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(71) Applicant: **Wrekin Holdings Limited**
Lichfield, Staffordshire WS14 9TZ (GB)

(72) Inventor: **Edmonds, David**
Lichfield, Staffordshire WS14 9TZ (GB)

(74) Representative: **Blower, Timothy John**
IP-Active.com Limited
The TechnoCentre
Coventry University Technology Park
Puma Way
Coventry, Warwickshire CV1 2TT (GB)

(54) **Cover members**

(57) A cover member (10) for mounting in use in a ground surface access assembly includes a plurality of partly coincident forms (20A, 20B 20C, 20D, 20E) each of which is rectangular in plan. Each form (20) includes a first side (22) coincident with at least a part of a first common datum side (14), a second side (24) coincident with at least part of a second common datum side (16) and a first corner (30) coincident with a common datum first corner (18). The cover member (10) includes a body (12) and a plurality of mountings (40, 42, 44, 46) located on an underside in use of the body (12). Each form (20) is provided with four of the mountings (40, 42, 44, 46), each mounting (40, 42, 44, 46) being located at or towards a corner (30, 32, 34, 36) of the respective form (20). The mountings (40, 42, 44, 46) of each form (20) comprise a common first mounting (40) located at or near the datum first corner (18).

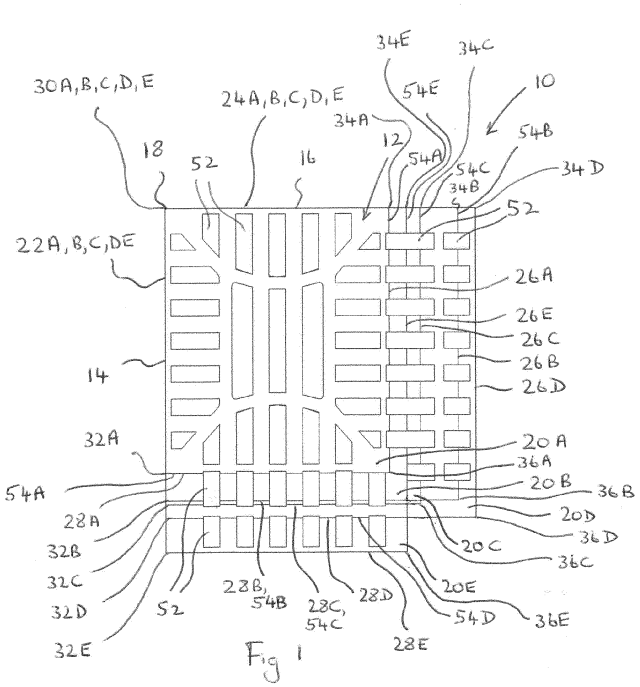

Fig 1

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Description

[0001] The present invention relates to cover members, particularly but not exclusively cover members for use in ground surface access assemblies.

[0002] The steep rise in raw material costs has meant that theft of ironwork such as cover members in ground surface access assemblies such as gully gratings and manhole covers is increasingly common, despite security measures being taken. When the cover members are taken from surface access assemblies installed in public highways and footways, a dangerous opening is left which must be covered as soon as possible. Commonly, metal sheeting is used, but this again simply provides further pickings for thieves. Alternatively, the opening can be covered with paving slabs which are then covered with tarmac, which provides an unsightly, unsafe installation without drainage. The problem is exacerbated by the different types and configurations of cover members, and the volume and speed with which it can occur - in one night, several hundred cover members can be taken in one local authority area. It is simply impractical for an organisation to keep in stock sufficient quantities to enable immediate replacement of so many cover members of different types.

[0003] According to a first aspect of the present invention, there is provided a cover member for mounting in use in a ground surface access assembly, the cover member including a substantially planar body, a first datum side and a second datum side which meet together at a datum first corner, the cover member including a plurality of partly coincident forms each of which is rectangular in plan having four corners, each form including a first side coincident with at least a part of the first datum side, a second side coincident with at least part of the second datum side and a first corner coincident with the datum first corner, the cover member including a plurality of mountings located on an underside in use of the body, wherein each form is provided with four of the mountings, each mounting being located at or towards a corner of the respective form, the mountings of each form comprising a common first mounting located at or near the datum first corner, a second mounting located along or near to the first datum side and spaced from the datum corner, a third mounting located along or near to the second datum side and spaced from the datum corner and a fourth mounting spaced from both the first and second datum sides.

[0004] Each mounting may comprise a projecting pad, which projects from the underside in use of the body.

[0005] The pads for different forms may provide different insertion depths. One, some or each mounting may include a plurality of pads, which provide different insertion depths.

[0006] The or each pad may provide a plurality of insertion depths. The or each pad may include a guide for cutting of the pad to a desired insertion depth. The or each pad may be stepped.

[0007] The cover member may include packing members, which, in use, may be fixed to one or more pads to increase the insertion depth of the respective pad.

[0008] The body may define a plurality of through holes, which may be in the form of slots.

[0009] Possibly, each form includes a third side, and may be arranged so that the third side is either located along an edge of the cover member, or extends across a plurality of the through holes. Possibly, one or some of the through holes extend to the edge of the cover member along the third side of one or some of the forms to form a plurality of edge projections.

[0010] Possibly, each form includes a fourth side, and may be arranged so that the fourth side is either located along an edge of the cover member, or extends across a plurality of the through holes. Possibly, one or some of the through holes extend to the edge of the cover member along the fourth side of one or some of the forms to form a plurality of edge projections.

[0011] Possibly, the cover member includes markings and/or guides to indicate the location of the third and/or fourth sides of each form.

[0012] Possibly, the cover member includes one or more reinforcement members, which may extend downwardly from the body. The or each reinforcement member may be elongate. Possibly, the reinforcement member (s) does not extend across any of the sides of any of the forms.

[0013] Possibly, the cover member is formed of a non- metallic material, and may be formed of a plastics or concrete material or polymer concrete material, which may be reinforced. Possibly, the cover member is formed of glass fibre reinforced material.

[0014] Possibly, the cover member is not rectangular in plan, and cannot be used without trimming. Possibly, in use, the cover member is trimmed to size on site before fitting.

[0015] Possibly, none of the third and fourth sides are coincident.

[0016] Possibly, the cover member is in the form of a grating, grid or grille. The cover member may be for use as an emergency or temporary cover member.

[0017] According to a second aspect of the present invention, there is provided a method of providing a cover member for mounting in use in a ground surface access assembly, the cover member including a substantially planar body, a first datum side and a second datum side which meet together at a datum first corner, the cover member including a plurality of partly coincident forms each of which is rectangular in plan having four corners, each form including a first

side coincident with at least a part of the first datum side, a second side coincident with at least part of the second datum side and a first corner coincident with the datum first corner, the cover member including a plurality of mountings located on an underside in use of the body, wherein each form is provided with four of the mountings, each mounting being located at or towards a corner of the respective form, the mountings of each form comprising a common first mounting located at or near the datum first corner, a second mounting located along or near to the first datum side and spaced from the datum corner, a third mounting located along or near to the second datum side and spaced from the datum corner and a fourth mounting spaced from both the first and second datum sides.

