

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
12 January 2006 (12.01.2006)

PCT

(10) International Publication Number
WO 2006/003406 A1

(51) International Patent Classification⁷: **A47B 21/00**

(21) International Application Number:
PCT/GB2005/002580

(22) International Filing Date: 30 June 2005 (30.06.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0414735.1 1 July 2004 (01.07.2004) GB

(71) Applicant (for all designated States except US): **ADEPTIAS LIMITED** [GB/GB]; 37 Beauchamp Avenue, Leamington Spa, Warwickshire CV43 5TD (GB).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **HORTON, George** [US/GB]; Adeptias Limited, 37 Beauchamp Avenue, Leamington Spa, Warwickshire CV43 5TD (GB).

(74) Agents: **HALLAM, Arnold, Vincent** et al.; Marks & Clerk, 144 New Walk, Leicester LE1 7JA (GB).

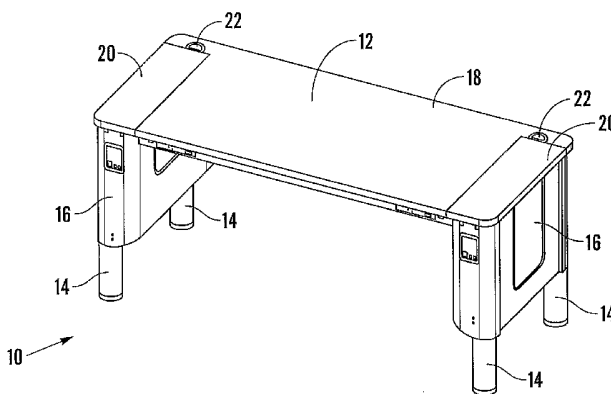
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ITEM OF FURNITURE



(57) Abstract: An item of furniture in the form of a desk for use as a computer workstation has a generally planar work surface having first and second portions (12, 20); a storage space (30) beneath the first portion of the work surface for storing a monitor (32); and support means (34) for supporting the monitor relative to the work surface, the support means having attachment means for attachment to the monitor. The support means (34) is movable between a retracted attitude in which the support means (34) is in the storage space (30) and an extended attitude in which the support means extends above the work surface for supporting the monitor above and spaced from the work surface. The first portion (20) of the work surface is movable between a closed position in which the first portion forms the generally planar work surface with the second portion and prevents movement of the support means (34) from either one of the retracted and extended attitudes to the other and an open position in which the first portion allows movement of the support means (34) between the retracted and extended attitudes. When the support means is in the extended attitude the attachment means is movable along horizontal and vertical axes to enable the position of the monitor above the work surface to be adjusted.

WO 2006/003406 A1

Item of Furniture

The present invention relates to an item of furniture for use as a computer workstation, in particular, but not exclusively, for use with a PC.

5

A conventional PC consists of a processor unit, a keyboard for user interaction with the processor unit, and a monitor or display screen for displaying information from the processor unit to the user. In general, the PC, or at least a monitor for the PC, will be located on a desk or other surface, often referred to as a workstation.

10

Nowadays, it is relatively uncommon to find an office, school, university, library, or even domestic home that does not include at least one PC. The increase in worldwide popularity of the internet and intranet style platforms as a resource tool for education and commerce has, to an extent, contributed to the proliferation of PCs in the everyday fabric of modern society.

15

It is an object of the invention to provide an improved item of furniture for use as a computer workstation.

20

According to the present invention there is provided furniture for use as a computer workstation, the furniture including a generally planar work surface and means for supporting a computer display screen above the work surface, said support means being adapted to be moved between a stowed position below the work surface and an extended position above the work surface.

25

Preferably, with the support means in its stowed position, the work surface defines a normal working area, A, and in which, with the support means in the extended position, the normal working area is substantially the same as with the support means in its stowed position.

30

- 2 -

Conveniently, the furniture may include a storage portion for receiving the support means in the stowed position.

5 Preferably, the furniture includes a cover portion movable between an open position in which the support means can be moved to or from the stowed position, and a closed position in which, with the support means in an extended position, said cover portion acts to prevent the support means from being moved to the inoperative position.

