Aug. 30, 1955 G. M. JENNINGS 2,716,441

COLLAPSIBLE CHAIR

Filed Jan. 16, 1950

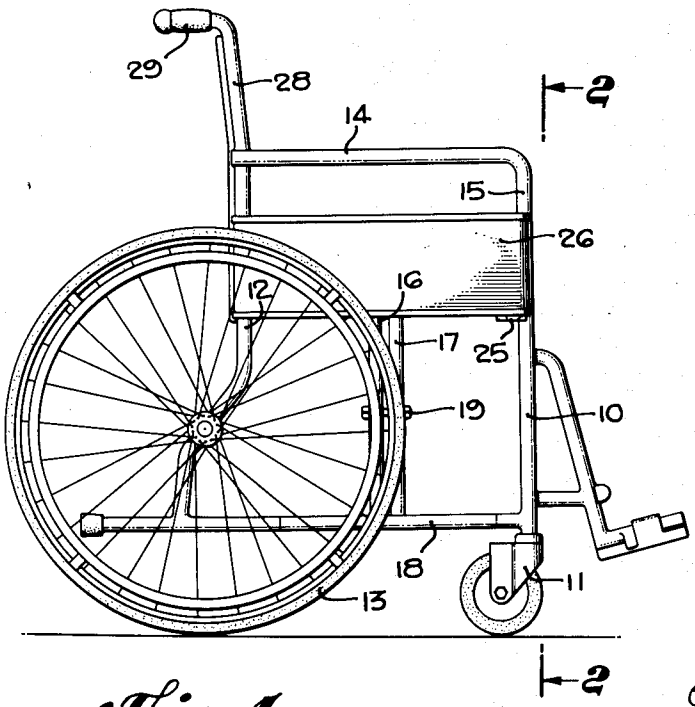


Fig. 1.

Fig. 4.

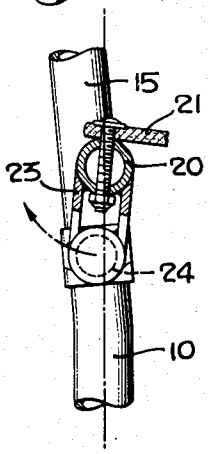
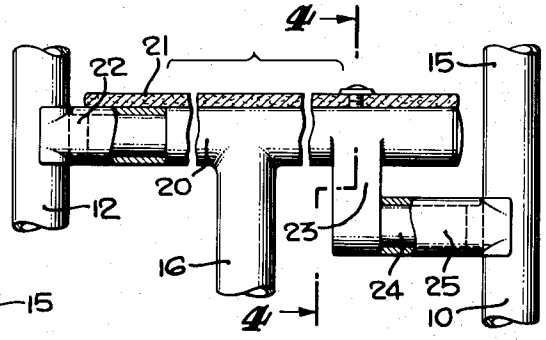


Fig. 3.



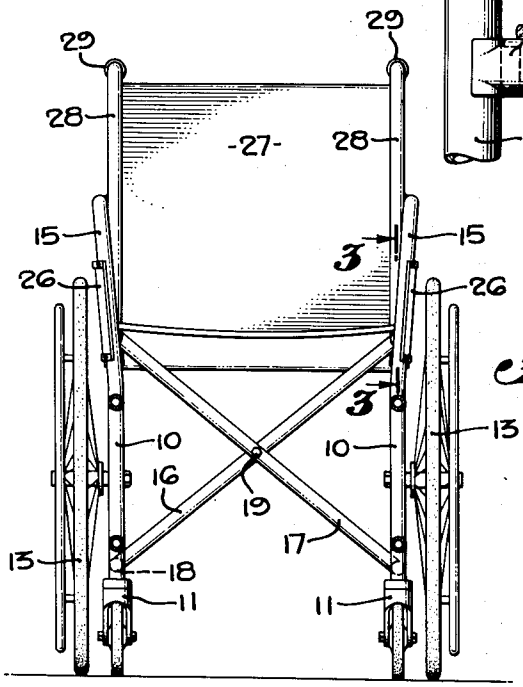


Fig. 2.

GERALD M. JENNINGS,
INVENTOR.

BY Hazard & Miller

ATTORNEYS

United States Patent Office 2,716,441
Patented Aug. 30, 1955

2,716,441

COLLAPSIBLE CHAIR

Gerald M. Jennings, Los Angeles, Calif.