[0018] The method includes any of the features or steps described in any of the preceding statements.

[0019] 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 plan view from above of a cover member;
Fig. 2 is a plan view from below of the cover member;
Fig. 3 is a perspective view from above of the cover member;
Fig. 4 is a perspective view from below of the cover member;
Fig. 5 is a perspective view from above of a corner of another cover member;
Fig. 6 is a perspective view from above of a corner of yet another cover member;
Fig. 7 is a perspective view from above of a corner of still yet another cover member;
Fig. 8 is a plan view from above of another cover member;
Fig. 9 is a perspective view from above of yet another cover member;
and
Fig. 10 is a perspective view from below of the cover member of Fig. 9.

[0020] In this specification, the term "coincident" is used in respect of features which occupy the same portion of space.

[0021] Figs. 1 to 4 show a cover member 10 in the form of a grating, grid or grille for use as an emergency or temporary cover member in a ground surface access assembly. The cover member 10 includes a substantially planar body 12, a first datum side 14 and a second datum side 16 which meet together at a datum first corner 18.

[0022] The cover member 10 includes a plurality of partly coincident forms 20A, 20B 20C, 20D, 20E each of which is rectangular in plan having four corners 30, 32, 34, 36. Each form 20 includes a first side 22 coincident with at least a part of the first datum side 14, a second side 24 coincident with at least part of the second datum side 16 and a first corner 30 coincident with the datum first corner 18.

[0023] The cover member 10 includes a plurality of mountings 40, 42, 44, 46 located on an underside in use of the body 12. Each form 20 is provided with four of the mountings 40, 42, 44, 46, each mounting 40, 42, 44, 46 being located at or towards a corner 30, 32, 34, 36 of the respective form 20. The mountings 40, 42, 44, 46 of each form 20 comprise a common first mounting 40 located at or near the datum first corner 18, a second mounting 42 located along or near to the first datum side 14 and spaced from the datum corner 18, a third mounting 44 located along or near to the second datum side 16 and spaced from the datum corner 18 and a fourth mounting 46 spaced from both the first and second datum sides 14, 16.

[0024] In the example shown in the drawings, the cover member 10 comprises five forms 20 which will be designated A, B, C, D and E. Each form is similar in terms of features, and therefore the same reference numerals have been used for the same features in each form 20, differentiated by the form designation A, B, C, D or E as appropriate.

[0025] Each mounting 40, 42, 44, 46 comprises a projecting pad 50, which projects from the underside in use of the body 10.

[0026] The body 10 defines a plurality of through holes 52, which in the example shown are in the form of slots.

[0027] Each form includes a third side 26, and is arranged so that the third side 26 is either located along an edge of the cover member 10, or extends across a plurality of the through holes 52.

[0028] Each form includes a fourth side 28, and is arranged so that the fourth side 28 is either located along an edge of the cover member 10, or extends across a plurality of the through holes 52.

[0029] In this example, none of the third and fourth sides 26, 28 are coincident.

[0030] The cover member 10 includes markings 54 to indicate the location of the third and/or fourth sides of each form.

[0031] The cover member 10 includes a plurality of elongate reinforcement members 56 which extend downwardly from the underside of the body 12. The reinforcement members 56 do not extend across any of the sides 22, 24, 26, 28 of any of the forms 20.

[0032] The cover member 10 is formed of a non-metallic material, and could be formed of a reinforced plastics material or concrete material, which could be reinforced with glass fibre material. In another example the cover member 10 could be formed of a resin material or a polymer concrete

[0033] The forms 20 could have the following dimensions:

Form designation	Length of first side 22 (and third side 26)	Length of second side 24 (and fourth side 28)
20A	385	325
20B	425	425
20C	430	370
20D	450	450
20E	500	350

[0034] These form sizes have been found to cater for a large proportion of the access cover installations in the UK.

[0035] It will be apparent that the cover member 10 is not rectangular in plan, and cannot therefore be satisfactorily used in the present condition as shown as a replacement cover within a rectangular opening. In use, the cover member 10 is supplied to site as shown, and then trimmed to size as required. Alternatively, the cover member 10 could be stored in the present condition, and then trimmed to order before being supplied to site.

[0036] To obtain a cover member of the form 20A, it is necessary to cut along markings 54A to form the third side 26A and the fourth side 28A.

[0037] To obtain a cover member of the form 20B, it is necessary to cut along markings 54B to form the third side 26B and the fourth side 28B.

[0038] To obtain a cover member of the form 20C, it is necessary to cut along markings 54C to form the third side 26C and the fourth side 28C.

[0039] To obtain a cover member of the form 20D, it is necessary to cut along marking 54D to form the fourth side 28D. The third side 26D is formed by the edge of the cover member 10.

[0040] To obtain a cover member of the form 20E, it is necessary to cut along marking 54E to form the third side 26E. The fourth side 28E is formed by the edge of the cover member 10.

[0041] The arrangement of the cover member 10 wherein the markings 54 and hence the third and fourth sides 26, 28 extend across a plurality of the through holes 52, but do not extend across the reinforcement members 56, reduces the amount of material to be cut, reducing the time and effort required in trimming the cover member 10 to size. Advantageously the material of the cover member 10 is relatively easy to cut, while being strong and light.

[0042] The arrangement of the mountings 40-46 and the reinforcement members 56 ensures that the trimmed cover member form 20 is sufficiently strong to provide a safe installation. In one example, all of the forms 20, comply with EN 124 C250, so that any of the forms 20 can be used in the roadway alongside the kerb. The cut third or fourth sides are laid adjacent to the kerbside in practice. The non-metallic material does not attract thieves. The holes 52 provide drainage.

[0043] Figs 5 to 10 show other embodiments of the invention, many features of which are similar to those already described in relation to the embodiment of Figs 1 to 4. Therefore, for the sake of brevity, the following embodiments will only be described in so far as they differ from the embodiment already described. Where features are the same or similar, the same reference numerals have been used and the features will not be described again.

[0044] As well as in differing in shape and size, the different forms could also differ in depth of insertion. For example, with respect to the forms 20 previously described, forms 20A and 20D could have a depth of insertion of 50 mm; form 20B could have a depth of insertion of 80 mm; and form 20D could have a depth of insertion of 75 mm. Other common forms not previously described could have depths of insertion of 40 mm, 44 mm, and 65 mm.

