United States Patent

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[54] **INVALID CHAIR**
16 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **297/155,** 297/153
[51] **Int. Cl.** **A47c 39/00**
[50] **Field of Search** 297/438, 428, 429, 433, 153, 149, 155

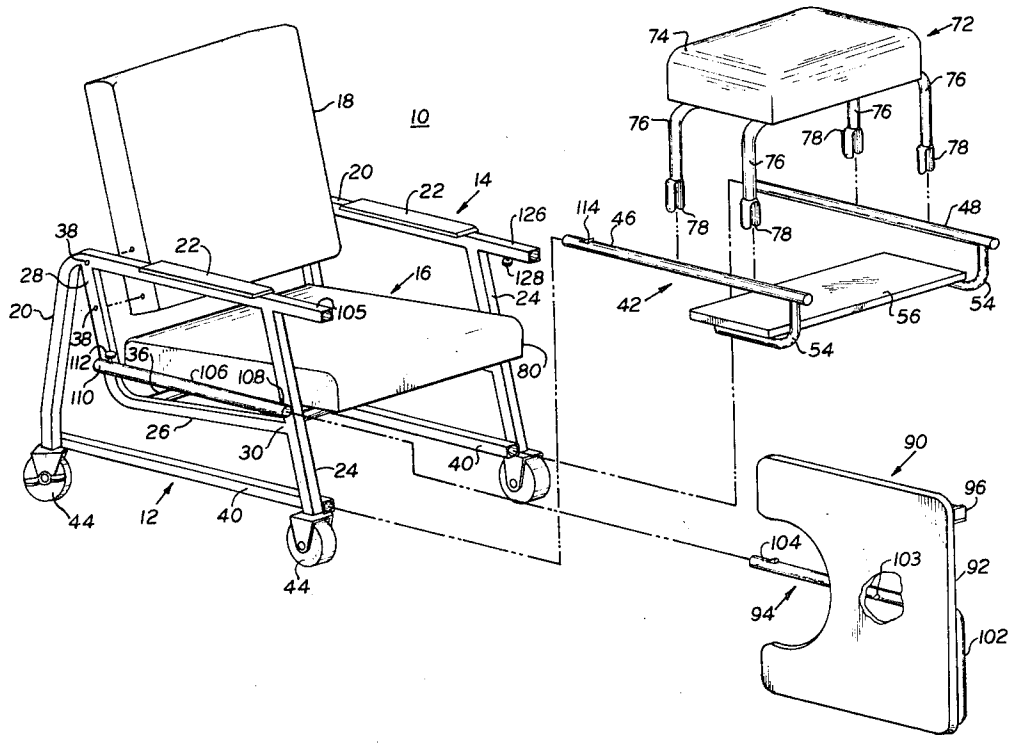
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ABSTRACT: An invalid chair is disclosed which includes first and second frames between which is removably supported a seat assembly which is longitudinally slidable with respect to the side frames. The chair further includes a table tray which can be moved between a noninterfering or storage position with respect to bodily access to the seat, and a tablelike position by merely aligning a single arm fixed to the table with a a passageway within one of the chair arm rests. Additionally, a foot rest is slidably disposed beneath the seat assembly and movable between a storage position and a forward foot rest, where it is adapted to support an ottoman having bifurcated legs.



