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(54) **Detachable support for a table top**

Abnehmbarer Träger für eine Tischplatte

Support amovible pour un plateau de table

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(56) References cited:
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BE-A- 876 573
GB-A- 1 102 082

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Description

[0001] The invention relates to a clamping device for clamping a table top support to a table top, the support comprising a number of detachable leg assemblies each comprising at least one upright and one beam, the clamping device having radial extending legs designed to project at least partly into a free outer end of each of said beams and to engage said beams with a clamping action.

[0002] Such a clamping device is known from EP-A-0 847 715. This known device has number of radially extending legs, each of the legs consisting of a number of deformable prismatic elements and each of the legs forming separate clamping devices. Except that the production of clamping elements with a number of deformable prismatic elements is rather complicated, also the fastening or loosening of a number of separate clamping devices in succession is rather cumbersome.

[0003] The invention intends to provide a clamping device which is easily assembled and with which a number of beams of leg assemblies can be clamped with one handling.

[0004] Accordingly, the invention provides that the clamping device consists of a first and a second clamping part, said first clamping part being fixedly mounted to the bottom side of the table top and said second clamping part being adjustably mounted in a direction approximately perpendicular to the first clamping part, each of the clamping parts having corresponding portions of the successive radial extending legs and that means are provided to adjust the second clamping part in relation to the first clamping part.

[0005] An essential advantage of a table with such a clamping device is that a table can be quickly and easily assembled through prefabricated leg assemblies with a minimum of operations. Furthermore, a table assembled in such a way can also be dismounted again and be stored with a minimum of required space. This is particularly important with spaces always requiring different numbers of tables, such as e.g. in congress centres.

[0006] According to a further embodiment it is provided that said means to adjust the second clamping part in relation to the first clamping part consist of a central adjusting screw and a central screw hole in the first clamping part, the adjusting screw being received freely rotatable in the second clamping part, the second clamping part having a central opening to be able to reach the adjusting screw.

[0007] With the clamping device according to the invention the leg assemblies can be fastened to the bottom side of a table top by one preferably centrally mounted clamping device. For enabling sufficient stabilization of the up-rights spaced from the clamping device, further fastening means may be mounted at the bottom side of the table top at or near the upright of a leg assembly, which fastening means engage an upright or a beam connected to it. Such further fastening means can additionally be mounted on one or more locations along the beam, e.g. in the middle of the beam.

[0008] These further fastening means can e.g. likewise comprise a clamping member, however it is preferred to keep these fastening means as simple as possible. Examples of such simple fastening means are a sleeve mounted at the bottom side of the table top, through which a beam should be stuck, and two or more projecting cams mounted at the bottom side of a table top, which are intended for engaging locking openings in the beam or in a mounting plate secured to it, said openings being located transversely to the longitudinal direction of said plate.

[0009] In order to enable direct positioning of the projecting locking cams and the openings in the beams when sliding the outer ends of the beams into said clamping device, it is further provided that in each of the corresponding portions of the radial legs of the first and second clamping pieces are provided with a corresponding stop intended for being contacted by the free outer end of a beam.

[0010] According to a further elaboration, projecting locking cams are mounted on the radial legs and they are intended for falling into recesses located in the beams near their outer ends. Through this, it is achieved that on clamping the outer ends of the beams, they are locked at the same time, as a result of which a small clamping force is already sufficient for keeping the leg assemblies in their intended positions.

[0011] In order to enable direct positioning of the projecting locking cams and the openings in the beams when sliding the outer ends of the beams across or into said clamping member, it is further provided for that each of the radial legs of the first and second clamping pieces is provided with a corresponding stop intended for being contacted by the free outer end of a beam.

[0012] For assembling a table having a support according to the invention it is sufficient to provide the table top with a first clamping piece and to mount one or more screws as further fastening means at a predetermined distance from said clamping piece in alignment with its projecting legs. After that, the leg assemblies can be immediately slid into position and be fixed.