[0045] The depth of insertion of the cover member is the thickness of the cover member at the mountings.

[0046] Figs. 5 to 7 show details of cover members 110, 210 and 310 which provide for forms having different depths of insertion. Clearly, where a mounting 44 for a form 20 is in a unique location and is not coincident with a mounting for another form 20 a pad 50 can be provided at the correct depth of insertion. However, this is not the case where a mounting 44 is common for several forms 20.

[0047] Fig. 5 shows a common first mounting 40 of a cover member 110 which includes a projecting pad 50 which includes a plurality of pad markings 60, the markings 60 designating a plurality of insertion depths, each marking 60 providing a guide for cutting of the pad 50 to an appropriate size. Each of the markings 60 could be a surface marking only, or could be in the form of a channel, trough, recess or depression defined by the lateral sides of the pad 50 to provide additional guidance.

[0048] Figure 6 shows a common first mounting 40 of a cover member 210 which includes a projecting pad 50 which is stepped to provide a plurality of pads 50A and 50D, 50B, 50E and 50F of differing insertion depths. When a shallower insertion depth is required, the pad 50 is again cut to the appropriate size, although in this case less cutting is required in comparison with the embodiment shown in Fig 5. The steps thus provide a cutting guide.

[0049] Figure 7 shows a common first mounting 40 of a cover member 310 which includes a projecting pad 50 and one or more packing members 58. Packing members 58 (which could of different thicknesses) are fixed to the pad 50

to provide a desired depth of insertion. The packing members 58 could be fixed in any suitable way, such as by adhesive or by fasteners such as nails, screws or pins, or a combination thereof. In another embodiment (not shown), the pad 50 could define one or more receiving holes which receive one or more lugs or pins which project from the packing members 58. A plurality of packing members 58 could be used to provide the desired depth of insertion.

[0050] In another embodiment (not shown), the cover member could include pads 50 having a combination of the features described above. For example, a cover member could have pads 50 providing a depth of insertion of 50 mm with pad markings 60 designating a depth of insertion of 45 mm and 40 mm and with packing members 58 of thicknesses 15 mm, 20mm, 25mm and 30 mm to provide depths of insertion of 65mm, 70mm 75mm and 80mm.

[0051] Fig 8 shows another embodiment of the invention, which is largely similar to the previous embodiment and will therefore only be described in so far as it differs from the embodiment already described. Where features are the same or similar, the same reference numerals have been used.

[0052] Fig 8 shows a cover member 110 which includes forms 20A-F, which could have the following dimensions:

Form designation	Length of first side 22 (and third side 26)	Length of second side 24 (and fourth side 28)
20A	385	325
20B	425	425
20C	430	370
20D	450	450
20E	510	350
20F	490	350

[0053] In this embodiment, edge through holes 62 extend to the edge of the cover member 110 along the third sides 26B, 26D and along the fourth sides 28E, 28F to form edge projections 64. The edge through holes 62 reduce weight and save material, and the edge projections 64 are relatively easy to cut off.

[0054] Figs. 9 and 10 show yet another cover member 410 having many similar features to those described above. In comparison with the form designations and dimensions described for the cover member 310 of Fig. 8, the third and fourth sides 28B, 28C are common to both of the forms 20B and 20C.

[0055] The cover member 410 illustrates another example of the stepped pads 50 shown in Fig. 6 and described above. In this example, the pads 50 are stepped on each side, which provides a manufacturing advantage.

[0056] The cover member 410 defines a pair of relieving recesses 66 which, in this example, are blind recesses extending inwardly from an in use upper surface 70. The recesses 66 are defined in the material forming the fourth mountings 46. Both recesses 66 lie along the common marking 54B, 54C for the fourth sides 28B, 28C of the forms 20B, 20C. One of the recesses 66 lies along the marking 54C for the third side 26C of the form 20C, and the other recess 66 lies along the marking 54B for the third side 26B of the form 20B.

[0057] The recesses 66 reduce the amount of material which is required to be cut to produce the required form. The surface recesses 66 preserve the integrity of the different fourth mountings 46A, 46B, 46C, 46D, 46E.

[0058] Referring to Fig. 10, the cover member 410 defines a plurality of relatively narrow relieving slots 68 which are defined between the reinforcement members 56 and the pads 50 of the mountings 40, 42, 44, 46. The slots 68 permit the pads 50 to be cut more cleanly. Surprisingly, the applicant has found that the slots 68 have no deleterious effect on the load carrying capacity of the cover member 410.

[0059] The markings 54 in this embodiment are provided in the form of incised lines defined in the upper surface 70, which provide a positive guide to a saw or similar cutting device when cutting.

[0060] Various other modifications could be made without departing from the scope of the invention. The cover member 10 and forms 20 could be of any suitable size, shape and thickness, and could be formed of any suitable material. The cover member 10 could comprise any suitable number of forms 20, in any suitable configuration. The number, shape and configuration of the holes 52 and reinforcement members 56 could be different. The cover member 10 could include guides in the form of depressions or recesses, or protrusions such as ridges to aid cutting.

[0061] Any of the features or steps of any of the embodiments shown or described could be combined in any suitable way, within the scope of the overall disclosure of this document.

[0062] There is thus provided a cover member which reduces stockholding of cover members for use in emergency or temporary situations. Only one type of emergency cover member is required which simplifies stockholding, loading and site work. The cover member can be quickly, easily and accurately cut to size as required. The resultant forms comply with regulatory standards for use in roadways, are not attractive to thieves and maintain drainage of the roadway.

Claims

1. A cover member 10 for mounting in use in a ground surface access assembly, **characterised in that** the cover member 10 includes a substantially planar body 12, a first datum side 14 and a second datum side 16 which meet together at a datum first corner 18, the cover member 10 including a plurality of partly coincident forms 20A, 20B 20C, 20D, 20E each of which is rectangular in plan having four corners 30, 32, 34, 36, each form 20 including a first side 22 coincident with at least a part of the first datum side 14, a second side 24 coincident with at least part of the second datum side 16 and a first corner 30 coincident with the datum first corner 18, the cover member 10 including a plurality of mountings 40, 42, 44, 46 located on an underside in use of the body 12, each form 20 being provided with four of the mountings 40, 42, 44, 46, each mounting 40, 42, 44, 46 being located at or towards a corner 30, 32, 34, 36 of the respective form 20, the mountings 40, 42, 44, 46 of each form 20 comprising a common first mounting 40 located at or near the datum first corner 18, a second mounting 42 located along or near to the first datum side 14 and spaced from the datum corner 18, a third mounting 44 located along or near to the second datum side 16 and spaced from the datum corner 18 and a fourth mounting 46 spaced from both the first and second datum sides 14, 16.

