

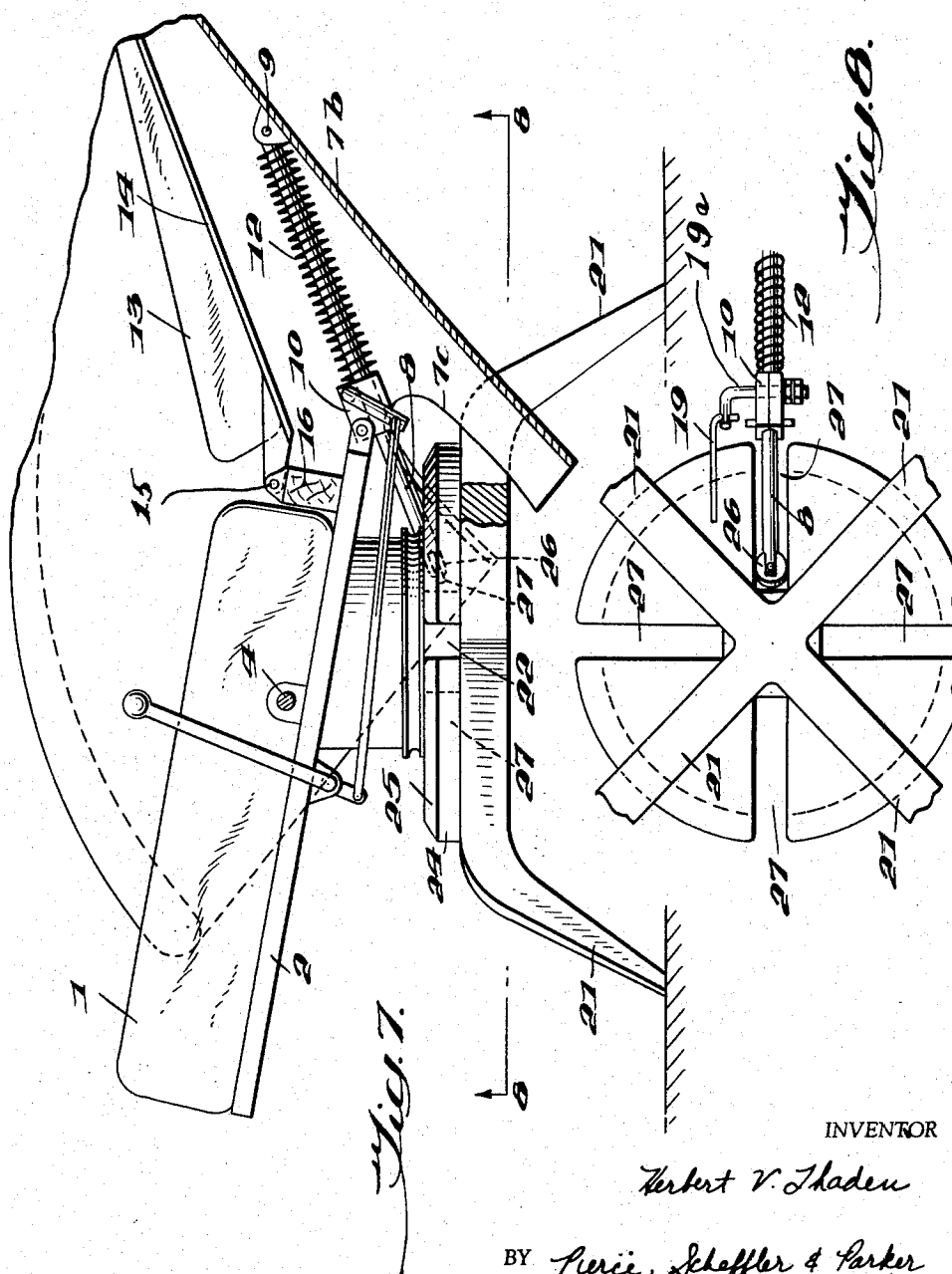
Aug. 25, 1959

H. V. THADEN
RECLINING CHAIR

2,901,026

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4 Sheets-Sheet 1



