



## Description

**[0001]** The invention relates to a holder according to the preamble of claim 1, meant for fastening a pair of underarm or forearm crutches together.

**[0002]** When a person using forearm or underarm crutches for one reason or another wishes to put the crutches temporarily aside, for instance when standing at a bank counter, he likes to put the crutches in a location from where they can easily be taken to use again. In the prior art there are known several different holders designed for temporarily connecting pairs of forearm and underarm crutches, by which holders the crutches are fastened together when they are put aside, in which case they do not fall as easily as otherwise, and they are fairly easily taken to use again. By known holders, crutches are fastened either at their handgrips or at their bodies. When joining the crutches at the handgrips, the bodies of the crutches remain in parallel, which means that they fall down easily. There are also known plastic holders, where the crutches are mutually attached by the bodies, so that the lengthwise axes of their bodies are set crosswise with respect to each other, in which case the crutches that are supported to stand on the ground do not fall as easily as before. However, a drawback with the latter holders attached to the crutch bodies is that the fastening of the crutches to the fastening grooves requires quite a lot of strength of the user, because the crutch body is first set in parallel with respect to the groove, whereafter the crutch is pressed down in the groove. Moreover, crutches that are fastened together by these holders are easily broken apart owing to vertical impacts directed at the connector piece. Yet another problem with current holders meant for fastening crutches is that there is needed a specific holder for each crutch size.

**[0003]** The object of the invention is to eliminate the drawbacks of the prior art. Hence, it is an object of the invention to realize a holder for fastening pairs of crutches, particularly forearm crutches, together so that the fastening of the crutches by means of a holder requires less strength of the user than the prior art solutions. A second object of the invention is to realize a method for fastening pairs of forearm and underarm crutches together, in which method the holder meant for fastening the crutches is remarkably resistant to strengths directed vertically to the holder plane. A third object of the invention is to realize a holder by which it would be possible to fasten crutches having different diameters in the cross-sectional profile of the body.

**[0004]** The above enlisted objects are achieved by a holder according to claim 1 for fastening underarm or forearm crutches together, including a functional element provided with a fastening canal, in which the body of the first crutch can be detachably fastened, as well as a fastening element, to which the body of the second crutch can be fastened by intermediation of the fastening canal provided in the fastening element, so that the second crutch body is placed at an angle with respect to the first

crutch body. The fastening canal of the functional element is formed of a bottom groove and of two fastening members, attached to the edges of the bottom groove, which fastening members open towards mutually different directions. In the fastening canal, there is formed a discontinuity point between the first fastening member and the second fastening member, and the body of the crutch can be set in said discontinuity point.

**[0005]** In a preferred embodiment of the invention, the fastening members of the functional element are elastic, and the fastening elements are opened, with respect to each other, at an angle of about 180 degrees.

**[0006]** In another preferred embodiment of the invention, the fastening canal of the functional element is formed of an elongate, roughly U-shaped groove, where to both sides of the lengthwise edges of the groove, there is attached a blade-like fastening member. As regards their length, the fastening members are roughly half of the length of the fastening canal, and they are located at opposite ends of the fastening groove, in which case in between them, roughly at halfway of the groove, there is left a discontinuity point. At the discontinuity point, neither edge of the groove is provided with a fastening member. When looking towards the fastening members from the discontinuity point, both fastening members having a certain radius of curvature are turned either clockwise in a spiraling way, or counterclockwise in a spiraling way around the longitudinal axis of the bottom groove.

**[0007]** In another preferred embodiment of the invention, also the fastening element is provided with a bottom groove, and both lengthwise edges of said bottom groove are provided with a blade-like fastening member. Now the lengths of the fastening members are, however, roughly equal to the whole bottom groove, and they are turned to opposite directions around the lengthwise axis of the bottom groove. In between the fastening members turning to opposite directions, there is left a narrow slot, through which the body of the crutch can be pressed down to the bottom of the groove.

**[0008]** In yet another preferred embodiment of the invention, the fastening element is formed of a pipe, in which the body of the second crutch can be permanently fitted.

**[0009]** The invention is based on the idea that the crutches are joined at their bodies by a holder provided with a functional element and a fastening element. The first crutch is attached more or less permanently to the fastening element, and the second crutch is attached detachably to the functional element, at an angle with the crutch set in the fastening element. The functional element is provided with a fastening canal formed of a bottom groove and blades attached to the lengthwise edges of the bottom groove, the length of said blades being roughly half of the length of the bottom groove. The fastening members are located on different sides of the bottom groove. The fastening members start at opposite ends of the fastening element, where their width is largest, and become narrower while proceeding towards the

discontinuity point located in the middle part of the bottom groove. At the discontinuity point, blades are not connected to the bottom groove. The fastening members are turned to opposite directions around the lengthwise axis of the bottom groove, but not quite as far as the edge of the opposite groove, so that a narrow orifice is left between each fastening member edge and the opposite bottom groove edge. The orifices of the fastening members are directed, i.e. opened, to different directions, at about 180 degrees with respect to each other. The radius of curvature of the fastening members is roughly the same as that of the bottom groove.

