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(54) **Surface access assemblies**

(57) A surface access assembly 10 includes a first cover 12a and a second cover 12B. Each of the covers 12A, 12B include a substantially planar surface part 20. The assembly 10 includes an interlocking member 54, which in an interlocked condition extends between the

first cover 12A and the second cover 12B to secure the first and second covers 12A, 12B together. The assembly 10 is arranged so that the interlocking member 54 extends in a direction substantially normal to the plane of the surface parts 20.

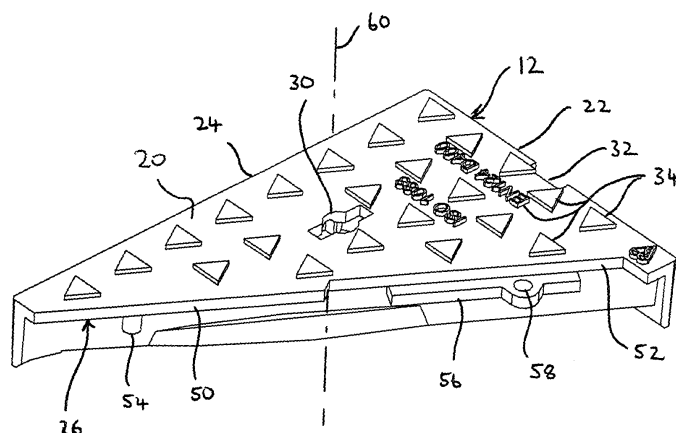


Fig 2

Description

[0001] The present invention relates to surface access assemblies.

[0002] Conventionally, surface access assemblies such as manhole cover assemblies include a pair of substantially identical triangular covers which are loosely bolted together and mounted within a frame. The loose bolts permit limited relative movement of the covers. When installed in roadways subject to high speed traffic, the passage of such traffic can cause the covers to be lifted out of the frame, causing hazard to road users. When the covers are loosely bolted together, each cover restrains the other from movement, reducing the possibility of the covers being lifted out of the frame. Each cover is mounted to the frame by a non-rock three point mounting, and the loose bolts permit each cover to retain its independent three point mounting.

[0003] Typically, the covers are connected together by bolts extending horizontally in use through reinforcement ribs on the underside of each cover. During installation and maintenance bolts can get lost and the connecting of the covers together by the bolts can be either accidentally or deliberately forgotten by operatives, resulting in a potentially unsafe installation. The presence or otherwise of the bolts is not visible in the installed condition, and can only be checked by removing the covers from the frame, which can be relatively arduous and time consuming.

[0004] In the case of smaller access covers such as fire hydrant boxes, typically single covers are mounted within a frame and held in position in the frame by wedges, the wedges acting to prevent lifting of the cover during trafficking. The wedges may be loose, or may be integrally cast with the covers. However, such wedges can cause jamming of the cover in the frame, making the cover difficult to remove. Loose wedges can be lost and an unsafe installation can result.

[0005] According to one aspect of the present invention, there is provided a surface access assembly, the assembly including a first cover and a second cover, each of the covers including a substantially planar surface part, the assembly including an interlocking member which in an interlocked condition extends between the first cover and the second cover to secure the first and second covers together, the assembly being arranged so that the interlocking member extends in a direction substantially normal to the plane of the surface parts.

[0006] Possibly, the first cover includes a first interlocking formation, which may be in the form of a projecting tab, and which may extend from an underside in use of the surface part.

[0007] The first interlocking formation may include a first hole, which may be defined by the tab, and in which in the interlocked condition the interlocking member may locate.

[0008] Preferably, in the interlocked condition the covers are loosely linked together, so that limited relative

movement is permitted. Preferably, the limited relative movement is a relative pivotal movement.

[0009] Possibly, the first and second covers each include a first interlocking formation. Possibly, the assembly includes a plurality of interlocking members. Possibly, a different interlocking member locates through each first hole in the interlocked condition.

[0010] Possibly, one interlocking member is formed integrally with each cover. Possibly, each interlocking member is arranged relative to the respective first hole so that the covers are interlocked by a rotational movement of one cover relative to the other cover. In the rotational movement the one cover may rotate about a first axis of rotation, which may extend substantially perpendicularly to the notional line of the joint between the covers, and may extend substantially through the midpoint of the joint.

[0011] Preferably, the interlocking member of one cover is located on one side of the first axis of rotation and the first hole of the same one cover is located on an opposite side of the first axis.

[0012] Alternatively, the covers may be interlocked by relative rotational movement about the line of the joint between the covers.

[0013] In one embodiment, the first interlocking formation may include a recessed portion, which may form part of the surface part.

[0014] Preferably, the second cover includes a second interlocking formation which may interlock with the first interlocking formation in the interlocked condition. Possibly, the first and second covers each include a second interlocking formation.

[0015] Possibly, each second interlocking formation may include a projecting portion, which may form part of the surface part. Preferably, the interlocking member extends downwardly in use from the projecting portion.

[0016] Possibly, the recessed portion of one cover receives the projecting portion of the other cover in the interlocked condition. Preferably, the shape of the recessed portion corresponds to the shape of the projecting portion.

[0017] The tab may extend from adjacent the recessed portion. Preferably, the tab is located on one side of the first axis and the projecting portion is located on the opposite side. Preferably, in the interlocked condition, the tab abuts the projecting portion of the other cover.

[0018] The first hole may be a through hole. In the interlocked condition the interlocking member may extend completely through the first hole, and a portion of the interlocking member may project beyond the first hole.

[0019] The assembly may include retaining means to retain the covers in the interlocked condition. The retaining means may substantially prevent withdrawal of the interlocking member from the first hole.

[0020] The retaining means may include a retaining formation, which may be enlarged relative to the first hole. The retaining formation may be in the form of a washer such as a star washer or welded washer.

[0021] In one embodiment, the retaining formation may be formed to or fitted to the projecting portion of the interlocking member. The projecting portion may be threaded, and the retaining formation may include a nut, which may threadably engage the projecting portion.

[0022] In another embodiment, the retaining means may include a securing member, which may locate through a passage defined by the cover. The securing member may be in the form of a fastener such as a bolt. A portion of the securing member may project beyond the passage below the cover, and the retaining formation may be formed to or fitted to the projecting portion of the securing member. The projecting portion may be threaded, and the retaining formation may include a nut, which may threadably engage the projecting portion.

[0023] The retaining means may include locking means to lock the covers in the interlocked condition. The locking means may include a locking formation, and a locking member may be positionable in engagement with the locking formation.

[0024] The cover may include spacing means to ensure that the connection between the covers is loose. The spacing means may space the retaining formation from the underside of the cover, and may be formed by the interlocking member. The passage may be defined by the surface part, and may be defined by the interlocking member.

[0025] In another embodiment, the securing member may form the interlocking member.

[0026] Preferably, each cover includes prising means. Preferably, the prising means include an aperture for receiving a prising tool, which may be defined in the surface part. Preferably, the cover is arranged so that in the interlocked condition as the tool is inserted into the prising aperture to lift the cover, both covers are lifted together. Preferably, the prising aperture is located on the same side of the first axis as the tab.

[0027] Preferably, each cover is formed by casting. Preferably, each cover is formed of cast iron, and more preferably of ductile cast iron.