[0013] The invention is explained further by way of the example illustrated in the drawing, in which:

Fig. 1 shows a perspective view of a table with support according to the invention;
Fig. 2 shows a perspective view of a dismounted support;
Fig. 3 shows a plan view of the first clamping piece of the clamping member;
Fig. 4 shows a side view of the second clamping piece of the clamping member;
Fig. 5 shows a plan view of the second clamping piece of the clamping member;
Figs. 6A,B show perspective bottom and plan views of the second clamping piece;

Figs. 7A,B show perspective bottom and plan views of the first clamping piece;
Figs. 8A,B show a number of views and a detail of a leg assembly.

[0014] Fig. 1 illustrates a table 1 having a table top 2 and leg assemblies 3,4,5. Each of the leg assemblies 3, 4, 5 consists of a hollow upright 6 and a hollow beam 7, extending approximately perpendicular to each other and being of triangular cross-section.

[0015] For fastening the leg assemblies 3, 4, 5 against the bottom side of the table top 2, a clamping member 8 is provided, see Fig. 2, consisting of a first clamping piece 9 to be fastened against the bottom side of the table top 2 and a second clamping piece 10 adjustable in relation to said first one. The clamping piece 9 is fastened by a number of screws 11 and the second clamping piece 10 can be moved away from and towards the first clamping piece 9 in a direction being approximately perpendicular to the table top plane by adjusting screw 12.

[0016] In order to be able to stabilize the leg assemblies at the level of the uprights to a sufficient degree, further fastening means are provided, being intended to cooperate with the locking openings 13 provided in the top side of the beam 7. The further fastening means per se can simply be screws screwed into the bottom side of the top in which a predetermined distance between the top and the flat bottom of the screw heads is maintained, in such a way that the beam can be clampingly trapped with the material around the locking openings between the screws and the top. If necessary, such further fastening means can be mounted at more locations along the beam, e.g. such as indicated in the figure, in the middle of the beam having a single locking opening 13'.

[0017] Fig. 3 illustrates a view of the first clamping piece 9 perpendicular to the plane 14 directed downwards in case of a fastened first clamping piece. In the clamping piece, holes 15, 16, 17 have been made for fastening screws 11 and a threaded hole 18 for adjusting screw 12. The first clamping piece has three radially projecting legs 19, 20, 21 at both sides being provided with bevels 22, 23, their angles being equal to the corresponding angles of the beams 7 of the leg assemblies. The bevels 22, 23 end into a stop 24 continuing along the entire other side of the first clamping piece, the side turned towards the table top, see Fig. 7A. The stop 24 is intended for allowing the beams of the leg assemblies to be slid to exactly a predetermined position.

[0018] Figs. 4, 5 illustrate a side view and a plan view of the second clamping piece 10, respectively. The second clamping piece has legs 25, 26, 27 corresponding to the legs 19, 20, 21. In cross-section, these legs follow the shape of the corresponding part of the beam 7, be it that the dimension in the given example has been chosen such, that the legs 25, 26, 27 will never contact the inner walls of the beams 7 entirely. Near their beginning and ending, the legs are provided with rounded-off projections 28, 29, the rounded-off portion being equal to the corresponding round portion in a beam 7, and which will provide for the clamping of a beam 7 together with a leg 19, 20, 21 of the first clamping piece 9. The shape of the legs 25, 26, 27 is necessary for the strength of the leg and forms a guide having sufficient clearance for sliding the beams 7 across the legs 19, 20, 21, 25, 26, 27 of the clamping member 8 to the stop 24.

[0019] The outer ends of the legs 25, 26, 27 of the second clamping piece 10 mounts projecting locking cams 30 intended for falling into openings 31 (see Fig. 8) in the beams 7 in case of a beam 7 being slid against the stop 24 and clamped. This locks the beams 7 against movement as a result of which the clamping force can be limited to holding the beams clamped by the clamping member.

[0020] In the middle of the second clamping piece 10, an opening 32 is made for being able to reach adjusting screw 12. This adjusting screw can be freely rotatably received in the clamping piece, causing the second clamping piece to be adjustable in two directions in relation to the first clamping piece. It is also possible to connect the adjusting screw to the first clamping piece only so that the second clamping piece can only be moved away from the first one in a controlled way.

