(12) STANDARD PATENT (11) Application No. **AU 2011349046 B2**
(19) AUSTRALIAN PATENT OFFICE

(54) Title
Crutch holder

(51) International Patent Classification(s)
A61H 3/02 (2006.01) ***A47G 25/12*** (2006.01)
A45B 1/00 (2006.01)

(21) Application No: **2011349046** (22) Date of Filing: **2011.12.21**

(87) WIPO No: **WO12/083367**

(30) Priority Data

(31) Number	(32) Date	(33) Country
2010905602	**2010.12.22**	**AU**
61/484,426	**2011.05.10**	**US**

(43) Publication Date: **2012.06.28**
(44) Accepted Journal Date: **2015.09.24**

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(56) Related Art
US 2004/0099782
US 13151007
US 5639055

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
28 June 2012 (28.06.2012)

WIPO | PCT

(10) International Publication Number
WO 2012/083367 A1

(51) International Patent Classification:
A61H 3/02 (2006.01) *A47G 25/12* (2006.01)
A45B 1/00 (2006.01)

(21) International Application Number:
PCT/AU2011/001658

(22) International Filing Date:
21 December 2011 (21.12.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2010905602 22 December 2010 (22.12.2010) AU
61/484,426 10 May 2011 (10.05.2011) US

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

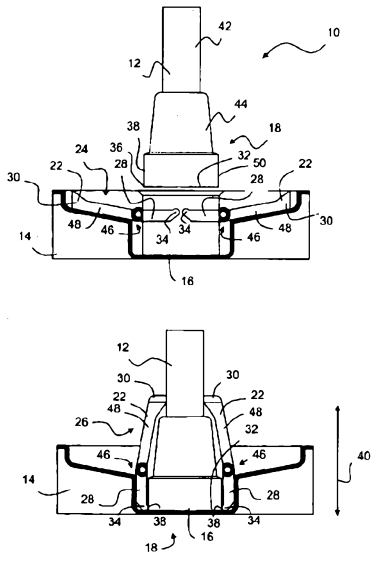
(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: CRUTCH HOLDER

(57) Abstract: In one preferred form of the present invention there is provided a crutch holder 10 for holding a crutch 12. The crutch holder 10 comprises a body 14 providing a cavity 16 for receiving an end 18 of the crutch 12. A plurality of holding elements 22 are movably mounted relative to the body 14 and adapted to move from a first position 24 to a second position 26 in response to the end 18 being received so as to assist with maintaining the crutch 20 in an upright position.

Fig. 2



WO 2012/083367 A1

Published:

— *with international search report (Art. 21(3))*

CRUTCH HOLDER

FIELD OF THE INVENTION

The present invention relates to crutch holders and methods.

BACKGROUND TO THE INVENTION

It would be appreciated that this invention relates to many different types of crutches or aids that assist in supporting a person from otherwise falling or collapsing. The invention will be discussed with specific reference to crutches, however it will be appreciated that there are a number of combinations of supports, such as a pair of crutches, walking canes or a single crutch.

A crutch holder general comprises a base that supports a hollow vertically extending cylinder for receiving one or more crutches. In order to provide sufficient support, the cylinder typically extends into the air and has a cross section that is suited to retaining the crutch or crutches in an upright position.

It is against this background and the problems and difficulties associated therewith that the present invention has been developed.

SUMMARY OF THE INVENTION

According to a first aspect of preferred embodiments herein described there is provided a crutch holder comprising: a body providing a cavity for receiving an end of a crutch; and a plurality of holding elements movably mounted relative to the body and adapted to move from a first position to a second position in response to the end of the crutch being received by the cavity so as to assist with maintaining the crutch in an upright position.

Preferably the holding elements include a first portion for engaging the end of the crutch and a second portion for engaging the crutch a predetermined distance away from the end of the crutch.

Preferably the holding elements are pivotally mounted such that tipping in the direction of one of the holding elements causes movement of the second portion of the holding element to force the first portion of the holding element to move in an opposite direction

to bring the first portion into increased engagement with the end of the crutch and result in an increased holding force.

Preferably each holding element provides a pivot lever for compressing the end of the crutch as the crutch is tipped, the cavity being adapted to provide an abutment to hold the end of the crutch in position to allow for the compressing action of each pivot lever.

Preferably each holding element is pivotally mounted to the body adjacent the periphery of the cavity so as to be rotatable from the first position to a vertically extending position.

Preferably the holding elements are adapted to move back to the first position when the crutch is lifted vertically out of the cavity.

Preferably the holding elements are counterweighted so as to be biased towards the first position.

Preferably the cavity includes slot portions for receiving the holding elements to provide what is effectively a cavity of a substantially circular cross section.

Preferably a first pair of the holding elements is arranged for preventing rotation of the crutch in a first plane; and a second pair of the holding elements is arranged for preventing rotation of the crutch in a second plane; the second plane being substantially perpendicular to the first plane.

According to a second aspect of preferred embodiments herein described there is provided a method of holding a crutch comprising: receiving an end of crutch within a cavity; wherein movement of the crutch into the cavity causes the crutch to bear against a plurality of holding elements and move the holding elements from a first position to a second position in which the holding elements assist with maintaining the crutch in an upright position.

Preferably each of the holding elements is arranged to extend upwardly when holding the crutch so as to increase the effective depth of the cavity as seen by the crutch.

According to a third aspect of preferred embodiments herein described there is provided a holder for a rod element comprising: a cavity for receiving an end of the rod element; and a plurality of holding elements adapted to move from a first position to a second position

as the cavity receives the rod element so as to assist with maintaining the rod element in an upright position when received by the cavity.

Preferably each of the holding elements is arranged to extend upwardly when holding the rod element so as to increase the effective depth of the cavity as seen by the rod element.

As will be discussed there are considered to be a number of preferred arrangements of the present invention that provide several advantages including:

(i) Crutch holders that provide advantageous holding mechanisms;

(ii) Crutch holders that are readily able to be used and which provide people who require crutches with more independence in domestic, hospital and other environments;

(iii) Crutch holders that have an aesthetically pleasing profile and that allow for ready insertion and removal of crutches; and

(iv) Crutch holders that while providing an advantageous holding mechanism are still readily manufactured with a relatively low number of parts.

It is to be recognised that other aspects, preferred forms and advantages of the present invention will be apparent from the present specification including the detailed description, drawings and claims.

BRIEF DESCRIPTION OF DRAWINGS

In order to facilitate a better understanding of the present invention, several preferred embodiments will now be described with reference to the accompanying drawings, in which:

Figure 1 provides a perspective view of a crutch holder according to a first preferred embodiment of the present invention;

Figure 2 provides two cross-sectional views of the crutch holder shown in Figure 1;

Figure 3 provides a single cross-sectional view of the crutch holder shown in Figure 1;

Figure 4 provides several cross-sectional views of the crutch holder shown in Figure 1, the views serving to illustrate the operation of the crutch holder;

Figure 5 provides a perspective view of the crutch holder shown in Figure 1, just before a crutch is inserted into the crutch holder;

Figure 6 provides a partially dismantled view of the crutch holder shown in Figure 1;

Figure 7 provides two cross-sectional views of the crutch holder shown in Figure 1;

Figure 8 provides two further cross-sectional views of the crutch holder shown in Figure 1;

Figure 9 provides an illustrative view of a method according to a second preferred embodiment of the present invention;

Figures 10 to 13 illustrate the operation of the method shown in Figure 9;

Figures 13 and 14 illustrate another crutch holder according to a further preferred embodiment of the present invention; and

Figure 15 illustrates yet another crutch holder according to a further preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE EMBODIMENTS

It is to be appreciated that each of the embodiments is specifically described and that the present invention is not to be construed as being limited to any specific feature or element of any one of the embodiments. Neither is the present invention to be construed as being limited to any feature of a number of the embodiments or variations described in relation to the embodiments.

Referring to Figure 1, there is shown a crutch holder 10 according to a first preferred embodiment of the present invention. The crutch holder 10 has a relatively low profile that allows for ready insertion and removal of a crutch 12 and provides a holding mechanism that advantageously holds the crutch 12 in an upright position.

The crutch holder 10 is considered to provide a stand that can advantageously be used in hospital rooms next to beds or chairs, bathrooms, rehabilitation rooms and gyms, waiting rooms and so forth. It is considered that the crutch holder 10 will reduce the difficulty of retrieving crutches in both domestic and hospital environments. The crutch holder 10 is considered to advantageously provide people who require crutches with more independence.

As shown in Figures 1 and 2, the crutch holder 10 comprises a body 14 providing a cavity 16 for receiving an end 18 of the crutch 12. A plurality of holding elements 22 are movably mounted relative to the body 14. The holding elements 22 are adapted to move

from a first position 24 to a second position 26 in response to the end 18 of the crutch 12 being received so as to assist with maintaining the crutch 20 in an upright position.

In the first position 24, the holding elements 22 extend in a generally horizontal direction in which a first portion 28 of each holding element 22 extends over the cavity 16 and a second portion 30 of each holding element 22 is spaced away from the cavity 16.