10 In a preferred embodiment, the cover portion forms part of the work surface.

The furniture may include means for selectively opening the cover portion.

15 In a preferred embodiment, the support means includes a mounting member adapted for movement in a vertical axis relative to the work surface, which mounting member may also be rotatable.

The support means may include an arm portion connected to the mounting member, said arm being adapted for supporting a computer display screen, preferably pivotably connected to the mounting member.

The invention may include means for automatically raising or lowering the support means, for example an hydraulic arrangement

25 Conveniently, the furniture may include a housing portion for receiving a computer processor.

Other preferred features of the invention will be apparent from the following description and from the dependent claims.

30

The invention will now be described, by way of example only, with reference to the accompanying Figures, in which:

- 3 -

- Figure 1 is a schematic perspective view from the front of a preferred form of an item of furniture in the form of a desk in accordance with the present invention, in which the desk is shown in a closed attitude;
- 5 Figure 2 is a view similar to Figure 1, showing the desk in an open attitude;
- Figure 3 is a view similar to Figures 1 and 2, showing only one half of the desk, with the desktop in a closed position and a cover portion in an open position;
- 10 Figure 4 is a detail from Figure 3, showing part of a support assembly;
- Figure 5 is a view similar to Figure 3, with a base mounting of the support assembly shown in a fully extended position and the monitor in a partially raised position;
- 15 Figure 6 is a view from the left hand end of the desk in Figures 1 to 5, showing the support arm and monitor in a partially raised position;
- 20 Figure 7 is a view similar to Figure 6, showing a support arm and the monitor in a fully extended position; and
- Figure 8 is a view of the left hand end of the desk, showing the desk in an IT-operative condition, with the monitor in an operative extended position and the cover portion in a closed position.
- 25

Referring to Figure 1, an item of furniture for use as a computer workstation is indicated generally at 10, in the form of a desk.

- 30 As can be seen, the desk 10 includes a main body and a generally planar upper surface 12, here in the form of a lid, shown in its normal working position. The lid enables the desk 10 to be used in a conventional manner, for example as a desk

- 4 -

for use in a school classroom. It will be understood that upper surface 12 is suitable for use for in supporting a computer keyboard, mouse and office, school, domestic or other stationery. The main body of the desk 10 and the lid 12 are generally rectangular in shape, as can be seen from Figure 1.

5

The desk 10 has four legs 14 and defines first and second ends, to the left and right as viewed in Figure 1. In this embodiment, the desk 10 is in the form of a twin desk, adapted for use by two persons, for example two school pupils and in its simplest form the two halves of the desk are mirror images of one another. A storage space 30, defined by a respective housing portion 16, is formed at each end of the desk 10. Each storage space 30 extends below the lid 12 of the desk and between the legs 14 at the respective end of the desk 10.

The lid 12 of the desk 10 has first and second portions 12, 20. The first portion is formed by a housing closure or cover 20, one being formed at each side of the desk, and the second portion is formed by a primary desktop portion 18. Each of the housing closures or covers 20 serve as closures for a respective aperture 22, which allow access to the associated storage space 30.

Referring now to Figure 2, the desk 10 is shown in a fully open attitude. As can be seen, the lid is connected to the main body of the desk 10 by means of hinged connections 24 extending substantially along one longerside of the desktop portion 18. This enables the lid 12 to be moved between the closed attitude shown in Figure 1 to the open attitude shown in Figure 2.

The main body of the desk 10 includes a central housing portion indicated at 26, which is covered by the desktop portion 18 when the desktop portion 18 is in its closed attitude. A pair of computer processor units 28 are provided in the central housing portion 26, access to which can only be gained when the desktop portion 18 is in its open attitude. Support means, not shown, are provided in the form of a strut, for supporting the desktop portion 18 in its open position, to enable safe working access to the central housing portion 26. Also, air vents (not

30

- 5 -

illustrated) are provided in the bottom of the central housing portion 26, beneath the position of the processors 28.

5 . Each storage space 30 is provided primarily as a storage housing for a computer monitor. A flat-type computer monitor 32 is illustrated in the storage space 30 at the left hand end of the desk 10 as viewed in Figure 2, in a stowed position within the storage space 30.

