



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 060 690 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
20.12.2000 Bulletin 2000/51

(51) Int Cl.7: **A47B 31/00**

(21) Application number: **00610049.9**

(22) Date of filing: **17.05.2000**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: **Dyhr, Klaus B.**
4330 Hvalsoe (DK)

(74) Representative: **Nielsen, Henrik Sten et al**
Budde, Schou & Ostenfeld A/S
Vester Søgade 10
1601 Copenhagen V (DK)

(30) Priority: **18.05.1999 DK 68899**

(71) Applicant: **Scandinavian Mobility EC-Hoeng A/S**
4270 Hoeng (DK)

(54) **A table system for hospital or nursing purposes**

(57)

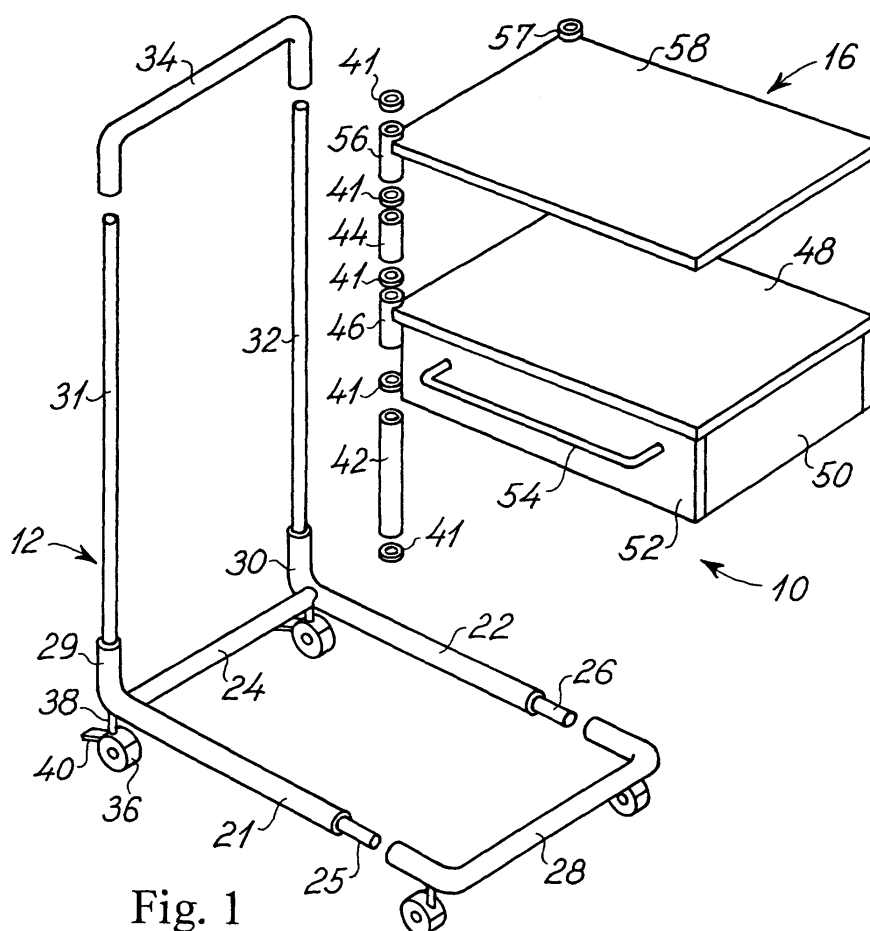


Fig. 1

Description

[0001] The present invention relates to a modular table system for hospital or nursing purposes. The table system comprises a chassis and one or more furniture elements. The chassis is build from modules, and can be used for supporting different furniture elements. The elements can be designed in order to facilitate use from the left as well as the right side. In a preferred embodiment the table system is a bed table, which can be used from the left as well as the right side of a bed.

Prior Art

[0002] Bed table systems are well known in the art. DE 2357738 describes a bed table with tiltable table. DE 1908438 describes a bed table with tiltable table. DE 2750662 describes a height adjustable bed table. GB 1010554 describes a height adjustable bed table.

[0003] EP 0 071 913 describes a modular laboratory furniture system.

US 4 433 884 describes a modular laboratory furniture system.

EP 0 612 222 describes a tiltable table.

US 4 337 988 describes mobile furniture modules.

US 4 927 214 describes modular table units.

[0004] US 3 851 980 describes a tubing connector.

US 4 101 183 describes modular office furniture.

US 4 321 873 describes a modular table unit.

US 4 844 566 describes demountable module assemblies.

WO 98/24346 describes a device comprising a modular cooking surface.

US 5 253 595 describes a modular system for office furniture.

WO 93/15630 describes a modular system of furniture including a table.

[0005] Reference is made to the above patent applications and patents, and the above US patents are hereby incorporated by reference.

Detailed description

[0006] Tables for use in connection with a bed, so-called bed tables, are well known in the art. Bed tables find widespread use in hospitals or nursing homes. Conventional bed tables can be moved around, they may comprise wheels, they may comprise a tiltable table, and they may comprise one or more drawers.

[0007] A bed table designed as a modular system provides the following advantages and features:

i) Facilitated cleaning, as the furniture elements can be separated, thereby allowing the cleaning of a single furniture element of the bed table or some of the furniture elements of the bed table. In particular, the modular system allows easy assembling and separation of the furniture elements from the bed table,

preferably without the use of tools.

ii) Easy cleaning with water, by intelligent choice of materials used for the table system.

iii) Adjusting and changing furniture elements gives a versatile movable table system. Thus, the use is not limited to use as a bed table, but can be used as a general multi-purpose furniture system.

iv) Good accessibility for users of the table as the furniture elements can be chosen and adjusted for the individual user.

v) Fewer tables have to be used because of the versatility of each table, which saves space.

vi) Cost effective, fewer tables have to be bought.

vii) Interchanging defect parts gives easy and cheap repair.

viii) Random orientation of separate furniture elements allowing easy accessibility.

ix) Elements, which can be used from two opposite sides also gives easy accessibility.

[0008] These advantages and features are achieved with the table system according to the present invention.

[0009] The present invention relates to a table system for hospital or nursing purposes comprising a chassis and one or more furniture elements, the chassis having a wheel supporting frame and fixation means for cooperating with corresponding fixation means of the one or more furniture elements, the chassis further comprising wheels supporting the frame, the one or more furniture elements each having a housing defining a top part, a bottom part and side parts, the fixation means of the one or more furniture elements allowing the one or more furniture elements to be arranged in random order in a stack and the one or more furniture elements being maintained in the stack and being fixated in relation to the chassis through the cooperation between the fixation means of the chassis and the fixation means of the one or more furniture elements, the table system further comprising at least one table, the table being the chassis, the one or more furniture elements or a table fixated to the chassis.

[0010] The table system may advantageously comprise a handle, which may be attached to the system, and which may allow movement of the table system.

[0011] The fixation means of the chassis may be constituted by any appropriate elements well known in the art per se such as conventional locking elements e.g. bolt and knot locking elements, bayonet locking elements, ratchet locking elements, doubletail locking elements, or may simply comprise tubular elements. The tubular elements constituting the fixation means preferably have circular or quadratic cross section. The table system, according to the present invention may comprise a table, which is preferably fixatable to the system and which may be tiltable. The table may comprise a ball bearing, which may be tiltable with respect to the chassis.

