



US 20070278834A1

(19) **United States**

(12) **Patent Application Publication**
Kielland

(10) **Pub. No.: US 2007/0278834 A1**

(43) **Pub. Date: Dec. 6, 2007**

(54) **WORKSTATION MODULE FOR A RECLINABLE OFFICE CHAIR**

Publication Classification

(76) Inventor: **Peter Kielland, Ottawa (CA)**

(51) **Int. Cl.**
A47B 83/02 (2006.01)

Correspondence Address:
J. GORDON THOMSON
P.O. BOX 8865
VICTORIA, BC V8V 3Z1

(52) **U.S. Cl.** **297/170**

(57) **ABSTRACT**

(21) Appl. No.: **11/755,680**

A workstation comprising a base, a working platform and a supporting member between the base and the working platform is disclosed and used in conjunction with a typical ergonomically adjustable office chair. The workstation includes a pair of leg rests adjustably fixed to the supporting member such that the user can fully extend and support their legs in a comfortable manner. The angle and position of the working platform and leg rests are adjusted in concert with adjustments to the chair's height and seating angle to optimize the user's posture while operating a computer.

(22) Filed: **May 30, 2007**

(30) **Foreign Application Priority Data**

Jun. 5, 2006 (CA) 2550385

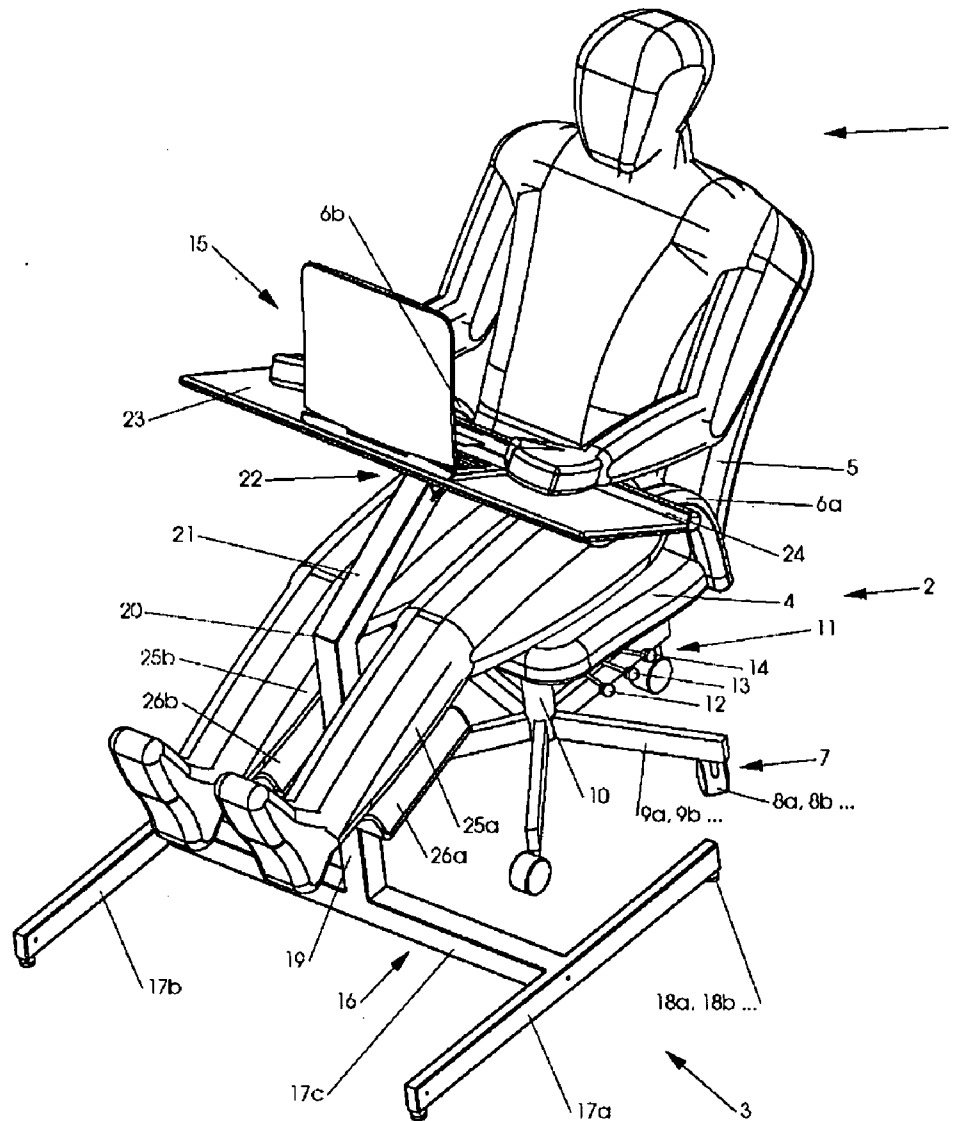


Figure 1

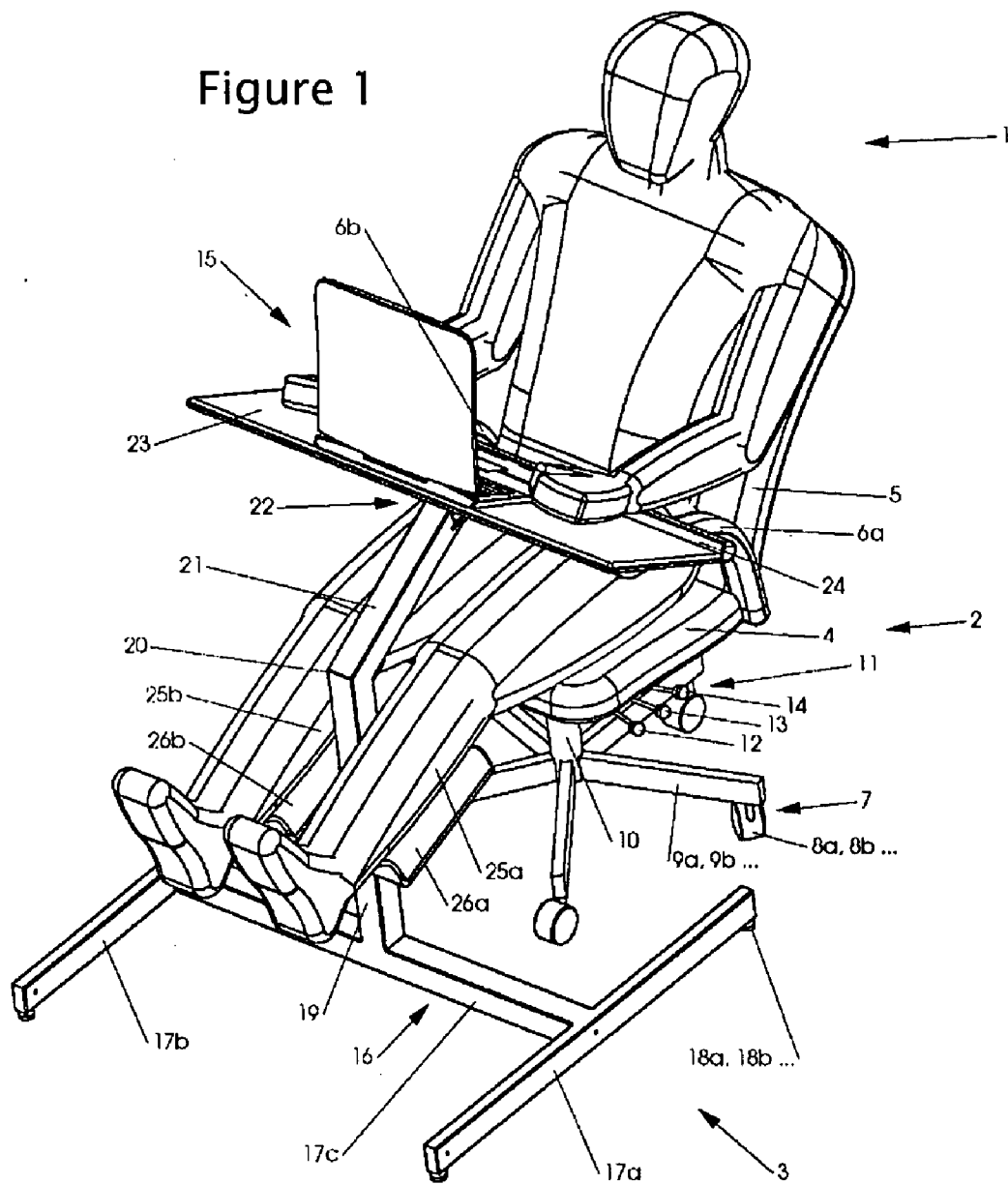


Figure 2

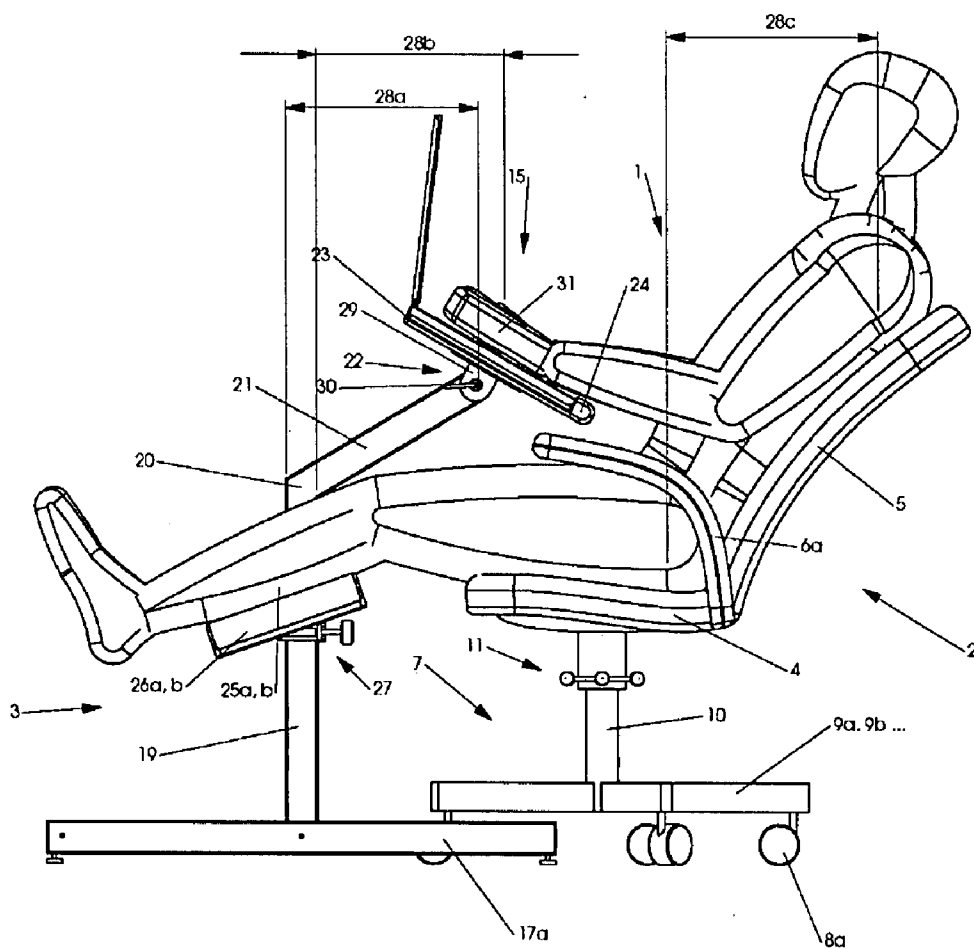


Figure 3

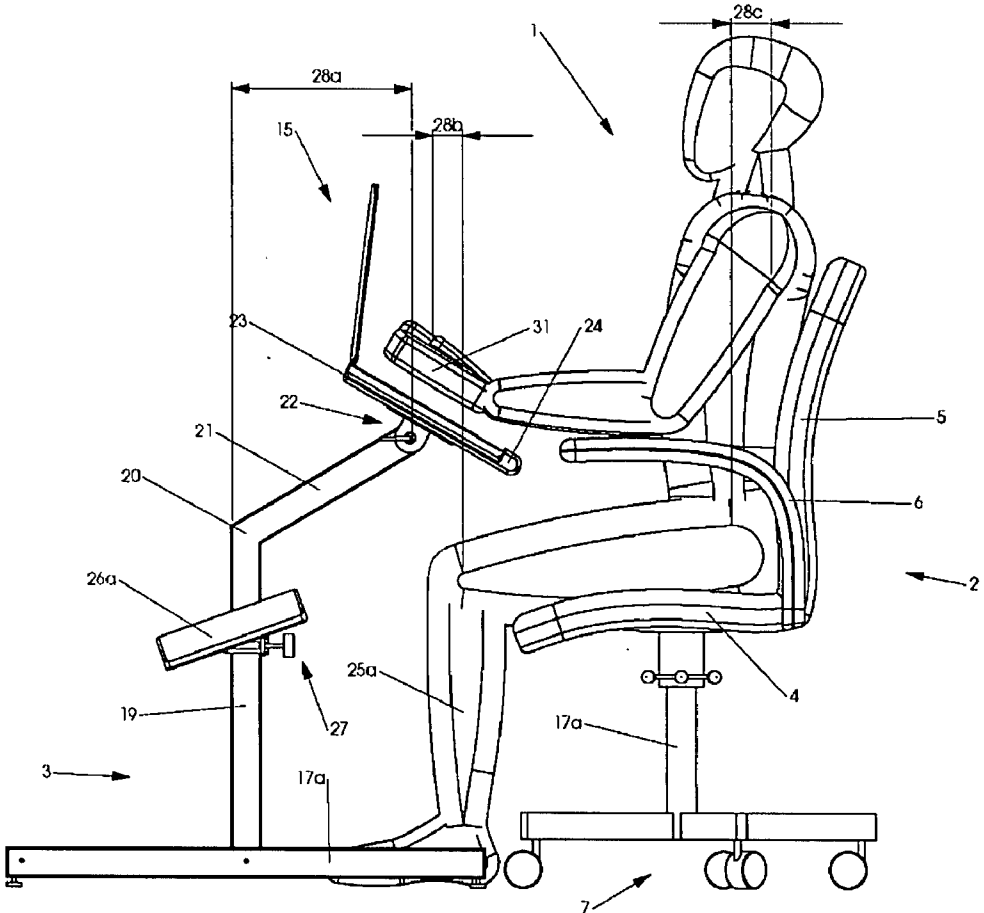


Figure 4

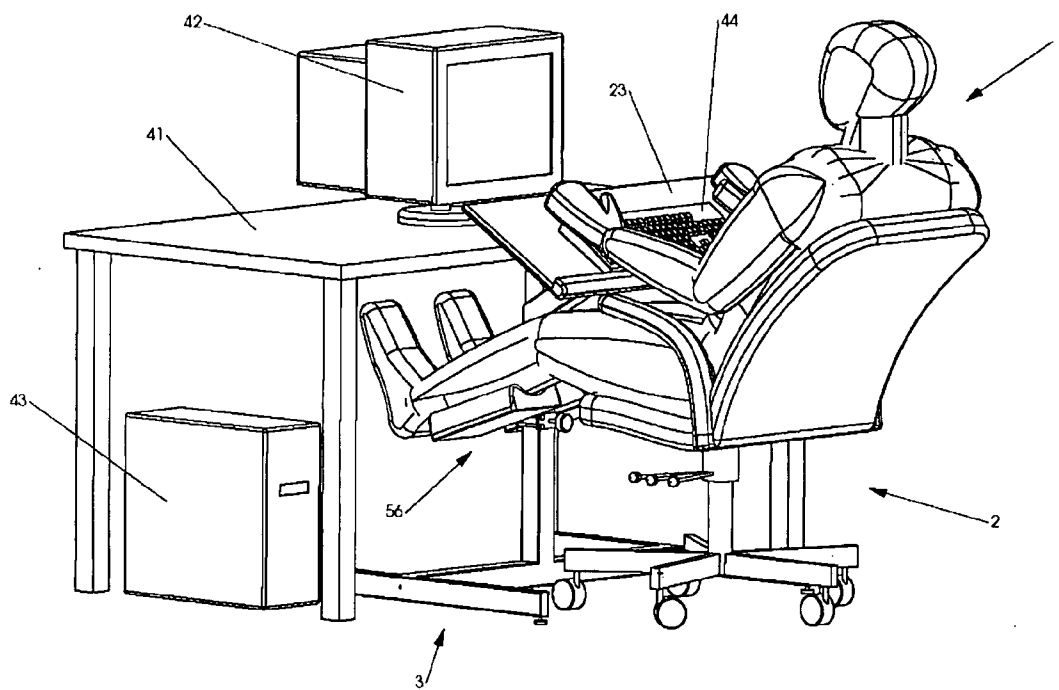


Figure 5

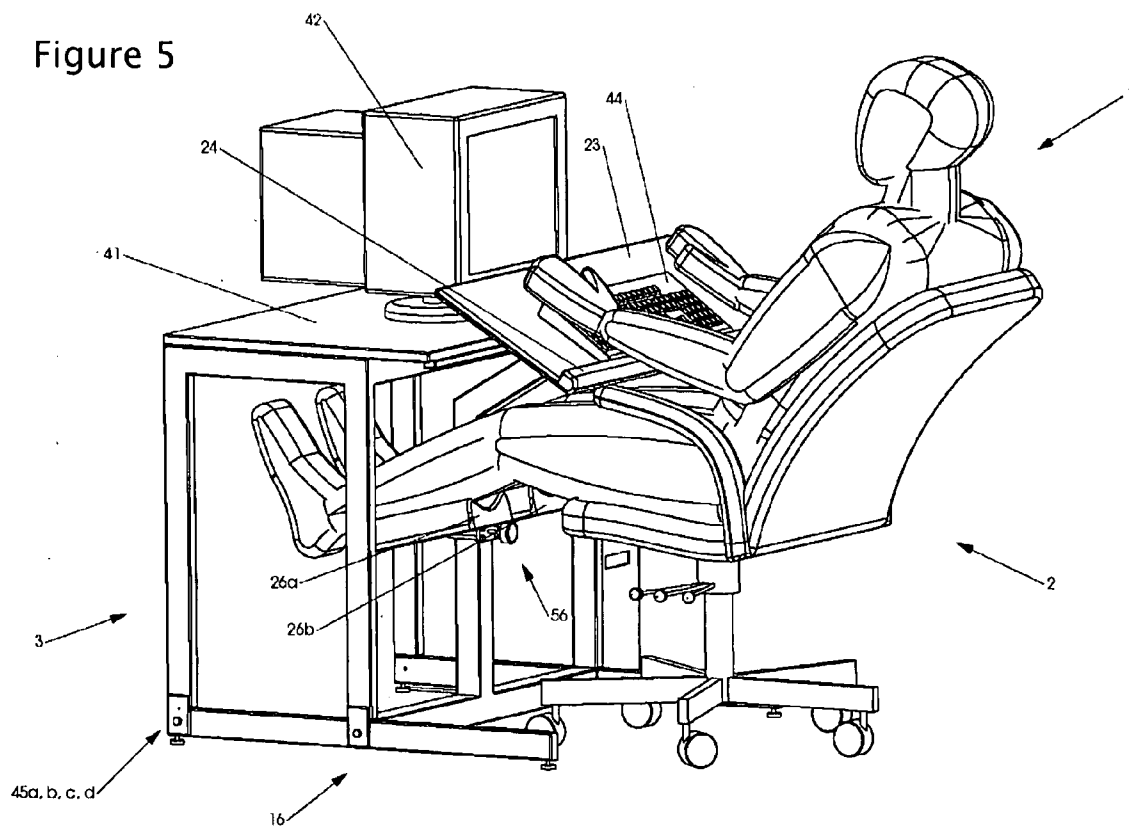


Figure 6

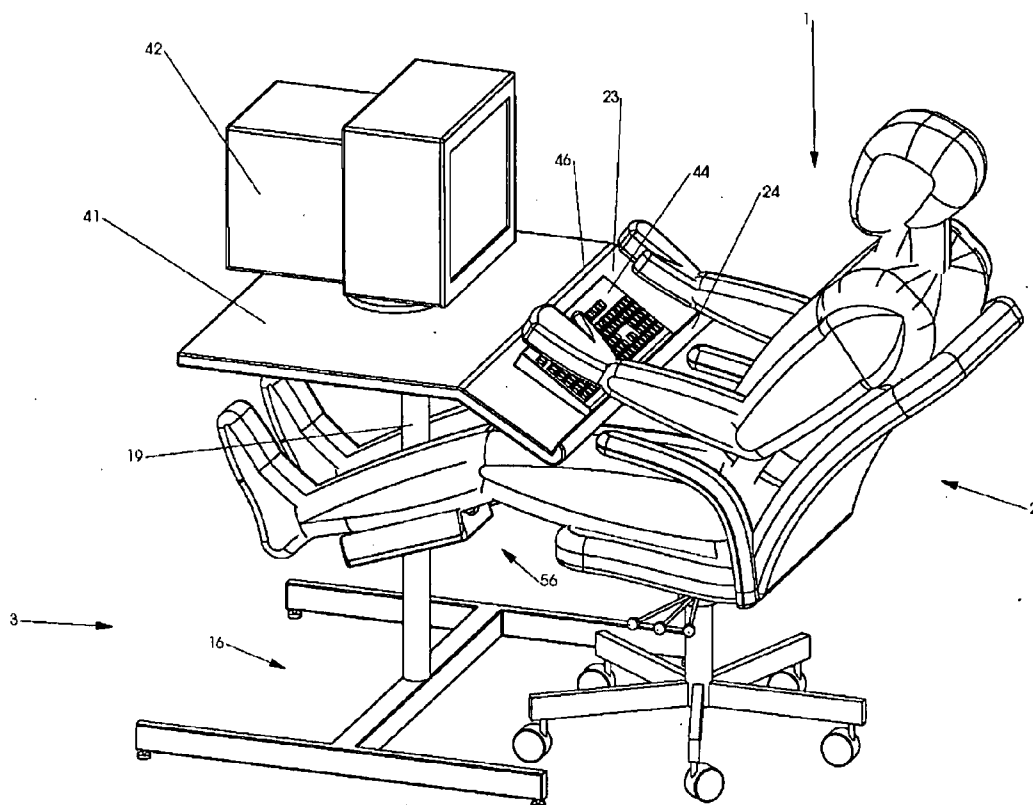


Figure 7

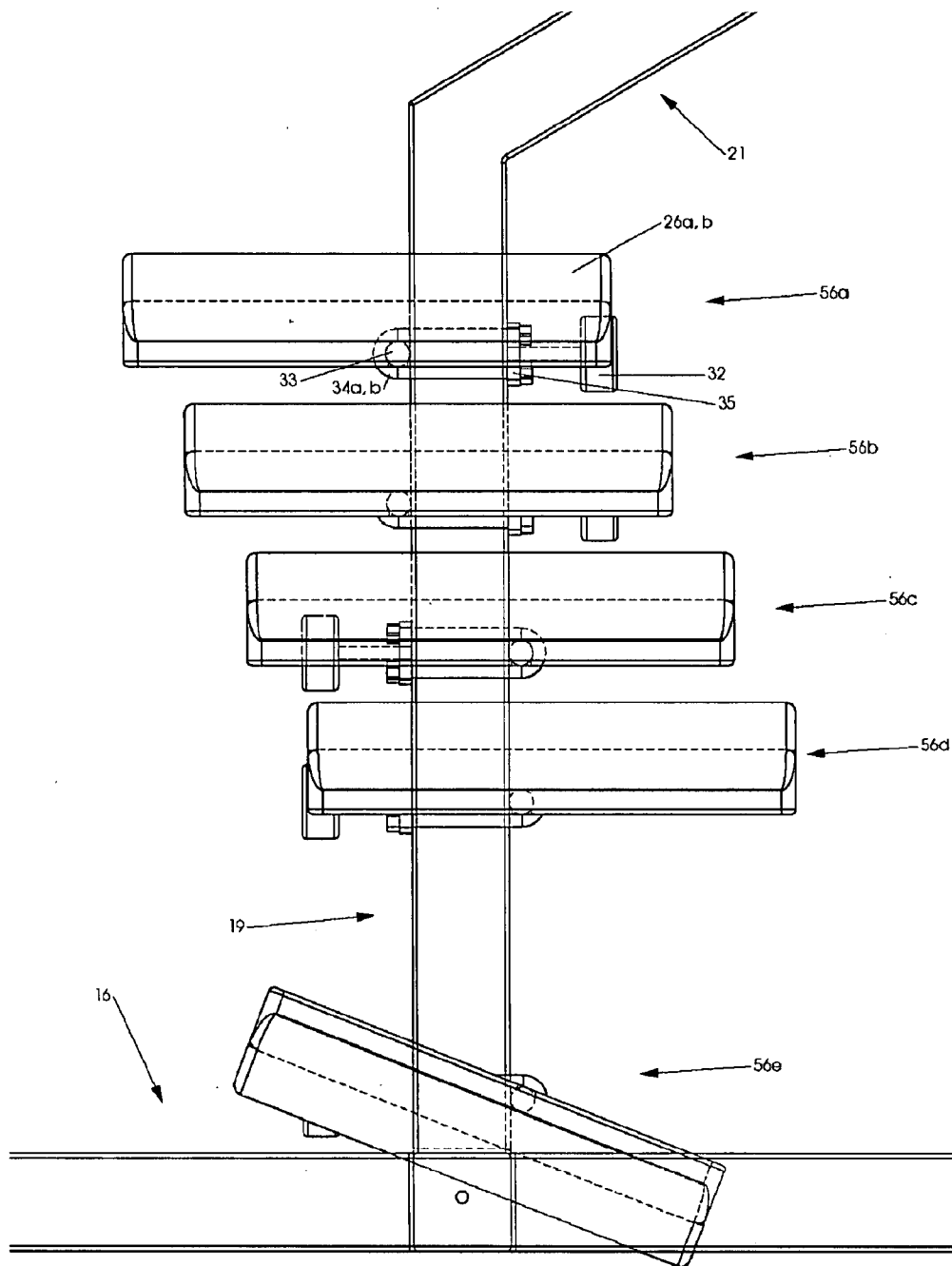


Figure 8

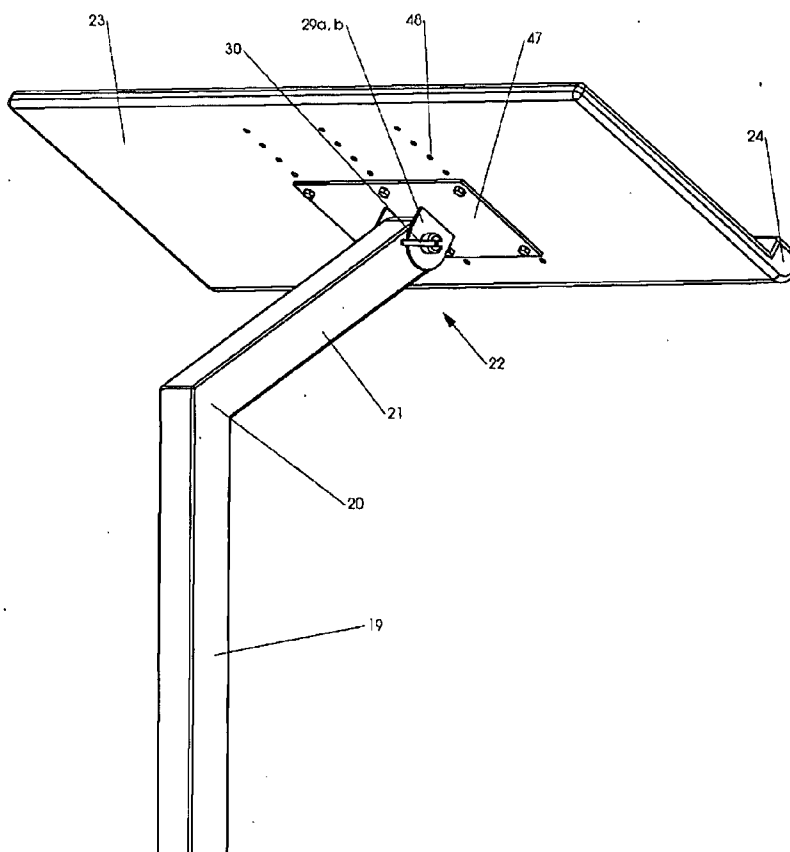


Figure 9

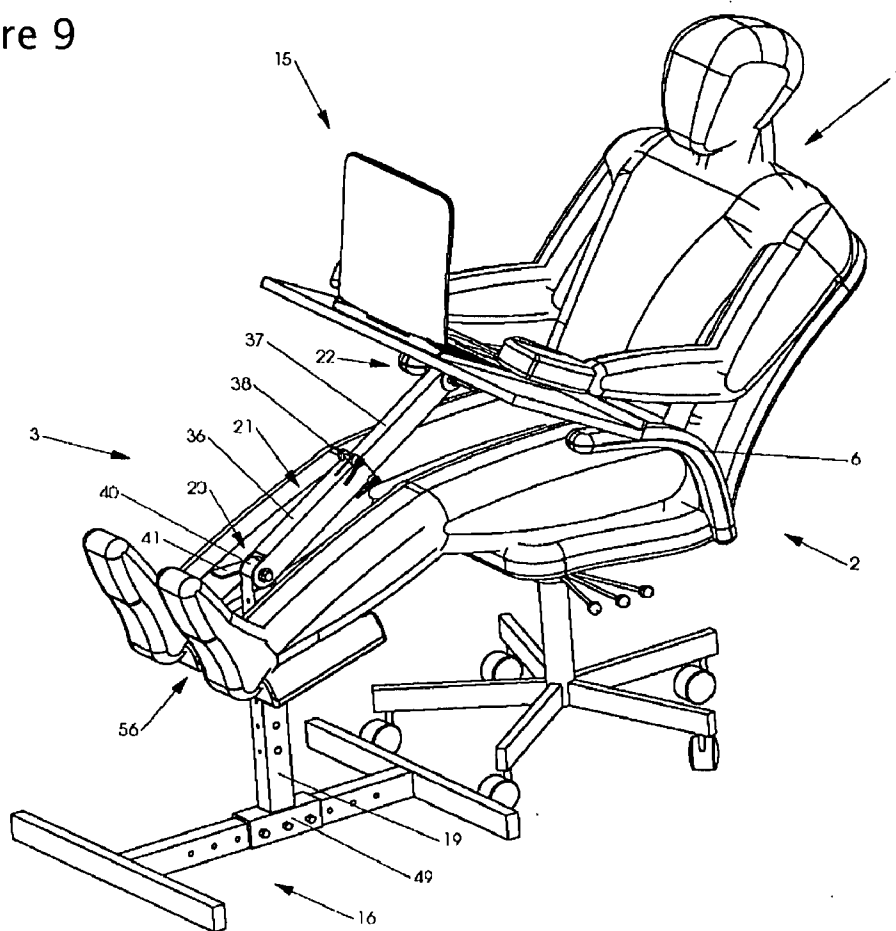
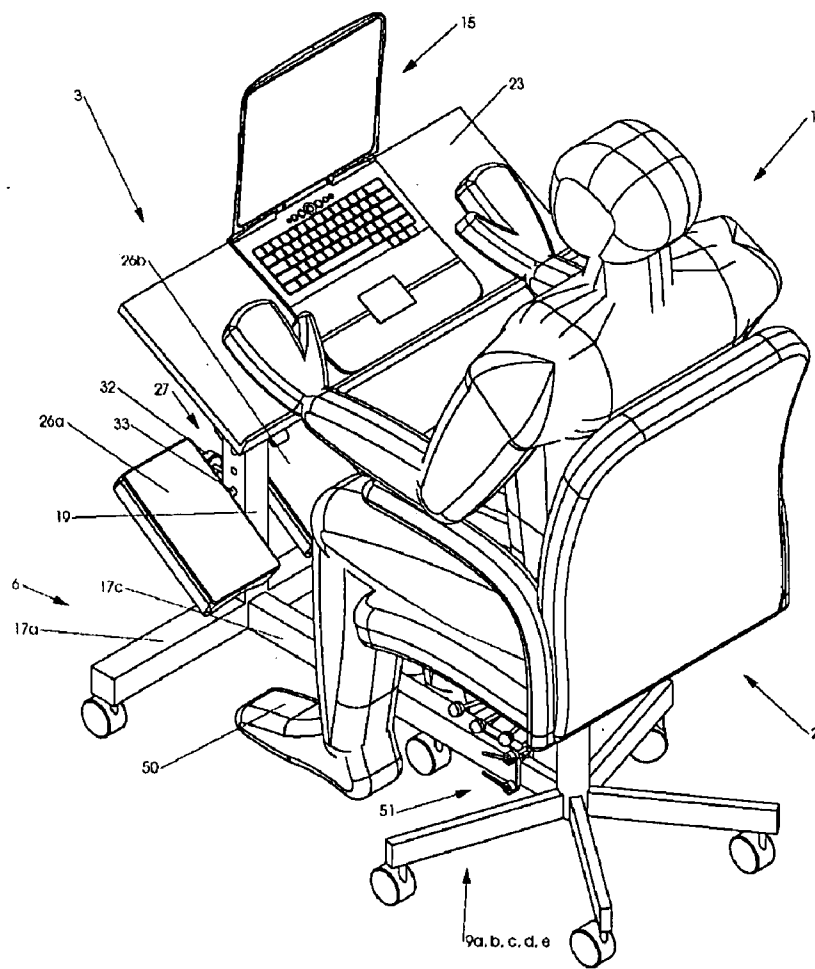