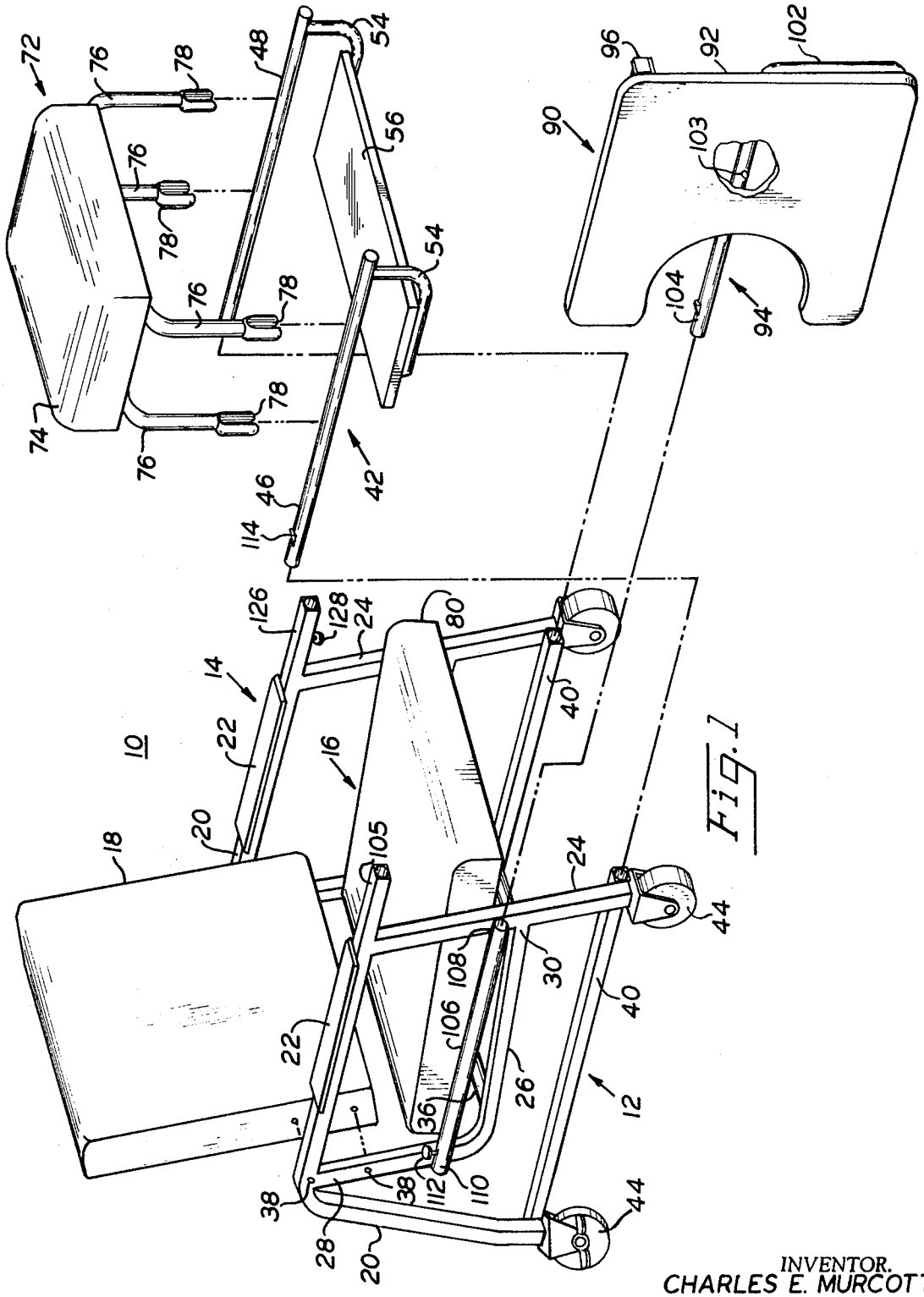


Fig. 1

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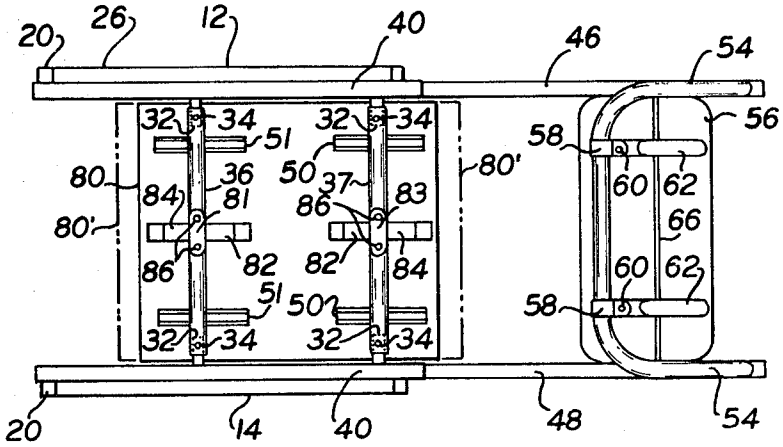