[0012] The table may be counterweighted in order to facilitate movement of the table. The counterweighting may alternatively be established by the use of actuators such as a gas cylinder, an electro-mechanical actuator or any other mechanical or electrical, pneumatic or hydraulic means allowing the table to be kept in a specific orientation. The table system is in one preferred embodiment a so-called bed table or an overbed table.

[0013] The table system, according to the present invention may comprise a motor, said motor driving at least one wheel.

[0014] The one or more elements, which can be used in the system according to the present invention, may be any element, which can be connected to another element. The one or more element may be designed so as to allow stacking with one or more other elements.

[0015] The one or more elements, which can be used in the system according to the present invention, may be any element, which is a modular element, so as to allow random stacking of the one or more elements.

[0016] The one or more elements, which can be used in the system according to the present invention may comprise locking means for fixing the position of said one or more elements with respect to the system.

[0017] The one or more elements, which can be used in the system according to the present invention, are preferably self-supporting for allowing the elements to provide rigidity to the overall system.

[0018] The one or more elements, which can be used in the system according to the present invention, may comprise a case, a cabinet or a drawer, which may be accessible from both sides of the system, e.g. left and right.

[0019] The one or more elements, which can be used in the system according to the present invention, may comprise electronic equipment, it may comprise an alarm device, and it may comprise medical equipment.

[0020] The materials for manufacture of any of the components according to the present invention is preferably a material, which is not substantially degraded by cleaning with water. The material for manufacture of any of the components according to the present invention preferably comprises plastic, wood, or metal, such as aluminum or any non-corrosive material or metal composition, or combinations thereof. In one embodiment a metal alloy, covered by protective paint is used.

[0021] The furniture elements according to the present invention comprise a housing. The ratios of the outer dimensions of the housing of the furniture elements with respect to the inner dimensions of the chassis and/or the frame of the table system are preferably expressible as rational numbers, so as to constitute a modular system based on housing units. In one embodiment the frame has a height dimension which is 12 times a module unit, and the elements have height dimensions which are muliplum of this module unit, e.g. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 or 12 times a module unit. This dimensioning scheme allows an integral number of

elements to be used to build a stack of elements, said stack having the same height as the frame. In one preferred embodiment the module unit is 60 mm. In one preferred embodiment the elements have height dimensions of 1, 2, 3, 4 or 6 times this module unit.

Definitions

[0022] The table system comprises a wheeled chassis, comprising a supporting frame and fixation means, and of one or more furniture elements, which may comprise parts, and optionally at least one handle, optionally at least one spacer, optionally electronic equipment.

[0023] The term "components" is used for the modular system and for any of the elements of said modular system, furniture elements or tubular elements, the optional handle, the parts of the elements, the wheels and the one or more tables.

[0024] A stack comprises at least one element.

[0025] In the present context horizontal as well as the directions up and down are defined with respect to gravity. The directions left and right, front and back are defined with respect to a person pushing the table system.

Brief description of the drawings

[0026] Preferred embodiments of the present invention will be described with reference to the accompanying drawings, in which:

[0027] Figure 1 is a partly schematic exploded perspective view of a first and preferred embodiment of the table system according to the present invention.

[0028] Figure 1a is a partly schematic perspective view of a preferred embodiment of a part of the table system according to the present invention, comprising hangers.

[0029] Figure 1b is a partly schematic perspective view of a preferred embodiment of a part of the table system according to the present invention, constituting a grate.

[0030] Figure 1c is a partly schematic perspective view of a preferred embodiment of a element according to the present invention, constituting electrical equipment.

[0031] Figure 2 is a partly schematic perspective view of another preferred embodiment of the table system according to the present invention.

[0032] Figure 3 is a partly schematic perspective view of a preferred embodiment of a part of the table system according to the present invention comprising a tiltable table in vertical position, where the tiltable table have been depicted as transparent for clarity.

[0033] Figure 4 is a similar partly schematic perspective view of a preferred embodiment of a part of the table system according to the present invention comprising a tiltable table in horizontal position.

[0034] Figure 5 is a similar partly schematic side view of a preferred embodiment of a part of the table system

according to the present invention comprising a tiltable table depicted in four different positions.

[0035] Figure 6 is a similar partly schematic side view of a preferred embodiment of a part of the table system according to the present invention comprising a tiltable table, outlining details of the locking mechanism for said tiltable table, some parts are depicted as partly transparent for clarity.

[0036] Figure 7 is a partly schematic perspective view of a second embodiment of a part of the table system according to the present invention comprising a two-part tiltable table in vertical folded position.

[0037] Figure 8a is a similar partly schematic side view of a second embodiment of a part of the table system according to the present invention comprising a two-part tiltable table in lower vertical folded position.

[0038] Figure 8b is a similar partly schematic side view of a preferred embodiment of a part of the table system according to the present invention comprising a two-part tiltable table in lower horizontal partly unfolded position.

[0039] Figure 8c is a similar partly schematic side view of a preferred embodiment of a part of the table system according to the present invention comprising a two-part tiltable table in upper horizontal unfolded position.

[0040] Figure 9a is a partly schematic top view of a preferred embodiment of a table system according to the present invention, depicted together with a bed (which does not form part of the present invention). In this embodiment a one-part tiltable table is included, and the table system is placed beside the bed.

[0041] Figure 9b is a similar partly schematic top view of preferred embodiment of a table system according to the present invention, depicted together with a bed (which does not form part of the present invention). In this embodiment a one-part tiltable table is included, and the table system is placed beside the bed, with the tiltable table covering a part of the bed.

[0042] Figure 9c is a partly schematic top view of preferred embodiment of a table system according to the present invention, depicted together with a bed (which does not form part of the present invention). In this embodiment a two-part tiltable table is included, and the table system is placed beside the bed.

[0043] Figure 9d is a similar partly schematic top view of preferred embodiment of a table system according to the present invention, depicted together with a bed (which does not form part of the present invention). In this embodiment a two-part tiltable table is included, and the table system is placed beside the bed, with the tiltable table covering a part of the bed.

[0044] Figure 10 is a partly schematic side view of a preferred embodiment of a part of a table system according to the present invention, depicting a part of a lockable height adjustment part for a table, some parts are depicted as partly transparent for clarity.

[0045] Figure 11 is a similar partly schematic side

view of another embodiment of a part of a table system according to the present invention, depicting a part of a lockable height adjustment part for a table.

[0046] Figure 12 is a partly schematic view of a preferred embodiment of a part of a table system according to the present invention, depicting a part of a tiltable table and a ball bearing. A part of the table has been depicted as transparent for clarity.

[0047] Figure 13 is a partly schematic view of another preferred embodiment of a part of a table system according to the present invention, depicting a part of a tiltable table and a ball bearing.

