

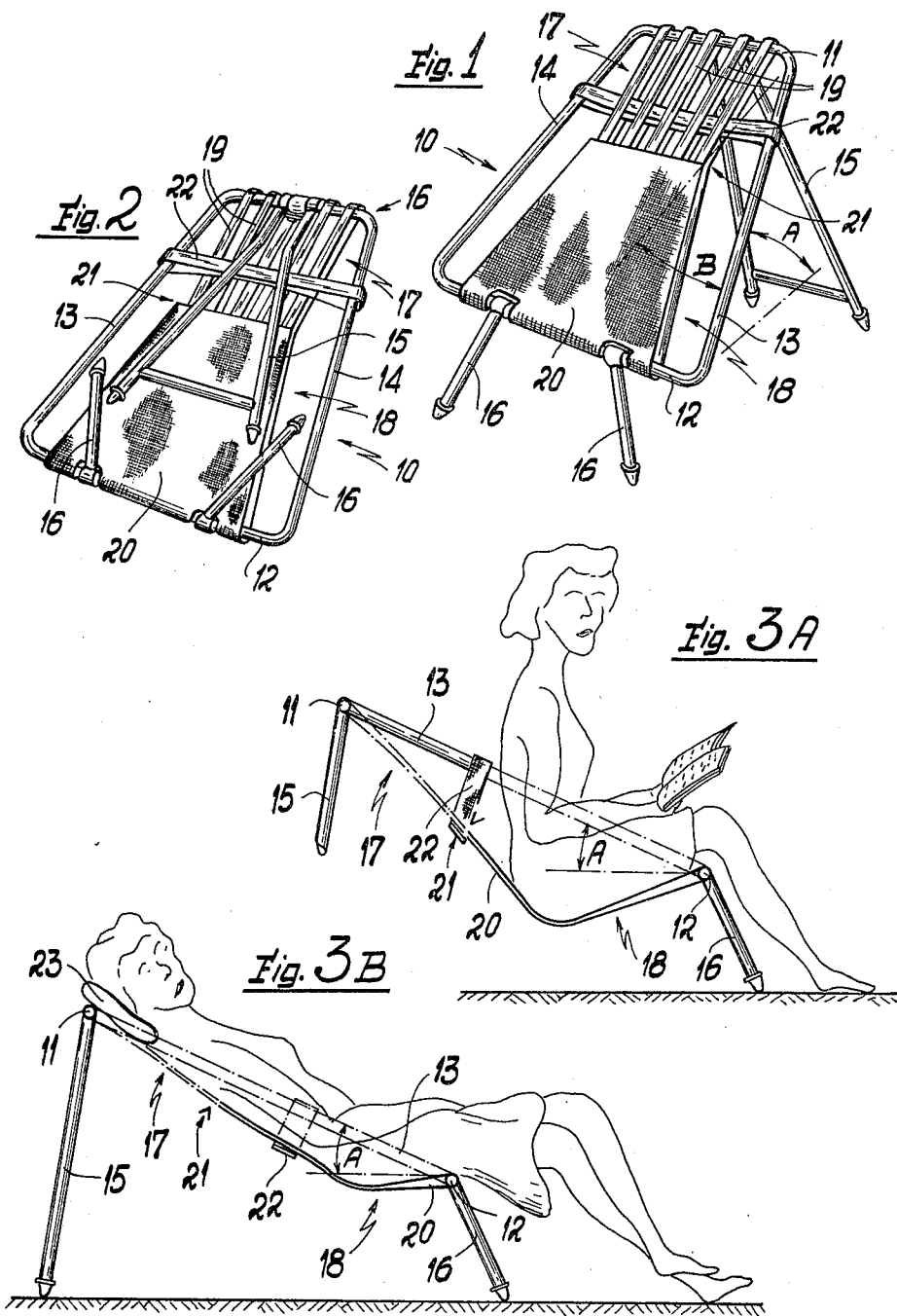
Oct. 18, 1966

TITO MOROSINI
COLLAPSIBLE EASY CHAIR

3,279,846

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2 Sheets-Sheet 1



INVENTOR.
Tito Morosini

BY

Michael J. Striker
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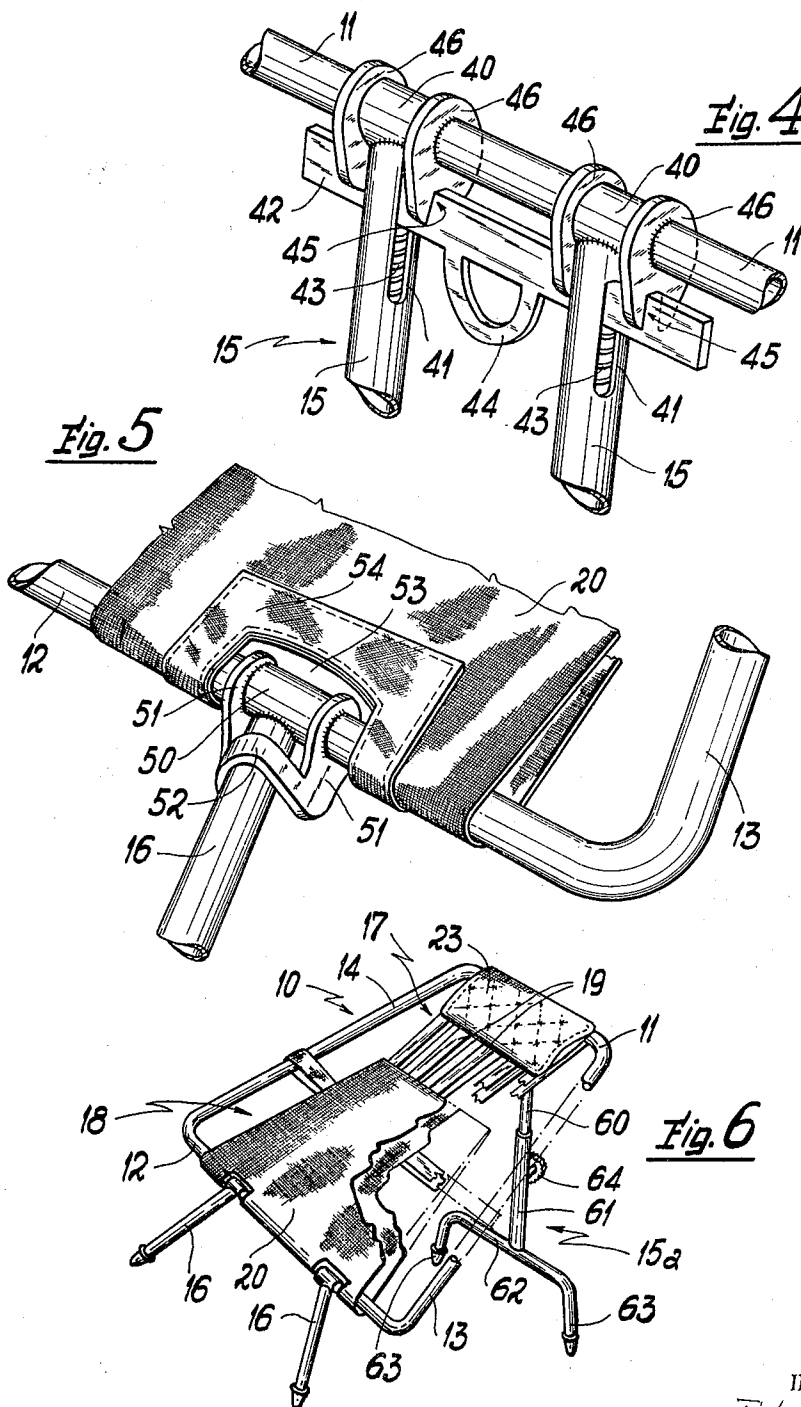
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INVENTOR.
Tito Morosini
Michael S. Striker
Att'y

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COLLAPSIBLE EASY CHAIR

Tito Morosini, Milan, Italy, assignor to Teodoro Camielli & C.—S.p.A. Vittorio Veneto (Italy), a company of Italy

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This invention generally relates to easy chairs or like articles of furniture and, more particularly, to a new and improved easy chair of collapsible type to facilitate the transportation thereof and including an essentially rigid framing having a front side portion, a rear side portion and symmetrically located lateral side portions, leg forming members hingedly secured to said framing to form therewith a collapsible framework, and a large strip of flexible textile material longitudinally arranged in said framing and having its rear and front end portions secured to said rear and respectively front side portion of said framing to form the seat and back-rest component of the chair.

