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Description

The present invention relates to an angle joint for the joining of at most six bars extending under a mutual angle of 90° or 180° , comprising a basic body located on the intersection of the axes of the bars to be connected and protrusions extending in the directions of each of said bars to be connected.

Such an angle joint is known from FR-A-1514258.

From this document angle joints are known, in which for at least two bars to be connected, protrusions have been provided. However, for at least one bar extending in a direction perpendicular thereto, an aperture has been provided in the basic body. In this prior art angle joint the construction of the protrusion is such, that only when a bar extending through the basic body is present, these protrusions can be moved towards the position, in which the bars, in which these protrusions are, are fixed.

This poses severe limitations on the versatility of this prior art joint.

Further this prior art joint is only disclosed in three possible configurations. By having the bar, to be inserted in the aperture in the basic body extend to a single direction or to both possible directions, six possible configurations can be obtained by this prior art joint.

The aim of the invention is to provide an angle joint, which for all eight theoretical possibilities, i.e. for the connection of two bars extending on the mutual angle of 90° or 180° , comprising a basic body located on the intersection of the axes of the bars to be connected and protrusions extending in the directions of at least some of said bars, can be provided with the stock keeping of only three different parts.

This aim is reached in that, the angle joint is composable of at least two elements of a set comprising first elements, second elements and third elements, and the first elements and the second elements each comprise a part of said basic body and at least one protrusion and that the third elements each comprise one protrusion.

By the provision of such an angle joint, all eight theoretical possibilities can be constructed with the stock keeping of only three angle joints. This is of utmost importance, as such angle joints are often used in the field of stand building on trade fairs and so on, in which the stock keeping of a greater number of parts is cumbersome. As a consequence of the features as set out in the characterizing part of the main claim, only first elements, second elements and third elements have to be kept in stock.

Subsequently the present invention will be elucidated with the help of the accompanying drawings, in which show:

figure 1: a perspective view of a bar structure in which the advantages of the angle joint according to the present invention are well shown;

figure 2A-I: perspective views of several configurations of the angle joint according to the present invention;

figure 3: a perspective view, partially broken away, of a first element according to the present invention in the condition in which this element has been manufactured;

figure 4: a perspective view of the element shown in figure 3 in the condition in which this element is fit for application;

figure 5: a perspective view of a second element according to the present invention in the condition in which this element is fit for application;

figure 6: a perspective view of a third element according to the present invention in the condition in which this element has been manufactured;

figure 7: a perspective view of the element depicted in figure 6 in the condition in which this element is fit for use;

figure 8: a perspective view, partly broken away of a joint according to the present invention in which this joint is used for the connection of three bars; and

figure 9: a perspective view of two bars according to the present invention, wherein these are connected through a arched plate.

When composing a configuration of bars of which an example has been depicted in figure 1, it is necessary to use angle joints with several configurations. All configurations of angle joints possibly necessary for the building of such a system of bars have been shown in figures 2A-2I. Further it is noted that the configurations shown in figure 2D and in figure 2E are the same.

The present invention provides three different types of elements: first elements a, second elements c and third elements b, with which elements all angle joints shown in figure 2A-2I can be composed.

In figure 3 a first element d has been depicted. This element d comprises a box-shaped part 3, and a longitudinal part 4, solidly connected therewith. By means of a hinged joint 5, a clamping piece 6 has been connected with the part 4.

The box-shaped part 3 comprises four side faces 7 which have been connected with an upper face 8. In the upper face 8 a square aperture 9 has been provided, which is delimited by a lower face 10 and side faces 11. The edges between the side faces 7 mutually and between the side faces 7 and the upper face 8 comprise bevels. A through aperture has been provided in the lower face 10.

The longitudinal part 4 is being composed of an upper face 14, side faces 15 and a rearface 16.

Against the lower part of the upper face 14 a guid shaft 17 has been provided.

The clamping piece 6 comprises again an upper face 18, two side faces 19 and a rearface not being visible in the drawing. The hinged connection 5 is between both two rearfaces. Against the lower side of the upper face 18 of the clamping piece 6 a nut berth 20 has been provided of which the inner faces are hexagonal.

