(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 369 656 A2**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **89311424.9**

(51) Int. Cl.[5]: **A47B 31/00**

(22) Date of filing: **03.11.89**

(30) Priority: **18.11.88 GB 8826972**

(43) Date of publication of application:
23.05.90 Bulletin 90/21

(84) Designated Contracting States:
BE DE ES FR GB GR IT LU NL

(71) Applicant: **CBM DISPLAY GROUP LIMITED**
56-58 Fowler Road Hainault Industrial Estate
Hainault Essex, IG6 3UT(GB)

(72) Inventor: **Fox, Clifford Royston**
Oakland House Rettendon Common
Chelmsford Essex(GB)

(74) Representative: **Crouch, David John et al**
Bromhead & Co. 19 Buckingham Street
London WC2N 6EF(GB)

(54) A computer printer stand.

(57) A computer printer stand (10) comprising a base (12), an upwardly extending frame (16) which is on a slant and a rest (28) at the upper end of the slanting part (16).

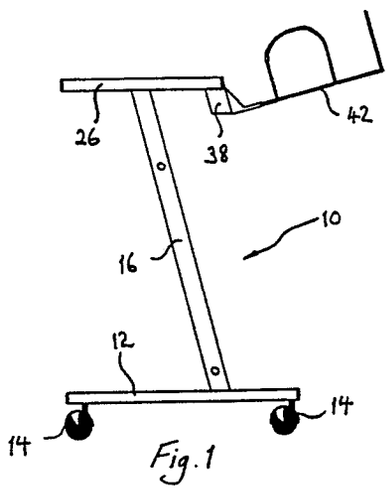
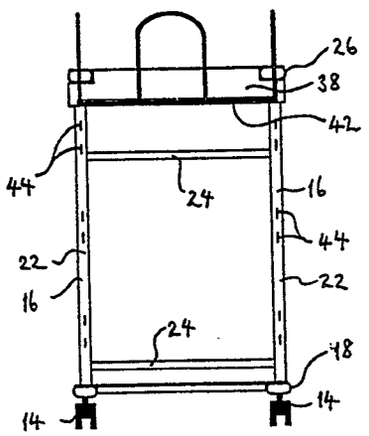


Fig. 1



EP 0 369 656 A2

A Computer Printer Stand

The present invention relates to a computer printer stand.

One aspect of the present invention is directed to a computer printer stand comprising a base, at least one part which extends upwardly from the base, and at least one rest at the upper end of the or each upwardly extending part in which the or each upwardly extending part is on a slant.

Advantageously, a paper catch tray may be provided which has attachment means to enable it to be attached to the or each slanting part selectively on either side of the slant, so that whichever side is selected the tray is substantially horizontal.

One way of effecting this is to provide at least one pair of upwardly extending slots on both sides of the slanting part or parts, and to provide at least one claw on the paper catch tray which has at least one notch at a first level and at least two notches at a second level, spaced apart in an intended horizontal direction, the said at least one notch being for engagement with one of the said at least one pair of slots and one or other of the said two notches being for engagement with the other of the pair of slots, depending upon whether the selected slot is on the upwardly directed side of the slanting part or the downwardly directed side thereof.

One or more paper feed trays may be provided, also with attachment means to enable the or each such tray to be attached to the or each slanting part selectively on either side of the slant, so that whichever side is selected the or each tray is substantially horizontal. This may be effected by means of one or more claws each having the construction set out in the immediately preceding paragraph.

A second aspect of the present invention is directed to a computer printer stand comprising a base, at least one part which extends upwardly from the base, and at least one rest at the upper end of the or each upwardly extending part, in which attachment means are provided on the stand to enable a paper catch tray to be attached to the stand at substantially the same level as the or each rest. If the or each upwardly extending part of such a stand is on a slant, the attachment means are preferably on that side of the rest or rests which are on or are nearer that side of the stand which faces the upwardly directed side or sides of the slanting part or parts.

A space may remain between the rest or the rests and the paper catch tray when the latter is so attached, to enable continuous paper to be fed to the printer through that space, into the printer, and thence into the paper catch tray.

A third aspect of the present invention is directed to a paper catch tray having side members the spacing between which may be adjusted to allow for paper of different width. Similarly, forward and rearward members of the tray may be spaced apart by an adjustable amount to allow for paper of different depths.

A fourth aspect of the present invention is directed to a paper grip comprising two end parts attached to which and between which extend a plurality of substantially coplanar spaced apart fixed rods, the end parts each being provided with at least one groove or slot extending perpendicularly from the plane of the fixed rods, the or each groove or slot being in register with a gap between the fixed rods, and at least one moveable rod also extending between the end parts and having its ends received in respective opposing grooves or slots of the two end parts, so that when the grip is arranged horizontally, the moveable rod or rods sit on the fixed rods over the gap or gaps therebetween, so that one or more lengths of continuous paper can be fed through the gap or gaps and held therein by the force of gravity acting on the or each moveable rod, the latter being able to rise, in the event that bends in the paper exert an upward force, whilst at the same time being retained horizontally so that it or they will come to rest under the force of gravity in a position directly above the gap or gaps between the fixed rods.

Preferably, the fixed rods have a round cross-section, preferably generally circular.

A computer printer stand in accordance with one or more of the preceding paragraphs may be provided with wheels or castors so that it is in the form of a trolley.

An example of a computer printer stand made in accordance with the present invention is illustrated in the accompanying drawings, in which :

Figure 1 is a side view of the stand;

Figure 2 is a rear view of the stand;

Figure 3 is a front view of the stand;

Figure 4 is a perspective view of the stand from the front and to one side;

Figure 5 is a perspective rear view of parts of the stand shown in Figures 1 to 4 on a larger scale and in greater detail;

Figure 6 is a side view of the stand shown in Figures 1 to 4 with a paper catch tray thereof positioned at a different level;

Figure 7 shows a perspective view of the stand from the front and to one side, with some of the parts shown in Figures 1 to 4 removed, and also showing a paper feed tray that can be attached to the stand;

Figure 8 shows a side view, on a smaller

scale, of the stand shown in Figures 1 to 4, together with a computer printer supported thereon, and a plurality of paper feed trays, each like the one shown in Figure 7, attached to the stand at different levels;

Figures 9 to 14 show respective side views of the printer stand having different configurations with respective lengths of continuous paper fed and collected in different respective ways;

Figure 15 shows a further side view of the stand shown in Figures 1 to 4 in one advantageous configuration with a length of continuous paper fed and collected in an advantageous fashion;

Figure 16 shows a perspective exploded view of a paper grip device which may be attached to the stand shown in Figures 1 to 4;

Figure 17 shows diagrammatically how a length of paper may be fed through the grip device; and

Figures 18 to 23 show perspective exploded views of various parts of the stand shown in Figures 1 to 4 at different successive stages in assembly thereof.

A computer printer stand 10 shown in Figures 1 to 4 comprises a base 12 (on the underside of which are provided castors 14), and a slanting frame 16 welded to the base 12 and slanting upwardly and forwardly from a position slightly rearwards of the centre line of the base 12 to an overall height of about 34 inches (about 860mm). The base 12 comprises two spaced apart substantially parallel elongate lengths of horizontal tubing 18 of oval section, across which extends a sheet metal plate 20 which may act as a paper feed tray. The slanting frame 16 comprises two substantially parallel spaced apart elongate lengths of tubing 22 of generally oval section welded respectively to the two lengths 18 of the base 12. The frame 16 further comprises two substantially parallel spaced apart cross struts 24 which are fixed to and extend between the two lengths of tubing 22.