Application January 16, 1950, Serial No. 138,844

3 Claims. (Cl. 155—140)

This invention relates to improvements in collapsible chairs, and has been particularly designed for use in collapsible wheel chairs but may be employed on other types of collapsible chairs as well.

A primary object of the invention is to provide a collapsible chair wherein the width or distance between the arm rests may be increased without increasing the spacing of the side frames of the chair when in extended position and without increasing the spacing of the wheels of the chair if the chair is so equipped.

Heretofore, collapsible wheel chairs have been provided consisting of two opposed side frames collapsibly connected together by an X-brace. There are many considerations which require that the spacing of the side frames when the chair is in extended or unfolded condition remain a certain distance, but it is desirable in many instances that the arm rests be spaced somewhat wider than their spacing in the conventional chair so that the chair may be used by large persons.

More specifically, an object of the present invention is to provide an improved chair wherein the side frames provide legs, the tops of which extend outwardly and upwardly at an angle to the lower portions of the legs and then extend rearwardly to provide arm rests that are rigidly secured to the outer sides of the rear legs of the wheel chair, and to provide a novel construction for mounting the slides on the seat bars of the X-brace so that they may follow the angular legs in the collapse of the chair. In this manner, as the arm rests are inclined outwardly and upwardly with relation to the planes of the side frames, an additional width or spacing can be secured. However, the smooth operation of the X-brace in collapsing and extending the chair is at all times retained.

With the foregoing and other objects in view which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawing for an illustrative embodiment of the invention, wherein:

Figure 1 is a view in side elevation of a collapsible wheel chair embodying the present invention;

Fig. 2 is a sectional view taken substantially upon the line 2—2 upon Fig. 1;

Fig. 3 is a vertical section, parts being broken away taken substantially upon the line 3—3 upon Fig. 2; and

Fig. 4 is a vertical section taken substantially upon the line 4—4 upon Fig. 3.

Referring to the accompanying drawings wherein similar reference characters designate similar parts throughout, the improved chair consists of two side frames preferably formed of metal tubing. Each side frame provides a forward leg **10** on the bottom of which a caster wheel **11** may be mounted and a rear leg **12** on which a large or drive wheel **13** may be mounted. If desired, the positions of the drive wheel and caster wheels may be reversed. That is, the drive wheel may be mounted on the front leg **10** and the caster wheel mounted at the bottom of the rear leg **12**.

The rear legs **12** provide vertically extending portions from a distance slightly below the level of the seat when the chair is in extended position to a point approximately even with the arm rests **14**. These arm rests are provided by extending the tubing forming the front leg **10** upwardly and outwardly from a point slightly below the level of the seat when the chair is in extended position as indicated at **15** and then bending the tubing rearwardly and brazing it or otherwise securing it to the outer sides of the rear legs **12**. Thus, as viewed in Fig. 2, the lower portions of the front legs **10** are vertical and are in the same longitudinally extending planes with the rear legs **12** of the side frames. The upper portions of the front legs **10** are bent at an angle thereto as indicated at **15** and these portions, together with the arm rests are in upwardly and outwardly inclined planes that are slightly inclined to the vertical. The two side frames are collapsibly connected together by an X-brace, the members of which are indicated at **16** and **17**. The lower ends of these members have longitudinally extending tubes **18** rigid therewith which fit between portions of the side frames and are pivotally connected thereto. Any suitable pivotal connection for pivotally connecting the tubes **18** to the side frames may be employed.

The members **16** and **17** of the X-brace are pivotally connected to each other at approximately their centers by a pivot bolt **19** and each member at its top has rigid therewith a longitudinally extending seat bar or tube **20** to which a flexible seat **21** may be secured. At the rear end of each seat bar a crotched slide **22** is rotatably mounted on the seat bar and has its crotch slidably engaging the vertical portion of one of the rear legs **12** so that as the side frames are forced towards each other the X-brace in collapsing will have the seat bars **20** guided vertically by reason of the sliding engagement afforded by the slides between the rear ends of the seat bars and the rear legs **12**.