[0021] Figs. 8A,B,C illustrate three views of a leg assembly 4 with upright 6 and beam 7. The opening 31 for locking cam 30 is made near the free outer end of the beam and locking openingen 13 are made near the other outer end of the beam 7. Said locking openings 13 consist of a round opening 33 having a connecting slot 34, the diameter of the opening 33 being larger than the width of the slot 34. The further fastening means intended for it are mounted at the bottom side of the table top at such distance from the clamping member that when a beam 7 contacts a stop, they are located within the slot or against its outer end.

[0022] The embodiment described in this example has a support with three leg assemblies. However, it is also possible to employ a larger number of leg assemblies, in which one is neither limited tot triangular or e. g. round table tops.

[0023] The illustrated leg assembly can easily be manufactured from one length of pipe material by making the required openings and recesses beforehand, bending the length and welding it at the angle. However, it is also possible to make leg assemblies with e.g. two uprights, a first beam between the uprights and a second upright perpendicular to the first upright or e.g. two uprights with one Y-shaped beam.

Claims

1. Clamping device (8) for clamping a table top support (3,4,5) to a table top 2, the support comprising a number of detachable leg assemblies (3,4,5) each

comprising at least one upright (6) and one beam (7), the clamping device (8) having radial extending legs designed to project at least partly into a free outer end of each of said beams (7) and to engage said beams (7) with a clamping action, **characterized in that** the clamping device (8) consists of a first (9) and a second clamping part (10), said first clamping part (9) being fixedly mounted to the bottom side of the table top (2) and said second clamping part (10) being adjustably mounted in a direction approximately perpendicular to the first clamping part (9), each of the clamping parts (9,10) having corresponding portions (19-21,25-27) of the successive radial extending legs and that means are provided to adjust the second clamping part (10) in relation to the first clamping part (9).

2. Clamping device according to claim 1, **characterized in that** said means to adjust the second clamping part (10) in relation to the first clamping part (9) consist of a central adjusting screw (12) and a central screw hole (18) in the first clamping part (9), the adjusting screw (12) being received freely rotatable in the second clamping part (10), the second clamping part (10) having a central opening (32) to be able to reach the adjusting screw (12).

3. Clamping device according to claims 1-2, **characterized in** each of the corresponding portions (19-21,25-27) of the radial legs of the first and second clamping pieces (9,10) are provided with a corresponding stop intended for being contacted by the free outer end of a beam (7).

4. Clamping device according to claims 1-3, **characterized in that** the radially extending legs (19-21) of the first clamping part (9) have bevels (22,23) at both sides, their angles corresponding with the angles of triangular shaped beams (7).

5. Clamping device according to claim 4, **characterized in that** the radially extending legs (25-27) of the second clamping part (10) are of triangular shape in cross-section with two successive sides corresponding to two successive sides of the triangular shaped beams (7), and are provided with rounded-off projections (28,29) that correspond to a round portion of beam (7) at the downward facing side thereof.

6. Clamping device according to claim 5, **characterized in that** the clamping engagement between clamping parts (9,10) and beams (7) is realized by clamping between the first clamping part (9) and rounded-off projections (28,29), the triangular shape of the legs (25-27) serving as a guide.

7. Clamping device according to claims 1-6, **characterized in that** projecting locking cams (30) are mounted on the radial extending legs (25-27) of the second clamping part (10) and they are intended for falling into recesses (31) located in the beams (7) near their outer ends.

8. Clamping device according to claims 1-7, **characterized in that** further fastening means have been mounted at the bottom side of the table top at or near the upright (6) of a leg assembly (3,4,5) and/or a location between the outer ends of beam (7) the further fastening means consist of one or more projecting cams mounted at the bottom side of a table top, being intended for engaging locking openings (33,34) made in the beam (7) in its longitudinal direction.