Detailed description of the drawings

[0048] Figure 1 illustrates a first embodiment of representative components of a table system 10, comprising a chassis 12, a drawer element 14, and a fixed table element 16. The side parts of frame 21 and 22 are held together by a connecting part of frame 24. The side parts of frame comprise bushing 25 and 26 for fitting into end part of frame 28. The brackets 29 and 30 connect the frame with the fixation means of chassis 31 and 32, and handle for movement of chassis 34 can be connected to the fixation parts of chassis 31 and 32. The chassis is supported by at least one wheel 36 with supporter 38 and a brake 40. The fixed table element 16 is constituted by fixation parts of table 56 and 57 and a plate 58. The visible parts of the drawer element 14 are fixation parts 46, a top part 48, side part 50, and front part 52, a drawer handle 54. The fixed table element 16 and the drawer element 14 can be piled up along the fixation parts of chassis 31 and 32 to form a stack of elements, and said elements can be fixated with respect to said fixation parts of chassis 31 and 32 with their fixation parts 56 and 57 for the element 14, and fixation parts 46 of the drawer element 14. Along the fixation parts of chassis 31 and 32, washers 41 separate elements, long spacers 42 or short spacers 44.

[0049] Figure 1a illustrates an embodiment of a hanger part 16", comprising fixation parts 51" and 52", row of hangers 53", support parts for hangers 54", and a towel hanger part 55". The fixation parts 51" and 52" corresponds to fixation parts of chassis (not shown).

[0050] Figure 1b illustrates a grate element 16' comprising side parts 62 and 64, end parts 63 and 65, and grating 66. The grating 66 is held between the side parts 62 and 64, and the end parts 63 and 65. For fixation to the frame are corresponding fixation parts 56' and 57', which are connected to bushing 60 and 61, which fit into corresponding holes of the side parts 62 and 64. The fixation parts 56' and 57' corresponds to fixation parts of chassis (not shown).

[0051] Figure 1c illustrates an electrical equipment element 14' comprising end part 70, side part 72, top part 74 and fixation parts 76 and 77. The electrical equipment can comprise radio equipment, measurement equipment, surveillance equipment, communication

equipment or a television set. In one embodiment the electrical equipment comprises loud speaker 71, communication controls 73, turnable controls 75, radio buttons 77, and a graphic display 79.

[0052] Figure 2 illustrates an embodiment of the present table system, which comprise a tiltable one-part table 18 and a cupboard unit 14" comprising end part 80, cupboard door 82, handle 84 and fixation parts 86.

[0053] Figure 3 illustrates a part of an embodiment according to the present invention as described below in Figure 4. In Figure 3 the tiltable table is shown in non-horizontal position.

[0054] Figure 4 illustrates a part of an embodiment according to the present invention comprising a vertically adjustable tiltable table part 90, comprising a table plate 92, and handles 94 and 95. The table plate 92 is locked in substantially horizontal position in this figure. The tiltable table part 90 further comprises two vertical tubes 100 and 101 which supports a non-horizontal supporting plate 102. The non-horizontal supporting plate 102 is maintained in position relative to the two vertical tubes 100 and 101, by fixation parts 112 and 113, which allow the non-horizontal supporting plate 102 to slide in non-horizontal direction. The vertical height of the non-horizontal supporting plate 102 can be adjusted, by sliding it along the two vertical tubes 100 and 101. The non-horizontal supporting plate 102 is connected to bended handle arms 122. The bended handle arms 122 allow releasing a lock for fixation of the vertical position of the vertically adjustable tiltable table part 90. The upper part of the tiltable table part 90 is a holder 104 which has arms 106 holding a tilt axle 108. The tilt axle 108 runs through the table plate 92. Thus, the tiltable table 92 can be tilted with respect to the holder 104. In the middle of the non-horizontal supporting plate 102 is a slit 110. One end of the tiltable table part 90 is fixed with respect to this slit 110 through a T-shaped piece (not shown), which runs inside the slit 110 when the inclination of the tiltable table part 90 is changed. In this embodiment the vertically adjustable tiltable table part 90 is fixed to the chassis by a chassis supporting part 120, through a fixation plate 124, which provides a stable and sturdy construction.

[0055] Figure 5 illustrates a part of an embodiment according to the present invention as described above in Figure 4. In Figure 5 the tiltable table is schematically shown in four different positions.

[0056] Figure 6 illustrates a preferred embodiment according to the present invention of a mechanism 128 fixing a tiltable table (not shown) in non-horizontal direction. The mechanism 128 comprises a moving base 150 for a movable rack 132, and a common base 151. The moving base 150 is fixed to the movable rack 132 by a connecting part 152. A part of a tiltable table (not shown) is connected to the moving base 150. The locking part of the mechanism comprises a fixation part 124, which is fixated to a fixed rack 130, which interacts with a movable rack 132, to fix the non-horizontal position of a tilt-

able table (not shown). The common base 151 is fixed to fixation parts 113, which can slide in vertical direction with respect to vertical tubes 101. Dowels 134 and 136 presses against a spring 148, locking the fixed rack 130 and the movable rack 132 against each other. With the use of a handle (not shown) the movable rack 132 can be pulled from the fixed rack 130 and unlocked. Then the movable rack can be moved in vertical direction and locked again, fixing the vertical position of the tiltable table (not shown). Dowels 138 and 140 are fixed in the common base 151. The dowels 138 and 140 in fitting slits 144 and 146 in moving base 150 ensures the movable rack can move horizontally with respect to the fixation parts 113 without moving vertically. A dowel 142 is connected to an exterior handle (not shown). The dowel 142 provides a point for release of the spring 148 by the exterior handle (not shown).

[0057] Figure 7 illustrates a preferred embodiment according to the present invention of a two-part tiltable table 158. The two-part tiltable table 158 comprises a first part consisting of a table plate 160, and a second part consisting of a table plate 162, said table plates 160 and 162 being connected by hinges 164. The end part of frame 179 supports a frame side supporting and connecting part 180, which supports supporting parts 181 and 182. A non-horizontal adjustable plate 176 is provided with a handle 178 for vertical movement of the non-horizontal adjustable plate 176 with respect to supporting parts 181 and 182. The handle 178 is provided with a locking release button 179. The non-horizontal adjustable plate 176 is connected to a ball bearing part 174, which allow adjusting the angle of the two-part tiltable table 158. Further degrees of freedom of movement of the two-part tiltable table 158 is provided by ball bearings 166 and 167, connected by a connecting part 168. The arms 170 fix the position of the two-part tiltable table 158 with respect to the ball bearing part 174. Handles 171 and 172 can be pulled to release a spring (not shown) affecting the locking mechanism of ball bearings (not shown) thus allowing adjustment of the angles of the tiltable table.

[0058] Figure 8a through 8c illustrates tilting and vertical movement of a two-part tiltable table.

[0059] Figure 9a through 9d illustrates different embodiment of the present invention when in use.

[0060] Figure 10 illustrates a preferred embodiment of a lockable height adjustment unit 210 for a table according to the present invention. The central part of the lockable height adjustment unit 210 is a lockable height adjustment part 212, which in unlocked condition can slide in between break and side movement restrictions fittings 260 and 261, and which lockable height adjustment part 212 is hold in place by movement restrictions fittings 262 and 263. The lockable height adjustment part 212 is through a hole 256 in the lockable height adjustment part 212 fixed to a spring 258, which is fixed to a hole 254, in a movable wheel stopping part 236. The movable wheel stopping part 236 can stop the move-

ment of the lockable height adjustment part 212 by pressing against wheels 230 and 231 turning around axles 232 and 233. The movable wheel stopping part 236 further comprises a hole 250, which is attached to a string 252. By pulling in the string 252 the movable wheel stopping part 236 is released from its stopping position, facilitating movement of the lockable height adjustment part 212.

