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(54) Improvements in and relating to furniture

(57) Furniture, furniture support systems and components therefore are provided with the aim of providing a more flexible system of work surface areas. The support system provides a number of components pivotally mounted about a common hub location, the components comprising an upright member and one or both of a laterally extending member with ground contacting or work surface supporting function.

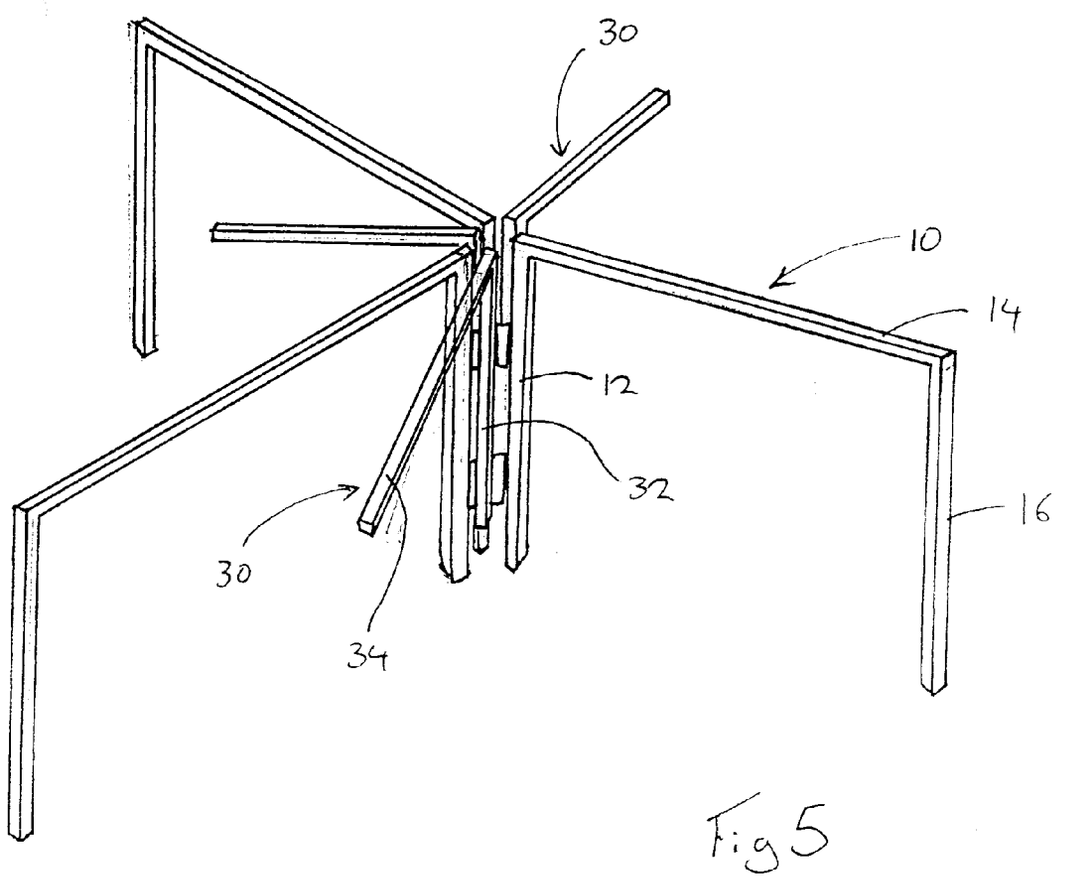


Fig 5

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Description

The present invention concerns improvements in and relating to furniture, particularly but not exclusively tables or other furniture which provides a work surface.

Furniture, and in particular tables, are often called upon to provide variety in terms of the shapes of top surface provided, the way in which adjacent units can be placed together and the orientation from which the top surface can be used from a seated position.

Existing tables commonly consist of a flat top surface mounted on a support structure. The structure normally consists of a rigid frame with a series of upright members joined together by cross members in a fixed arrangement. Whilst such units can be placed together their geometry is fixed. This restricts the top shape which can be applied to any given support and also means that if a user attempts to place their legs under the surface from certain directions they will knock against the support or be severely restricted in their movement.

Similar problems hold true for collapsible support structures as in the assembled state they too present rigid units.

The present invention seeks amongst other aims to provide a system offering versatility in the position from which a user can use the furniture, the profile of the top surface which can be used in conjunction with the support and the manner in which a plurality of such units can be assembled with one another or with prior art units. A readily dismantlable system having a lower storage volume is also aimed for.

According to a first aspect of the invention we provide a furniture support system comprising a plurality of components in which the components comprise an upright member and depending therefrom a laterally extending member, wherein the laterally extending member includes a portion adapted to contact the ground and/or a portion adapted to support a work surface, two or more such components being pivotally mounted relative to one another about a common hub location.