Such collapsible easy chairs are widely known and appreciated in particular for garden, beach, camping and in general for outdoors use. Taking into account their structural simplicity, light weight and easy transportation, such easy chairs are considered as satisfying comfortable, even if the fabric seat component is generally considered somewhat rigid. Such chairs are mostly provided with an adjustable framework for adjusting the inclination of their seat forming fabric strip, and with strings for adjusting the deepness of the downward bow formed by said fabric component as loaded by the user's body weight. Such provisions lead however to an undesired structural complexity and the adjustable chairs of the type heretofore known require action and operations for their adjustment to a more or less reclined position as desired for example for reading and conversation and respectively for rest and relaxing.

It is an object of this invention to provide a new and improved collapsible easy chair of the above general type and which is not subject to the limitations of the current corresponding articles of furniture.

More particularly, it is an object of this invention to provide a new collapsible easy chair of the type referred to above, which is distinguished by its improved comfortableness, in particular by the provision of a strip-shaped seat forming structure including a fore portion and a rear portion, the said fore portion being made of a flexible but inextensible material and the said rear portion being made of resiliently extensible material to provide a seat and back rest forming support, the arrangement and the bow of which will be modified in accordance with the position of the user's body.

Another object of this invention is to provide an improved easy chair as above, which is distinguished by the provision of a transverse resiliently extensible support member secured at its opposite end portions to the said symmetrical lateral side portions of said framing, said transverse member being slidably displaceable along said lateral portions for adjusting the bow of said seat forming structure as loaded by the user's body.

A further object of this invention is to provide an improved easy chair as above, distinguished by the provision of a framing having an essentially trapezoidal configuration having its greater and smaller base at said front and respectively at said rear side portion thereof, whereby, the farther said transverse support is displaced towards said fore or front portion, the more its elongation and stretching are increased to provide a correspondingly increased supporting force.

A still further object of this invention is to provide an easy chair as above, distinguished by the extreme simplicity of its framework and by the easiness of the operations required for collapsing said framework for storage and transportation and, respectively, for setting the chair up again for comfortable use thereof.

These and other objects and advantages of the invention will be made readily apparent as this description proceeds, and in order to more particularly describe the invention, reference is made to the accompanying drawings, forming an essential component of this disclosure, and which, by way of example only, illustrate one specific embodiment of the improved collapsible easy chair and a modification thereof. In the drawings, wherein like reference numerals refer to like parts and components throughout the several figures:

FIGURE 1 is a perspective view showing the chair in its normal position of use;

FIGURE 2 is a like view showing same chair in its fully collapsed position of transportation;

FIGURES 3A and 3B are somewhat diagrammatical showings of the chair, in longitudinal vertical sectional view, directed to illustrate the different arrangement and bow of its seat and back-rest forming component under two different positions of the user's body;

FIGURES 4 and 5 are fragmentary perspective views of details of the hinge connections of the various components with the framework; and

FIGURE 6 is a perspective view similar to FIG. 1 and showing a modified embodiment of the improved chair.

Referring first to FIGS. 1 and 2: there is shown a collapsible easy chair having a rigid framing generally indicated at 10 and of essentially trapezoidal configuration. Such framing may be preferably constructed of tubular metallic material and comprises a rear side portion 11, a fore side portion 12 parallel to said rear side portion, and symmetrically located lateral side portions 13 and 14. The bases of the trapezoid are embodied by said rear and fore portions 11 and 12, and the greater base is formed by said fore portion 12.