Fig. 2

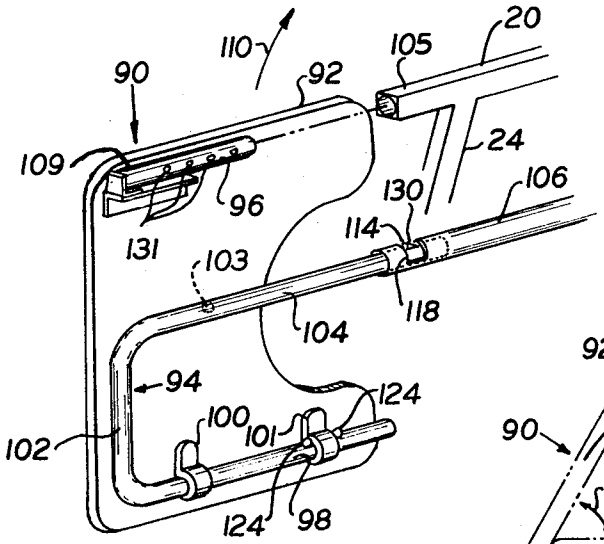


Fig. 3

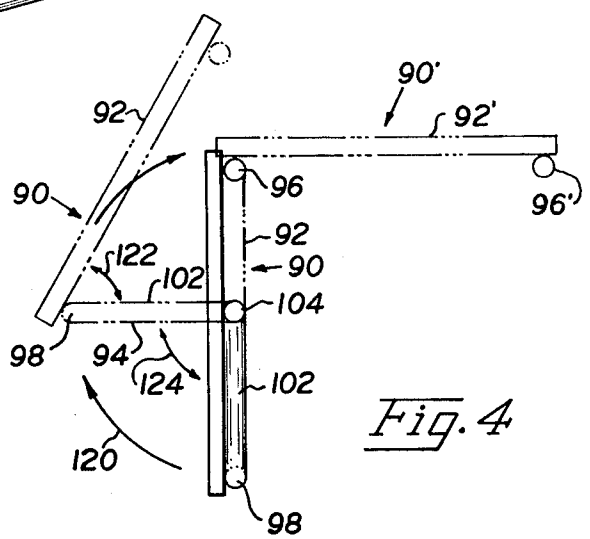


Fig. 4

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INVALID CHAIR

This invention relates to chairs and more particularly to an invalid chair of the type which combines a table tray and footrest elements.

In U.S. Pat. No. 3,123,397, issued Mar. 3, 1964, in the name of the instant inventor, there is described a combined chair, table, and footrest structure suitable for convalescing patients or the like. As set forth in this patent, the chair includes a pair of swingable U-shaped table supporting members, one arm of each member being adapted to be inserted into separate supporting tubes when the table is placed before the occupant seated in the chair. However, the simultaneous alignment of two moveable arms with their respective supporting tubes has proved at times to be somewhat difficult. Moreover, chairs of the type described in the aforementioned patent have no provisions for adjusting the position of the seat in accordance with the desires of the user thereof.

Accordingly, prior to the instant invention, manufacturers have not been able to economically produce an invalid chair of simple knockdown construction, which eliminates the problems inherent in the above mentioned table tray construction, and also incorporates an adjustable seat.

In accordance with a preferred embodiment of the invention, there is provided an invalid chair having a table tray stored on one side of the chair when not in use and adapted to be easily positioned before an occupant in the chair by the occupant or by one not occupying the chair by merely aligning a single tube rigidly fastened to the table tray with a passageway within one armrest of the chair. The chair further includes a seat assembly which is longitudinally slideable relative to the side frames of the chair to permit an occupant thereof to change his position with respect to the back of the chair. As another feature, the chair hereof is supplemented by the addition of an ottoman which is removably connected to a chair footrest assembly by means of bifurcated legs which depend from the ottoman cushion.

Finally, and as pointed out above, the chair hereof, including its various features, is economically constructed in a knock-down manner which also facilitates manufacturing and shipping.

Accordingly, it is an object of the instant invention to provide a chair, preferably an invalid chair, which is mechanically simple, of knock-down construction, and which includes a plurality of features desirable and indeed necessary for the comfort of a patient confined to such a chair.