In the guide shaft 17 a stud 21 can be provided, unto which a nut 22 has been screwed. When the clamping piece 6 is folded around the hinge 7, the nut 22 will enter the inner parts of the nut berth 20. The upper face 18 comprises an aperture 23 through which a screw driver can be inserted for connection with a slit 24 provided in the stud 21.

The situation, obtained by the folding of the clamping piece 6 has been shown in figure 4. It is visible how the slit 24 of the stud 21 can be reached through the aperture 23. Further figure 4 shows how a bolt 25 can be inserted in the hole 13, so that the first element can be connected with another element. Figure 4 also shows that the lower edge of the side faces 7 comprise both fixation cams 26 and fixation apertures 27. With the help of these fixation means the position of the first element is fixed relative to the element, with which the first element is connected by means of the bolt connection 25.

The second element c shown in figure 5 is equal to the first element, but it deviates in the fact that the second element comprises a second protrusion, which is also composed by a longitudinal part 4 and a clamping piece 6. Also in this case the clamping pieces 6 have been connected by means of hinges 5 with the relevant longitudinal part 4. Further the remark is made that both longitudinal parts 4 have been fixed against adjacent sides 7 of the box shaped part 4, so that both protrusions composed by the longitudinal part 4 and the clamping piece 6 extend under an angle of 90° .

Figure 6 shows a perspective view of a third element b. This third element is equal to the first element shown in figures 3 and 4, but deviates in the fact that the box shaped part 3 has been replaced by a block 28, of which the external size is equal to the internal size of the aperture 9. Further the block 28 comprises a hole 29, which has been provided with a thread, in which the thread of the bolt 25 fits. Further the longitudinal part and the clamping piece are equal to the longitudinal part 4 and the clamping piece 6, as has been described with the first element with the help of figures 3 and 4.

Finally figure 8 shows how a combination of two first elements and of one third element is fit for the composition of an angle joint which is suitable

for the connection of three bars extending within one plane, under a mutual angle of 90° . Said angle joint is being composed by two first elements 2, in which in the aperture of one of said first elements a third element has been located, and in which all elements have been connected to each other by a bolt 25. When an angle joint is being composed without a third element said bolt connection comprises a nut.

On the angle joint thus developed bars, or as in the present case profiles are fitted of which the internal size is equal to the external size of the protrusions of the anglejoint, after which the studs 21 are being tensioned, through which the clamping pieces of said box shaped parts are being urged away and the profiles are being clamped. To reach the slit of the studs the profiles have been provided with suitable apertures. As such apertures do not enhance the appearance of the profile, the profile has been adapted for the taking of strips which cover said apertures 31. Therefore the sides of the profiles are provided with slits 32 with a T-shaped cross-section, in which strip, not depicted in the drawings, can be fitted. Because of optical appearance these strips are preferably provided on all four sides of the profiles.

Further the slits are shaped such that plates extending perpendicular on the slits can be fitted therein. These plates can be composed by mirrors, glass plates, perspex plates, plastic plates, and so on. Further as a consequence of the angle joint according to the present invention it is thus possible to make rectangular structures for displays and stands on trade fairs with the help of only three different elements, profiles and plates. Further suspensions elements, etc. can be provided in the T-shaped slits with the help of a nut and bolt connection.

According to a preferred embodiment, the profiles have been provided with slits 33 on their corners. These slits are substantially circular, so that a thin, plate, provided of a leveled edge on its sides, and which has been made of flexible material, can be provided into the slits, as has been shown in figure 9. By providing such plates between several profiles, it is - by means of the flexibility of the plates - possible to build structures from arched planes in which, by the variation of the width of the plates, a large degree of freedom can be obtained. So, for instance, columns can be constructed, on to which a table top can be provided.

When the protrusions comprise apertures extending longitudinally the protrusions can be fitted over the bars to be connected, so that also solid bars can be connected with the angle joint according to the present invention.