[0028] According to a second aspect of the present invention, there is provided a cover for a surface access assembly, the cover being as described above in any of the preceding statements.

[0029] According to a third aspect of the present invention, there is provided a method of assembling a surface access assembly, the assembly including a first cover and a second cover, each of the covers including a substantially planar surface part, the assembly including an interlocking member, the method including the step of securing the first and second covers together in an interlocked condition in which the interlocking member extends between the covers, the assembly being arranged so that the interlocking member extends in a direction substantially normal to the plane of the surface parts.

[0030] Possibly, the assembly is as described above in any of the preceding statements.

[0031] According to a fourth aspect of the present invention, there is provided a surface access assembly, the assembly including a first cover and a second cover, each of the covers including a substantially planar surface part, the first cover including a first interlocking formation in the form of a projecting tab which is arranged so that in an interlocked condition, when the first cover is lifted, the tab lifts the second cover also.

[0032] Possibly, the assembly includes any of the features described in the preceding statements.

[0033] According to a fifth aspect of the present invention, there is provided a cover for a surface access assembly, the cover including any of the features described in the preceding statements.

[0034] Embodiments of the present invention will now be described by way of example only, and with reference to the accompanying drawings, in which:-

Fig. 1 is a perspective view of a surface access assembly according to one embodiment of the invention;

Fig. 2 is a perspective view of a surface access cover for the surface access assembly of Fig. 1;

Fig. 3 is a view from below of the cover of Fig. 2;

Fig. 4 is a perspective view of a pair of the covers of Fig. 2 in an interlocked condition;

Fig. 5 is a view from below of the pair of the covers of Fig. 4;

Fig. 6 is a view from below of a detail of a pair of covers similar to that shown in Fig. 5 as indicated by the numeral VI in Fig. 5;

Figs. 7A and 7B are views from below of a similar detail to that of Fig. 6 as indicated by the numeral VII in Fig. 5;

Fig. 8 is a perspective view from above a surface access cover in accordance with another embodiment of the invention;

Fig. 9 is a perspective view from below of the cover shown in Fig. 8;

Fig. 10 is a perspective view from below of a pair of covers as shown in Figs. 8 and 9 in an interlocked condition forming a surface access assembly;

Fig. 11 is a perspective view from above of the surface access assembly of Fig. 10.

Fig. 12 is a view from below of a detail of another cover; and

Fig. 13 is a view from below of the cover of Fig 12. in an interlocked condition with another cover.

[0035] Fig. 1 shows a surface access assembly 10 according to one embodiment of the invention, the assembly 10 including a pair of identical covers 12A, 12B, seated in a frame 14.

[0036] Referring to Figs. 2 and 3, and cover 12 (which could be either one of the covers 12A, 12B shown in Fig. 1) includes a substantially planar surface part 20 which is substantially triangular in plan, having a shorter outer edge 22, a longer outer edge 24 and an interlocking inner edge 26. The surface part 20 defines a keyway aperture 30. A prising aperture 32 is defined by the surface part 20 in the shorter outer edge 22. The in use upper surface of the surface part 20 includes a surface pattern 34.

[0037] Corner projections 40 extend downwardly from an underside in use of the surface part 20, and reinforcement ribs 42 extend along the underside in use of the surface part 20 between the corner projections 40. The three corner projections 40 permit three point mounting of the cover 12 within the frame 14.

[0038] The inner edge 26 includes a projecting portion 50 and a recessed portion 52. An interlocking member in the form of a peg 54 extends downwardly in use from the underside of the projecting portion 50. A projecting tab 56 extends from an underside in use of the surface part 20 adjacent the recessed portion 52. The tab 56 defines a first through hole 58. The recessed portion 52, the tab 56 and the first hole 58 form a first interlocking formation, and the projecting portion 50 forms a second interlocking formation.

[0039] In use, and referring to Figs. 4 and 5, the two covers 12A, 12B are assembled together into an interlocked condition before seating within the frame 14. One of the covers 12A is presented to the other cover 12B so that the plane of the surface part 20A of the one cover 12A is inclined at an angle relative to the plane of the surface part 20B of the other cover 12B, generally about a first axis of rotation 60 as shown in Fig. 4. The first axis 60 extends through a region defined between the projecting portion 50 and the recessed portion 52 of each of the covers 12A, 12B substantially perpendicularly to the notional line 64 of the joint between the covers 12A, 12B substantially through the midpoint of the joint, the first axis 60 being coplanar with the surface parts 20A, 20B of the covers 12A, 12B.

[0040] The one cover 12A is brought towards the other cover 12B and then rotated about the first axis 60 in a clockwise direction as viewed in Fig. 4 so that the pegs 54A, 54B of the covers 12A, 12B locate in the respective other first through holes 58A, 58B and the projecting portions 50A, 50B of each of the covers 12A, 12B are received within the respective corresponding recessed portions 52A, 52B.

[0041] Figs. 4 and 5 show the covers 12A, 12B in the interlocked condition. The projecting portions 50A, 50B, the recessed portions 52A, 52B, the pegs 54A, 54B, the

tabs 56A, 56B and the first through holes 58A, 58B interlock together to hold the two covers 12A, 12B together and thus form interlocking formations which are arranged to substantially prevent the covers from being separated by relative movement in any direction but an opposite rotational movement to the interlocking rotational movement about the first axis 60. In the interlocked condition, the interlocked covers 12A, 12B can be lifted together and placed in the frame 14 as shown in Fig. 1.

[0042] The fit of the respective interlocking formations together permits some degree of limited relative pivotal movement of the one cover 12A relative to the other cover 12B about the joint line 64 which forms a second axis, so that the interlocking formations fulfil the requirements of loose connection.

[0043] A particular advantage of the arrangement described is that each peg 54 extends in a direction which is substantially normal to the plane of its respective surface part 20, that is, in an in use substantially vertical direction. Typically such covers are formed integrally by casting and are usually formed of cast iron, for example ductile iron. Covers including features such as the pegs 54 and first through holes 58 which extend in a substantially vertical in use direction are relatively easy to manufacture in one piece by traditional casting methods, in contrast to features which extend horizontally which require more complex mould tooling or require the covers to be manufactured in a plurality of parts and then assembled in an extra operation.

[0044] To remove the covers 12A, 12B from the frame 14, a key can be inserted through each of the keyway apertures 30 and the covers lifted together. Alternatively a prising tool such as a bar can be inserted into the prising aperture 32. The prising bar is positioned on an edge of the frame 14 and operated to lever, for example, one of the covers 12 upwardly. It will be noted that the tab 56A is on the same side of the first axis 60 as the prising aperture 32, and so as the prising bar levers the cover 12A upwardly, the tab 56A also lifts the other cover 12B upwardly, so that the arrangement of the interlocking formation relative to the prising aperture 32 ensures that both covers 12A, 12B are lifted together by one prising bar, permitting easy removal of the interlocked covers from the frame 14.