10 Although each storage space 30 is shown as being defined by the walls of the respective housing portion 16, it would be appreciated that the storage space 30 can simply be an open space beneath the lid 12 of the desk for receiving the computer monitor 32. However, in order to protect the monitor, it is preferable that the storage space is formed by some form of protective housing such as the housing 16.

15 The monitor 32 is mounted on a support means in the form of a support assembly, indicated generally at 34, for movement of the monitor 32 between its stowed position and an extended position above the normal working position of the upper surface 12 of the desk 10, as will be described in more detail below.

20 From Figures 1 and 2, it will be understood that each cover 20 is arranged generally above the storage space 30 defined by a respective housing portion 16, so as to provide a cover for the monitor 32 and support assembly 34 in its stowed position. In order to gain access to the monitor 32 and processors 28, the lid 12 can be raised from its normal working position in Figure 1, as indicated in Figure 25 2. However, each cover 20 is connected to the desktop portion 18 for hinged movement between a closed position, as shown in Figure 1, and an open position. Hence, each cover 20 can be opened, independently of the desktop portion 18, as described below, for access to the monitor 32.

30

- 6 -

The support assembly 34 and method of moving the monitor 32 from the stowed position within the desk 10 illustrated in Figure 1, to an extended, working position, will now be described.

5 Referring to Figure 3, the desk 10 is shown with the desktop portion 18 in its normal working position. The left hand cover 20 has been moved to its fully open position relative to the desktop portion 18, to enable access to the storage space 30. Due to the angle of perspective of Figure 3, the monitor 32 is partially obscured from view by the cover 20 in this view. However, an arm 38 of the
10 support assembly 34 is visible, which is shown more clearly in Figure 4.

The support assembly 34 includes a mounting means, here in the form of an elongate member 36. The member 36 is adapted for movement in a vertical axis relative to the desk 10 between a stowed position illustrated in Figures 1 to 4 and
15 an extended position shown in Figures 5 to 8. The member 36 is arranged so as to pass through the aperture 22 in the desktop portion 18, when moving between its extracted and extended positions. The member 36 is also rotatable about the vertical axis. The member 36 may be adapted for movement vertically in a
20 number of ways. For example, it may be in the form of a telescopic member, which can extend or retract along the vertical axis or may be mounted as a slide member in a guide, which is secured relative to the desk 10 within the storage space 30.

An arm 38 is connected to the member 36, so as to be movable between and
25 through a number of different positions relative to the member 36, and for rotation with the base mounting 36. The monitor 32 is connected to attachment means at a free end of the arm 38, and is shown in a number of sequentially raised positions relative to the desk 10, for the purposes of description, in Figures 5 to 8.

30 The arm 38 may be connected to the member 36 by means of a joint which allows pivoting of the arm 38 about a vertical axis only, or about both vertical and horizontal axis. The connection of the arm to the member 36 may conveniently

- 7 -

be by way of a universal joint, which may include a clamping means for clamping the joint to fix the arm 38 in a pre-selected angular position relative to the member 36. However, in the illustrated embodiment, the arm 38 is pivotable on the member 36 only about a generally horizontal axis.

5

To raise the support assembly 34, the user raises the monitor 32, which causes the member 36 to rise vertically, the support arm 38 is being raised with the member 36. The member 36 moves directly in its vertical axis, up through the aperture 22, to its fully extended position shown in Figures 5 to 8. A stop means, not illustrated, prevents further movement upward and holds the member 36 in its extended position. The stop means may be in the form of a simple latch mechanism which holds the member 36 in its extended position, or in the form of a stop and manually actuable clamp. As the monitor 32 is raised further, the arm 38 pivots about its connection with the member 36, from a generally downwardly depending position shown in Figure 5, through a generally horizontal position shown in Figure 6, up to an extended position relative to the normal working surface 12 of the desk 10, as shown in Figure 7.