Figure 10



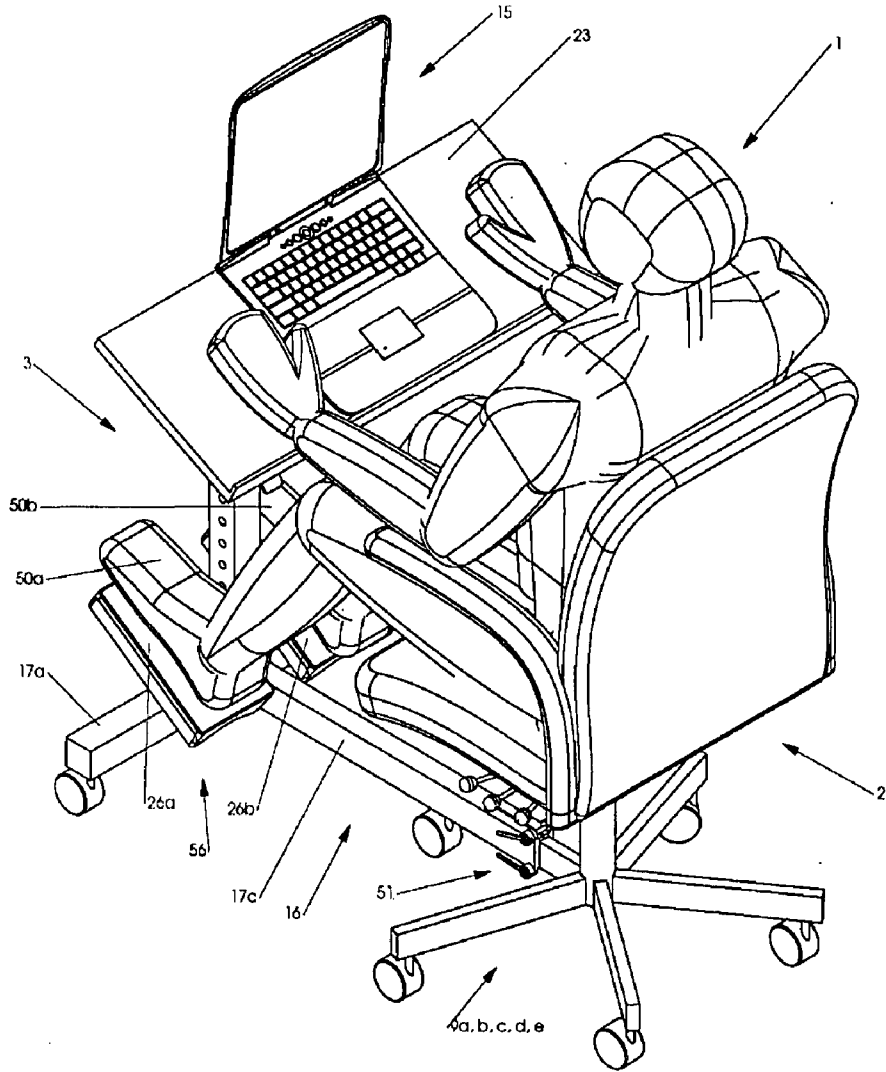


Figure 11

Figure 12

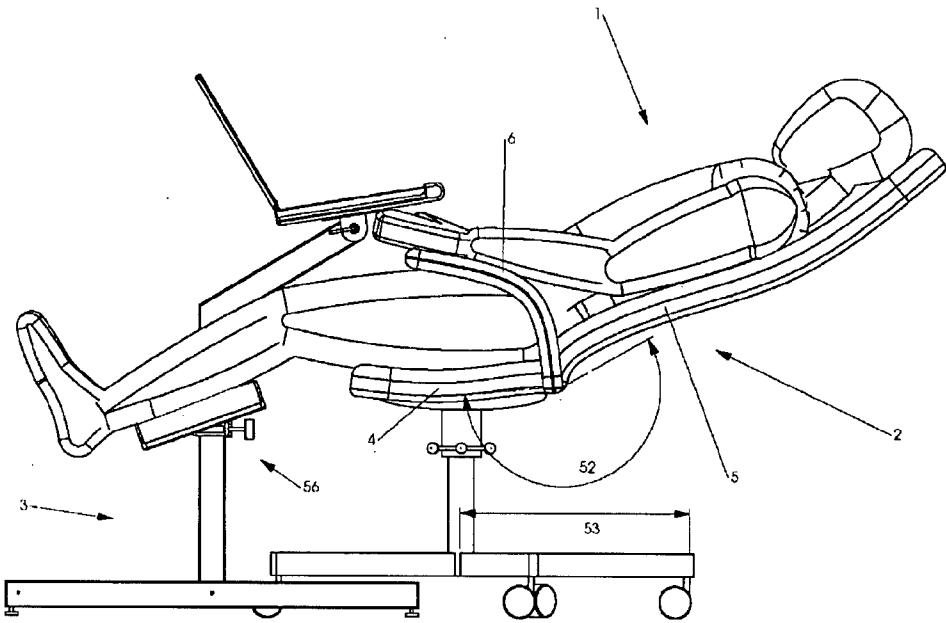


Figure 13

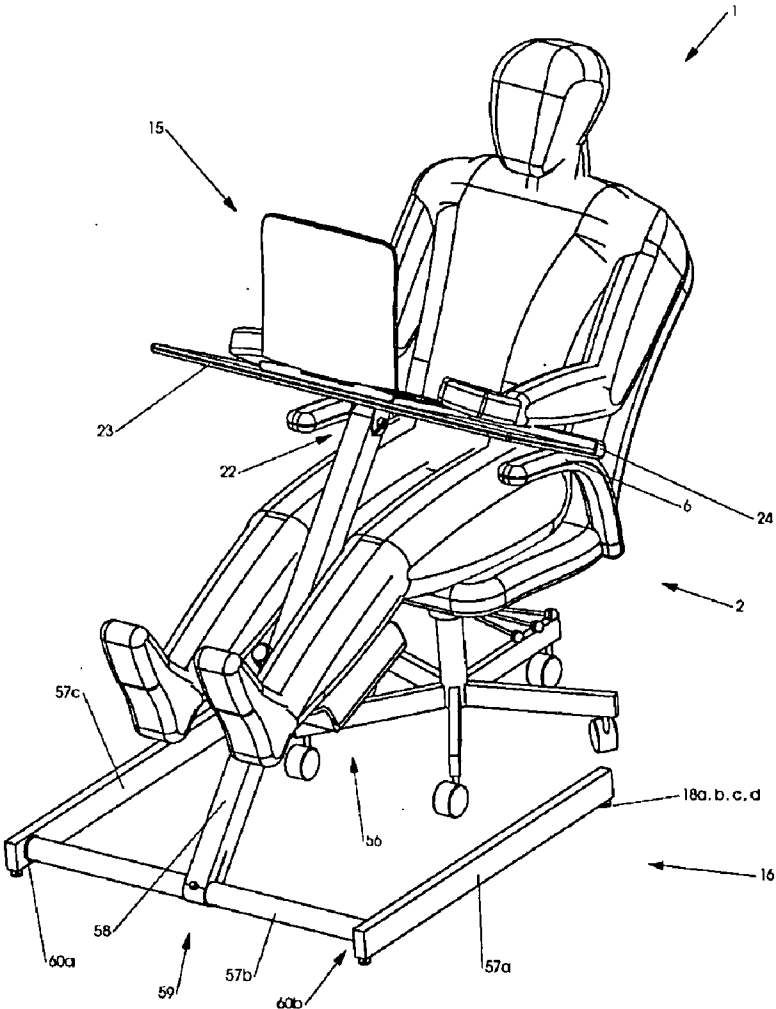


Figure 14

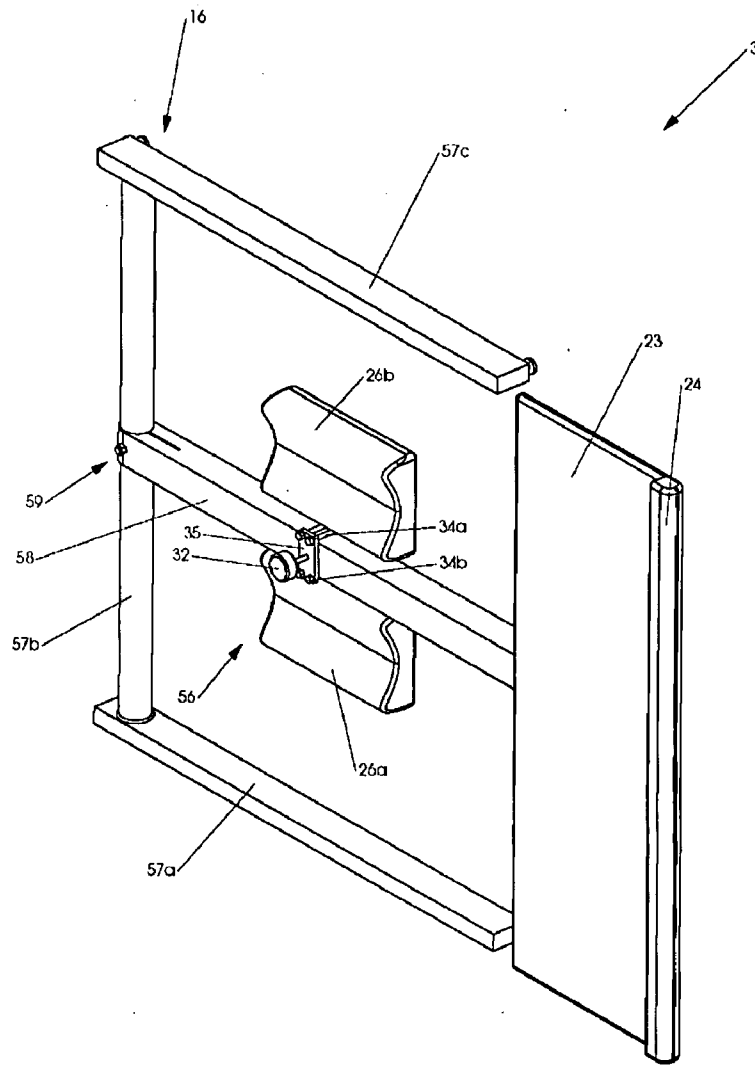


Figure 15

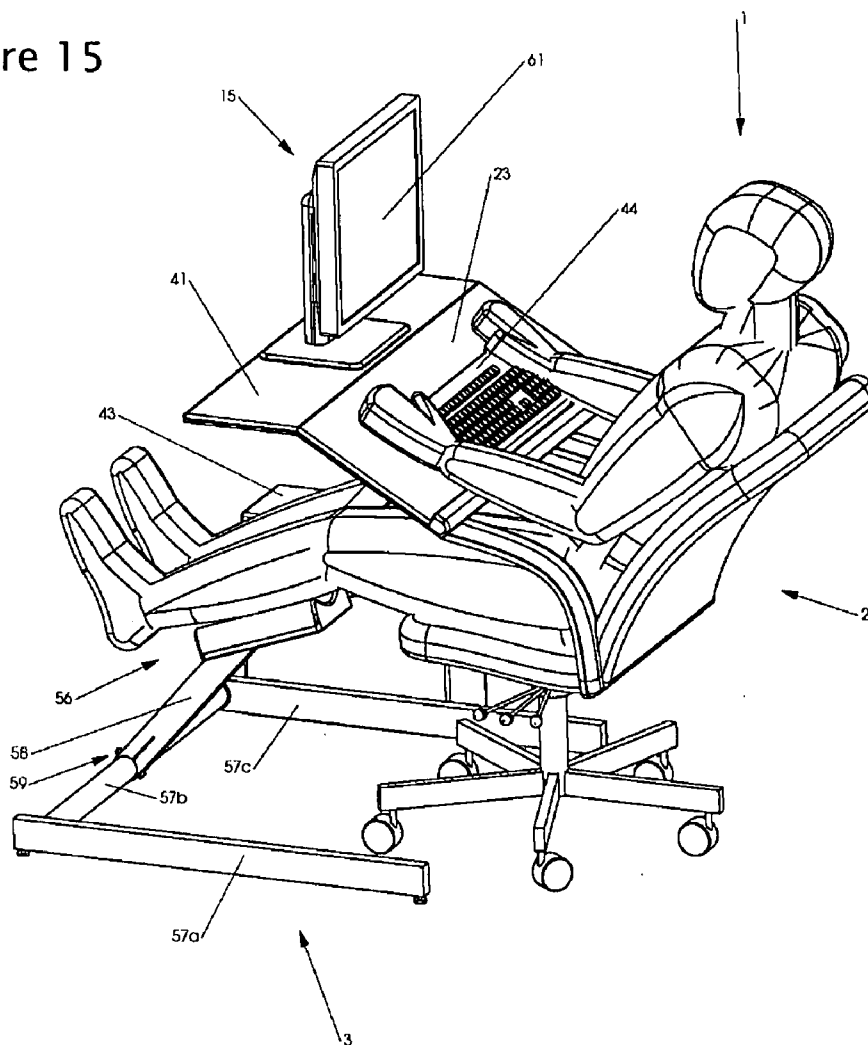


Figure 16

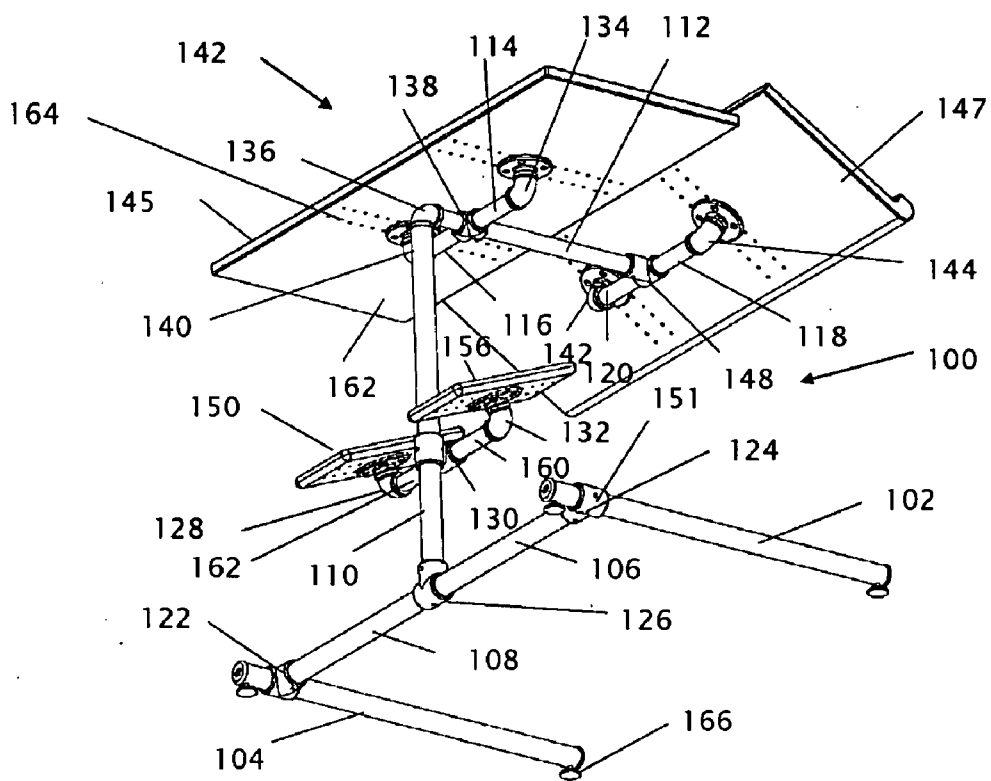


Figure 17

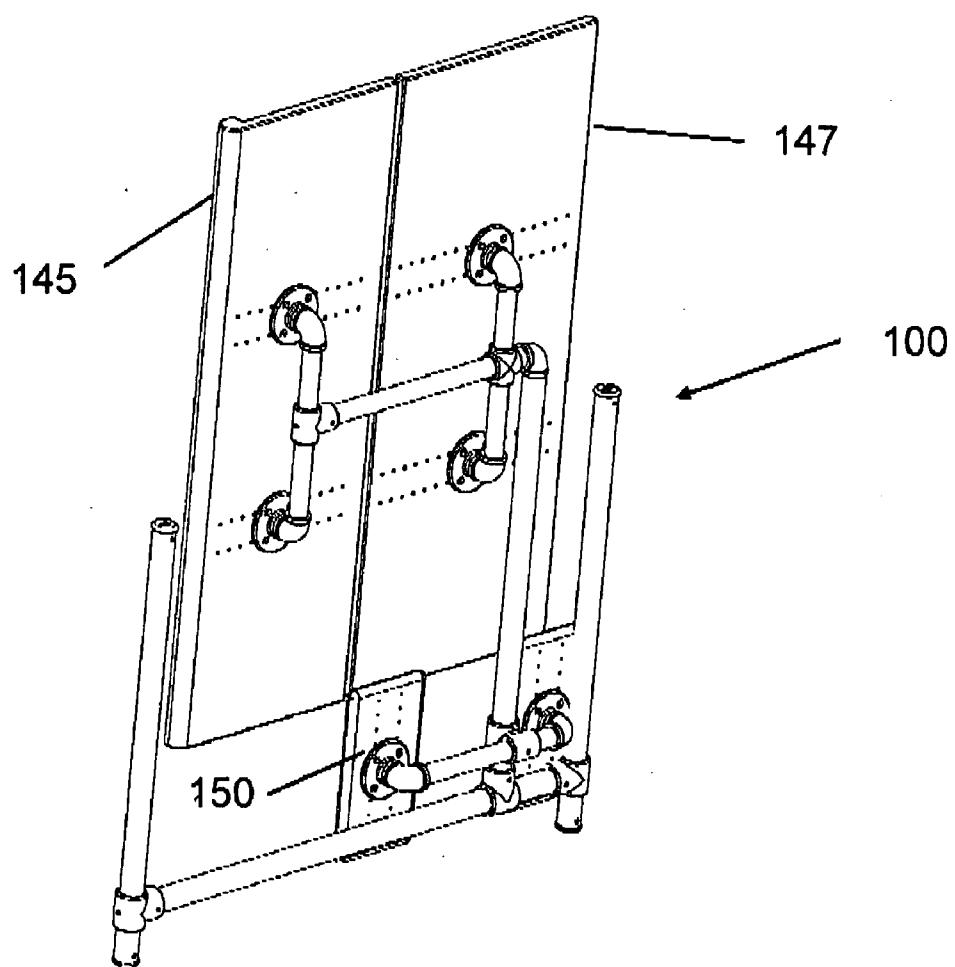
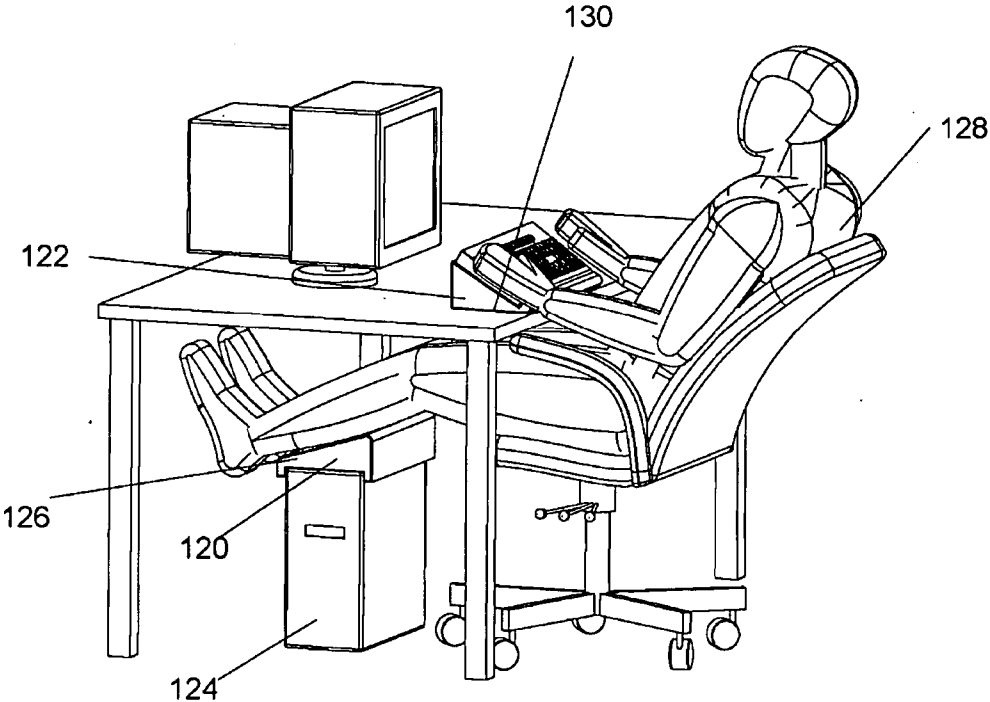


Figure 18



WORKSTATION MODULE FOR A RECLINABLE OFFICE CHAIR

CROSS-REFERENCE TO OTHER APPLICATIONS

[0001] This patent application claims priority from Canadian Patent Application 2550385 "Workstation Module for a Reclinable Office Chair" filed in the Canadian Patent Office on Jun. 5, 2006.

FIELD OF THE INVENTION

[0002] This invention relates to desks and chairs and more particularly to a workstation module for a reclinable office chair.

BACKGROUND OF THE INVENTION

[0003] Office workers often suffer fatigue and lost productivity due to long hours spent seated at a desk. Over the years, office furniture manufacturers have responded with a variety of ergonomic office chairs and desks designed to alleviate this problem. One early solution was the advent of swiveling, and castered office chairs that permitted a worker to more easily multitask between different workstations (for example: to scoot between a typewriter and a nearby filing cabinet). The advent of computers resulted in even more sedentary workers so recent improvements have focused more on optimizing the ergonomics of their seating posture. Castered, swiveling and now ergonomically adjustable office chairs have therefore become ubiquitous in the office environment.

[0004] Typically these ergonomic chairs possess a variety of mechanical controls for adjusting the chair's seat-height with respect to the floor, its angle between the seat cushion and seatback cushion, its overall tilt angle, its armrest height, its lumbar support etc.

[0005] Various efforts have also been made to optimally position an ergonomic office chair with respect to the keyboard and display of a computer. Cooper (U.S. Pat. No. 5,056,864) provides the user with an optimal, recumbent posture by integrating the user's chair with a computer. May (U.S. Pat. No. 6,102,476) also provides an integrated chair/computer however it appears somewhat less ergonomic. Maddox (U.S. Pat. No. 6,056,363) provides yet another reclining "computer/chair". While these types of integrated solution may provide an ergonomic posture, they are massive, complicated and expensive. Furthermore, they cannot make use of existing ergonomic office chairs that a user may already have in their possession.

[0006] Trimmell (U.S. Pat. No. 5,893,607) and Sher (U.S. Pat. No. 6,773,060) propose much simpler and inexpensive solutions that attach directly to an existing office chair. Such devices are relatively inexpensive however they provide no support to the user for a reclining work posture and are therefore ergonomically sub-optimal. Furthermore, their cantilevered geometry cannot support heavy work tools such as a CRT computer monitor. Furthermore, being attached to the chair, these devices encumber the user when attempting to stand up or sit down.