[0061] The movable wheel stopping part 236 further comprises slits 238 and 239, said slits movement being steered by splits 240 and 241, which are fixed in the lockable height adjustment part 212. The lockable height adjustment part 211 further comprises gliding parts 214, 215, 216, and 217, supported by springs 218, 219, 220, and 221 which steers the lockable height adjustment part 212, when said part is moved.

[0062] Figure 11 illustrates another embodiment of a lockable height adjustment unit 271 for a table according to the present invention. Central for this embodiment is a movable fixation plate 270, which can move with respect to a fixation plate 272, between vertical tubes 292 and 293 with slits 274 for steering wheels 278, 279, 290 and 291, which are fixed in position on the movable fixation plate 270 by axles 276, 275, 288 and 289. The stopping wheels 280 and 281 which are fixed in position by axles 282 and 283 are connected to arms 284 and 285 which are fixed to dowels 286 and 287, said dowels may stop movement of the movable fixation plate 270, when pressed against the central stopping part 299, which is fixed to the movable fixation plate 270. The vertical tubes 292 and 293 are fixed to fittings 294 and 295, which confines the movement of the movable fixation plate 270 between the vertical tubes 292 and 293. A wheel stopping part 298 is placed in top of the lockable height adjustment unit 271 in order to keep the movable fixation plate 270 between vertical tubes 292 and 293.

[0063] Figure 12 illustrates a two-part tiltable table 310 comprising a first table plate 314 and a second table plate 312 which are connected by hinges 316, which are held in place by screws 317. A first ball bearing 324 is connected through locking parts 326 to a second ball bearing 328 allowing changing the inclination of the two-part tiltable table 310. The handles 320 and 321 can be pulled independently to release a spring 330 affecting the locking mechanism 326 of ball bearings 324 and 328 thus allowing adjustment of the angles of the tiltable table with respect to the chassis (not shown).

[0064] Figure 13 illustrates an embodiment according to the present invention of a part of a tiltable table 410 comprising table plate 414, which can be connected to another part of a two-part table (not shown) at sockets 415. The table plate 414 is held by a first ball bearing 424 connected to a second ball bearing 426, and by parts of a socket part 428 fixed to the receiving part of tiltable table 450. The first ball bearing 424 is held by fixation parts 440 connected to the chassis (not shown) of the table system according to the present invention.

Using two ball bearings for mounting the tiltable table to the chassis provides two degrees of freedom for the adjustment of the angle of the tiltable table.

Claims

1. A table system for hospital or nursing purposes comprising a chassis and one or more furniture elements, said chassis having a wheel supporting frame and fixation means for cooperating with corresponding fixation means of said one or more furniture elements, said chassis further comprising wheels received by said wheels supporting frame, said one or more furniture elements each having a housing defining a top part, a bottom part and side parts, said fixation means of said one or more furniture elements allowing said one or more furniture elements to be arranged in a stack and said one or more furniture elements being maintained in said stack and being fixated in relation to said chassis through the cooperation between said fixation means of said chassis and said fixation means of said one or more furniture elements, said table system further comprising a table.
2. The table system, according to claim 2, comprising a handle, said handle allowing movement of said chassis.
3. The table system, according to any of the preceding claims, wherein said fixation means of said chassis comprise tubular elements, and said fixation means of said one or more furniture elements comprise bushing elements for receiving said tubular elements.
4. The table system, according to claim 2 and 3, said handle being constituted by a part of one of said tubular elements.
5. The table system, according to any of the preceding claims, said table being tiltable.
6. The table system, according to any of the preceding claims, said table comprising a ball bearing connected to said stack or said chassis, said table being tiltable with respect to the ball bearing.
7. The table system, according to any of the preceding claims, said table being counterweighted in order to facilitate movement in particular raising of the table.
8. The table system, according to any of the preceding claims, said one or more furniture elements consisting of a drawer element, said drawer element comprising a drawer, and said drawer being received within said housing in a hidden position, said drawer

being shiftable sideways, so as to allow said drawer to be accessible from both sides of the system.

9. The table system, according to any of the preceding claims, said one or more furniture elements comprising a clinical surveillance apparatus, such as an EEG, ECG, HB (Heart Beat) monitoring apparatus or an AIV apparatus. 5
10. A furniture element for use in the table system according to any of the preceding claims. 10

15

20

25

30

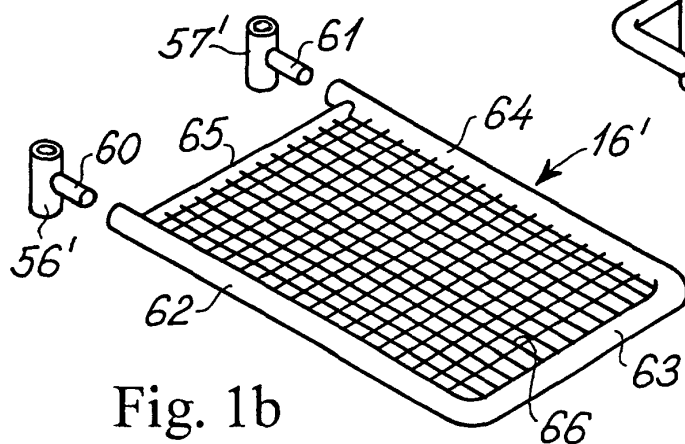
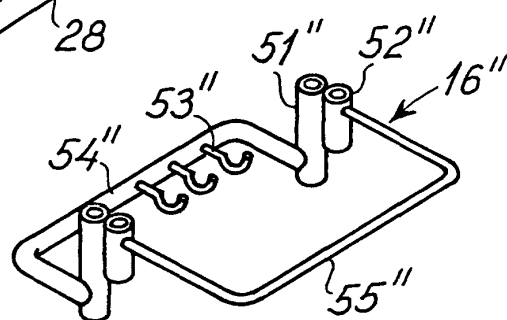
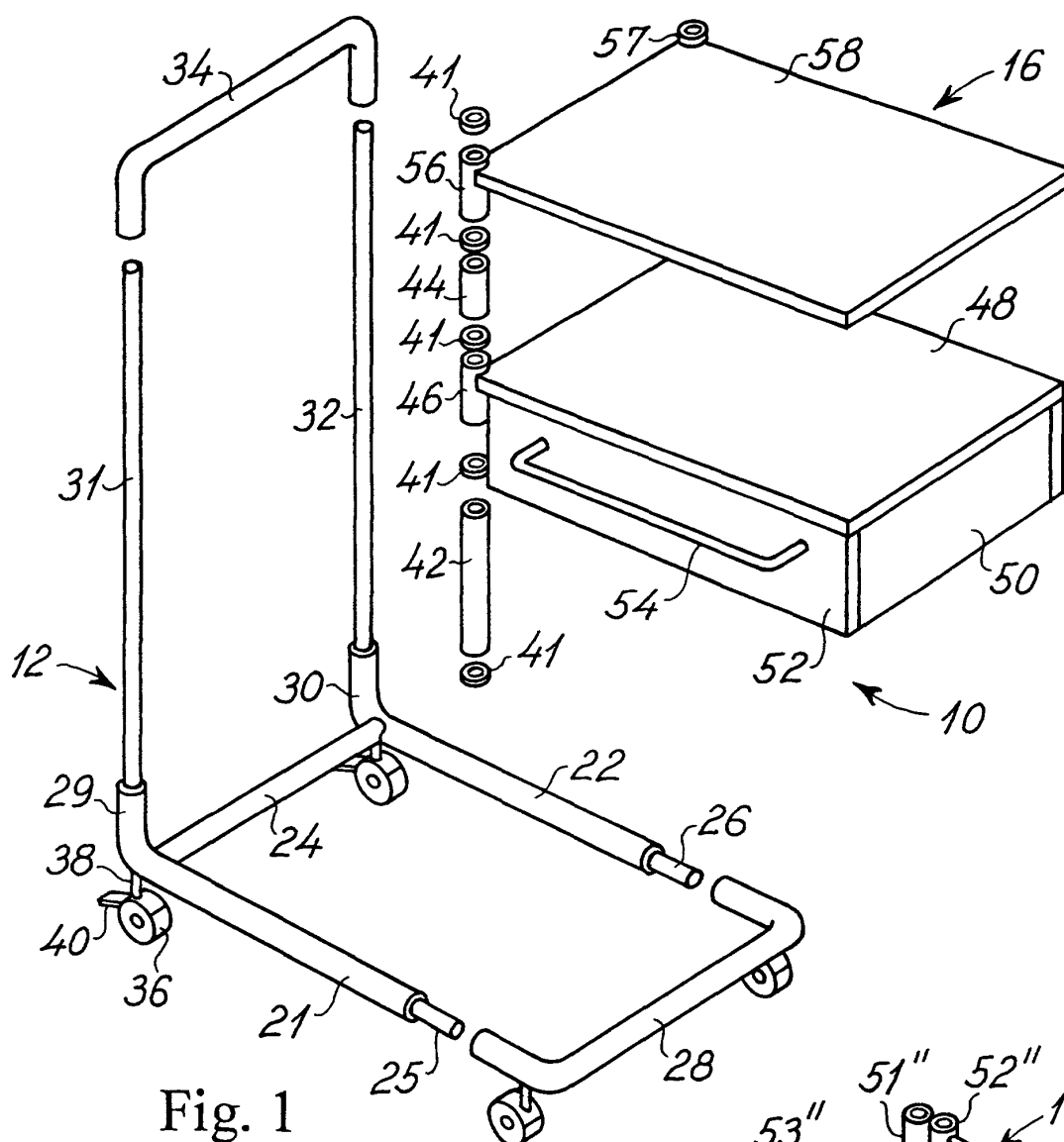
35