As has been shown in figure 2, all configura-

tions depicted in figure 2A-2I can be composed by means of said three described elements. For instance, the configuration depicted in figure 2A has been developed by two first elements, which is also the case in the configuration depicted in figure 2B. The configuration depicted in figure 2C comprises two first elements and one third element, just as the configuration depicted in figure 2D. The configuration depicted in figure 2E comprises a combination of a first and a second element. The remark is made that the configurations depicted in figure 2D and figure 2E are equal. The configuration depicted in figure 2F comprises a combination of a first element, a second element and a third element and the combination depicted in figure 2G comprises a combination of two second elements. The configuration depicted in figure 2H is composed by two second elements and one third element.

With the elements according to the present invention, it is also possible to compose a joint comprising six protrusions. In this case two second elements and two third elements are used. In the case of one of said third elements the aperture 29 is being cleared away, so that the thread is being removed. All elements are connected by a bolt, in which the bolt has been screwed into the thread of said other third element.

Claims

1. Angle joint for the joining of at most six bars extending under a mutual angle of 90 or 180°, comprising a basic body located on the intersection of the axes of the bars to be connected and protrusions extending in the directions of each of said bars to be connected, characterized in that the angle joint is composable of at least two elements of a set comprising first elements (a), second elements (b) and third elements (c), and
the first elements (a) and the second elements (b) each comprise a part (3) of said basic body and at least one protrusion (4, 6) and that the third elements (c) each comprise one protrusion (4, 6).
2. Angle joint according to claim 1, characterized in that each of the first elements (a) comprise the half (3) of a basic body and a protrusion (4, 6), and that each of the second elements (b) comprise half of a basic body (3) and two protrusions (4, 6) extending perpendicularly.
3. Angle joint according to claim 2, characterized in that the partition plane between the two halves (3) of the basic body is parallel with the

direction of the protrusion (4, 6) connected with said half and with the direction of another bar (30).

4. Angle joint according one of the preceding claims, characterized in that the protrusions (4, 6) are fit to be clamped into hollow bars (30).
5. Angle joint according to one of the preceding claims, characterized in that the elements (a, b, c) composing an angle joint can be mutually connected by means of a bolt connection (25).
6. First element (a) to be used with the angle joint according to one of the preceding claims, characterized by piece (3), forming a part of the basic body and a protrusion (4, 6) connected therewith and extending perpendicular from a side face thereof.
7. Second element (b) to be used with the angle joint according to one of the preceding claims, characterized by a piece (3), forming a part of said basic body and two protrusions (4, 6), solid therewith and extending mutually perpendicularly to the side faces concerned.
8. Element according to claim 6 or 7, characterized by joining means (25) for joining it to another element.
9. Third element (c) to be used with the angle joint according to one of the preceding claims, characterized by a body forming a protrusion (4, 6) and by joining means (29) for joining to first (a) or second elements (b).
10. Element according to one of the claims 6-9, characterized in that the body composing the protrusion (4, 6) comprises two parts which are linked through a hinge (5) located on the side from the basic body.
11. Element according to claim 10, characterized by means (21, 22, 23, 24) for urging the parts (4, 6) away from each other.
12. Element according to claim 11, characterized in that the means for urging the parts away from each other are composed by a nut (22) and a stud (21).
13. Bar to be used with the angle joint according to one of the claims 1-6, characterized in that the bar (30) comprises means (32) for the fixation of a decorative strip.
14. Bar according to claim 13, characterized in that

the means (32) for fixation of the decorative strip are such that the decorative strip covers the holes (3) provided in the bar (30).

15. Bar according to claim 13 or 14, characterized in that the bar comprises means (31, 33) for the fixation of at least one plate (34).

16. Bar according to claim 13, 14 or 15, characterized in that the means for the fixation of a decorative strip and the means for the fixation of a plate (34) are being composed by slits (33) provided in the sides of the profile which slits (31) have a T-shaped cross-section.

17. Bar according to one of the claims 13-16, characterized in that the bar comprises means (33) for the fixation of a plate (3) extending initially in the diagonal direction.

18. Bar according to claim 17, characterized in that the means for the fixation of a diagonal plate (34) are being composed by a slit (33) provided in the edge with a substantially circular cross-section.