[0045] In the interlocked condition as described, the covers 12A, 12B are separable by relative rotation in an opposite rotational direction to the direction of the interlocking rotational movement. However, in certain circumstances it may be desirable to prevent separation of the covers. Fig. 6 shows a detail taken from Fig. 5 in which in the interlocked condition a portion 62 of the peg 54 projects beyond the first through hole 58. The assembly 10 includes retaining means including a retaining formation which is enlarged relative to the first hole 58 and is in the form of a retaining washer 70. The retaining washer 70 is fitted to the projecting portion 62 to retain the peg 54 in the first hole 58 and the covers 12 in the interlocked condition. In the example shown in Fig. 6 the retaining

washer 70 is in the form of a push fit star washer.

[0046] As an alternative to the use of the retaining washer 70, Figs. 7A and 7B show a similar detail to that shown in Fig. 6. A projecting portion 162 of a peg 154 includes a plurality of castellations 172. During assembly, the castellations 172 are closed together as shown in Fig. 7A so that the peg 154 can pass through the first hole 58. In the interlocked condition a tool such as a punch is then used to open out the castellations 172 relative to each other to flare the projecting portion 162 of the peg 154 to form a retaining formation. Once flared, the castellations 172 prevent the peg 154 from withdrawing through the first hole 58, locking the covers permanently but loosely together.

[0047] Figs. 12 and 13 show another example of a retaining means. In this example the interlocking member is in the form of a peg 254 which is threaded. The retaining means include locking means which include a locking formation in the form of a substantially flat locking face 66 which is formed on the side of the peg 254. The retaining means include a nut 90 which in this example is square but could be of any suitable shape. The nut 90 defines a threaded peg passage 92 in which the peg 254 is receivable, and a pin passage 94 in which a locking member in the form for example of a split cotter pin 68 is receivable.

[0048] Fig. 13 shows the nut 90 assembled to the peg 254. The locking means is arranged so that when the pin 68 is located within the pin passage 94, the pin 68 engages the locking face 66, preventing rotation of the nut 90 and thus locking the nut 90 on the peg 254. The ends of the split pin 68 are opened to prevent removal of the pin 68. Thus the locking means locks the covers 12 in the interlocked condition. Advantageously, the pin 68 can be removed when required to permit separation of the covers 12. The locking face 66 can be located so that when the nut 90 is correctly positioned on the peg 254 to permit the pin 68 to engage the locking face 66 the covers 12 are loosely connected. Thus incorrect assembly of the covers 12 (for example by over tightening the nut 90 so that the covers 12 are no longer loosely connected) is prevented.

[0049] Various other modifications may be made without departing from the scope of this embodiment of the invention. The interlocking formations could be of any suitable design. For example, the peg could extend upwardly from the tab and be received in a first hole defined by the projecting portion. However, in practice it has been found easier to drop the peg into the first hole, rather than the first hole over the peg. A first hole defined by the projecting portion in the surface part is liable to blockage by debris in use.

[0050] The integrally formed interlocking member and corresponding first hole could be of a different form. For instance, the interlocking member could be in the form of a ridge and the first hole could be a corresponding elongate slot or furrow, and could be a blind hole.

[0051] The covers 12A, 12B could also or alternatively

be interlocked by relative rotation about the joint line 64.

[0052] Any suitable retaining means could be used to retain the peg within the first hole. Any suitable method of flaring or enlarging the projecting portion of the peg could be used. The projection portion could be threaded to threadably mount a nut with a washer. A nut or washer could be permanently fixed to the peg, for example by welding or adhesive. The locking means could be of any suitable type.

[0053] There is thus provided a cover for a surface access assembly which can be loosely connected to another identical cover to conform with good practice and with regulatory requirements, and yet does not require the use of separate fastening members such as bolts or securing members such as wedges which can be easily lost or their use neglected. Thus the possibility of unsafe installations is reduced. The covers are relatively easy to manufacture, and can be permanently interlocked together for additional security.

[0054] Figs. 8 to 11 show a surface access assembly 110 according to another embodiment of the invention, the assembly 110 including a pair of identical covers 112A, 112B. Many of the features of the surface access assembly 110 are similar to the features described previously in relation to the surface access assembly 10 shown in Figs. 1 to 7. Where features are similar, the same reference numerals have been retained and the features will not be described in detail again.

[0055] Referring to Figs. 8 and 9, each cover 112 (which could be either one of the covers 112A, 112B shown in Figs. 10 and 11) includes a substantially planar surface part 20, which is substantially triangular in plan, and which in this embodiment includes a substantially straight inner edge 126.

[0056] Each cover 112 includes a first interlocking formation in the form of a projecting tab 156 which extends from an underside in use of the surface part 20 from an off-set position along the inner edge 126. The tab 156 defines a first through hole 58.

[0057] An interlocking member in the form of a projection 154 projects from the underside in use of the surface part 20 of each cover 112.

[0058] Each cover 112 defines a passage 80 which extends through the surface part 20 and the interlocking projection 154.

[0059] In use, the covers 112A, 112B as shown in Figs. 10 and 11 are assembled together as follows. The covers 112A, 112B are brought into contact along the inner edges 126 with the plane of one surface part 20 being at an angle relative to the plane of the other surface part. The one cover 112 is then pivoted about the notional joint line 64 along the inner edges 126 so that the interlocking projections 154 locate within the first holes 58 of the tabs 156.

[0060] Alternatively, the covers 112A, 112B could be interlocked by relative rotation about the first axis 60, in similar fashion to that described previously.

[0061] The assembly 110 includes retaining means in-

cluding securing members in the form of fasteners such as bolts 84, which are located through each of the passages 80. The retaining means includes retaining formations in the form of plain washers 88, spring washers 86 and nuts 90, which are mounted to projecting threaded portions of the bolts 84. The plain washers 88 are enlarged relative to the first holes 58, to prevent withdrawal of the interlocking projections 154 from the first holes 58.

[0062] The bolts 84 could have countersunk heads which could locate within countersunk portions 82 of the passages 80, so that the bolt heads fit flush to the surface parts 20 of the covers 112.

[0063] The nuts 90 could include resilient inserts formed of a plastics material such as nylon into which threads are cut by the threaded portions of the bolts 84 to resist disengagement of the nuts 90 from the bolts 84 in use.

[0064] As with the previous embodiment, the covers are arranged to be loosely connected so that a limited amount of relative movement is permitted between the covers. This can be ensured by appropriate selection of the length of the interlocking projections 154 relative to the depth of the tabs 156. Thus, the interlocking projections 154 could be chosen to be longer than the thickness of the tabs 156 so that there is a clearance between the plain washers 88 and the tabs 156, the interlocking projections 154 thus forming spacing means. The nuts 90 can thus be tightened to the bolts 86 against the interlocking projections 154 without the loose connection between the covers being compromised.

[0065] As with the embodiment shown in Figs. 1 to 7, the tabs 156, first holes 58, passages 80 and interlocking projections 154 are relatively simple to manufacture by conventional manufacturing methods such as casting. As shown in Fig. 11, however, the advantage that this embodiment provides is that there is a clear visual indication of the presence of the bolts, which are visible from above the surface in use. Thus, the integrity of the installation can be easily checked without disassembly being required.

[0066] Various other modifications may be made without departing from the scope of this embodiment of the invention. The assembly could be provided without bolts. The tabs could be of any suitable size and shape, and any suitable number could be provided. The fasteners could be of any suitable design. The interlocking projections could be of any suitable design and number.