The first portions 28 are adapted to engage the lower face 32 of the end 18 of the crutch 12 as the crutch 12 is inserted into the cavity 16. The first portions 28 include a number of projecting portions 34 that extend laterally away from the length of each respective holding element 22. As the crutch 12 is further inserted into the cavity 16, the projecting portions 34 bear against the lower face 32 of the end 18 of the crutch 12. As the crutch 12 and the lower face 32 thereof is inserted into the cavity 16, the projecting portions 34 move outwardly along the lower face 32 .

As the end 18 of the crutch 12 continues to be inserted, the projecting portions 34 are brought to an edge 36 of the end 18 of the crutch 12. Further insertion causes the first portions 28 to subsequently move past the edge 36 and bear against the sides 38 of the end 18 of the crutch 12. As the end 18 of the crutch 12 is fully pushed into the cavity 16 the projecting portions 34 bear against and slightly compresses the sides 38 of the end 18 so as to hold the crutch 12 in position.

When holding the crutch 12 in position, the second portions 30 of each holding element 22, engage the crutch 12 a predetermined distance 40 away from the end 18 of the crutch 12. As shown in Figure 2, the second portions 30 are adapted to engage the aluminium rod portion 42 of the crutch 12 above a rubber tip 44 provided at the end 18.

In the embodiment, each holding element 22 is pivotally mounted to the body 14 at locations 46 between the respective first portions 28 and the second portions 30 of each holding element 22. The pivotal mounting is considered to be advantageous due to the holding elements 22 consequently each providing a pivot lever 48 for compressing the outer rim 50 (the sides 38) of the rubber tip 44 of the crutch 12, as the crutch is tipped forwards or backwards.

As shown in Figure 3, tipping in direction 52 towards one of the holding elements 54 causes the second portion 56 of the holding element 54 to move away from the central

axis 58 of the cavity 16. This forces the first portion 60 of the holding element 54 to move in an opposite direction, towards the central axis 58 of the cavity 16. This advantageously serves to bring the first portion 60 into increased engagement with the outer rim 50 of the crutch 12 and result in an increased holding force.

It is to be appreciated that, in order to provide the increased holding force, the opposite holding element 62 and the surrounding walls of the cavity 16 provide an abutment 64 that holds the end 18 of the crutch 12 (to provide an opposite force) so that the holding element 54 is able to act to provide the increased holding force.

As shown in Figures 4 to 6, the crutch holder 10 includes a first pair 66 of the holding elements 22 disposed in a first plane 68 for preventing rotation of the crutch 12 in that plane. The crutch holder 10 further includes a second pair 70 of the holding elements 22 arranged in a second plane 72, that is substantially perpendicular to the first plane 68, for preventing rotation of the crutch 12 in the second plane 72.

Advantageously by providing the first pair 66 of the holding elements 22, the crutch holder 10 is able to advantageously assist with preventing tipping in both a forward and reverse direction in the first plane 68. Similarly, by providing the second pair 70 of the holding elements 22, the crutch holder 10 is able to advantageously assist with preventing tipping in both a forward and reverse direction in the second plane 72. In the vertical planes 74 located between the first plane 68 and the second plane 72 the components of the tipping action provided by tipping the crutch 12 are shared between the first plane 68 and the second plane 72 such that the first pair 66 and the second pair 70 of the holding elements 22 cooperate to prevent tipping of the crutch 12.

As shown in Figure 6, the first portions 28 advantageously include laterally extending portions 76 that cause the holding elements 22 to move when the crutch 12 is tipped in any direction with the first pair 66 and the second pair 70 of the holding elements 22 cooperating to prevent tipping.

The laterally extending portions 76 include concave portions 78 that neatly fit around the aluminium rod portion 42 of the crutch 12. Advantageously the concave portions 78 of the holding elements 22 extend around a substantial portion of the circumference of the rod portion 42.

Referring to Figures 5 and 6, the body 14 of the crutch holder 10 comprises a first portion 80 and a second portion 82. The second portion 82 includes a plurality of holes for receiving fasteners that extend through the second portion 82 into the first portion 80. The first portion 80 includes a plurality of fastening holes 84 having corresponding internal threaded portions for securing the fasteners. The first portion 80 and the second portion 82 define mounting portions 88 in the form of grooves for pivotally mounting the holding elements 22.

The holding elements 22 are able to be positioned on the first portion 80, and the second portion 82 is able to be brought into engagement with the first portion 80 and secured using the fasteners so as to mount the holding elements 22 in position, with the holding elements 22 being pivotally mounted to the body 14 by the grooves.

As shown in Figure 5, the first portion 80 includes two slots 90 extending across the cavity 16 for allowing the holding elements 22 to extend upwardly to hold the crutch 12. The slots 90 are arranged to form a cruciform configuration through which the holding elements 22 are able to extend upwardly.

The mounting portions 88 are spaced outside the periphery 92 of the cavity 16 so as to be able to hold a pivot portion 94 extending from each holding element 22. As shown in Figure 6, the pivot portions 94 comprise extensions that extend laterally away from the body of each holding element 22. The pivot portions 94 are advantageously spaced further away from the end of the first portion 28 than the end of the second portion 30. The spacing of pivot portions 94 advantageously serves, when the crutch 12 is removed from the crutch holder 10, to bias the holding elements 22 to move from a vertically extending position to the first position 24. This is described in further detail below with reference to Figure 7.

The removal of the crutch 12 from the crutch holder 10 is illustrated in Figure 7. Initially, the crutch 12 starts off in a received position 96. Following this the crutch 12 is lifted upwardly to a position 98 at which point the shoulder 100 of the rubber tip 44 of the crutch 12 bears against inclined portions 102 of the holding elements 22. This causes all the holding elements 22 to move outwardly such that their centres of mass moves beyond the pivot fulcrum provided by pivot portions 94 such that the holding elements 22 move away from the vertically extending position 104 and fall back towards the retracted first

position 24 shown in Figure 2. Thus by controlling the position of the pivot portions 94 and the centres of mass, the holding elements 22 are counterweighted so as to be biased towards the first position 24 when the crutch 12 is lifted vertically out of the cavity 16. As would be apparent this is advantageous for the reason that the holding mechanism of the crutch holder 10 does not have to be manually reset. The crutch holder 10 is advantageously adapted to automatically move the holding elements 22 back to the first position 24 on removal of the crutch 12.

As shown in Figure 6, the walls of the cavity include two slot portions 106 for receiving the first portions 28 of the holding elements 22 when the crutch 12 is held in the upright position. The slot portions 106 are shaped such that when the crutch 12 is held in the upright position the surfaces 108 of the first portions 28 of the holding elements 22 and the cavity 16 form an effective cavity of substantially circular cross section, as seen by the crutch 12. This advantageously serves to assist with providing an abutment when the crutch 12 is tipped so as to allow for the compressing action of the respective holding elements 22 which act as pivot levers.

As would be apparent, the second portions 30 are biased towards the central axis 58 of the cavity 16 (the longitudinal axis 110 of the crutch 12) when holding the crutch 12 due to the centers of mass of the holding elements 22 being spaced inwardly from the pivot provided by the pivot portions 94.

As discussed the second portions 30 of each holding element 22 are arranged for holding the crutch 12 above the shoulder the rubber tip 44 at the end 18 of the crutch 12. In order to readily accommodate a conventional rubber tip end the holding elements 22 are, in this embodiment, of a length of about 67cm. Such a length advantageously serves to hold conventional crutches as well to provide a base of convenient size. The base is of course weighted by known means.

As illustrated in Figure 8, the advantageous holding mechanism provided by the crutch holder 10 allows for insertion of a crutch without having to lift the crutch a substantial distance. In this embodiment, the crutch 12 only needs to be lifted a distance 112 of say 40mm to insert the crutch 12. To remove the crutch 12 it is also possible to lift the crutch 12 by 40mm and move the crutch 12 slightly side to side to quickly urge all of the holding elements 22 back to their retracted positions.

Figure 9 illustrates a method 114 according to a further preferred embodiment of the present invention. At block 116, the method 114 comprises receiving the end 118 of a crutch 120 within a cavity 121 of a crutch holder 122. At block 124, movement of the crutch 120 into the cavity 122 causes the crutch 120 to bear against a plurality of holding elements 126 and move the holding elements 126 from a first condition 128. As shown in Figures 10 and 11 the holding elements 126 move upwardly to an intermediate position in which the holding elements 22 bear against a rubber end 130 of the crutch 120. The holding elements then move along the rubber end 130 to finally bear against the crutch 20 at a position 132 above the rubber end 130. When the crutch 120 is tipped, the holding elements 126 advantageously provide a compressing action at the base of the rubber end 130 that assists with maintaining the crutch 120 in an upright position. At block 134, the method 114 advantageously holds the crutch 120 upright due to the weight of the crutch 120 providing a natural tipping action.