**[0010]** A crutch is easily attached in the fastening canal of a functional element provided with this kind of fastening members: the crutch body is supported against the bottom groove, so that it is first placed in the discontinuity point left in between the fastening members, whereafter the crutch is turned, so that the lengthwise axis of the crutch is in parallel with the center line of the fastening canal, and now the crutch is in place in the fastening canal, formed by the fastening members and the bottom groove. The turning of the crutch to fit in the fastening canal requires remarkably less strength than with holders of the prior art, where the crutch must be pressed down in a groove-like fastening canal. The fastening members are also somewhat elastic, in which case their radius of curvature can change. At the same time the radius of curvature of the fastening canal also changes, and there is achieved the remarkable advantage that crutches with different body diameters can be fitted in the same fastening canal. The fastening members of the fastening element are turned to opposite directions around the lengthwise axis of the bottom groove, in which case their orifices are directed at 180 degrees with respect to each other, and there is in turn achieved the advantage that the holder is well resistant to vertical impacts in the direction of the holder plane, in which case the fastening between the crutches does not come apart as easily as with known holders.

**[0011]** The invention is described in more detail with reference to the appended drawings.

**[0012]** Figure 1 is a top-view illustration of a holder according to the invention.

**[0013]** Figure 2 illustrates the holder of figure 1, viewed from direction II.

**[0014]** Figure 3 illustrates the holder of figure 1, viewed from direction III.

**[0015]** Figure 4 illustrates the holder of figure 1, viewed from direction IV.

**[0016]** Figure 5A illustrates the holder fastening member of the functional element, viewed directly from the center line of the fastening canal towards the fastening member.

**[0017]** Figure 5B illustrates the holder fastening member of the functional element, viewed diagonally from the top towards the fastening member.

**[0018]** Figures 6A - 6C illustrate the holder as well as a forearm crutch body in different positions with respect

to the holder functional element.

**[0019]** In the specification below, we shall describe the most important structures of the holder according to the invention, illustrated in the drawings.

**[0020]** Figure 1 is a top-view illustration of a holder 1 according to the invention, i.e. the holder is viewed from an angle where the structural details of the functional element 3; 3' located at the front of the holder are best observed.

**[0021]** The holder 1 includes a functional element 3' and a fastening element 3". The fastening element 3; 3" of the holder is visible behind the functional element. As can be observed, the functional element 3' and the fastening element 3" are mutually attached at the rear of the U-shaped bottom grooves 34 thereof. The functional element 3' and the fastening element 3" are both provided with two blades used as fastening members 31 and 32, which are connected to the U-shaped bottom groove 34. Together with the bottom groove, the fastening members 31 and 32 form a fastening canal 5. The center lines P; P1 and P; P2 of the fastening canals 5; 5' and 5; 5" of the functional element 3' and the fastening element 3" are placed at an angle  $\alpha$  with respect to each other. The length of the blades of the functional element 3' is roughly half of the length of the bottom groove 34 of the functional element, whereas the length of the blades of the fastening element 3" is equal to that of the bottom groove 34 of the fastening element.

**[0022]** From the angle of view of figure 2, there is seen how the fastening members 31, 32 of the functional element 3' open to different directions; the orifice 6; 6' of the first fastening member 31 opens towards the viewer, whereas the orifice of the second fastening member 32 opens away from the viewer.

**[0023]** Figure 3 shows the spiraling shape of the blade 31 and 32 of the fastening element 3; 3", when they turn around the bottom groove 34. The blades 31 and 32 extend along the whole length of the groove, and in between the blade edges 31 b and 32b, there is left a narrow orifice 6; 6'. As for the shape of the blades of the functional element 3; 3', it is illustrated in more detail in figures 5A and 5B.

**[0024]** Figure 4 illustrates how the functional element 3; 3' and the fastening element 3; 3" of the holder 1 are fastened together by means of a connector 2. The drawing also clearly shows the curved shape of the fastening canal 5; 5' of the functional element, and the fastening member orifice 6; 6' and 6; 6'b, left between each blade tip 32b and 31 b located at the end of the bottom groove and the opposite edge of the bottom groove. The functional element and the fastening element can also be joined together in some other ways that are described below.

**[0025]** Figure 5A shows in more detail the front edge 31 a of the blade 31 of the functional element 3'. In between the tip 31 b of the front edge 31 a and the end 34b of the bottom groove 34, there is left an orifice 6. The radius of curvature R; R2 of the blade, and the radius of

curvature  $R$ ;  $R1$  of the bottom groove, are roughly equal. The employed center point of the radius of curvature is the imaginary center line  $P$ ;  $P1$  of the fastening canal 5.

**[0026]** Figure 5B shows that the shape of the blade 31 is spiraling and widens towards the end of the groove 34. The tip 31 b of the blade is placed at the end of the groove. The front edge 31 a of the blade seems to turn in a spiraling way with respect to the observation point B located around the middle of the center line  $P$ ;  $P1$ .

**[0027]** Figures 6A, 6B and 6C show a holder 1 where a forearm crutch S is placed in different positions with respect to the functional element 3' and fastening element 3" of the holder. This series of drawings illustrates how a forearm crutch is turned in relation to the fastening elements of the holder, when it should be fastened to the holder 1.