[0067] Any of the features described in any of the embodiments could be combined in any suitable combination. In one further example, covers similar to those shown in Figs. 8 to 11 could be provided without integral interlocking projections 154, so that the securing members 80 form the interlocking members. Thus, the interlocking members could be formed separately to the covers.

[0068] Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be un-

derstood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

Claims

1. A surface access assembly (10), **characterised in that** the assembly includes a first cover (12A, 112A) and a second cover (12B, 112B), each of the covers including a substantially planar surface part (20), the assembly including an interlocking member (54, 154, 254) which in an interlocked condition extends between the first cover and the second cover to secure the first and second covers together, the assembly being arranged so that the interlocking member extends in a direction substantially normal to the plane of the surface parts.
2. An assembly according to claim 1, in which the first cover includes a first interlocking formation (52, 56, 156).
3. An assembly according to claim 2, in which the first interlocking formation is in the form of a projecting tab (56, 156) which extends from an underside in use of the surface part.
4. An assembly according to claims 2 or 3, in which the first interlocking formation includes a first hole (158).
5. An assembly according to claim 4 when dependent on claim 3, in which the first hole is defined by the tab.
6. An assembly according to claims 4 or 5, in which in the interlocked condition the interlocking member locates in the first hole.
7. An assembly according to any of the preceding claims, in which in the interlocked condition the covers are loosely linked together, so that limited relative movement is permitted.
8. An assembly according to claim 2 or any claim dependent thereon, in which the first and second covers each include a first interlocking formation.
9. An assembly according to claim 8 when dependent on claim 4 or any claim dependent thereon, in which the assembly includes a plurality of interlocking members, and a different interlocking member locates through each first hole in the interlocked condition.
10. An assembly according to any of the preceding claims, in which one interlocking member is formed integrally with each cover.

11. An assembly according to claim 10 when dependent on claim 4 or any claim dependent thereon, in which each interlocking member is arranged relative to the respective first hole so that the covers are interlocked by a rotational movement of one cover relative to the other cover. 5
12. An assembly according to claim 11, in which in the rotational movement the one cover rotates about a first axis of rotation (60), which extends substantially perpendicularly to the notional line of the joint (64) between the covers. 10
13. An assembly according to claim 11, in which the covers are interlocked by relative rotational movement about the line of the joint between the covers. 15
14. An assembly according to claim 2 or any claim dependent thereon, in which the first interlocking formation includes a recessed portion (52), which forms part of the surface part. 20
15. An assembly according to claim 2 or any claim dependent thereon, in which the second cover includes a second interlocking formation (50) which interlocks with the first interlocking formation in the interlocked condition. 25
16. An assembly according to claim 15, in which the first and second covers each include a second interlocking formation. 30
17. An assembly according to claims 15 or 16, in which each second interlocking formation includes a projecting portion (50), which forms part of the surface part. 35
18. An assembly according to claim 17, in which the interlocking member extends downwardly in use from the projecting portion. 40
19. An assembly according to claims 16 or 17 when dependent on claim 14 or any claim dependent thereon, in which the recessed portion of one cover receives the projecting portion of the other cover in the interlocked condition, and the shape of the recessed portion corresponds to the shape of the projecting portion. 45
20. An assembly according to claims 14 and 17 or any claim dependent thereon, when dependent on claim 3 or any claim dependent thereon, in which the tab extends from adjacent the recessed portion, and in the interlocked condition, the tab abuts the projecting portion of the other cover. 50
21. An assembly according to claim 4 or any claim dependent thereon, in which the first hole is a through hole, and in the interlocked condition the interlocking member extends completely through the first hole, a portion (62, 162) of the interlocking member projecting beyond the first hole. 55
22. An assembly according to any of the preceding claims, in which the assembly includes retaining means (66, 68, 70, 172, 84, 86, 88, 90, 94) to retain the covers in the interlocked condition.
23. An assembly according to claim 22, in which the retaining means substantially prevent withdrawal of the interlocking member from the first hole.
24. An assembly according to claims 22 or 23 when dependent on claim 21, in which the retaining means includes a retaining formation (70, 88, 172), which is enlarged relative to the first hole and is formed to or fitted to the projecting portion of the interlocking member.
25. An assembly according to claims 22 or 23, in which the retaining means include a securing member (84), which locates through a passage (80) defined by the cover.
26. An assembly according to claim 25 when dependent on claim 22, in which a portion of the securing member projects beyond the passage below the cover, the retaining means include a retaining formation (88) which is enlarged relative to the first hole and the retaining formation is formed to or fitted to the projecting portion of the securing member.
27. An assembly according to claim 26, in which the cover includes spacing means (154) to ensure that the connection between the covers is loose, which space the retaining formation from the underside of the cover.
28. An assembly according to claim 22 or any claim dependent thereon, in which the retaining means includes locking means (66, 68, 94) to lock the covers in the interlocked condition.
29. An assembly according to claim 25 or any claim dependent thereon, in which the securing member forms the interlocking member.
30. An assembly according to any of the preceding claims, in which each cover includes prising means (32) which include an aperture (32) for receiving a prising tool, and the cover is arranged so that in the interlocked condition as the tool is inserted into the prising aperture to lift the cover, both covers are lifted together.
31. A cover for a surface access assembly, the cover

being as defined in any of the preceding claims.

- 32.** A method of assembling a surface access assembly (10), the assembly including a first cover (12A, 112A) and a second cover (12B, 112B), each of the covers including a substantially planar surface part (20), the assembly including an interlocking member (54, 154, 254), the method including the step of securing the first and second covers together in an interlocked condition in which the interlocking member extends between the covers, the assembly being arranged so that the interlocking member extends in a direction substantially normal to the plane of the surface parts.
- 33.** A method according to claim 32, in which the assembly is as defined in any of claims 1 to 30.