Another object of the instant invention is to provide a chair of the type described above which includes a table tray movable between a first noninterfering position with respect to bodily access to the seat of such chair, and a second tablelike functional position which can be utilized for eating, writing, etc.

Another object of the instant invention is to provide such a chair with a footrest assembly which further includes an ottoman removably connected to the aforementioned footrest assembly.

These and other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes butter understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein

FIG. 1 is an exploded perspective view of a chair constructed in accordance with the principles of the instant invention;

FIG. 2 is a bottom view of the chair of FIG. 1 in its assembled condition;

FIG. 3 is an enlarged perspective view illustrating the manner in which the table tray of the instant invention cooperates with a side frame member thereof; and

FIG. 4 is a partially schematic Figure illustrating the manner in which the table tray of the instant invention may be rotated between its first, noninterfering position, and its second functional position.

Referring now to the drawings, wherein like reference numerals designate like parts throughout the figures thereof,

there is shown in FIG. 1 an invalid chair **10** which broadly speaking includes a first side frame assembly **12** and a second side frame assembly **14** between which is removably secured a seat assembly **16** and a back portion **18**. The assemblies **12** and **14** are similar, and each include a generally L-shaped rectangular, tubular member **20** on the upper legs of which are secured armrests **22**; a front upright rectangular, tubular member **24**; and a second generally L-shaped member **26** secured at one end **28** to the member **20** and at the opposite end **30** thereof to the front upright member **24**. Each of the members **26** includes a pair of protruding stub tubes **32** adapted to slide within a respective pair of bars **36, 37** attached to the seat assembly **16** to thereby join the seat assembly to side frames **12** and **14**. The stub tube **32** may be secured to bars **36** and **37** by fasteners **34**. The members **26** further include a pair of apertures **38** by which fastening means such as bolts (not shown) may be passed to join the back **18** to the side frames **12** and **14**.

Additionally, each of the side frames **12** and **14** include a lower rectangular hollow tube **40** which by virtue of being secured at opposite ends respectively to the members **20** and **24** add rigidity to the side frames **12** and **14**. Additionally, each tube **40** receives one of a pair of rigid bars **46** and **48** of a footrest assembly generally designated as reference numeral **42** in FIG. **1**. Finally, the side frames **12** and **14** include wheels or casters **44** disposed at the lower end of the members **20** and **24** by which the entire chair **10** is easily movable.

The footrest assembly **42**, as fully described in my patent 3,325,215 issued June 14, 1967, is comprised of the pair of tubular rigid bars **46** and **48** which has secured thereto and depending therefrom a U-shaped frame member **54** as illustrated in FIG. **2**. A footrest platform **56** is pivotally rotatable about frame member **54** by a pair of brackets **58** secured to the undersurface of the platform **56** and secured thereto by means of suitable fastening means **60**. The undersurface of the foot platform **56** is additionally provided with a pair of depending brackets **62** which sandwich a generally U-shaped rod member **66** pivotally mounted on frame member **54** as clearly described in my above-mentioned patent.

As illustrated in FIG. **2** and suggested in FIG. **1**, the rigid bars **46** and **48** of the footrest assembly **42** are telescopically received in the hollow tubes **40** provided on the side frames **12** and **14** whereby the footrest assembly may be conveniently moved between a nonuse storage position (relatively under the seat assembly **16**) to a functional footrest position of FIG. **2**.

The instant invention also provides an ottoman assembly generally designated as reference numeral **72** which may be used in conjunction with the footrest assembly **42**. Such ottoman assembly **72** includes a cushion portion **74** from which depends a plurality of legs **76** each of which terminates in a bifurcated securing member **78** which has an internal open dimension slightly less than the distance between the rigid bars **46** and **48** whereby the entire ottoman assembly **72** may be removably secured to the footrest assembly **42** by means of the frictional force developed between the bifurcated members **78** and the rigid bars **46, 48**.