**[0028]** In the specification below, the invention is described in detail with reference to the above generally described structural parts of the holder 1, illustrated in figures 1 - 6, and to the functions created thereby.

**[0029]** The holder 1 comprises two elements 3 to be attached to the crutches, a functional element 3' seen at the front in figure 1, and a fastening element 3" seen further in the background. The functional element is meant to be detachably attached to the first crutch of a pair of forearm crutches, whereas the fastening element 3" is meant to be fastened more or less permanently to the second crutch of the pair of forearm crutches.

**[0030]** The respective center lines  $P$ ;  $P1$  and  $P$ ;  $P2$  of the fastening canals 5; 5' and 5; 5" of the functional element 3' and the fastening element 3" are marked by dotted lines, and in between said center lines  $P1$  and  $P2$ , there is left an angle  $\alpha$ , i.e. the fastening elements 3' and 3" are located at a given angle  $\alpha$  with respect to each other, thus forming a roughly X-shaped holder 1 (figure 6c). The size of the angle  $\alpha$  depends on at which point of the body of a forearm or underarm crutch the holder is positioned by the stationary fastening element 3". In case the holder is attached higher in the body of the second crutch, said angle must be wide, so that the setting of the first crutch in the functional element 3; 3' of the holder is carried out without difficulty.

**[0031]** Let us now observe in more detail the structure and shape of the functional element 3; 3' seen at the front in figure 1. The fastening members 31 and 32 of said fastening element 3' are formed of two identical blades that are attached to the lengthwise edges of the bottom groove 34 of the fastening element 3'. The blades 31 and 32 together with the bottom groove 34 form a fastening canal 5; 5', in which the body of a forearm or underarm crutch shall be set in parallel with the bottom groove. The blades 31 and 32 are narrowed when proceeding from the ends of the bottom groove towards the center part 34a. Blades are not attached to the lengthwise edges of the bottom groove at just the center part 34a, i.e. here the fastening canal 5' has a bladeless discontinuity point. When the chosen origin of the point of observation is said center part 34a of the bottom groove 34, which center

part is located in the middle of the bottom groove, equally far from the opposite edges 34b and 34c of the bottom groove, the blades 31, 32 are connected to said opposite edges 34b and 34c, when proceeding from said origin 34a somewhat towards the ends of the bottom groove 34.

**[0032]** The center line  $P$ ;  $P1$  of the fastening canal 5; 5' passes through the nominal center point (cf. figure 5A) of the radius of curvature of the bottom groove and the radius of curvature of the fastening members. The respective rear edges 31 d and 32d of the blades 31 and 32, located at the ends of the groove, are roughly perpendicular to the center line  $P$ ;  $P1$  of the fastening canal 5; 5', whereas the front edges 31 a and 32a of the blades 31 and 32 are inclined, i.e. placed at an angle  $\beta$  with respect to the same center line  $P$ ;  $P1$ . In between the front edges 31 a and 32a of the blades, there is left a bladeless discontinuity point 7, the center line  $P$ ;  $P3$  of which also is placed at an angle  $\beta$  with respect to the center line  $P$ ;  $P1$  of said fastening canal 5; 5'. At the discontinuity point, a blade is not connected to either of the bottom groove edges.

**[0033]** Both the front edges 31 a, 32a and the rear edges 31 d, 32d of the blades begin at the blade bases 31 c and 32c and meet at the blade tips 31 b and 32b located at the ends of the groove 34. Said blade bases 31 c and 32c are attached to the lengthwise edges 34b and 34c of the bottom groove 34. The blades 31 and 32 are widened while proceeding from the center part 34a of the groove towards the bases 31 c and 32c, and the front edges 31 a and 32a of the blades are placed at an angle deviant from a right angle with respect to the lengthwise axis  $P$ ;  $P1$  of the groove 34, so that the blades 31 and 32 seem to turn clockwise in a spiraling way when viewing them from the center part 34a.

**[0034]** Figure 5B shows how the edge 31 a of the blade 31 turns in a spiraling way around the point B of the fastening canal 5; 51' located in the middle of the blade length, when viewing the blade somewhat diagonally with respect to the direction of the center line.

**[0035]** The blade 31 is curved, so that the front and rear edges of its casing form a circle with a radius  $R$ ;  $R2$ ; figure 5A illustrates the curvature of the blade 31, but because the structure of the blade 32 is identical, it curves in the same way with a radius  $R2$ . In figure 5A, the front edge 31 a of the blade 31 seems to make a circle clockwise, when said blade is observed at right angles from the center line  $P$ ;  $P1$ . The base 31 c of the first blade 31 is connected to the first lengthwise edge 34c of the bottom groove, and said blade curves clockwise while its radius of curvature is  $R$ ;  $R2$ . Now the nominal center point of the radius of curvature is placed on the center line  $P$ ;  $P1$  located in the fastening canal 5 of the fastening element 3. Between the blade tip 31 b and the second lengthwise edge 34b of the bottom groove, there is now left an orifice 6, which in the drawing opens at right angles to the right. Thus it can be said that the blade 31 opens to the right. On the other hand, the base 32c of the second blade 32 is integrated to the second lengthwise edge 34b (figure