Two further lengths of tubing 26 are welded respectively to the upper ends of the lengths 22, and are also substantially horizontal, being also substantially parallel to one another and to the lengths of tubing 18 of the base 12. Two substantially parallel elongate rest plates 28 are attached to and extend across an upper side of the tubular lengths 26. A gap 30 is present between the rest plates 28 which me be moved closer together or further apart by adjustment means 32 at the ends of the rest plates 28 to allow for printers of different size. The adjustment means at each end of each plate 28 comprise a slot 34 in the end of the plate, extending parallel to the tubular lengths 26, and a tightening screw 36 which engages a corresponding hole in one of the upper tubular lengths 26. Integral with and depending downwardly from the rear rest plate 28 is a paper catch tray mounting 38 which extends along the length of the plate 28 and which slants downwardly therefrom so as to be substantially parallel to the slanting frame 16. End portions 40 of the mounting 38 are hollow. Releasably mounted on the rear of the mounting 38 is a paper catch tray 42. Such a positioning of the catch tray 42 facilitates easy removal of paper therefrom without the user having to bend over the back of the stand, and gives better catch control for stiffer types of continuous paper, especially paper that provides sticky labels or several layers of carbonless sheet.

A plurality of pairs of slots 44 is provided on the downwardly directed side of the slanting tubular lengths 22 and also on the upwardly directed side thereof, and also on on the rear of the end blocks 40 of the mounting 38. Each pair of slots 44 are spaced apart in a generally upward direction and each slot is elongate with its length also generally in an upward direction, bearing in mind that all the surfaces in which they are formed are on a slant. The paper catch tray 42 comprises a chrome-plated wire grid 46. It is provided with respective sides in the form of inverted U-shaped wire members 48 which have their free ends bent inwardly at 90° to the U-shaped portion to provide slidable legs 50. These may be slid towards and away from the opposing side, and are retained on the tray by lengths of the grid 46 which are spaced apart in a generally vertical direction. The free ends of the legs 50 are bent outwardly to provide abutment portions 52. These abut against fixed parts of the grid 46 in the event that the side 48 is moved outwardly to a predetermined limit. Similar front and rear inverted U-shaped wire portions 54 and 56 are provided at the rear and front of the paper catch tray 42 respectively, having substantially the same features as the sides 48 so that they can be slid towards and away from one another. The forward member 56 is shorter and squarer than the rearward member 54 to fit more neatly adjacent to the rear plate 28.

Two metal plate claws 58 are welded respectively to the two forward corners of the wire grid 46. Each claw 58 comprises a lower forward projecting portion 60 and an upper forwardly projecting portion 62 spaced apart by a bridge portion 64. A single notch 66 is cut into the underside of the lower projecting portion 60, and two notches 68 are cut into the underside of the forwardly projecting portion 62. The notches 68 are spaced apart horizontally by an amount such that the angle subtended by the line between the notches 68 at the notch 66 is substantially twice the angle between the slanting frame 16 and a perpendicular to the base 12. Therefore, each claw 58 may have its forwardly projecting portions 60 and 62 inserted in

to any selected pair of slots in the stand. Irrespective of which side of the slanting frame 16 the paper catch tray 42 is positioned, it may be fixed horizontally by use of the oppropriate one of the upper notches 68. In the arrangement shown in Figures 1 to 4, the slot 68 has been selected which results in the paper catch tray slanting upwardly and away from the mounting 38. However, Figure 6 shows the paper catch tray 42 mounted on the rear side of the slanting frame 16, in such a manner that it is substantially horizontal.

Figures 2 to 4 show the front of the rear sides of each tubular length 22 provided with three pairs of slots 44 spaced apart along the length of the tube. Clearly, each tube can be provided with a smaller or greater number of pairs of slots.

Figure 7 shows a paper feed tray 70 comprising a simple wire grid 72 to the front corners of which are welded respective claws 74 which have precisely the same construction as the claws 58 on the paper catch tray 42. The paper feed tray 70 may therefore be fixed to any two level pairs of slots 44 in the same way as the paper catch tray 42. Indeed, up to six paper feed trays 70 may be attached to the stand 10 in the manner shown in Figure 8.

Figures 9 to 14 show different respective arrangements in which paper may be fed from a paper feed tray 70 (or base plate 12) upwardly through the gap 30 between the rest plates 28 in to the printer 76 and thence in to the paper catch tray 42. Which of the different possible arrangements is used will depend on the space available for the trolley, the access available to different sides of the trolley, and the sort of paper which is used, whether it is relatively stiff or very flexible, and whether it is a single sheet or in triplicate. Figure 15 shows another arrangement which may be desirable for a printer 76 having a rear feed slot instead of a central underside feed. Such an arrangement is possible because of a gap which exists between a lower edge of the mounting 38 and a forwardmost wire of the grid 46 of the tray 42.

A paper grip device 78 shown in Figure 16 may be secured to the upper ends of the slanting tubular lengths 22 by means of screws 80 extending through holes 82 in respective injection-moulded plastics end blocks 84 of the grip device 78 and corresponding holes 86 in the tubular lengths 22. Each end block 84 is of generally cruciform shape, with a main horizontal portion 88 provided on one side with a number of grooves 90 which are closed at their lower ends, and upper and a lower tabs 92 and 94 respectively in which are formed the screw holes 82. The lower tab 94 is provided with two horizontally spaced holes 82 so that the same block 84 can be used at either end of the grip device 78. A plurality of rods 96 are fixed to and extend between the end blocks 84 at positions adjacent to the lower edge of the horizontal portions 88, adjacent to the blind ends of the grooves 90. A plurality of moveable rods 98 each extend between the end blocks 84 with its respective ends in respective opposing grooves 90 of the two end blocks 84. Thus the rods 98 will tend to occupy positions in which they rest on the fixed rods 96.

Whilst the illustrated paper grip device 78 has been shown with seven moveable rods 98 and correspondingly eight fixed rods 96, it may still be useful with a single moveable rod 98, or indeed with any number of moveable rods 98. It has been made in the illustrated example with seven movable rods 98 because there are up to seven positions from which paper may be fed to the printer in the stand illustrated in Figure 8, including the base plate 20. A length of continuous paper 100 from each feed position may be fed through a respective pair of fixed rods 96, under a given moveable rod 98, as shown in Figure 17. The paper will be inhibited from falling downwardly through the paper grip device by virtue of the weight of the moveable rod 98. However, in the event that a bend in the paper, or some other distrubance urges the rod 98 away from the rods 96, it will be retained in line above the gap between those rods by the grooves 90 so that directly the disturbing force is removed, it will fall back in to position immediately next to the rods 96.

The fixed rods of the paper grip device may be made of fibre glass with a diameter of substantially 4mm. Such rods are suitably springy. The moveable rods are preferably made of a heavier material, such as wire rod, and may have a diameter of substantially 6mm. To obtain greater weight acting on the paper, each moveable rod may be replaced by a bar having an elongate section which extends in the upward direction, with both ends of the section rounded, so that the edges of the bar are smooth.

The paper grip device 78 may be used to hold ends of continuous paper from up to seven different feed locations, in close proximity to the printer. When a change of paper is desired, the current paper being used may be drawn back through the grip device (which does not exert such a great retaining force that cannot be readily overcome by hand force), and the selected new paper can be drawn up through the gap 30 and fed into the printer.

Colour codes, numbers, or other identification markings on the end blocks 84 can be used for ready identification of the paper held by the grip device 78. The same markings can be used on the feed trays to identify which sheet in the grip device comes from which tray.

The paper printer stand shown in Figures 1 to

4 is dismantleable for storage or transport, and is readily reassembled in an office or other site where it is to be used.

The various components of the stand, and the manner in which they are put together in the assembly of the stand are shown in Figures 18 to 23. A first component 102 comprises one of the lengths of tubing 18 of the base 12, one of the lengths of tubing 22 of the slanting frame 16, and one of the upper lengths of tubing 26. These three lengths of tubing are welded together in the manner already described herein. A second component 104 is precisely the same as the first component 102 and constitutes the other side of the base 12, slanting frame 18 and upper part of the stand. With the components 102 and 104 placed on the floor substantially parallel to one another as shown in Figure 18, and spaced apart by a distance which is slightly greater than the length of the cross-struts 24, the latter are bolted to and between the components 102 and 104 by means of bolts 106 inserted through respective holes 108 in the slanting tubular lengths 22. The base plate 20 may then be slid on to the upper sides of the tubular lengths 18 so that elongate stepped-section brackets 110, welded to the underside of the plate 20, and extending adjacent to and along opposite sides of that plate, engage the two tubular lengths 18 respectively with bottom flanges 112 of those brackets resting underneath the undersides of the tubular lengths 18 as shown in Figure 20. Those flanges 112 are then bolted to the undersides of the tubular lengths 18 by means of bolts 114 extending through holes 116 formed in the flanges 112.

