

# United States Patent [19]

Bocksch et al.

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[54] ROTARY ARMCHAIR

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297/440

[58] Field of Search ..... 297/349, 418, 416, 411,  
297/412, 440, 445; 248/415, 405, 406

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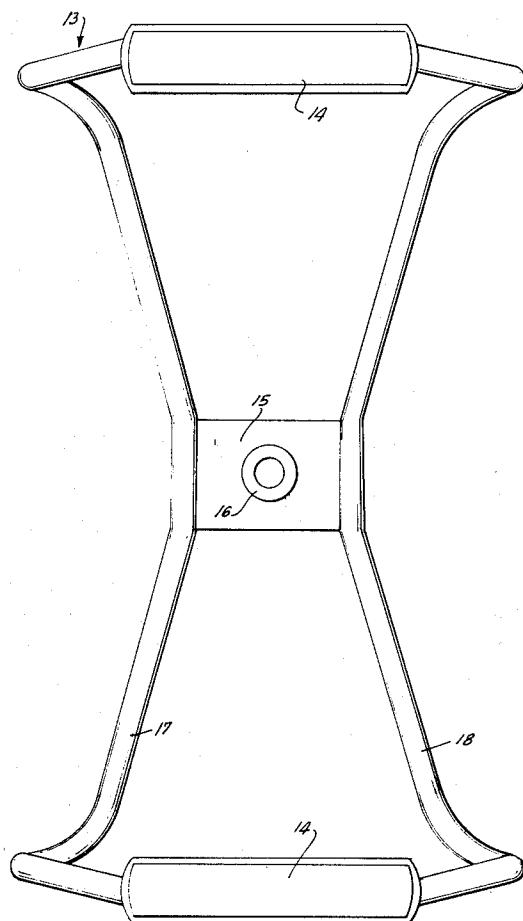
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[57]

## ABSTRACT

A base carries an upright telescopic spring-loaded column the lower end of which is removably received in a conical seat of the base, and the upper end of which is also provided with a conical seat. A discrete armrest unit has two symmetrically shaped tubular elements, the outer ends of which are connected by respective armrests, and the center of which is bridged by a connecting plate having a conical opening into which the conical seat at the upper end of the column is insertable so that a portion of the conical seat extends upwardly out of the plate. A seat unit including a seat and the backrest extending upwardly from the seat, is provided at the underside of the seat with a socket into a conical recess of which the upwardly extending part of the conical seat of the upper end of the telescopic column is insertable.

7 Claims, 7 Drawing Figures



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FIG. 5

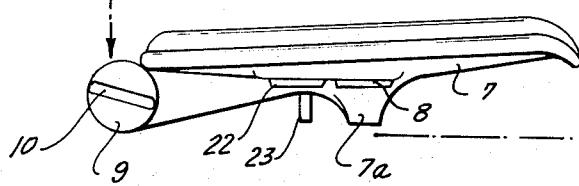
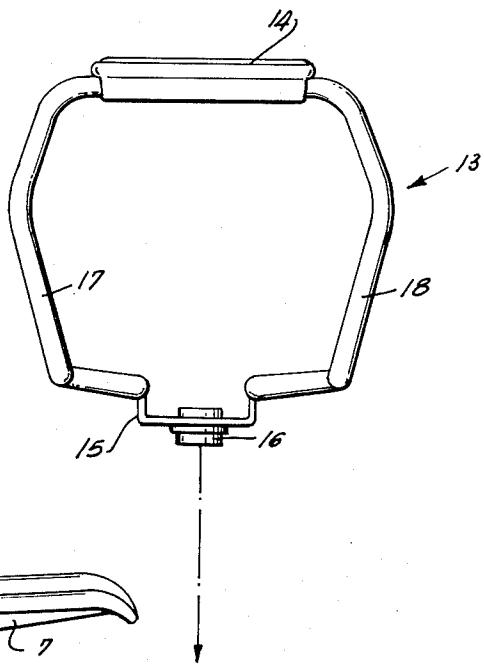
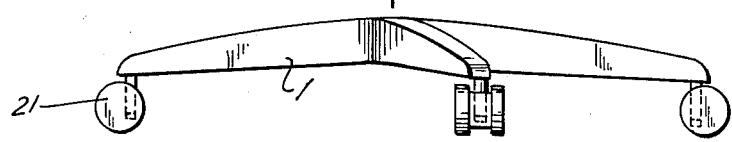
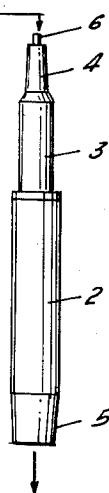