Said framing 10 is suitably supported on and above the ground by leg forming components hingedly connected to said rear and fore side portions, preferably by means adapted to secure said components at the required inclination thereof. A preferred embodiment of such means will be discussed in detail below. For example, said leg forming components may include a downwardly directed rear supporting structure 15 having two symmetrically diverging members and a reinforcing cross member secured therebetween, as shown, and two diverging and downwardly slanting fore legs 16. Such components are preferably made of metallic tubular material also. The manufacture of the above frame structure of tubular material appertains to common knowledge of those skilled in the art and therefore no further detail will be herein set forth thereabout.

The user's body seat and back-rest forming structure is suitably secured to and stretched between said rear and fore side portions of said framing 10. Said structure includes a rear upper back-rest portion 17 and as a seat a lower fore portion 16, said portions being critically formed by a flexible and resiliently extensible material, such as by a plurality of parallel and spaced elastic strips 19 made of a material including rubber warp threads or otherwise elasticized fabric, and respectively by a flexible but not extensible material, such as a fabric of the type conventionally made use of for providing the seat and/or back-rest surfaces of garden chairs, lounges and other collapsible or foldable articles of the character considered.

Said rear upper portion and said fore lower portions 17 and 18 are firmly secured to each other at transverse alignment indicated at 21, by means of sewing, riveting or

other conventional means. The said rear portion 17 is shorter than said fore portion 18. Preferably, the ratio of the length of said rear extensible portion (as fully stretched) to the length of said not extensible fore portion, in the space defined between said rear and fore side portions of the framing, such space being preferably on the order of 3 feet or slightly more, is comprised between a ratio of 1 to 3 and 1 to 4.

The length and the slant of the supporting structure formed by said components 15 and 16 is such as to support the said framing 10 at a suitable inclination to horizontal. Such inclination may be advantageously defined by an angle A (FIGS. 1, 3A and 3B) comprises between 20 and 30 degrees, and preferably of 25 degrees; however, provision may be made for adjustment at will of such inclination, as discussed below with reference to FIG. 6.

The improved easy chair of this invention can advantageously be provided also with a further body supporting component consisting of a transverse resiliently extensible member 22, preferably made of elasticized strip material and arranged between said lateral side portions 13 and 14. Such transverse strip 22 is arranged to pass beneath the longitudinal compound made support structure 17 and 18 and is slidable along said lateral side portions 13 and 14, so that it may be arranged at different positions in the interval defined between said rear and fore side portions 11 and respectively 12. In FIGS. 3A and 3B there are shown two different positions in which said transverse extensible strip may be arranged, for example. Assuming that the divergence of said lateral side portions 13 and 14 is relatively small (at an angle B—FIG. 1—of between 10 and 15 degrees, for example) the said transverse strip will remain at the desired adjusted position upon the friction thereof with the said lateral side portions 13 and 14. Such transverse strip may be provided with a buckle or other conventional means for full removal and/or for adjustment of the stretching thereof, if desired.

The new and surprising advantages of the above described arrangement and combination of parts of the improved chair will be readily apparent from a comparison of the showings of FIGS. 3A and 3B. As the user accommodates himself on the improved easy chair in different positions, the compound body supporting structure 17 and 18 will adapt itself to a different configuration, bow and deepness. If the user sits on portion 18 fairly far from side portion 12 of the framing, the rear upper extensible portion 17 of said structure will be more stretched and the entire structure will assume the most suitable configuration (FIG. 3A) for sitting. On the other hand, if the user sits fairly near to said fore side portion 12 and leans backward (FIG. 3B), so that his body weight is substantially distributed along the entire structure length, a lesser stretch will be imparted to said structure and the extensible portion 17 thereof will contract. The structure will therefore assume a configuration which is most adapted for comfortable rest and relaxing. A pillow 23 (FIGS. 3B and 6) may be provided and preferably connected by strings to the said upper rear side portion 11 of the framing for providing a comfortable head-rest.

The arrangement of the said extensible pre-stretched transverse strip 22 may be adjusted for best adaptation of the chair to the desired rest position. For example, in FIG. 3B there is shown how the said transverse strip 22 may be adjusted in a position such as to provide a comfortable support for the user's waist. It is evident that a means for adjustment of the said components, such as of the stretching of the extensible members and parts, may be provided for best adaptation of the improved chair to different users' corpulence, body weight and size.