In Figures 6 and 7, it can be seen that each cover 20 is connected to the desktop portion 18 by a pair of hinges 40. The attachment, typically a universal joint, between the monitor 32 and the support arm 38 is also clearly visible, by means of which the monitor 32 can be tilted, rotated or raised/lowered relative to the arm 38, as required by a user.

25 Since the member 36 is rotatable about a vertical axis, the arm 38 and monitor 32 can be moved from the position shown in Figure 7, to the position shown in Figure 8, for use by a user sat in front of the desk 10.

30 With the member 36 in its fully extended position and the monitor 32 and support arm 38 suitably positioned, a user can close the cover portion 20, so as to be completely flush with the rest of the working surface 12 of the desk 10, as illustrated in Figure 8. A keyboard and mouse can be stored with the monitor 32

in the storage space 30, so as to be removable when the cover 20 is opened, for use with the monitor 32 and processor 28.

5 In the position shown in Figure 8, the desk 10 functions as a computer workstation, with almost no reduction in the normal working area of the upper surface of the desk 10 from the position shown in Figure 1. It will be understood the operation described above for extending the monitor 32 and support assembly 34 is simply reversed, in order to return the monitor 32 to its stowed position within the desk 10.

10

In a preferred embodiment of the invention, the desk may include means for selectively opening the storage cover and/or main desktop area. For example, a button-operated locking mechanism can be provided for locking the cover /desktop portion in its normal working position. To open the cover /desktop portion, a user must press a button located on the front of the desk which causes the storage cover and/or desktop portion to raise up by about 2 cm above its normal working position. This enables the user to swing open the cover portion/desktop area, in order to access the storage or central housing area. To close the cover /desktop portion, the user simply pushes the cover or desktop portion closed. The desktop portion can also be locked separately from the cover portion to allow access to the latter but not to the central housing portion 26 and the processor units 28.

25 The locking mechanism is configured in this manner so that closing the cover portion/desktop portion requires a two-handed operation, i.e. one hand to depress the button, and the other to move the cover portion/desktop portion, to reduce the risk of the user trapping fingers in the desk during said closing operation.

30 In addition to the purely mechanical arrangement for moving the support assembly between its raised and lowered positions, a preferred embodiment of the invention may include means for automatically raising or lowering the support

assembly. For example, a button operated hydraulic control device can be used in connection with the member 36, which includes means for selectively raising and lowering the member 36, in response to a user pressing a button provided in the front of the desk.

5

It will be understood that the item of furniture in accordance with the invention provides a means by which a user can have a contiguous, planar desktop surface which has no evidence or intrusion of any IT equipment. A particular advantage of the invention is that the support means can be raised from a stowed position below the level of the desktop surface to an extended position for supporting a computer monitor above the desktop surface, without any significant reduction in the effective working area of the desktop surface.

10

A further advantage of a preferred embodiment of the invention is that the item of furniture provides a convenient means for securably stowing away IT equipment (monitor, processor, keyboard and mouse) within the furniture, without the need for unsightly security means, such as Kensington cables or metal cages on or adjacent the desktop, for example. Also, IT equipment can be easily stored within the furniture, it is a further advantage of preferred embodiments of the invention that they can be provided with alarms to indicate and ward off attempts at unauthorised access.

15

20

Although the desk shown in Figures 1 to 8 is illustrated as being a two-person desk, the furniture can be in the form of a single person desk. In preferred embodiments, the housing can be provided at the front or rear of the desk, or other suitable location.

25

The furniture can be of any suitable form, for example, in the form of a shelving unit, kitchen unit or any other furniture having a surface suitable for a PC monitor.