As suggested previously, the instant invention provides that the seat assembly **16** shall be longitudinally slidable relative to the side frames **12** and **14** to provide a variety of sitting positions for the patient. To that end, and as best seen in FIG. **2**, the seat assembly **16** includes a seat portion **80** (preferably cushioned as illustrated in FIG. **1**) on the undersurface of which is secured a forward pair of channels **50** and a rearward pair of channels **51** which are adapted to slide on the bars **36, 37** whenever the occupant of the seat **80** desires to shift the position of the seat with respect to the back. The forward and rearward movement of the seat is limited by a pair of depending generally U-shaped channel brackets **82** having between their opposite ends a portion **84** which sandwiches the bars **36, 37** with such portion. Thus, although the bars **36, 37** of the frame of the seat assembly **16** are (removably) secured to the side frames **12** and **14**, the seat portion **80** of the seat assembly

16 is longitudinally slidable relative to such bars 36, 37 as illustrated by the phantom showing 80'. If desired, the bars 36, 37 may be coated with a material having a low coefficient of friction, i.e. nylon, silicone, etc.

To prevent lateral movement of the seat portion 80 with respect to the bars 36, 37 additional restraining members such as fasteners 86 are secured to the bars 36, 37 at each side of the brackets 82 via respective plate members 81, 83 which are respectively sandwiched between the fastener and bracket 82. In the preferred embodiment the protruding ends of the fasteners 86 used on the front bar 37 may be wing-shaped for easy adjustment, such that when tightened, they will prevent motion of the seat assembly by clamping bracket 82 via plate member 83 against the bar 37.

Returning to FIG. 1 and with reference also to FIGS. 3 and 4, it has been noted previously that the instant invention provides a table tray which is easily moveable between a storage position and a functional table tray position for providing a supported surface, which table tray remains connected to the chair assembly 10 even during the movement of the tray between its two extreme positions. Such table tray is generally designated as reference numeral 90 in the Figures and is seen to include a table platform member 92 on the undersurface of which is provided first and second bars 94 and 96 respectively. As best seen in FIG. 3, the first bar 94 is generally U-shaped and includes: a first leg 98 which is pivotally secured to the undersurface of the table platform 92 by means of brackets 100 and 101; a central portion 102; and a somewhat longer leg 104 which is adapted to be telescopically received by a tubular receiving member 106 (FIG. 1) which is secured at opposite ends 108 and 110 to the upright 24 and L-shaped member 26 respectively of the side frame 12.

The second bar 96 is rigidly spaced away from the undersurface of platform 92 (as illustrated at 109) and is substantially shorter than the leg 104 of the bar 94. The bar 96 is telescopically received by the upper portion 105 of the generally L-shaped member 20 of the side frame 12 when the table tray assembly 90 is in its stored position.

Thus, and assuming that table tray assembly 90 occupies the position shown in FIG. 4, it may be easily moved to its storage position by simply sliding it in the direction of arrow 110 until the leg portion 104 and the shorter bar 96 are both completely housed in their respective receiving tubes 106 and 105 respectively. To retain the table tray assembly 90 in its first, storage position, there is provided a spring biased plunger 112 on the tubular member 106 (see FIG. 1) which is adapted to pass a spring biased catch device 114 provided at the rear of the leg portion 104 when the table tray assembly reaches its rearmost extent of travel to thereby lock the tray assembly to this rearmost position. The catch device 114 may be of the type described in my patent 3,239,255 issued Mar. 8, 1966.

To convert the table tray assembly 90 from the storage or nonused position, to its function position, the following steps are taken. First, the plunger 112 of FIG. 1 is lifted such that the catch device may pass thereunder when the table tray is withdrawn to the position illustrated in FIG. 3. It should be noted that the catch device 114 on the leg portion 104 is biasingly urged into an aperture 118 in the tube member 106 to provide the outermost limiting position for the table tray assembly 90 as it is pulled out of the tubes 105 and 106 of the side frame. It should also be noted that when the table tray assembly 90 reaches the position of FIG. 3, the shorter rigid bar 96 secured to the undersurface of the table platform member 92 is free of its receiving housing 105 while the longer leg portion 104 of the first bar 94 is still retained in its respective tubular housing 106 by the catch device 114. Also, it should be noted that the aperture 118 which receives the spring biased catch device 114 is actually an arcuate notch which circumvents a substantial arc of the tubular member 106 whereby although the leg portion 104 is constrained from further linear movement, it is still relatively free to rotate about its own axis.