2. A cover member according to claim 1, in which each mounting comprises a projecting pad 50, which projects from the underside in use of the body, the pads for different forms providing different insertion depths.

3. A cover member according to claim 2, in which one, some or each mounting includes a plurality of pads, which provide different insertion depths.

4. A cover member according to claims 2 or 3, in which the or each pad provides a plurality of insertion depths, and includes a guide for cutting of the pad to a desired insertion depth.

5. A cover member according to any of the preceding claims, in which the body defines a plurality of through holes 52, each form including a third side 26 and a fourth side 28 which are arranged so that the third side is either located along an edge of the cover member, or extends across a plurality of the through holes, and/or the fourth side is either located along an edge of the cover member, or extends across a plurality of the through holes.

6. A cover member according to claim 5, in which one or some of the through holes extend to the edge of the cover member along the third side and/or the fourth side of one or some of the forms to form a plurality of edge projections.

7. A cover member according to any of the preceding claims, in which each form includes a third side 26 and a fourth side 28 and the cover member includes markings and/or guides 54 to indicate the location of the third and/or fourth sides of each form.

8. A cover member according to any of the preceding claims, in which the cover member includes one or more elongate reinforcement members 56, which extend downwardly from the body and do not extend across any of the sides of any of the forms.

9. A cover member according to any of the preceding claims, in which the cover member is formed of a non-metallic material, and may be formed of a plastics or concrete material or polymer concrete material, which may be reinforced, and may be formed of glass fibre reinforced material.

10. A cover member according to any of the preceding claims, in which the cover member is not rectangular in plan, and cannot be used without trimming and may be trimmed to size in use on site before fitting.

11. A cover member according to any of the preceding claims, in which the cover member is in the form of a grating, grid or grille and may be for use as an emergency or temporary cover member.

12. A method of providing a cover member 10 for mounting in use in a ground surface access assembly, **characterised in that** the cover member 10 includes a substantially planar body 12, a first datum side 14 and a second datum side 16 which meet together at a datum first corner 18, the cover member 10 including a plurality of partly coincident forms 20A, 20B 20C, 20D, 20E each of which is rectangular in plan having four corners 30, 32, 34, 36, each form 20 including a first side 22 coincident with at least a part of the first datum side 14, a second side 24 coincident with at least part of the second datum side 16 and a first corner 30 coincident with the datum first corner 18, the cover member 10 including a plurality of mountings 40, 42, 44, 46 located on an underside in use of the body 12, each

form 20 being provided with four of the mountings 40, 42, 44, 46, each mounting 40, 42, 44, 46 being located at or towards a corner 30, 32, 34, 36 of the respective form 20, the mountings 40, 42, 44, 46 of each form 20 comprising a common first mounting 40 located at or near the datum first corner 18, a second mounting 42 located along or near to the first datum side 14 and spaced from the datum corner 18, a third mounting 44 located along or near to the second datum side 16 and spaced from the datum corner 18 and a fourth mounting 46 spaced from both the first and second datum sides 14, 16.

13. A method according to claim 12 in which the method includes any of the steps defined in any of claims 1 to 11, and the cover member 10 includes any of the features defined in any of claims 1 to 11.

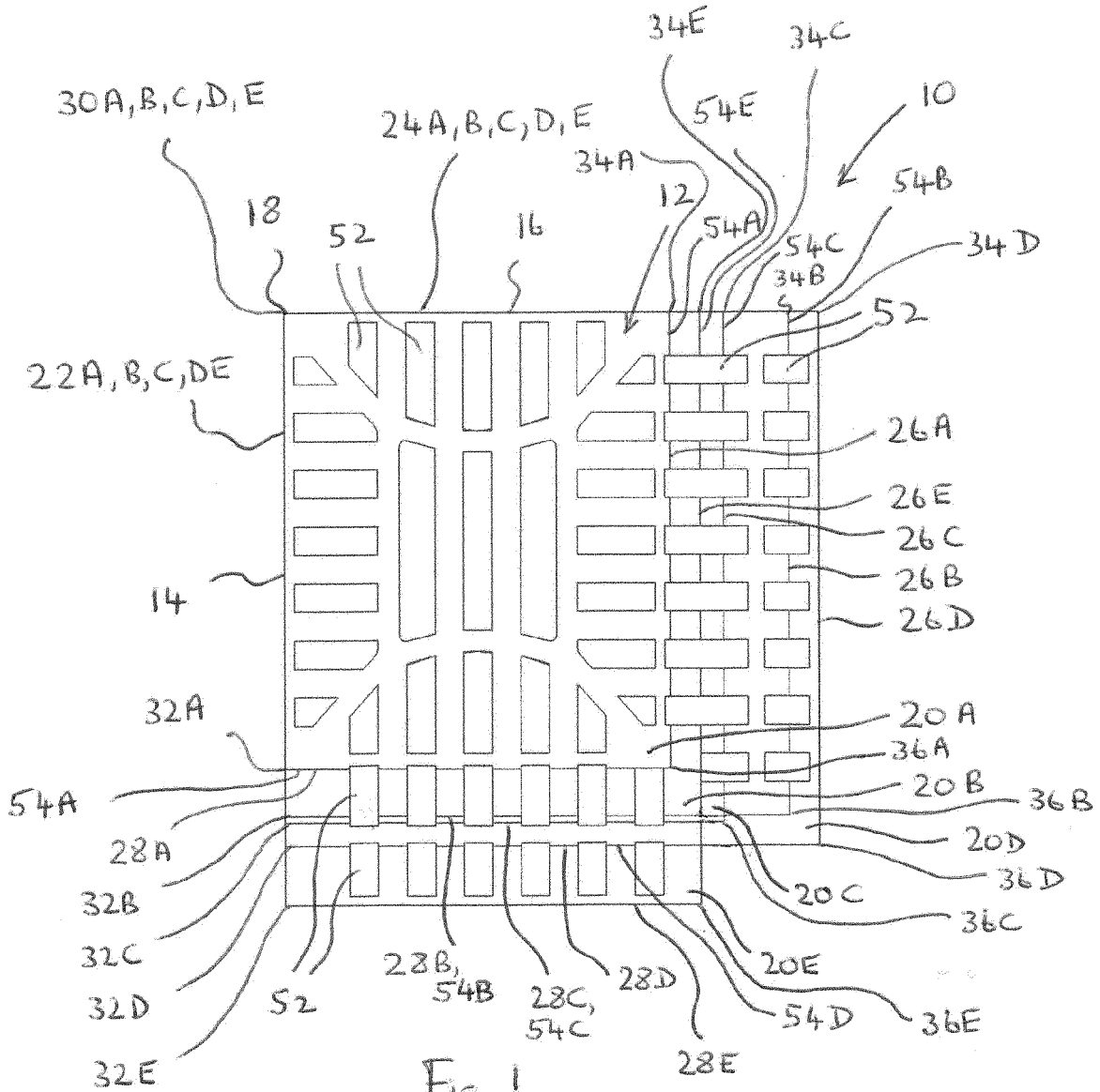
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Fig 1