The angular relationship, however, of the front legs **10** with relation to the rear legs **12** presents a somewhat different problem in guiding the forward ends of the seat bars during the collapse of the seat. To guide the forward ends of the seat bars and still have them slidably engage the front legs **10**, arms **23** are brazed or otherwise secured to the under sides of the seat bars adjacent their forward ends. These arms carry forwardly extending pivot pins **24** on which crotched slides **25** are rotatably mounted. These slides have their crotches slidably engaging the front legs **10**. With this arrangement, during the collapse of the chair the member **17** of the X-brace will swing in a clockwise manner as viewed in Fig. 2, about the lower end of the side frame to which it is connected by its tube **18**. As the seat bar **20** on the member **17** swings upwardly its slide **22** merely pivots on the end of the seat bar in following the vertical portions of the rear legs **12**. The seat bar, however, is slightly rotated during this swinging movement and in so doing, swings the arm **23** outwardly so that the slide **25** thereon may follow the upwardly and outwardly inclined portion **15** on the front leg of the opposed side frame. In this manner, although the upper portions of the front legs of the side frames are bent outwardly the ends of the seat bars will be slidably guided at each end by the legs of the side frames so that the two side frames will be brought together smoothly and maintained in parallel relationship. Conversely, on extending the chair the reverse rotation of the seat bars occasioned by the extending of the X-brace will cause the arms **23** to slowly swing downwardly from their lateral positions and thus gradually shift the slides **25** in the manner required in following the angular front legs **10**. Sheet metal side panels **26** may connect the front and rear legs on the outer sides

thereof adjacent the level of the seat when the chair is in extended position. The upper portions of the rear legs are connected together by a flexible back rest as indicated at **27** and above the arm rests **24** the rear legs may be inclined upwardly and rearwardly as indicated at **28** and equipped with handles **29**.

It will be appreciated that with the improved construction of wheel chair that the spacing of the side frames may be retained at the conventional distance and that likewise the spacing of the wheels can also be retained at the conventional distance. This spacing is governed or limited by the seat **21** becoming taut as the X-brace unfolds. At the same time although the spacing of the side frames is retained at the conventional distance, the distance between the arm rests **14** is considerably increased. Although the front legs are angular in form due to the outward inclination of the portions **15** of the front legs by the application of the arm **23** to the seat bars and the rotating of the slides **25** about axes spaced from the axes of the seat bars, a proper guiding of the forward ends of the seat bars on the angular front legs during the collapse and extension of the chair is permissible.

Various changes may be made in the details of construction without departing from the spirit and scope of the invention as defined by the appended claims, wherein I claim:

1. A collapsible chair comprising a pair of side frames each having a front leg and a rear leg, at least a portion of one leg of each side frame being angularly related to the other portion of said leg of that frame, X-brace members pivotally connected to the side frames adjacent the lower ends thereof and pivotally connected to each other, seat bars at the upper ends of the X-brace members, and slides rotatably mounted upon each seat bar and slidably engaging the legs of the side frames, the slides on each seat bar being rotatable about spaced but parallel axes.

2. A collapsible chair comprising a pair of side frames each having a front leg and a rear leg, the upper portions of the front legs being bent outwardly, X-brace members pivotally connected to the side frames adjacent the lower ends thereof and pivotally connected to each other, seat bars at the upper ends of the X-brace members, slides rotatably mounted upon the rear ends of the seat bars slidably engaging the rear legs of the side frames, offset arms on the forward ends of the seat bars, and slides rotatably mounted upon the offset arms on the forward ends of the seat bars slidably engaging the front legs of the side frames, the forward slides being rotatable about axes which are spaced and parallel to the axes of rotation of the rear slides.

3. A collapsible chair comprising a pair of side frames each having a front leg and a rear leg, the upper portions of the front legs being bent outwardly, X-brace members pivotally connected to the side frames adjacent the lower ends thereof and pivotally connected to each other, seat bars at the upper ends of the X-brace members, slides rotatably mounted upon the rear ends of the seat bars slidably engaging the rear legs of the side frames, offset arms on the forward ends of the seat bars, said offset arms being rigidly secured to the forward ends of the seat bars and extending downwardly therefrom when the chair is in expanded position, and slides rotatably mounted upon the offset arms on the forward ends of the seat bars slidably engaging the front legs, the slides at the forward and rear ends of the seat bars being rotatable about spaced parallel axes.

References Cited in the file of this patent

UNITED STATES PATENTS

2,354,949	Ducavich	Aug. 1, 1944
2,379,566	Duke	July 3, 1945
2,486,015	Everest et al.	Oct. 25, 1949