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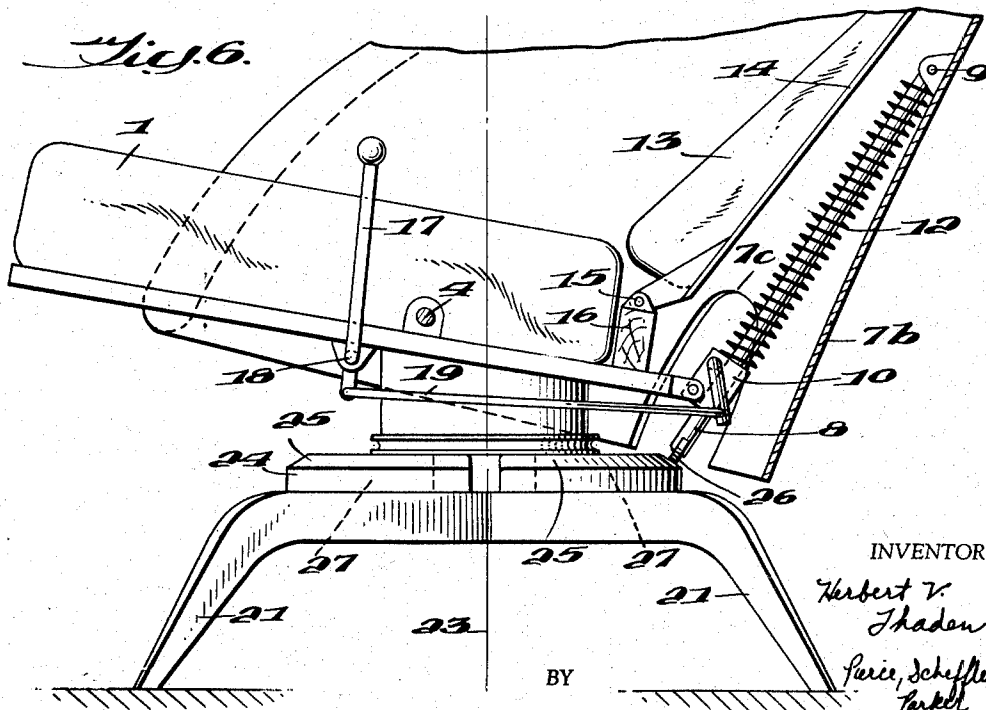
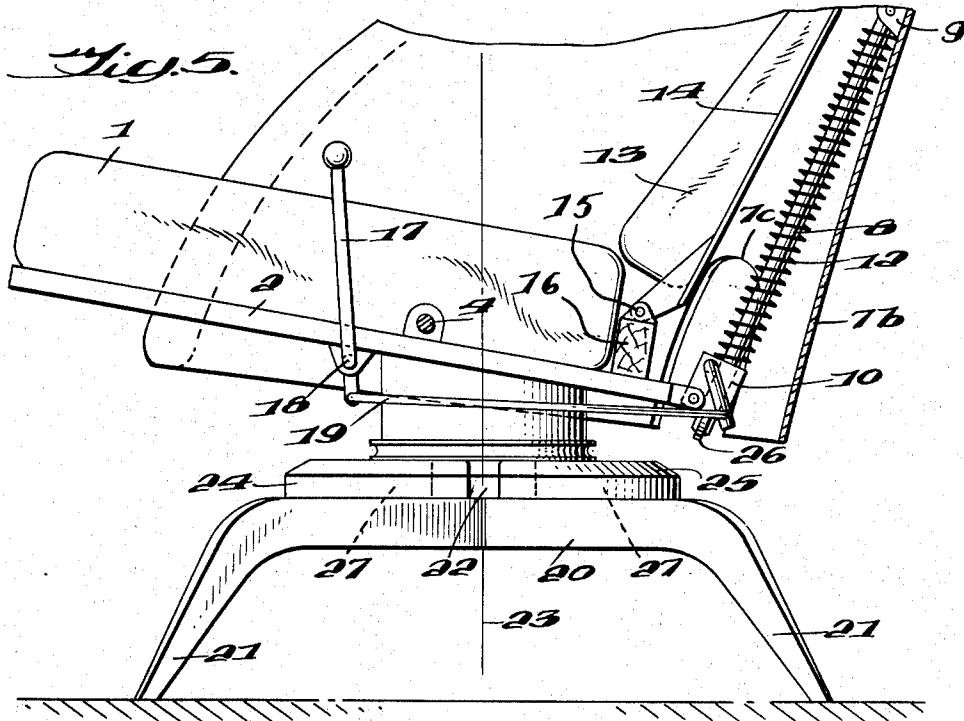
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4 Sheets-Sheet 2