30

Claims

- 1 An item of furniture for use as a computer workstation having:
a generally planar work surface having first and second portions(12, 20);
5 a storage space (30) beneath said first portion of the work surface for
storing a monitor (32);
and support means (34) for supporting said monitor relative to said work
surface, said support means having attachment means for attachment to said
monitor;
- 10 wherein:
said support means (34) is movable between a retracted attitude in which
said support means (34) is in said storage space (30) and an extended attitude in
which said support means extends above said work surface for supporting said
monitor above and spaced from said work surface;
- 15 said first portion (20) of said work surface is movable between a closed
position in which said first portion forms said generally planar work surface with
said second portion and prevents movement of said support means (34) from
either one of said retracted and extended attitudes to the other and an open
position in which said first portion allows movement of said support means (34)
20 between said retracted and extended attitudes;
- and wherein, when said support means is in said extended attitude said
attachment means is movable along horizontal and vertical axes to enable the
position of said monitor above said work surface to be adjusted.
- 25 2 An item of furniture as claimed in claim, in which the item of furniture
includes means for selectively opening the cover portion.
- 3 An item of furniture as claimed in claim 1 or 2 in which the support means
(34) mounts said attachment means to said desk so as to enable movement of
30 said attachment means in generally horizontal and vertical planes above said
work surface when said support means (34) is in its extended attitude.

- 11 -

4 An item of furniture as claimed in any preceding claim, in which the support means (34) includes a first member (36) mounted for movement in a vertical axis relative to the work surface between said retracted and extended attitudes.

5

5 An item of furniture as claimed in claim 4, in which the first member (36) is an elongate member.

6 An item of furniture as claimed in claim 4 or 5, in which the first member
10 (36) is rotatable about said axis for moving said monitor in a generally horizontal plane.

7 An item of furniture as claimed in claim 4, 5 or 6, in which the support
15 means (34) includes an arm (38) connected to the first member (34), said arm (38) having said attachment means for attaching and supporting a computer display screen.

8 An item of furniture as claimed in claim 7, in which said arm (38) is
20 connected to the first member (36) so as to be movable about a generally horizontal axis for moving said computer screen in a generally vertical plane.

9 An item of furniture as claimed in any preceding claim, in which a
25 computer display screen is mounted on the support means (34) so as to be stowable with the support means in said storage space.

10 An item of furniture as claimed in any preceding claim, in which the support means (34) includes means for automatically moving said support means between said retracted and extended attitudes.

30 11 An item of furniture as claimed in claim 10, in which the moving means is operable to raise and lower said first member (36) along said vertical axis for

- 12 -

automatically moving said support means between said retracted and extended attitudes.

12 An item of furniture as claimed in claim 10 or 11, in which the moving
5 means includes an hydraulic arrangement

13 An item of furniture as claimed in any preceding claim, in which the display screen is a flat-type monitor.

10 14 An item of furniture as claimed in any preceding claim, in which the item of furniture includes a housing portion for receiving a computer processor.

15 15 An item of furniture as claimed in claim 14, in which said generally planar work surface is formed by a lid of said item, said lid serving as a closure for said housing portion.

16 An item of furniture as claimed in any preceding claim, in which a computer processor is housed within the item of furniture.

20 17 An item of furniture as claimed in any preceding claim, in which said storage space comprises a compartment closed by said first portion (20) of said work surface.

25 18 An item of furniture as hereinbefore described and as illustrated in the accompanying drawings.