1) of the bottom groove 34. When the rear edge 32d of said blade 32 is viewed, in the fashion described above, at right angles from the direction of the center line P; P1, the blade seems to turn around the center line, clockwise in a similar way as the blade 31, while the radius of curvature of said blade is identical to that of the blade 31, i.e. R2. Owing to the direction of observation of said blade 32, also between the tip 32b of this blade and the bottom groove edge, there is left an orifice that should in figure 5A open 90 degrees to the right from the center line. However, because the blades 31 and 32 are viewed towards opposite directions from the center line P; P1, the blade orifices 6 are placed at an angle of 180 degrees with respect to each other, i.e. the blades are opened (directed) at an angle of 180 degrees with respect to each other.

**[0036]** In the examples illustrated in the drawings, the blades 31, 32 are turned clockwise when viewing them from the discontinuity point 7. The blades 31, 32 could as well be turned counterclockwise when viewing them from the discontinuity point, in case this would be functional for instance from the point of view of the left or right handedness of the holder.

**[0037]** The fact that the blades open to different directions is also visible in figures 2 and 4. In figure 4, the first blade 31 of the fastening canal 5; 5' of the functional element 3' opens towards the viewer, in which case the orifice 6; 6'a left between the blade tip 31 b and the lengthwise edge 34c of the bottom groove 34 of the fastening canal is directed towards the viewer. On the other hand, the second blade 32 of the fastening canal, i.e. its orifice 6; 6'b, opens away from the viewer, and its opening direction is 180 degrees in relation to the opening direction of said first blade. The radius of curvature of the concave side of the bottom groove 34 of the fastening canal, facing the viewer, is R; R1, cf. figure 5A. The radius of curvature R; R1 of the bottom groove 34 of the fastening canal 5; 5' is roughly equal to the radius of curvature R; R2 of the cross-sectional profile of the fastening canal blade 31 (and 32) (figure 5A). Said radii of curvature R; R1 and R; R2 are arranged to be such that a crutch with a given round diameter fits in the cylindrical fastening canal 5' that is formed of the bottom groove 34 and of the blades 31, 32 turned around it. However, the cylindrical fastening canal 5' has a bladeless discontinuity point 7 between the front edges 31 a and 32a of the blades, in order to set the crutch in the bottom groove (figures 1 and 2). The blades 31 and 32 are made of an elastic material, such as plastic, in which case the radius R; R2 of their cross-sectional profile changes, when necessary, along with the changes of the radius of the fastening canal 5.

**[0038]** Owing to the elasticity of the blades, the placing of a forearm or underarm crutch in the fastening canal 5; 5' is carried out without difficulty (cf. figure, description below). The spiraling shape of the blades can also be seen in figure 3. The mutual fastening of the functional element 3' and the fastening element 3" by a connector 2 is seen in figure 4. The connector 2 is placed between

the functional element 3' and the fastening element 3" and is attached to their outer casing, at the bottom groove 34.

**[0039]** Instead of a connector, the functional element 3' and the fastening element 3" could also be joined by some other means; among exemplary fastening methods, let us point out the fastening of the functional element and the fastening element detachably by a friction joint, such as a screw joint, or locking basing on a design, such as a pin-and-sleeve joint, or permanently by an adhesion joint, such as a glue joint or sound welding.

**[0040]** The crutch S is detachably attached to the holder 1 in the way illustrated in figure 6 (the crutch to be set permanently in the fastening element 3" is not illustrated). The crutch S is placed in the discontinuity point 7 of the fastening canal 5 of the functional element 3; 3', in between the slanted front edges 31 a, 32a of the blades 31 and 32, so that the center line L; L1 of the crutch is roughly parallel with the center line P; P3 of the discontinuity point of the blades, in which case the crutch S is positioned at an angle  $\beta$  with respect to the center line P; P1 of the fastening canal. Thereafter the crutch S is turned counterclockwise (figures 6B and 6C), until the center line L; L1 of the crutch is in parallel with the center line P; P1 of the functional element 3; 3' (figure 6C), so that the crutch is positioned in the above described groove of the fastening canal 5 of the functional element.

**[0041]** In case the blades 31, 32 of the functional element would be turned counterclockwise around the center line P1 of the fastening canal when viewed from the discontinuity point, the crutch should naturally be turned clockwise.