Patentansprüche

1. Klemmvorrichtung (8) zum Festklemmen eines Tischplattenträgers (3, 4, 5) an einer Tischplatte 2, wobei der Träger eine Anzahl von abnehmbaren Schenkeleinheiten (3, 4, 5) aufweist, die jeweils mindestens eine Stütze (6) und eine Querstrebe (7) umfassen, und wobei die Klemmvorrichtung (8) mit radial verlaufenden Schenkeln versehen ist, die so ausgestaltet sind, dass sie zumindest teilweise jeweils in ein freies äußeres Ende der genannten Querstreben (7) hineinragen und unter Klemmwirkung mit den genannten Querstreben (7) in Eingriff kommen, **dadurch gekennzeichnet, dass** die Klemmvorrichtung (8) aus einem ersten (9) und einem zweiten Klemmteil (10) besteht, wobei das erste Klemmteil (9) fest an der Unterseite der Tischplatte (2) montiert und das zweite Klemmteil (10) in einer Richtung einstellbar montiert ist, die annähernd senkrecht zum ersten Klemmteil (9) verläuft, wobei die Klemmteile (9, 10) jeweils entsprechende Abschnitte (19-21, 25-27) der daran anschließenden radial verlaufenden Schenkel aufweisen und Mittel vorgesehen sind, mit denen das zweite Klemmteil (10) im Verhältnis zum ersten Klemmteil (9) eingestellt werden kann.

2. Klemmvorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** diese Mittel zur Einstellung des zweiten Klemmteils (10) im Verhältnis zum ersten Klemmteil (9) eine zentrale Einstellschraube (12) und eine zentrale Schrauböffnung im ersten Klemmteil (9) umfassen, wobei das zweite Klemmteil (10) die Einstellschraube (12) frei drehbar aufnimmt und mit einer zentralen Öffnung (32) versehen ist, die ein Erreichen der Einstellschraube (12) ermöglicht.

3. Klemmvorrichtung nach Anspruch 1 bis 2, **dadurch gekennzeichnet, dass** die entsprechenden Ab-

schnitte (19-21, 25-27) der Radialschenkel des ersten und zweiten Klemmteils (9, 10) jeweils mit einem entsprechenden Anschlag versehen sind, der als Kontakt für das freie äußere Ende einer Querstrebe (7) dient.

4. Klemmvorrichtung nach Anspruch 1 bis 3, **dadurch gekennzeichnet, dass** die radial verlaufenden Schenkel (19-21) des ersten Klemmteils (9) beidseitig mit angefasten Kanten versehen sind, wobei die Winkel den Winkeln der Dreieckform besitzenden Querstreben (7) entsprechen.

5. Klemmvorrichtung nach Anspruch 4, **dadurch gekennzeichnet, dass** die radial verlaufenden Schenkel (25-27) des zweiten Klemmteils (10) im Querschnitt die Form eines Dreiecks besitzen, wobei zwei aufeinanderfolgende Seiten jeweils zwei aufeinanderfolgenden Seiten der dreieckigen Querstreben (7) entsprechen, und dass die radial verlaufenden Schenkel (25-27) des zweiten Klemmteils (10) mit abgerundeten Vorsprüngen (28, 29) versehen sind, die einem runden Abschnitt der Querstrebe (7) auf deren nach unten weisender Seite entsprechen.

6. Klemmvorrichtung nach Anspruch 5, **dadurch gekennzeichnet, dass** der Klemmeingriff zwischen den Klemmteilen (9, 10) und den Querstreben (7) durch ein Festklemmen zwischen dem ersten Klemmteil (9) und den abgerundeten Vorsprüngen (28, 29) erreicht wird, wobei die dreieckige Form der Schenkel (25-27) als Führung dient.

7. Klemmvorrichtung nach Anspruch 1 bis 6, **dadurch gekennzeichnet, dass** vorspringende Schließnokken (30) an den radial verlaufenden Schenkeln (25-27) des zweiten Klemmteils (10) befestigt und dazu bestimmt sind, in Vertiefungen (31) zu fallen, die in den Querstreben (7) nahe den äußeren Enden angeordnet sind.

