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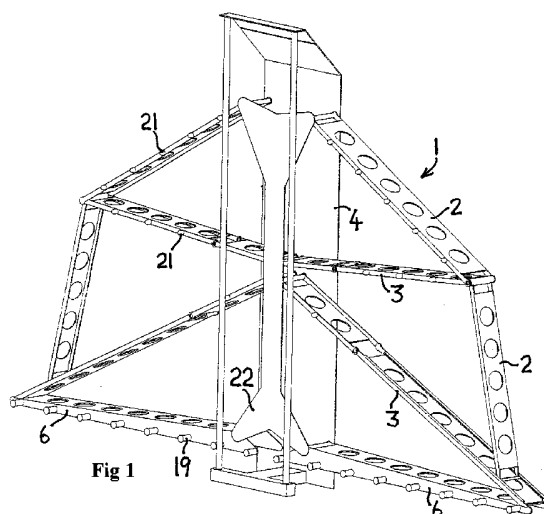
(56) Documents Cited:  
**GB 0885799 A** **US 3866496 A**

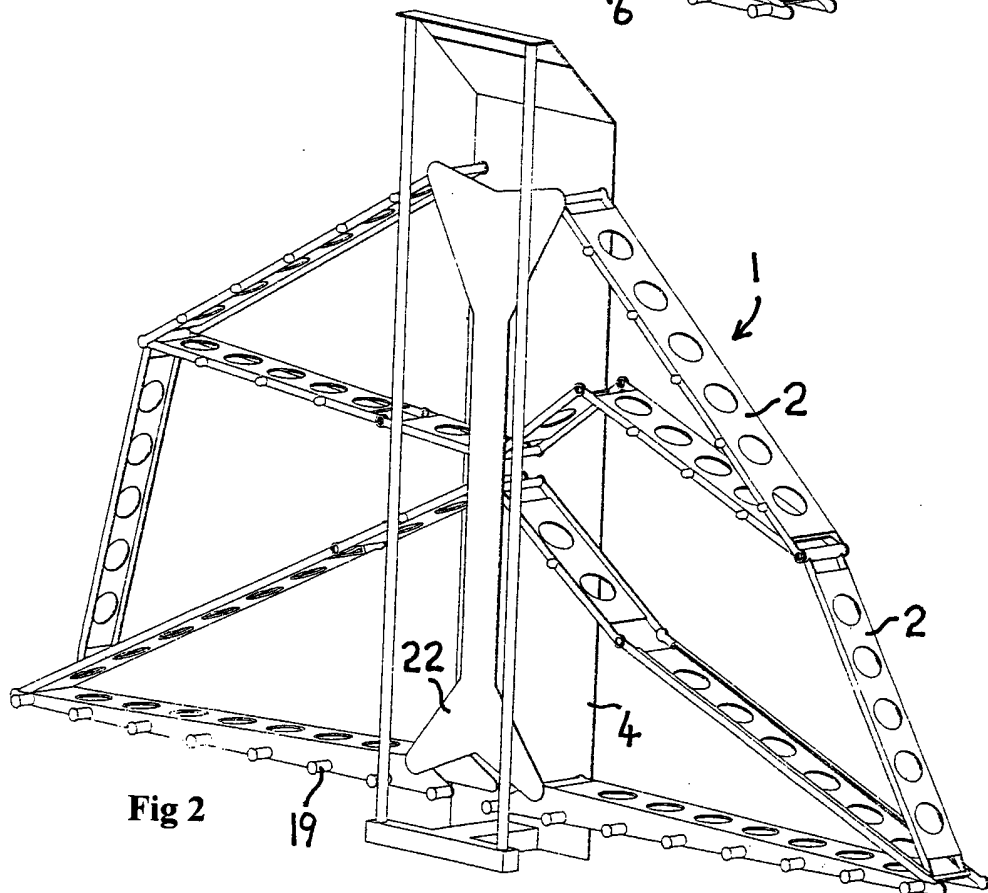
