incorrect posture would worsen even more.

[0022] According to a constructive solution of unquestionable interest in practice and in application, the at least one portion 5 is contained on a plane that is substantially parallel to the plane defined by the plane for anchoring to the shield 6, which is inclined with respect to the reference straight line by an angle comprised between 1° and 30°.

[0023] Such an interval defines an inclination that substantially conforms to the optimum posture of the hand 7, according to ergonomic criteria.

[0024] In fact, when a hand is closed so as to grip a tubular object, and not only, the natural position assumed by the fingers is such that they delimit a cavity which also is substantially tubular, arranged approximately parallel to the plane defined by the palm of the hand and inclined with respect to the perpendicular to the axis of the forearm by an angle comprised between 1° and 30°.

[0025] The handle 4 comprises a central segment 5, which constitutes the at least one portion 5, and two lateral portions 8a and 8b.

[0026] Advantageously, the lateral portions 8a and 8b are connected respectively at one side to the corresponding ends of the central segment 5 and have, on the opposite side, respective points for fixing to the shield.

[0027] According to a first possible constructive solution, the lateral portions 8a and 8b are arranged at right angles to the plane for anchoring to the shield 6 (with the handle substantially U-shaped), for coupling to the fixing points.

[0028] According to the preferred constructive solution, illustrated in the accompanying figures, the lateral portions 8a and 8b are inclined with respect to the perpendicular to the plane for anchoring to the shield 6, for coupling to the fixing points.

[0029] Their inclination makes it possible to arrange the fixing points so that they are aligned along a same direction substantially at right angles to the direction of the axis of the forearm 3 of the user.

[0030] In this manner it is possible to couple the device 1 according to the invention to any type of shield, even to those that are already commercially available and indeed usually have fixing points according to the methods described in the previous paragraph.

[0031] Moreover, the peculiar shape of the lateral portions 8a and 8b ensures a greater resistance of the handle 4 to impacts and external stresses.

[0032] The device 1 according to the invention comprises a supporting plate 9, which is preferably disk-shaped and can be coupled to the shield 6 substantially at a first face 10 thereof.

[0033] The coupling between the shield 6 and the plate 9 is preferably such as to allow a rotation of the shield 6 about the plate 9, i.e., so that the rotation of the shield 6 is not integral with the rotation of the plate 9 but independent.

[0034] This prevents, in case of a scuffle and most of all if an attacker grabs the shield 6, any rotation imparted by the attacker to the shield 6 from having repercussions on the forearm 3 of the user, preventing the danger of loss of balance by the user or, in the worst case, a corresponding torsion of the forearm 3, with respect to the shoulder, such to break the forearm.

[0035] The handle 4 and the receptacle 2 are fixed on the second face 11 of the plate 9, opposite the first one.

[0036] In particular, the receptacle 2 comprises at least one half-ring 12, which is fixed to the second face 11 of the plate 9 and is arranged along the reference straight line, i.e., parallel to the plane for anchoring to the shield 6 and perpendicular to the axis defined by the forearm 3.

[0037] Inside the at least one half-ring 12, the forearm 3 of the user is intended to be inserted and accommodated in a stable manner according to the predefined configuration, as can be deduced from the accompanying figures.

[0038] In particular, according to a preferred constructive solution of considerable practical interest, proposed in Figure 1 by way of non-limiting example of the application of the invention, the receptacle 2 comprises two half-rings 12, which are arranged mutually side by side.

[0039] Each half-ring 12 is fixed to the second face 11 of the plate 9 at least at a respective first end flap and is arranged according to the reference straight line.

[0040] Moreover, a connecting band 16, preferably made of polymeric material, is interposed between the side-by-side half-rings 12.

[0041] The connecting band 16, together with the two half-rings 12, supplies a larger abutment surface for the forearm 3 intended to be inserted in the receptacle 2, therefore helping further to prevent an undesired and unintentional extraction of the forearm.

[0042] Indeed to facilitate intentional extraction, if required by the circumstances, it should be noted that it is possible to fix the half-ring 12 to the plate 9 only at a single end flap, for example the upper end portion 14, leaving instead the lower end portion 15 disengaged and free, in order to allow indeed the intentional extraction of the forearm 3.