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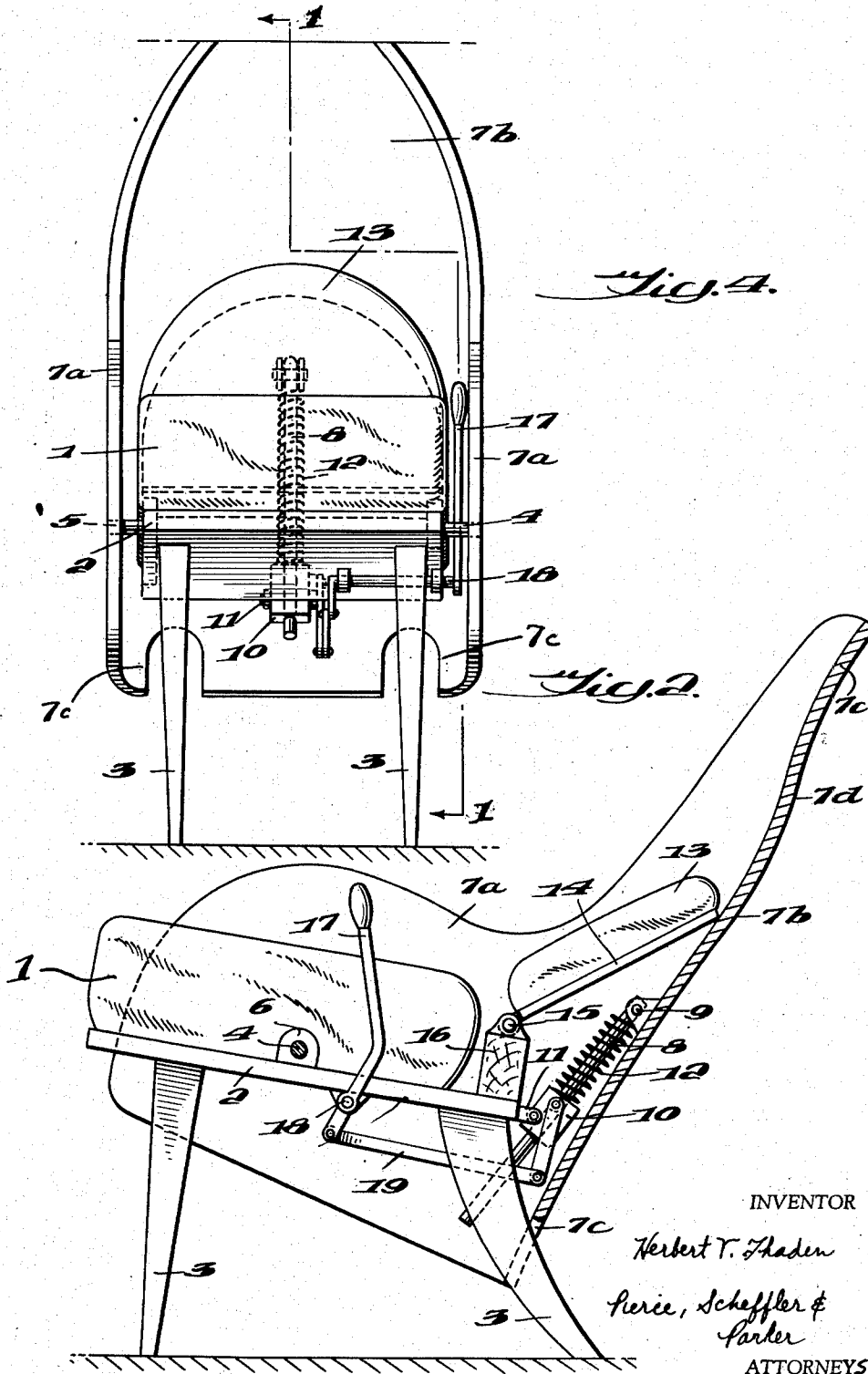
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