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2,769,483

UNIVERSALLY ADJUSTABLE INVALID CHAIR

Filed April 25, 1955

2 Sheets-Sheet 1

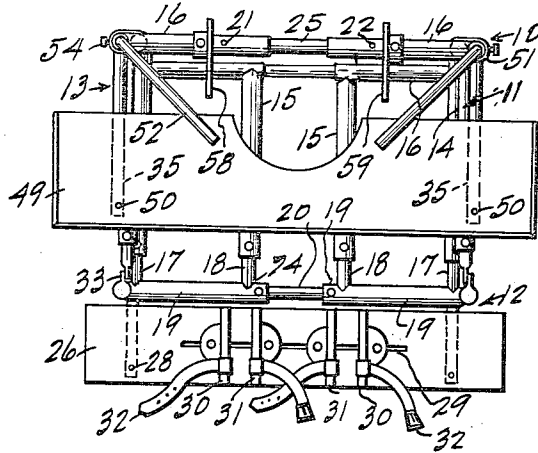


FIG. 1

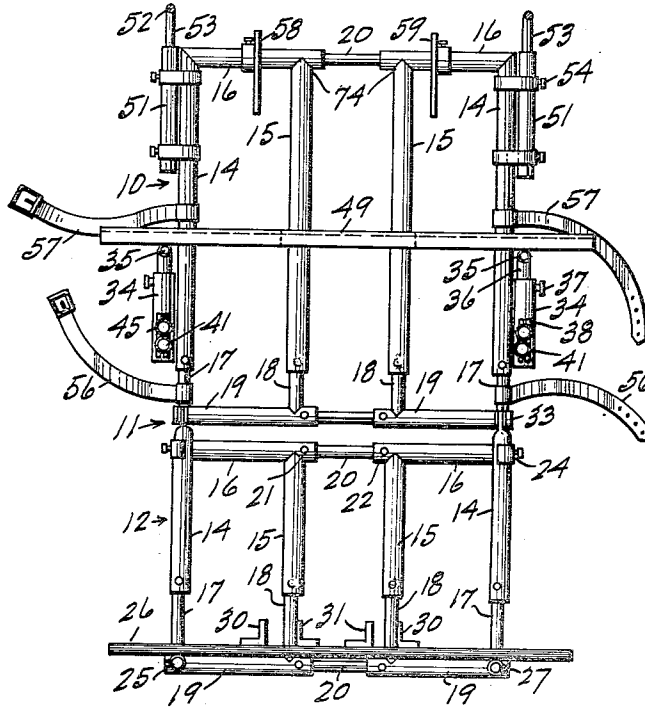


FIG. 2

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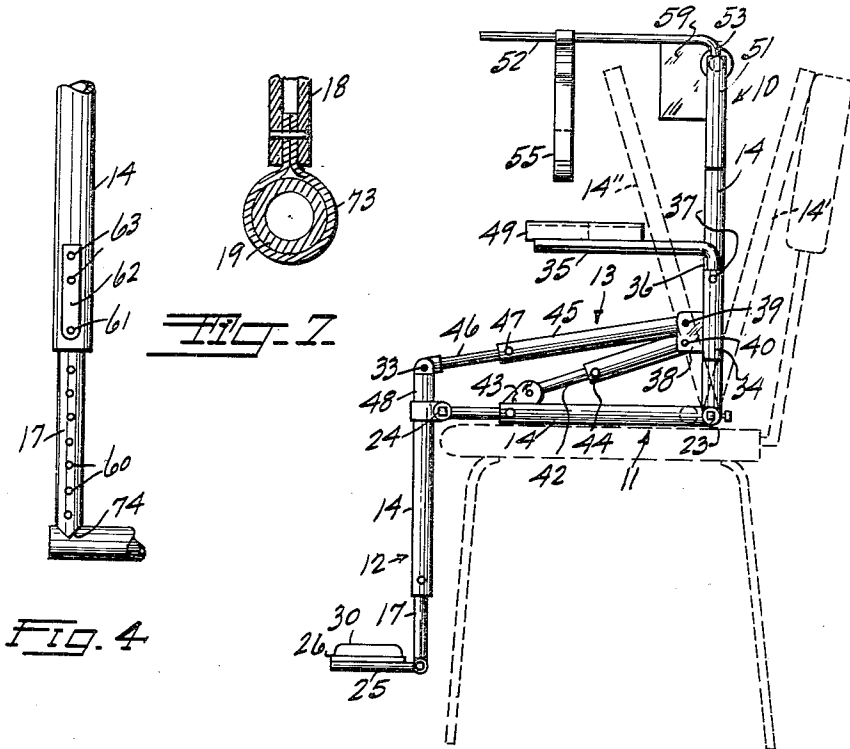