[0007] Brown (U.S. Pat. No. 6,298,794) and Lin (6,425, 631) propose compromise solutions having either a totally separate computer workstation module (Brown) or one that is quite easily moved to permit the user to sit down or get up

(Lin). Neither device however facilitates a reclined working posture when used in conjunction with an existing ergonomic office chair.

[0008] Therefore there continues to be a need for a computer workstation that is ergonomic, easy to assemble or disassemble and inexpensive to manufacture.

OBJECTIVES AND ADVANTAGES OF THE INVENTION

[0009] It is therefore an objective of the present invention to provide a reclining workstation module for use with existing reclinable office chairs and existing office desks.

[0010] It is a further objective of the present invention to provide a compact and geometrically strong workstation module that supports the user's legs in a reclined posture when the office chair is reclined while simultaneously supporting a laptop computer at an ergonomically correct position.

[0011] It is still a further objective of the present invention to provide a workstation module that has a minimum number of moving parts while still being adaptable to different sized users.

[0012] Yet another objective of the present invention is to provide a workstation module optimized for use with laptop computer but that can optionally be augmented for use with desktop computers.

[0013] It is a further objective of the present invention to provide a workstation module that exploits the adjustments available in the existing office chair with which it is used, thereby minimizing the number of moving parts.

[0014] A further objective of the present invention is to provide a workstation module that can provide supplemental adjustability to fit the needs of particularly large or small users.

[0015] Another objective of the present invention is to provide a workstation module that can either stand alone for use with a laptop computer or else be used in conjunction with an existing office desk for tasks involving a desktop computer.

[0016] Another objective of the present invention is to provide a workstation module that enables users to quickly and easily change their work posture.

SUMMARY OF THE INVENTION

[0017] In order to satisfy the requirements identified above, my invention is a workstation module for a reclinable office chair. The chair comprises a mobile base supporting a seat having a top surface and a bottom surface. The seat includes an adjustable backrest, a left armrest having an upper surface and a right armrest having an upper surface. The base comprises a central telescoping column supporting the seat and a plurality of radially extending supporting members each having an inside end fixed to the bottom of the column and an outside end adapted to carry swivel castors for mobility.