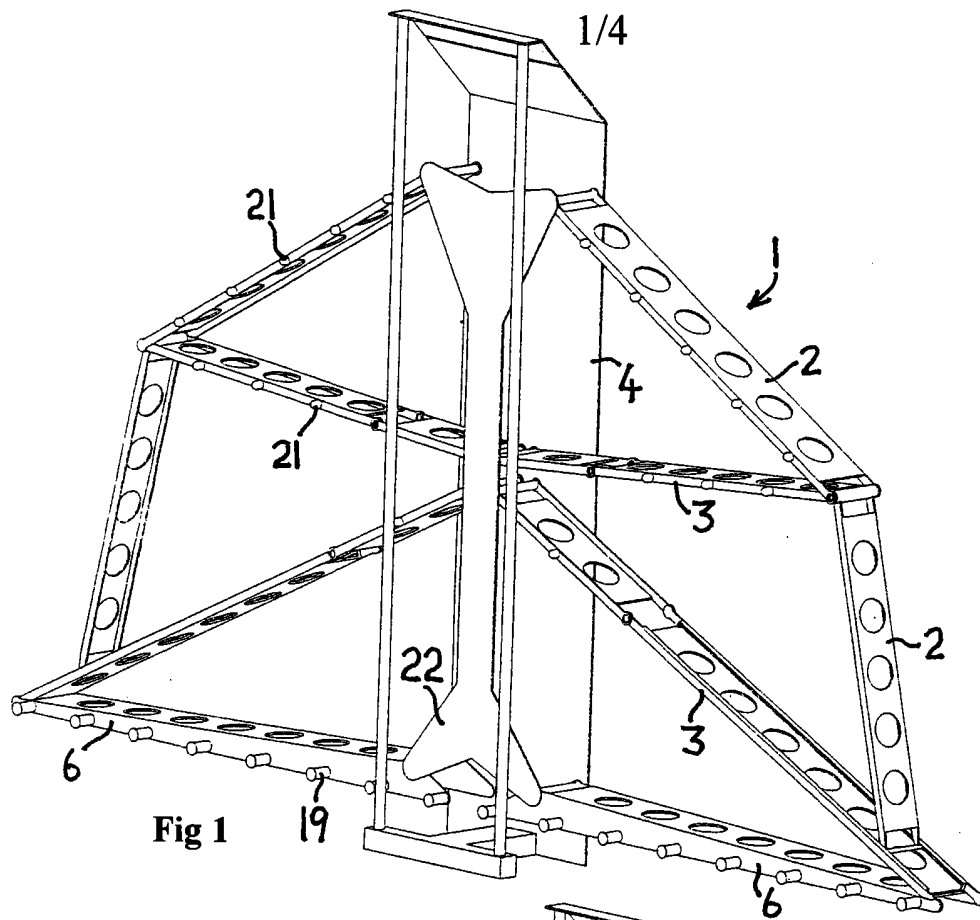
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UK CL (Edition X ) **B3B, B5L**  
INT CL **B23D, B23Q, B27B**  
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