FIG. 4

FIG. 3

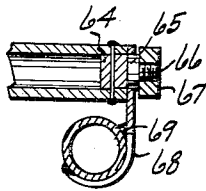


FIG. 5

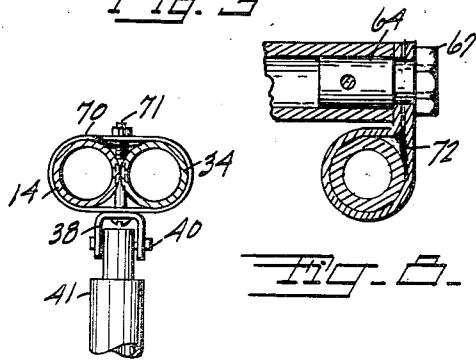


FIG. 6

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2,769,483

UNIVERSALLY ADJUSTABLE INVALID CHAIR

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14 Claims. (Cl. 155—28)

This invention relates to improvements in chairs for invalids particularly those who are partly or wholly paralyzed through cerebral palsy, poliomyelitis, and similar ailments, and provides a chair which is universally adjustable to fit the particular person for perfect support, enabling the patient to be seated in the most comfortable and desirable position.

It is known that various types of seats have been made with certain limited adjustments, for which reason they are very limited in their application and uses. So far as known, none have ever been made which can be adjusted to suitably support all parts of the person, and which universal support is the important feature of this invention.

This chair, which is the subject of the invention, can be made in several different sizes, each of which can be adjusted to the bodies of persons through predetermined ranges in size or age. For example, about four different sizes of chairs will accommodate the entire range from 2 years to mature adult. One size which is now in use will properly support a child 7 years old when the chair is adjusted to its maximum, while adjusted to its minimum will prove perfect for a child two years old. Other suitable sizes would range from 7 to 11 years, 11 to 16, and 16 to adult sizes.

The back, seat, and leg drop are all adjustable as to both, length or height, and width. The back is adjustable for inclination in either direction from the perpendicular, for forward or rearward leaning. The arm slings are adjustable for height as is also the table. The head supports are adjustable for span, and for height through height adjustment of the back, and the leg drop is provided with a foot rest which is provided with foot locators, thus providing a universally adjustable chair in which a paralyzed person can be comfortably secured and supported in the most advantageous and desirable position.

The objects and advantages of the invention are as follows:

First, to provide a universally adjustable chair for adjustment to the frame of a person for perfect support throughout.

Second, to provide a chair as outlined in which all parts of the chair are adjustable as to both, length or height, and width.

Third, to provide a chair as outlined with an adjustable foot support and foot retainers adjustable as to span and location.

Fourth, to provide a chair as outlined in which the back of the chair is adjustable for inclination in either direction, forwardly or backwardly, from the perpendicular.

Fifth, to provide a chair as outlined with arm slings which are adjustable as to both, height and location relative to the back of the chair.

Sixth, to provide a chair as outlined with head supports adjustable as to span for suitably supporting the head of a person.

Seventh, to provide a chair as outlined with a table adjustable as to height.

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Eighth, to provide a chair as outlined which is adjustable to the frames of persons through a range of ages from a minimum to a maximum of about five years, to adult.

In describing the invention reference will be had to the accompanying drawings, in which:

Fig. 1 is a top plan view of the invention.

Fig. 2 is a front elevation.

Fig. 3 is a side elevation showing the means of support of the chair in phantom.

Fig. 4 is an enlarged view showing a modification of the adjustment locking means.

Fig. 5 is an enlarged section through one type of hinge for the hinged connections.

Fig. 6 is an enlarged section through a connection between one of the chair frame members and a support tube.

Fig. 7 shows a modification of the connection between the inner telescopic members and the cross members.

Fig. 8 is a modification of the hinge structure illustrated in Fig. 5.

The invention consists of a chair having a back 10, a seat 11, a leg drop 12, and side arms 13, all of these parts being adjustable, with the back, seat, and leg drop being adjustable as to width, the leg drop and back adjustable as to height and inclination, and the seat adjustable as to length.

Each of these members consists of two side frames telescopically connected, each side frame comprising a main section having two longitudinal members 14 and 15 connected at one end by a cross member 16, and, a telescopic section also having two longitudinal members 17 and 18 which are slidable in the members 14 and 15, and having a cross member 19 at one end, these two sections being telescopic for adjustment of the length of the frame, and the two opposed frames are also telescopically connected as by a member 20 which is fixed in the inner end of one cross member as indicated at 21 and secured by suitable securing means such as a set screw 22 in the other cross member.

The back 10 is suitably hinged to the seat as indicated at 23, and the seat is hinged to the leg drop at a point below the top as indicated at 24. Arms 25 project forwardly from the telescopic section cross member of the leg drop for support of the foot board 26 which arms may be pivoted on a vertical axis as indicated at 27 so as to require only a fixed pivot 28 adjacent the outer end, or the securing means 28 may operate in a slot parallel to the slot 29, the foot board 26 having foot positioning and retaining means consisting of pairs of side guards 30 and 31 which are provided with straps 32 for strapping the feet in cases where the patient is suffering from cerebral palsy or the like, these pairs of elements being adjustable as to spacing, and the pairs adjustable as to span.