40

45

50

55



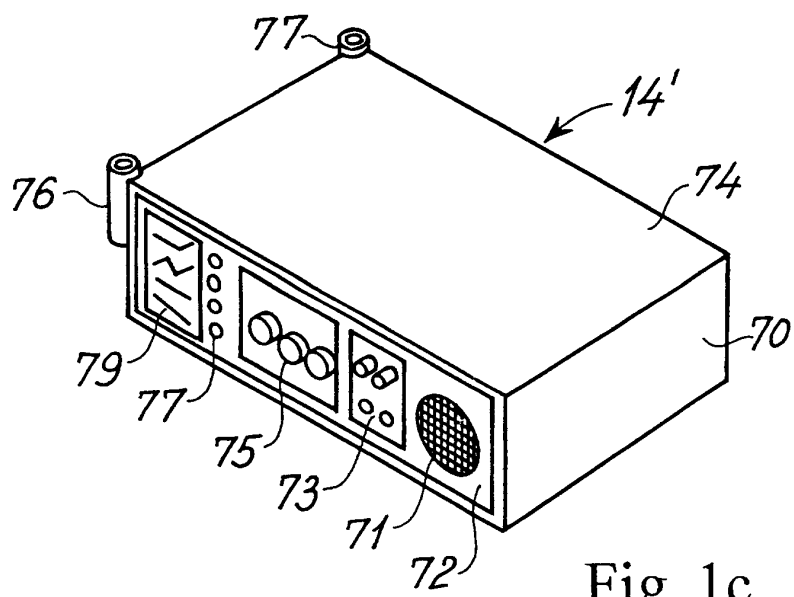


Fig. 1c

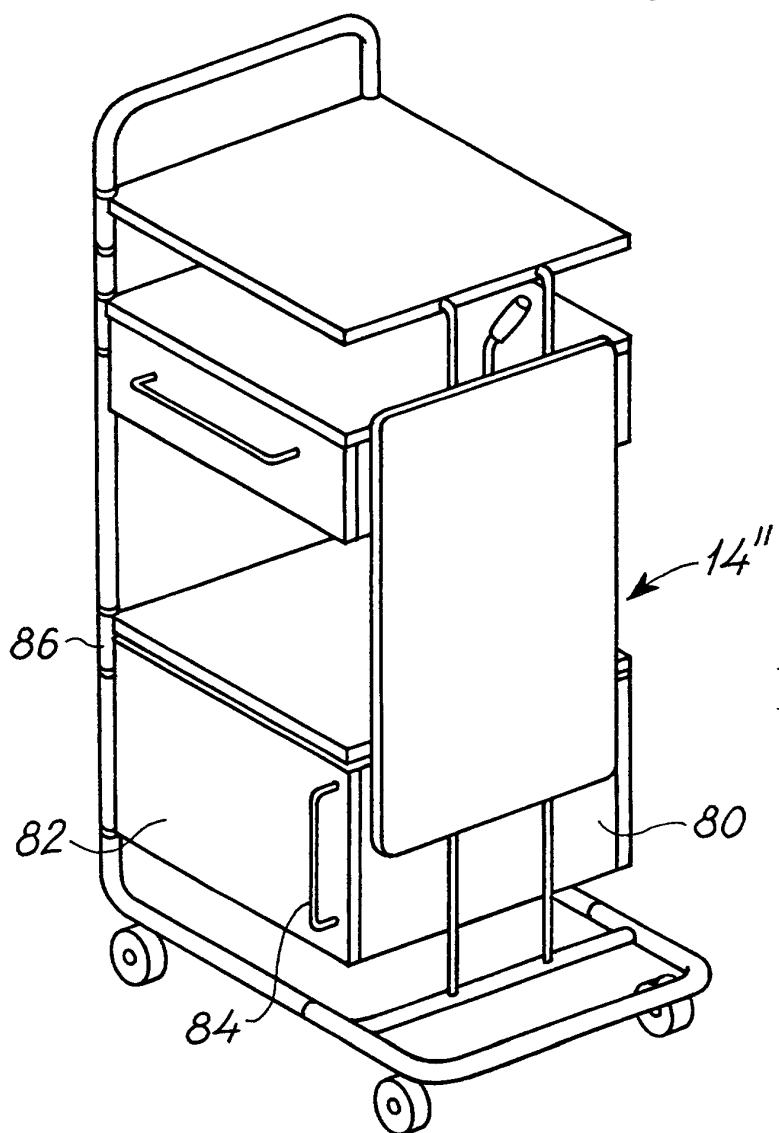


Fig. 2

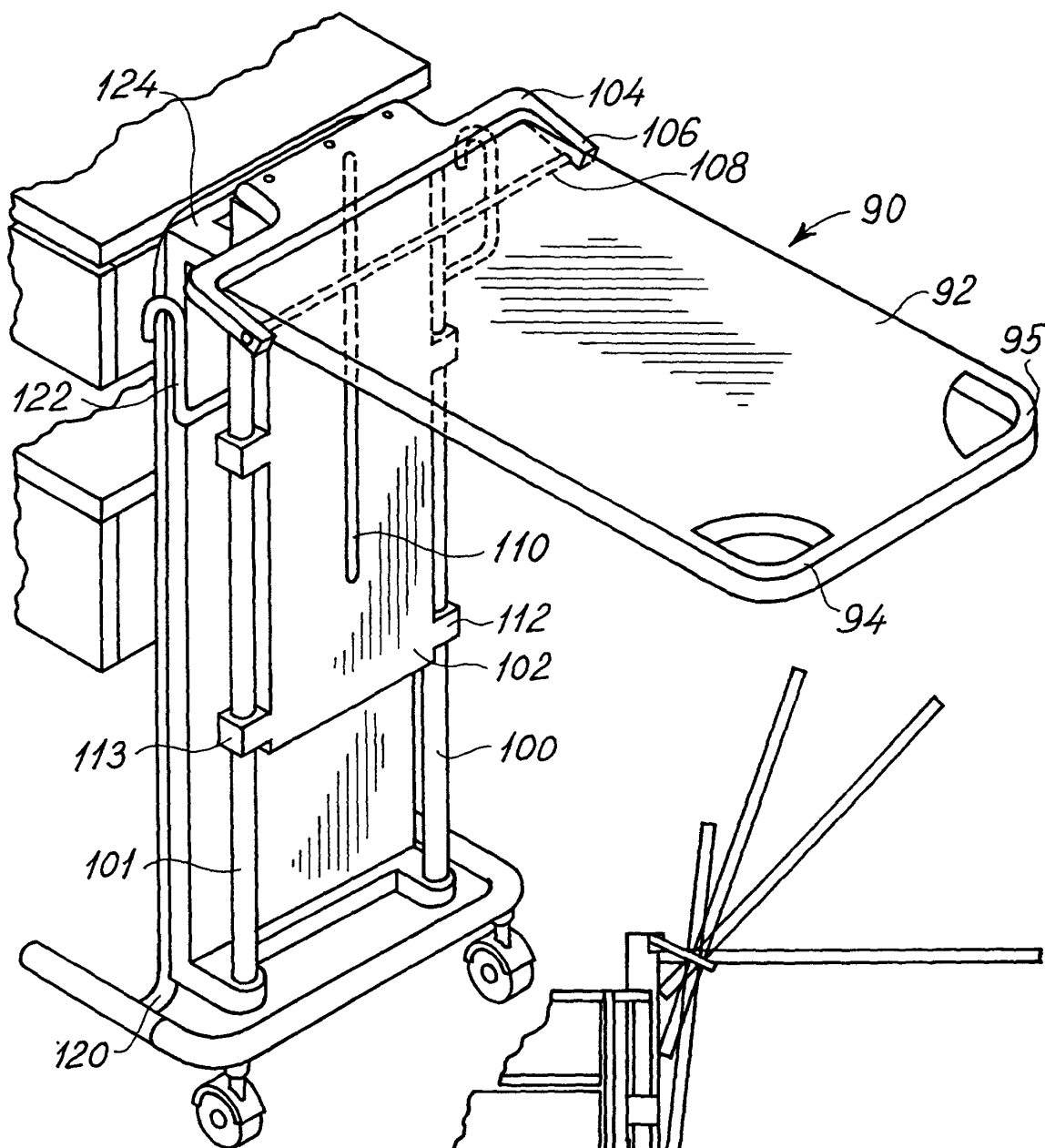