In this way the relative positions of the supports can be adjusted to give a versatile support system accommodating a wide variety of work surface profiles and positions for use. The support is preferably provided only by such components.

Preferably the upright members are pivotally connected to at least one other upright member at the hub location. Alternatively an end portion of one laterally extending member may be pivotally connected to an end portion of another or of an upright member at the hub location. In a further alternative the components may be pivotally connected to a separate hub forming member.

Preferably all bar two and most preferably each component is pivotally connected to two other components. In this way a substantially circular hub with depending members is provided. The hub, whether completed or not may define a conduit for wiring. The wiring may be for electrical power supply or communication purposes.

The pivotal connection may be provided by a pivot pin engaging portions of the connected components. Alternatively the components maybe connected to one another by a flexible material allowing relative but restrained movement. It is particularly preferred that the pivotal connection should be releasable. In this way the sequence and number of components in a support system can be varied as desired.

The pivotal movement is preferably substantially in the horizontal direction. An upright member is one which extends away from the ground. A lateral member is one which extends across the ground. These members need not of course be vertical or horizontal.

Preferably a plurality of the members extend radially with respect to the hub location. The arc separating the respective members is variable due to the pivotal mounting.

The length of the laterally extending elements may be adjustable. Alternatively compatible components may be provided having different pre-set lateral extension.

Whilst linear elements are preferred the configuration may be variable, for instance through other pivot points provided on the laterally extending members at locations away from the hub. Alternatively curved members, most preferably of complimentary curvature, may be used.

Preferably the laterally extending elements are relatively elongate. Elongate elements for the work surface support are particularly preferred. The ground engagement maybe provided by a laterally extending element which extends in a number of directions, for instance a circular plinth. It is preferred that the ground engaging members are also elongate in specific directions only, for instance bars.

Preferably at least three members with ground engaging portions are provided.

Preferably at least three members with work surface supporting portions are provided.

The work top supporting portions may be provide on components comprising an upright and laterally extending member with the lateral member being provided towards or at the top of the upright only. The ground engaging portions may be provided on components comprising an upright and a laterally extending member with the lateral member being provided towards or at the bottom of the upright only. Such components may be provided in an alternating arrangement around the hub.

The ground engaging portions may be provided on members attached to a single upright with the positions of the members being fixed relative to one another. The work top supporting members are preferably still free to move.

The ground engaging and/or work surface engaging portions may comprise only a portion of, or extend throughout substantially the whole of the lateral mem-

ber.

Preferably one or more of the components provides a member with a ground engaging portion and a work top supporting portion.

The ground engaging and work supporting portions may be on separate members extending from the same upright member. The direction in which such members extend form the same upright may be parallel or offset.

Alternatively the ground engaging portion and work top engaging portion maybe connected to the same laterally extending member. For instance the ground engaging portion may be provided by a further upright depending from the laterally extending member carrying the work top engaging portion. The further upright may be provided at the distal end of the lateral member relative to the hub or may be provided in an intermediate position. Alternatively the work top engaging portion may be provided by an upright depending in such a manner from a laterally extending member providing the ground engaging portion.

In a preferred embodiment at least one of the components comprises an upright member with a laterally depending member at or near the top of the upright, the laterally depending member providing a further ground engaging upright at or near the distal end of the lateral member. The uprights are preferably pivotally mounted relative to one another via a pivot directly connecting the two.

In a further refinement the system may be provided with one or more components providing work top engaging portions only. These components may be alternated around the hub with components of the preferred embodiment.

Two or more hubs may be connected together by a laterally extending brace. The lateral extension of this brace may be adjustable. The brace may be fixedly or pivotally connected to one, both or all of its respective hubs. Direct attachment to an upright is preferred.

Two or more components may be connected to one another by connecting members at locations away from the hub. The connecting members may connect components attached to the same hub. Alternatively, or additionally the connecting members may connect components of one hub to components of another hub.

The connecting members may be of adjustable length. In a preferred form the connecting members are provided as a variable shape parallelogram or as a fixed rectangular or square frame.

The connecting members may engage the laterally extending or upright members of the components.

It is preferred that the connecting members be provided with protrusions which engage recesses on the components, or vice versa. A protrusion complimentary to, or received in a hollow in an upright member is particularly preferred,

According to a second aspect of the invention we provide an item of furniture comprising a work surface and a support system according to the first aspect of the invention.

The furniture may incorporate any of the optional features set out above for the support system.

The work surface may comprise a table top, kitchen surface or any area with respect to which a user might wish to sit.

Preferably the work surface and support system are releasably fastened to one another.

The fasteners are preferably mounted on the laterally extending members. Preferably the fastener is provided with a work surface engaging portion, a component engaging portion and a connection portion between the two. It is preferred that the component engaging portion be of complimentary profile to the component. Preferably the work surface engaging portion is complimentary to the underside of the work surface and most preferably complimentary to the component too. Preferably the connection portion is also complimentary.