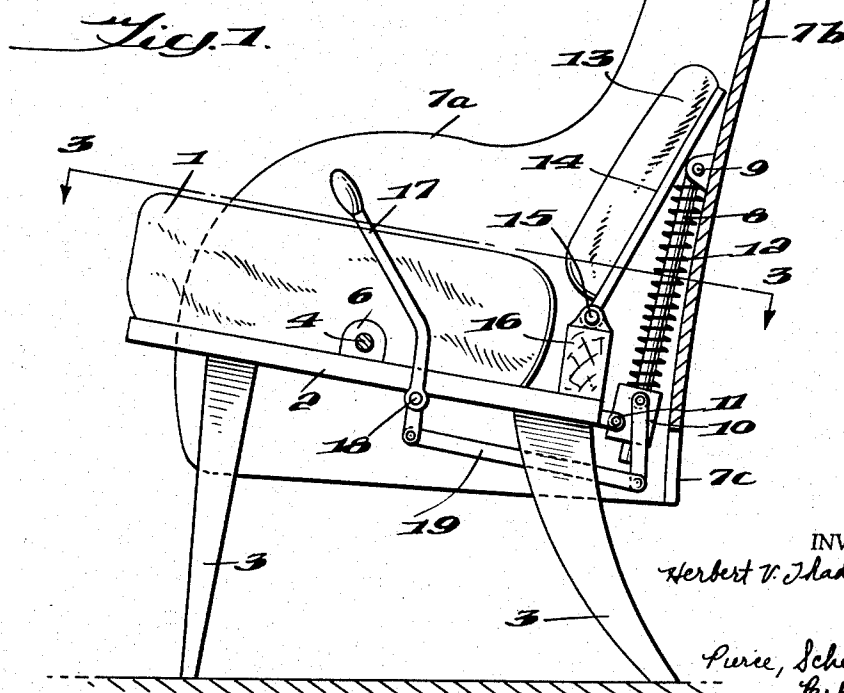
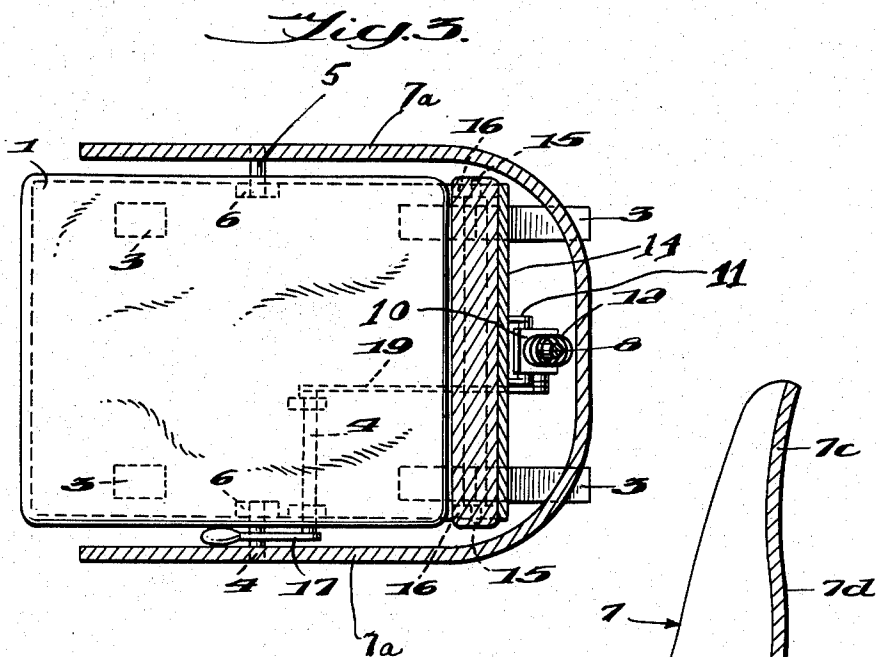
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2,901,026