If one considers the depth of the cavity 121, the provision of the holding elements 126 advantageously serves to increase the effective depth of the cavity 121 as seen by the crutch 120. Furthermore by engaging the crutch 120 above the rubber end 130, very slight tipping results in relatively large compression force to hold the crutch 122 in position by the advantageous lever action provided.

Figures 13 and 14 show a crutch holder 136 according to yet another preferred embodiment of the present invention. The crutch holder 136 is considered to advantageously sit unobtrusively at floor level while holding a pair of crutches in an upright position ready for use.

The crutch holder 136 provides an elliptical-type plastic dome measuring 320mm in length by 220mm wide and is 40mm at its thickest point which tapers down to floor level at its edge. The dome has two side by side cavities to accommodate the pair of crutches. Each of the cavities holds a mechanism that serves to hold the crutches in place.

Locking arms of the mechanism are activated as a crutch base enters the cavity and locks using the weight of the crutch around the aluminium tube of the crutch, above the rubber grip.

As the crutch reaches full insertion, the locking arms hold the crutch in a vertical position ready for use. To release and extract the crutches, the crutches are simply lifted out of cavities and the locking arms retract and disappear back into the housing of the dome.

The crutch holder 136 is considered to provide a medical healthcare aid in which to stand a pair of crutches. Crutches are a hazard and an inconvenience when not in actual use. Use of the crutch holder 136 in professional settings such as hospital rooms next to beds or chairs, bathrooms, rehabilitation rooms and gyms, waiting rooms and so forth is considered to reduce the nursing and manpower. Importantly, the crutch holder 136 is also considered to provide those who use crutches with more independence.

The crutch holder 136 may also be used domestically by being positioned at bedside, in the bathroom, next to the dining room chair, the television chair, or out on the deck and so forth. Use domestically should provide relief to carers and to give those who use crutches back some independence. As would be apparent the crutch holder 136 should also find application in commercial premises such as workplaces, restaurants, beauty salons and waiting rooms - only to mention a few applications.

From a safety and convenience viewpoint, the crutch holder 136 advantageously provides crutches standing ready for the patient to slip their arms into and not, in the usual position, propped up in the nearest corner or laying dangerously on the floor.

Figure 15 illustrates a further preferred embodiment of the present invention in the form of a crutch holder 138, for a single crutch or walking cane. The crutch holder 138 includes three holding elements 140 and a recess 142 for receiving a crutch. The holding elements 140 are angularly disposed at about 120 degrees relative to the centre of the recess 142. The holding elements 140 are movable from a reclined position to an extended position in which the holding elements 140 are adapted to prevent tipping of the crutch by applying a clamping action.

In order to provide the clamping action, the holding elements are pivotally mounted to the body of the crutch holder 138 a set distance above the bottom of the recess 142. When in the extended position the first ends of the holding elements 140 hold the shaft of the crutch at three points and second opposite ends of the holding elements 140 hold the lower end of the shaft to assist with preventing tipping.

It will be appreciated that in embodiment where the crutch holder 138 is for a walking cane, the device is configured to receive and hold a walking cane with dimensions of a 19 mm shaft and 38 mm rubber end.

Having now described several preferred embodiments of the present invention it will be appreciated that these embodiments provide examples of:

(i) Crutch holders that provide advantageous holding mechanisms;

(ii) Crutch holders that are readily able to be used and which provide people who require crutches with more independence in domestic, hospital and other environments;

(iii) Crutch holders that have an aesthetically pleasing profile and that allow for ready insertion and removal of crutches; and

(iv) Crutch holders that while providing an advantageous holding mechanism are still readily manufactured with a relatively low number of parts.

As would be apparent, various alterations and equivalent forms may be provided without departing from the spirit and scope of the present invention. This includes modifications within the scope of the appended claims along with all modifications, alternative constructions and equivalents.

There is no intention to limit the present invention to the specific embodiments shown in the drawings. The present invention is to be construed beneficially to the applicant and the invention given its full scope.

In the present specification, the presence of particular features does not preclude the existence of further features. The words 'comprising', 'including' and 'having' are to be construed in an inclusive rather than an exclusive sense.

It is to be recognised that any discussion in the present specification is intended to explain the context of the present invention. It is not to be taken as an admission that the material discussed formed part of the prior art base or relevant general knowledge in any particular country or region.

Claims

1. A crutch holder comprising: a body providing a cavity for receiving an end of a crutch; and a plurality of holding elements movably mounted relative to the body and adapted to move from a first position to a second position in response to the end of the crutch being received by the cavity so as to assist with maintaining the crutch in an upright position.

2. A crutch holder as claimed in claim 1 wherein the holding elements include a first portion for engaging the end of the crutch and a second portion for engaging the crutch a predetermined distance away from the end of the crutch.

3. A crutch holder as claimed in claim 2 wherein the holding elements are pivotally mounted such that tipping in the direction of one of the holding elements causes movement of the second portion of the holding element to force the first portion of the holding element to move in an opposite direction to bring the first portion into increased engagement with the end of the crutch and result in an increased holding force.

4. A crutch holder as claimed in any one of claims 1 to 3 wherein each holding element provides a pivot lever for compressing the end of the crutch as the crutch is tipped, the cavity being adapted to provide an abutment to hold the end of the crutch in position to allow for the compressing action of each pivot lever.

5. A crutch holder as claimed in any one of claims 1 to 4 wherein each holding element is pivotally mounted to the body adjacent the periphery of the cavity so as to be rotatable from the first position to a vertically extending position.

6. A crutch holder as claimed in any one of claims I to 5 wherein the holding elements are adapted to move back to the first position when the crutch is lifted vertically out of the cavity.

7. A crutch holder as claimed in any one of claims 1 to 6 wherein the holding elements are counterweighted so as to be biased towards the first position.

8. A crutch holder as claimed in any one of claims 1 to 7 wherein the cavity includes slot portions for receiving the holding elements to provide what is a effectively a cavity of a substantially circular cross section.

9. A crutch holder as claimed in any one of claims 1 to 8 wherein each holding element is arranged for holding the crutch above the shoulder of conventional gripping tip at the end of the crutch.

10. A crutch holder as claimed in any one of claims 1 to 9 wherein a first pair of the holding elements is arranged for preventing rotation of the crutch in a first plane; and a second pair of the holding elements is arranged for preventing rotation of the crutch in a second plane; the second plane being substantially perpendicular to the first plane.

11. A crutch holder as claimed in any one of claims 1 to 10 wherein the body comprises a first body portion· and a second body portion defining mount portions, the holding elements being able to be positioned on first body portion and the second body portion being able to being brought into
engagement with the first body portion to mount the holding elements such that the holding elements are pivotally mounted to the body by the mount portions

12. A crutch holder as claimed in any one of claims 1 to 11 wherein the first portion includes slots for allowing the holding elements to extend upwardly to hold the crutch.

13. A crutch holder as claimed in claim 12 wherein the slots of the first body portion are of a cruciform configuration.

14. A crutch holder as claimed in any one of claims 1 to 13 wherein the holding elements comprise elongate members each of a length of at least 10cm.

15. A method of holding a crutch comprising: receiving an end of the crutch within a cavity; wherein movement of the crutch into the cavity causes the crutch to bear against a plurality of holding elements and pivot the holding elements from a first position to a second position in which the holding elements assist with maintaining the crutch in an upright position.

16. A method as claimed in claim 15 wherein each of the holding elements is arranged to extend upwardly when holding the crutch so as to increase the effective depth of the cavity as seen by the crutch.

17. A method as claimed in claim 15 or 16 wherein each of the holding elements is arranged to extend into the horizontal cross section of the cavity so to decrease the effective width of the cavity as seen by the crutch.