Fig. 4

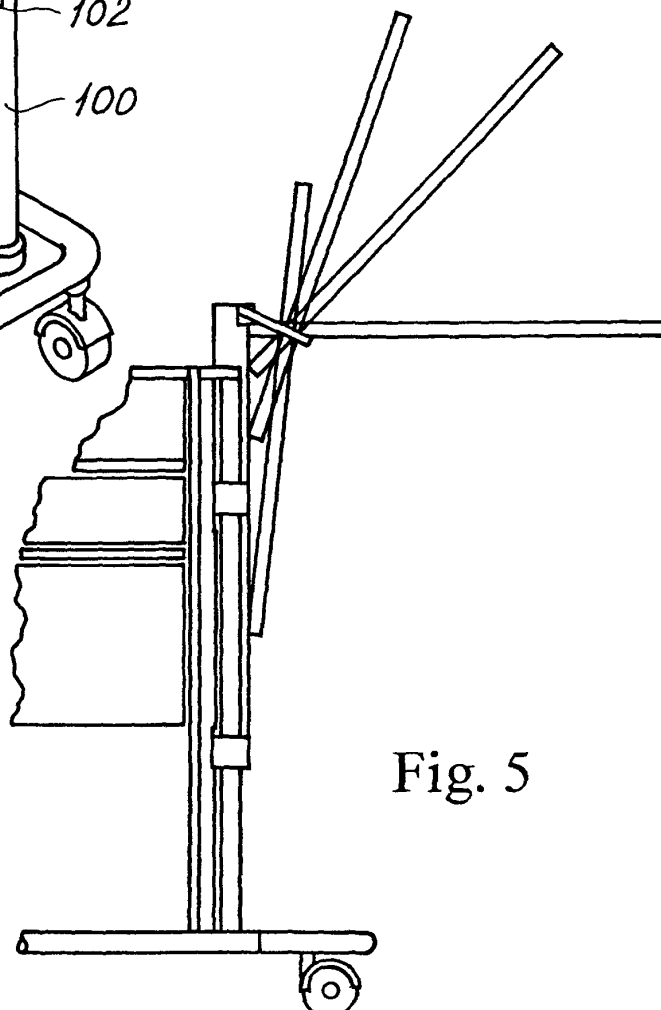


Fig. 5

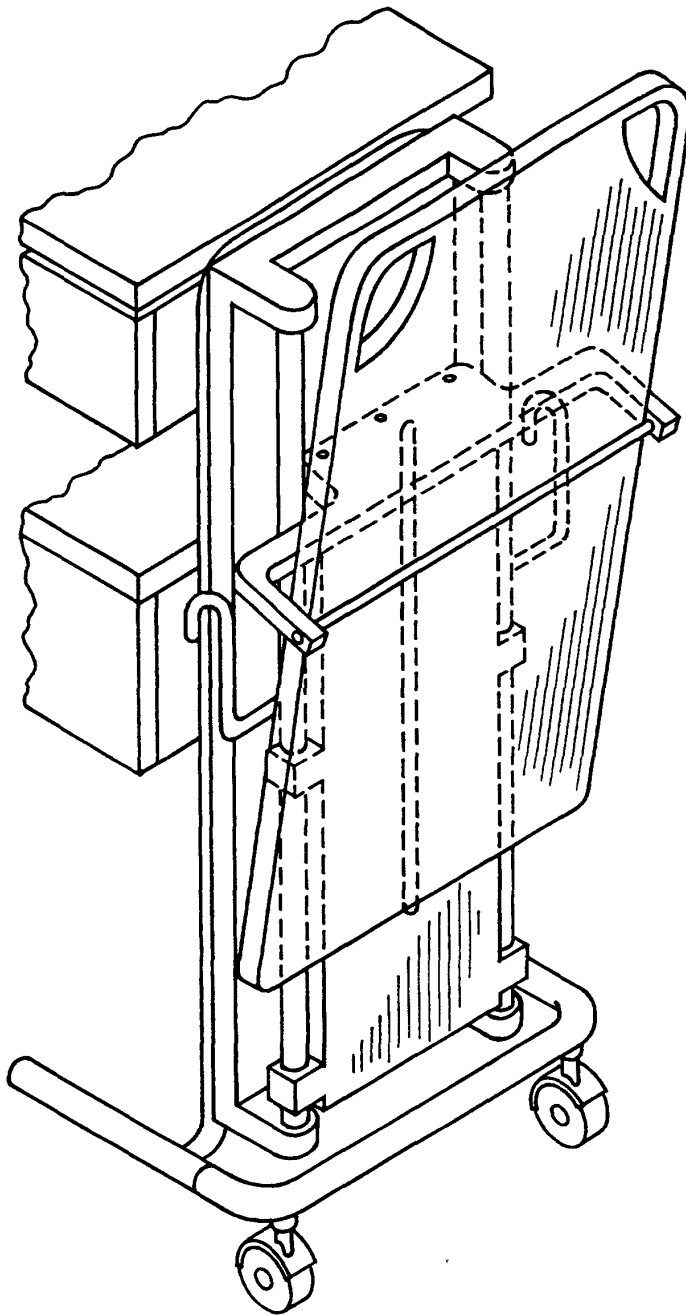


Fig. 3

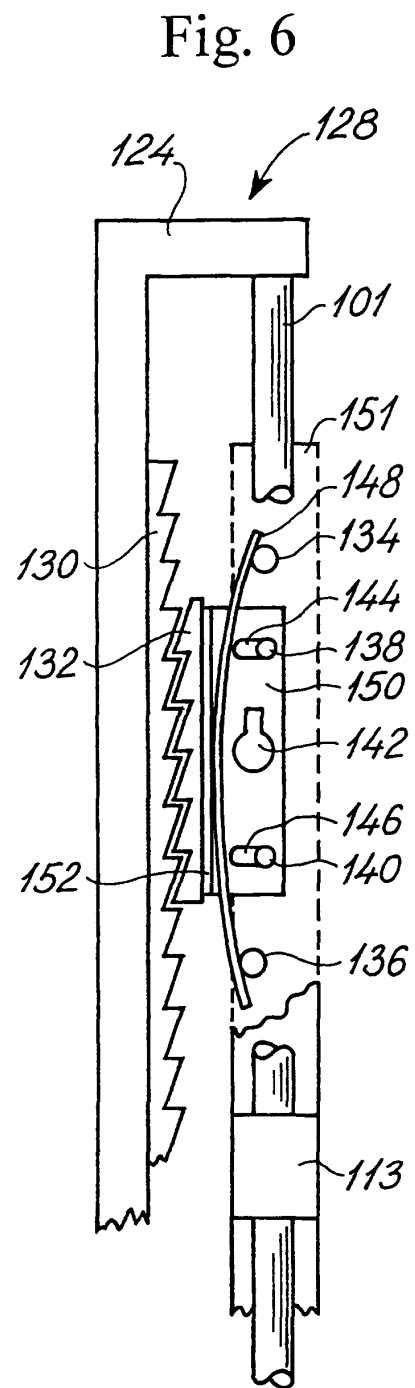


Fig. 6