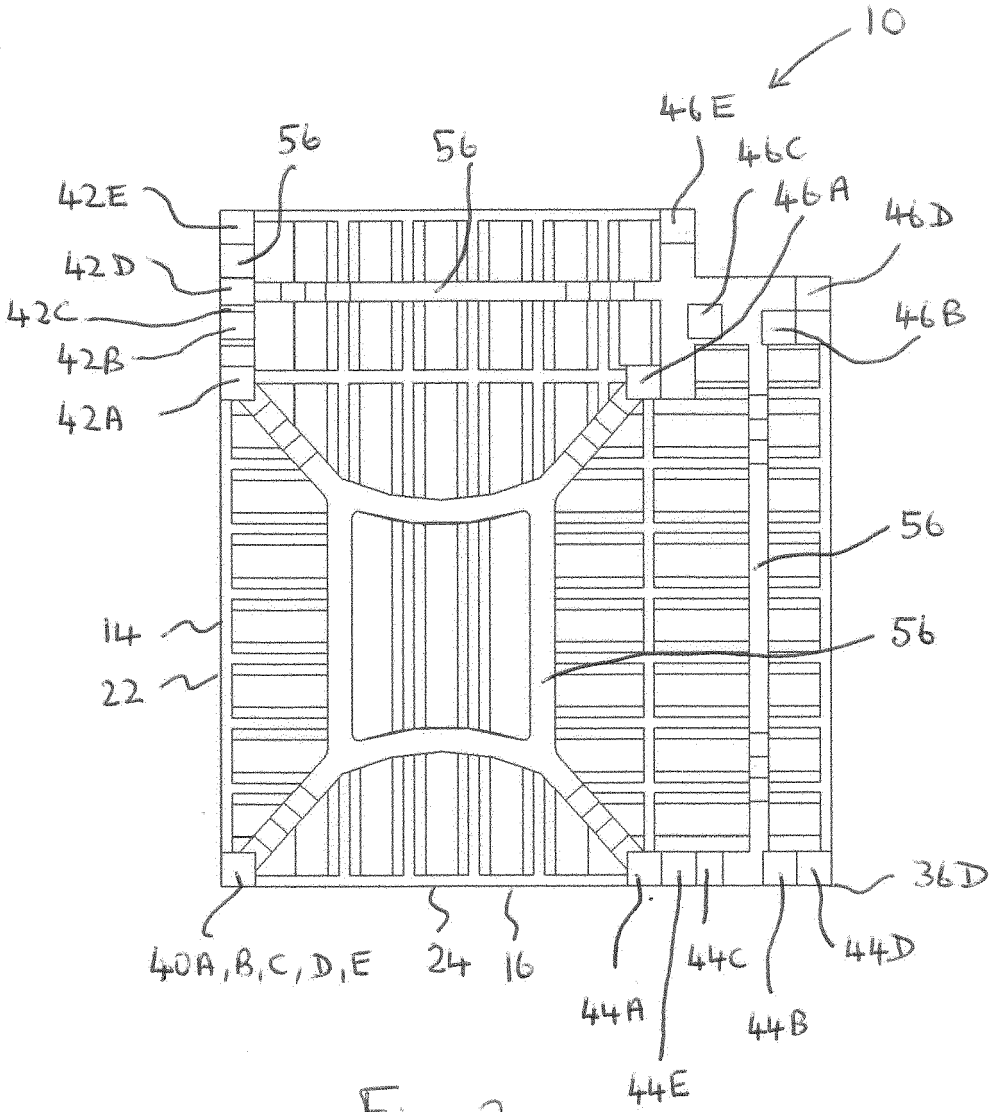
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Fig 2

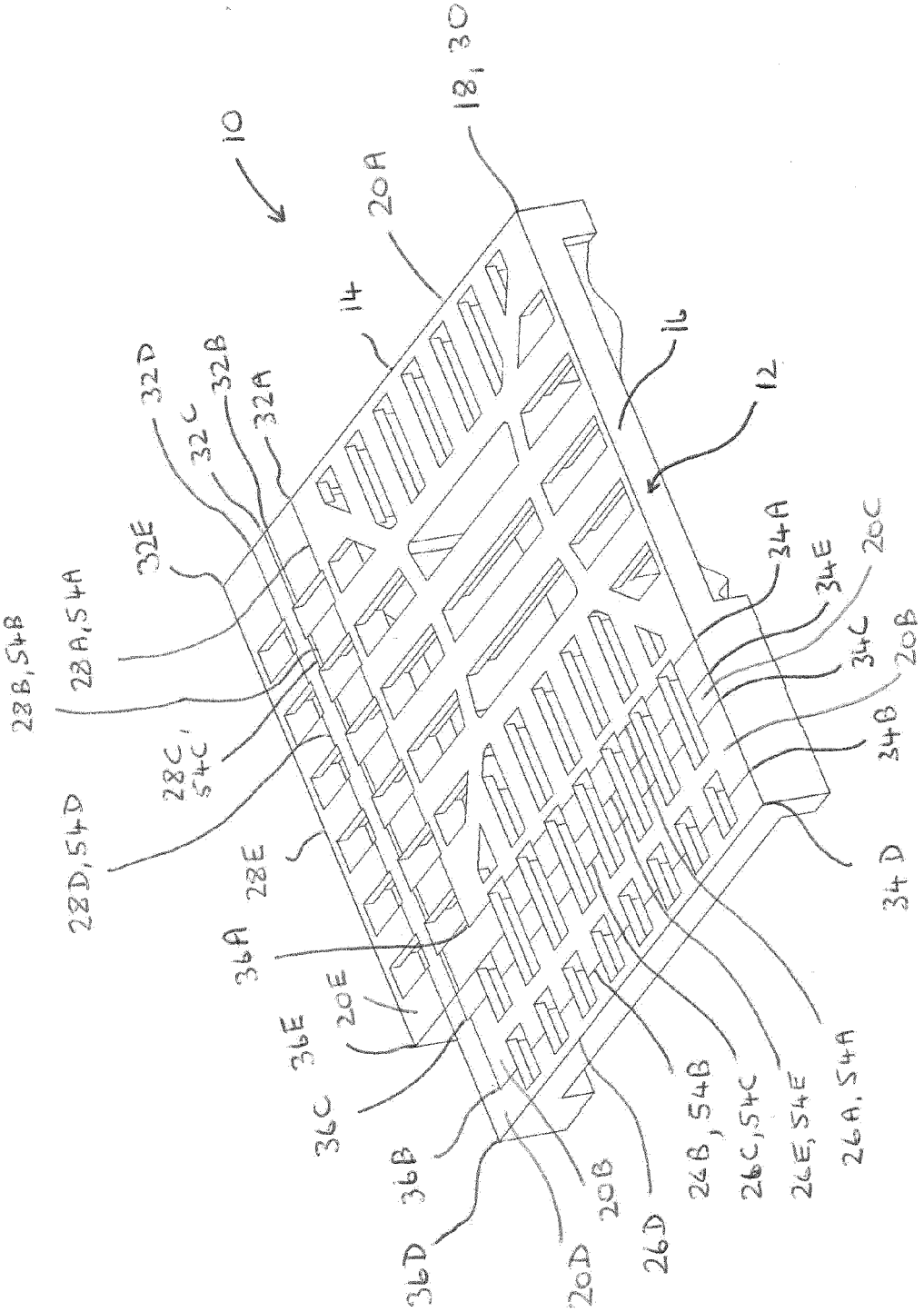
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Fig 3