[0043] The receptacle 2 comprises moreover a padding 13, which is fixed to the second face 11 and is interposed between the at least one half-ring 12 and the handle 4.

[0044] The padding 13 is shaped ergonomically for shape mating with the forearm 3 of the user in the predefined configuration, so that maximum user comfort is ensured.

[0045] It is therefore evident that the at least one half-ring 12 and the padding 13 allow the accommodation of the forearm 3 according to a single position and orientation, which define indeed the predefined configuration.

[0046] The padding 13 is made of a material preferably

chosen among polymeric foams, rubber, latex, derivatives thereof and the like.

[0047] The padding 13 is adapted to reduce the transmission of impacts between the plate 9 and the forearm 3, the impacts possibly occurring during a possible attack or scuffle.

[0048] The handle 4 is covered with a material preferably chosen among polymeric foams, rubber, latex, derivatives thereof and the like.

[0049] The half-ring 12 is made of a material of the elastomer type preferably chosen among rubber, polymers and the like, so that the mating between the forearm 3 and the half-ring 12 is as flexible as possible, and makes it possible to extract the forearm rapidly if needed.

[0050] Use of the device 1 according to the invention is as follows.

[0051] When the user needs to protect himself/herself, he/she inserts the forearm 3 in the half-ring 12, making it slide along the padding 13 until it reaches the predefined configuration, with the hand 7 holding the portion 5 of the handle 4.

[0052] As noted, the arrangement chosen for the portion 5 makes it possible to maintain the grip even for prolonged periods, without causing excessive fatigue or tensions in the user (or at least in his/her forearm 3).

[0053] The optimum posture of the hand 7 in fact is ensured by the particular inclination of the portion 5, which complies with the ergonomic criteria of the hand.

[0054] This makes it possible at the same time to reduce the fatigue of the user, and particularly the tension on the joints of the hand 7, forearm 3 and arm, due to prolonged support of the weight of the shield 6.

[0055] This fatigue, in fact, in shields of the known type is further worsened by an incorrect posture.

[0056] Another advantage of the invention is that it can be used on the different types of shield that are currently commercially available.

[0057] In fact, the fixing points both in the devices of the known type and in the device according to the invention are arranged in a similar manner, i.e., aligned along a same direction which is substantially at right angles to the direction of the axis of the forearm.

[0058] In practice it has been found that the device according to the invention fully achieves the intended aim, since it makes it possible to reduce the fatigue and the tension of the upper limbs, ensuring a correct posture of the forearm and of the hand.

[0059] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. All the details may furthermore be replaced with other technically equivalent elements.

[0060] In the exemplary embodiments shown, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other exemplary embodiments.

[0061] In practice, the materials used, as well as the dimensions, may be any according to requirements and to the state of the art.

[0062] The disclosures in Italian Patent Application No. B02011A000401 from which this application claims priority are incorporated herein by reference.

[0063] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A support and grip device (1), particularly for protective shields and the like, comprising a receptacle (2) for accommodating a forearm (3) of a user, according to a predefined configuration, and a handle (4), which faces and is proximate to said receptacle (2) and has at least one portion (5) that can be held by the user to grip the shield (6) and the like, **characterized in that** said at least one portion (5) of said handle (4) is arranged substantially along a direction that is inclined with respect to a reference straight line, said reference straight line being parallel to the plane for anchoring to the shield (6) and perpendicular to the axis defined by the forearm (3), when the forearm (3) is accommodated in said receptacle (2), for the grip of the handle (4) by the user in a manner that conforms to the posture of the hand (7) according to ergonomic criteria.

2. The support and grip device according to claim 1, **characterized in that** said at least one portion (5) is contained on a plane that is substantially parallel to the plane defined by the plane for anchoring to the shield (6).

3. The support and grip device according to claims 1 and 2, **characterized in that** said at least one portion (5), contained on a plane that is substantially parallel to the plane defined by the plane for anchoring to the shield (6), is inclined with respect to said reference straight line by an angle comprised between 1° and 30°.

4. The support and grip device according to one or more of the preceding claims, **characterized in that** said handle (4) comprises a central segment (5), which constitutes said at least one portion (5), and two lateral portions (8a, 8b), which are connected respectively to corresponding ends of said central segment and have, on the opposite side, respective points for fixing to the shield (6).