Revendications

1. Raccord d'angle destiné à raccorder au plus six barres faisant mutuellement des angles de 90 ou 180°, comprenant un corps placé à l'intersection des axes des barres à raccorder et des saillies disposées dans les directions de toutes les barres à raccorder, caractérisé en ce que le raccord d'angle peut être composé d'au moins deux éléments d'un jeu comprenant des premiers éléments (a), des seconds éléments (b) et des troisièmes éléments (c), et les premiers éléments (a) et les seconds éléments (b) comportent chacun une partie (3) du corps et au moins une saillie (4, 6) et les troisièmes éléments (c) comportent chacun une saillie (4, 6).
2. Raccord d'angle selon la revendication 1, caractérisé en ce que chacun des premiers éléments (a) comporte la moitié (3) d'un corps et une saillie (4, 6), et chacun des seconds éléments (b) comprend la moitié d'un corps (3) et deux saillies (4, 6) qui dépassent perpendiculairement.
3. Raccord d'angle selon la revendication 2, caractérisé en ce que le plan de séparation des deux moitiés (3) du corps est parallèle à la direction de la saillie (4, 6) raccordée à cette moitié et à la direction d'une autre barre (30).

4. Raccord d'angle selon l'une quelconque des revendications précédentes, caractérisé en ce que les saillies (4, 6) sont logées afin qu'elles soient serrées dans des barres creuses (30).

5. Raccord d'angle selon l'une quelconque des revendications précédentes, caractérisé en ce que les éléments (a, b, c) composant un raccord d'angle peuvent être raccordés mutuellement par un boulon (25) de raccordement.

6. Premier élément (a) destiné à être utilisé avec le raccord d'angle selon l'une quelconque des revendications précédentes, caractérisé par un organe (3) faisant partie du corps et une saillie (4, 6) raccordée à cet organe et dépassant perpendiculairement d'une face latérale de cet organe.

7. Second élément (b) destiné à être utilisé avec le raccord d'angle selon l'une des revendications précédentes, caractérisé par un organe (3), formant une partie du corps et deux saillies (4, 6) solidaire du corps et dépassant des faces latérales concernées en direction perpendiculaire.

8. Élément selon la revendication 6 ou 7, caractérisé par un dispositif (25) de liaison à un autre élément.

9. Troisième élément (c) destiné à être utilisé avec un raccord d'angle selon l'une des revendications précédentes, caractérisé par un corps formant une saillie (4, 6) et par un dispositif (29) de liaison des premiers (a) ou seconds (b) éléments.

10. Élément selon l'une des revendications 7 à 9, caractérisé en ce que le corps comportant la saillie (4, 6) comprend deux parties qui sont reliées par une articulation (5) placée du côté opposé au corps.

11. Élément selon la revendication 10, caractérisé par un dispositif (21, 22, 23, 24) destiné à écarter les parties (4, 6) l'une de l'autre.

12. Élément selon la revendication 11, caractérisé en ce que le dispositif destiné à écarter les parties l'une de l'autre est composé par un écrou (22) et une tige filetée (21).

13. Barre destinée à être utilisée avec le raccord d'angle selon l'une des revendications 1 à 6, caractérisée en ce que la barre (30) comporte un dispositif (32) de fixation d'une bande décorative.

14. Barre selon la revendication 13, caractérisée en ce que le dispositif (32) de fixation de la bande décorative est tel que la bande décorative recouvre les trous (31) formés dans la barre (30).
15. Barre selon la revendication 13 ou 14 caractérisée en ce que la barre comporte un dispositif (31, 33) de fixation d'au moins une plaque (34).
16. Barre selon la revendication 13,14 ou 15 caractérisée en ce que le dispositif de fixation d'une bande décorative et le dispositif de fixation d'une plaque (34) sont formés par des fentes (32) disposées dans les côtés du profilé, les fentes (33) ayant une section en T.
17. Barre selon l'une quelconque des revendications 13 à 16 caractérisée en ce que la barre comporte un dispositif (33) de fixation d'une plaque (34) disposée initialement en diagonale.
18. Barre selon la revendication 17 caractérisée en ce que le dispositif de fixation d'une plaque (34) en diagonale est composé par une fente (33) placée au bord et ayant une section sensiblement circulaire.