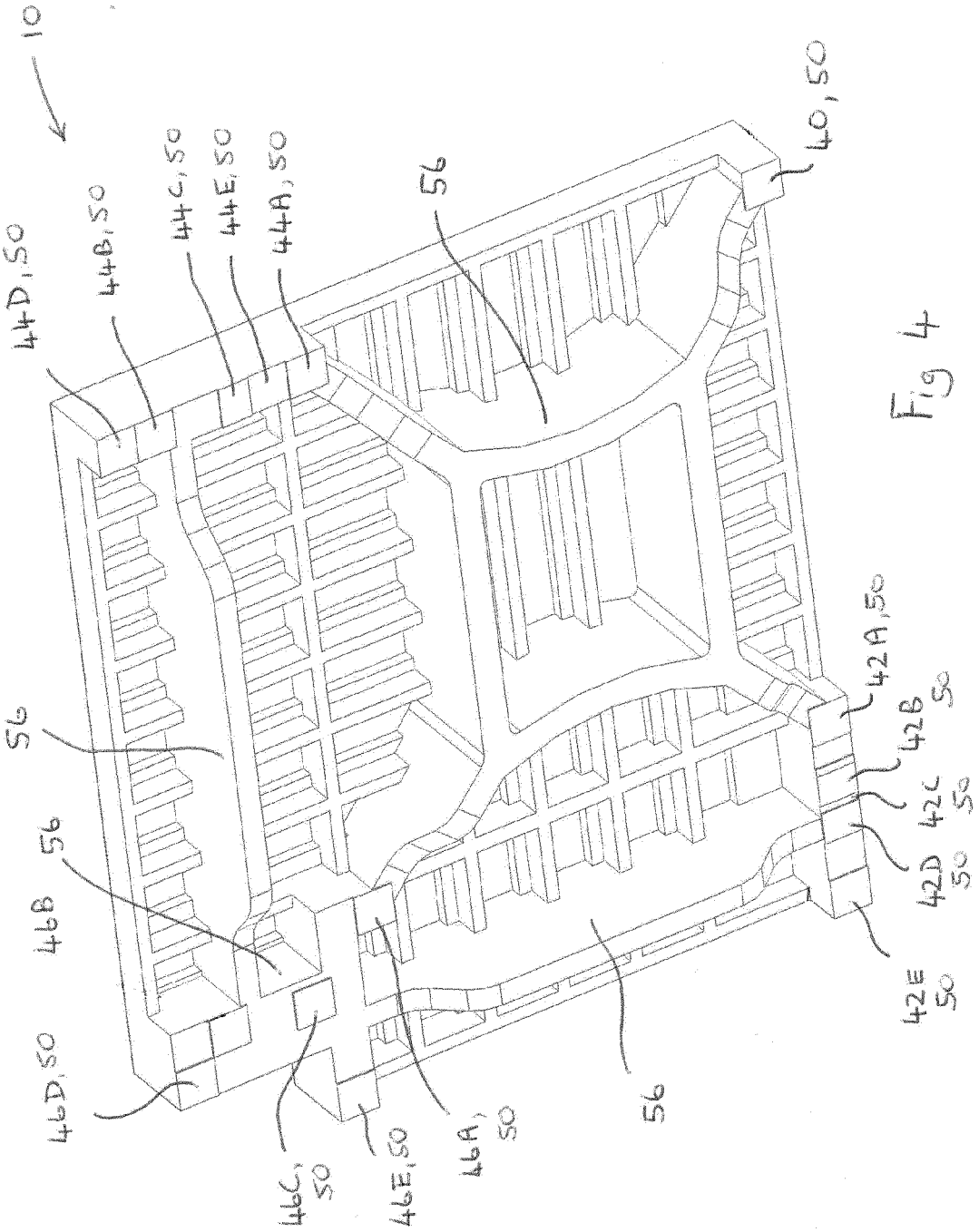
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Fig 4