As shown in Figure 21, a castor 14 may be bolted to each of the two ends of the two tubular lengths 18 by means of a bolt 120.

The rest plates 28 are then secured to the upper tubular lengths 26 by means of the tightening screws 36 passing through upper holes 122 in the upper sides of the tubular length 26. Each screw 36 has a hollow internally screw threaded shank which is engaged by a correspondingly externally screw threaded shank of a further screw 124 which is inserted through a second hole (not shown) in the underside of the tubular length 26, precisely in registration with the upper hole 122.

The paper catch tray 42 may then be releaseably attached to the mounting 38 as shown in Figure 23 and as already described in detail with reference to Figure 5.

Numerous variations and modifications to the illustrated trolley will readily occur to the reader without taking it outside the scope of the present invention. For example, the claw 58 has been shown as having two notches 68 in an upper forwardly extending portion 62 and a single notch in a lower forwardly extending portion 60. It would be possible as an alternative to have one notch in the upper portion and two notches in the lower portion. Adjustable feet may be provided instead of castors. Alternatively, the castors may be lockable. Each rest plate 28 may be provided with suitably positioned depressions or a rim around its perimeter (other than along the edge adjacent to the gap 30) to inhibit movement of the printer on those plates. Attachment means may be provided on the rest plates 28 to enable an acoustic hood (not shown) to be secured in place over a printer positioned on those plates.

Claims

1. A computer printer stand (10) comprising a base (12), at least one part (16) which extends upwardly from the base (12), and at least one rest (28) at the upper end of the or each upwardly extending part (16), characterised in that the or each upwardly extending part (16) is on a slant.

2. A computer printer stand (10) according to claim 1, characterised in that a paper catch tray (42) is provided which has attachment means (58) to enable it to be attached to the or each slanting part (16) selectively on either side of the slant, the attachment means (58) being so constructed that, whichever side is selected, the tray is substantially horizontal.

3. A computer printer stand (10) according to claim 2, characterised in that at least one pair of upwardly extending slots (44) is provided on both sides of the slanting part or parts (16), and in that at least one claw (58) is provided on the paper catch tray (42), which claw (58) has at least one notch (66) at a first level and at least two notches (68) at a second level, the said at least two notches (68) being spaced apart in an intended horizontal direction, the said at least one notch (66) being for engagement with one of the said at least one pair of slots (44) and one or other of the said two notches (68) being for engagement with the other of the pair of slots (44), depending upon whether the selected slot (44) is on the upwardly directed side of the slanting part (16) or the downwardly directed side thereof.

4. A computer printer stand (10) according to claim 2 or claim 3, characterised in that one or more paper feed trays (70) are provided, with attachment means (74) to enable the or each such tray (70) to be attached to the or each slanting part (16) selectively on either side of the slant so that whichever side is selected the or each tray (70) is substantially horizontal.

5. A computer printer stand (10) according to claim 4, characterised in that the attachment means (74) of the or each paper feed tray (70)

comprise one or more claws (74) each having the construction set out in claim 3.

6. A computer printer stand (10) comprising a base (12), at least one part (16) which extends upwardly from the base (12) and at least one rest (28) at the upper end of the or each upwardly extending part (16), characterised in that attachment means (38) are provided on the stand to enable a paper catch tray (42) to be attached to the stand (10) at substantially the same level as the or each rest (28)

7. A computer printer stand (10), according to claim 6, characterised in that the or each upwardly extending part (16) is on a slant.

8. A computer printer stand (10), according to claim 7, characterised in that the attachment means (38) are on that side of the rest or rests (28) which are on or are near that side of the stand (10) which faces the upwardly directed side or sides of the slanting part or parts (16).

9. A computer printer stand (10) according to any one of claims 6 to 8, characterised in that the stand (10) is so constructed that a space remains between the rest or the rests (28) and a paper catch tray (42) when the latter is attached to the stand (10), to enable continuous paper to be fed to a printer resting on the stand (10) when the latter is in use, through that space, into the printer (76), and thence in to the paper catch tray (42).

10. A paper catch tray (42) characterised in that the tray (42) has side members (48) the space in between which may be adjusted to allow for paper of different width.

11. A paper catch tray (42) according to claim (10), characterised in that the tray (42) is further provided with forward and rearward members (54, 56) the space in between which may be adjusted to allow for paper of different depth.

12. A paper grip (78) comprising two end parts (84) attached to which and between which extend a plurality of substantially co-planar spaced apart fixed rods (96), the end parts (84) each being provided with at least one groove or slot (90) extending perpendicularly from the plane of the fixed rods (96), the or each groove or slot (90) being in register with a gap between two fixed rods (96) and at least one moveable rod (98) also extending between the end parts (84) and having its ends received in respective opposing grooves or slots (90) of the two end parts (84) so that when the grip (78) is arranged horizontally, the moveable rod or rods (98) sit on the fixed rods (96) over the gap or gaps therebetween, so that one or more lengths of continuous paper can be fed through the gap or gaps and held therein by the force of gravity acting on the or each moveable rod (98), the latter being able to rise, in the event that bends in the paper exert an upward force, whilst at the same time being retained horizontally so that it or they will come to rest under the force of gravity in a position directly above the gap or gaps between the fixed rods (96).

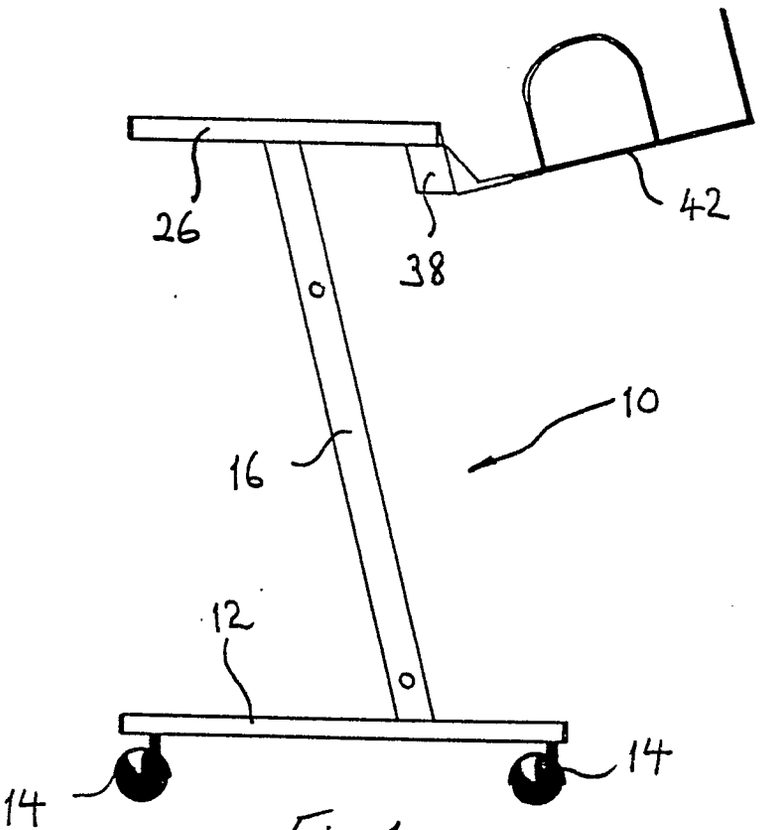
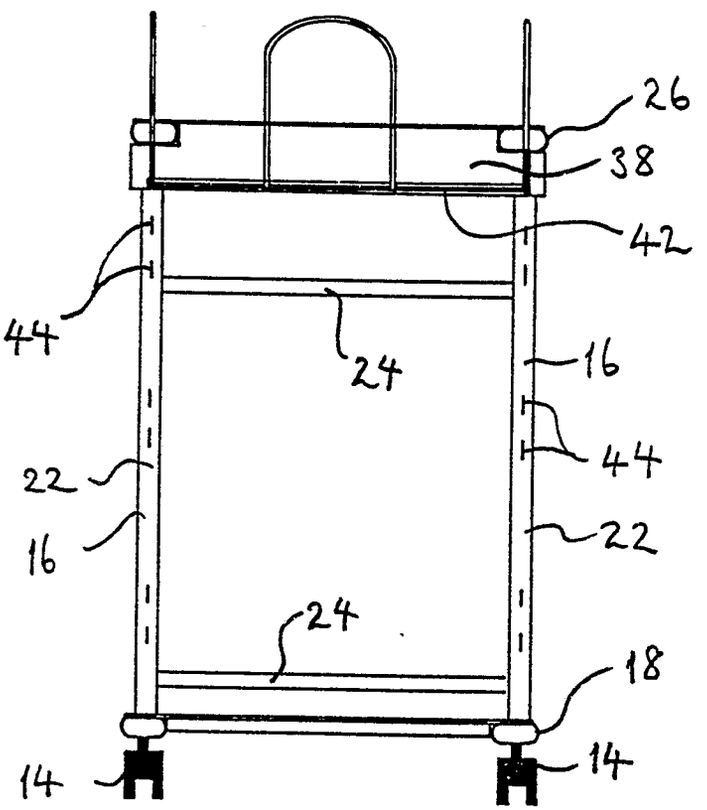


