United States Patent [19]

Taylor

[11] **3,891,267**

[45] **June 24, 1975**

[54] **RECLINING CHAIR ASSEMBLY**

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[22] Filed: **Nov. 9, 1973**

[21] Appl. No.: **414,594**

[52] **U.S. Cl.** **297/68;** 297/349; 297/440

[51] **Int. Cl.** **A47c 1/32**

[58] **Field of Search** ..... 297/68, 83, 84, 85, 75, 297/88, 89, 340, 349, 422, 441, 440, DIG. 2, DIG. 7

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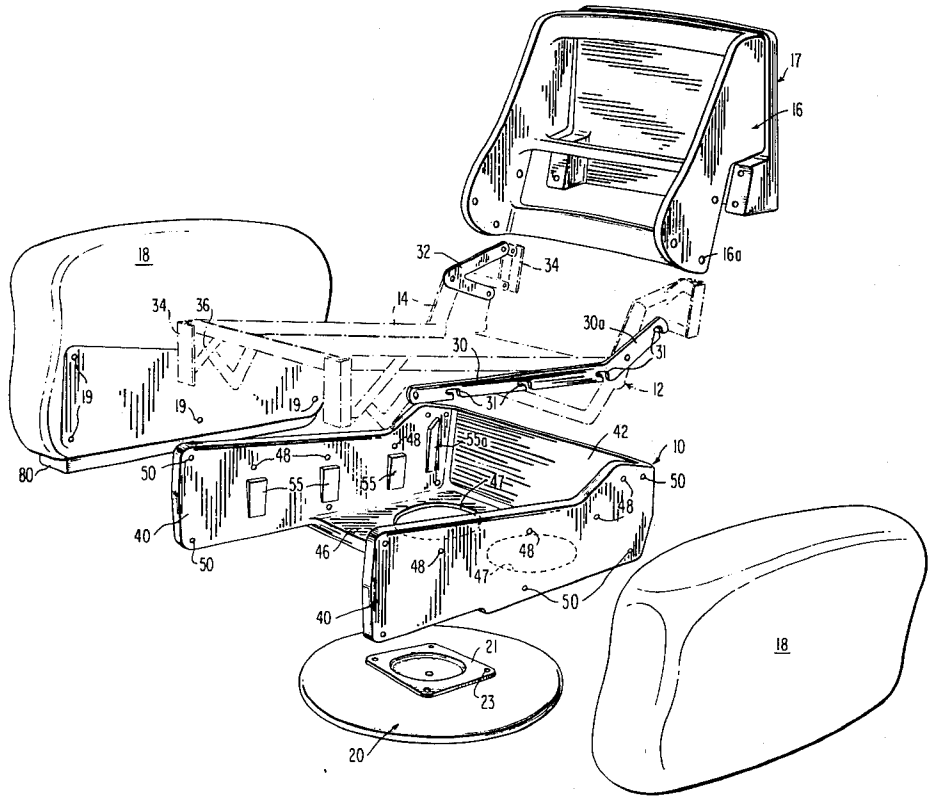
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[57] **ABSTRACT**

In a reclining chair having a seat and a backrest and linkage means for moving the seat and backrest between normal upright and inclined reclining positions; a main frame having a generally box-like configuration for supporting while facilitating assembly of the chair. During assembly, the linkage means is cradled in the box-like frame and secured thereto by means of apertures preformed in the side walls of the frame to be aligned with specific fastening areas on the linkage means. To facilitate such alignment of the apertures as well as to support the linkage in the frame during securement thereto, a plurality of abutments are formed on the inner sides of the frame side walls for receiving and accurately locating the linkage during assembly. The arm rests for the chair are mounted to the opposite sides of the frame by means of a second set of preformed apertures in the side walls of the frame adapted to be aligned with preformed apetures in the arm rests. To accommodate a swivel assembly, the frame is provided with a horizontal bottom wall extending between the side walls for securing the swivel thereto. At least one opening is provided in the bottom wall to provide access to the frame side walls and the linkage during assembly. In the event a swivel is not desired, the chair may be supported on the ground either through the main frame or through glide members formed on the undersides of the arm rests. Preferably, the frame is formed with an integral molded plastic construction, however, a wood construction may be employed if desired.

