This invention relates to articles of furniture or seating units adjustable from the sitting position to a more or less reclining position. It is particularly directed to a construction which is adapted for use in an upholstered piece of furniture having stationary arms and an upholstered seat cushion which may be tilted without interference with the arm structure. For example, in upholstered chairs, what is known as a T-cushion, it is often used in the seat which has a T-shaped front portion extending beyond the arms, both towards the front of the chair and laterally. When a seat or cushion of this shape is mounted for tilting movement it must clear the corners of the arm and if the front surfaces of the arms are vertical or slightly forwardly inclined, as in some designs, the seat and its cushion must move slightly forward during the upward swinging movement thereof so as to be given an arc of movement which will enable the T-shaped extensions to clear the arms.

It is an object of the present invention to provide a construction in which this result is accomplished. It is a further object of the invention to provide a construction of the above character which is provided with a leg rest connected to the article of furniture in such manner that it is projected to a leg supporting position when the back rest and seat are swung to a reclining position and is retracted when the seating elements are moved to an upright position.

In the accompanying drawings which illustrate certain preferred embodiments of the invention:

Figure 1 is a perspective view of a chair embodying one form of the invention and showing the seating elements of the chair in their reclining position;

Figure 2 is a side elevation of the chair shown in Figure 1 in an upright position;

Figure 3 is a view similar to Figure 2, showing the chair in a half reclining position;

Figure 4 is a side elevation of a modified form of chair in an upright position;

Figure 5 is a side elevation of the chair shown in Figure 4 in a reclining position;

Figures 6 and 7 are views similar to Figures 4 and 5 showing another modification of the invention.

Referring to the drawings in detail, the chair shown in Figures 1, 2 and 3 comprises a frame 20 having arms 22 which include side members 24. The front walls of the arms are shown as having vertical surfaces 26. The chair is shown as having a back rest 32 and a seat 34. The back rest is pivoted to the frame at points 36 some distance above the bottom of the frame and the seat has extension wings 38 which are pivoted to the back rest 32 at pivot points 40 which are below the points 36 with the back rest being pivoted. The forward part of the seat is supported on seat guide links 42 which are pivoted to the seat at 44, the lower ends of the guide links in the construction shown in Figures 1, 2 and 3, being pivoted at 46 to guide members or plates 48 which are pivoted at points 50 to the frame. The guide members 48 are pivoted at points 52 to thrust links 54 which are pivoted to the back rest at points 56 which are below the points 50 where the back rest is pivoted to the frame.

With the construction shown it will be seen that when the back rest is tilted and is swung about its pivot axis the seat frame will be tilted upward towards its forward edge and also will be pushed bodily forward owing to the fact that it is pivoted to the back rest below the pivotal axis thereof. In the present instance the seat is shown as having T-formation to the front thereof including T-extensions 58 which extend laterally of the front surfaces 26 of the chair arms. With the construction shown it will be seen that the rear surfaces of the T-extensions will move upwardly along the curved path as indicated by the broken lines 64 in Figures 2 and 3 so that the T-extensions of the seat will move away from the surfaces of the arms and clear the upper corners thereof. This construction permits the front surfaces of the arms to be vertical or even to project slightly and thereby to conform to features of design which may be desired.

The back rest and seat construction described is desirable in securing a proper movement of the seat whether the article of furniture is provided with a retractable leg rest or not. However, the use of a retractable leg rest is highly desirable in reclining articles of furniture and the present invention provides a linkage for legging and operating such a leg rest which is particularly designed for use in connection with the other features of the construction described.

In the form of the invention shown in Figures 1, 2 and 3, the leg rest 66 has attached to it links 68 and 70 which are pivoted to the leg rest at spaced locations of a width of the leg rest from front to rear. The seat has operating links or levers 72 pivoted thereto at points 74, in rear of the T-extensions 58, the ends of the long arms of these operating links or levers being pivoted at points 76 to the ends of links 68. The operating links or levers cross the links 70 to which they are pivoted at points 78. The rear ends of the links 70 are pivoted at 80 to links 82. The operating links or levers 72 have short arms 84 which are pivoted at 86 to the upper ends of control links 88 which are pivoted at 90 to the lower corners of the guide members or plates 48. The rear ends of the links 82 are pivoted at 92 to intermediate portions of the control links 88. When the chair is tilted back the linkage described will cause the leg rest to be raised and projected forward as shown in Figure 1. Where the linkage is used with a seat construction having T-shaped extensions, the rear portions of the operating levers 72 are given a depressed or concave curvature as shown at 94 so as to pass under the T-extensions without contacting the same.

It will be observed that the leg rest is carried on what may be termed a lazy tongs comprising two sets of related links. One set of the links comprises links 68 and 72 pivoted to each other at 76 and the other set of links comprises the links 70 and 82 pivoted to each other at 80. The leg rest is mounted on the ends of links 68 and 70. Only links 72 of the first set are pivoted directly to the seat. The second links 82 of the second set of links instead of being pivoted directly to the seat as is the practice in certain prior constructions, are pivoted to the control links 88 which transfer lifting force from the seat and back rest organization to the lazy tongs construction through the links 82. This gives a different operating movement to the leg rest than that which occurs when the leg rest lazy tongs linkage includes two sets of links connected directly to the seat.