It is evident that said leg forming members of the improved chair are provided with means adapted for securing said members in their operative position (FIGS. 1, 3A, 3B and 6) to resist shocks and stresses as the user sits, gets up and moves about on the chair. FIGS. 4 and

5 illustrate a preferred but not critical construction of said means, wherein the rear supporting structure 15 may be latched to resist movements in any direction, while the fore legs 16 abut on stop means in their most downwardly and forwardly extended position.

As shown in FIG. 4, the two parallel upper end portions 15' of rear supporting structure 15 are secured, by welding for example, to short sleeves 40 rotatably arranged about the said upper rear side portion 11 of framing, which therefore will embody the axis about which said structure may be swung for setting the chair up (FIG. 1) or collapsing it for facilitating its storage and transportation. Said portions are provided with longitudinally extended slots 41 wherein and wherealong a flat rod 43 is arranged for guided displacement in the plane defined by said portions 15'. Such rod 42 is upwardly urged by spring means, such as coil springs 43 arranged within said portions 15', and it is provided with an eye such as shown at 44 so as to permit a user to exert manually a downward pull.

At both ends of each sleeve 40 shaped flanges 44 are arranged and secured to said rear side portion 11, for example by welding. Such flanges define the position of said sleeves and therefore of the rear supporting swingable structure 15 along said rear side portion 11. In addition, said flanges are downwardly elongated and provided with notches or slits 45 wherein said rod 42 may fit when it is urged close to said upper side portion 11, as shown. Said rod 42 therefore acts as a latch for preventing the rotation of said structure 15 about the axis of portion 11 and defining the operative position of said structure in the chair. When folding of said chair is desired, by manually displacing said rod 42 far from said portion 11, said rod will be disengaged from notches 45 and said structure 15 may be manually swung in a position essentially co-planar to framing 10, as shown in FIG. 2.

Said flanges 44 may be shaped to form a camming surface at their edges, wherealong said rod 42 may slide and be thereby caused to retreat as the structure 15 is being swung back in its operative position and then snap into engagement in said notches 45 to facilitate the setting of the chair for use.

Provided that the said chair may be secured in its operative position by the latching of its rear supporting structure at 15, it has been found that the fore legs 16 thereof do not require a corresponding latching, as said fore legs 16 are set at a substantial forward slanting position and abut on stop means at said position. Such stop means may be provided as shown in FIG. 5. Each leg 16 (only one of which is shown in FIG. 5) is secured to a sleeve 50, by welding for example, positioned between flanges 51 secured to said fore side portion 12 of framing and integrally formed with a bow-shaped part 52 bridging over and about said leg 16 when in its operative position, to limit the downward and forward swinging of said leg.

The hinge and stop means of each leg 16 with respect to the fore side portion 12 of the framing may be arranged at locations comprised in the width of the fabric 20 secured to said portion 12. Such fabric may be provided with a suitable opening such as at 53, reinforced such as at 54 for the desired arrangement. Said fore legs 16 may be manually swung back at a folded position essentially co-planar to the framing 10 (FIG. 2). Therefore the improved chair of the present invention may be collapsed to a package of very small overall dimensions, namely into a completely flattened structure for facilitating its storage and transportation.

While, as above discussed, it has been found that upon a proper inclination of the framing 10, such as comprised between 10 and 30 degrees, the chair will afford a very comfortable seat means either for upright sitting and for relaxing, the improved chair might be provided

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with means designed for adjustably varying such inclination.

The modified embodiment of FIG. 6 is provided with one example of such means, consisting of an adjustably elongatable rear supporting structure generally indicated at 15a.

Such structure may include an upper tubular member 60 telescopically fitted into a lower tubular member 61 secured to a transverse member 62 at its lower end to form a suitable wide interval between parts 63 at which said structure rests on the ground. Said mutually telescopic members 60 and 61 may be secured at a plurality of relative axial positions by conventional means, such as a set-screw or a set-pin which may fit into any of a plurality of holes drilled into the inner member 60, and controlled by a knob such as at 64 or a winged screw or the like.