A fastener with parallel component and work surface engaging portions, and preferably with a perpendicular connection portion, is envisaged.

The work surface may be fastened to the fastener by lugs engaging recesses, by releasable fasteners or the like.

The fastener may be provided independently.

The work surface engaging portion may extend beyond the boundaries of the component and / or component engaging portion.

According to a third aspect of the invention we provide a furniture support component comprising an upright member and a laterally extending member, the laterally extending member having a ground engaging portion and/or work top supporting portion and wherein the component is provided with first pivotal mounting means adapted to be complimentary to pivotal mounting means carried on a separate second component, and is also provided with second pivotal mounting means adapted to be complimentary with first pivotal mounting means carried on a separate third component.

Preferably the first and second pivotal mounting means are different, ie complimentary components.

The element may also incorporate further optional features as provided above in the first aspect.

Various embodiments of the invention will now be described, by way of example only and with reference to the accompanying drawings in which :-

Figure 1 is a perspective view of a prior art table;

Figure 2 is a side view of a component of the invention;

Figure 3 is a plan view of an item of furniture according to a first embodiment of the invention;

Figure 4 is a plan view of an item of furniture according to the first embodiment in a different configuration;

Figure 5 is a perspective view of a second embodiment of the invention;

Figure 6 is a plan view of an item of furniture according to a third embodiment of the invention;

Figure 7 is a plan view of a fourth embodiment of the invention;

Figure 8 is a perspective view of a linking frame; and

Figure 9 is a perspective view of a fastener.

Figure 1 illustrates a typical prior art table. The support structure consists of an upright element 2 at each corner which contact the ground. The uprights are joined together by horizontal elements 4 at their top. These elements 4 provide a plane on which the work surface, not shown, can be mounted by various means. To give rigidity to the structure additional bracing elements 6 are provided between three of the uprights 2. These prevent undesired wobble in the overall structure. The space 8 between one pair of uprights is left open to give access to the users legs.

Tables of this type cannot successfully be used from the other directions as the bracing elements 6 get in the way. The fixed nature of the support structure also means that the shape and extent of table top are limited. If the table top extends too far beyond the bounds of the elements 4 in any direction the there will be play in the surface which is undesirable from the users point of view. Equally if an irregular shaped top is to be used it must extend beyond the elements 4 in all directions or expose the frame in an unsightly manner.

The present invention provides a support structure comprising a series of components 10 as illustrated in Figure 2. These consist of an upright member 12 connected to a laterally extending member 14 which is connected to a further upright member 16. Both the member 12 and member 16 contact the ground. The overall support structure consists of a series of such components joined together or in combination with one or more of the other component types discussed below. A hinge 17 connects adjacent components.

As illustrated in Figure 3 this support structure is used to support a square topped desk 20 with a scooped profile 22. The support provides clear access to the normal work station through the scoop 22 whilst providing full support to the desk top 20.

Adjacent components 10 are connected together such that each is free to move pivotally relative to the other at the distal end to a significant degree. A series of adjacent components 10 connected in this way form a hub 18.

The support system can be provided with the bare minimum number of components 10 to give the needed support or excess components can be provided, 10a in Figure 3, for use when required.

If the desk top 20 is no longer suited to requirements, either permanently or temporarily, then the support can be successfully used with a different profiled desk top 24. As shown in Figure 4 a non-uniform top has been provided and the pivotal mountings of the components 10, have been used to open the components out and still give full support.

In cases where the support structure lacks sufficient components 10 as it stood additional components 10a can be pivotally mounted to the existing hub 18.

Figure 5 illustrates a form of the invention in which as well as components of type 10, with two uprights and a lateral member, components of type 30 are provided. Components 30 consist of an upright member 32 which can be pivotally mounted relative to other components 30 or components 10. The upright 32 carries a laterally extending member 34. The member 34 is shown as having a shorter lateral extension than element 14 and can be used to give support to the desk top where a full component 10 would be inconvenient due to the upright 16 being present. Full flexibility is once again provided.

In the arrangement portrayed in Figure 6 the hubs 18 of two support structures are connected together by a member 40. This member connects the two pivotal systems to give extra support to the overall desk, which in this case consists of a squared and free form portion desk top. By providing the member 40 as a variable length the distance between the hubs can be increased or decreased and fixed as needed. Any suitable restraint can be used to maintain the length of the member 40 once set.

A further embodiment, Figure 7, of the invention provides a system in which three or more components of type 30 are pivotally mounted to a series of components 50 of a further type. Components 50 comprise an upright member 52 adapted to be pivotally mounted 51 to adjacent uprights. Depending from the upright 52 is a laterally extending member 54 which at least in part engages the ground. This embodiment therefore provides a system in which the ground engagement and the support for the desk top can be provided independently of one another.