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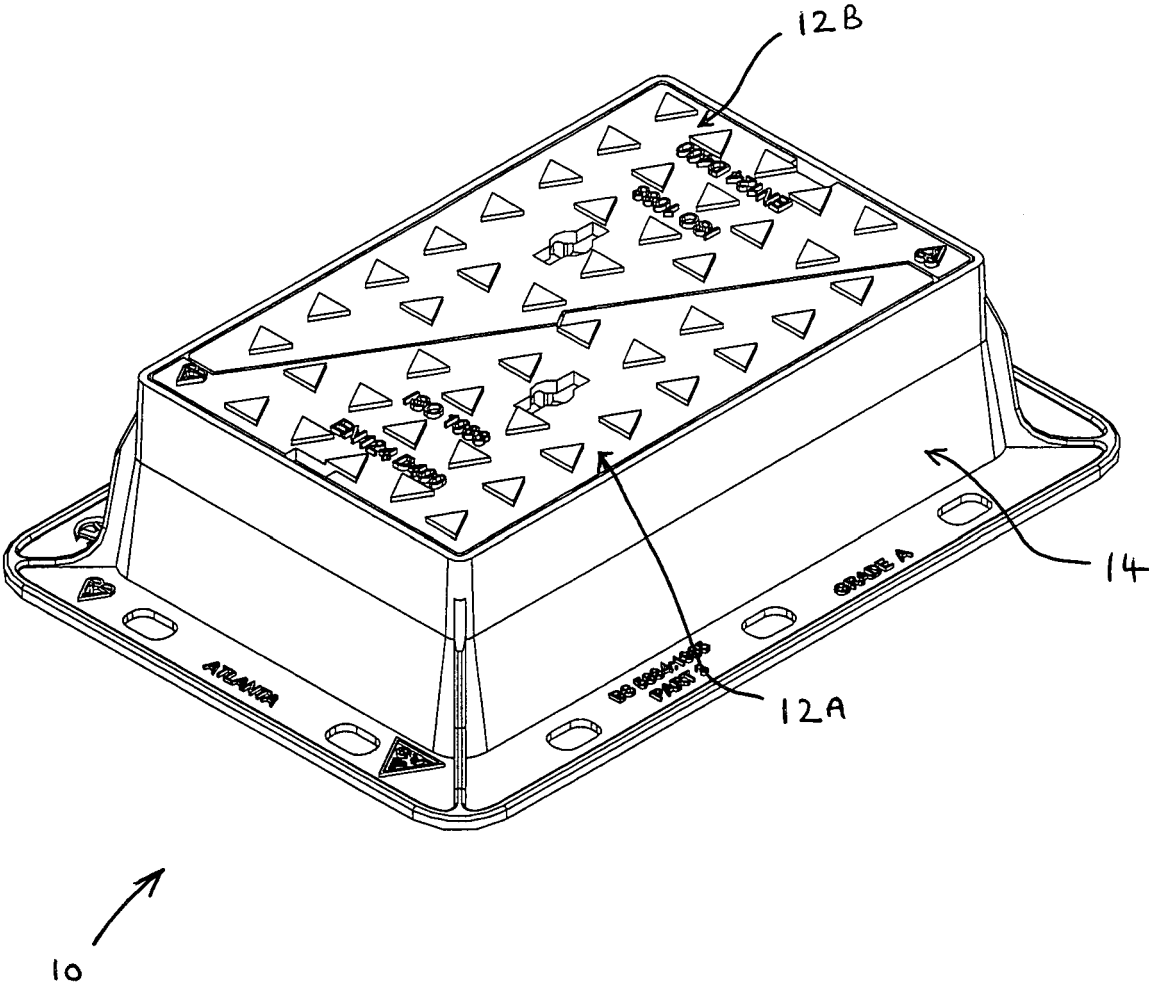