Fig. 1

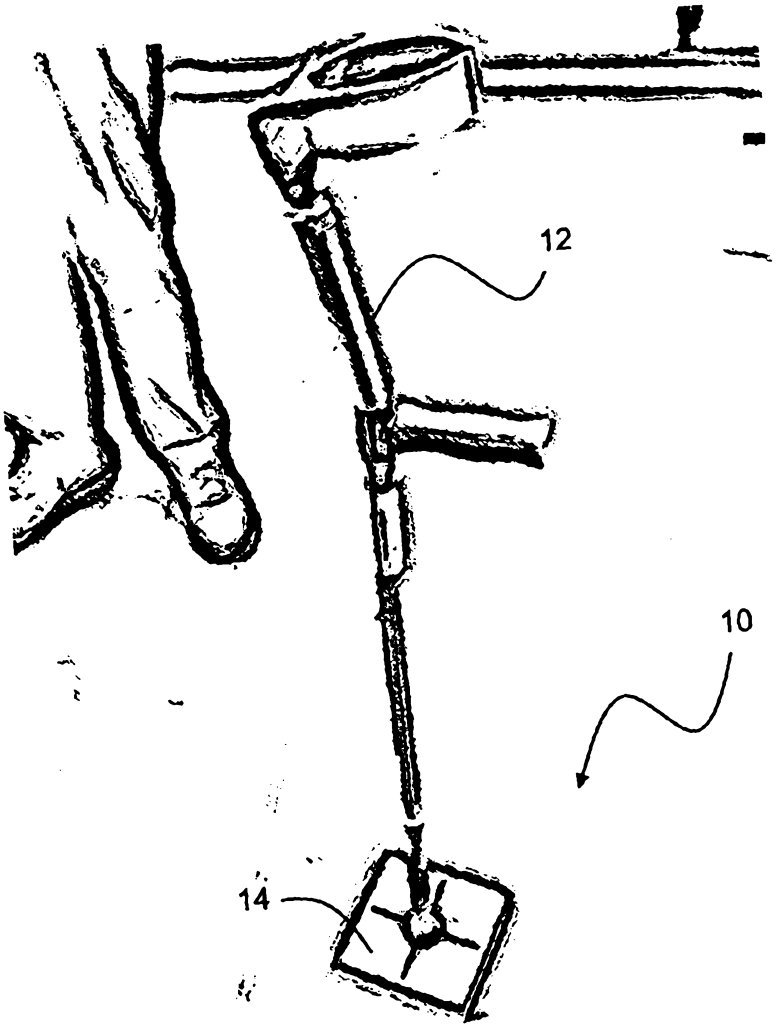


Fig. 2

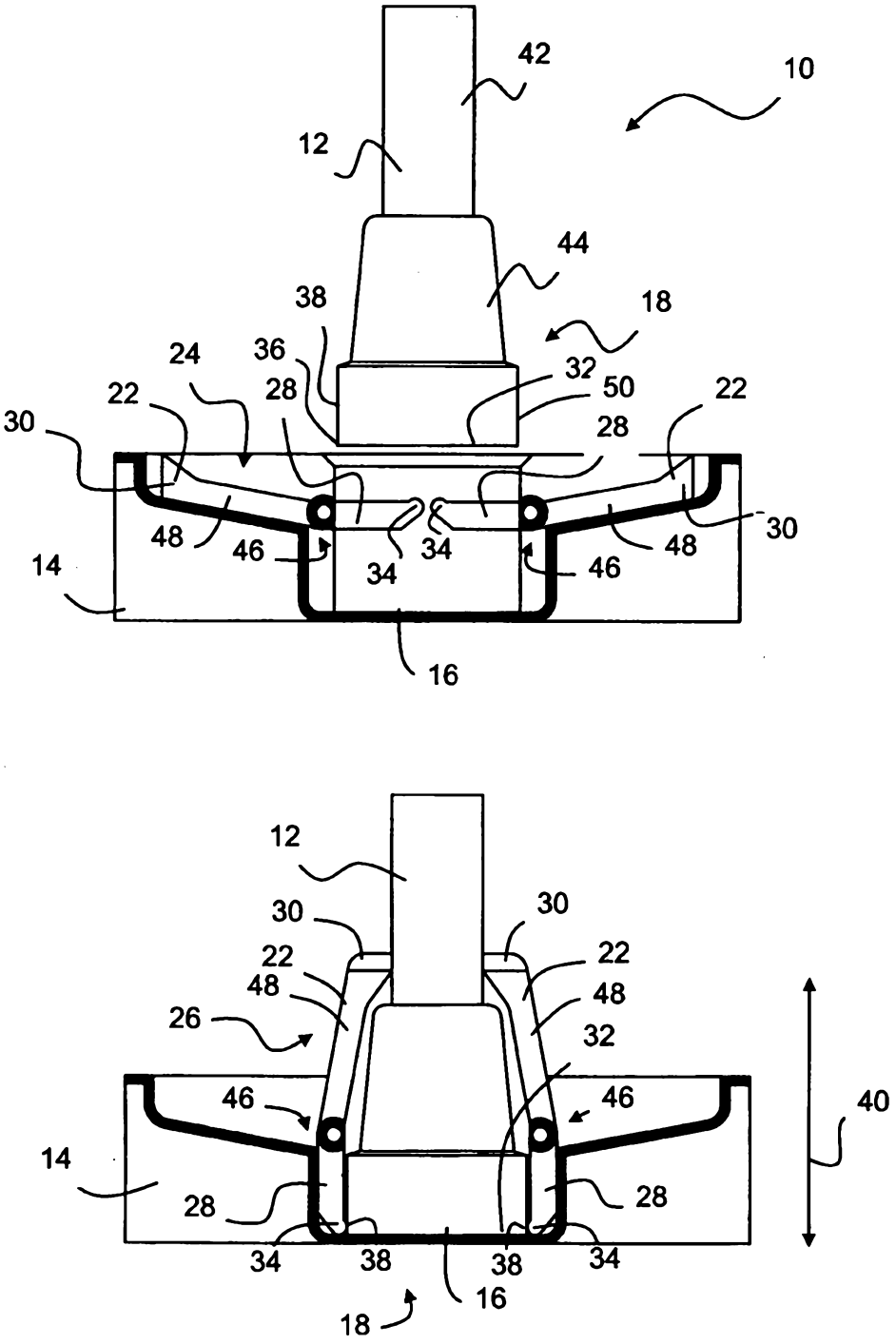

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Fig. 3