While only preferred embodiments of the improved easy chair of the invention have been heretofore described and shown in the accompanying drawings, it is evident that further modifications and improvements may be provided by those skilled in the art, in the structural details of the new structure and in the various ancillary provisions and adjusting devices; for example, the said fore legs 16 may be constructed as two telescopic members for adjustment of the length thereof. Such legs, which have been described and shown as individually swingable, may be secured together by transverse brace means for providing an unitarily swingable structure. Flange means and/or transverse members may be provided at the lower end portions of the leg forming means to provide a larger support surface to prevent sinking of said legs into sand or other loose grounds, and so on.

Therefore, it is intended that the above and other modifications and adaptations are comprehended within the meaning and range of equivalents and embodiments of the invention, except insofar as set forth and defined in the appended claims.

Having now described the invention, what I claim as new and desire to have protected by Letters Patent of the United States of America is:

1. In a collapsible easy chair of the character described, the combination of:

an essentially rigid framing structure including spaced parallel rear and fore support elements and spaced symmetrical connecting portions extending thereintermediate;

rear and fore legs forming supporting rear and fore structures respectively hingedly connected to said rear and fore elements of said framing and manually swingable between a collapsed position essentially co-planar to said framing and an extended operative position in which said framing is supported upon an essentially horizontal ground surface at a forward inclination, latch means for releasably securing at least one of said rear and fore supporting structures in said operative position, said rear supporting structure including parallel tubular members forming the part of said structure adjacent and hingedly connected to said rear element, said latch means comprising a transverse rod guidedly slidable along said members, spring means urging said rod towards said rear element, and flange means rigidly connected to said rear element and having notches for engagement of said transverse rod as urged by said spring means when said rear supporting structure is swung to its operative position;

a seat and back-rest surface forming flexible structure longitudinally arranged and stretched between and secured to said rear and fore elements of said framing, said flexible structure comprising

a flexible and resiliently extensible rear portion adjacent to said rear element of said framing, and

a flexible but inextensible fore portion adjacent to said fore element of said framing, the length of said in-

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extensible fore portion being between two-thirds and three-fourths of the spacing between said parallel rear and fore elements of said framing.

2. In a collapsible easy chair of the character described, the combination of:

an essentially rigid framing structure of generally trapezoidal configuration, including parallel rear and fore support elements spaced at an interval of at least three feet and symmetrically diverging connecting portions extending thereintermediate, said fore element forming the greater base of the trapezoid;

rear and fore legs forming supporting rear and fore supporting structures respectively hingedly connected to said rear and fore elements of said framing and manually swingable between a collapsed position essentially coplanar to said framing and an extended operative position at which said framing is supported rearwardly and upwardly inclined upon an essentially horizontal ground surface and means for releasably securing at least one of said rear and fore supporting structures in said operative position;

a seat and back-rest surface forming respective flexible structures longitudinally arranged and stretched between and secured to said rear and fore elements of said framing, said flexible structures consisting of

a flexible and resiliently extensible rear portion adjacent to said rear element of said framing and formed by a plurality of parallel members of elastically extensible material, and

a flexible but inextensible fore portion made of flexible but inextensible fabric material, and adjacent to said fore portion of said framing, the length of said inextensible fore portion being substantially greater than half of the spacing between said parallel rear and fore elements of said framing;

and a transverse support component of elastically extensible strip material secured to and stretched between and slidably displaceable along said symmetrically diverging connecting portions of said framing, and arranged below the respective flexible structures.

3. The combination as defined in claim 2, further comprising a pillow secured to said rear element of said framing and arranged to cover and rest upon said flexible and elastically extensible rear portion of said back-rest-forming flexible structure.

4. The combination as defined in claim 2, wherein said rear and fore legs respectively form supporting structures of greater and smaller length to support the rear and the fore portion of said framing respectively at a greater and smaller height so as to support said framing over an essentially horizontal surface at an inclination comprised between 20 and 30 degrees.