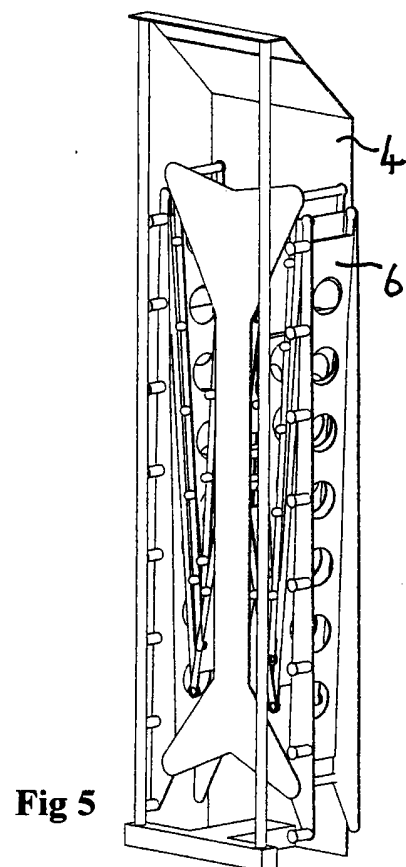
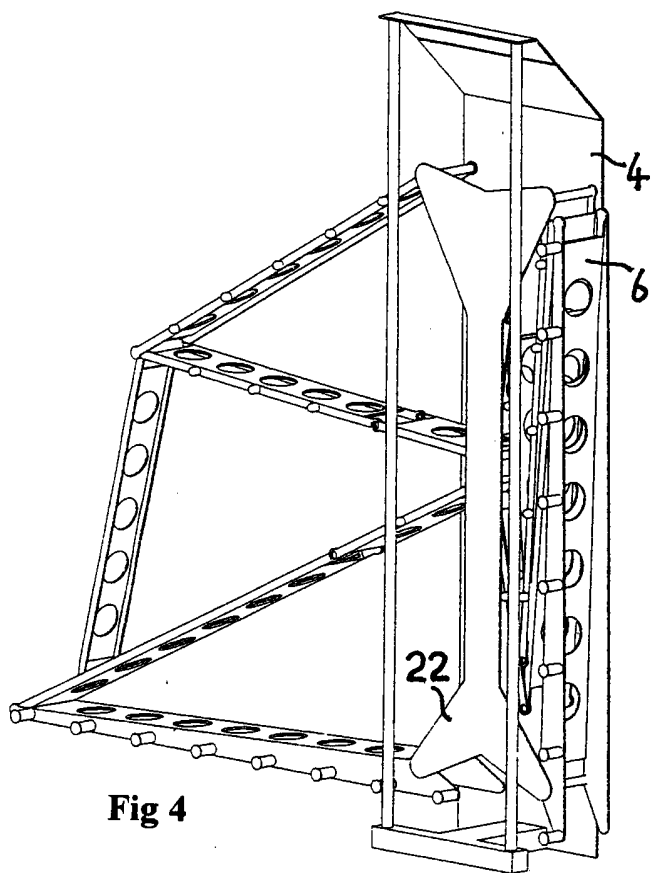
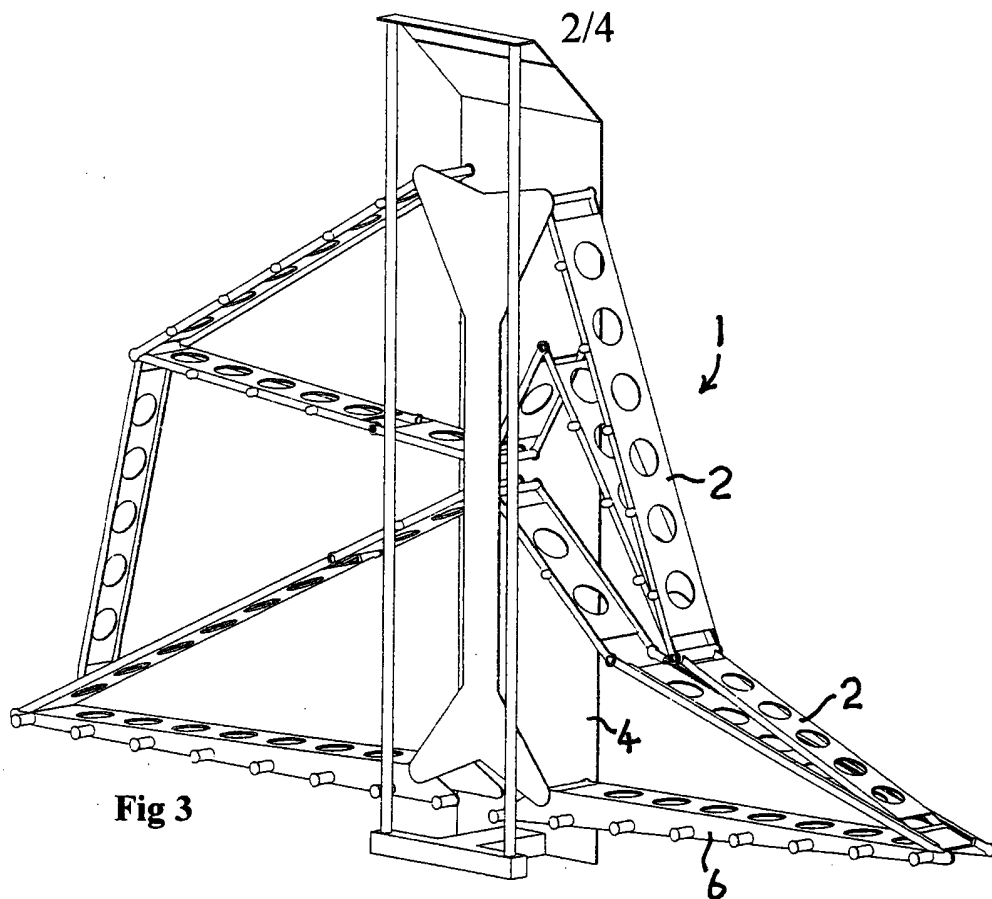
(54) Abstract Title: **Vertical panel saw**