Fig 1

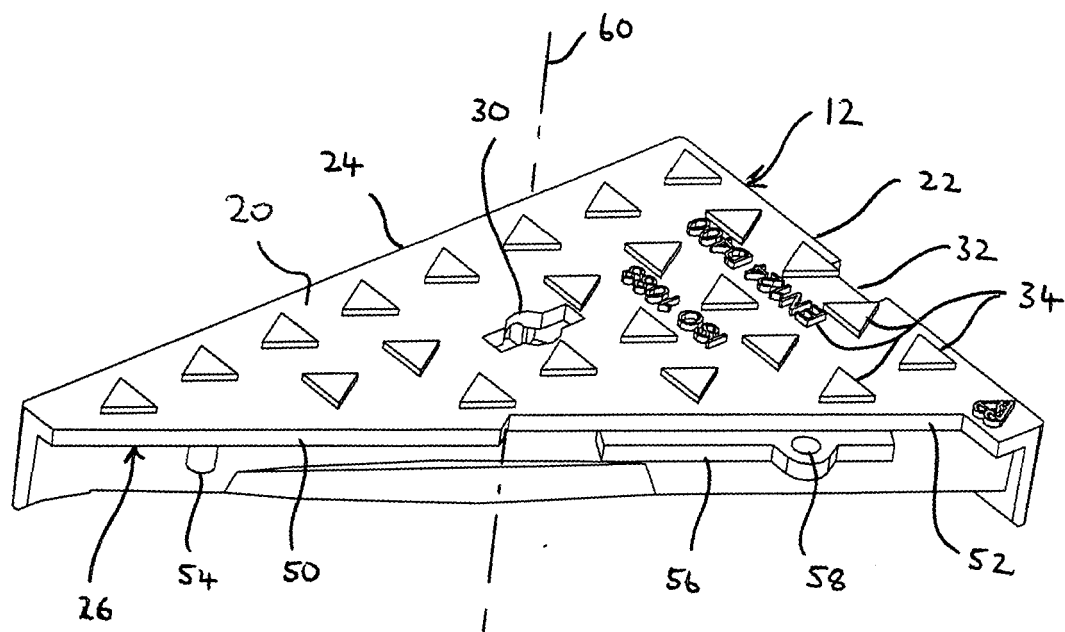


Fig 2

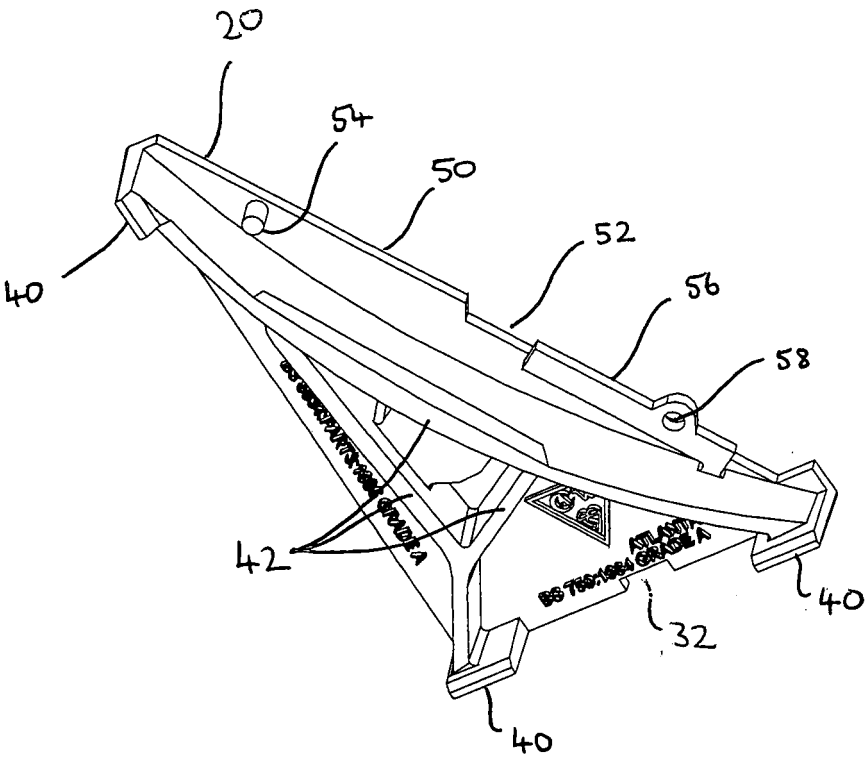


Fig 3

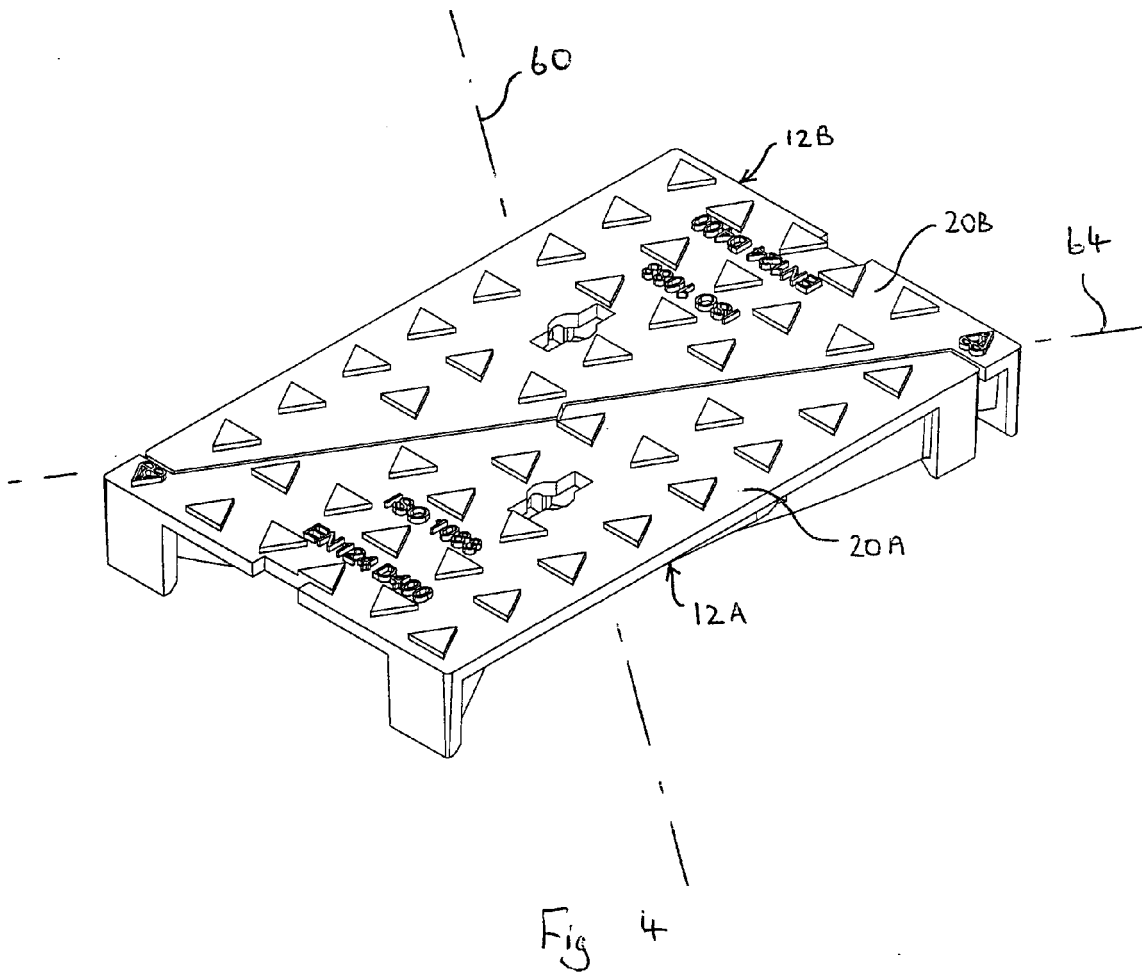


Fig 4

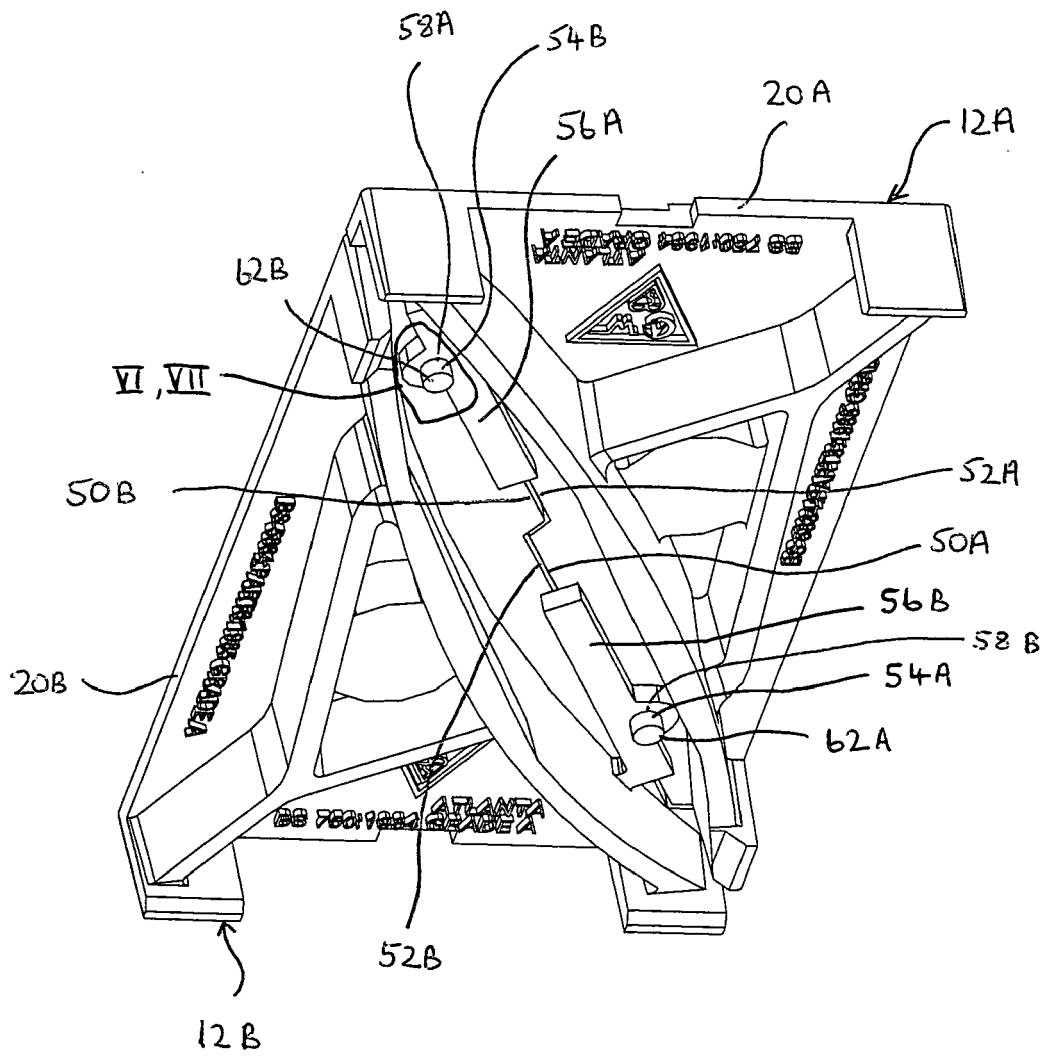


Fig 5

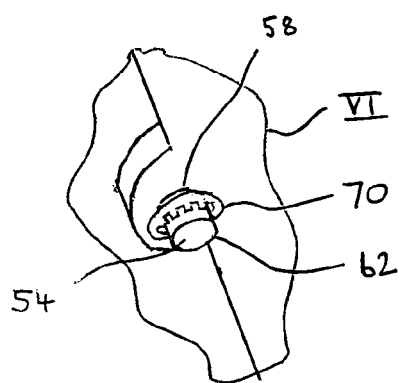