5. The support and grip device according to one or more of the preceding claims, **characterized in that** said

lateral portions (8a, 8b) are inclined with respect to the perpendicular to the plane of the shield (6), for coupling to said fixing points, which are aligned along a direction that is substantially perpendicular to said axis of the forearm (3) of said user.

6. The support and grip device according to one or more of the preceding claims, **characterized in that** it comprises a supporting plate (9) which is preferably disk-shaped and can be coupled to the shield (6) substantially at a first face (10) thereof, said handle (4) and said receptacle (2) being fixed to the second face (11) of said plate (9), which is opposite with respect to the first one.

7. The support and grip device according to one or more of the preceding claims, **characterized in that** said receptacle (2) comprises at least one half-ring (12), which is fixed to said second face (11) of said plate (9) and is arranged along said reference straight line, the forearm (3) of the user being intended to be inserted within said at least one half-ring (12).

8. The support and grip device according to one or more of the preceding claims, **characterized in that** said receptacle (2) comprises two of said half-rings (12) which face each other, each one of said half-rings (12) being fixed to said second face (11) of said plate (9) at least at a respective first end flap and being arranged along said reference straight line, a connecting band (16) being interposed between said side-by-side half-rings (12) and being preferably made of polymeric material.

9. The support and grip device according to one or more of the preceding claims, **characterized in that** said seat (2) comprises a padding (13), which is fixed to said second face (11) and is interposed between said at least one half-ring (12) and said handle (4), said padding (13) being shaped ergonomically for shape mating with the forearm (3) of the user in said predefined configuration.

10. The support and grip device according to one or more of the preceding claims, **characterized in that** said handle (4) is covered with material preferably chosen among polymeric foams, rubber, latex, derivatives thereof and the like.