28 Claims, 3 Drawing Figures



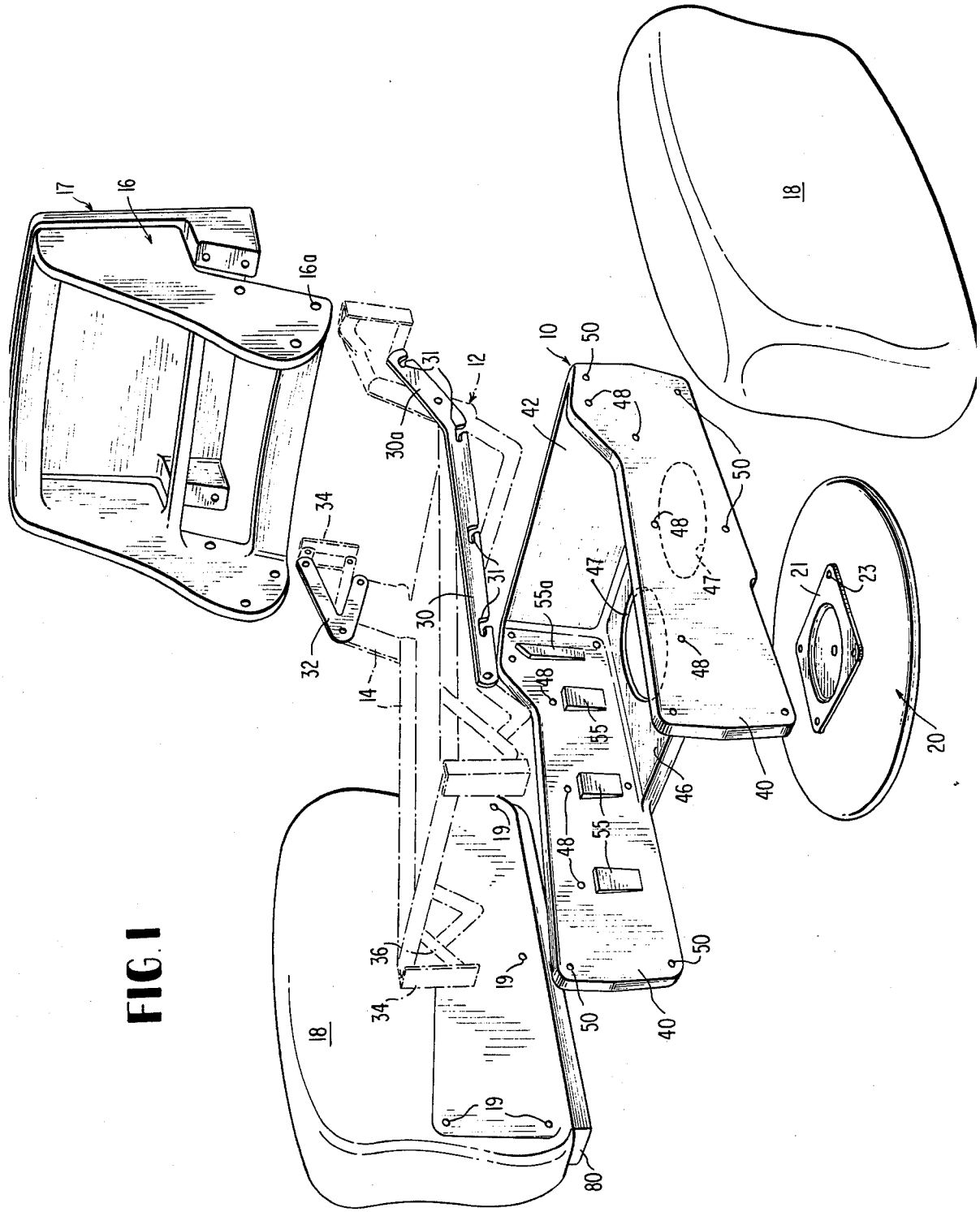

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FIG. 1

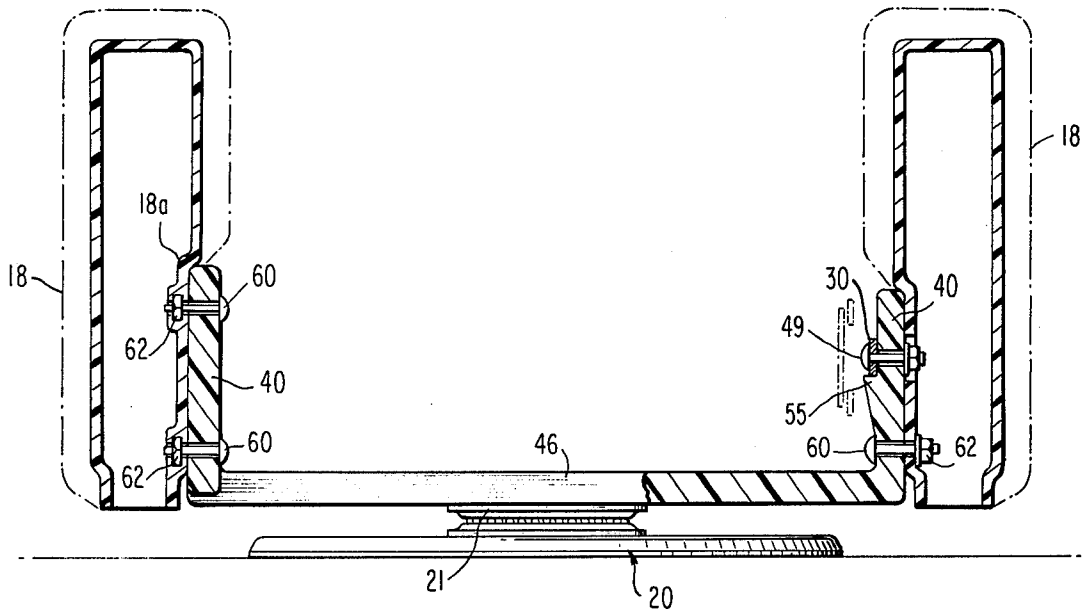
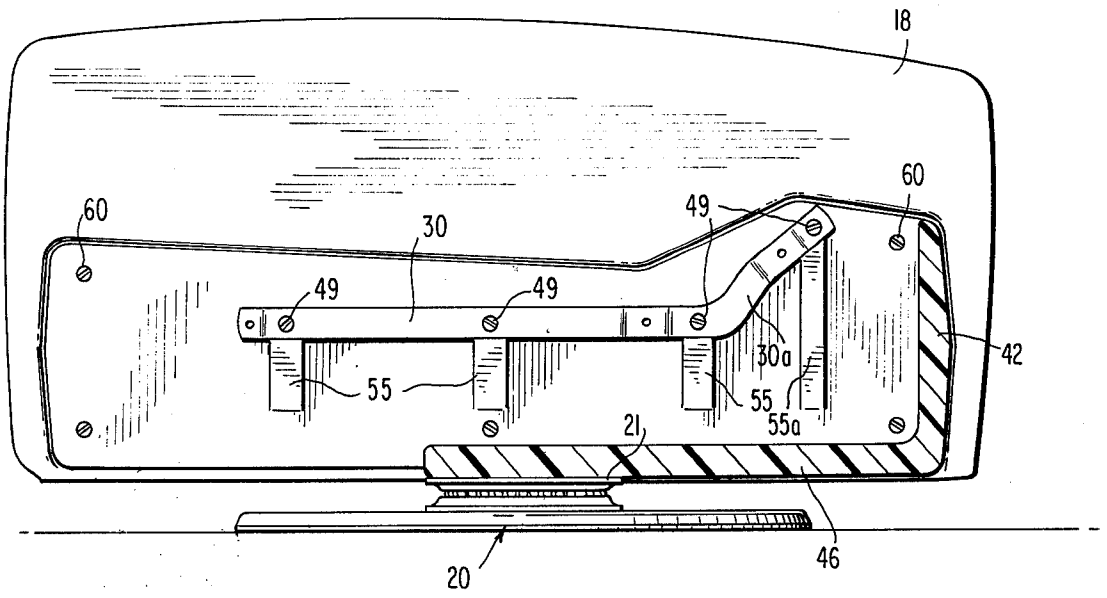

18
18a
18
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62
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62
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30
40
49
55
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62
21
20

FIG. 2

FIG. 3


18
60
60
49
30
49
49
30a
42
55
55
55a
21
46
20

RECLINING CHAIR ASSEMBLY

OBJECTS OF THE INVENTION

The present invention relates to reclining chairs of the type having a seat and a backrest and a linkage means for supporting and moving them between a normal generally upright position and a plurality of inclined reclining positions. Such a chair may also have an extendable and retractable foot rest as well as an extendable and retractable secondary backrest; however, the invention need not be limited to such.