[0018] The workstation comprises a supporting base comprising a first base member being a cross-member having a first end and a second end, a bottom surface and a top surface, a second base member fixed near its mid point to the first base member first end and oriented perpendicular thereto and a third base member fixed near its mid point to the first base member second end and oriented perpendicular thereto thereby forming an H-shaped supporting base. The

support base may also have a “T” configuration, an “O” configuration or a squared “C” configuration. The second and third base members each have first and second ends that are adapted to carry feet or castors to support the base off of the floor. The workstation further includes a vertical column having a first and second end. The first end is fixed to the centre of the first base member top surface and the second end is fixed to an angled support member adapted to support a tilting worktable having a top edge, a bottom edge, a left edge, a right edge, an upper working surface and a lower surface having a centre point. There are also provided a left leg support platform and a right leg support platform fixed to the vertical column.

[0019] In one embodiment of the workstation a four-legged table may be used in conjunction with the workstation or the four-legged table may be incorporated into the tilting worktable.

[0020] In one embodiment of the invention there is a workstation module comprising a base portion, a working platform having an adjustable tilt angle and having a top surface and a bottom surface and disposed above the base portion at a first height adjustable by first adjustable means and ergonomically optimized for comfort of a user, vertical support means disposed between the base portion and the working platform and user leg support means attached to the vertical support means at a second height adjustable by second adjustable means.

[0021] The base portion comprises a first member comprising a cross member having a first end, a second end, a middle and a first plurality of apertures there-through, a second member having a first end, a second end and a middle wherein the second member middle is fixed to the cross member first end and a third member having a first end, a second end and a middle wherein the third member middle is fixed to the cross member second end thereby forming an “H”-shaped base portion.

[0022] The vertical support means comprises a vertical member having second plurality of apertures there-through, a first end and a second end, wherein the first end includes an attachment channel having a third plurality of apertures therein, wherein the attachment channel is adapted to fit over the cross member, and wherein the third plurality of apertures is adapted to coincide with the first plurality of apertures so that the attachment channel may be fixed by fixing means to the cross-member thereby permitting adjustable placement of the vertical member along the cross member.

[0023] The vertical support means further comprises a telescoping tilting member comprising a first inclined member having a first end and a second end, wherein the first inclined member first end is adjustably pinned in a pivoting relationship to the vertical member second end so that the angle of the telescoping tilting member may be adjusted with respect to a horizontal plane and the first inclined member second end telescopes within a first end of a second adjacent and co-axial inclined member.

[0024] The second adjacent and co-axial inclined member second end is adjustably pinned to the working platform bottom surface permitting the adjustable tilt angle.

[0025] The telescoping tilting member has an adjustable length by releasably clamping the first end of the second adjacent and co-axial inclined member with respect to the second end inclined first member.

[0026] The user leg support means comprise a first leg support attached at the adjustable second height to one side of the vertical member and a second leg support attached to the opposite side of the vertical member at the adjustable second height.

[0027] The first leg support and the second leg support are tiltable by tilting means to an angle selectable by the user so that the first and second leg supports hold the calves of the user in a comfortable manner and permit the user full leg extension underneath the working surface.

[0028] The first and second leg supports are cushioned for user comfort.

[0029] In another embodiment of the invention there is a workstation module comprising a base portion, a working platform disposed above the base portion at an adjustable first height, vertical support means having a first end and a second end disposed between the base portion and the working platform and user leg support means, wherein the working platform is attached to the vertical support means second end at a fixed second height, and wherein the user leg support means are attached to the vertical support means between the vertical support means second end and the vertical support means first end.

[0030] This embodiment of the workstation module has a base portion that comprises a first member comprising a cross dowel-member having a first end, a second end and a middle, a second member having a first end and a second end, wherein the second member first end is fixed to the cross dowel-member first end and a third member having a first end and a second end wherein the third member first end is fixed to the cross dowel-member second end thereby forming an square “C”-shaped base portion.

[0031] The workstation module working platform is a rectangular member having a suitable top surface area for a work object and a bottom surface.

[0032] The workstation module working platform bottom surface is removeably attached to the vertical support means second end by first pivot means.

[0033] The workstation module platform includes a bottom end having a restraining member fixed thereto to prevent the work object from fall off the bottom end of the working platform.

[0034] The workstation module restraining member has a rounded profile to comfortably support the wrists of the user during keyboarding operations.

[0035] The workstation module vertical support means comprises an inclined member having an angle of inclination from a horizontal surface adjustable between zero degrees and ninety degrees, a first end and a second end, wherein the inclined member first end is attached to the cross dowel-member middle by first adjustable pivoting means, and the inclined support member second end is attached to the working platform bottom surface by the second pivoting means.

[0036] The workstation module first pivoting means comprises a first aperture in the inclined member first end adapted to frictionally fit around the cross dowel-member middle so that the user is able to increase or decrease the

angle of inclination by raising or lowering the working platform thereby determining the first adjustable height.

The angle of inclination may be fixed by fixing means located adjacent to the first aperture.

[0037] The fixing means comprises a first aperture in the first end of the inclined member and a plurality of second apertures in the cross dowel-member, the plurality of second apertures serially arranged around the circumference of the cross dowel-member, wherein each second aperture of the plurality of second apertures represents a predetermined angle of inclination, and further wherein the angle of inclination is fixed by aligning the first aperture and one of the plurality of second apertures and inserting a pin therein.

[0038] The fixing means may also comprise a compression clamp adjacent to the inclined member first end aperture, wherein the compression clamp is adapted for compression of the inclined member first end aperture around the cross dowel-member thereby retaining the angle of inclination. The fixing means may also comprise a splined portion located at the middle portion of the cross dowel-member and an aperture in the first end of the inclined member, the aperture having serrations adapted to mesh with the spline portion thereby maintaining a predetermined angle of inclination when the serrations are meshed with the spline portion.

[0039] The second pivoting means comprises a second aperture in the inclined member second end and an apertured bracket adapted to receive the second aperture to that a pin may be inserted through the apertured bracket and the second aperture thereby attaching the inclined member second end to the working platform bottom surface and permitting adjustment of the working platform tilt angle.

[0040] The user leg support means comprises an attachment bracket adapted for sliding engagement along the inclined support member, wherein the attachment bracket is fixable anywhere along the inclined member by releasable fixing means, and wherein a first leg support is attached to the left side of the attachment bracket and a second leg support is attached to the right side of the attachment bracket so that the user is able to slide the first and the second leg supports in a parallel manner up or down the inclined support member and fix the location of the leg support means in a comfortable position.

[0041] The workstation has a stowage and shipping position wherein the inclined member sits parallel to the second and third base members and the tilt angle of the working platform is zero so that the workstation may be easily stowed and shipped.

[0042] The angle of inclination is adjustable by second pivot means between the vertical support second end and the inclined member first end.

[0043] The invention may also take the form of a combination of a workstation module with a reclinable office chair. The chair is comprised of a mobile base comprising a central telescoping column having a top end and a bottom end. The top end is fixed to a seat bottom and the bottom end is fixed to a plurality of radially extending supporting members each having an inside end fixed to the bottom of the column and an outside end adapted to carry a swivel castor for mobility. The workstation module comprises a supporting base comprising a first base member having a first end, a second end and a middle and a second base member having a first end and a second end. The first end of the second base member

is fixed to the middle of the first base member thereby forming a "T"-shaped base. There is a vertical supporting member having a length, a first end fixed to the middle of the first base member and a second end fixed to a working platform. The vertical supporting member comprises a plurality of apertures along its length, and leg supporting means adapted for attachment to the vertical member at one of the plurality of apertures.

[0044] In yet another embodiment of the invention there is an office module kit comprising a leg rest and a keyboard rest used in combination with a computer tower, an office chair and horizontal working surface. An office module kit comprising a leg rest and a keyboard rest used in combination with a computer tower, an office chair and horizontal working surface wherein the leg rest is adapted to fit over the top of the computer tower and is angled at a first predetermined angle to provide an ergonomic comfort position for an operator; and wherein, the keyboard rest is included at a second predetermined angle for maximum comfort and stress free operation of the keyboard. The leg rest is adapted to fit over the top of the computer tower and is angled at a first predetermined angle to provide an ergonomic comfort position for an operator. The keyboard rest is included at a second predetermined angle for maximum comfort and stress free operation of the keyboard.

[0045] These and other objectives and embodiments will become more apparent from consideration of the following figures and their detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0046] FIG. 1 illustrates a perspective front view of one embodiment of the present invention with a user seated with back erect and legs outstretched working with a laptop computer.

[0047] FIG. 2 illustrates a side view of the same embodiment shown in FIG. 1 with its user seated in a semi-reclined posture.

[0048] FIG. 3 illustrates a side view of the same embodiment shown in FIG. 1 with the user seated in an erect position with both feet on the ground.

[0049] FIG. 4 illustrates a side view of the same embodiment shown in FIG. 1 which uses a modified office chair to safely permit a fully reclined user posture.

[0050] FIG. 5 illustrates a close-up, detailed view of the tilting worktable shown in FIG. 4.

[0051] FIG. 6 illustrates a close-up, detailed view of the calf supports shown in FIG. 1. Five instances of the support labeled A to E are shown mounted to the central support column to illustrate a preferred adjustment mechanism.

[0052] FIG. 7 illustrates a perspective view of the same embodiment of the invention as shown in FIG. 1 and illustrating the use of the invention with a conventional desk and desktop computer.

[0053] FIG. 8 illustrates a perspective view of another embodiment of the invention having a bolt-on table fixture augmenting the functionality of the invention as shown in FIG. 1.

[0054] FIG. 9 illustrates a monolithic embodiment of the invention having no moving parts or adjustments.

[0055] FIG. 10 illustrates another embodiment of the invention which has greater adjustability than the embodiment shown in FIG. 1.

[0056] FIG. 11 illustrates another embodiment of the invention which is easily collapsible for storage.

[0057] FIG. 12 illustrates the same embodiment of the invention as shown in FIG. 11 in a collapsed configuration for storage.

[0058] FIG. 13 illustrates one embodiment of the invention that supports the soles of the user's feet rather than the calves of their legs for semi-recumbent seating.

[0059] FIG. 14 illustrates another embodiment of the invention which attaches to the base of an office chair.

[0060] FIG. 15 illustrates another embodiment of the invention.

[0061] FIG. 16 illustrates yet another embodiment of the invention using tubular members.

[0062] FIG. 17 illustrates another example of the invention in FIG. 16 in a folded configuration.

[0063] FIG. 18 depicts an alternate, kit embodiment of the invention that exploits additional office structures (other than the typical office chair), to provide the desired support structure for the user's calves and their computer equipment, thereby enabling the same recumbent working posture as the invention's non-kit embodiments.

DETAILED DESCRIPTION

[0064] Referring first to FIG. 1 there is illustrated a front perspective view of my invention: a workstation module for a reclinable office chair. User 2 is seated on a typical office chair 4, which in turn is positioned adjacent to my workstation 6. Office chair 4 is ergonomically designed for user comfort and efficiency and comprises a base 8 supporting seat 10, seatback 12 and typically also includes left and right armrests 14 and 16 respectively. Base 8 is typically comprised of 5 radial support members denoted 18, 20, 22, 24 and 26, each radial being supported at its outboard end by swivel-caster 28, 30, 32, 34 and 36 (these numbers not all shown on figure) and centrally joined to chair support column 38). Support column 38 telescopes to provide seat height adjustability and typically employs a pneumatic piston mechanism.

[0065] User 2 sits on seat 10, leans against seatback 12 and utilizes control levers 11 to adjust the chair's moveable parts until comfortable ergonomics are achieved. For example: lever 40 might adjust the length of telescopic support column 38, lever 42 might adjust the angle of seatback 12 with respect to seat 10 and lever 44 might adjust the overall backwards tilt angle of the seat and seatback. More sophisticated controls (not illustrated) may be included to provide additional degrees of adjustment such as: armrest height, fore and aft seat position, lumbar support firmness, headrest position etc. In order to insure safety and stability, modern standards regulate the number and dimensions of base radials 18 to 24 with respect to the maximum tilt angle of seatback 12.

[0066] The office chair 4 shown in FIGS. 1 through 15 illustrate typical dimensions and proportions with respect to the illustrated, average-sized male human 2. My invention 6 is also shown with typical dimensions, proportions and mechanical configurations however further variability may be reasonably inferred to accommodate atypical user physiques or work habits.