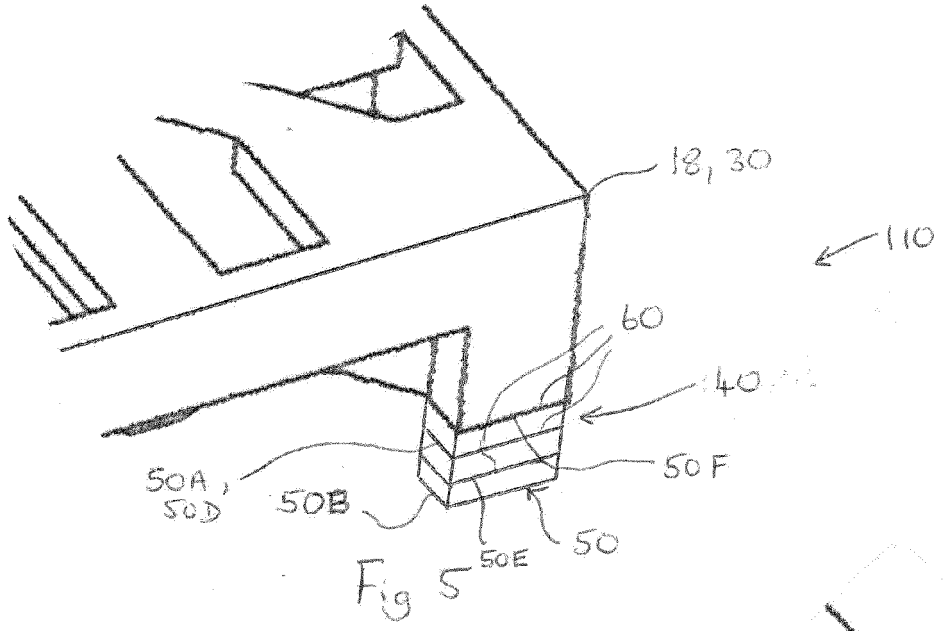

Fig 5

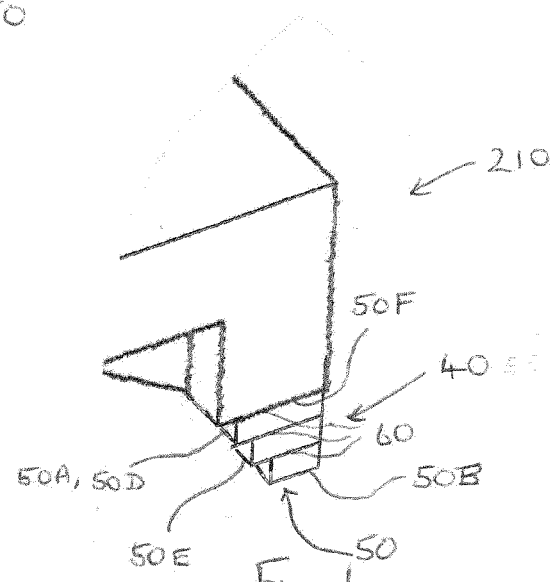

Fig 6

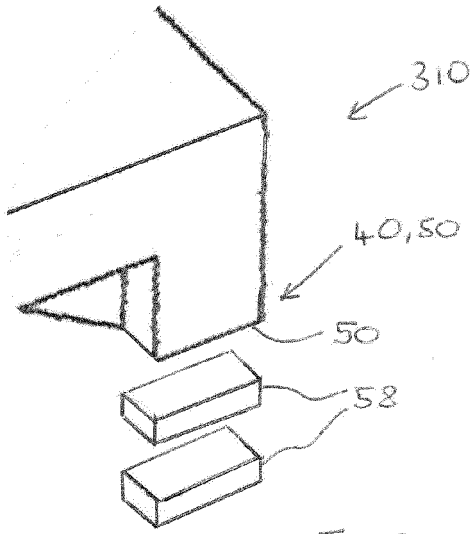

Fig 7

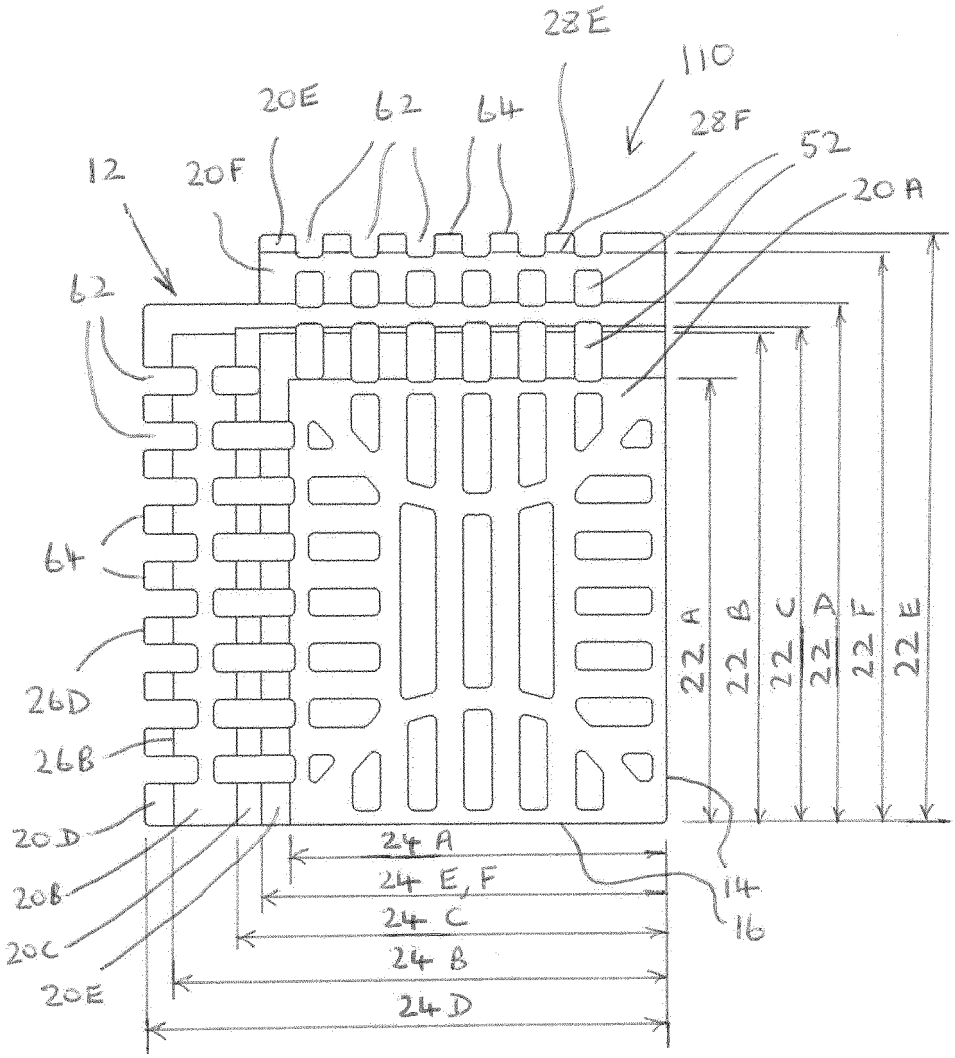
28E
110
20E
62
64
28F
52
12
20F
20A
62
64
26D
26B
20D
20B
20C
20E
22A
22B
22C
22A
22F
22E
24A
24E, F
24C
24B
24D
14
16