Fig. 1



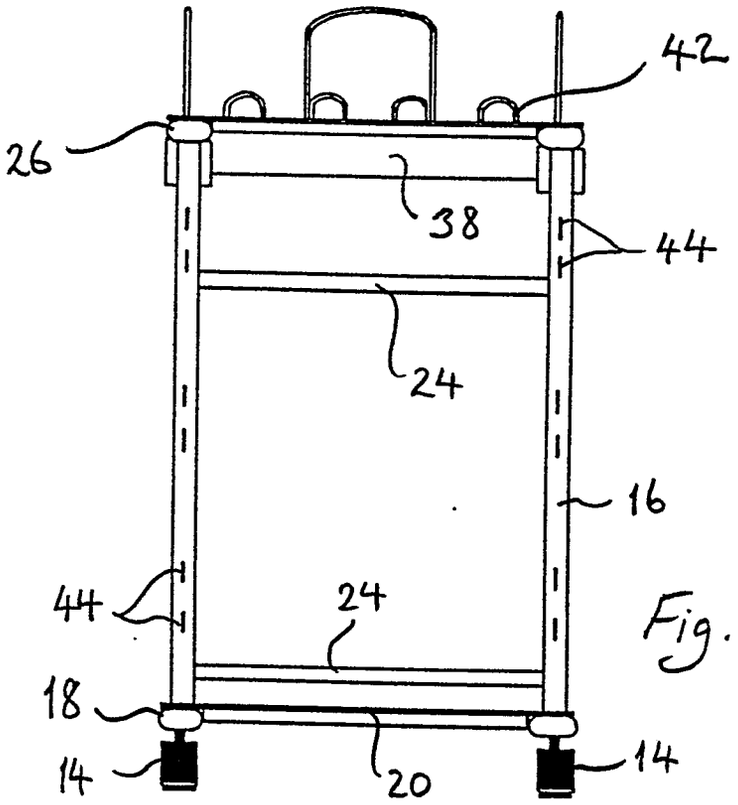

42
26
38
44
24
16
44
24
18
14
20
14

Fig. 3

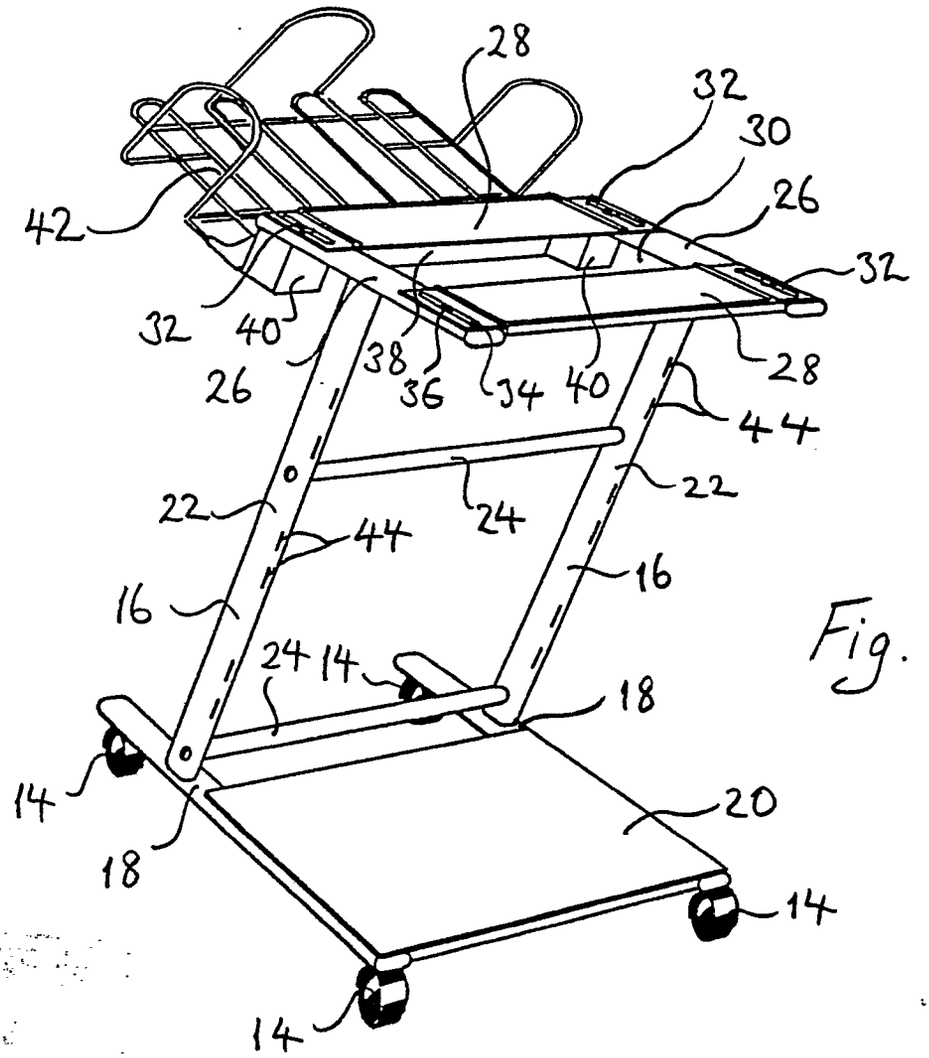

28
32
30
42
26
32
32
40
38
36
34
40
26
28
44
22
24
22
44
16
16
24
14
18
14
18
20
14
14