More specifically, the present invention relates to an improved construction for such a chair as well as a method of assembling the various parts thereof during manufacture.

One of the primary objects of the present invention is to provide a novel construction for a reclining chair of the type aforedescribed which highly facilitates assembly on a mass production basis during manufacture without sacrificing chair support or modern day styling requirements. Included herein is the provision of a new and improved method for assembling such a chair.

Another object of the present invention is to provide such a reclining chair construction which is highly versatile for use with various designs including modern day low profile designs as well as various types of linkage systems employed for mounting and moving various parts of the chair. Included herein is the provision of such a chair which may incorporate an extendable and retractable foot rest and/or secondary backrests or headrests some times referred to in industry as "pop-up headrests." Further included herein is the provision of such a chair construction which may incorporate a swivel base.

Yet another object of the present invention is to provide such a novel chair construction and method of assembly which may utilize prefabricated parts such as armrests, backrests, and headrests which may be premolded or otherwise fabricated as separate items for subsequent attachment to the chair on a mass assembly basis.

A more specific object of the present invention is to provide a novel base frame which highly facilitates assembly of various chair parts during manufacture while also providing basic chair support in the finished chair for the various parts thereof. Included herein is the provision of such a base frame which may be employed to accurately locate and secure the associated chair linkage to highly facilitate assembly during manufacture as well as to provide effective chair support and operation of the linkage system during use of the chair.

SUMMARY OF INVENTION

The above and other objects are achieved in connection with a reclining chair having a seat and a backrest and linkage means for moving the seat and backrest between normal, upright position and inclined, reclining positions. If desired, the chair may have an extendable and retractable footrest movable through the lower forward portion of the chair and a secondary backrest or headrest sometimes referred to as a "pop-up" in industry.

In summary, the present invention provides a main frame, preferably molded from plastic, having a generally box-like configuration for facilitating assembly of the chair during manufacture and for ultimately providing main support for the various parts of the finished

chair. During assembly, the linkage system is cradled in the frame and secured thereto by means of any suitable fasteners extending through apertures preferably preformed in the side walls of the frame to be aligned with specific fastening areas on the linkage means. To facilitate such alignment of the apertures as well as to support the linkage in the frame during securement thereto, a plurality of abutments are formed on the inner sides of the frame side walls for receiving and accurately locating the linkage during such assembly. Any suitable fasteners received in the aligned apertures may be employed for securing the linkage to the frame side walls.

Armrests for the chair are mounted to the opposite sides of the frame by means of a second set of preformed apertures in the side walls of the frame adapted to be aligned with preformed apertures in the armrests. Any suitable fasteners such as bolts or screws received through the aligned apertures and into lock nuts fixed to the arm rest may be employed to complete the securement.

To accommodate a swivel assembly if such is desired, the frame is provided with a horizontal bottom wall extending between the side walls for securing the swivel thereto. At least one large opening is provided in the bottom wall to provide access to the frame side walls and the linkage during assembly. In one specific preferred embodiment, two such access openings are provided in the horizontal bottom wall. In the event a swivel is not desired, the chair may be supported on the ground either through the main frame or through glide members formed or attached on the undersides of the armrests.

Preferably, the frame is formed with an integral molded plastic construction, however, a wood metal construction may be employed, if desired. Furthermore, while in one specific preferred embodiment, preformed apertures are provided at predetermined locations in the frame for fastening the linkage and the armrests thereto. It should be apparent that instead of apertures, premarked fastening areas of suitable indicia may be provided for locating the linkage and armrests in the proper fastening position relative to the frame and for indicating where the fasteners should be secured to the frame.

To complete assembly of the chair, the backrest in one preferred embodiment, is connected to rear portions of the linkage assembly. In cases where an extendable and retractable footrest is desired, such will be connected to the front portions of the linkage unit and the open front end of the base frame will easily accommodate the same without sacrificing a low profile design.

DRAWINGS

Other objects and advantages of the present invention will become apparent from the following more detailed description taken in conjunction with the attached drawings in which:

FIG. 1 is an exploded perspective view of a reclining chair assembly embodying and constructed and assembled, in accordance with the present invention, with portions of an associated linkage unit shown in phantom and with other portions removed, and also with an extendable and retractable footrest removed for clarity purposes;

FIG. 2 is a transverse cross-sectional view illustrating attachment of armrests to a base frame incorporated in the chair, with the backrest and portions of the linkage unit being omitted; and

FIG. 3 is a longitudinal cross-sectional view taken through the base frame after the linkage unit has been secured thereto and with parts removed as in FIG. 2.