FIG. 2



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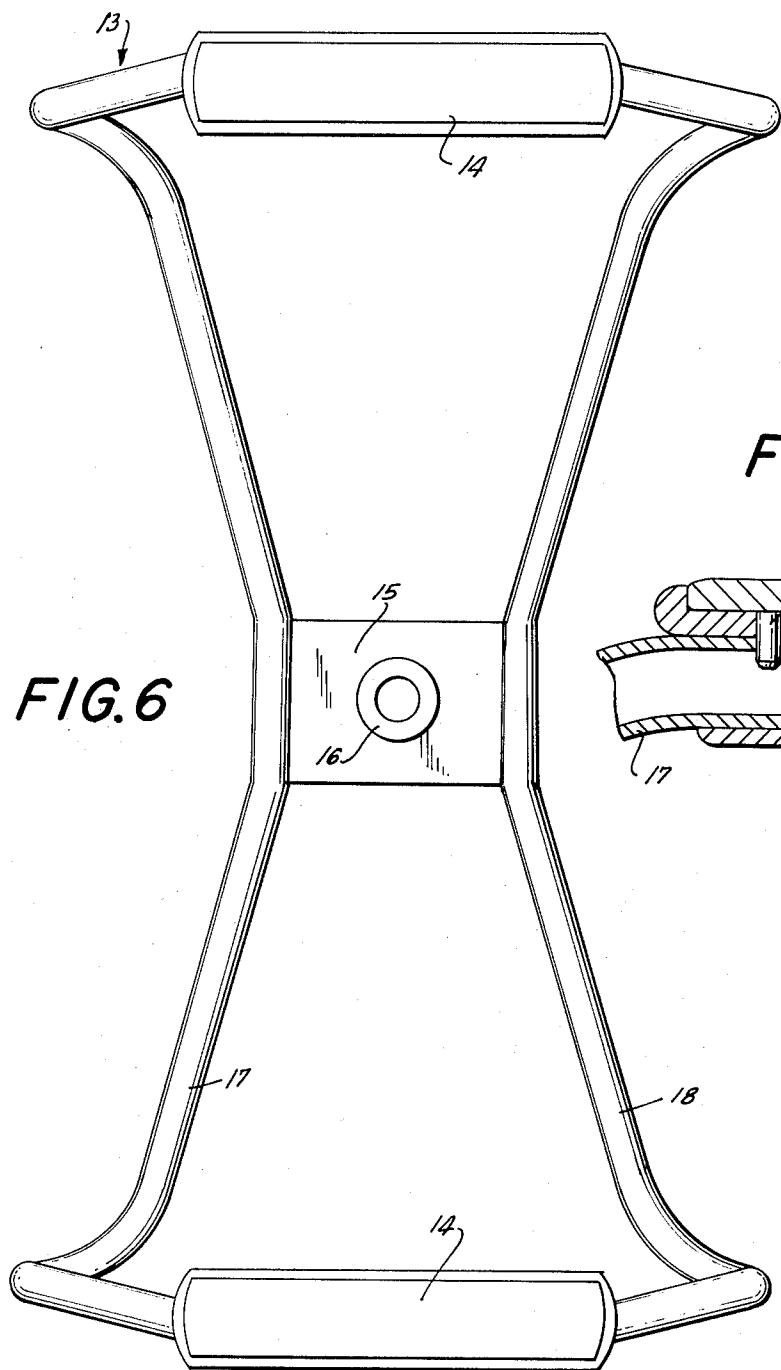
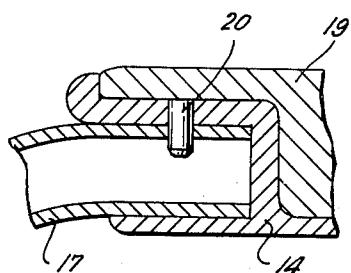