RECLINING CHAIR

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4 Claims. (Cl. 155—116)

This invention relates generally to a reclining chair, and more particularly to a reclining chair having a stationary seat to which is pivotally connected a shell having arm and back supporting portions. The present application is a continuation-in-part application of my prior applications Ser. No. 585,085 filed May 15, 1956 (now issued as U.S. Pat. No. 2,824,601) and Ser. No. 664,765 filed June 10, 1957.

Reclining chairs per se are well known in the patented prior art. The present invention relates to living room and office versions of reclining chairs of a type having a stationary seat frame to which is pivotally secured at the sides thereof a rigid shell having arm and back supporting portions. The arm portions of the shell are connected to the seat frame sides and a kidney pad is pivotally mounted at the rear of the seat frame so that the lower back portion of an occupant of the chair will be supported when the shell is in either an erect or a reclined position.

Thus the primary object of my invention is to provide a reclining chair having a stationary seat frame to which is pivotally connected a rigid shell having arm and back supporting portions, the arm portions of the shell being pivotally connected to the sides of the chair seat frame.

Another object of my invention is to provide a reclining chair of the type described having a kidney support pad pivotally connected at one end to the rear portion of the stationary seat frame and slidably supported at the other end by the back portion of the pivotally mounted shell, and also having spring means for urging the shell to an erect position with respect to the stationary seat frame.

A further object of my invention is to provide a reclining chair of the type described in which the kidney pad has an elevated pivot point with respect to the chair seat frame and the shell pivot point so that reclining movement of the shell will result in a greater degree of reclining movement of the kidney pad.

Still another object of my invention is to provide a reclining chair of the type described wherein the rigid shell has a head rest portion and a recessed portion for receiving the shoulders of the occupant and also for slidably receiving the upper surface of the pivotally mounted kidney pad.

Another object of my invention is to provide indexing means in the office version of my reclining chair so that the shell may be pivoted rearwardly to a fully reclined position only when the rotatably mounted seat has a certain predetermined angular position with respect to the legs of the base.

Another object of my invention is to provide an office version of my reclining chair having roller and track means for supporting the shell in a partially reclined position wherein the seat may be rotated 360° about its base, and slot means associated with the roller means for enabling the shell to pivot rearwardly to a fully reclined position when the seat is at certain predetermined positions with respect to the supporting base.

Other objects and advantages of my invention will become more apparent from a study of the following speci-

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cation when considered in conjunction with the accompanying drawings, in which:

Fig. 1 is a sectional elevation view of the living room version of my reclining chair in its erect position taken along line 1—1 of Fig. 4;

Fig. 2 is a sectional elevation view of the chair in its reclined position;

Fig. 3 is a sectional plan view taken along line 3—3 of Fig. 1;

Fig. 4 is a front elevation of the living room version of the chair illustrated in Figs. 1—3;

Figs. 5—7 are partially-sectioned detailed views of the office version of my reclining chair showing the track indexing means; and

Fig. 8 is a sectional view taken along line 8—8 of Fig. 7.

Referring now more particularly to the living room version of the reclining chair illustrated in Figs. 1—4, the chair cushion 1 is secured to a rigid wooden or metal rectangular chair frame 2 which is fixedly supported above the floor by the legs 3 rigidly connected thereto. Pivotally mounted to pivot rods 4 and 5 mounted by brackets 6 to the chair frame is the rigid outer chair shell 7 which has a generally U-shaped configuration in a cross-section taken along the horizontal plane (Fig. 3). This shell may be of a molded plastic and fiber composition (as disclosed in my copending application Serial No. 485,898, filed February 3, 1955, now Patent No. 2,831,534, issued April 22, 1958), metal, plywood or any other suitable composition. The shell, having arm portions 7a and a back portion 7b, is preferably, but not necessarily, of unitary integral construction. The shell may or may not be provided with fabric or plastic covered upholstery, as desired.

A shell supporting rod 8 of a strong metal such as steel is pivotally connected at its upper end to the back portion of the shell by suitable bolt means 9 and is slidably guided at the other end in a tubular housing 10 pivotally connected to brackets 11 extending rearwardly from the chair frame 2. Coil spring 12 positioned concentrically about the rod 8 intermediate the housing 10 and the shell connection 9 provides resilient means for urging the shell 7 to its normal erect position illustrated in Fig. 1. A kidney pad 13 is secured to support member 14 which is pivotally connected at pivot points 15 elevated above the rear portion of the stationary seat frame by a transverse support element 16.