Fig 6

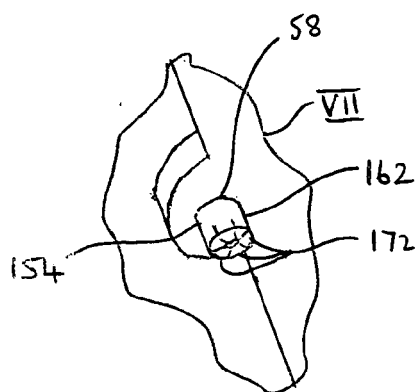


Fig 7A

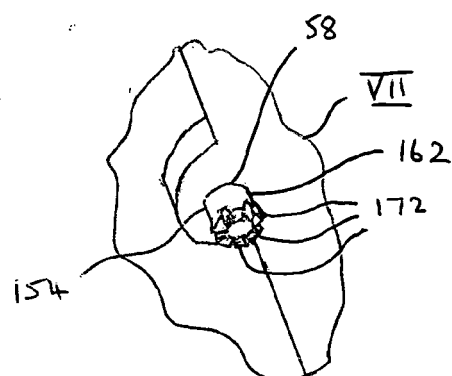


Fig 7B

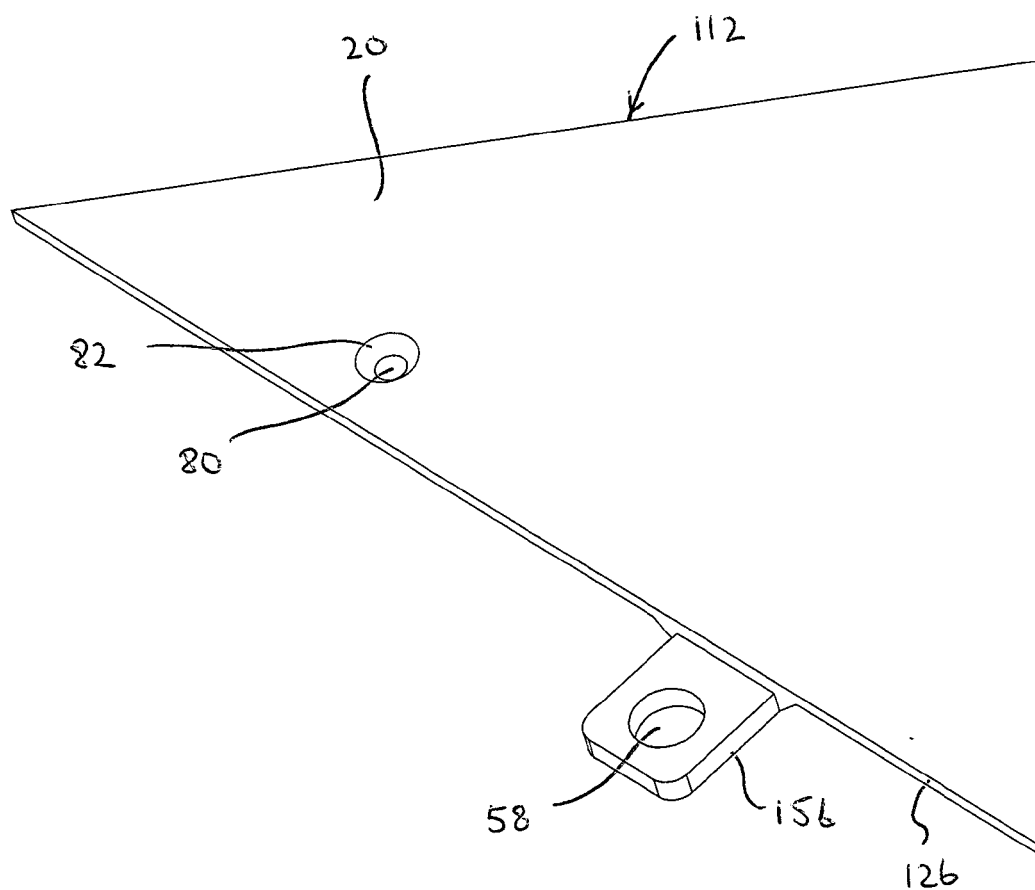
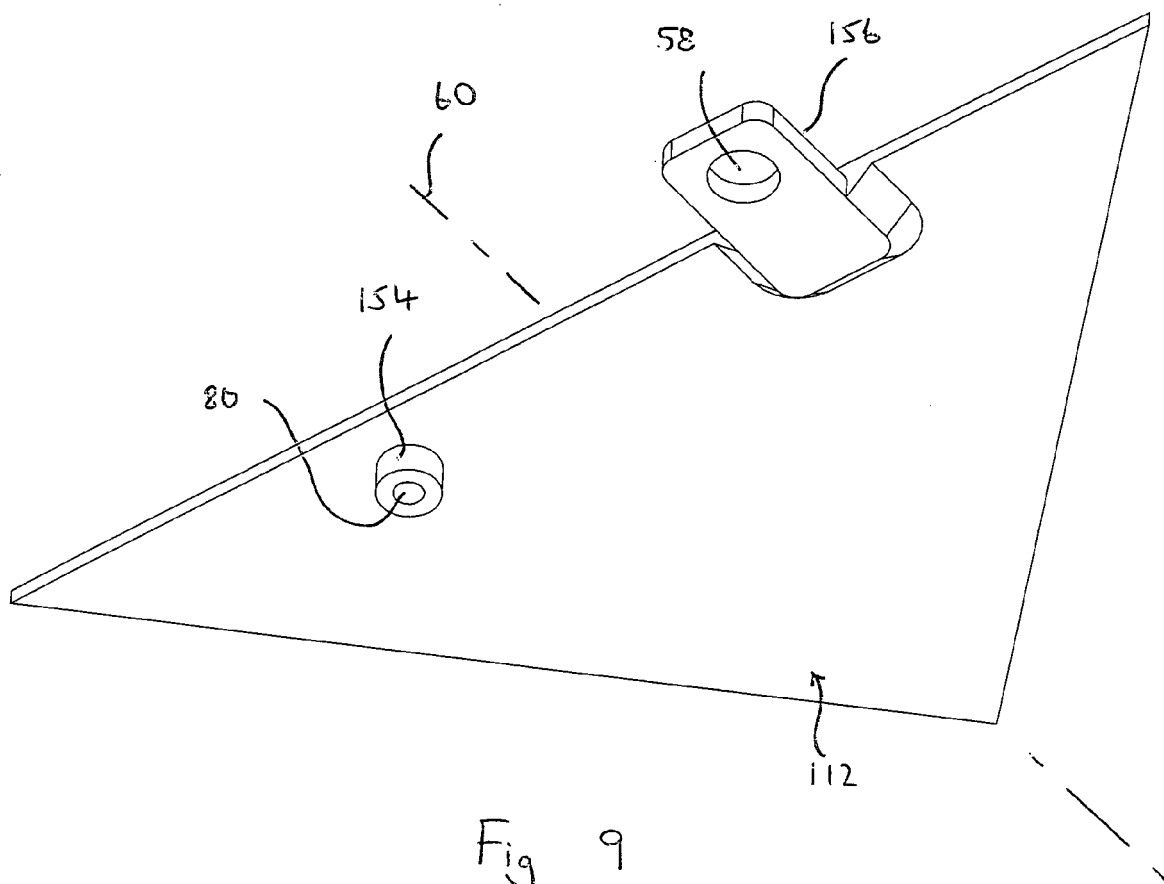
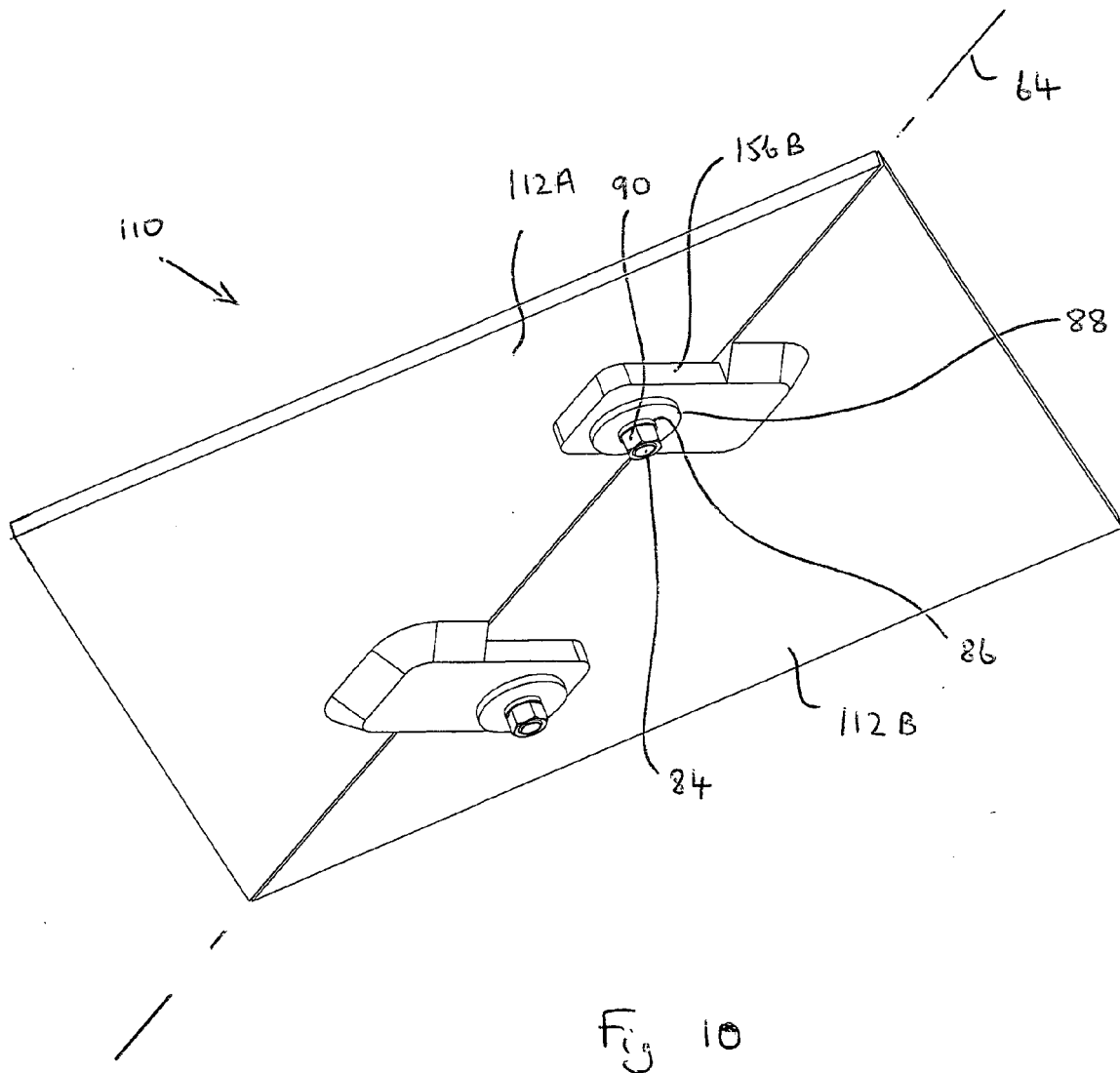