FIG. 7



## ROTARY ARMCHAIR

## BACKGROUND OF THE INVENTION

The present invention relates generally to a rotary armchair, and more particularly to a spring-loaded rotary armchair, and still more particularly to a spring-loaded rotary armchair which is adjustable in its height.

Spring-loaded chairs which can be rotated and which may or not be adjustable in the height of their seat, are already quite well known. As a rule they are used as office furniture. There are two basic types of such chairs, namely those having armrests and those which are not provided with armrests. If the chair is of the type having an armrest then it is well known to connect the armrests via their carriers to the underside of the chair seat, either by screwing them to the chair seat or by welding them to it. Of course, this requires additional operating steps in assembling the chair and increases not only the manufacturing cost but also the manufacturing time and, in consequence, the selling expense of such chairs.

Aside from these obvious disadvantages there are, however, other disadvantages in this type of furniture, resulting from the fact that the armrests are secured to the seat in such a manner that they can be removed either only with great difficulty or not at all. In particular, this results from the fact that there are instances where particular type of work to be performed by a person sitting on such a chair requires that the armrests be removed because they hinder the movements of the user. Of course, if the armrests are welded to the seat then they cannot be removed at all, and even if they are only screwed in place they are also difficult to remove and subsequently to reinstall. Conversely, it is sometimes desirable to purchase first a rotary chair without armrests and at a later date to be able to convert this chair to a chair having armrests, a possibility which is also precluded by the present state of the art.

Evidently, therefore, the existing state of the art is in need of further improvement.

## SUMMARY OF THE INVENTION

It is, accordingly, a general object of the present invention to provide such improvements.

More particularly it is an object of the present invention to provide a rotary chair, in particular a rotary armchair, which can be produced and assembled much more simply and less expensively than heretofore known from the art.

Another object of the invention is to provide such a rotary armchair which makes it possible for a user to convert the chair readily, without the use of tools and in a brief span of time from a chair having arms to a chair without arms, or vice versa.

An additional object of the invention is to provide such a rotary armchair in which all components can readily be disassembled for storage and, in particular, for packing and distribution purposes. This, however, is a requirement which must harmonize with the above-indicated requirement that the components of the armchair should be capable of being assembled and disassembled by a user without the need for tools and special connecting means.

In keeping with these objects, and others which will become apparent hereafter, one feature of the inven-

tion resides in a rotary armchair which, briefly stated, comprises a base, and a spring-loaded telescopic column connected with and extending upwardly from the base. The column includes an outer tube having a lower end which is secured to the base and also having an upper end. A turnable inner tube extends through the upper end and is provided with a conical free end portion having a lower and an upper section. A discrete armrest unit comprises two mirror-symmetrical shaped tubular elements having respective farther-spaced outer ends bridged by armrests, and closer-spaced center portions bridged by a connecting plate which is provided with a conical opening arranged to receive the lower section so as to releasably connect the unit with the column. A seat unit includes a seat, backrest extending upwardly from the seat, a socket at the underside of the seat and having a conical recess arranged to receive the upper section of the free end portion of the inner tube, so as to releasably connect the seat unit with the column. Further, the seat unit includes a projection which engages one of the tubular elements to thereby prevent relative angular displacement of the armrest unit and seat unit.