8. Klemmvorrichtung nach Anspruch 1 bis 7, **dadurch gekennzeichnet, dass** an der Unterseite der Tischplatte weitere Befestigungsmittel bei oder neben der Stütze (6) einer Schenkeleinheit (3, 4, 5) beziehungsweise an einer Stelle zwischen den äußeren Enden der Querstreben (7) montiert sind, wobei die weiteren Befestigungsmittel eine oder mehrere Nocken aufweisen, die an der Unterseite der Tischplatte montiert und dazu bestimmt sind, mit in der Querstrebe (7) in deren Längsrichtung hergestellten Schließöffnungen (33, 34) in Eingriff zu kommen.

Revendications

1. Dispositif de serrage (8) pour serrer un support de plateau de table (3, 4, 5) sur un plateau de table (2), le support comportant plusieurs ensembles formant pied amovible (3, 4, 5) comportant chacun au moins un montant (6) et une poutre (7), le dispositif de serrage (8) ayant des pattes s'étendant radialement conçues pour faire saillie au moins partiellement dans une extrémité extérieure libre de chacune desdites poutres (7), et pour venir en prise avec lesdites poutres (7) avec une action de serrage, **caractérisé en ce que** le dispositif de serrage (8) comporte une première (9) et une seconde (10) partie de serrage, ladite première partie de serrage (9) étant montée de manière fixe sur le côté inférieur du plateau de table (2), et ladite seconde partie de serrage (10) étant montée de manière ajustable dans une direction approximativement perpendiculaire à ladite première partie de serrage (9), chacune des parties de serrage (9, 10) ayant des parties correspondantes (19-21, 25-27) des pattes s'étendant radialement à la suite, et **en ce que** des moyens sont fournis pour ajuster la seconde partie de serrage (10) par rapport à la première partie de serrage (9).

2. Dispositif de serrage selon la revendication 1, **caractérisé en ce que** lesdits moyens pour ajuster la seconde partie de serrage (10) par rapport à la première partie de serrage (9) sont constitués d'une vis d'ajustement centrale (12) et d'un trou de vis central (18) dans la première partie de serrage (9), la vis d'ajustement (12) étant reçue en pouvant tourner librement dans la seconde partie de serrage (10), la seconde partie de serrage (10) ayant une ouverture centrale (32) pour pouvoir atteindre la vis d'ajustement (12).

3. Dispositif de serrage selon la revendication 1 ou 2, **caractérisé en ce que** chacune des parties correspondantes (19-21, 25-27) des pattes radiales des première et seconde parties de serrage (9, 10) est munie d'une butée correspondante prévue pour être mise en contact avec l'extrémité extérieure libre d'une poutre (7).

4. Dispositif de serrage selon l'une des revendications 1 à 3, **caractérisé en ce que** les pattes s'étendant radialement (19-21) de la première partie de serrage (9) ont des biseaux (22, 23) des deux côtés, leurs angles correspondant aux angles de poutres de forme triangulaire (7).

5. Dispositif de serrage selon la revendication 4, **caractérisé en ce que** les pattes s'étendant radialement (25-27) de la seconde partie de serrage (10) sont d'une forme triangulaire en coupe transversa-

le, avec deux côtés successifs qui correspondent aux deux côtés successifs des poutres de forme triangulaire (7), et sont munies de saillies arrondies (28, 29) qui correspondent à une partie ronde d'une poutre (7) à son côté dirigé vers le bas.

6. Dispositif de serrage selon la revendication 5, **caractérisé en ce que** la mise en prise de serrage entre les parties de serrage (9, 10) et les poutres (7) est réalisée par serrage entre la première partie de serrage (9) et les saillies arrondies (28, 29), la forme triangulaire des pattes (25-27) servant de guide.

7. Dispositif de serrage selon l'une des revendications 1 à 6, **caractérisé en ce que** des cames de verrouillage en saillie (30) sont montées sur les pattes s'étendant radialement (25-27) de la seconde partie de serrage (10), et sont prévues pour tomber dans des évidements (31) situés dans les poutres (7) à proximité de leurs extrémités extérieures.