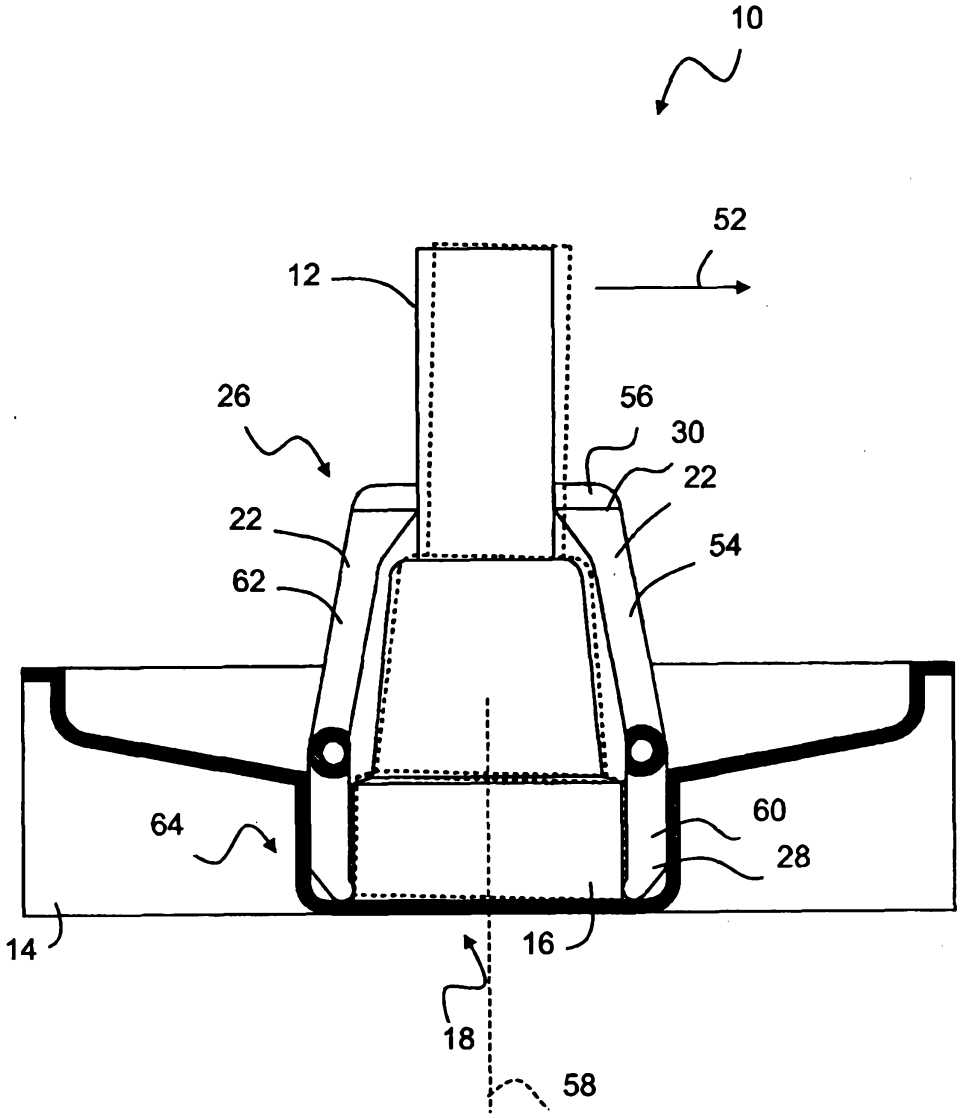

Fig. 4

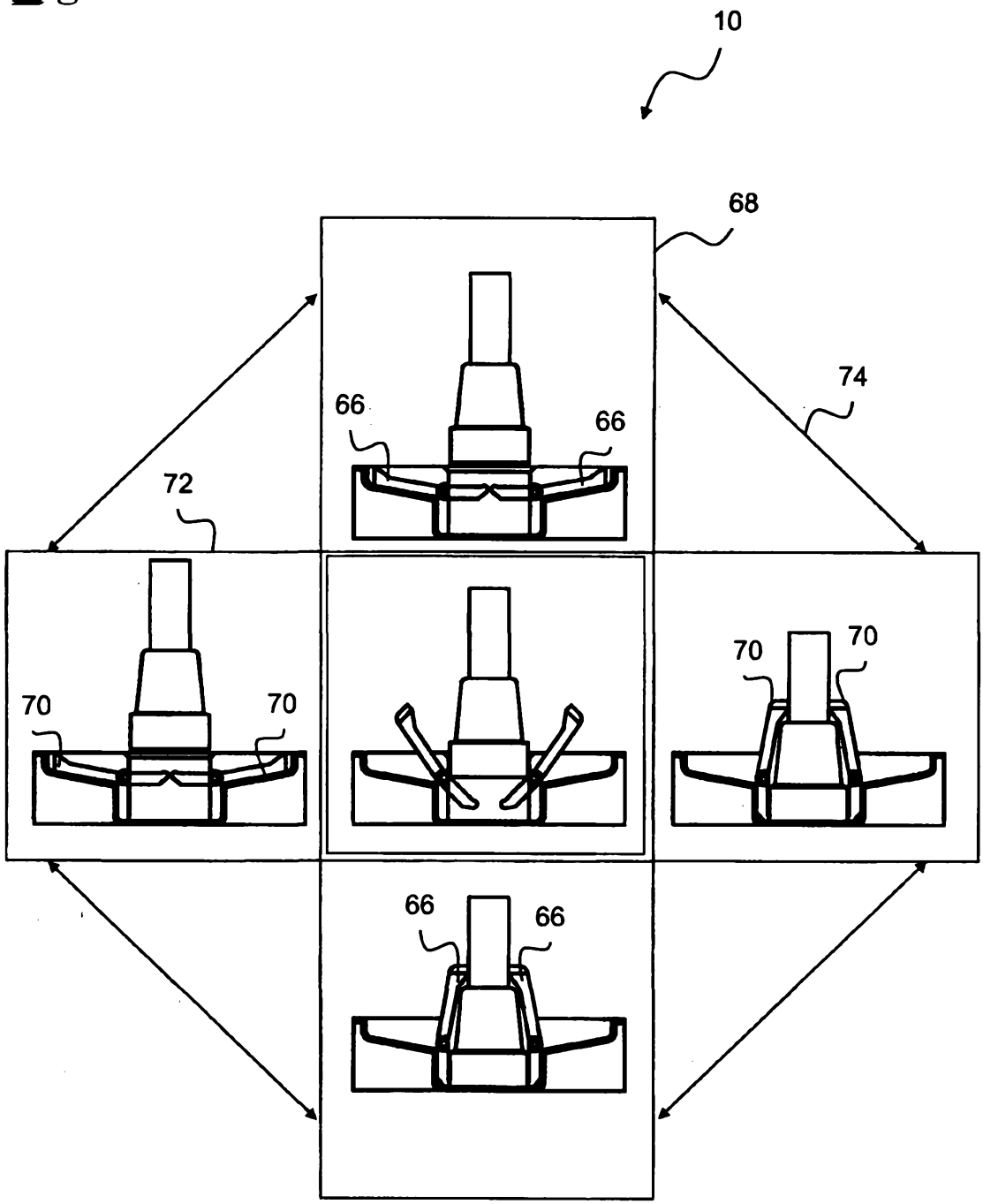

Fig. 5

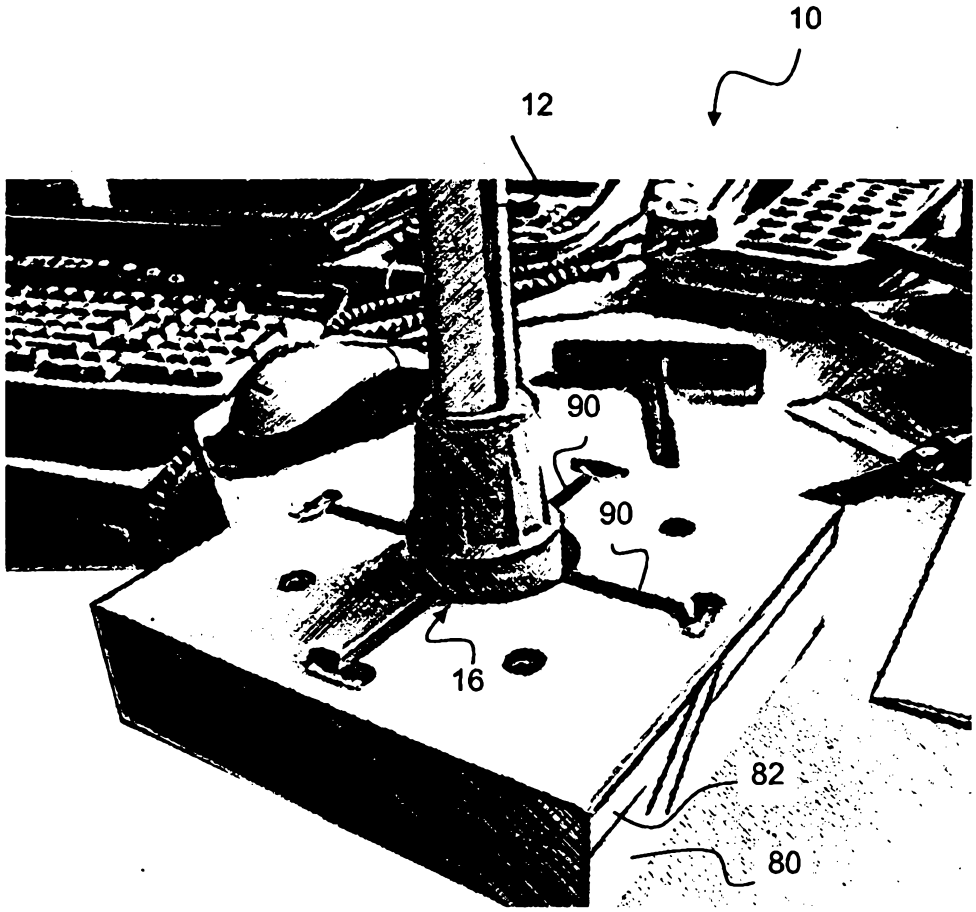