Referring now more particularly to Fig. 2, it will be seen that when the shell 7 is pivoted rearwardly about pivot rods 4 and 5 with respect to the seat frame, the upper extremity of the back portion 7b of the shell is lowered and the kidney pad support 14 will pivot rearwardly about the pivot points 15 so that the upper extremity thereof will remain in slidable engagement with the occupant supporting surface of the shell back portion 7b. The kidney pad thus serves to bridge the gap produced between the shell and the rear portion of the seat frame and to support the lower back portion of an occupant of the seat when the shell is in the reclined position. The shell supporting rod 8 will slide longitudinally downwardly through its housing 10 to compress the coil spring 12.

If desired, suitable locking means may be provided to lock the shell in its various pivotal relationships with respect to the stationary seat frame. As shown in Figs. 1 and 2, a lever 17 pivotally connected at its middle portion to the chair frame 2 by pivot means 18 is connected by suitable linkage means 19 to the tubular housing 10. Actuation of the lever 17 in one direction will lock the shell supporting rod 8 within the tubular housing 10 and thus prevent movement of the shell relative to the chair seat frame. Actuation of the lever in the opposite direction will allow free movement of the rod 8 in the tubular

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housing 10 and free adjustment of the position of the shell 7 relative to the seat frame.

As illustrated in Figs. 2 and 4, the lower edge of the back portion of the shell is provided with vertical slots 7c adjacent the rear legs 3 to enable clearance between the shell and the legs when the shell is pivoted rearwardly to the reclined position.

It will be noted from Fig. 1 that when the shell is in its erect position with respect to the stationary chair seat frame the upper portion 7c of the shell back serves as a head rest and a deeper, indented portion 7d provides shoulder room for the chair occupant. The kidney pad 13 is at its normal pitch and serves to support the small of the occupant's back. The side portions 7a of the shell provide high arm rests for the forearms and elbows of the occupant and the forward edge of the stationary seat frame is of such a height as to permit crossing or normal extension of the legs. When the shell is pivoted rearwardly to a reclined position to allow stretching of the occupant's posture, back portions 7c and 7d continue to support the occupant's head and back, respectively, and the kidney pad 13 has pivoted rearwardly to a substantially horizontal position. The kidney support moves angularly a greater extent than the shell back by virtue of the high elevation of the pivot points 15 with respect to the rear portion of the chair seat frame. The arm supporting surfaces of the shell side portions 7a have been depressed to a position substantially flush with the occupant's back. Due to the fact that the chair seat frame has remained stationary, the height of the occupant's knees remains unchanged.

In the office swivel version of my reclining chair illustrated in Figs. 5—8, it has been found to be desirable to provide means for enabling the shell to be pivoted rearwardly to a partially reclined position while enabling rotary movement of the seat with respect to the stationary base, and means for enabling full reclining of the shell while at the same time preventing rotary movement of the seat with respect to the frame. It has also been found to be desirable to provide indexing means at various angular positions of the seat frame with respect to the supporting base so that the slots in the lower edge of the shell back portion will always be in alignment with the chair legs when the shell pivots rearwardly to its fully reclining position with respect to the chair seat frame.

Referring more particularly now to Fig. 5, the chair seat frame is rotatably connected to the stationary supporting base 20 having supporting legs 21 by means of a swivel assembly 22. If desired standard rollers may be positioned at the lower extremities of legs 21. Concentrically located with respect to the swivel axis centerline 23 and secured to the supporting base 20 is a metal cylindrical member 24 the edges of which are bevelled to form a circular track 25. When the shell is in the position shown in Fig. 5, the seat frame may be rotated 360° about the swivel axis.

When the lever 17 is actuated to release the locking of rod 8 in the tubular housing 10, the shell 7 may be pivoted rearwardly about pivots 4 and 5 to the partially reclined position of Fig. 6. Rollers 26 rotatably mounted in the lower extremity of the shell supporting rod 8 comes into engagement with track 25 and in view of the rigid connection 9 at the upper end of the rod to the shell back portion, further pivotal movement of the shell in the reclining direction is prevented. When the shell is in the first reclining position illustrated in Fig. 6, the chair seat frame may be rotated 360° about the swivel centerline 23 and there is ample clearance between the lower extremity of the shell and the base legs 21. The inclination of the kidney pad with respect to the chair seat increases from about 117° in Fig. 5 to about 127° in Fig. 6.