8. Dispositif de serrage selon l'une des revendications 1 à 7, **caractérisé en ce que** des moyens de fixation supplémentaires ont été montés sur le côté inférieur du plateau de table, sur le montant (6) ou à proximité de celui-ci, d'un ensemble formant pied (3, 4, 5) et/ou en un emplacement entre les extrémités extérieures de la poutre (7), et les moyens de fixation supplémentaires sont constitués d'une ou de plusieurs cames en saillie montées sur le côté inférieur d'un plateau de table, conçues pour venir en prise avec des ouvertures de verrouillage (33, 34) réalisées dans la poutre (7) dans sa direction longitudinale.

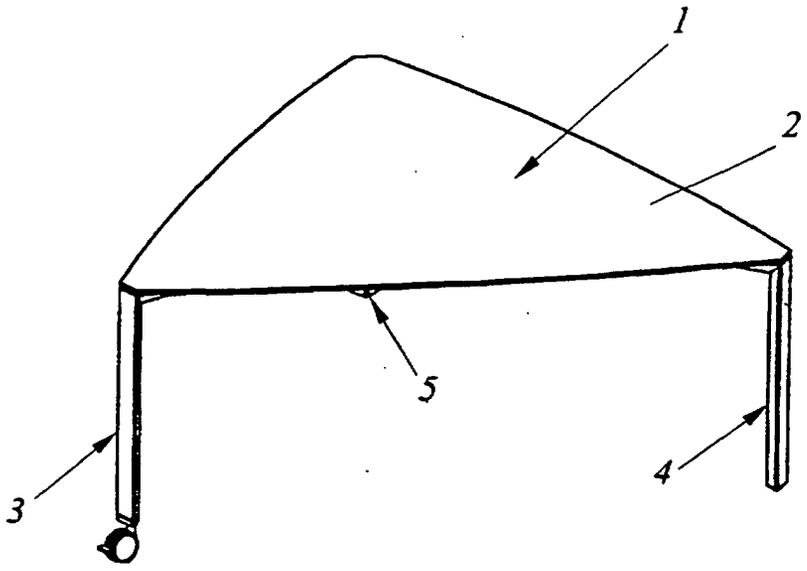


FIG. 1

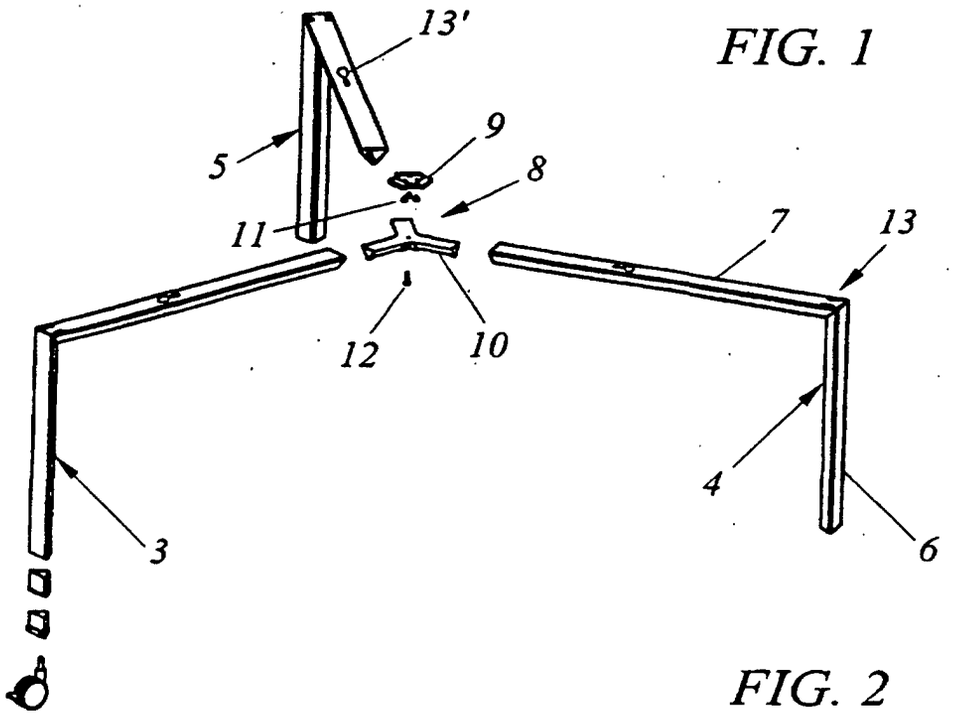
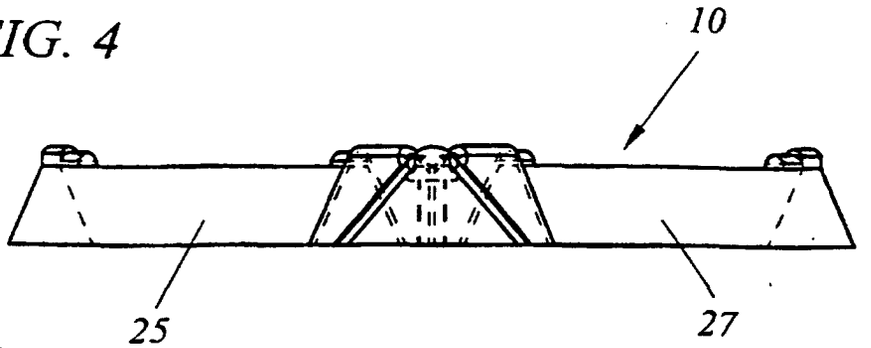