Figures 4 and 5 show a modified form of the linkage for supporting the leg rest. The stationary frame, seat and back rest, and the linkage for operating the seat and back rest are the same as in the construction shown.
in Figures 1, 2 and 3. In this construction, however, the links 88a for transmitting movement to the leg rest operating levers are pull links instead of thrust links as in the previous construction and are connected to extensions 84a of the operating levers 72a which are not bent back as are the short arms 84 in the previous construction but extend beyond the pivot points 74. The lower ends of the pull links 88e are pivoted to the guide members 48a at points 90a which are between the points 50 where the members 48e are pivoted to the chair frame and the points 52a where thrust links 54 are pivoted to the guide members. The relative movement between the points 52a and the points 74 due to the forward and upward movement of the chair seat results in pulling force being applied to the links 88e when the chair members are moved to a reclining position. In the present construction also the leg rest supporting links 70 are pivoted to links 88a which are not connected to the pull links 88e but are pivoted at points 92a on the seat.

In the construction shown in Figures 6 and 7 the back rest, seat and their connections with the frame are the same as already described. Linkage for supporting leg rest is also the same as that shown and described in connection with Figures 4 and 5 except that in this construction the pull links 88b are not pivoted at their lower ends to the guide members 48b but are pivoted at points 90b directly to the stationary chair frame. As the seat moves forward and upward the links will pull on the short arms 84 of the leg rest operating levers 72 so as to project the leg rest as before.

I have described preferred embodiments of my invention, but it is understood that this disclosure is for the purpose of illustration, and that various omissions of changes in shape, proportion and arrangements of parts as well as the substitution of equivalent elements for those herein shown and described may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

1. A reclining article of furniture having a stationary frame, and a back rest and seat mounted thereon and movable from upright sitting to reclining positions, said frame having arms extending above the level of the seat when in upright sitting position, said arms having upward standing front faces set back from the front of the seat, said seat being of generally T-shape at the front and having portions extending laterally in front of the front faces of the arms, the back rest being pivoted on the frame to swing about an axis substantially above the bottom of the back rest, the seat being pivoted at its rear to the back rest substantially below the pivotal axis of the back rest, whereby when the back rest is tilted back the seat will be moved forward, a leg rest and linkage for supporting the leg rest and elevating and advancing the same when the back rest is tilted, comprising sets of inter-related links constituting a lazy tongs arrangement, one set of said links including a pair of links pivoted to each other, one of said links being pivoted at its free end to the leg rest at a point removed from the seat edge thereof, the other link of said pair being pivoted to the seat in rear of the T-extension portions thereof, the second set of lazy tongs links comprising a link pivot to the leg rest near to the rear edge thereof than the first link pivot to the leg rest, the second said leg rest pivot link being longer than said first leg rest pivot link and crossing the second link of the first pair of links between the point where said second link is pivot to said first leg rest pivot link and the point where said second link is pivot to the seat, a control link connected at one end to the second link in the first pair of said links pivoted to the seat, the other end of said control link being pivot to a guide member of an operating link system connecting said back rest, said seat and said frame, the second link of said second pair of links constituting the lazy tongs arrangement being pivot at one end to the outer end of said second leg rest pivot link and at its other end to an intermediate point of said control link between the point at which said control link is connected to said second link of said first pair of lazy tongs links and the point where said control link is pivot to the guide member of said operating link system.

2. In a reclining article of furniture having a stationary frame, a back rest mounted on said frame for tilting movement about an axis substantially above the lower end of the back rest, a seat pivoted at its rear to the back rest substantially below the pivotal axis of the back rest, a leg rest, means for connecting said leg rest and said seat permitting movement of said leg rest from a retracted position when said back rest is tilted, said means comprising sets of inter-related links constituting a lazy tongs arrangement, one set of said links including a pair of links pivot to each other, one of said links being pivot at its free end to the leg rest at a point removed from the rear edge thereof, the other link of said pair being pivot to the seat, the second set of lazy tongs links comprising a link pivot to the leg rest nearer to the rear edge thereof than the first link pivot to the leg rest, the second said leg rest pivot link being longer than said first leg rest pivot link and crossing the second link of the first pair of links between the point where said second link is pivot to the seat, the second said leg rest pivot link being pivot to said first leg rest pivot link and the point where said second link is pivot to the seat, a control link connected at one end to the second link in the first pair of links at a point removed from the point at which said second link of the first pair of links is pivot to the seat, the other end of said control link being pivot to a guide member of an operating link system connecting said back rest, said seat and said frame, the second link of said second pair of links constituting the lazy tongs arrangement being pivot at one end to the outer end of said second leg rest pivot link and at its other end to an intermediate point of said control link between the point at which said control link is connected to said second link of said first pair of lazy tongs links and the point where said control link is pivot to the guide member of said operating link system.

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