Referring now to Figs. 7 and 8, in the upper surface of the cylindrical member 24 are positioned a plurality

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of radial slots 27 displaced 45° from the legs 21. These slots have a width adapted to slidably receive the roller 26 so that when the chair seat is rotated with the shell in the first reclining position (Fig. 6) to a point where the roller 26 riding on track 25 comes into contact with one of the slots 27, the roller 26 and rod 8 may slide into the slot so that the shell may be further pivoted rearwardly to its full reclining position as shown in Fig. 7. Spring 12 will be fully compressed and rod 8 may be locked within the tubular housing 10 upon actuation of lever 17. When the shell is in its fully reclined position, the rear legs 21 will extend through the slots 7c in the lower extremities of shell rear portion 7b as shown by the phantom outline of the shell. Thus it is apparent that the indexing means consisting of the slots 27 and roller 26 serve not only to orient the slots 7c with respect to the legs 21 when the chair is rotated in the first reclining position of Fig. 6, but also to prevent movement of the shell with respect to the legs when the shell is in the fully reclined position of Fig. 7 with roller 26 and the lower portion of rod 8 extending into one of the slots 27. Also, since the shell 7 may be pivoted rearwardly only when the rod 8 (and consequently shell 7) is centrally located with respect to the rear legs 21, greater stability of the chair in its fully reclined position is insured. When the shell is in its fully reclined position, the kidney pad support 14 will be inclined at an angle of about 157° to the chair seat.

It should be mentioned that due to the high elevation of the pivot point 15 with respect to the chair seat frame 2 and the shell pivots 4, 5 by means of the vertical support 16, rearward movement of the shell results in a correspondingly greater movement of the kidney pad. As stated above, for movement of the shell from the erect position of Fig. 5 to the fully reclined position of Fig. 7, the kidney pad inclination is increased from about 117° to 157°.

With regard to the locking means associated with the tubular housing 10, in the embodiment illustrated in Fig. 8 the tubular housing 10 is in the form of a U-shaped clamp adapted to slidably receive the rod 8 and the member 19a of the actuating linkage is threaded to one leg of the U-shaped clamp by a screw-thread connection and to the other leg by threaded connection having threads of an opposite pitch. Thus upon rotation of member 19a in one direction the legs of the clamp will be drawn toward each other to lock the rod 8, and upon opposite rotation of member 19a the legs will be separated. It is of course obvious that other embodiments of the locking device may be utilized, as for example a lever-controlled set screw arrangement or the like.

While in accordance with the statutes I have illustrated and described the best embodiments of my invention known to me, it will be apparent to those skilled in the art that certain changes may be made in the apparatus disclosed without deviating from my invention as defined in the following claims.

I claim:

1. A reclining chair comprising a base; a seat frame rotatably connected to said base for rotational movement about a vertical axis with respect to said base; a rigid shell pivotally connected to said seat frame and having a substantially vertically disposed back portion and arm portions substantially at right angles to said back portion; spring means biasing said shell to its normally erect position with respect to said seat frame comprising a shell supporting rod pivotally connected at its upper extremity to the back portion of said shell, a tubular member adapted to slidably receive said rod, said tubular member being pivotally connected to said seat frame, and a coil spring positioned about said rod intermediate said tubular member and the pivot connection of the rod to the shell; and means for supporting said shell in a first reclined position with respect to said seat frame, said supporting means comprising a cylindrical member secured

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to the base adjacent the swivel mounting, said cylindrical member having a circular track thereon concentric with the swivel axis, and a roller member secured to the lower extremity of said rod and adapted to ride on said circular track when the shell is pivoted rearwardly to a first reclined position with respect to the seat frame so that the shell will be supported by said rod and the base for 360° rotation of the seat about the swivel axis.

2. A reclining chair as defined in claim 1 and further including indexing means for allowing movement of the shell to a fully reclined position with respect to said seat frame when the seat is at a certain predetermined angular position with respect to the base, said indexing means comprising at least one radial slot in the circular track of said cylindrical member, said slot being of a width to receive said roller and the lower portion of said shell supporting rod.

3. A reclining chair as defined in claim 2 wherein said

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base has a plurality of legs and the lower extremity of said shell has at least one slot therein to receive one of said legs when the shell is in its fully reclined position.

4. A reclining chair as defined in claim 3 wherein said base has four legs spaced at 90° intervals with respect to the swivel axis, and wherein said circular track has four radial slots therein spaced at 45° intervals with respect to said legs.

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