Fig. 4

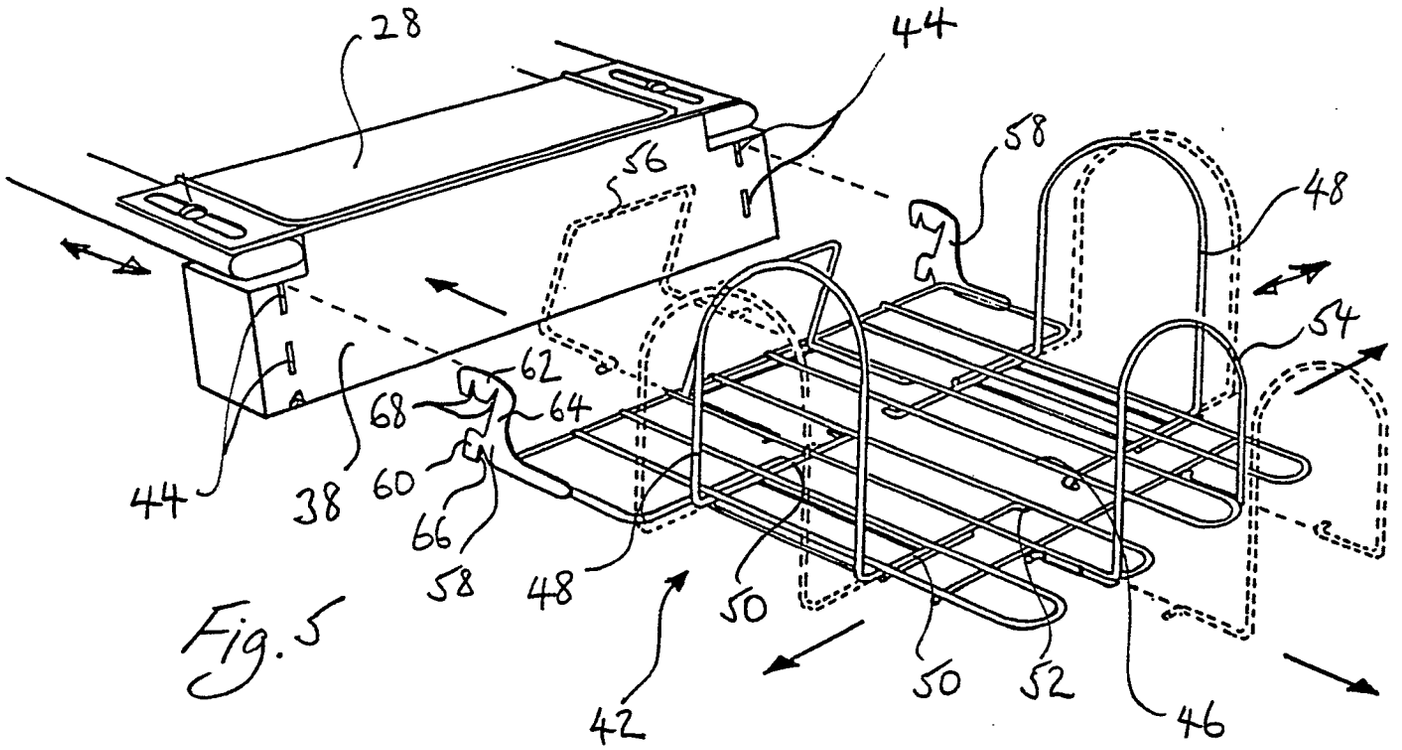

28
44
56
58
48
54
62
68
64
60
66
44
38
58
48
50
42
50
52
46

Fig. 5

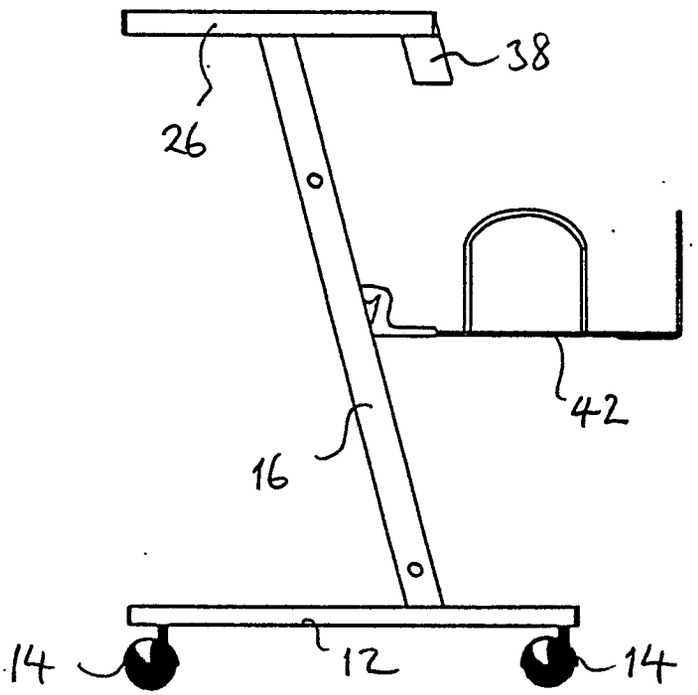

38
26
42
16
14
12
14

Fig. 6

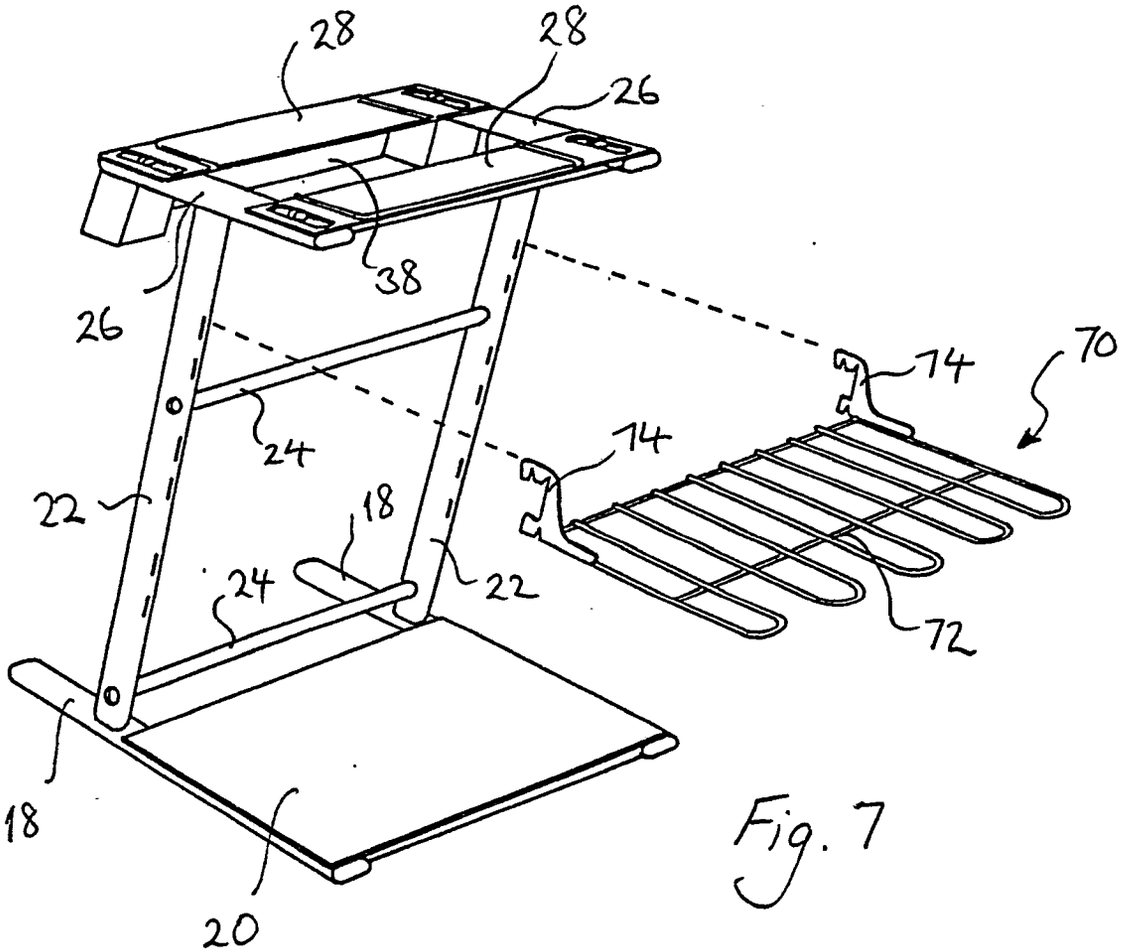


Fig. 7

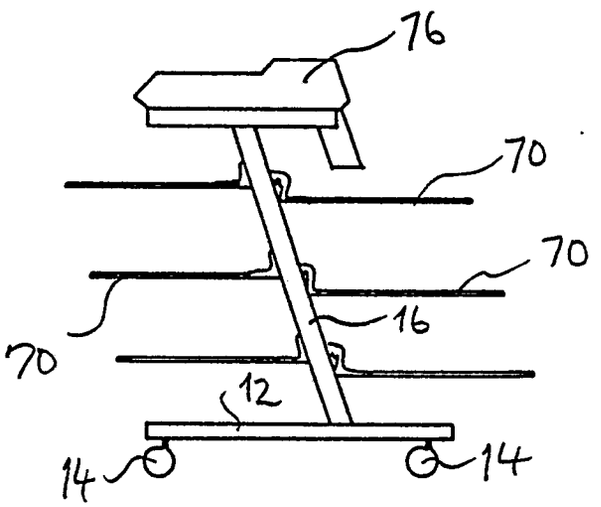


Fig. 8

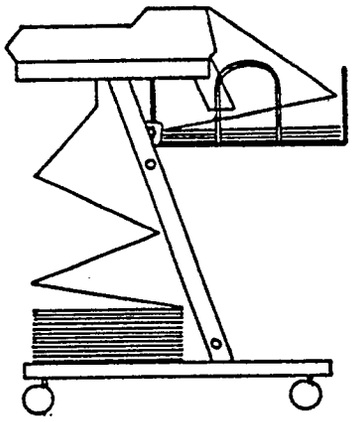