Due to the fact that the armrest unit is provided as a discrete unit it can be installed or removed in toto when the chair is to be converted to an armchair, or when it is to be converted to a chair having no arms. Because the armrest unit is so constructed that the tubular elements are symmetrical it is clear that the armrest unit will always have the proper orientation with respect to the seat, irrespective of how it is connected with the telescopic column. The wedging action obtained in the conical connections between the telescopic column and the armrest unit, and again between the telescopic column and the seat unit, eliminates any need for separate connecting means and makes possible a connection simply by inserting the conical free end portion into the conical opening and into the conical recess, respectively, without requiring any tools. On the other hand, a mere upwardly directed blow by the edge of the hand against the seat unit and the armrest unit will usually be sufficient to disconnect the two from the telescopic column, again without having to resort to the use of tools. The provision of the projection on the seat, and the engagement of this projection with one of the tubular elements of the discrete armrest unit, assures that relative angular displacement of the armrest unit and the seat unit is precluded, and at the same time assures that the once-obtained orientation of seat unit and armrest unit relative to one another will remain until it is desired to disengage them from one another.

Furthermore, it is advantageous according to the present invention to provide the base with conical recess having an upright orientation, and to provide the lower end of the outer tube of the telescopic column with a conical portion which can be received in this recess. Thus, the column can also be readily connected with and disconnected from the base without requiring tools for any particular expertise.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following de-

scription of specific embodiments when read in connection with the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a side view illustrating the base of the novel chair;

FIG. 2 is a side view illustrating the spring-loaded telescopic column of the chair;

FIG. 3 is a side view illustrating the seat of the seat unit for the chair;

FIG. 4 is another side view illustrating the backrest part of the seat unit;

FIG. 5 illustrates in a side view the discrete armrest unit of the chair;

FIG. 6 is a top-plan view of the armrest unit shown in FIG. 5; and

FIG. 7 is a fragmentary longitudinal section illustrating a detail of the connection of the armrest unit with the tubular elements thereof.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the drawing we have illustrated a single exemplary rotary armchair according to the present invention, with FIGS. 1-5 each illustrating a portion of the armchair, FIG. 6 illustrating a top-plan detail view of the portion shown in FIG. 5, and FIG. 7 showing a fragmentary detail view of the portion in FIGS. 5 and 6.

It will be seen, by referring to the drawing, that the telescopic column is composed of an outer tube 2 and an inner tube 3 which extends upwardly through the upper open end of the outer tube 2. The column is spring-loaded, which can be achieved in a manner well known from the art and therefore requiring no further discussion, by inserting a so-called gas spring into the interior of the column. An operating pin 6 is provided, which when depressed opens a valve provided in the piston of the gas spring and unblocks the piston of the latter so that the piston can move. The gas spring resembles a shock absorber in its construction and operation. When there is no weight on the telescopic column, the inner tube 3 will slide upwardly upon depressing of the pin 6 until the latter is disengaged, causing the valve in the piston of the gas spring to close and thus to block the further movement of the piston. If the telescopic column is subjected to a load, the inner tube 3 slides into the outer tube 2 until the valve again is closed.

It is emphasized that the construction and operation of the gas spring itself does not form a part of the present invention and is well known per se from the art. It is mentioned here only for purpose of explanation, and no claims are made as to its features.

The outer tube 2 of the telescopic column is provided with a cone 5 which can be inserted into a corresponding bore located centrally in the cruciform base 1. The outer ends of the projections of the base are provided with adjustable casters 21, advantageously dual characters. The upper free end portion of the outer tube 3 is also provided with a cone, identified with reference numeral 4.

Before discussing further details of the assembly attention is directed to FIGS. 5 and 6, it will be seen that the discrete armrest unit which forms a part of the rotary armchair according to the present invention is designated with reference numeral 13 and has to symmetrical shaped tubular elements 17 and 18. The outer free ends of the elements 17 and 18 (only one of elements

17 shown) are, as seen in FIG. 7, received in passages provided at the opposite ends of armrests 14 in which they are received under pre-stress. In these passages they are retained against displacement by pins 20. Reference numeral 19 designates padding or upholstery on the armrests 14.