Fig. 6

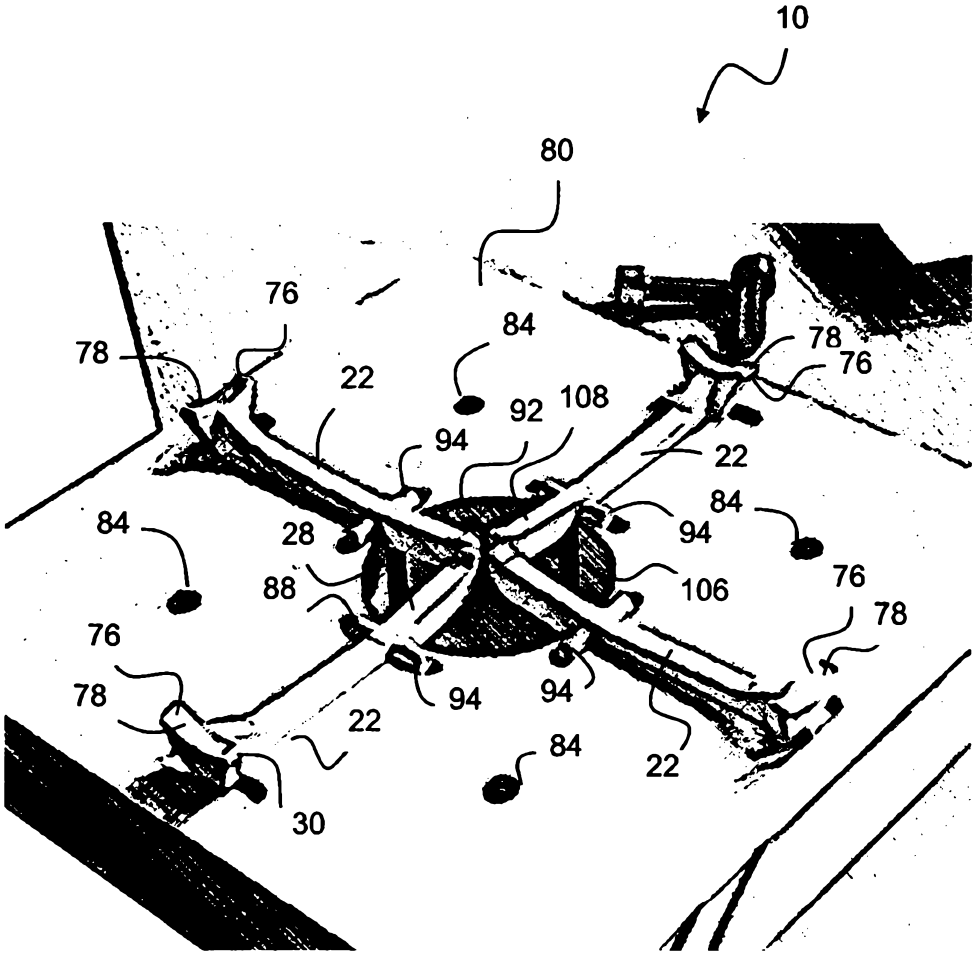

Fig. 7

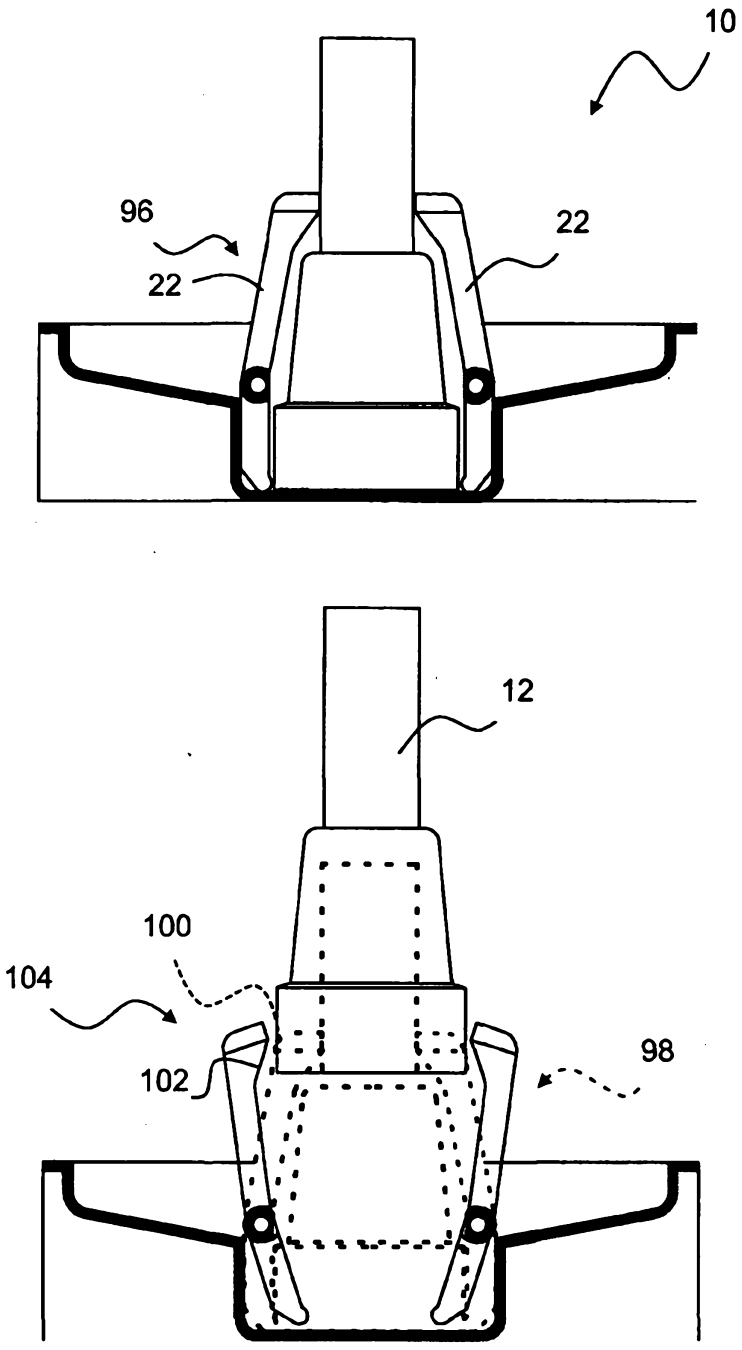

Fig. 8

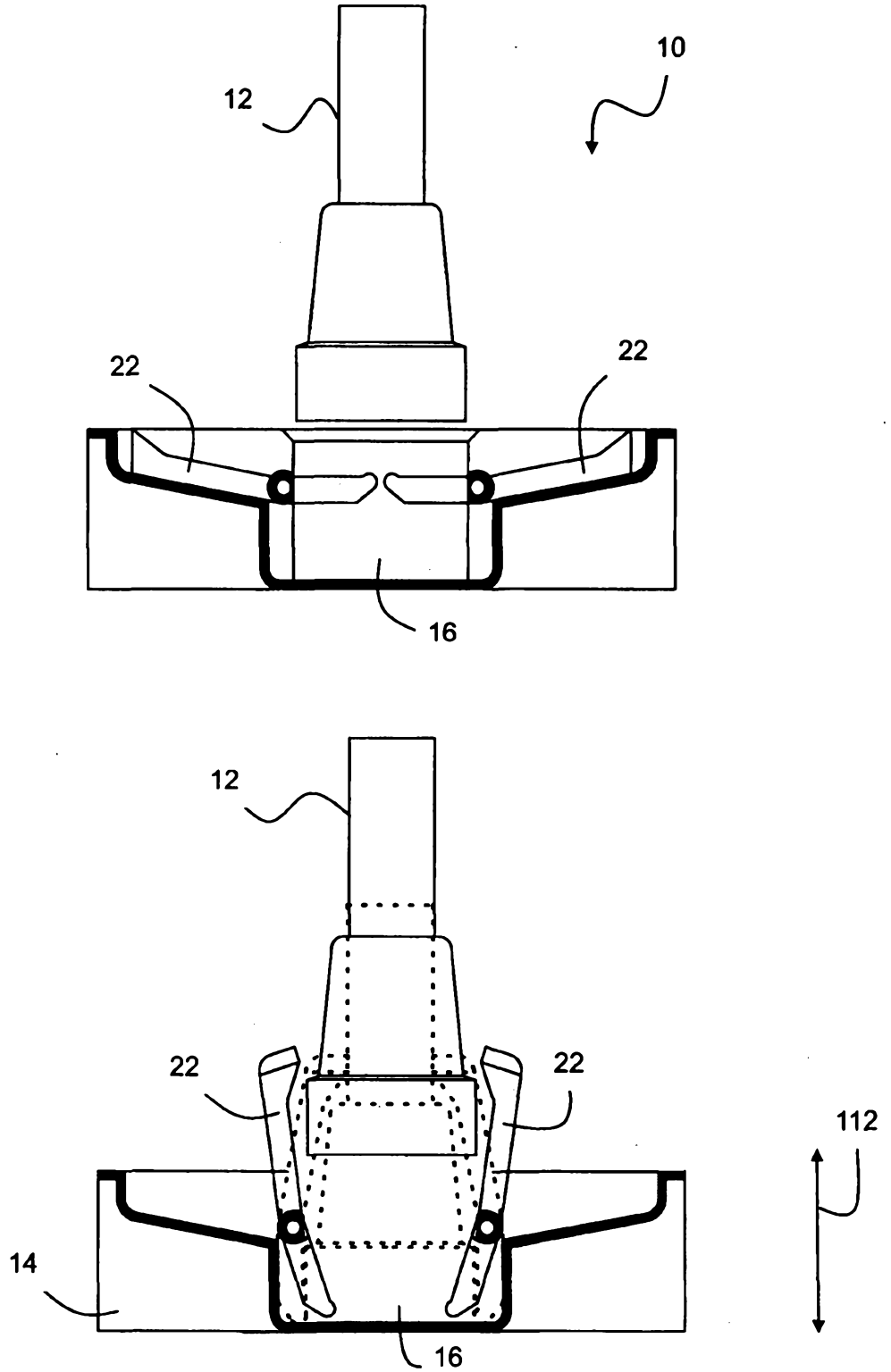

Fig. 9