**[0042]** The placing of the crutch in the way described above in the fastening canal 5 of the functional element 3' requires remarkably less strength than with known holders, where the fastening canal is a mere groove; in case the canal is a mere groove or corresponding formation, the shape and radius of curvature of the groove must be made to precisely conform to the shape of the crutch, which means that the fit must be tight, and setting the crutch in a groove with a tight fit in turn requires remarkably strength. From this kind of groove, the crutch is easily detached owing to impacts that are vertical in relation to the plane of the groove. On the other hand, in the embodiment of the invention, the crutch is placed in the discontinuity point of the fastening canal, at an angle  $\beta$  with respect to the center line of the fastening canal, whereafter it is turned so that the crutch slides, through the orifices 6; 6' and 6; 6" of the curved fastening members 31 and 32 opening to opposite directions, to the fastening canal 5 formed by the fastening members 31 and 32 and the bottom groove 34. In said fastening canal, the crutch is at the top held by the curved bottom groove 34, and on the other hand by the curved fastening members 31 and 32 opening to different directions, which means that it is not easily detached owing to vertical impacts directed to the holder plane. The fastening members 31 and 32 are elastic, so that they allow a certain degree of expan-

sion in the radius  $R$ ;  $R_2$ , which means that forearm or underarm crutches  $S$  of different thicknesses can be fitted in the fastening canal 5.

[0043] In the above specification, we have described only one embodiment of the holder according to the invention, and for a man skilled in the art, it is obvious that the invention can also be realized in many other ways within the scope of the inventive idea specified in the appended claims. Thus, for example the shape and detailed structure of the blades can differ from what is set forth above. Likewise, the fastening canals provided in the functional elements and fastening elements can also be different. For instance, the fastening canal of the fastening element 3" can be an elongate groove, the concave shape of which corresponds to the convex shape of the body of the forearm or underarm crutch to be placed in said groove. The fastening canal of the fastening element 3" may also be formed of a pipe, in which the second crutch body can be fitted. In that case the fastening element is in practice formed of said tubular fastening canal only. The crutch body is inserted in this kind of pipe employed as the fastening canal before the forearm or underarm supports are connected to the crutch part of the forearm or underarm crutches. The fastening element with a tubular fastening canal may also be connected to a forearm or underarm crutch obtained after compiling the forearm or underarm supports and the crutch body. In that case the insertion is carried out either at the bottom end of the crutch part, or by dismantling the structures of the forearm or underarm support. The ratio of the inner diameter of the pipe used as the second fastening element to the outer diameter of the crutch body is such that said fastening element cannot move by itself up and down in the lengthwise direction of the crutch body. However, the friction between the crutch body and the fastening element 3" must still be such that the holder can be moved up and down on said crutch body by using only a little strength, or that the holder can be turned round the crutch body.

[0044] Advantageously the crimp joint of the fastening members of the functional element with the crutch body fitted therein is more easily opened than the crimp joint of the fastening members of the fastening element with the crutch body fitted in said fastening element. The reason for this is that the compression strength of the fastening members of the fastening element with the crutch body is arranged to be higher, and that the fastening element and the functional element are removed from the crutch body in different ways.

[0045] The described different compression strength is realized for instance like in the drawings, where the fastening members pass from one end of the fastening groove 54 to the other, and the discontinuity point arranged in between the fastening members is remarkably narrower than in the first fastening element. This arrangement can, however, be realized in many other ways, too, for example by selecting different plastic materials for the fastening elements, or different material strengths for one