[0067] My invention 6 is comprised of a base portion 50, which centrally supports a substantially vertical column 52 and to which inclined support arm 54 is mounted. Working platform 56 is tiltable and mounted to the upper end of inclined support arm 54 and two leg support platforms 58 and 60 are adjustably mounted to opposite sides of vertical

column 52. To use my invention, user 2 stretches out upon reclined office chair 4 placed adjacent to base portion 50 and straddles column 52 such that calves 62 and 64 rest on leg support platforms 58 and 60. Working platform 56 is positioned for use by adjusting the reclinable chair's posture controls 40, 42 and 44 to locate and orient the user such that working platform 56 provides ergonomic support for office work object 66 (such as the illustrated laptop computer). Other suitable work objects for support by table 56 might be: a keyboard, reading material, or writing material.

[0068] Working platform 56 is typically affixed to inclined support arm 52 by means of hinge clamp 68, thereby enabling adjustment of the table's tilt angle for greater comfort. When not being used as a workstation, the user may rotate table 56 to the horizontal to enable it to serve as a conventional table. See FIG. 5 for more detail of the hinge clamp 68.

[0069] Restraining member 70 forms a ridge along the lower edge of the tilted working platform 56 thereby preventing work object 66 from sliding off. The upper rear edge 72 of member 70 is typically rounded to provide a comfortable support for the user's wrist while keyboarding. The lower rear edge 74 of member 70 may also be rounded to prevent marring of armrests 14 and 16 in the event that chair 4 is positioned such that the working platform's lower edge contacts the armrests.

[0070] In the embodiment shown in FIG. 1, the base portion 50 is comprised of an "H" shaped configuration of three members. Base members 76, 78 and 80 are typically formed of rectangular cross-section steel and welded into the desired form however other member cross-sections, materials or joinery methods may be used (e.g.: bolted aluminum or glued wood). Cross-member 80 joins left and right foot-members 76 and 78 to form an "H-shaped" base having open ends into which the casters of chair 4 may be advanced as required in order to adjust the horizontal position of the user 2 with respect to worktable 56.

[0071] The cross-member 80 has a first end and a second end and is shown joined near the midpoints of members 76 and 78 however those "H" proportions may be varied to increase the depth 77 of the open end 79 presented towards the user 2. Moving the cross-member 80 forward ultimately transforms the "H-shaped" base in a "C-shaped" base (see FIGS. 10 and 11). An "E-shaped" base is also possible. This configuration (not illustrated) might also be employed in which the tip of its center prong is used to support the vertical column 52. Other configurations for base portion 50 may also be used to minimize construction costs or to immobilize vertical member 52. For example: when provided for use by students in a university study hall, base portion 50 might be comprised of a plate bolted to the floor or vertical member 52 may even be simply embedded into a concrete floor.

[0072] Other freestanding base portion shapes such as circular or radial designs (similar to base 8 of chair 4) are also within the scope of the invention.

[0073] Level adjuster feet 75 are typically provided at the corners of base 50 as illustrated (lockable casters may also be used for increased mobility).

[0074] Referring now to FIGS. 1 and 2, there is shown in FIG. 2 the same embodiment of my invention 6 as illustrated in FIG. 1 however the user 2 is in a semi-reclined position. The back 12 of the seat 4 is adjusted by use of one of the controls 40, 42 or 44 depending on the design of the chair.

The height of the chair seat on column 38 is also adjustable by the user. The user's calves 62 and 64 are resting on the leg rests 58 and 50 adjustably fixed to vertical member 52.

[0075] Vertical member 52 is affixed at its first end 53 to cross-member 80 near its mid-point 81. Fixation is typically by welding however appropriate bolted, clamped or hinged fixations may also be used. The second end 55 of vertical member 52 is affixed to first end 57 of inclined support member 54. Again, monolithically welded construction is typical however a pivoting joint may also be provided at joint 59 in order to adjust angle 61 between the vertical member 52 and angled member 54 for improved comfort and ease of storage and dismantling (see FIG. 10 for example). The second end 63 of inclined support member 54 is fixed to work table 56 via fixation means 68. Fixation means 68 may be rigid or articulated for more ergonomic adjustability.

[0076] Left and right leg support platforms 58 and 60 are affixed to vertical member 52 such that the reclined user's calves 62 and 64 rest comfortably on them. The means used to affix platforms 60 and 62 to vertical may be a welded joint however its preferred embodiment is comprised of a mechanism 90 allowing both positional and angular adjustments of the platforms as further explained below.

[0077] The length and orientation of support member 54 result in both horizontal and vertical offsets of worktable 56 with respect to vertical member 52. The support member's length and orientation are chosen such that horizontal offset 92 is approximately equal to 94 (the horizontal distance between the user's hands 96, 98 and calves 62, 64 when seat 4 back 12 is reclined). To provide comfortable ergonomics, distances 92, and 94 are also approximately equal to distance 100 (the pullback distance resulting from reclining seatback 12).

[0078] Referring now to FIGS. 1, 2 and 3 there is shown the same embodiment of my invention 6 but in this FIG. 3 the user 2 is sitting in an upright posture with both feet on a floor surface. Distance 94 and 100 are both reduced when the user elects to work in the conventional upright office posture however, since the leg rests 58 and 60 are no longer utilized the approximate equality of distance 92 to distances 94 and 100 is no longer required.

[0079] Referring now to FIG. 4 there is shown the same embodiment of my invention 6 as in FIGS. 1 to 3 however in this FIG. 4 the user 2 is in a fully reclined position and the seat back 12 is almost horizontal, that is, angle 110 approaches 180 degrees. In this configuration, the user is able to adopt a comfortable resting position while at the workstation 6 and rest legs 112 and 114 on leg rests 58 and 60. To provide greater support and stability to the reclined user, at least one 116 of the plurality of radial chair supports is extendable to a length 53 underneath the reclined chair back 12. This prevents tipping of the chair backwards. Alternatively, the fully reclining chair can be stabilized against tipping by integrating it into this embodiment (see FIG. 13).

[0080] Referring now to FIG. 5 there is shown the lower surface 120 of the worktable 56. Also shown is vertical member 52 joining the inclined support member 54 at joint 59. The second end 63 of inclined support member 54 is pivotally attached to the lower surface 120 of the work table 56 by means of an apertured hinge 122 over an aligned aperture (not shown) in the second end 63 of the inclined support member. The hinge is adjustably fixed by way of

locking clamp 124. The hinge 122 is fixed to a plate 126 comprising screw holes 128 at each of its corners 130. The lower surface 120 of the work table has a plurality of holes 134 in linear trains that are adapted to coincide with the screw holes on the plate 126. The work table can be therefore adjusted to suit the user and then fixed into place by screws.

[0081] Referring now to FIG. 6 there is shown one embodiment of my invention in which the left and right leg rest platforms 140 and 142 are adjustably fixed to vertical column 144. To clarify how fore/aft adjustment of the leg rest platforms 140 and 142 can be done using a simple U-bolt clamping mechanism 146 the leg rest platforms are shown in a variety of positions A to E on the vertical column. In positions A and B, between the left and right leg rest platform is a leg rest axle 150. A first 152 and second 154 U-bolts are used to fix the axle 150 against the outside surface 156 of the vertical column 144. The threaded ends 158 of the U-bolts are joined by a pressure plate 160 between them. The pressure plate includes a threaded aperture 162 at its centre which receives a threaded shaft 164 with a knob 166. As the knob is turned, the threaded shaft threads into the aperture and against the inside surface 170 of the vertical column 144 thereby tightening the U-bolts against the axle and the outside surface of the vertical column. By loosening the U-bolts the leg rest platforms can be moved up and down the vertical column and angles to suit the user. In positions C and D the leg rest platforms can be reversed. In position E the leg rest platforms can be lowered to the bottom of the vertical column to act as foot rests.

[0082] As FIG. 6 illustrates, on the top surface 190 and 192 of each of the leg rest supports 140 and 142 there is a cushion 194 and 196 configured to provide a comfortable support for each of the user's calves. To provide optimal comfort, each platform's upper surface may be somewhat concave to roughly conform to the user's calf and may also include a cushioned covering that further relieves pressure points.

[0083] Still referring to FIG. 6 the leg rest platforms may be adjustable in a fore and aft motion by an eccentric fore/aft fixation of axle 150 onto the leg-rest platforms 140 and 142 to effect the desired movement. Note in position A that the distance from axle 150 to the front end of the platform is somewhat greater than the distance from the axle to their back ends. In position B the axle is more centered on the platform and so these distances change. In position C and D the platforms have been mounted so that the axle 150 is against the front surface 170 of column 144 and in the opposite direction, thereby reversing the eccentricity and moving the platforms further back thereby providing two more horizontal adjustment options for the two leg-rest platforms.

[0084] In order to accommodate the most complete range of user physiques and work desirable postures, my invention may be equipped with reversible platforms that can support either the user's calves or the user's feet. In position E the leg rest platforms are installed cushion side down to present a flat durable surface 198 suitable for a footrest when the user desires only a lightly reclined posture.

[0085] Referring now to FIG. 7 there is illustrated another embodiment of my invention 200 being used in conjunction with a full-sized desktop computer comprised of: CRT monitor 202, CPU unit 204 and keyboard 206. The monitor 202 is too heavy and bulky to be supported by worktable 208

and so an existing, standard office desk **210** may be positioned in front of and somewhat above my invention **200** such that the reclined user **212** can achieve a usage configuration similar to that shown in FIG. 1 and FIG. 2. The computer system's keyboard **206** resides on worktable **208** together with a computer mouse (not shown). The system's CPU unit **204** may be placed either on the floor as shown or on table **210**.

[0086] FIG. 8 illustrates an embodiment of my invention **220** that integrates the same functionality as the configuration shown in FIG. 7. Instead of resting adjacent to an existing office desk, a purpose-built desk **220** is dimensioned such that its legs **224** to **230** affix onto base members **232** and **234** using fixation bolts **222**. FIG. 8 also shows the location of knob **166** used to adjust the location and angle of the leg supports.

[0087] Now referring to FIG. 9 there is shown yet another embodiment of my invention **250** which integrates a horizontal, monitor-supporting table **252** with the tilted, keyboard-supporting table **254**. Table **252** and tilted supporting table are joined at a fixed or adjustable hinged joint **256**. The horizontal table and the tilt table are supported by a vertical column **258** fixed to the mid-point of cross-member **260**. If angular adjustment is provided, it may be used either to improve the ergonomic angle of keyboard **262** or to make the horizontal table **252** coplanar with tilt table **254** when the invention is not being used as a work station.

[0088] Referring now to FIG. 10 to facilitate compact retail packaging, the frame members used to form base **60** may be bolted together for assembly by the end-user. FIG. 10 illustrates a bolted embodiment that facilitates such disassembly for compact storage. The embodiment shown in FIG. 1 also lends itself to compact storage: if the upper and lower ends of vertical member **52** have removable fixations to base **50** and table **56** then those upper and lower planar members can be boxed closely together for efficient shipping or compact storage. Even easier collapsibility can be incorporated into this general concept by utilizing lockable hinge joints (not illustrated) at the two ends of vertical member **52** thereby enabling base **50** and table **56** to be quickly folded into a flattened structure suitable for compact storage.