FIG. 2

FIG. 4



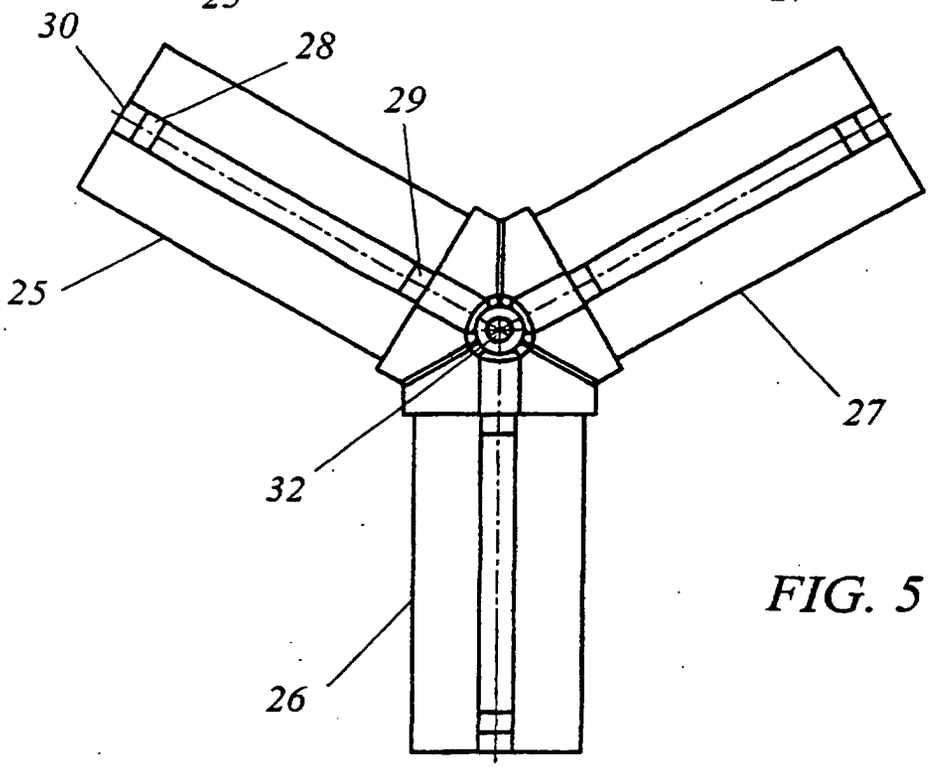


FIG. 5

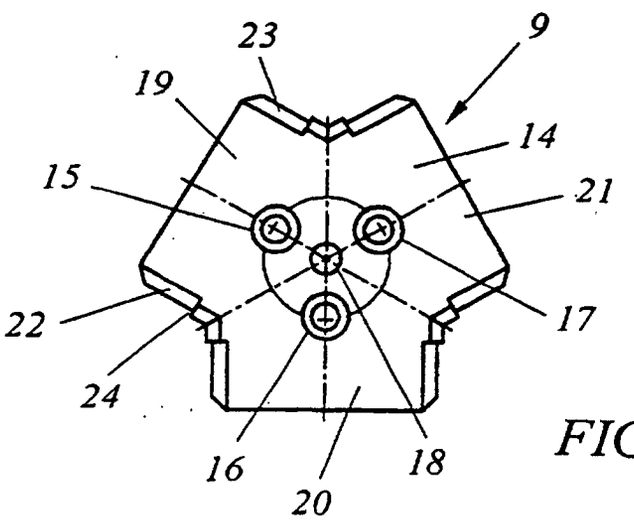
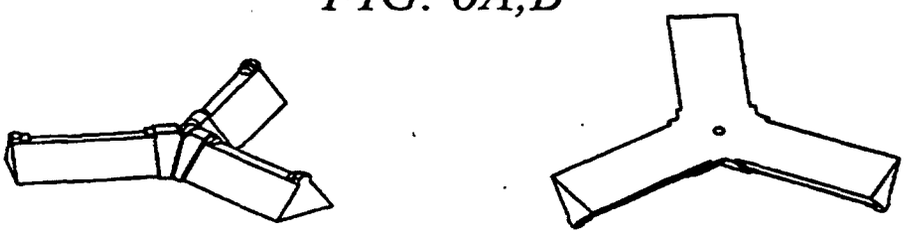


FIG. 3

FIG. 6A,B



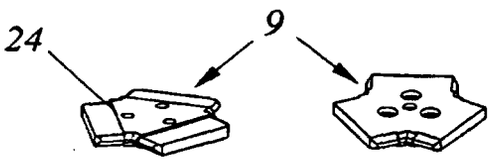