Once the table tray 90 has reached a position where the rigid bar 96 is free of its housing 105, the tray platform member 92 is grasped and rotated in a direction of arrow 12 in FIG. 4 until it reaches the table tray functional position illustrated in phantom at 90' in FIG. 4. As will be appreciated, such movement of the tray assembly 90 is actually affectuated through 2° of rotational movement. Specifically, the shorter leg 98 of the first bar 94 pivotally rotates with respect to the table platform member 92 (by way of the brackets 100 and 101) and simultaneously the longer leg 104 of the bar 94 rotates about its own axis within its tubular housing 106. These two points of rotation are identified by the arrows 122 and 124 in FIG. 4.

When the table tray assembly 90 reaches the position illustrated in phantom FIG. 4, the shorter rigid bar 96 can be easily aligned with the hollow upper receiving portion 126 of the member 20 of the second side frame 14 (see FIG. 1). At this point, the entire table tray 90 is then slid rearwardly as viewed in FIG. 1 such that the shorter rigid bar 96 is telescopically received within the hollow receiving portion 126 while the longer leg 104 of the first rigid bar 94 slides back into its receiving tube 106. It may be pointed out that the catch device 114 which defines the outer limit of travel for the longer leg 104 (FIG. 3) is provided with a cammed back surface 130 such that rearward movement of the table tray assembly 90 does not have to be proceeded by a manual defeat of the catch device 114 as described in my aforementioned patent 3,239,255.

Preferably, the undersurface of the receiving tube 126 of the second side frame 14 is provided with a spring biased plunger 128 which will biasingly enter any one of a plurality of apertures 131 provided on the undersurface of the shorter rigid bar 96 (FIG. 3). In this manner, the final resting position of the table tray, when it is in its functional position, can be adjusted in accordance with the size of the patient utilizing the chair.

It is important to appreciate and indeed it is an important aspect of the instant invention that even during the movement of the table tray assembly 90 between its storage or nonused position to its functional table top position, the table tray assembly 90 remains in a connecting relationship with respect to the remainder of the chair. In this manner and in contradistinction to the prior art, such table trays will not become misplaced and separated from the chair for which it is designed.

It should be noted that bracket 101 is so positioned longitudinally on tray platform member 92 that when the table tray assembly 90 is in the fully extended position, i.e., the catch device 114 is protruding from aperture 118, bracket 101 is rearward of front tubular member 24, and thus when the table tray assembly is moved rearwardly to the storage position bracket 101 will not scrape against front tubular member 24. Moreover, as clearly illustrated in FIG. 3, a stop member 124 is positioned on leg 98 on each side of bracket 101 to prevent longitudinal motion of the table platform 92 with respect to bar 94. Also illustrated in FIG. 3 (in phantom) and in FIG. 1, is a protruding stop 103 located on the leg 104 which is similar to stop 124 and which permits easy insertion of the bar 96 into the receiving tube 105. That is to say, that the stop 103, which (as shown in FIG. 1) is located on the underside of the table platform 92 when it is in the fully extended position, limits rotation of the table tray around arm 104 so that when the tray assembly 90 is against stop 103 and simultaneously moved rearwardly, the bar 96 is aligned with the tube 105 and thereby easily inserted therein.

From the above description, it will be further understood that the entire chair 10 is of knock-down construction. For example, as pointed out previously, the back 18 is removable from the side frame 12 and 14. The footrest assembly 42 can be detached from the chair by removing the rigid bars 46 and 48 thereof from the housing tubes 40; and the ottoman 72 is removable from the rigid bars 46, 48. Also the table tray assembly 90 can be detached by defeating the catch device 114 (FIG. 3) and withdrawing the leg portion 104 of the U-shaped bar 94 from its housing tube 106. Finally, the seat assembly 16

may be removed from the side frames **12** and **14** by removing the fasteners **34**.

It should be understood that the foregoing disclosure relates to only a preferred embodiment of the invention and that it is intended to cover all changes and modifications of the example of the invention herein chosen for the purposes of the disclosure which do not constitute departures from the spirit and scope of the invention.