DETAILED DESCRIPTION

Referring now to the drawings in detail, there is shown for illustrative pruposes only, a reclining chair assembly constr cted and assembled in accordance with the present invention. Basically included in the chair, is a base frame generally designated **10** in accordance with the present invention, a linkage system generally designated **12** for moving a seat (not entirely shown) and a backrest generally designated **16** between a normal, upright position generally illustrated in FIG. **1** and a plurality of inclined, reclining positions wherein the backrest **16** extends rearwardly at an angle to the seat in well-known manner. The seat includes a cushion (not shown) mounted on rails or "seat links" **14** which, in turn, are pivotally mounted with respect to anchoring or stationary mounting links generally designated **31** which, in turn, are fastened to base frame **10** as will be further described subsequently. The chair may or may not include a secondary backrest or headrest sometimes referred to as a "pop-up" **17** adapted to normally lie behind backrest **16** when the chair is in the upright or normal position and to project upwardly beyond backrest **16** to support the head and upper back portions when the backrest is moved into an inclined position for reclining. In the specific embodiment shown, backrest **16** is connected to rear portions shown as V-shaped links **32** of the linkage unit while secondary backrest **17** is connected to rear portions **34** of the linkage unit.

Although not shown, the chair may incorporate an extendable and retractable footrest movable through the lower front of the chair in well-known fashion. The footrest is supported through a footrest linkage **34** and **36** included in the linkage system to be extendable upon reclining movement of the chair or, in the alternative, a hand-actuating lever (not shown) may be incorporated into the chair for actuation of the footrest. In order to move the backrest into reclining position, the chair occupant merely exerts pressure rearwardly on the backrest causing the seat links **14** to pivot relative to stationary links **30** while causing the backrest to pivot rearwardly relative to the seat links **14** and the stationary links **30** in well-known manner. It whould be understood that the present invention may be employed in conjunction with any suitable or conventional linkage mechanisms and that the linkage mechanism per se including the operation thereof, forms no part of the present invention.

In accordance with the present invention, a novel base frame **10** is provided for facilitating accurate and rapid assembly of the various chair parts, particularly the mounting of the linkage system and the armrests while, at the same time, providing basic chair support for the various parts and ensuring smooth operation of the linkage during chair use. In the specific embodiment shown, base rame **10** includes opposite generally parallel vertical side walls **40** interconnected in the rear by a vertical end wall **42.** Between side walls **40** at the bottom thereof, extends a horizontal bottom wall **46** starting at an intermediately positioned forward edge and terminating at rear wall **42** to which is joined. Base frame **10** has a generally box-like configuration in the specific embodiment with the forward end thereof between side walls **40** being open as clearly illustrated in FIG. **1.** It will additionally be noted that in the specific embodiment shown, the upper edge of side walls **40** extend rearwardly and downwardly at a gradual incline in their forward ends and the rise in the rearward direction at their rear portions adjacent end wall **42.** This configuration corresponds to the shape and position of certain portions of the linkage assembly and particularly seat links **14** when the linkage is mounted in the base frame as will be described.

In the preferred embodiment, base frame **10** is molded from plastic as an integral generally rigid structure. Any suitable commercially available plastic of sufficient strength may be employed for this purpose. Alternatively, base frame **10** may obviously be made from wood or sheet steel or other metal if desired. In one commercial embodiment, the various walls of base frame **10** may be made with a thickness of ¾ inches while the overall width between outside surfaces of side walls **40** is 24 ¼ inches. The greatest depth dimension of side walls **40** in this embodiment is 10 inches while the overall length of the frame is 30 ¾ inches with the bottom wall **46** being recessed from the forward ends of the side walls **40** a distance of 11 ⅝ inches. This particular dimensioning will enable use in connection with standard or conventional linkage systems presently being marketed today in the United States. However, it should be obvious that for different linkage systems of different dimensions, the dimensions of the base frame **10** may be varied accordingly.