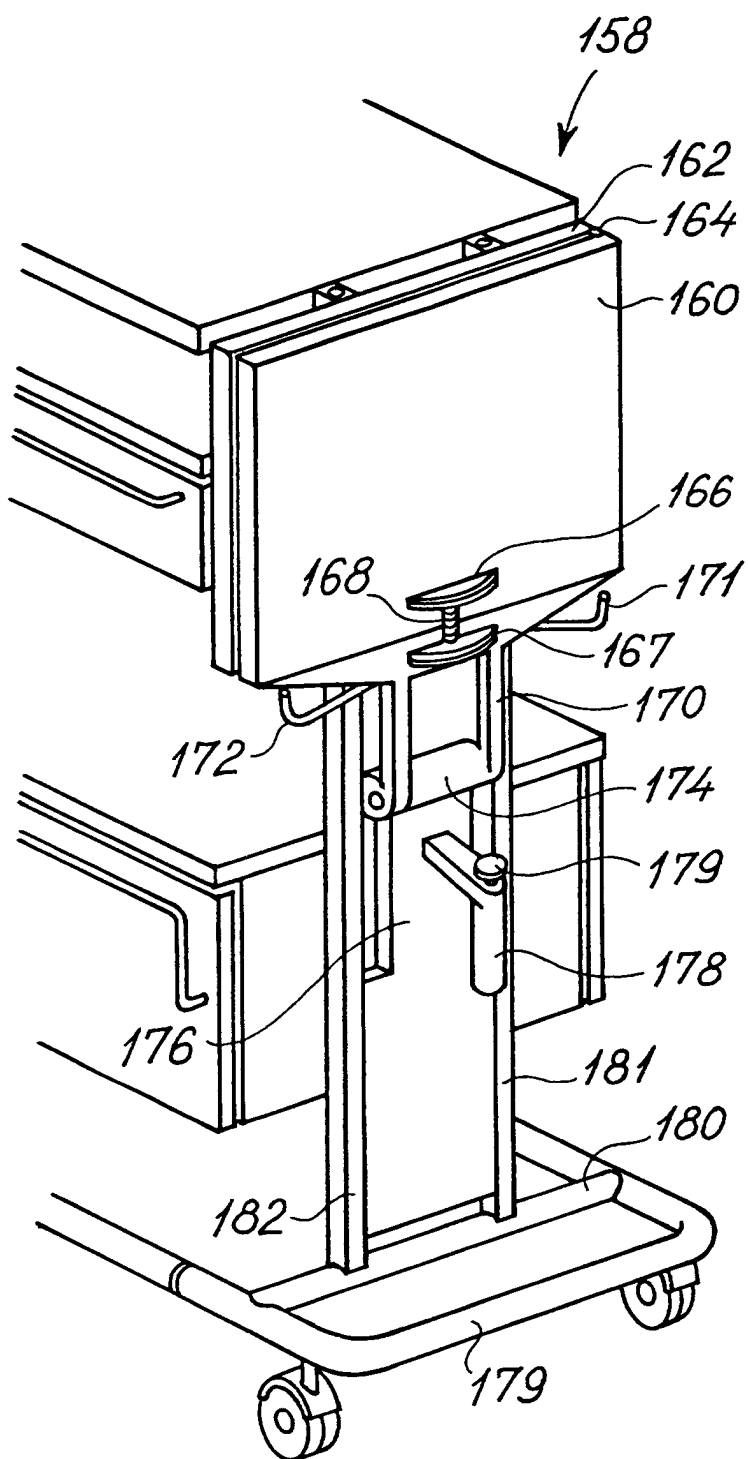


Fig. 7

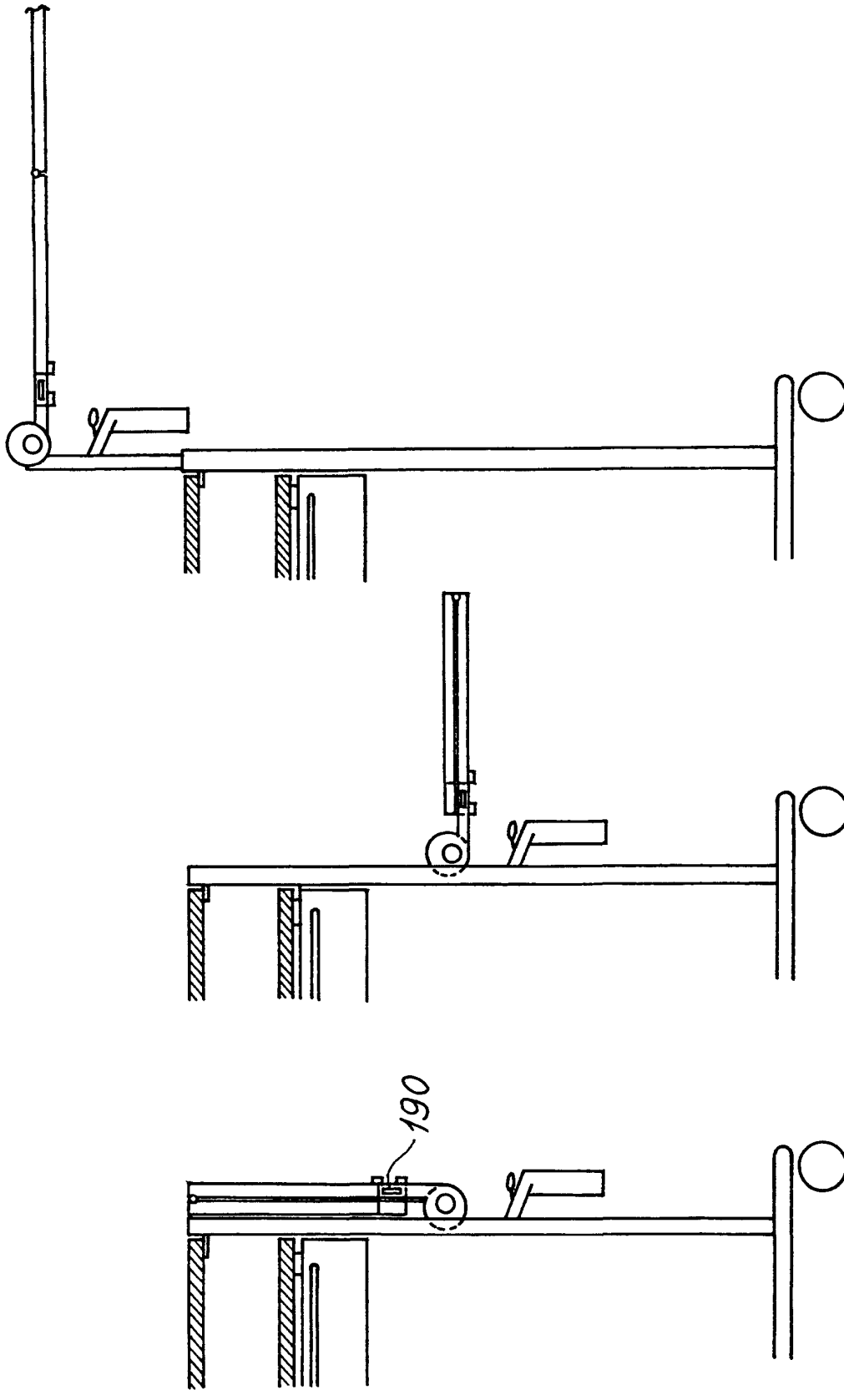


Fig. 8a

Fig. 8b

Fig. 8c

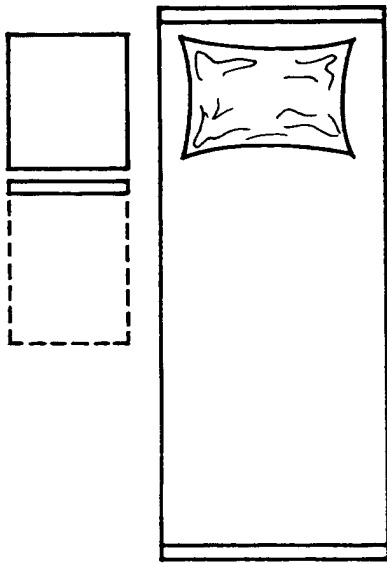


Fig. 9a