In Figure 8 two hubs 18 are connected together via a linking frame 100 which engages the ends of the lateral members 14 and uprights 16.

The linking frame is formed of a series of connecting members 102 in a rigid frame. The linking frame 100 and components 10 are connected by downward angled protrusions 104 which engage the hollow uprights 16.

The top surface of the linking frame 100 can be provided flush with the top surface of the lateral members 14.

The pivotal mounting of the uprights relative to one another can be achieved in a variety of ways, for instance using male and female components with bores adapted to receive a pivot pin.

As shown in Figure 9 a lateral member 14 is provided with two fasteners 200. The fasteners are formed

from work surface engaging portions 202, component engaging portions 204 and connecting portion 206.

The work surface engaging portion 202 extends beyond the member 14 and is provided with a pair os shaped apertures 208 designed to accommodate lugs on the underside of the work top.

The attachment of the desk, table or work top to the support structure can equally be provided in any desired way, from simply resting it there, to the provision of suitable fastenings on, or which co-operate with the uprights or lateral members.

In many modern desk applications electrical and communication cables need to be provided neatly and securely to the work station. The hub of the present invention provides a convenient channel for this purpose. In some embodiments, such as Figure 5, an encircled channel exists, in others, such as Figure 3, the channel is open on one side but can still be put to the desired purpose. A suitable cover 70 can be provided if required. If the cover is flexible, in the vertical direction at least, then the full flexibility of the pivotal supports is maintained even with the cover in position.

When not in use, or for storage or transportation purposes, the work surface can be removed and the pivotal connections used to fold the support up to a minimum volume. The support can simply be fanned out once more to the desired configuration in subsequent use.

A very wide variety of configuration can be provided by producing components of the aforementioned types, in a variety of lengths, and assembling them in a suitable sequence.

Claims

1. A furniture support system comprising a plurality of components in which the components comprise an upright member and depending therefrom a laterally extending member, wherein the laterally extending member includes a portion adapted to contact the ground and/or a portion adapted to support a work surface, two or more such components being pivotally mounted relative to one another about a common hub location.

2. A support system according to claim 1 in which all bar two and preferably each component is pivotally connected to two other components.

3. A support system according to claim 1 or claim 2 in which the pivotal connection is provided by a pivot pin engaging portions of the connected components or the components are connected to one another by a flexible material.

4. A support system according to any of claims 1 to 3 in which a plurality of the members extend radially with respect to the hub location, the arc separating the respective members being variable due to the pivotal mounting.

5. A support system according to any preceding claim in which the length of the laterally extending elements is adjustable.

6. A support system according to any preceding claim which at least one of the components comprises an upright member with a laterally depending member at or near the top of the upright, the laterally depending member providing a further ground engaging upright at or near the distal end of the lateral member.

7. A support system according to any preceding claim in which two or more hubs are connected together by a laterally extending brace.

8. A support system according to any preceding claim in which two or more components are connected to one another by connecting members at locations away from the hub.

9. An item of furniture comprising a work surface and a support system according to any of claims 1 to 8.

10. A furniture support component comprising an upright member and a laterally extending member, the laterally extending member having a ground engaging portion and/or work top supporting portion and wherein the component is provided with first pivotal mounting means adapted to be complimentary to pivotal mounting means carried on a separate second component, and is also provided with second pivotal mounting means adapted to be complimentary with first pivotal mounting means carried on a separate third component.