I claim:

1. In a chair of the type wherein a seat means and a back means are fastened between a pair of side frame means and a table tray is adapted to move from a storage position alongside a first of said pair of side frame means to a tablelike position before an occupant of said chair, said table tray being detachably coupled to said first side frame means during both said storage and tablelike positions by a U-shaped swingable supporting element mounted to the underside of said table tray, the improvement comprising,

a support element rigidly mounted to the underside of said table tray spaced from said U-shaped element and detachably coupled to said first side frame means in said storage position and adapted to engage a second of said pair of said frame means when said table tray is swung on said U-shaped supporting element from said storage position to said tablelike position.

2. The chair as recited in claim **1** wherein said first side frame means includes a first and second hollow receiving means for telescopically receiving respectively one leg of said U-shaped element and said rigidly mounted table support element when said table tray is in said storage position, and said second side frame means include a single hollow receiving means for receiving said rigidly mounted table support element when said table tray is in said tablelike position.

3. The chair as recited in claim **2** wherein said leg of said U-shaped element received in said first hollow receiving means is longer than said rigidly mounted table-support element.

4. The chair as recited in claim **2** wherein each of said side frame means include an armrest and wherein the armrest on said first side frame means includes said second hollow receiving means and said armrest on said second side frame means includes said single hollow receiving means.

5. The chair as recited in claim **1** wherein said seat means is removably connected to said first and second side frame means.

6. The chair as recited in claim **1** wherein said back means is removably connected to said first and second side frame means.

7. The chair as recited in claim **1** wherein said seat means comprises a rigid seat support base and a seat portion slidably mounted with respect to said seat support base and said back means.

8. The chair as recited in claim **7** wherein said rigid seat support base includes at least two spaced-apart rigid bars each connected on respective opposite ends thereof to said first and second side frame means, and said seat portion includes at least one depending bracket which is adapted to loosely sandwich at least one of said rigid bars to said seat portion whereby said seat may slidably travel between the longitudinal ends of said bracket.

9. The chair as recited in claim **8** further including at least one pair of stop means secured in one of said rigid bars at opposite lateral sides of said depending bracket whereby said depending bracket is sandwiched between said stop means to prevent lateral displacement of said seat portion.

10. The chair as recited in claim **9** wherein said stop means are adjustable to clamp said depending bracket against one of said rigid bars whereby said seat portion is prevented from moving with respect to said back and side frame means.

11. The chair as recited in claim **7** further including track means fastened to said seat portion and adapted to slide on said rigid bars when an occupant of said chair desires to change the position of said seat portion with respect to said back means and side frame means.

12. The chair as recited in claim **1** further including a footrest assembly having at least a first and a second rigid bar between which is supported a foot support platform and wherein said first and second side frame means each include lower hollow receiving means, said first and second rigid bars of said footrest assembly being telescopically and slidably received by said lower hollow receiving means of said first and second side frame means; and further including ottoman means having a cushioned portion and plurality of depending legs each terminating in a bifurcated attaching member, said bifurcated attaching member adapted to frictionally secure said depending legs to said first and second rigid bars of said footrest assembly.

13. In a chair of the type wherein a seat means and a back means are fastened between a pair of side frame means, the improvement comprising,

a rigid seat support base having at least two spaced-apart rigid bars each adapted to have their respective opposite ends coupled to each of said side frame means, and

wherein said seat means includes at least one depending bracket which is adapted to loosely sandwich at least one of said rigid bars to said seat means whereby said seat means may slidably travel longitudinally between the ends of the said bracket.

14. The chair as recited in claim **13** further including at least one pair of stop means secured in one of said rigid bars at opposite lateral sides of said depending bracket whereby said depending bracket is sandwiched between said stop means to prevent lateral displacement of said seat means.

15. The chair as recited in claim **14** wherein said stop means are adjustable to clamp said depending bracket against one of said rigid bars whereby said seat means is prevented from moving with respect to said back and side frame means.

16. The chair as recited in claim **13** further including track means fastened to said seat means and adapted to slide on said rigid bars when an occupant of said chair desires to change the position of said seat means with respect to said back means and side frame means.