As noted above, the entire linkage system is suspended from base frame **10** by means of stationary mounting links **31** positioned on opposite sides of the linkage system. In the preferred embodiment, stationary mounting links **31** have preformed therein a plurality of apertures **31** clearly shown in FIG. **1** for accommodating fasteners to secure the same relative to side walls **40** of the base frame. Side walls **40** of the base frame are also preferably provided with a first set of preformed apertures **48** positioned at predetermined locations so as to align with apertures **31** in mounting links **30** when the two parts are properly positioned relative to each other. In order to facilitate such positioning of these parts, abutment means are provided on base frame **10** which, in the specific embodiment shown, take the form of a plurality of individual abutments **55** which project inwardly from the inner surfaces of side walls **40** as clearly shown in FIG. **1** and **3.** During assembly, the linkage system is placed through the top of base frame **10** with the bottom edges of stationary mounting links **31** engaged on the upper surfaces abutments **55.** From FIG. **3** it will be noted that for the specific linkage shown, the first three abutments **55** have their upper surfaces in a common horizontal plane corresponding to the lower edge of stationary mounting link **30.** However, the rear portions **30*a*** of stationary mounting link **30** in the specific embodiment, extend upwardly and rearwardly at an incline and hence the rearmost abutments **55*a*** extend above the forward abutments **55** with the upper surface of rear abutments **55*a*** extending at an incline so as to receive in flush engagement the rear lower surface portions of mounting link portions **30*a*** as shown in FIG. **3.**

When stationary mounting links **30** are properly engaged on abutments **55, 55***a* apertures **48** in side walls **40** of base frame **10** will be aligned with apertures **31** in stationary mounting links **30.** While supported in this position, suitable fastening means may easily be inserted through apertures **48** and **31** to ridgidly secure stationary mounting links **30** to side walls **40** of base frame **10.**

In order to secure armrests **18** to side walls **40** of base frame **10,** a second set of preformed apertures **50** are preferably formed in side walls **40** at predetermined locations to align with corresponding apertures **19** preformed in the armrest **18.** Referring to FIG. **2,** any suitable fasteners such as bolts **60** may be employed to secure armrests **18** to side walls **40** of base frame **10.** Suitable lock nuts **62** may be provided in armrests **18** fixed around apertures **19** thereof to receive bolts **60** to rigidly secure armrests **18** to side walls **40.** In the specific embodiment shown in FIG. **2,** the lower inner surface portions of armrests **18** are recessed inwardly to receive side walls **40** in flush surface-to-surface contact to minimize projection of side walls **40** from the inner surfaces of armrests **18.**

In addition to providing reinforcement for base frame **10,** bottom wall **46** thereof also serves as a means for mounting a base swivel assembly generally designated **20** in the event a swivel chair is desired. Swivel **20** may have any suitable conventional construction, including a ball-bearing allowing the chair to swivel about a vertical axis in well-known fashion; it being understood that the swivel assembly per se forms no part of the present invention. Swivel assembly includes an upper mounting plate **21** having apertures **23** in the four corners thereof through which fasteners may be employed to secure it to bottom wall **46** of base frame **10** as best shown in FIGS. **2** and **3.** In situations where the chair will not include a swivel assembly, the chair may be supported on the ground through means of suitable glides formed on the bottom of base frame **40** and/or the bottom of armrests **18.** In FIG. **1,** the left-hand armrest **18** is shown with such a glide **80.**

In order to provide access to the linkage system and the base frame side walls and other portions of the chair during assembly, access apertures are provided in the bottom wall **46.** In the specific embodiment shown, two such apertures are provided.

As noted above, backrest **16** is mounted to V-shaped links **32** by means of suitable fasteners; with links **32** being in turn pivotally connected to seat links **14.** If desired, backrest **16** may also be made as a molded item with preformed apertures **16***a* to facilitate assembly to the linkage system.

Although the base frame **10** has been disclosed as incorporating preformed apertures **48** and **50,** if desired, in place of apertures, suitable indicia may be employed in the event it is desired to utilize self-tapping or elf-aperture-forming fasteners. However, it should be clearly understood that the use of preformed apertures is the preferred mode of practicing the invention and, in any event, should be viewed as the equivalent of utilizing predetermined indicia at predetermined locations on the base frame **10** to indicate proper alignment with apertures in mounting link **30** and in armrests **18.**

It should further be understood that although armrests **18** have been disclosed above as being premolded, they as well as other parts of the chair including backrest **16** may be made with a conventional construction including a wood frame and upholstery.