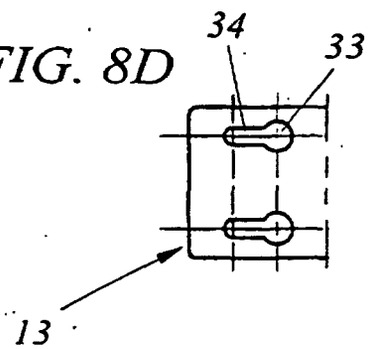


FIG. 7A,B

FIG. 8D



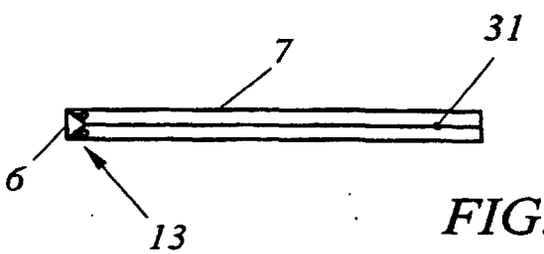


FIG. 8C

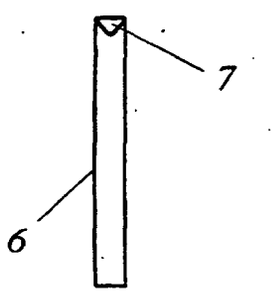


FIG. 8B

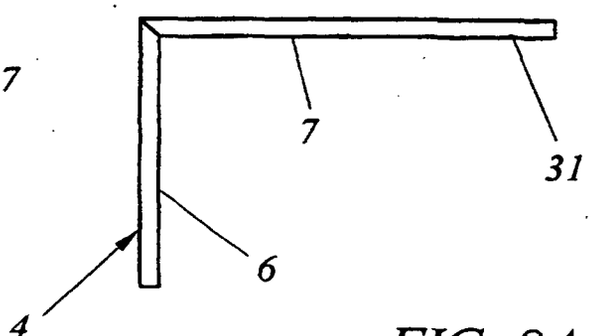


FIG. 8A