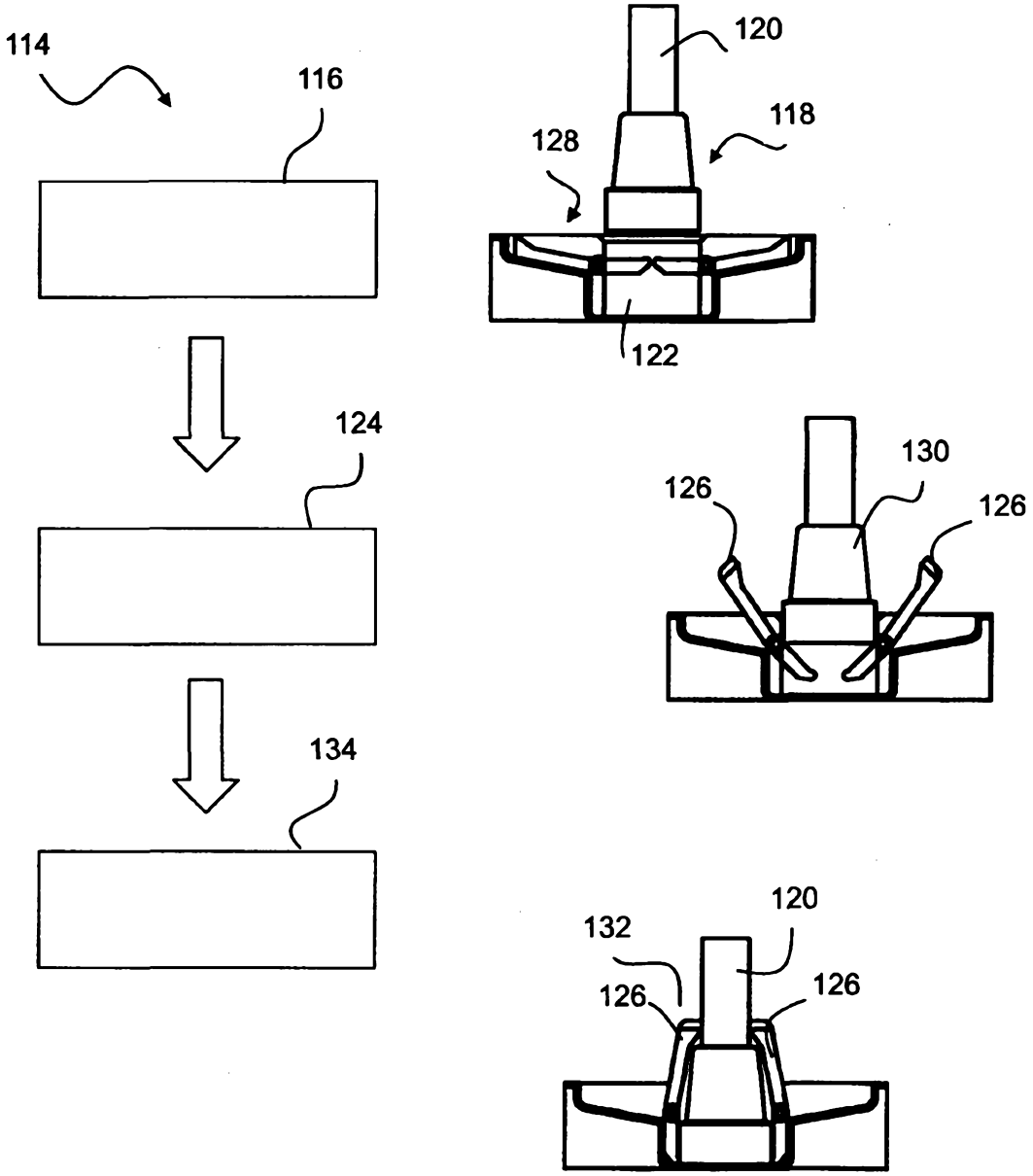

Fig. 10

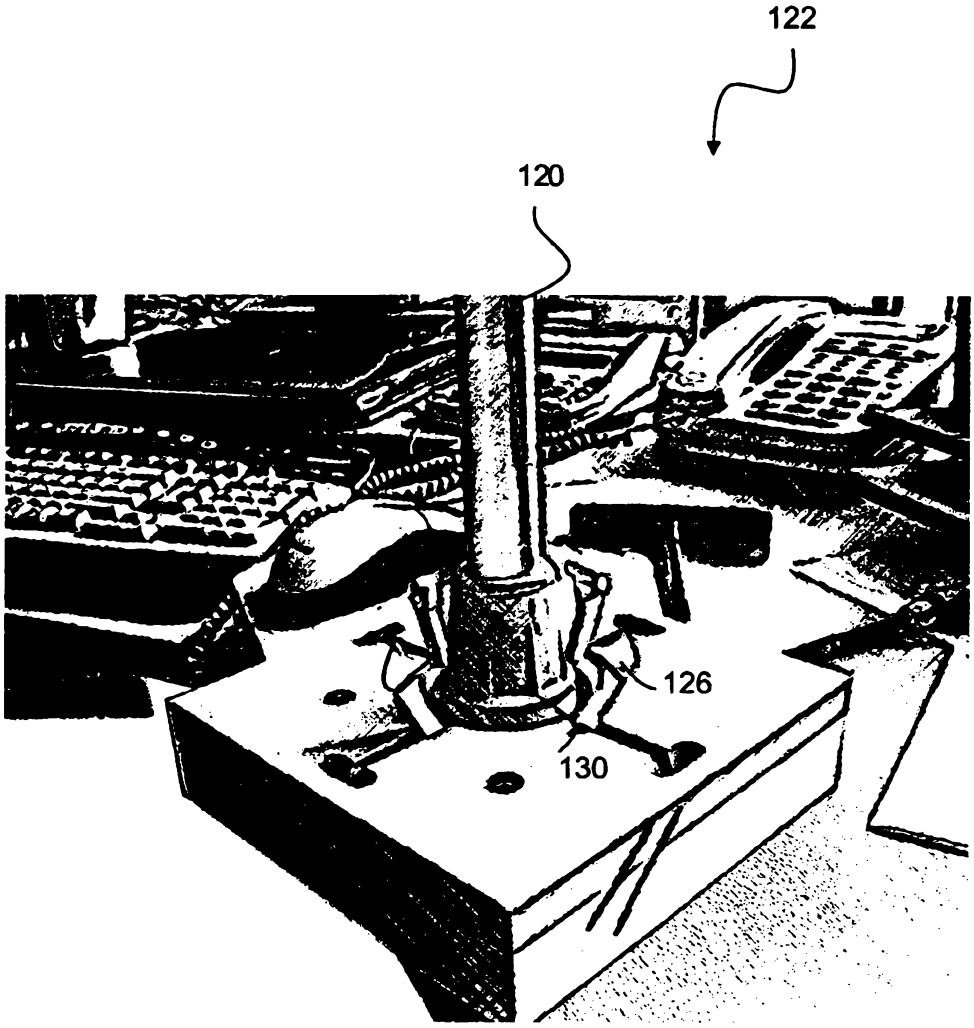

Fig. 11

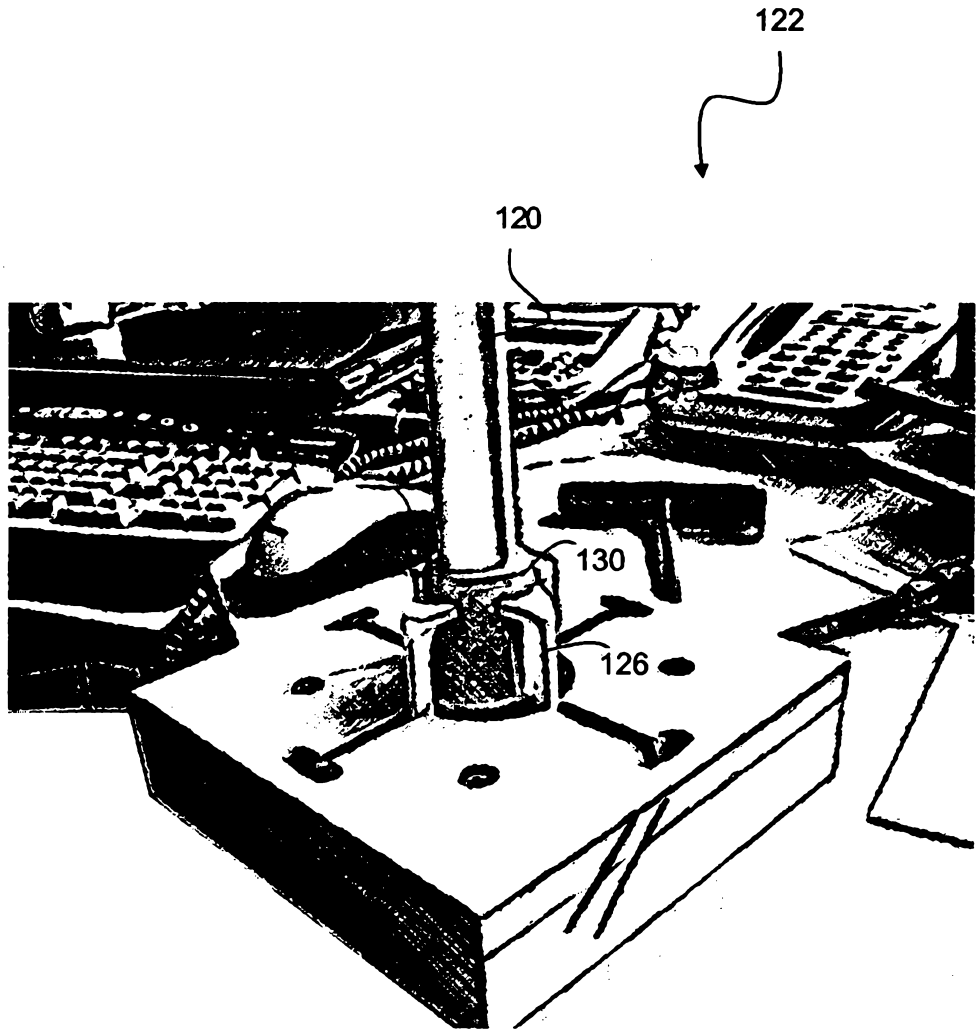

Fig. 12