It will be seen that the present invention in addition to facilitating assembly does not permit faulty alignment of the linkage system with the base frame. This not only ensures accurate assembly but also ensures proper operation of the linkage mechanism over long periods of repeated use. The present invention also ensures product uniformity while minimizing the heretofore required dimensional tolerances for the various chair parts.

What is claimed is:

1. A reclining chair assembly comprising in combination, a seat, a backrest, and linkage means for supporting and moving the seat and backrest relative to each other between a normal or upright position and a inclined reclining position, a main frame for supporting the linkage means, said main frame including opposite sides and a cross piece interconnecting said sides, said sides having preformed apertures therein located at predetermined locations for securing said linkage means relative thereto, said linkage means having fastening areas adapted to be aligned with said apertures in said sides of the main frame, said linkage means including a pair of mounting links to be rigidly secured to the opposite sides of the frame respectively, said main frame further including abutments for supporting and locating said linkage means on the frame prior to securement thereto with said fastening areas aligned with said apertures in said sides of the main frame, said abutments projecting inwardly from inner surfaces of the opposite sides of said frame at elevations spaced below top surface portions of the frame to receive and position the mounting links below the top surfaces of the frame, said sides of the main frame further including a second number of apertures for securing arm rests thereto, and wherein there is further included a pair of arm rests adapted to be secured to said sides of the main frame through said second number of apertures therein.

2. The reclining chair assembly defined in claim **1** wherein said main frame including said abutments has a molded integral plastic construction.

3. The reclining chair assembly defined in claim **2** wherein said cross piece of the main frame extends across the rear end of the main frame and wherein there is further included a second cross piece extending in a horizontal plane between the sides at the bottom of the frame, and wherein the front end of the frame opposite the first cross piece is open so that the main frame has a generally U-shaped configuration and wherein the opposite sides of the frame and the first defined cross piece of the frame extend in vertical planes so that the frame is generally box-like in configuration.

4. The reclining chair assembly defined in claim **3** wherein said second cross piece at the bottom of the frame has at least one large opening providing access to the linkage means and frame during assembly.

5. The reclining chair assembly defined in claim **4** wherein said arm rests are upholstered and have a plurality of apertures adapted to be aligned with said second number of apertures in the main frame for fastening the arm rests to the main frame by fastening means through said apertures.

6. The reclining chair assembly defined in claim **4** wherein the assembly further includes a swivel adapted to be mounted to said second cross piece to mount the

entire chair for rotational movement about a vertical axis.

7. For use in a reclining chair having a seat and a backrest and a linkage means for moving said seat and backrest relative to each other between a normal upright position and an inclined reclining position; a main frame for mounting and supporting the linkage means comprising opposite generally parallel side members and a cross member interconnecting said side members, said side members having a plurality of preformed apertures therein for receiving fasteners for securing the linkage means thereto during assembly, said frame further having abutment means projecting inwardly from said side members for supporting and locating the linkage means in position relative to said frame prior to securing said linkage means to said side members through means of said apertures and wherein said frame including said abutment means have an integral molded plastic construction.

8. The main frame defined in claim **7** wherein said cross piece extends across one of the ends of the frame between said side members and wherein the opposite end of frame between said side members is open so that the main frame has a generally U-shaped appearance.

9. The main frame defined in claim **8** wherein said cross members extend in vertical planes so that the frame has a generally box-like appearance.

10. The main frame defined in claim **9** further including a second cross member extending between said side members at the bottom thereof and intermediate the opposite ends of the frame for securing swivel assembly thereto.

11. The main frame defined in claim **10** wherein said second cross member has a large opening therein for providing access to the side members of the frame and an associated linkage means during assembly.

12. For use in a reclining chair having a seat, a backrest, and a linkage means for moving said seat and backrest relative to each other between a normal upright position and an inclined reclining position; a main frame for mounting and supporting the linkage means comprising, opposite generally parallel side walls extending in a vertical plane and an end wall extending in a generally vertical plane interconnecting one of the ends of said side walls with the opposite end of the frame between said side walls being open so that the frame has a generally U-shaped box-like configuration, said side walls having a plurality of preformed apertures located in predetermined positions for receiving fasteners securing the linkage means to the frame during assembly, said side walls further having areas for attaching arm rests thereto and wherein said side walls at the rear end thereof have rearwardly raised inclined portions for conforming to the configuration of the linkage means to be associated therewith and wherein the frame includes abutment means for positioning the associated linkage means along inner surfaces of the side walls of the frame.