Patentansprüche

1. Eckverbinder zur Verbindung von höchstens sechs Stangen, die sich unter einem gegenseitigen Winkel von 90° oder 180° erstrecken, mit einem Grundkörper, der am Schnittpunkt der Achsen der zu verbindenden Stangen liegt, und mit Vorsprüngen, die sich in Richtung einer jeden der zu verbindenden Stangen erstrecken, dadurch gekennzeichnet, daß der Eckverbinder aus wenigstens zwei Elementen einer Gruppe zusammengebaut ist, die erste Elemente (a), zweite Elemente (b) und dritte Elemente (c) umfaßt, wobei die ersten Elemente (a) und die zweiten Elemente (b) jeweils ein Teil (3) des Grundkörpers und wenigstens einen Vorsprung (4, 6) aufweisen und daß die dritten Elemente (c) jeweils einen Vorsprung (4, 6) besitzen.
2. Eckverbinder nach Anspruch 1, dadurch gekennzeichnet, daß jedes der ersten Elemente (a) eine Hälfte (3) eines Grundkörpers und einen Fortsatz (4, 6) aufweist, und daß jedes der zweiten Elemente (b) eine Hälfte eines Grundkörpers (3) und zwei Vorsprünge (4, 6) aufweist, die sich senkrecht zueinander erstrecken.

3. Eckverbinder nach Anspruch 2, dadurch gekennzeichnet, daß die Teilungsebene zwischen den beiden Hälften (3) des Grundkörpers parallel zur Richtung der Vorsprünge (4, 6) verläuft, die mit dieser Hälfte verbunden sind und außerdem parallel zur Richtung einer weiteren Stange (30).
4. Eckverbinder nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß die Vorsprünge (4, 6) in Hohlprofile (30) einklemmbar sind.
5. Eckverbinder nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß die Elemente (a, b, c), die den Eckverbinder aufbauen, gegenseitig über eine Bolzenverbindung (25) festlegbar sind.
6. Erstes Element (a) zur Benutzung in Verbindung mit dem Eckverbinder nach einem der vorhergehenden Ansprüche, gekennzeichnet durch ein Teil (3), das einen Teil des Grundkörpers bildet und einen hiermit verbundenen Fortsatz (4, 6), der rechtwinklig von einer Seite vorsteht.
7. Zweites Element (b) zur Benutzung in Verbindung mit dem Eckverbinder gemäß einem der vorhergehenden Ansprüche, gekennzeichnet durch ein Teil (3), welches einen Teil des Grundkörpers bildet und zwei hiermit fest verbundene Fortsätze (4, 6) aufweist, die sich senkrecht zueinander von den Seitenflächen her erstrecken.
8. Element nach den Ansprüchen 6 oder 7, gekennzeichnet durch Verbindungsmittel (25) zur Verbindung mit einem weiteren Element.
9. Drittes Element (c) zur Benutzung mit einem Eckverbinder nach einem der vorhergehenden Ansprüche, gekennzeichnet durch einen Körper, der einen Fortsatz (4, 6) bildet und durch Verbindungsmittel (29) zur Verbindung mit einem ersten Element (a) oder einem zweiten Element (b).
10. Element nach einem der Ansprüche 7 bis 9 dadurch gekennzeichnet, daß der Körper, der den Fortsatz (4, 6) bildet, aus zwei Teilen besteht, die über ein klappbares Gelenk (5) miteinander verbunden sind, das an der vom Grundkörper abgewandten Seite angeordnet ist.
11. Element nach Anspruch 10,

gekennzeichnet durch Mittel (21, 22, 23, 24),
die die Teile (4, 6) voneinander wegdrücken.

12. Element nach Anspruch 11,
dadurch gekennzeichnet, daß die Mittel zum
Wegdrücken der Teile voneinander von einer
Mutter (22) und einer Schraubspindel (21) ge-
bildet werden. 5

13. Profilstange zur Benutzung in Verbindung mit
einem Eckverbinder nach einem der Ansprü-
che 1 bis 6, 10
dadurch gekennzeichnet, daß die Profilstange
(30) Mittel (32) zur Festlegung eines Schmuck-
streifens aufweist. 15