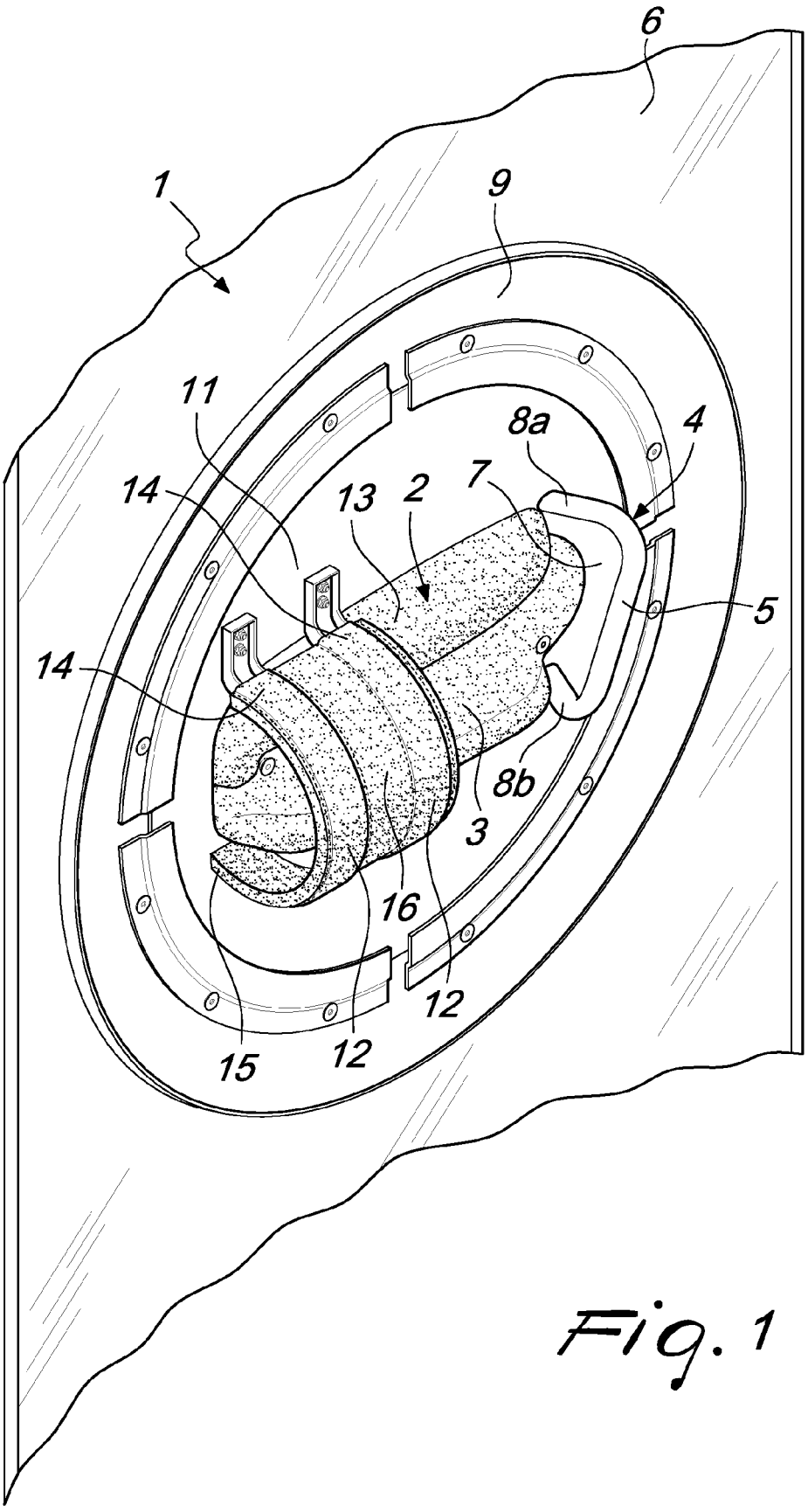

Fig. 1

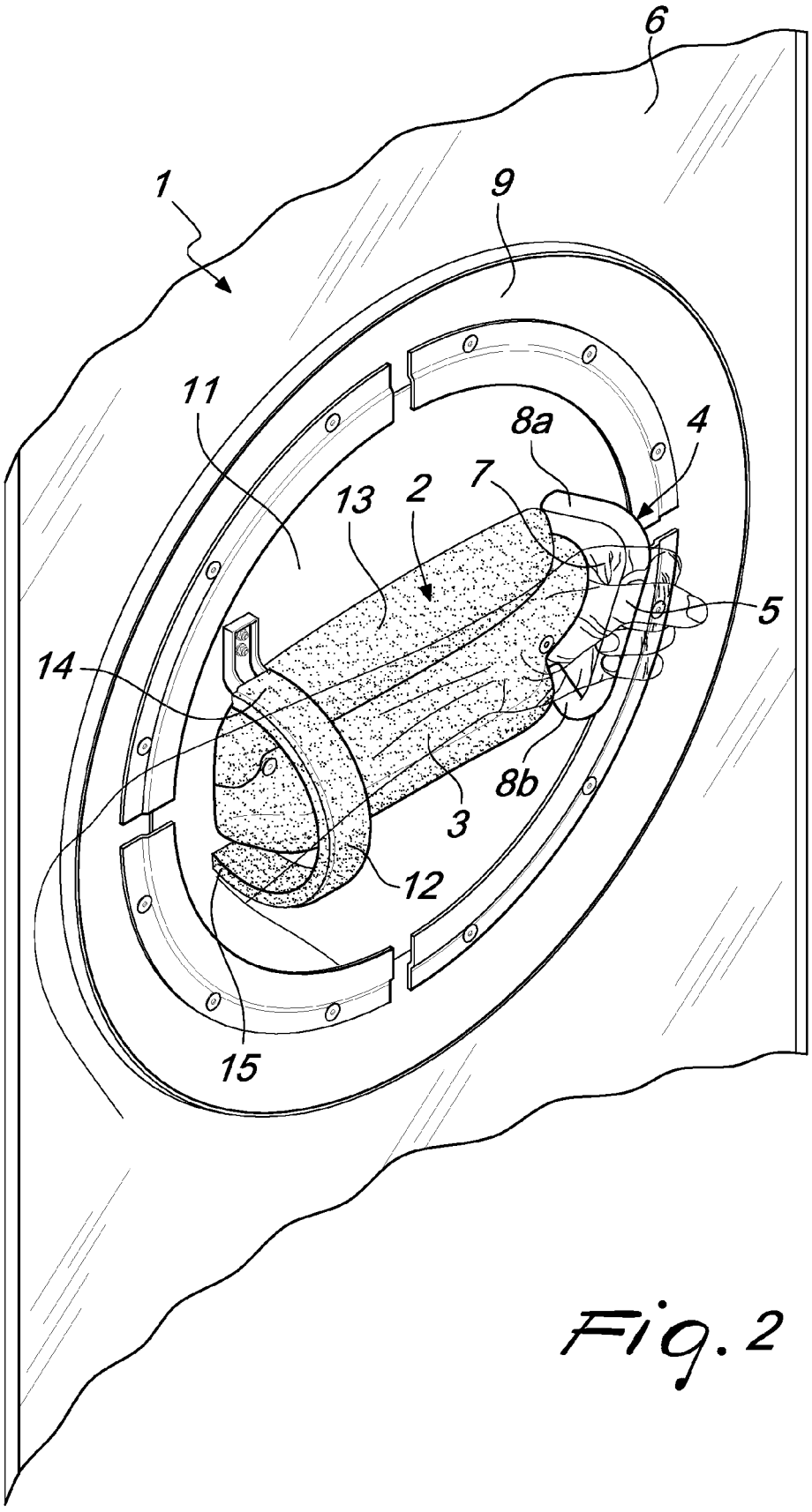

Fig. 2