(57) A vertical panel saw 1 comprises an openwork structure 2, 3 of pivoted members arranged to define a plane workpiece support surface when in an open condition, an opposite pair 6 of the pivoted members carrying fence means 19 effective to engage a lower edge of a panel workpiece when this is present, and a housing 4 including attachment points for the pivoted members and one or more saw guides located to carry a holder shoe for a powered working tool.

This provides a foldable support structure which can be portable and which is sufficiently rigid so as to be able to support a large sheet of wood for cutting. The working tool on the holder shoe may be replaced with an alternative tool such as a drill or a router.







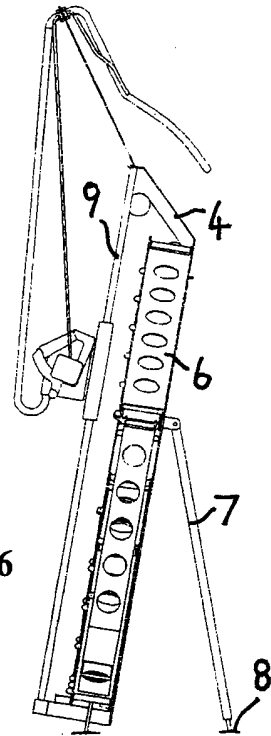


Fig 6

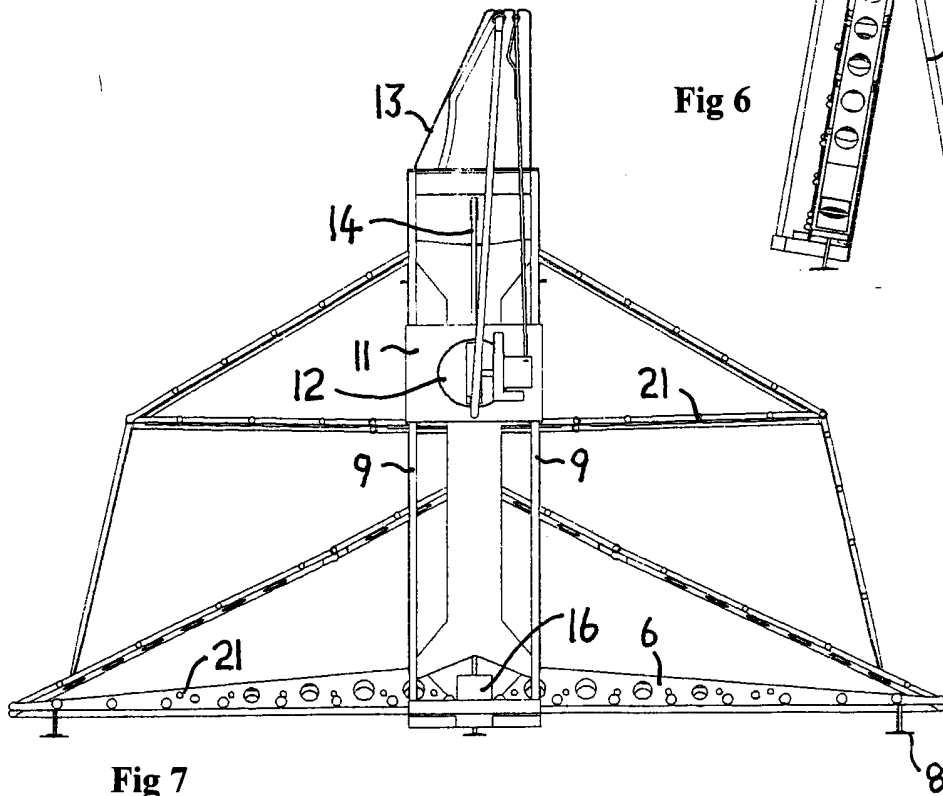


Fig 7

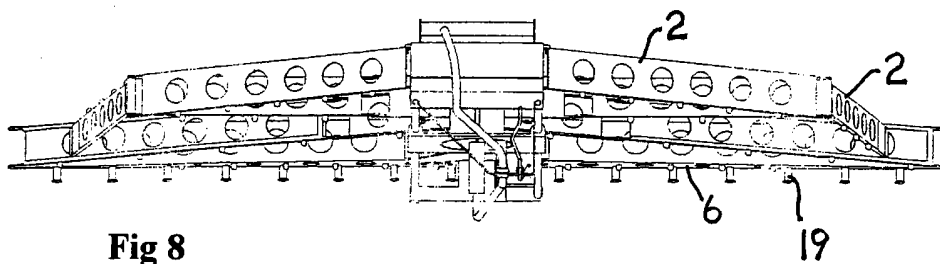


Fig 8

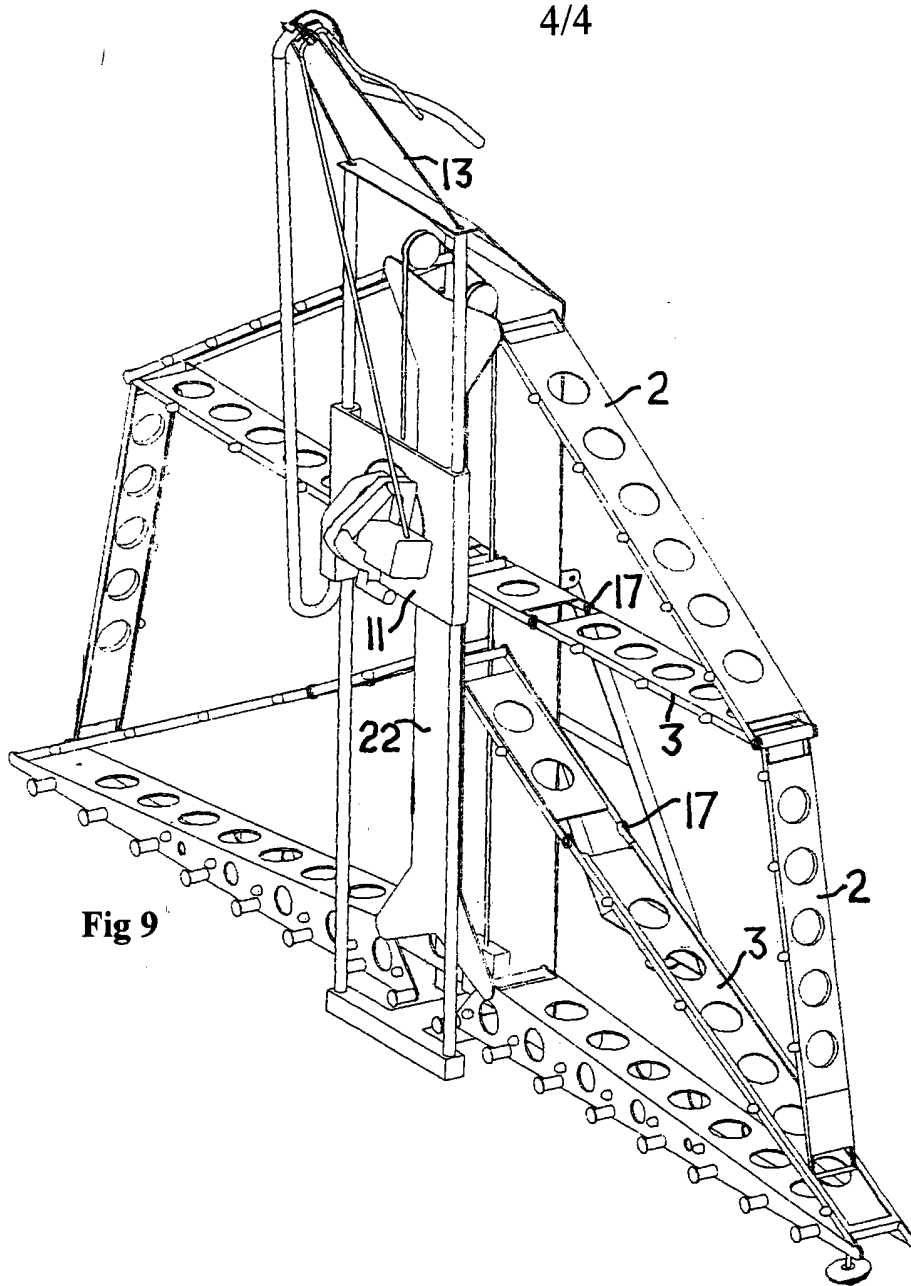


Fig 9

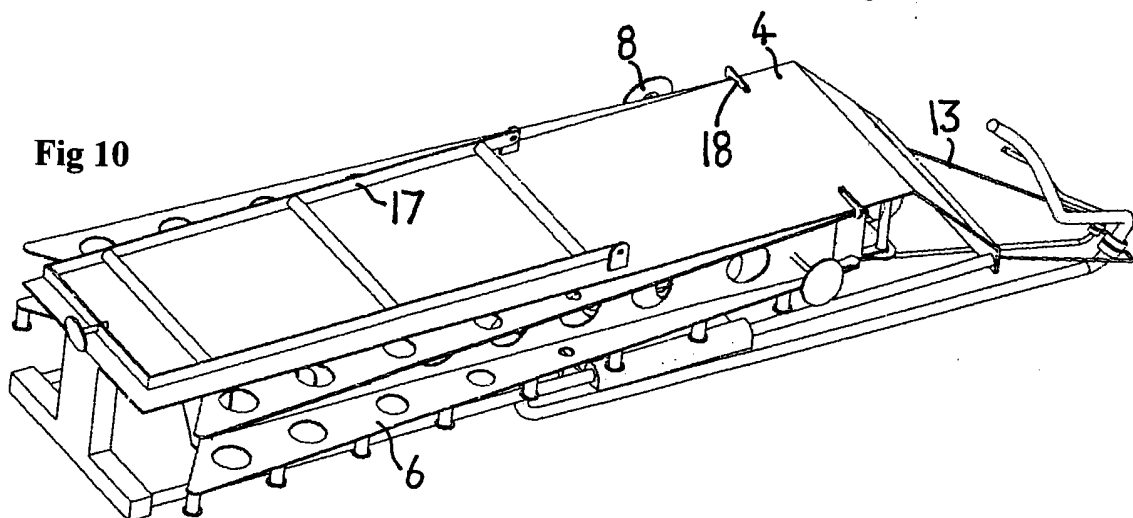


Fig 10

### Vertical Panel Saw

This invention relates to a vertical panel saw. It relates particularly to a tool for cutting large sheets of wood or similar non-ferrous material whilst the sheet is supported in a generally vertical attitude.