Fig. 9

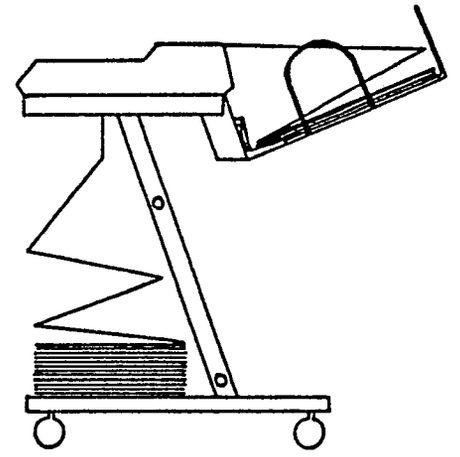


Fig. 10

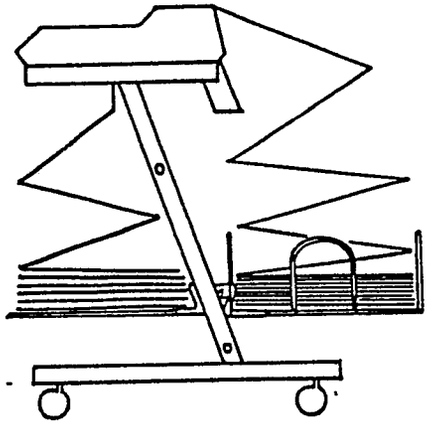


Fig. 11

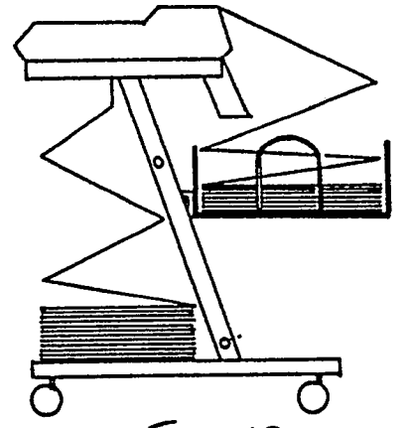


Fig. 12

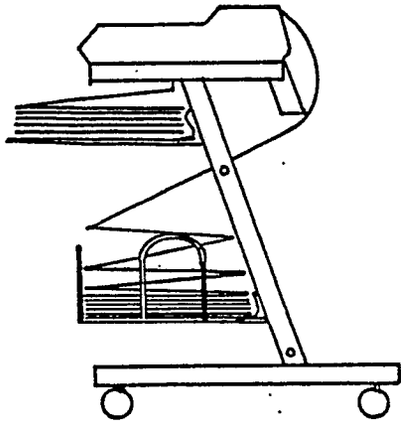


Fig. 13

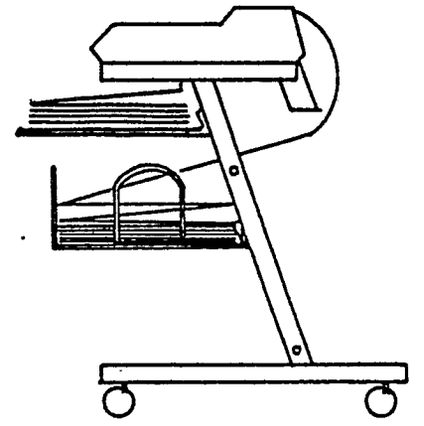


Fig. 14

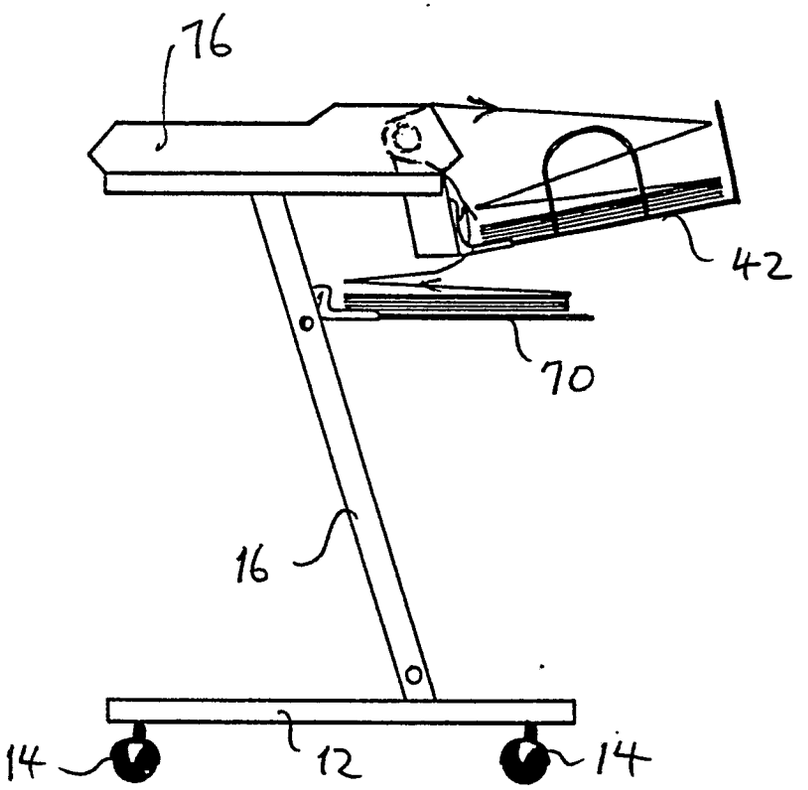


Fig. 15