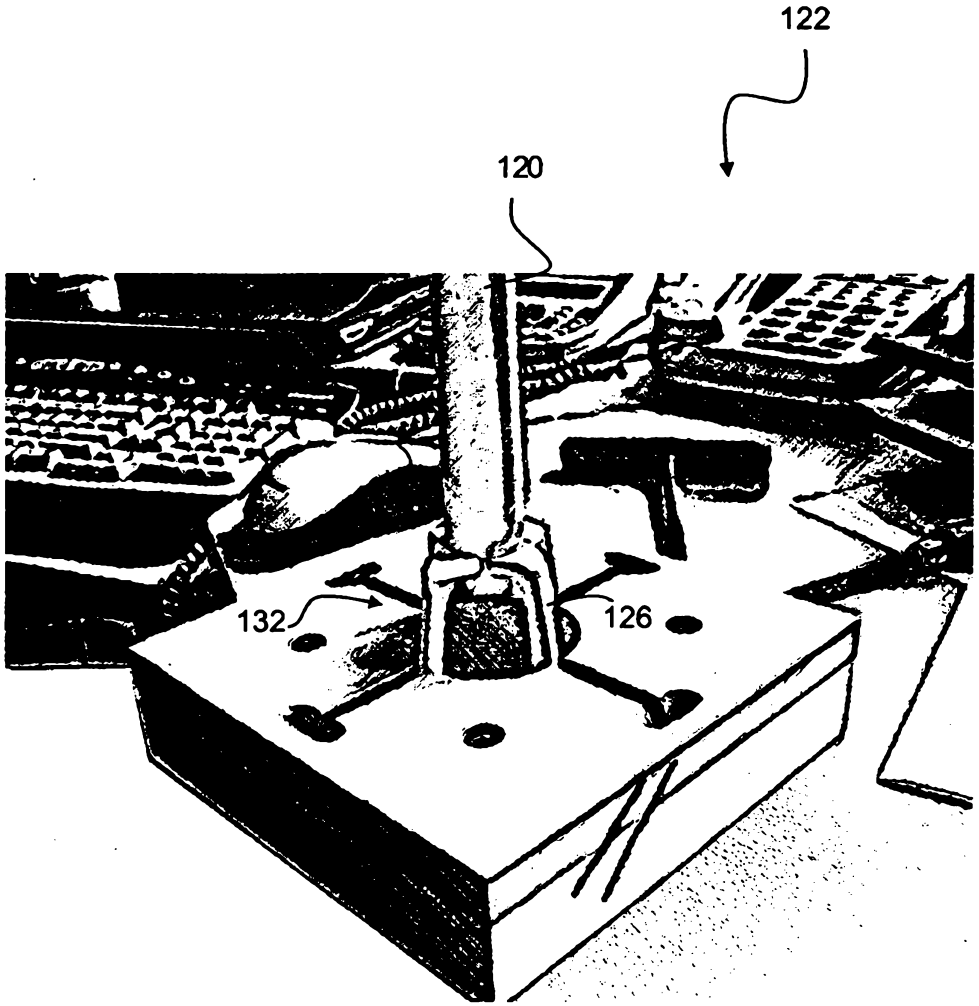

Fig. 13

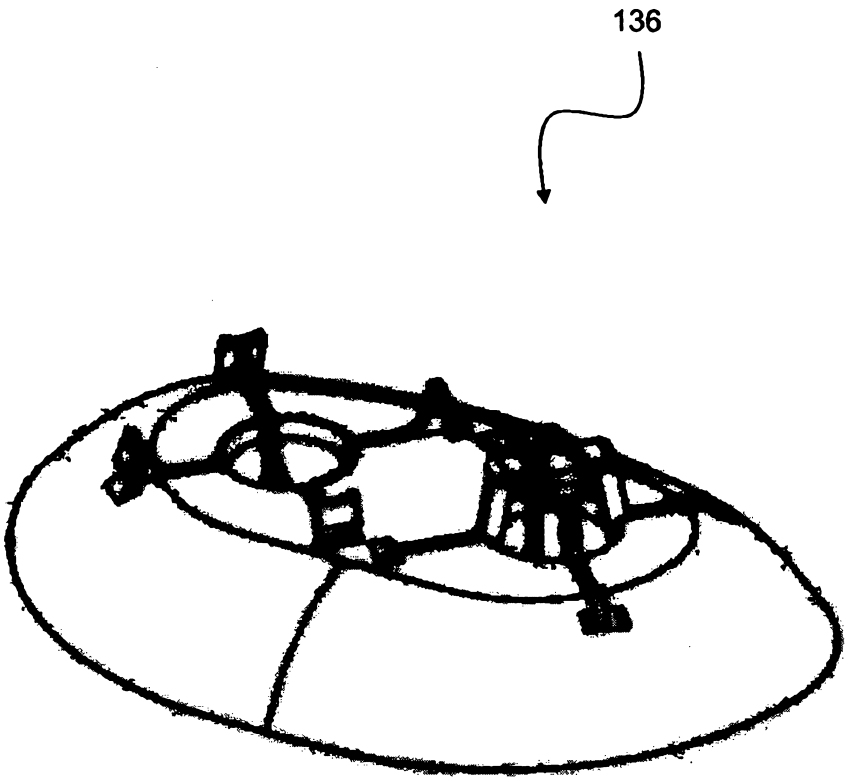

Fig. 14

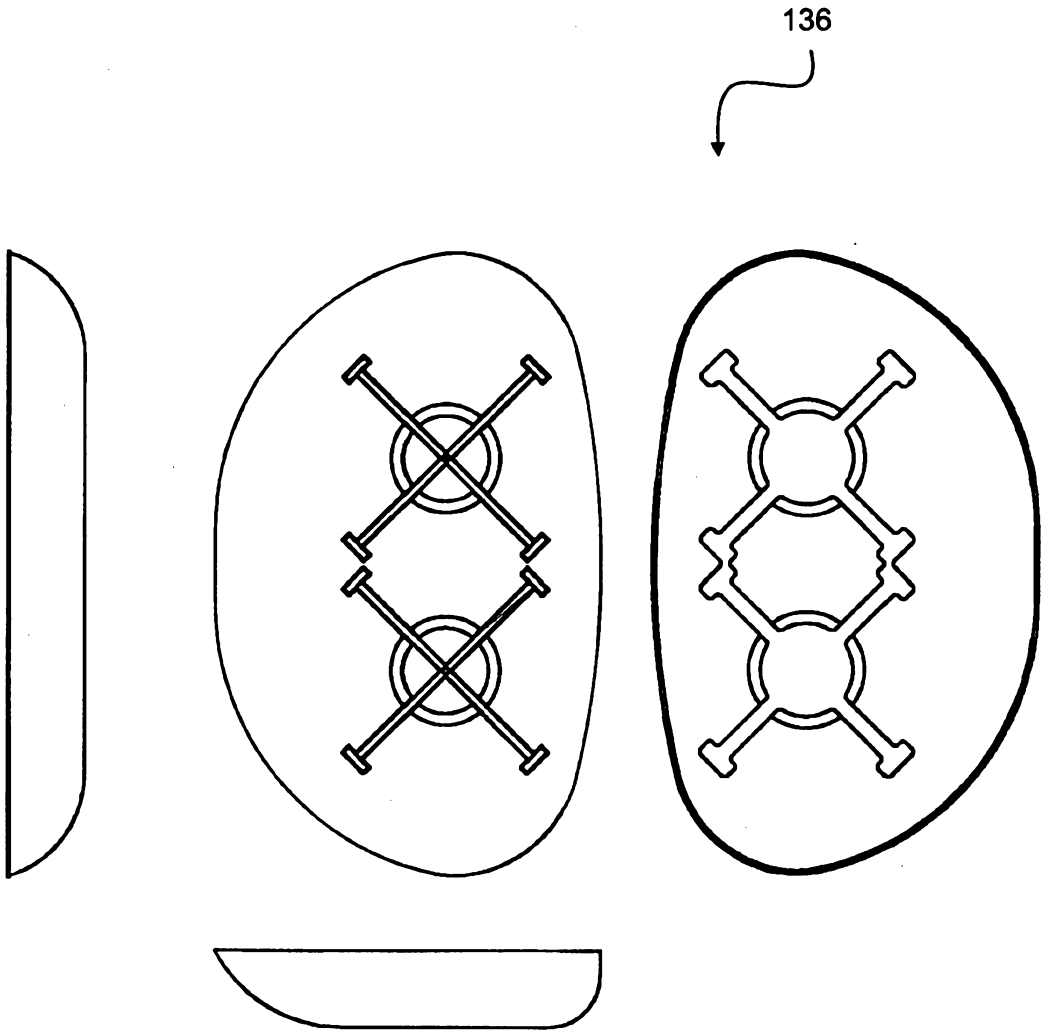

Fig. 15