14. Profilstange nach Anspruch 13,
dadurch gekennzeichnet, daß die Mittel (32)
zur Festlegung des Schmuckstreifens derart
ausgebildet sind, daß der Schmuckstreifen Lö-
cher (31) abdeckt, die in der Profilstange (30)
vorhanden sind. 20

15. Profilstange nach den Ansprüchen 13 oder 14,
dadurch gekennzeichnet, daß die Profilstange
Mittel (31, 33) zur Festlegung wenigstens einer
Platte (34) aufweist. 25

16. Profilstange nach den Ansprüchen 13, 14 oder
15, 30
dadurch gekennzeichnet, daß die Mittel zur
Festlegung eines Schmuckstreifens und die
Mittel zur Festlegung einer Platte (34) von
Schlitzen (32) gebildet sind, die in den Seiten
der Profilstangen angeordnet sind, wobei die
Schlitze (33) einen T-förmigen Querschnitt be-
sitzen. 35

17. Profilstange nach einem der Ansprüche 13 bis
16, 40
dadurch gekennzeichnet, daß die Profilstange
Mittel (33) zur Befestigung einer Platte (34)
aufweist, die sich ursprünglich in Diagonalrich-
tung erstreckt. 45

18. Profilstange nach Anspruch 17,
dadurch gekennzeichnet, daß die Mittel zur
Festlegung einer Diagonalplatte (34) von einem
Schlitz (33) gebildet sind, der in einer Kante
angeordnet ist und einen im wesentlichen 50
kreisförmigen Querschnitt aufweist.