Fig 8





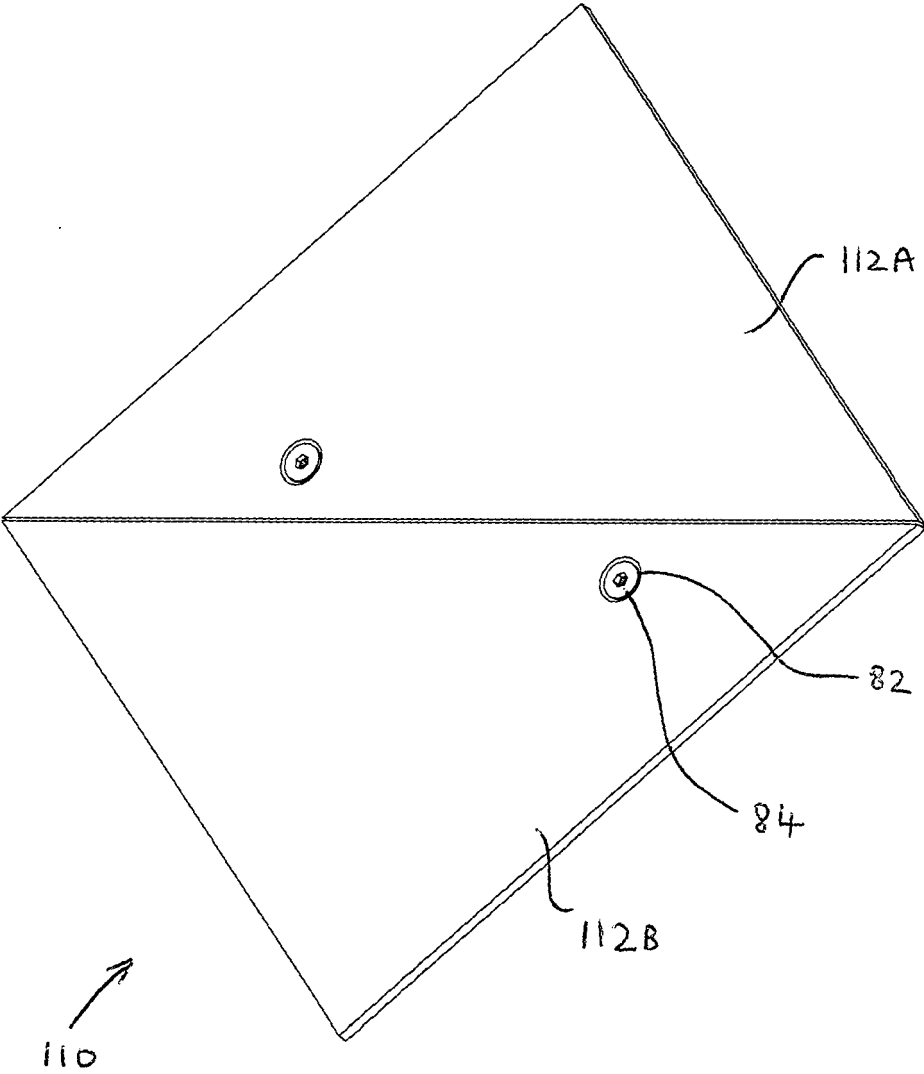


Fig 11