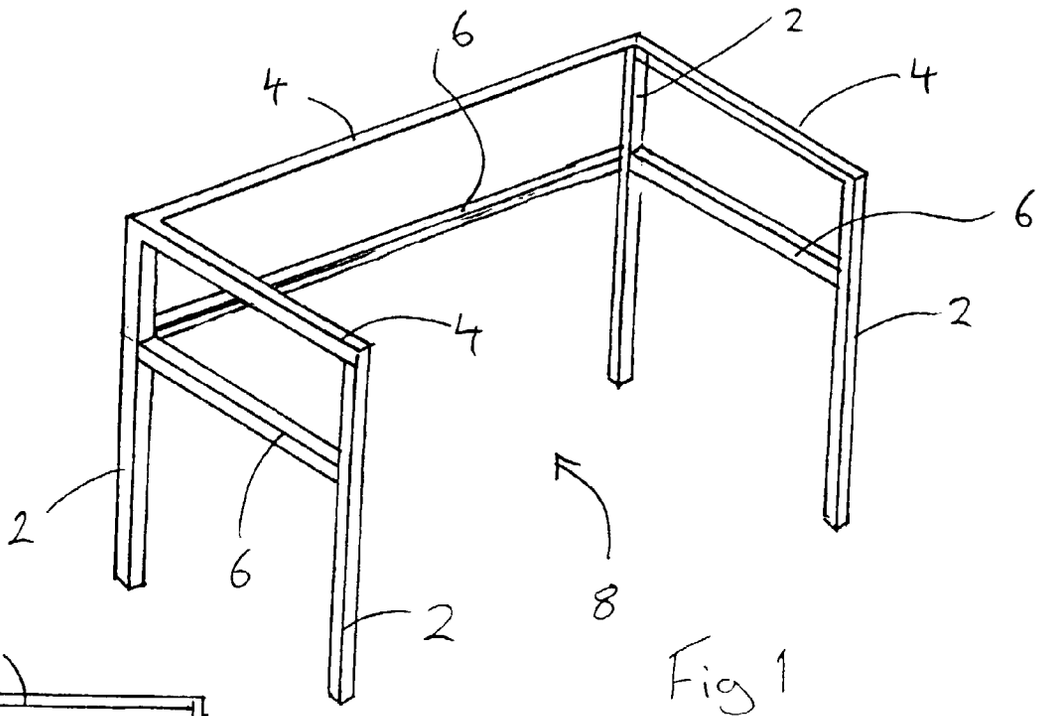


Fig 1

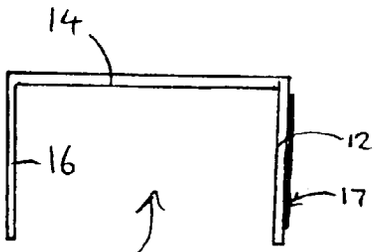


Fig 2

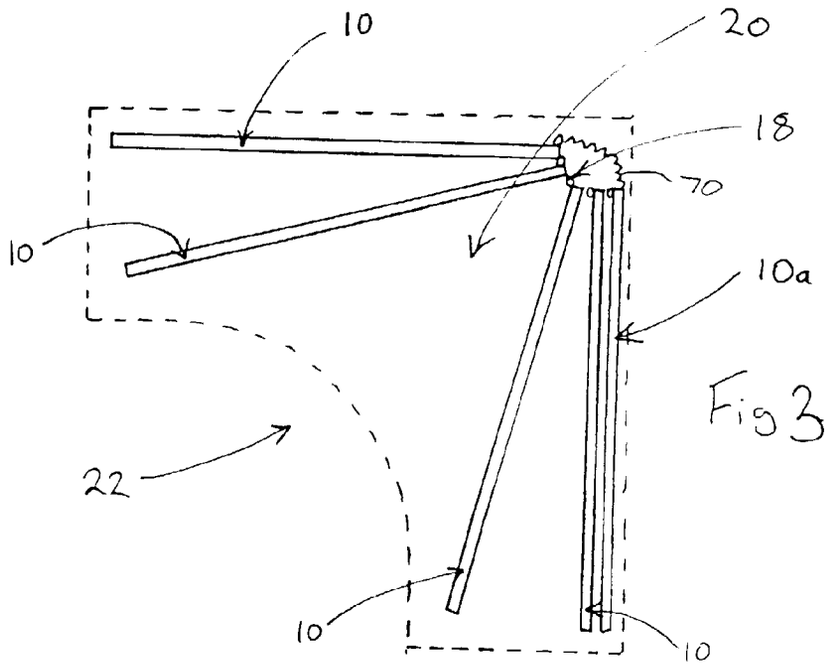