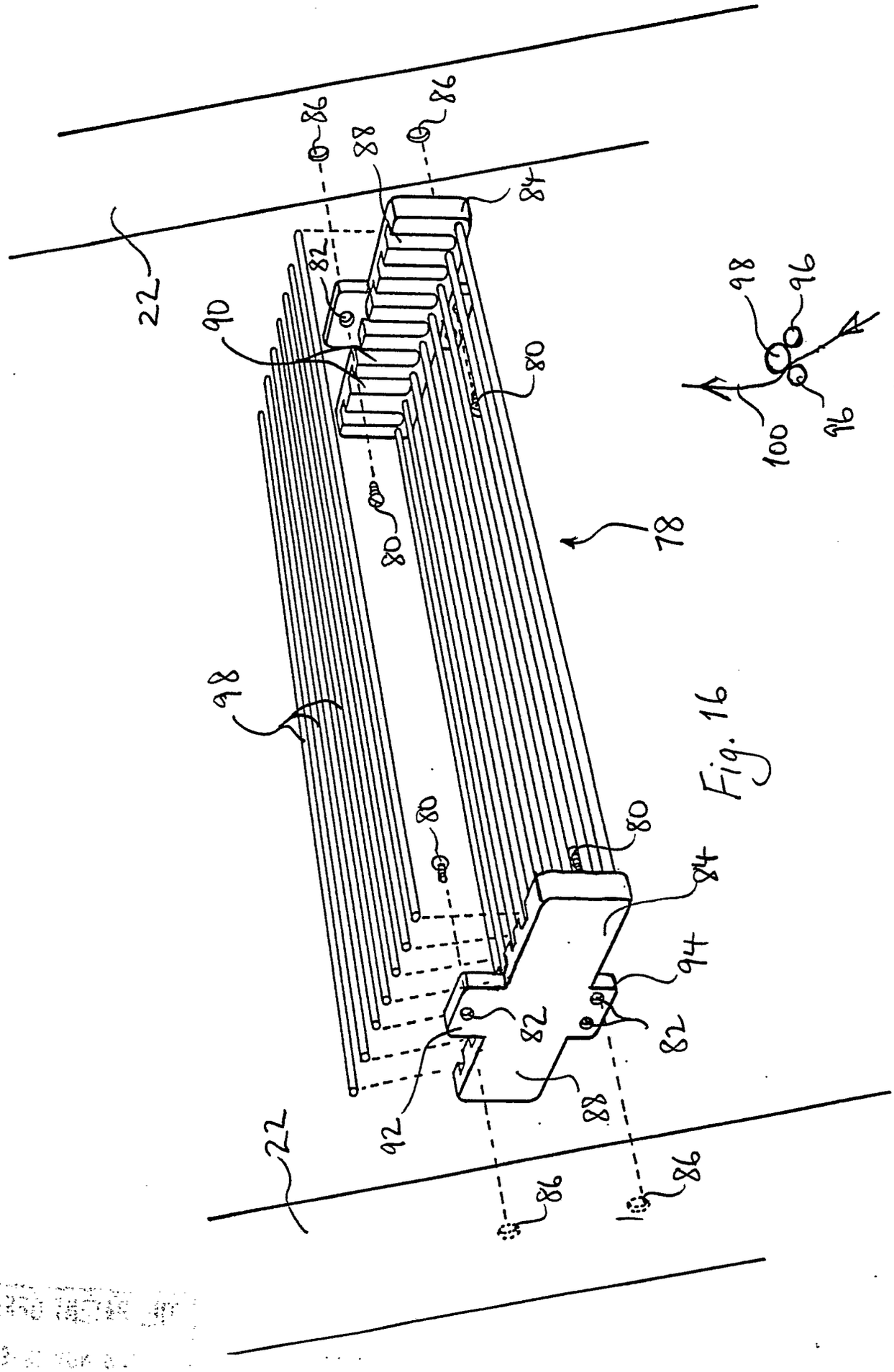

22
86
88
86
84
82
90
80
80
78
98
80
80
84
94
82
82
92
88
22
86
86

Fig. 16

98
96
100
96

Fig. 17

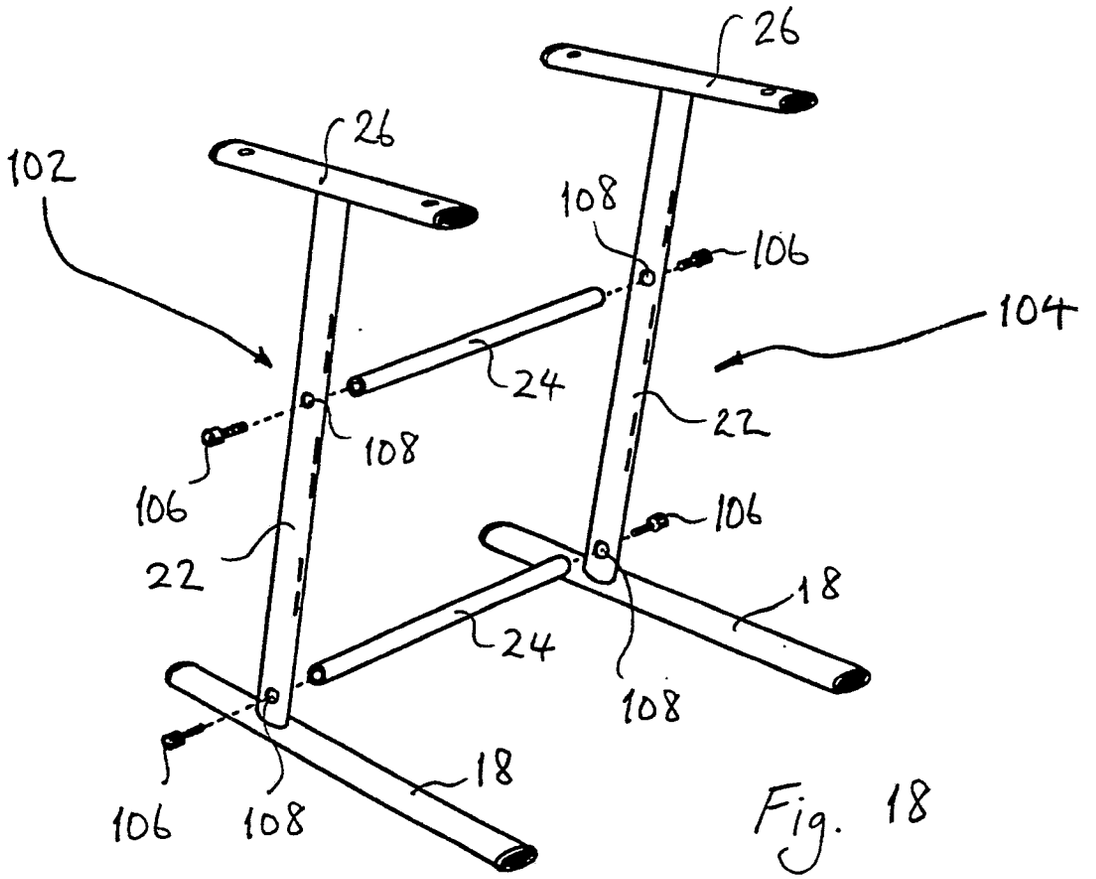

26
26
102
108
106
104
24
22
108
106
106
22
18
24
108
18
106
108

Fig. 18

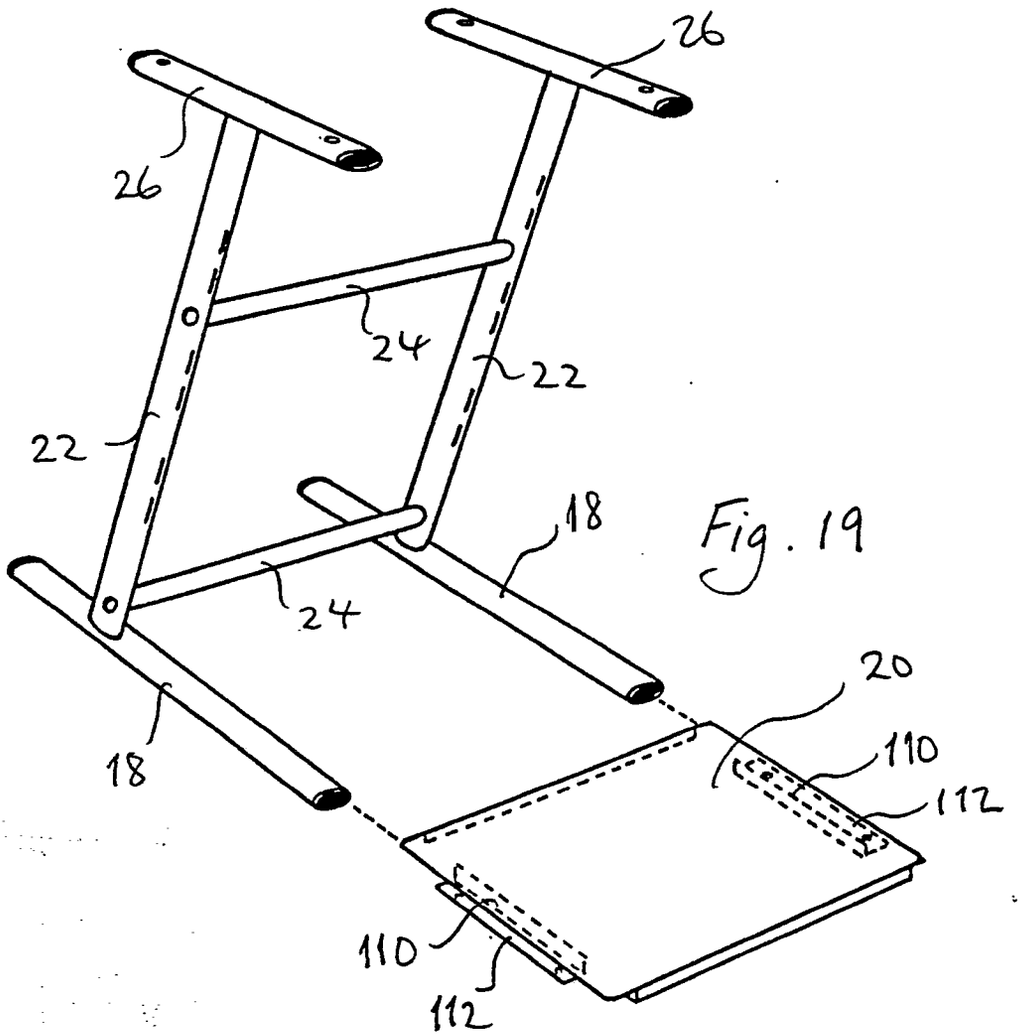

26
26
24
22
22
18
24
20
110