55

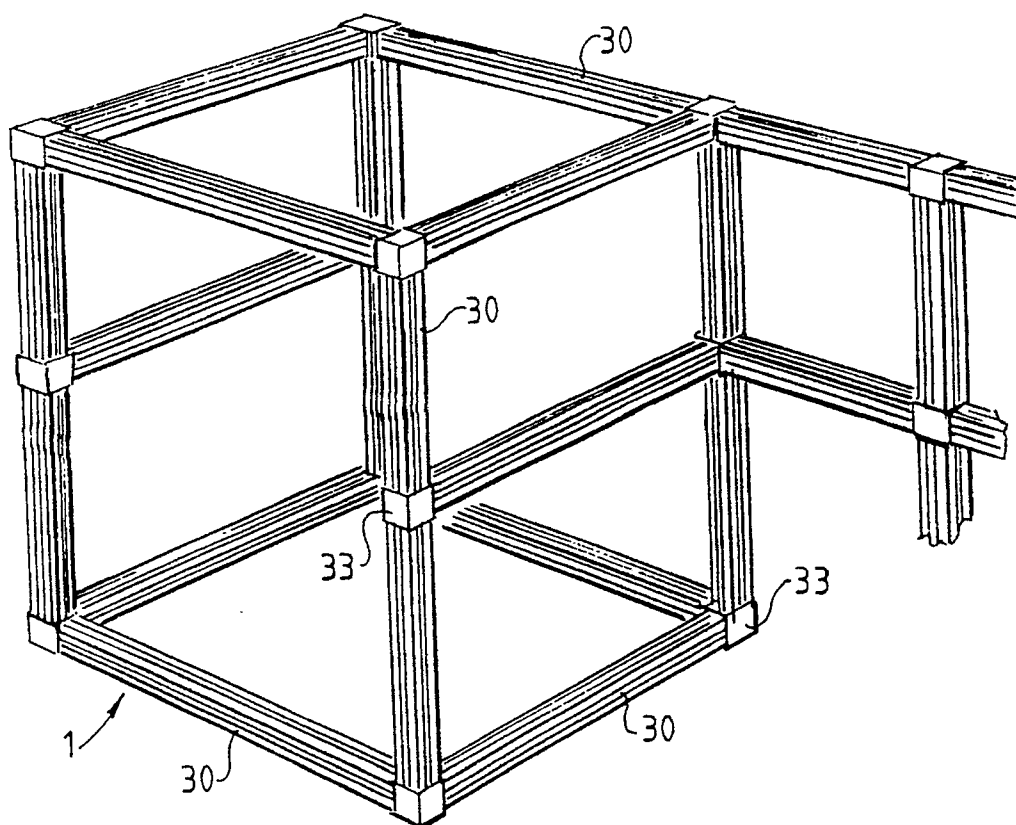
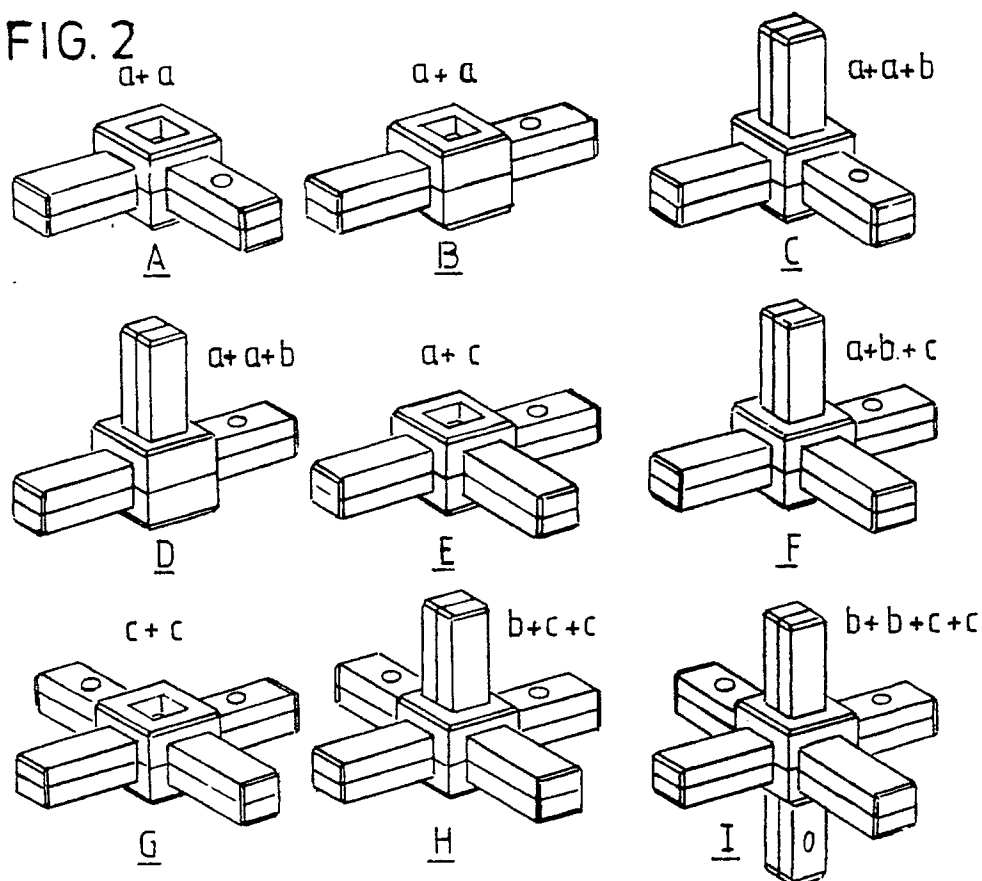