A saw of this type is needed frequently in the building and do-it-yourself trades since it can be used for cutting large sheets of material having dimensions up to eight feet by four feet (2440 millimetres x 1220 millimetres) without demanding a large area of floor space to accommodate the machine. An MDF board of this size, for example, in a thickness of 18 millimetres has a weight of about 65 kilograms so it should be held in a secure manner for the required cutting operation.

The need to provide a firm support for the largest expected area of sheet material implies that the machine will usually have to be installed in a fixed workshop place and it will not be able to be moved to a new location to enable the sheet material to be cut directly for use as might be needed on a building construction site. However, it has been proposed in Patent No. US3866496 (Payne, Marion L. et al) that a sheetboard cutting machine might be mounted on wheels to enable it to be moved from place to place over a level floor. The patented machine is described as being portable but it is clear that it still could not be lifted and carried by one man if it was required to be used in a different situation.

I have now devised a model of vertical panel saw which is sufficiently rigid so as to be able to support a sheet of eight feet by four feet in size and sheets down to eighteen inches (460 millimetres) square and which can be made light in weight so as to be capable of being handled by one person.

According to the invention, there is provided a vertical panel saw having an openwork structure of pivoted members arranged to define a plane workpiece support surface when in an open condition, an opposite pair of the pivoted members carrying fence means effective to engage a lower edge of a panel workpiece when this is present, and a housing including attachment points for the pivoted members and one or more saw guides located to carry a holder shoe for a working tool.

The saw guides for the holder shoe are arranged to lie at right angles to the said fence means when the pivoted members of the structure are in the open condition. When the pivoted members are in a closed condition, they may be arranged to be located substantially entirely within the said housing.

The holder shoe may be arranged to be readily detachable from the one or more saw guides. The holder shoe may be capable of supporting a portable saw power unit or other working tool such as a router or drill. The holder shoe will also be able to accept a range of alternative suitable models of the saw power unit etc.

The fence means may be a line of support pins positioned along the length of one pivoted member. Each support pin may carry a roller which is mounted for free rotation about the pin.

The housing may include a tripod support leg to enable it to stand roughly upright when located on a floor surface that may include some rough patches.

When the pivoted members are in the closed condition, a lock may be engaged to retain the members within the said housing.

The invention also comprises a vertical panel saw having a workpiece support

surface with a holder shoe for a saw power unit which is located on saw guides of a housing.

By way of example a particular embodiment of the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of the vertical panel saw showing the openwork structure of the saw in a fully open condition,

Figures 2 to 4 are similar views with one side of the structure being folded in stages,

Figure 5 is a view showing the openwork structure fully folded,

Figure 6 shows a different embodiment of the panel saw in a side view with the structure in a folded state,

Figure 7 is a front view of the panel saw with the structure opened out,

Figure 8 is a plan view of the panel saw,

Figure 9 is a perspective view, and.

Figure 10 is a similar view of the panel saw in the closed condition.

As depicted in Figure 1, the vertical panel saw comprises a workpiece support structure 1 which is arranged in use to be positioned on a flat surface in an approximately vertical attitude by being provided with a tripod leg system. A rear leg of this tripod system is present but it is not seen in the Figure 1 view.

The workpiece support structure provides a plane support surface which is able to carry a sheet of workpiece material having the dimensions of eight feet by four feet. The support surface is made up of an openwork structure of outer pivoted members 2 and inner pivoted members 3 which are joined together at their ends to make a lattice. The pivoted

members are made in a ladder-like shape so they will resist any tendency to bend under sideways pressure. The lattice is arranged as a parallelogram construction with diagonal struts formed by the inner pivoted members 3. The inner pivoted member 3 components are provided with hinges along their length so that the lattice may be folded completely to enable the support structure to be stored in a compact form.

Figures 2 to 4 show a right hand half of the support structure in respectively a part folded and fully folded condition.

The inner ends of the support surface pivoted members 2,3 are secured in a central housing 4 which provides attachment points for these members.

The action of folding the openwork structure of the panel saw is demonstrated in the views of Figures 1 to 5. Figure 1 shows both sides of the structure in a fully open position as is required when the panel saw is set up for use. In Figure 2, the right hand side is shown folded with two of the inner pivoted members 3 being displaced to allow the outer pivoted members 2 to be moved inwardly. In Figure 3, the inner pivoted members 3 and the outer pivoted members 2 have been brought together so that they will allow a bottom structural member 6 to be folded. Figure 4 shows the bottom structural member 6 being folded completely so that it lies within the outline of the housing 4. It thus lies alongside the folded parts of the structure inner members to form a compact package within the housing. Figure 5 shows the housing 4 when both the right and left hand sides of the support structure have been folded and the hinged members are essentially fully accommodated within the housing.

Figures 6, 7 and 8 show a different embodiment of the panel saw in respectively side, front and plan views.