112
18
110
112

Fig. 19

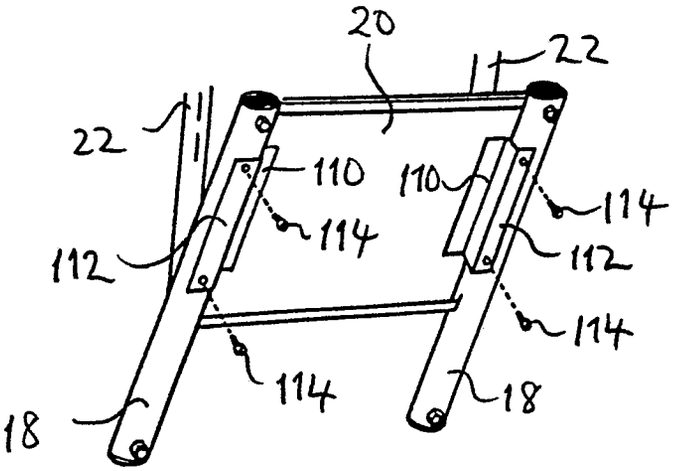


Fig. 20

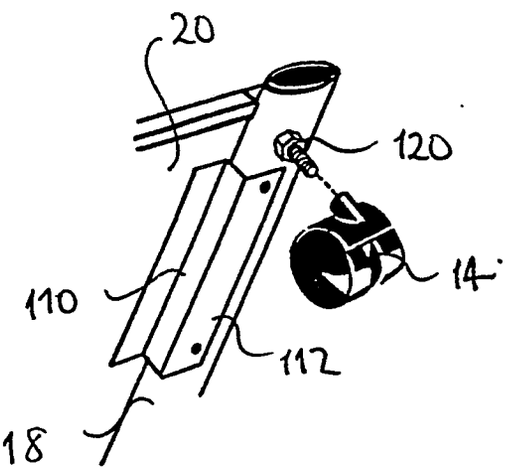


Fig. 21

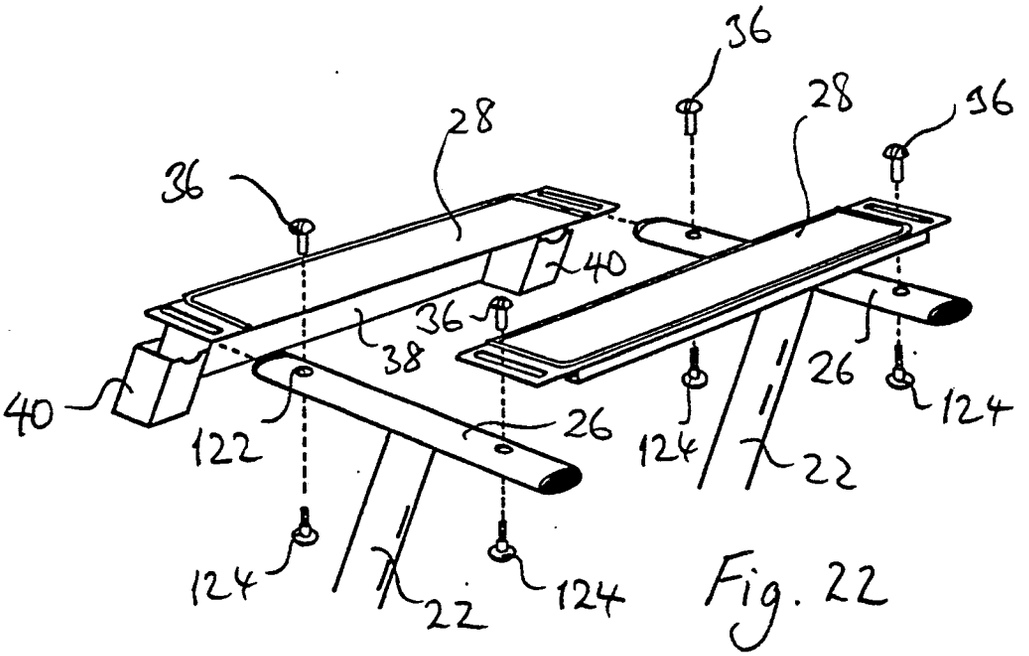

36
28
28
36
36
40
36
38
40
122
26
124
124
26
124
22
124
22
124

Fig. 22

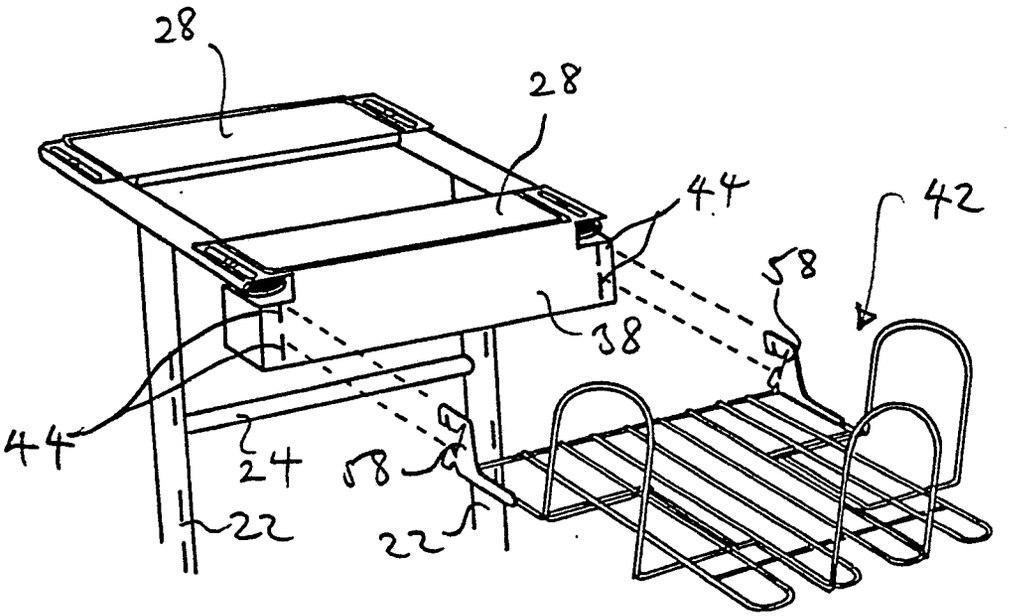

28
28
44
42
58
38
44
24
58
22
22

Fig. 23