[0089] Still referring to FIG. 10 vertical support member **302** comprises a vertical support column **304** and a flange **306**. Both the vertical support column and flange comprise a plurality of apertures vertically **308** and horizontally **310**. The horizontal cross-member **312** is also comprises a plurality of apertures **314**. In this embodiment, the top end **316** of the vertical support column **304** is pivotally fixed by hinge **340** to the first horizontal component **320** first end **322**. The first horizontal component **320** second end **324** has a telescoping relationship with second horizontal component **326** first end **328** so that the length of the combined horizontal support **330** can be adjusted towards or away from the user **332** so that different user physiques can be accommodated. The first horizontal component **320** is fixed positional with respect to the second horizontal component **326** by way of a locking camp **334**. The second end **336** of second horizontal component **326** is pivotally fixed to the underside **338** of work table **340** so that the tilt angle of the work table can be adjusted to suit the user. The second end of the second horizontal component is fixed to the underside of the table using the same means as illustrated in FIG. 5 and described previously. Cross-member **312** and apertured flange **306** can be moved towards or away from the user thereby adjusting

the distance of the leg supports and table from the user. Similarly, the height of the support **330** can be adjusted by adjusting the aperture point at which the first end **322** of the first horizontal member **320** is fixed to the vertical column **304**. Therefore it is easy for the user **332** to establish ideal ergonomics.

[0090] Referring now to FIG. 11, there is shown yet another embodiment of my invention **350**. The base **352** comprises first and second parallel members **354** and **356** having respective first ends **358** and **360** and second ends **362** and **364**. The first ends **358** and **360** of each of the first and second parallel members are joined by cross-member **366** thereby forming a channel-shaped or "C"-shaped support. The angled support member **368** is a single piece column that has a first end **370** and a second end **372**. The angled support member first end **370** is pivotally fixed to the cross-member **366** at a pivot located at its mid-point so that the entire angled support member is able to pivot from zero degrees to 180 degrees around mid-point of cross-member **366**. The pivot may be fixed at a desired angle using a clamp or cotter pin. In another embodiment a ratchet mechanism would permit the user to raise and lock the table height. Releasing the ratchet might be accomplished using a lever located at the pivot point or by remote cable actuation from the user's seated position.

[0091] This embodiment also incorporates leg supports **380** and **382** adjustably fixed to the angled support member by means previously described in respect of FIG. 6. The second end **372** of the angled support arm is pivotally connected to the underside **382** of the tilt table **384** so that the angle of the tilt table can be adjusted and fixed by a clamp. In this embodiment the base **352** of the invention includes feet **386** at each of the first and second ends of the first and second parallel members **354** and **356**. Casters may also be used.

[0092] Referring to FIG. 11a there is shown a similar embodiment to that shown in FIG. 11 except that the table top has a horizontal surface **371** and an inclined surface **373**. The operator can use a keyboard **375** on the inclined table top while the screen **377** rests on the horizontal portion. The operator retains the same inclined posture as shown in FIG. 11.

[0093] Referring to FIG. 12 there is shown the same embodiment as FIG. 11 of the invention **350**. In FIG. 12 the angled support member is shown at an angle of zero degrees with respect to the horizontal floor the base **352**. The first **354** and second **356** base members are shown parallel to the angled support member. The tilt table **384** is shown at an angle of zero with respect to the angled support member. In these configurations the invention is easily folded and stored under a bed or in a closet.

[0094] Referring now to FIG. 13 there is shown another embodiment of my invention **400** in which the "T"-shaped base **402** of the invention is directly attached to a support leg **404** of the chair **406**. Adjustment of the base with respect to the support leg **404** is accomplished by way of a clamp **410**. In FIG. 13 the leg support platforms **412** and **414** are used as foot platforms.

[0095] Referring to FIG. 14 which is the same embodiment as FIG. 13, the operator is sitting upright with both feet on the floor.

[0096] Referring to FIG. 15, there is shown one embodiment of the invention that is similar to the embodiment shown in FIG. 14, but for the working surface comprises a

tilted portion 23 upon which the keyboard 44 is placed and a horizontal portion 41 upon which the computer flat screen 61 is placed.

[0097] Referring to FIG. 16, there is shown yet another embodiment of the invention 100 wherein the supporting members [102, 104, 106, 108, 110, 112, 114, 116, 118, 120] comprise tubular members or pipes and the pipes are fixed together by pipe connectors [122, 124, 126, 128, 130, 132, 134, 136, 138, 140]. The working surface 142 is similar to that shown in FIG. 15 in that it comprises a horizontal surface 145 and a tilted surface 147 which is adjustable by way of T-connection 148. All of the pipe connectors are held to the pipes by way of setscrews 151 which can be easily loosened and tightened for disassembly and adjustment. Similar pipe connectors that employ threaded fixation or clamping fixation may also be used (not illustrated). For example, the setscrews on T-connection 148 can be loosened for angle adjustment of the tiltable surface 146. Leg rests 158 and 158 are fixed to the ends of pipes 160 and 162 by way of elbow couplings 128 and 132. Collar coupling 130 fixes the leg rest assembly to the vertical member 110. Again setscrews within each of the couplings permit easy adjustment of the height and angle of the leg rest assembly. The base of the unit comprises two parallel members 102 and 104 separated by members 106 and 106. Depending on the location of the workstation, the base members can be adjusted by setscrews 150 in couplings 122 and 124 to form either a "C"-shaped configuration to the base or an "H"-shaped configuration. The working surfaces 144 and 146 and the leg rests 150 and 156 are fixed to their respective pipe members and elbow joints by way of flange members 160. The bottom 162 of each of the working surfaces and leg rests are perforated 164 with lines of holes so that the location of the working surfaces and leg rests can be adjusted with respect to their pipe supporting members. Pads 166 may be located at the end of each supporting base member 102 and 104 for floor contact.

[0098] FIG. 17 is the same workstation of FIG. 16 showing it in a folded configuration. The setscrews in the necessary couplings have been loosened so that the workstation can be easily folded for storage.

[0099] FIG. 18 illustrates an alternate embodiment of the invention that further adapts and exploits typical office structures (other than the typical office chair and table utilized in the embodiments described above). To provide the necessary support structure for the user's calves and their computer equipment, a leg rest 120 and a keyboard rest 122 are provided. The leg rest is adapted to affix to the top of a typical desktop computer tower 124 and is angled at an angle 126 to provide an ergonomic comfort position for the operator 128. Angle 126 is about 20 degrees. The leg rest may also have a cushioned surface for added comfort. The keyboard rest 122 is also included at an angle 130 for maximum comfort and stress free operation of the keyboard. Angle 130 is about 30 degrees. The leg rest and the keyboard rest would be sold as a kit.

[0100] This description contains much specificity that should not be construed as limiting the scope of the invention but merely provides illustrations of some of its embodiments. Thus the scope of the invention should be determined by the appended claims and their legal equivalents rather than by the examples given.

What is claimed is:

1. A workstation module comprising a base portion, a working platform disposed above said base portion, vertical support means disposed between the base portion and said working platform and user leg support means attached to said vertical support means at a fixed second height.

2. The workstation module as claimed in claim 1 wherein said working platform is disposed above the base portion at a predetermined first height ergonomically optimized for comfort of a user.

3. The workstation module as claimed in claim 2 wherein said predetermined first height is fixed.

4. The workstation module as claimed in claim 2 wherein the predetermined height is adjustable by said user by adjustable means.

5. The workstation module as claimed in claim 2 wherein said base portion comprises a first member comprising a cross member having a first end, a second end and a middle, a second member having a first end, a second end and a middle wherein said second member middle is fixed to said cross member first end and a third member having a first end, a second end and a middle wherein said third member middle is fixed to said cross member second end thereby forming an "H"-shaped base portion.

6. The workstation module as claimed in claim 5 wherein the second member and the third member first and second ends include supporting members to raise them off of a supporting surface.

7. The workstation module as claimed in claim 6 wherein said supporting members are lockable castors.

8. The workstation module as claimed in claim 2 wherein said base portion comprises a first member comprising a cross member having a first end, a second end and a middle, a second member having a first end and a second end wherein said second member first end is fixed to said cross member first end and a third member having a first end and a second end wherein said third member first end is fixed to said cross member second end thereby forming square "C"-shaped base portion.

9. The workstation module as claimed in claim 2 wherein said base portion is circular.

10. The workstation module as claimed in claim 9 wherein the base portion is fixed to the floor.

11. The workstation module as claimed in claim 6 wherein said working platform is a rectangular member having a suitable top surface area for a work object and a bottom surface.

12. The workstation module as claimed in claim 11, wherein the working platform bottom surface is removeably attached to said vertical support means by first pivot means.

13. The workstation module as claimed in claim 12 wherein the working platform includes a bottom end having a restraining member fixed thereto to prevent said work object from fall off the bottom end of the working platform.

14. The workstation module as claimed in claim 11 wherein the workstation module is integrated with a four legged table so that additional working space is provided.

15. The workstation as claimed in claim 11 wherein the working platform comprises a horizontal surface pivotably fixed to a tilting surface.

16. The workstation as claimed in claim 11 wherein the working platform comprises a horizontal surface and a tilting surface independent of said horizontal surface.

17. The workstation module as claimed in claim 12 wherein said restraining member has a rounded profile to comfortably support the wrists of the user during keyboarding operations.

18. The workstation module as claimed in claim 17 wherein said vertical support means comprises a vertical member having a first end and a second end, wherein said vertical member first end is fixed to said cross member middle.

19. The workstation module as claimed in claim 18 wherein said vertical support means further comprises an inclined member having an angle of inclination, a first end and a second end, wherein said inclined member first end is fixed to said vertical member second end, and wherein said inclined member second end is fixed to said first pivot means.

20. The workstation module as claimed in claim 19 wherein said angle of inclination is adjustable by second pivot means between the vertical support second end and the inclined member first end.

21. The workstation module as claimed in claim 20 wherein said user leg support means comprise a first leg support fixed at the second height to one side of the vertical member and a second leg support fixed to the opposite side of the vertical member at the second height.

22. The workstation module as claimed in claim 21 wherein said first leg support and said second leg support are tiltable by tilting means to an angle selectable by the user so that the first and second leg supports hold the calves of the user in a comfortable manner and permit the user full leg extension underneath the working surface.

23. The workstation module as claimed in claim 22 wherein the first and second leg supports are cushioned for user comfort.

24. The workstation module as claimed in claim 23 wherein said first pivot means comprises a hinge clamp comprising a connection plate having a top surface and a bottom surface, wherein said connection plate top surface connects by connection means to the working platform bottom surface, and wherein said connection plate bottom surface connects to a lockable pivoting hinge connected to the inclined member second end, so that the working platform can be tilted at any angle desired by the user to maximize comfort, and further so that the working platform may be disconnected from the inclined member second end for storage.

25. The workstation module as claimed in claim 24 wherein said connection means comprises at least two

parallel lines of mounting holes disposed centrally in the working platform bottom surface, said at least two parallel lines of mounting holes adapted to receive fastening screws so that the connection plate can be fastened to working platform bottom surface in a variety of locations.

26. In combination, a workstation module with a reclinable office chair, said chair comprising of a mobile base comprising a central telescoping column having a top end and a bottom end, wherein said top end is fixed to a seat bottom and said bottom end is fixed to a plurality of radially extending supporting members each having an inside end fixed to the bottom of the column and an outside end adapted to carry a swivel castor for mobility, wherein said workstation module comprises a supporting base comprising a first base member having a first end, a second end and a middle and a second base member having a first end and a second end such that said first end of said second base member is fixed to said middle of said first base member thereby forming a "T"-shaped base, a vertical supporting member having a length, a first end fixed to the middle of said first base member and a second end fixed to a working platform wherein said vertical supporting member comprises a plurality of apertures along said length, and leg supporting means adapted for attachment to the vertical member at one of said plurality of apertures.

27. The combination as claimed in claim 26 wherein the first base member first end and second end includes a lockable castor for mobility, and wherein the second base member second end includes clamping means.

28. The combination as claimed in claim 27 wherein the second member is adapted to fit over one of said plurality of radially extending supporting members in a telescoping relationship and clamp to one of the plurality of radially extending supporting members using clamping means thereby joining the workstation module to the chair as a single mobile unit.

29. An office module kit comprising a leg rest and a keyboard rest used in combination with a computer tower, an office chair and horizontal working surface wherein the leg rest is adapted to fit over the top of the computer tower and is angled at a first predetermined angle to provide an ergonomic comfort position for an operator; and wherein, the keyboard rest is included at a second predetermined angle for maximum comfort and stress free operation of the keyboard.

* * * * *