Fig 3

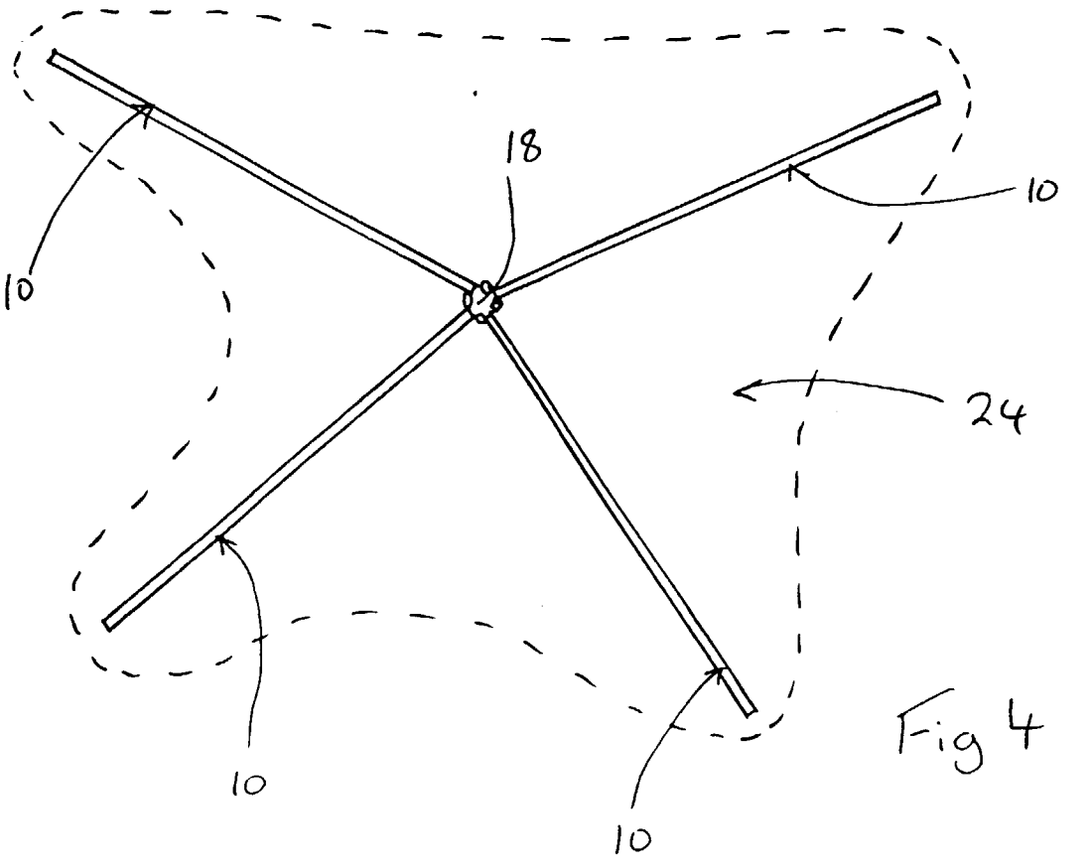


Fig 4

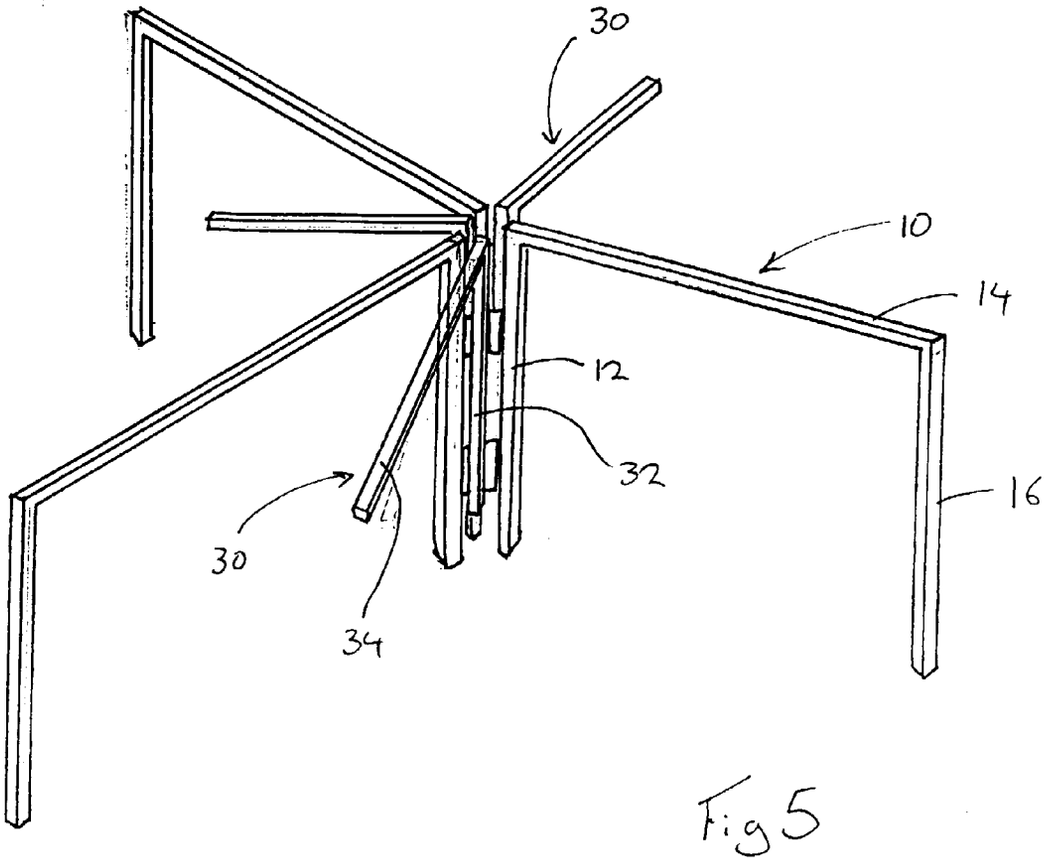


Fig 5