13. The frame defined in claim **12** further including a bottom wall extending in a generally horizontal plane between the side walls for securing a swivel to the frame while also lending additional strength to the frame.

14. The frame defined in claim **13** wherein said bottom wall has at least one opening therein providing access from the bottom to the side walls and an associated linkage means during assembly.

15. The main frame defined in claim **14** wherein said bottom wall extends from an intermediate area of the frame to the first cross member at one end of the frame.

16. The main frame defined in claim **15** having a molded integral plastic construction.

17. The main frame defined in claim **16** wherein said areas on said side walls for attaching arm rests thereto include preformed apertures.

18. For use in a reclining chair having a seat, a backrest, and a linkage means for moving said seat and backrest relative to each other between a normal upright position and an inclined reclining position; a main frame for mounting and supporting the linkage means comprising, opposite generally parallel side walls extending in a vertical plane, and a cross piece interconnecting said side walls and being rigidly secured thereto, said side walls having a plurality of indicia at predetermined locations thereon for receiving fasteners for securing the linkage means to the frame during assembly, and said side walls having a second set of indicia thereon at predetermined locations thereon for receiving fasteners for securing armrests to the side walls during assembly and wherein said side walls have abutment means for supporting the linkage in said frame during assembly and for aligning said first set of indicia with apertures in the linkage means for mounting the linkage means to said side walls during assembly, said abutment means projecting inwardly from the inner surfaces of the side walls of the frame.

19. The main frame defined in claim **18** wherein the space between forward portions of said side walls is open so that the frame has a general U-shaped configuration.

20. The main frame defined in claim **19** wherein said cross piece is a rear vertical wall interconnecting rear end portions of said side walls and wherein there is further included a bottom wall extending horizontally between said side walls from a point intermediate the ends of said side walls towards the rear vertical wall.

21. The reclining chair assembly defined in claim **1** wherein the sides of the frame have upper rear portions extending upwardly in the rearward direction at an incline to conform to the orientation of said mounting links, said mounting links having rear portions extending upwardly at an incline against inner surfaces of said upper rear portions of the sides of the frame.

22. The reclining chair assembly defined in claim **21** wherein said abutments include a first pair of abutments projecting inwardly from inner surfaces of said upper rear portions of the sides of the frame at an elevation higher than the elevation of other abutments positioned on the sides of the frame forwardly of said first pair such that when the mounting links are properly engaged on said abutments the mounting links will be properly positioned relative to the frame with the fastening areas of the linkage means aligned with the preformed apertures in said frame.

23. The main frame defined in claim **7** wherein said abutment means includes a first pair of opposite abutment surfaces respectively located at intermediate portions of said side members of the frame and a second pair of abutment surfaces located on rear portions of said side members of said frame at an elevation higher than the elevation of said first pair of abutment surfaces for engaging rear portions of the linkage means, the location and orientation of said abutment surfaces being such that when the linkage means properly rests

thereon the linkage means will be in proper position relative to the frame.

24. The main frame defined in claim **11** further including a first pair of abutments projecting inwardly from inner surfaces of the side walls of the frame at a location intermediate the ends of the side walls and a second pair of abutments projecting inwardly from inner surfaces of the rearwardly raised inclined portions of the side walls, the elevation of said second pair of abutments being higher than that of said first pair such than when the associated linkage means is engaged on said first and second pairs of abutments, the linkage means will be in proper position relative to the frame for securement thereto.

25. The main frame defined in claim **18** wherein said abutment means includes means includes a first pair of abutments located intermediate said side walls of the frame and a second pair of abutments located on rear portions of said side walls at an elevation higher than the first pair of abutments such that when the associated linkage means is engaged on said first and second pair of abutments, the linkage means will be properly positioned relative to the frame for securement thereto.

26. The main frame defined in claim **25** wherein the rear portions of the side members of the frame extend upwardly and rearwardly at an incline to conform to the orientation of portions of the linkage means.

27. The main frame defined in claim **26** wherein said second pair of abutments have upper abutment surfaces extending rearwardly and upwardly at an incline to conform to the orientation of portions of the associated linkage means.

28. The main frame defined in claim **12** wherein the distance between the opposite side walls of the frame is approximately 24 inches and wherein the depth of the side walls at said rearwardly raised inclined portion is approximately 10 inches.

* * * * *