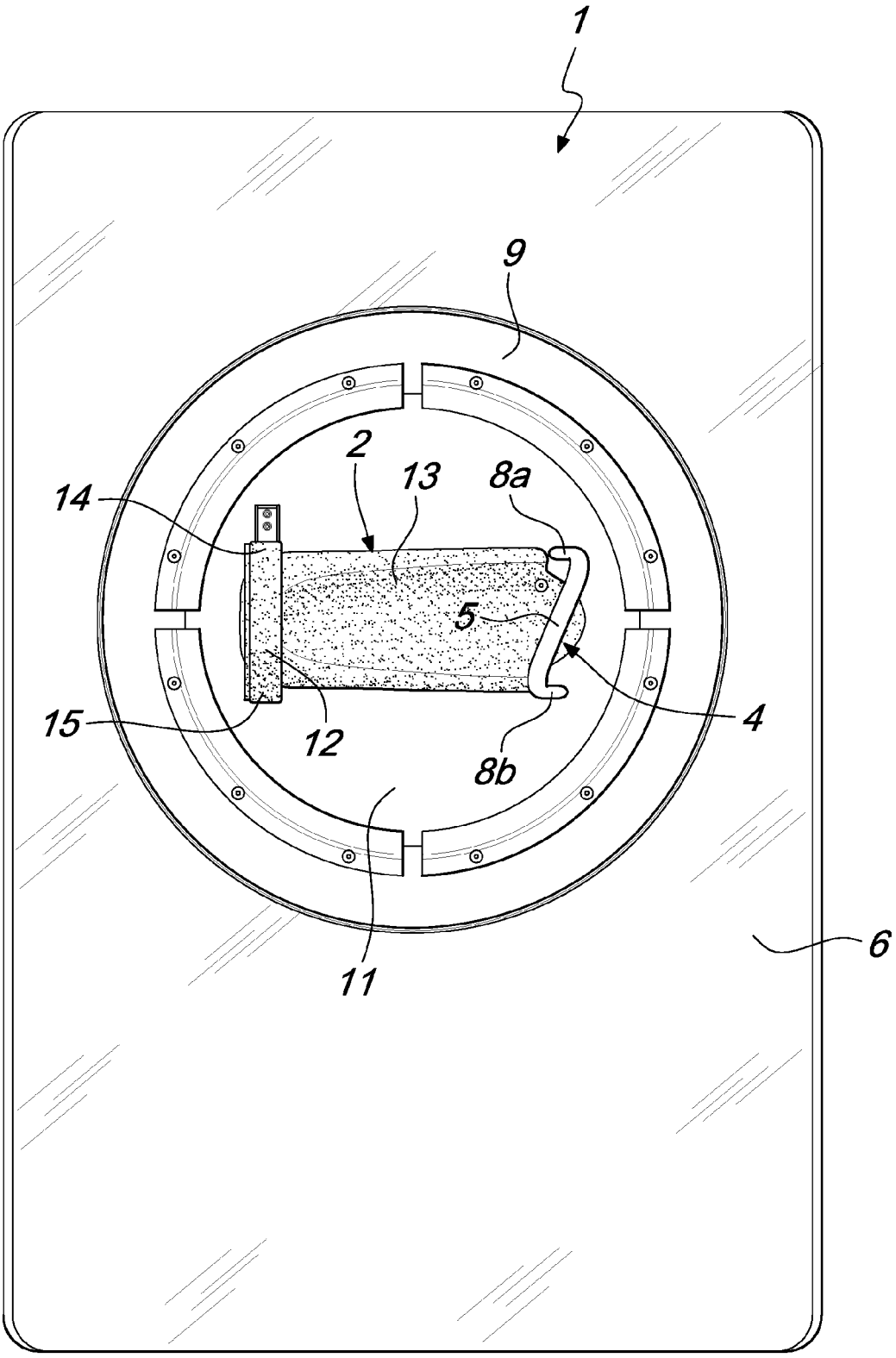

Fig. 3

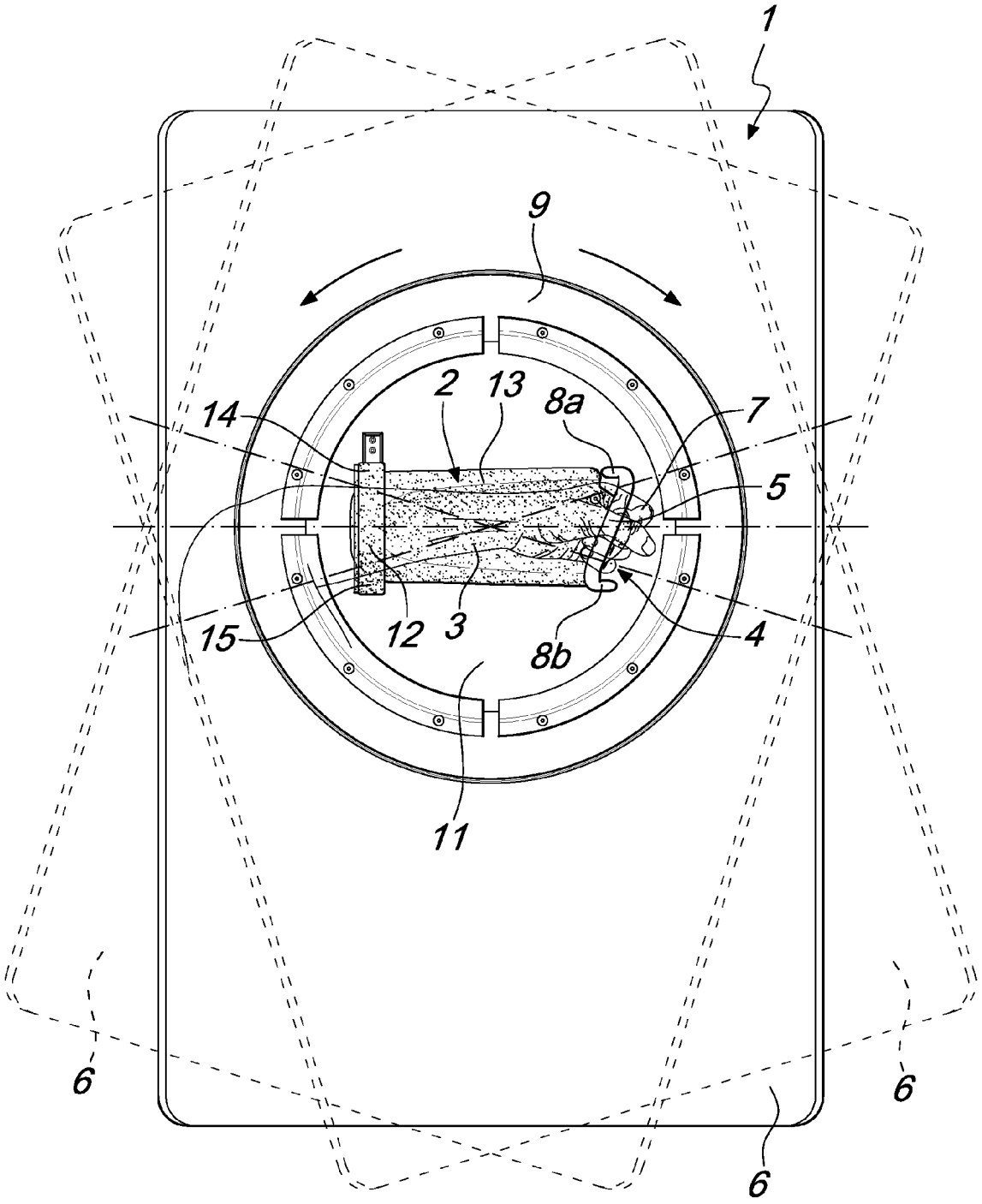

Fig. 4