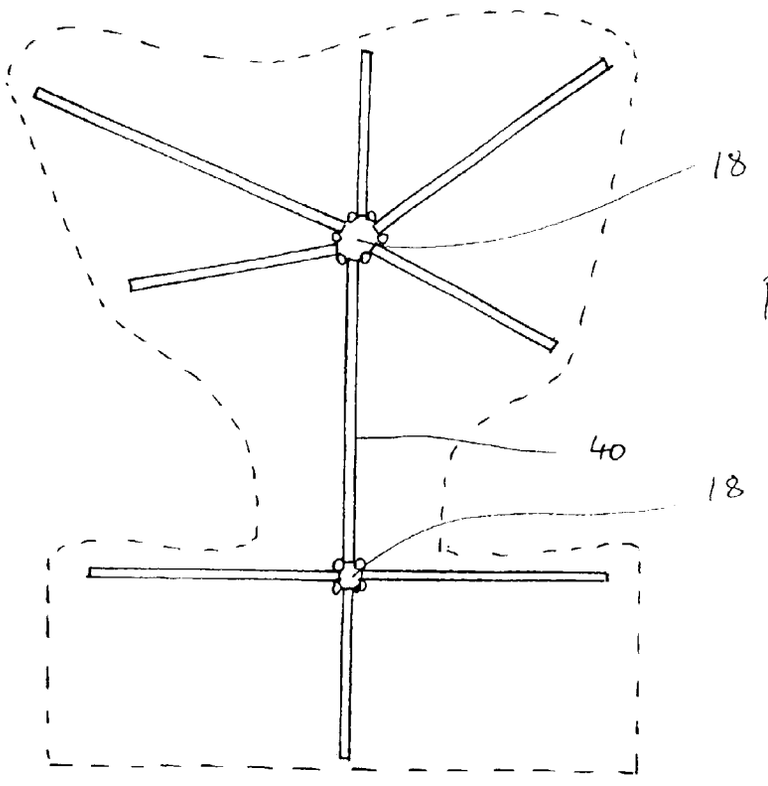


Fig 6

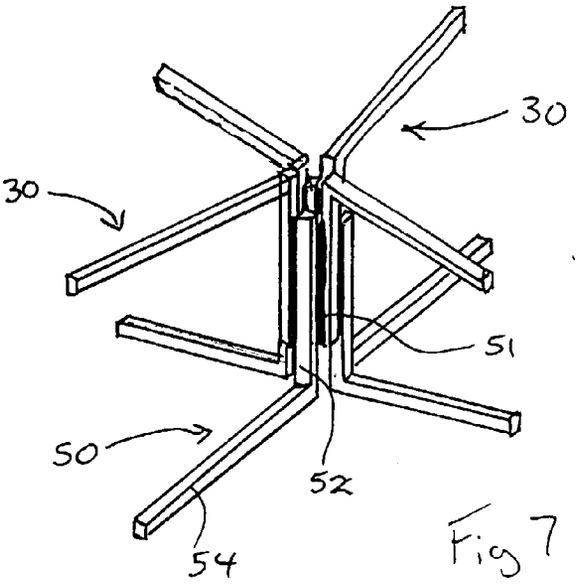
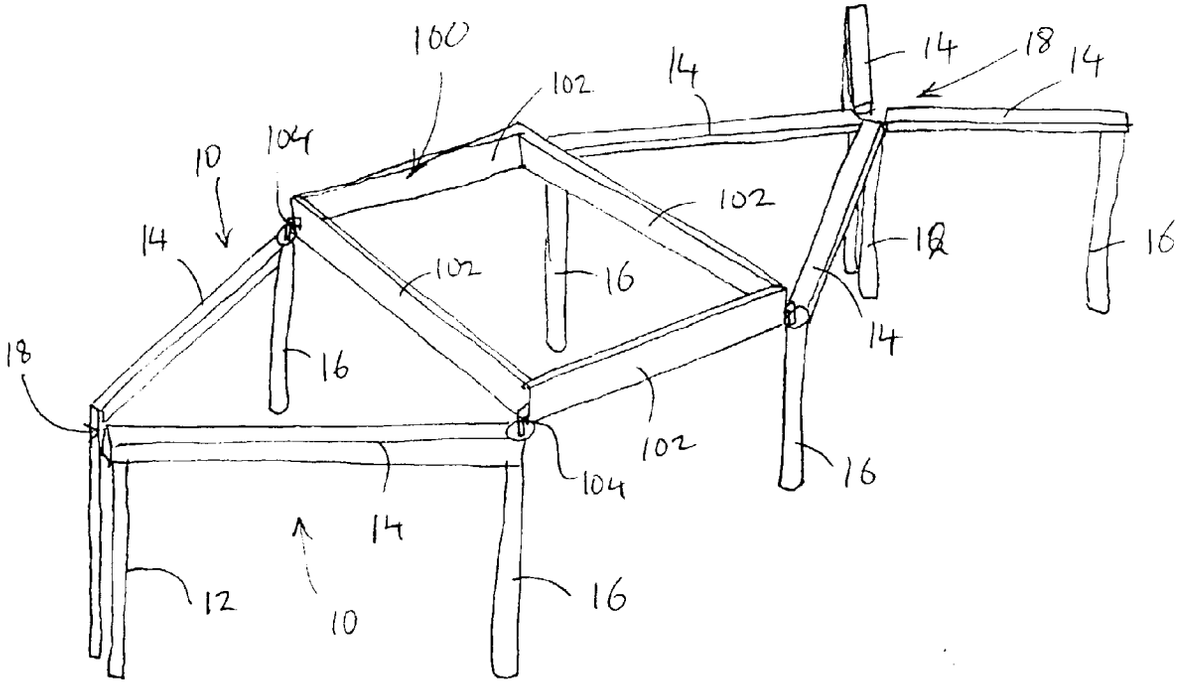