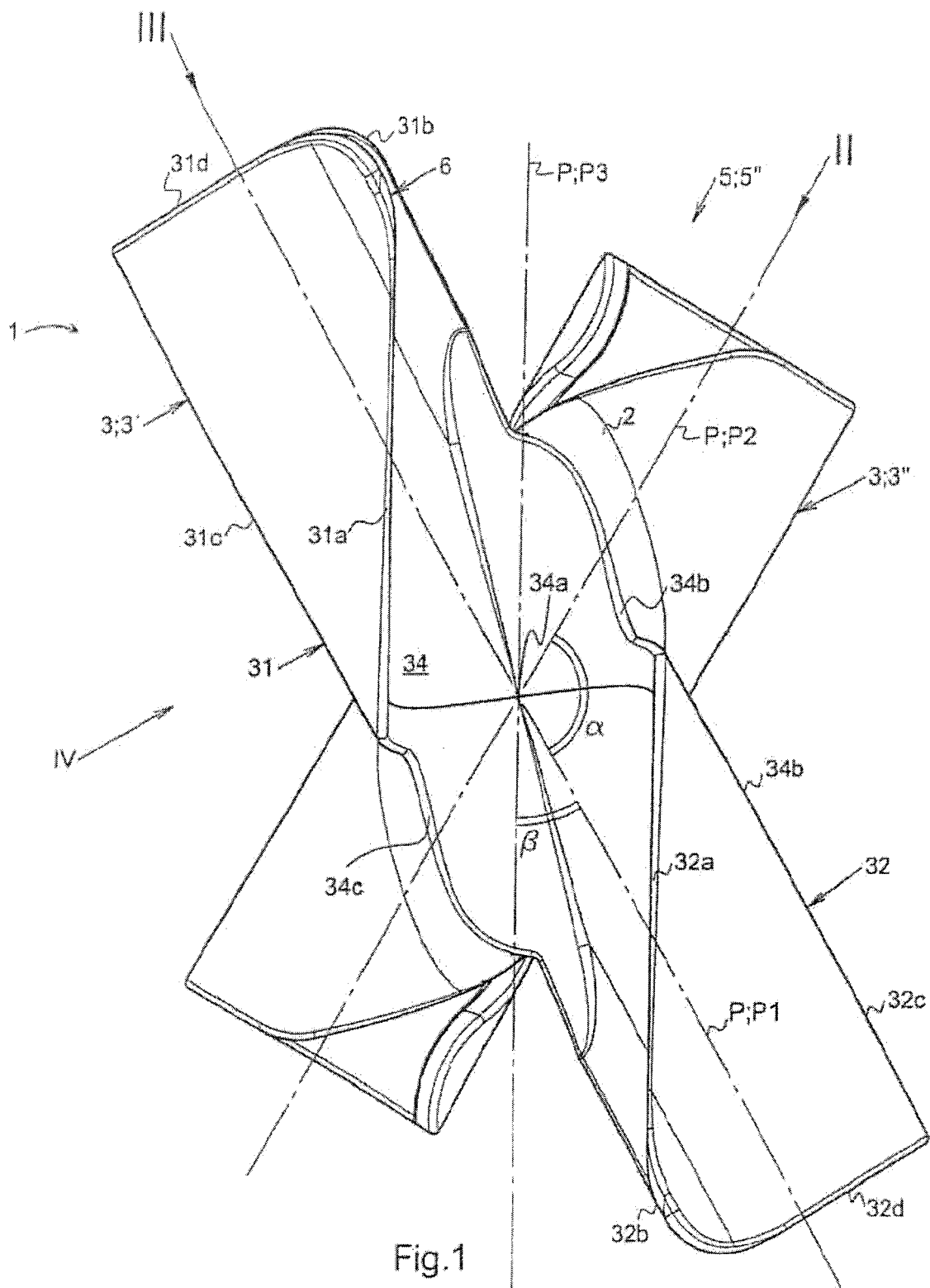
and the same plastic type, etc. The functional element is removed from the crutch body by turning the crutch counterclockwise on the plane of the mutually crosswise attached crutches, until the crutch body is placed at the discontinuity point, and thereafter simply by removing the crutch that was released from the crimp joint of the blades from the functional element. The setting of the crutch body is carried out on the contrary order, as was already specified in connection with the description of figure 6. On the other hand, when removing a crutch from the fastening element, or when setting a crutch body in the fastening element, the crutch must be pulled or pushed at an angle of 90 degrees with respect to the plane of the mutually attached crutches, and in this direction the moving of the crutches requires remarkably more strength than when turning the crutch body along the plane of the crutches.

## Claims

1. A holder (1) for fastening a pair of underarm or forearm crutches together, comprising a functional element (3; 3') provided with a fastening canal (5; 5'), in which the body of the first crutch can be detachably attached, as well as a fastening element (3; 3"), to which the body of the second crutch can be fastened by intermediation of a fastening canal (5; 5") of the fastening element, so that the body of the second crutch is placed at an angle with respect to the body of the first crutch, **characterized in that** the fastening canal (5; 5') of the functional element is formed of a bottom groove (34) and of two fastening members (31, 32) connected to the edges of the bottom groove (34), which fastening members open to mutually different directions, and that said fastening canal (5; 5') has a discontinuity point (7) in between the first fastening member (31) and the second fastening member (32), in which discontinuity point (7) a crutch can be placed.
2. A holder (1) according to claim 1, **characterized in that** the fastening members (31, 32) of the functional element (3; 3') are elastic, and that with respect to each other, their orifices (6', 6") open at an angle of roughly 180 degrees.
3. A holder (1) according to claim 1 or 2, **characterized in that** a discontinuity point (7) is formed between the front edges (31a, 32a) of the first fastening member (31) of the functional element and the second fastening member (32) of the functional element, while the center line (P; P3) of said discontinuity point is placed at an angle with respect to the center line (P; P1) of the fastening canal (5; 5') of the functional element.
4. A holder (1) according to any of the preceding claims,

**characterized in that** in the fastening canal (5; 5') of the functional element (3; 3'), there is arranged an elongate, U-shaped bottom groove (34), and that to both lengthwise edges (34b, 34c) of said bottom groove (34), there are attached curved blades (31, 32), which blades turn around the center line (P; P1) of the fastening canal in opposite directions, said blades having a radius of curvature (R; R2), the center line of said radius of curvature being located on said center line of the fastening canal.

5. A holder (1) according to claim 4, **characterized in that** the radius of curvature (R; R2) of the cross-sectional profile of the blades (31, 32) arranged in the fastening canal (5) is roughly the same as the radius of curvature (R; R1) of the bottom groove (34).
6. A holder (1) according to claim 5, **characterized in that** the radii of curvature (R) of the blades (31) and (32) of the fastening canal (5) as well as of the bottom groove (34) are roughly equal to the radius of the cross-sectional profile of the forearm crutch (S).
7. A holder according to any of the preceding claims, **characterized in that** the length of the fastening members (31, 32) of the functional element (3") is roughly half of the length of the bottom groove.
8. A holder (1) according to any of the preceding claims 1 - 7, **characterized in that** the fastening canal (5; 5") of the fastening element (3;3") is formed of a bottom groove (34), at the lengthwise edges of which bottom groove there are connected blades (31, 32), roughly of the same length as the bottom groove, said blades turning around the bottom groove, so that in between said blades, there is left a discontinuity point, in which a crutch can be fitted.
9. A holder according to any of the preceding claims 1 - 7, **characterized in that** the fastening canal (5; 5") of the second fastening element (3;3") is formed of a pipe, in which the second crutch body can be fitted.
10. A holder according to any of the preceding claims 1-7, **characterized in that** the functional element (3; 3') and the fastening element (3; 3") are joined together by a friction joint, a mutual shape lock, an adhesion joint, by welding or by intermediation of a connector fastened to their outer casing.