5. The combination as defined in claim 2, wherein the supporting structure formed by said rear legs comprises relatively displaceable components for adjustment of the height at which the rear portion of said framing is supported above said ground surface, and having manually operable means for securing said components to each other in any of a plurality of relative positions for adjustment of the inclination of said framing.

6. In a collapsible easy chair of the character described, the combination of:

an essentially rigid framing structure of generally trapezoidal configuration, including parallel rear and fore support elements spaced at an interval of at least three feet and symmetrical connecting portions extending thereintermediate and diverging at an angle between 10 and 15 degrees, said fore elements forming the greater base of the trapezoid;

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rear and fore legs forming rear and fore supporting structures respectively connected to said rear and fore elements of said framing so as to support said framing upon an essentially horizontal ground surface at a forward inclination on the order of between 20 and 30 degrees;

a seat and back-rest surface forming respective flexible structures longitudinally arranged and stretched between and secured to said rear and fore elements of said framing, said flexible structures consisting of

a flexible and resiliently extensible rear portion adjacent to said rear element of said framing and formed by a plurality of parallel elastically extensible strips, and

a flexible but inextensible fore portion made of flexible but inextensible fabric material, and arranged adjacent to said fore element of said framing, the length of said inextensible fore portion being comprised between two-thirds and three-fourths of the spacing between said parallel rear and fore elements of said framing;

a transverse support component of elastically extensible strip material secured to and stretched between and slidably displaceable along said symmetrically diverging connecting portions of said framing, and arranged below the respective seat and back-rest-forming flexible structures.

7. In a collapsible easy chair of the character described, the combination of:

an essentially rigid framing structure of generally trapezoidal configuration, including parallel rear and fore supporting elements spaced at an interval of at least three feet and symmetrical connecting portions extending thereintermediate and diverging at an angle between 10 and 15 degrees, said fore element forming the greater base of the trapezoid;

rear and fore legs forming rear and fore supporting structures respectively hingedly connected to said rear and fore elements of said framing so as to be manually swingable between a collapsed inoperative position to urging of the latter by said spring means and an extended operative position in which said framing is supported upon an essentially horizontal ground surface at an inclination on the order of between 20 and 30 degrees;

means for releasably securing said rear supporting structure in said operative position;

a seat and back-rest surface forming respective flexible structures longitudinally arranged and stretched between and secured to said rear and fore elements of said framing, said flexible structures consisting of

a flexible and resiliently extensible rear portion adjacent to said rear element of said framing and formed by a plurality of parallel elastically extensible strips, and

a flexible but inextensible fore portion made of flexible but inextensible fabric material, and arranged

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adjacent to said fore element of said framing, the length of said inextensible fore portion being comprised between two-thirds and three-fourths of the spacing between said parallel rear and fore elements of said framing;

and a transverse support component of elastically extensible strip material secured to and stretched between and slidably displaceable along said symmetrically diverging connecting portions of said framing, and arranged below the respective seat and back-rest forming flexible structure.

8. The combination as defined in claim 7, further comprising manually disengageable latch means for angularly securing said rear legs forming said rear structure to said rear element of said framing.

9. The combination as defined in claim 8, wherein said rear structure includes parallel tubular members forming the part of said structure which is adjacent and hingedly connected to said rear element, and wherein said latch means comprise a transverse rod guidedly slidable along said members, spring means urging said rod towards said rear element, and flange means rigidly connected to said rear element and having notches arranged for engagement therewith of said transverse rod in response to injury of the latter by said spring means and when said rear structure is swung to its operative position.

10. The combination as defined in claim 7, further comprising stop means rigidly connected to said fore element of said framing and arranged for abutment thereagainst of said fore structure in the downwardly and forwardly extended operative position thereof.

11. The combination as defined in claim 7, further comprising a pillow secured to said rear element of said framing and arranged to overlie and rest upon said flexible and elastically extensible rear portion of said back-rest-forming flexible structure.

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FRANK B. SHERRY, *Primary Examiner.*

F. K. ZUGEL, *Assistant Examiner.*