In the center region intermediate their respective outer ends the tubular elements 17 and 18 are closest together and are there bridged by a sheet-material 10 (preferably sheet metal) plate 15 which is welded to them. At the center of the plate 15 is a conical opening 16 which can receive the lower section of the conical free end portion 4 at the upper end of the outer tube 3 of the telescopic column. The upper section of the 15 free end portion 4 will then project upwardly beyond the plate 15. When the chair is assembled to this extent, then the seat unit is secured to the column. For this purpose the seat 7 is provided at its underside with a socket 7a having a conical recess arranged to mate with 20 the upper section of the conical free end portion 4. Thus, the seat 7 is then connected with this upper section, that is the section which projects upwardly beyond the plate 15. The seat is provided with a laterally projecting extension or tongue 23 which, when the seat 25 7 is connected with the column in the manner just described, will engage one of the tubular elements 17 and 18 so as to prevent any undesired changes in the angular orientation of the seat unit and armrest unit with reference to one another.

30 Diagrammatically illustrated, because it does not form a part of the invention, is an operating button 8 by means of which a user can operate the pin 6 which in turn actuates the valve of the gas spring; reference numeral 22 similarly diagrammatically identifies an operating button for a further gas spring permitting an adjustment in the inclination of the seat back or backrest 12. Of course, there must be transmission members connecting the buttons 8 and 22 with the pin 6 and a corresponding pin for the second gas spring, and these 35 transmission members also do not form a part of the present invention but should be understood to be located in the interior of the seat 7.

The backrest 12 has a carrier 11 which is insertable 40 into a recess between the clamping device 9 composed of two shell sections which can be so drawn together via an adjusting screw 10 as to retain the carrier 11. The latter can thus be fixed in the clamping device 9 at any desired level. The device 9 is eccentrically 45 mounted on the seat 7 and its position and thereby the inclination of the backrest 12 can be changed by operating the gas spring mentioned above which is not illustrated but which will be actuated by depressing the button 22.

50 In addition to the advantages obtained with the present invention and outlined above, there is the further advantage that a rotary armchair such as illustrated in FIGS. 1-7 can be readily manufactured but requires no assembly of its constituent components to one another, namely of the column to the base, of the armrest unit 55 to the column, or of the seat unit to the column. These various components can all be supplied in unassembled condition to a user. This not only cuts down on the assembly operations at the manufacturer, and thereby reduces the manufacturing expense, but also permits a simpler packing of the components for shipment, and a manner of packing which requires less shipping space. On the other hand, the assembly of the various 60 65

components by the user is so simple and requires no tools or expertise at all, that it is possible without any difficulty to expect a user to assemble the components himself.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of constructions differing from the types described above.

While the invention has been illustrated and described as embodied in a rotary armchair, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims:

1. A rotary armchair, comprising a base; a spring-loaded telescopic column connected with and extending upwardly from said base, said column including an outer tube having a lower end secured to said base and an upper end, and a turnable inner tube extending through said upper end and provided with a conical free end portion having a lower and an upper section; a discrete armrest unit comprising two symmetrical shaped tubular elements having respective farther-spaced outer ends bridged by armrests, and closer-

spaced center portions bridged by a connecting plate which is provided with a conical opening arranged to receive said lower section so as to releasably connect said unit with said column; and a seat unit including a seat, a backrest extending upwardly from said seat, a socket at the underside of said seat and having a conical recess arranged to receive said upper section so as to releasably connect said seat unit with said column, and a projection on said seat and engaging one of said tubular elements to thereby prevent relative angular displacement of said units.

2. A rotary armchair as defined in claim 1, wherein said base is of substantially cruciform configuration.

3. A rotary armchair as defined in claim 2, wherein said base has a plurality of projections; and further comprising casters on the respective projections.

4. A rotary armchair as defined in claim 1, said armrests being elongated and having spaced ends provided with inwardly extending passages, the respectively associated outer ends of said tubular elements each being received in stressed condition in one of said passages; and pin means securing the respective outer ends in the associated passages.

5. A rotary armchair as defined in claim 1, said base having a conical bore; and wherein said lower end of said outer tube is conically configurated and releasably received in said conical bore.

6. A rotary armchair as defined in claim 1, wherein said armrests each comprise a support, and padding on said support.

7. A rotary armchair as defined in claim 1, wherein said connecting plate is welded to said tubular elements.

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