Fig 8

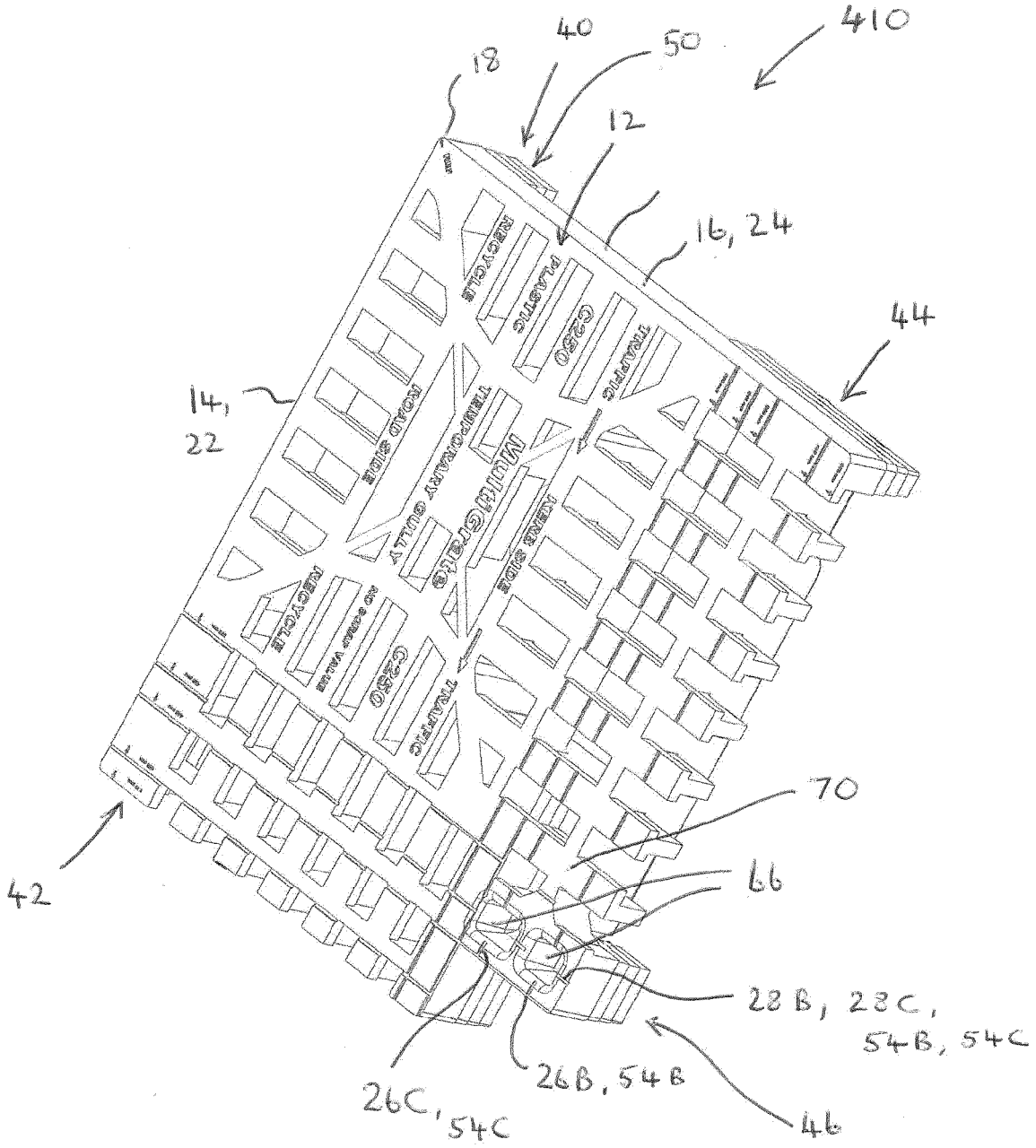
410
40
50
18
12
16, 24
44
14,
22
42
70
66
28B, 28C,
54B, 54C
26B, 54B
26C,
54C
46

Fig 9

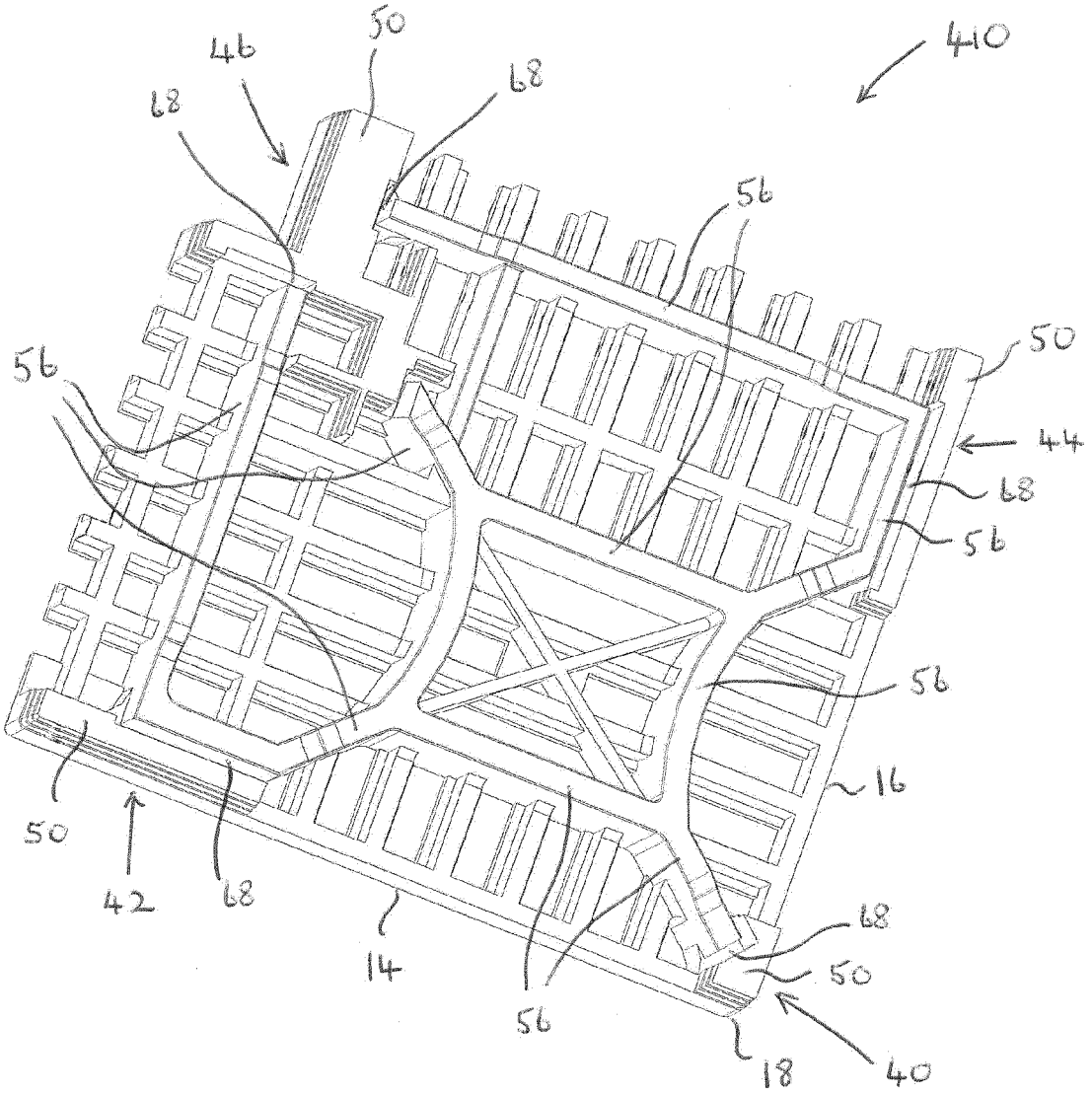

Fig 10