In the side view of Figure 6, it can be seen that there is a pivoted tripod leg 7 which is located on a rear side of the housing 4. This leg is positioned with a foot 8 at its base and it thus enables the housing 4 to be arranged in a near-vertical attitude on a floor surface. Further feet 8 are provided at the ends of the bottom structure member 6 as seen in Figure 7. These three feet thus provide a stable support for the housing 4 which is effective if the floor space that is available should have an uneven surface.

A front part of the housing 4 supports two saw guides 9 which are hollow vertical columns. These saw guides 9 carry a tool mount 11 which is able to slide up and down on the columns and be clamped in a chosen position on the columns. The tool mount 11 carries a rotatable holder shoe 12 for a circular saw and motor power unit. The holder shoe 12 may be positioned so that the circular saw will be able to cut along either a vertical or a horizontal line as may be required by a user of the panel saw. The holder shoe 12 is provided with its own clamp so that it may be secured in the selected cutting position.

An upper wall of the housing 4 also supports a spring arm 13 which carries a power cable and a dust hose for use by the saw and motor power unit. The spring arm 13 is provided with clamp fixings so that the dust hose and power cable will be kept under slight tension as the tool mount 11 is moved on the column supports when the panel saw is in use. The dust hose will be capable of being attached to a suitable vacuum source when the panel saw is in operation to assist removal of the saw dust produced.

The positioning of the saw and motor power unit on the front of the housing is partially counterbalanced by a tape 14 which passes over a pulley wheel and is connected to a constant force spring unit 16.

Figure 9 is a perspective view of the vertical panel saw in the open condition and Figure 10 shows the device when closed up to enable it to be carried by a person or transported by vehicle.

In Figure 9, it will be seen that the outer pivoted members 2 are each formed in a deep beam construction to ensure that they have good strength and rigidity. The material is punched out at intervals to reduce weight and the material itself is a lightweight alloy shaped in a form with thin walls. The inner pivoted members 3 are each provided with a hinge 17 located along their length, the upper pivoted member 3 being allowed to fold downwards and the lower pivoted member 3 being allowed to fold upwards. Lock means (not shown) adjacent the hinges 17 prevent the members 3 from being folded in an incorrect direction. This arrangement of hinges in the lower pivoted members 3 ensures that these components will be placed under compressional forces during use of the vertical panel saw.

Figure 10 shows the panel saw in the closed condition. The tripod leg 7 has been folded against a rear wall of the housing 4. The bottom structural members 6 have been folded into the outline of the housing 4 and only the feet 8 of the members 6 extend beyond this outline. These feet 8 could be made easily removable if this was required.

The spring arm 13 extends beyond the top end of the housing 4 and this arm 13 can be easily detached from the housing if it was required to keep the length of a package down to a minimum size. Small spring latches 18 serve to retain the folded bottom structural members 6 in their folded position within the housing 4 space.

It will be noticed in the Figure 1 view that a lower edge of the support structure is formed with two bottom structural members 6 which lie in a straight line along the bottom

of the lattice. These two members 6 are intended to provide a support for the lower edge of a sheet of workpiece material and accordingly they carry a fence means. In the present embodiment, the fence means is a line of support pins 19 which are spaced along the lengths of the two members 6. Each support pin 19 carries a roller which is mounted for free rotation about the pin. The support pins 19 thus provide a straight pathway for the workpiece sheet so that the sheet may be moved smoothly across the support structure with the lower sheet edge being carried on the support pins 19.

Since the workpiece sheet is required to slide smoothly across the face of the support structure for some sawing operations, the front edges of the pivoted members 2,3 and also the member 6 (Figure 7) are provided in some places with material support pegs 21. These material support pegs 21 thus serve to reduce frictional forces when the sheet is moved and they are intended to assist the sliding action.

Since it may be convenient at some time for the panel for cutting to be supported at the body waist height relative to the user of the saw, there are also fixing points located on the inner pivoted members 3 to enable a mid-height fence to be arranged so that the user will find this a helpful alternative to use of the bottom fence represented by the support pins 19.

The housing 4 for the support structure is provided by a sheet metal casing which is arranged somewhat like three walls of a box with the two straight columns forming the saw guides 9 being located on a front face. The housing 4 together with an internal partition 22 serves to provide attachment points for the pivoted members 2,3 and 6 of the structure. A rear wall of the housing also provides means for attaching the tripod leg 7 to the housing so that the housing can be positioned in a roughly upright attitude on a floor

surface. After the housing has been arranged in this way, the lattice structure may be opened out ready for use. The power saw in its holder shoe 12 will be attached onto the two saw guides 9 of the housing.