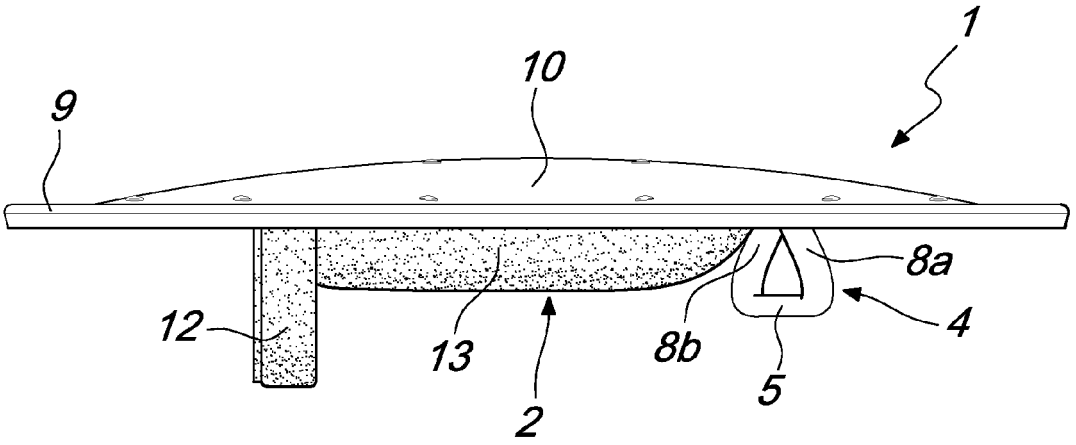

Fig. 5

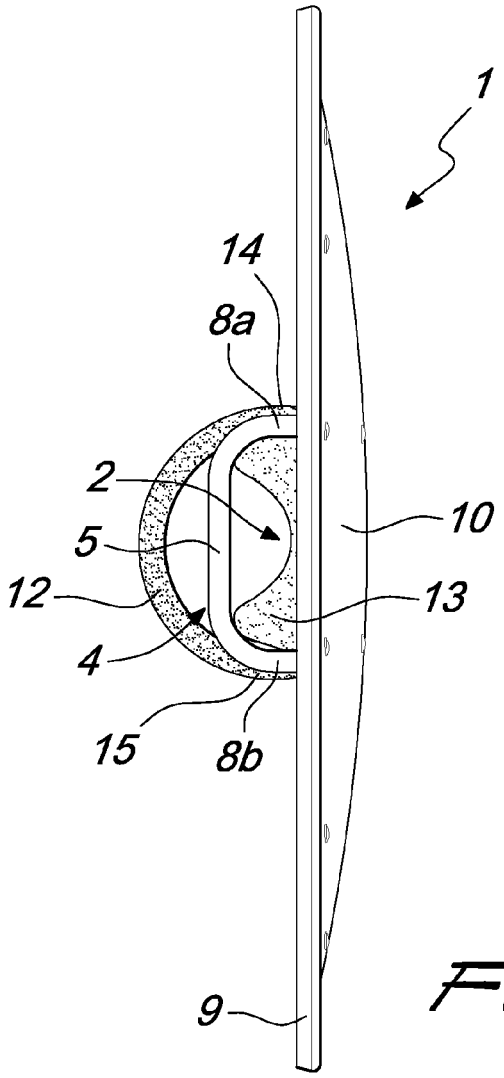

Fig. 6

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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