FIG. 1

FIG. 2



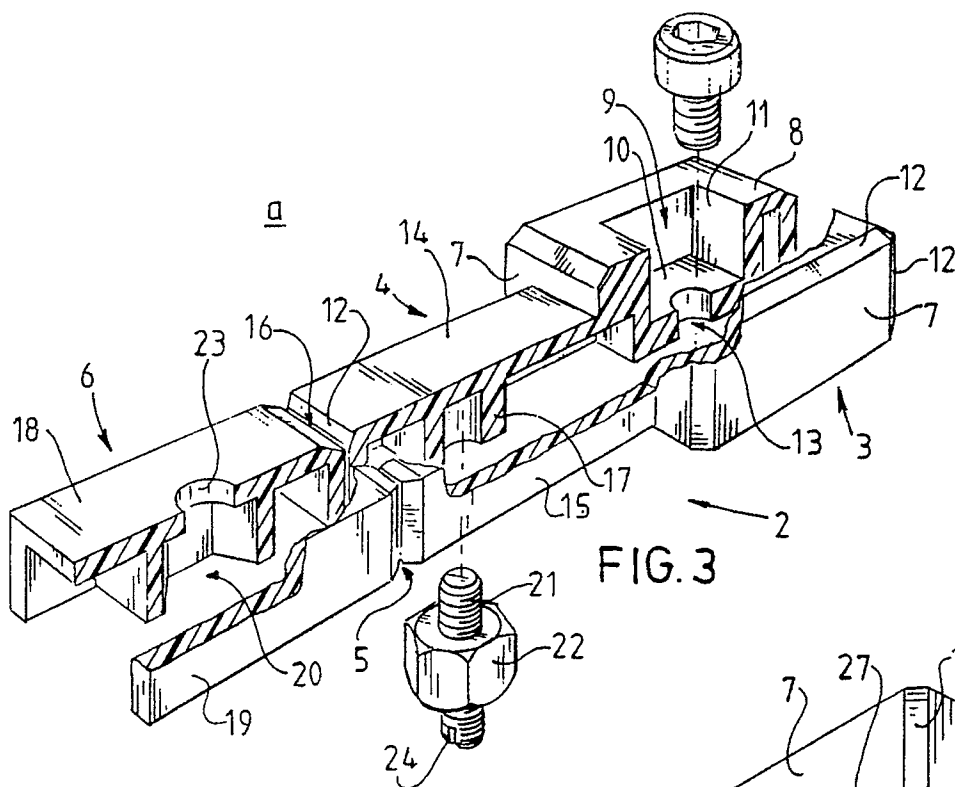


FIG. 3

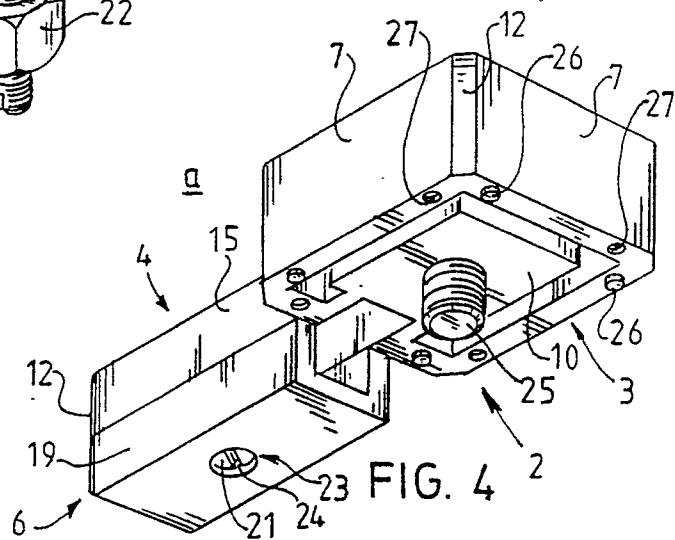


FIG. 4

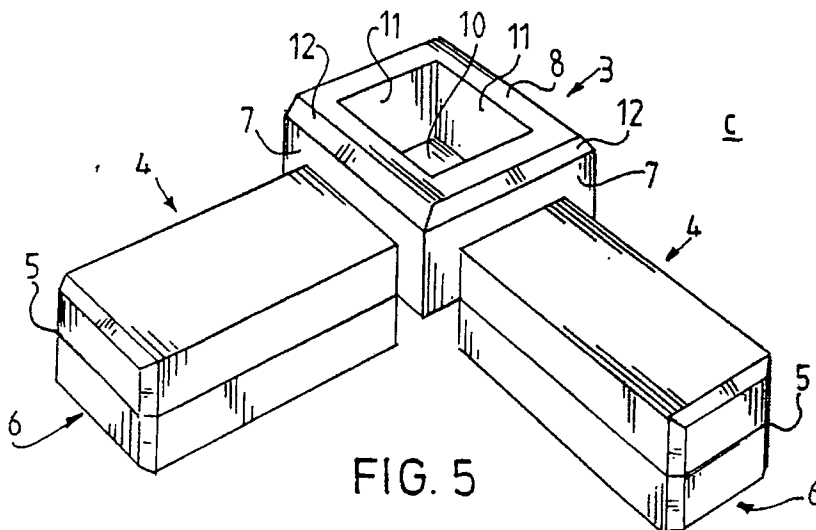


FIG. 5