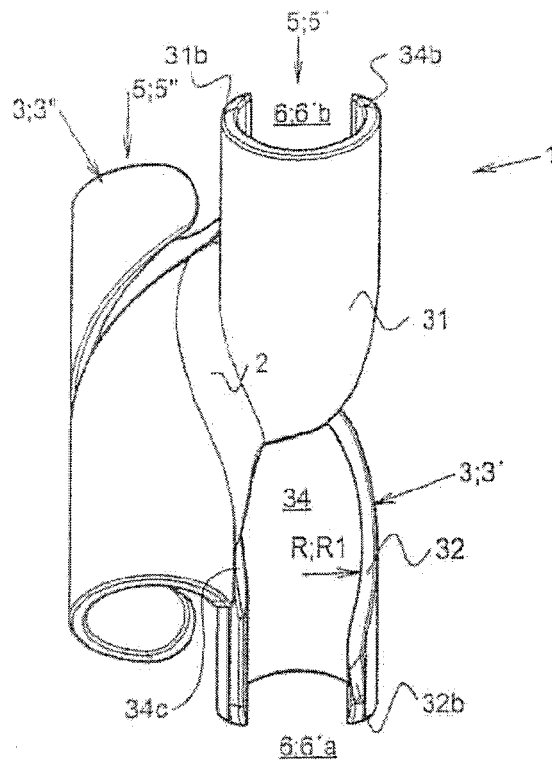


Fig.4

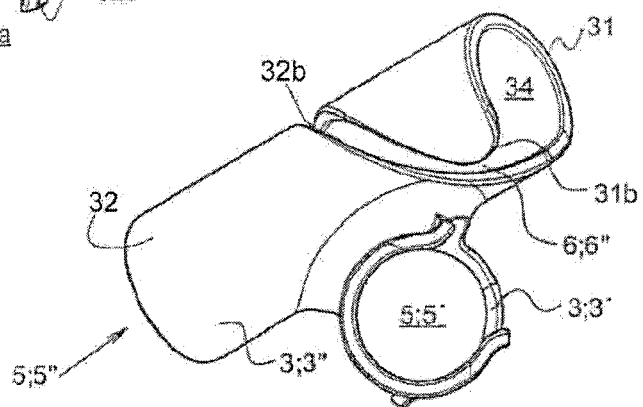


Fig.3

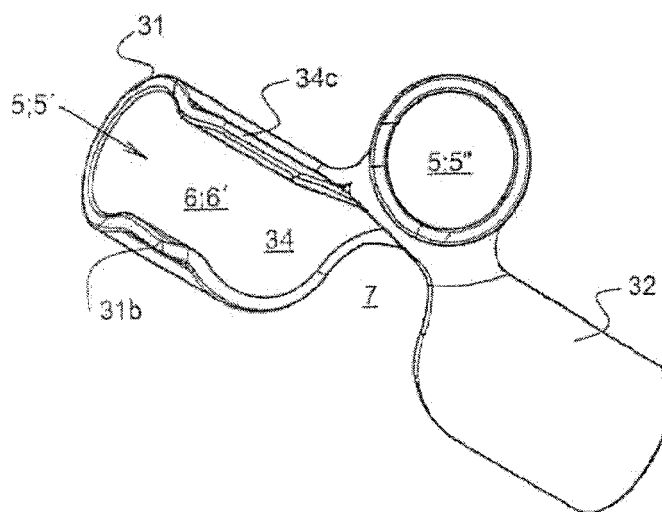


Fig.2

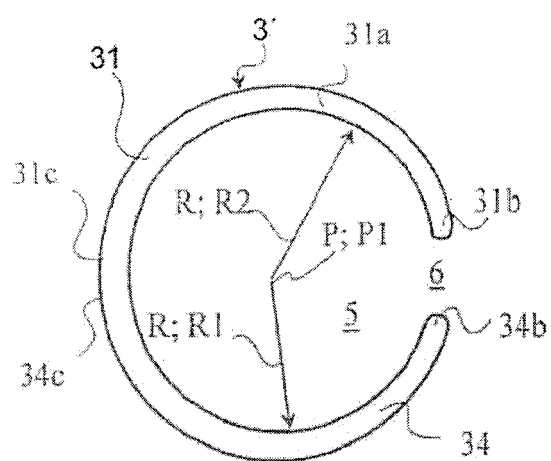


Fig. 5A

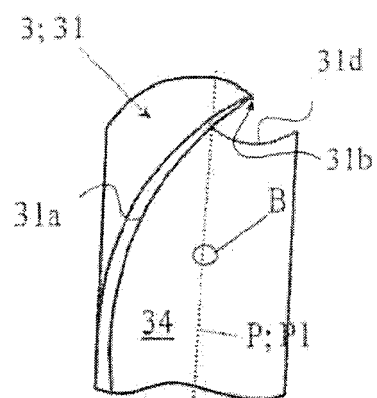
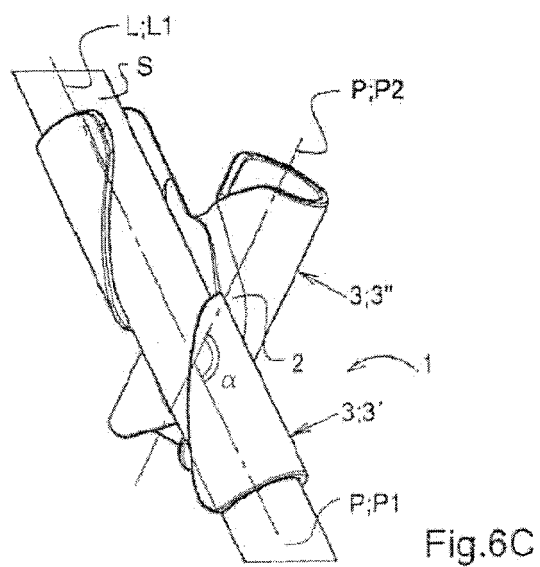
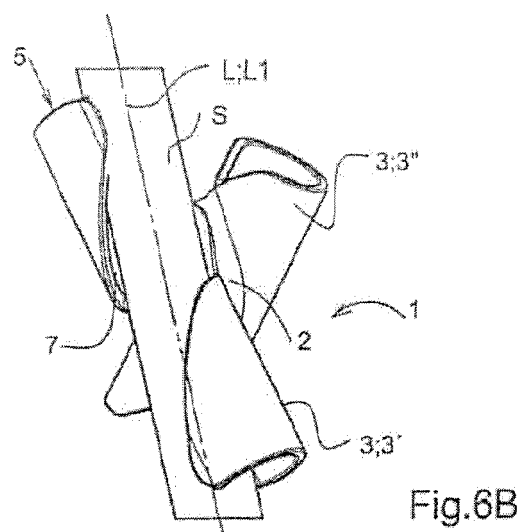
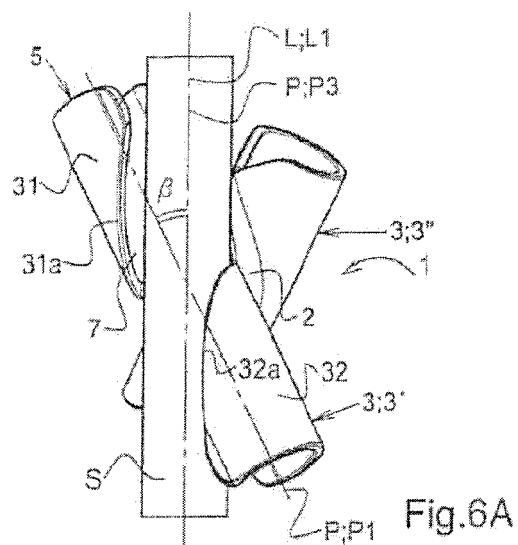


Fig. 5B





DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 23 34 913 A1 (BASSAN & CIE) 23 January 1975 (1975-01-23) * page 5, last paragraph - page 6, paragraph 6; figures 5-7 *	1-10	INV. A61H3/02
A	CH 676 793 A (HANSUELI BUEHRER) 15 March 1991 (1991-03-15) * abstract; figures *	1	
A	DE 203 15 044 U1 (NIELSEN, GEB. GROTELOH) 4 December 2003 (2003-12-04) * abstract; figures *	1	
A	DE 296 18 453 U1 (BAEHR, ERWIN, 66271 KLEINBLITTERSDORF, DE) 6 February 1997 (1997-02-06) * figures *	1	
A	US 6 561 206 B1 (WILKINSON CHRISTOPHER M) 13 May 2003 (2003-05-13) * abstract; figures *	1	
A	DE 195 43 938 A1 (BROSCH, ANDREAS, 44795 BOCHUM, DE) 28 May 1997 (1997-05-28) * figures *	1	
A	WO 83/03880 A (KARNHAG, LARS, OWE; FRANZEN, PER-OLOV) 10 November 1983 (1983-11-10) * abstract; figures *	1	
The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>12 July 2006</b>	Examiner <b>Untermann, N</b>
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

 2  
 EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 06 11 2059

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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12-07-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 2334913	A1	23-01-1975	NONE
CH 676793	A	15-03-1991	NONE
DE 20315044	U1	04-12-2003	NONE
DE 29618453	U1	06-02-1997	NONE
US 6561206	B1	13-05-2003	NONE
DE 19543938	A1	28-05-1997	NONE
WO 8303880	A	10-11-1983	DE 3369369 D1 26-02-1987
		EP 0120861 A1 10-10-1984	
		JP 59500651 T 19-04-1984	
		SE 428491 B 04-07-1983	