1/3

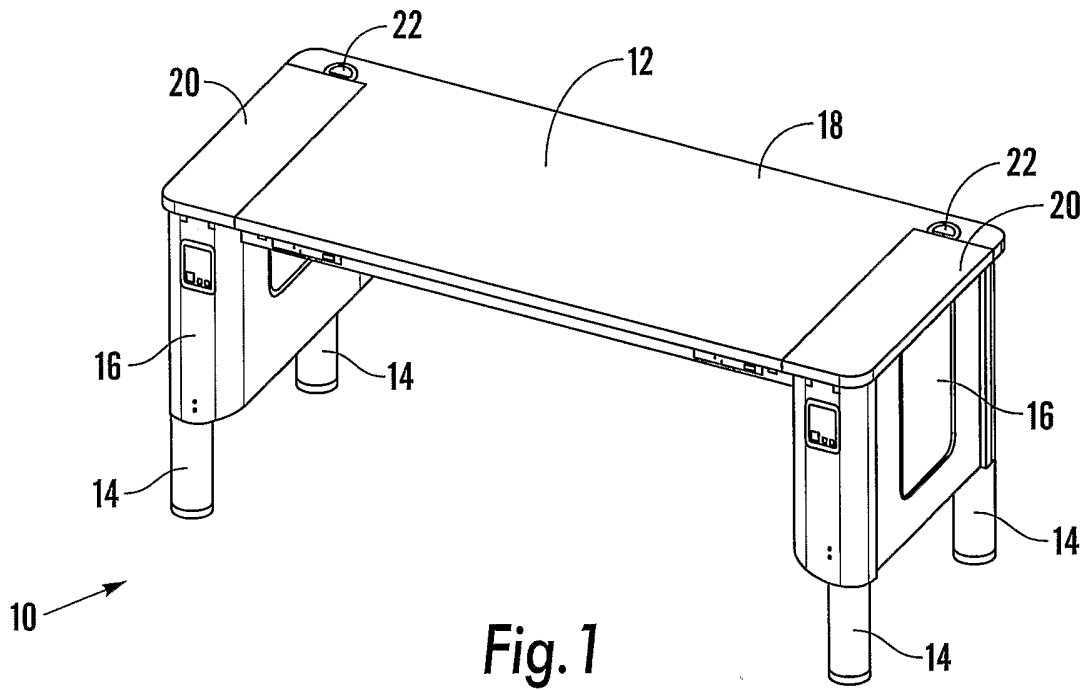


Fig. 1

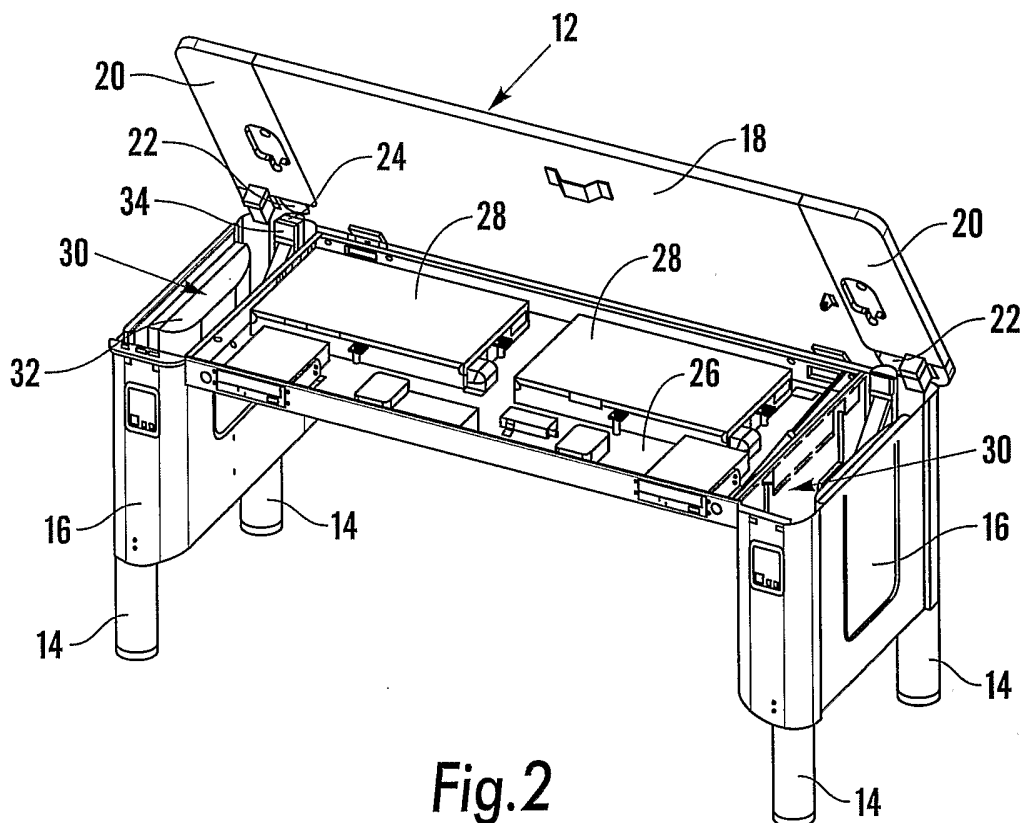


Fig. 2

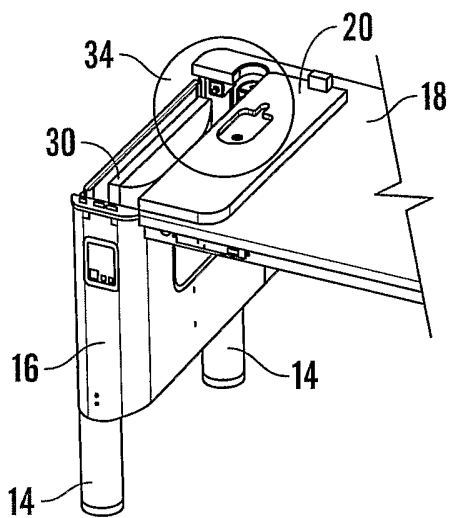


Fig. 3

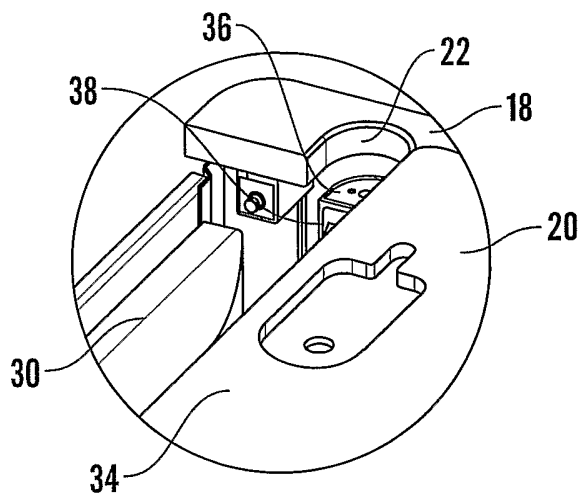


Fig. 4

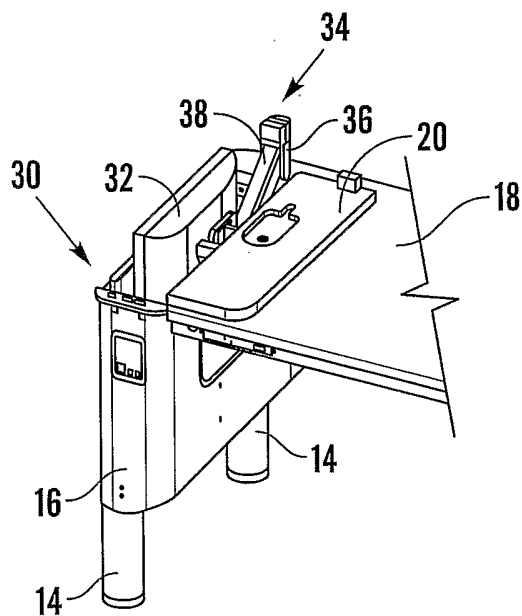


Fig. 5

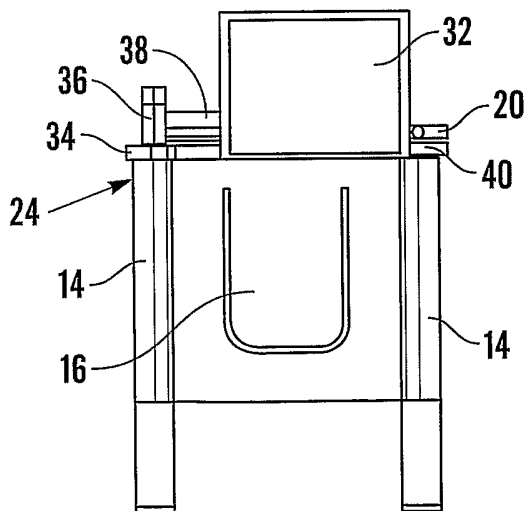


Fig. 6

3/3

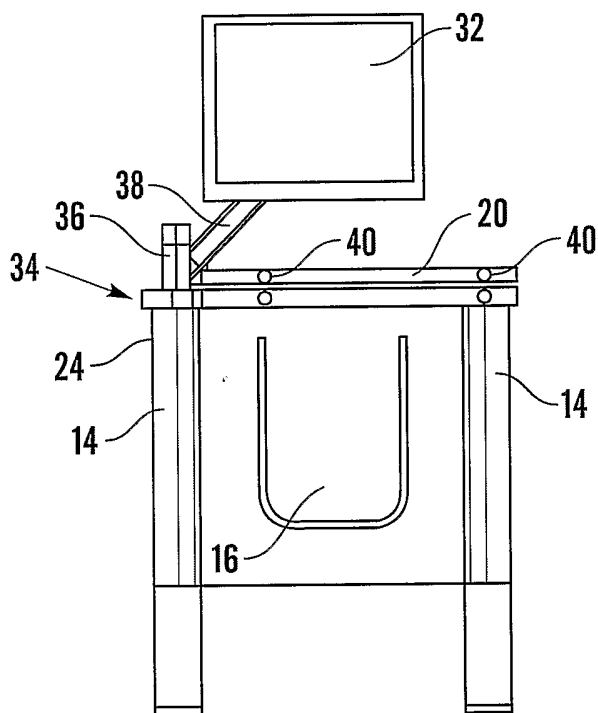


Fig. 7

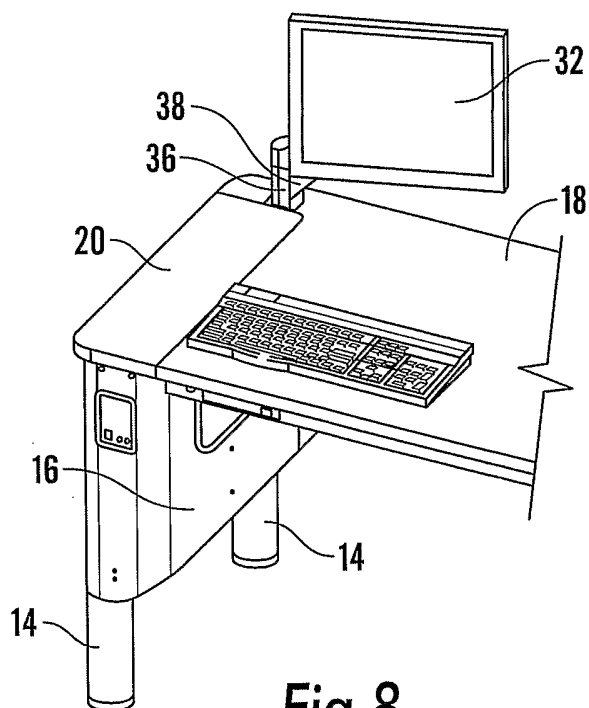


Fig. 8

INTERNATIONAL SEARCH REPORT

PCT/GB2005/002580

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 A47B21/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 A47B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
 EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 101 53 492 A1 (VS VEREINIGTE SPEZIALMOEBELFABRIKEN GMBH & CO) 13 June 2002 (2002-06-13) column 7, line 3 - line 32 column 7, line 60 - column 8, line 7 -----	1-18
A	US 2003/037709 A1 (KOLAVO FRANK) 27 February 2003 (2003-02-27) the whole document -----	3-8
A	DE 201 13 322 U1 (LEYBOLD DIDACTIC GMBH) 17 January 2002 (2002-01-17) page 4, paragraph 1 ----- -/--	10-12

Further documents are listed in the continuation of box C.
 Patent family members are listed in annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family
---	---

Date of the actual completion of the international search 1 September 2005	Date of mailing of the international search report 19/09/2005
--	---

Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer <p style="text-align: center; font-size: 1.2em;">Ottesen, R</p>
--	---

INTERNATIONAL SEARCH REPORT

PCT/GB2005/002580

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 04, 31 March 1998 (1998-03-31) & JP 09 327335 A (KURAMOTO SEISAKUSHO:KK), 22 December 1997 (1997-12-22) abstract -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

PCT/GB2005/002580

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 10153492	A1	13-06-2002	NONE
US 2003037709	A1	27-02-2003	WO 03017802 A1 06-03-2003
DE 20113322	U1	17-01-2002	NONE
JP 09327335	A	22-12-1997	NONE