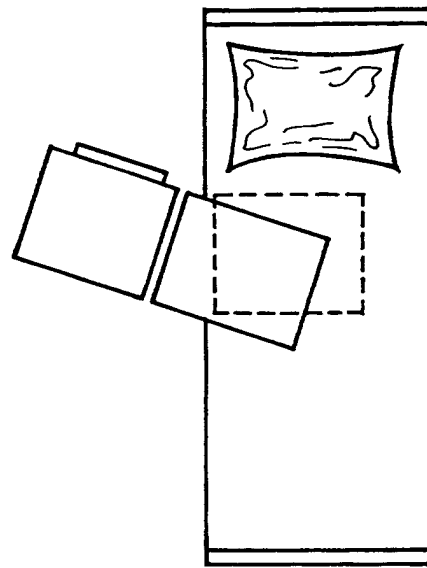


Fig. 9b

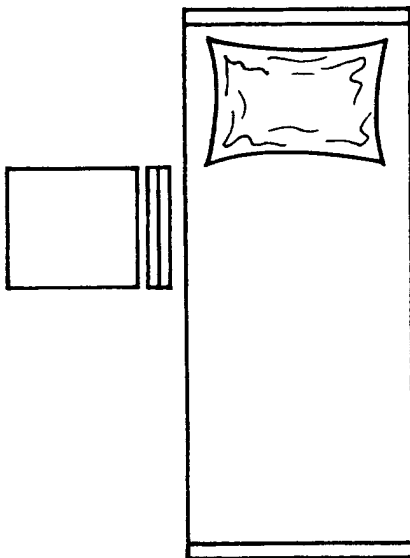


Fig. 9c

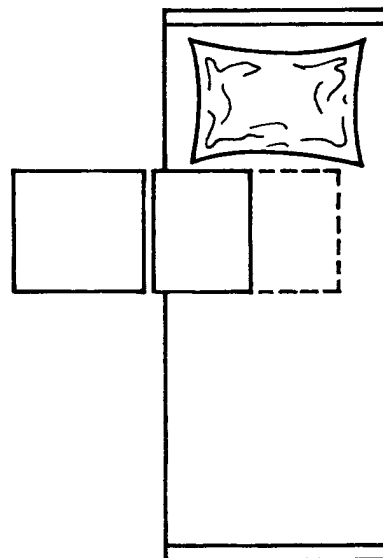


Fig. 9d

Fig. 11

Fig. 10