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Fig 7

Fig 8


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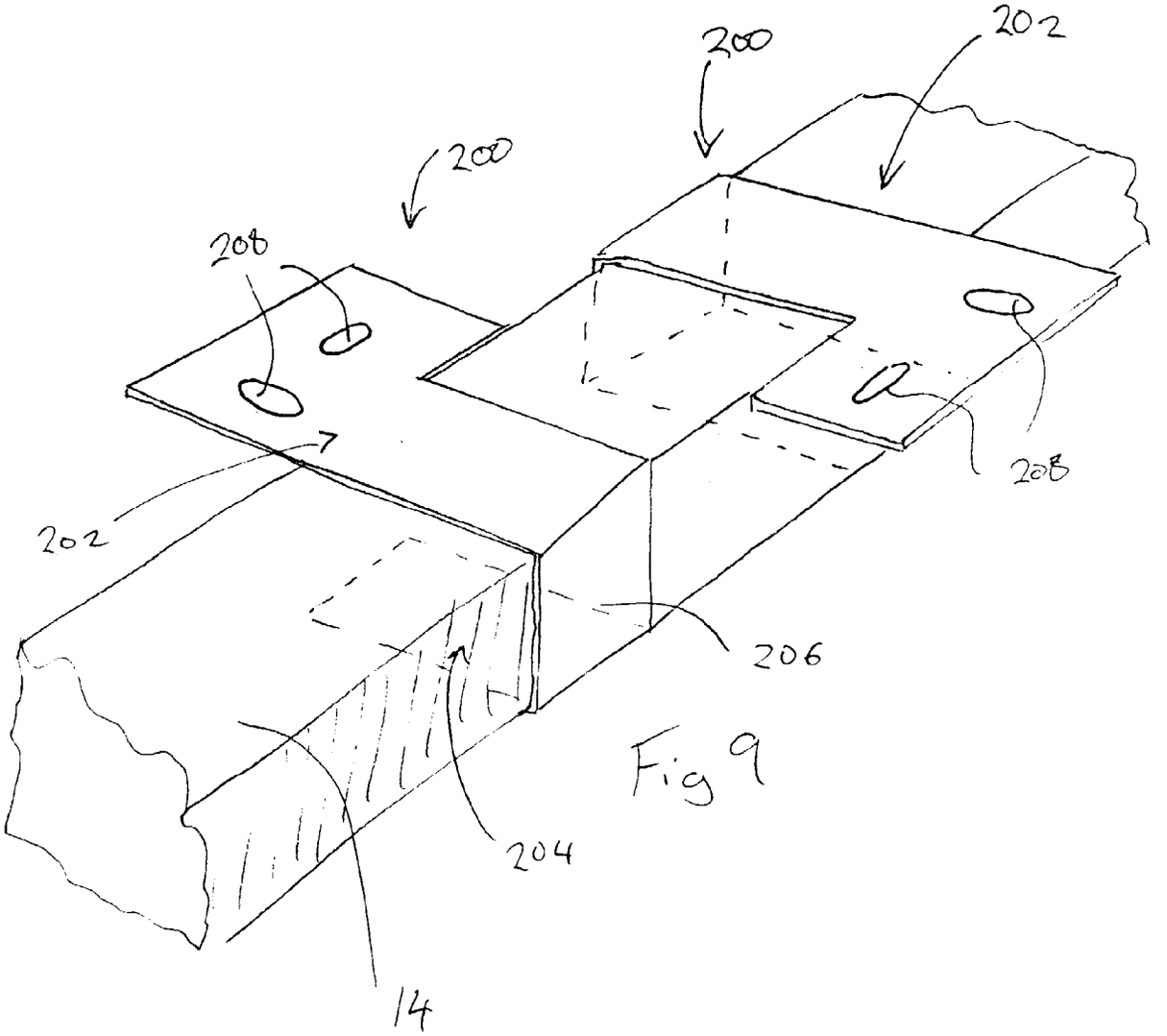


Fig 9