In use of the vertical panel saw, this is able to be carried by a single person directly to the place where it is to be used since when folded it forms a package five and a half feet (1680 millimetres) long and eight inches (200 millimetres) square. This package can be transported conveniently in a car and then at the required working site it is a quick and easy operation to open out the lattice structure and then attach the power saw unit in its holder shoe 12 to the two saw guides 9 of the housing. Since the machine is capable of being folded down into a very compact form, it is particularly suitable for use at a location with restricted access.

The vertical panel saw of the invention has been found to be able to be built at an economical price and in a lightweight construction and it is still capable of making an accurate cut as required on a large panel workpiece. The lattice structure for carrying the panel forms a strong and rigid support and yet this can be folded into a compact form for storage or transportation. The opening and closing action is quick and easy for one person to carry out without extra help being needed. When folded, the panel saw can be loaded into an ordinary saloon car with the rear seats lowered. The saw is capable of cutting in a cross cut mode by drawing the saw unit down the column with the saw blade aligned to the axis of the column. The saw is alternatively capable of cutting in a rip mode where the saw head is rotated through a right angle and locked at a required height. The cutting action is then effected by the operator pushing the workpiece panel across the face of the lattice structure so that the cut is made along the length of the panel.

The vertical panel saw may also be arranged to include some accessories which will be helpful or necessary for the cutting operation. These can include fitted measuring scales to assist setting up the correct saw positions for horizontal and vertical cutting.

The foregoing description of an embodiment of the invention has been given by way of example only and a number of modifications may be made without departing from the scope of the invention as defined in the appended claims. For instance, whilst the cutting machine has been described as being a panel saw, the working tool carried on the holder shoe 12 could be easily replaced with an alternative tool such as a drill or a router.

## CLAIMS

- 1 A vertical panel saw having an openwork structure of pivoted members arranged to define a plane workpiece support surface when in an open condition, an opposite pair of the pivoted members carrying fence means effective to engage a lower edge of a panel workpiece when this is present, and a housing including attachment points for the pivoted members and one or more saw guides located to carry a holder shoe for a working tool.
- 2 A saw as claimed in Claim 1, in which the saw guides for the holder shoe are arranged to lie at right angles to the said fence means when the pivoted members of the structure are in the open condition.
- 3 A saw as claimed in Claim 1 or 2, in which when the pivoted members are in a closed condition, they are arranged to be located substantially entirely within the said housing.
- 4 A saw as claimed in any one of Claims 1 to 3, in which the holder shoe is arranged to be readily detachable from the one or more saw guides.
- 5 A saw as claimed in any one of Claims 1 to 4, in which the holder shoe is capable of supporting a portable saw power unit or other working tool.
- 6 A saw as claimed in any one of Claims 1 to 5, in which the fence means is a line of support pins positioned along the length of one pivoted member.
- 7 A saw as claimed in Claim 6, in which each support pin carries a roller which is mounted for free rotation about the pin.
- 8 A saw as claimed in any one of Claims 1 to 7, in which the housing includes a tripod support leg effective to enable the panel saw to stand generally upright when located on a floor surface.

9 A saw as claimed in any one of Claims 1 to 8, in which the saw housing includes a lock capable of being engaged to retain the pivoted members substantially within the said housing when the members are in a closed condition.

10 A saw as claimed in any one of Claims 1 to 9, in which the one or more saw guides support a tool mount carrying a holder shoe for a working tool power unit.

11 A saw as claimed in Claim 10, in which the tool mount includes a clamp whereby it may be secured in a required position on the one or more saw guides.

12 A vertical panel saw, substantially as hereinbefore described with reference to any one of the accompanying drawings.

**Application No:** GB0508252.4

**Examiner:** Gareth Prothero

**Claims searched:** 1 to 12

**Date of search:** 9 May 2006

## Patents Act 1977: Search Report under Section 17

### Documents considered to be relevant:

| Category | Relevant to claims | Identity of document and passage or figure of particular relevance |
|----------|--------------------|--------------------------------------------------------------------|
| A        | -                  | GB 885799 A<br>(REICH) See figs.                                   |
| A        | -                  | US 3866496 A<br>(PAYNE et al.) See esp figs.                       |

### Categories:

|   |                                                                                                           |   |                                                                                                                  |
|---|-----------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------|
| X | Document indicating lack of novelty or inventive step                                                     | A | Document indicating technological background and/or state of the art.                                            |
| Y | Document indicating lack of inventive step if combined with one or more other documents of same category. | P | Document published on or after the declared priority date but before the filing date of this invention.          |
| & | Member of the same patent family                                                                          | E | Patent document published on or after, but with priority date earlier than, the filing date of this application. |

### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>x</sup> :

B3B; B5L

Worldwide search of patent documents classified in the following areas of the IPC

B23D; B23Q; B27B

The following online and other databases have been used in the preparation of this search report

Online: WPI, EPODOC