The upper ends of the outer longitudinal members of the leg drop extend above the cross members 16 and terminate in a hinge eye 33, this hinge eye also being located in spaced relation above the hinge 24 to the seat.

The back has a sleeve 34 fixed to each of its outer longitudinal members of the main section at the lower end thereof, and a table bracket 35 has a depending portion 36 slidable in the sleeve and fixed in any adjusted position by suitable means such as a set screw 37, and this sleeve also has a pair of hinge ears 38 fixed thereto for connection of two different elements vertically spaced as indicated at 39 and 40, these elements being also telescopic and consisting of a main telescopic member 41 and inner sliding member 42 with one member connected to the ear at 40 and the other connected through the hinge joint 43 to the forward end of the outer member 14 of the seat, and the two members being securable in adjusted position by suitable means such as the set screw

44, this element providing for adjustment of the inclination of the back in either direction relative to the perpendicular.

The other element also consists of a main telescopic member 45 and an inner telescopic member 46 and also suitably secured in adjusted position by a set screw 47, with one end of the element hingedly connected at 39 and the other end hingedly connected to the upward extension 48 of the outer drop member 14 as indicated at 33, for adjustment of the inclination of the leg drop and location of the foot board relative to a vertical plane.

A table 49 is pivotally mounted on the arms 35 as indicated at 50 for removal at will, though securing means such as a set screw or thumb nut may be provided if necessary. This pivotal mounting permits adjustment of the width of the chair without requiring adjustment of the table or arms since the arms will merely pivot and swing without noticeably changing the position of the table relative to the back.

Another sleeve 51 is fixed to the outer longitudinal member of each of the main frames 14 at the upper ends thereof, and an arm sling bracket 52 has a depending leg 53 slidably adjustable in the sleeve and suitably secured as by a set screw 54, and an arm sling 55 of suitable type is slidable on the arm sling bracket so that the sling can be adjusted to any desired position for support of the arm or arms of the patient.

Suitable straps 56 and 57 are provided for securing the person in position, and here shown as a chest strap 57 and a seat or hip strap 56. Head supports 58 and 59 are adjustable as to elevation through adjustment of the height of the back, and for span are adjustable on the cross members 16 of the back.

A modification of the securing means for the telescopic tubes is shown in Fig. 4 and in which spaced holes 60 are formed through the wall of the inside tube and a pin 61 is fixed to a leaf spring 62 and engages in the respective holes 60, the spring being fixed to the outer telescopic member as indicated at 63. Obviously no securing means is provided or required for the inner members 15 of the frames.

Fig. 5 illustrates one method of forming the hinge joint at 24, but suitable only where the material can be welded or brazed, and consists of a plug 64 which is fixed in one member and having a shouldered portion 65 terminating in a threaded end 66 for a nut 67, the other member of the hinge consisting of a strap 68 which is welded to the tube 14 as indicated at 69.

For materials such as aluminum or plastic, where other methods of securing are not feasible, a method is illustrated in Fig. 6, in which the tube 34 is attached to the tube 14 by a strap 70, with a bolt 71 clamping the opposite strands of the strap about the tubes and simultaneously fixing the ear 38 in position.

A modification of the connection shown in Fig. 5 is shown in Fig. 8, the plug 64 being made the same, while the strap is brought around the tube, clamped and welded as indicated at 72 and which would be suitable for aluminum or plastic construction since the strap may be formed of steel or brass, for welding or brazing.

Fig. 7 shows a method of connecting the inner telescopic members 17 and 18 to the cross member when these members are formed of material which does not readily fuse together, and consists of a strap 73 formed around the cross member 19 and brought together and machined to snugly fit in the telescopic member or to be welded thereto. This would apply to the connections 74.

I claim:

1. A universally adjustable chair comprising a back, a seat, and a leg drop, each formed of telescopic sections extendable longitudinally and laterally to conform to the width and height of a person to be seated therein, with said back and said leg drop hingedly connected to the respective back and front of the seat, and means for securing said back and leg drop in perpendicular or in-

clinably adjusted position relative to the said seat, at will; said means for securing comprising two telescopic struts for each side of the chair and connected at their respective ends to the back, and, to the seat and to the leg drop, and means for securing said struts in adjusted position.

2. A universally adjustable chair comprising a back, a seat, and a leg drop, each formed of telescopic sections extendable longitudinally and laterally to conform to the width and height of a person to be seated therein, with said back and said leg drop hingedly connected to the respective back and front of the seat, and means for securing said back and leg drop in perpendicular or inclinably adjusted position relative to the said seat, at will; an arm sling bracket mounted for vertical adjustment on each side of said back, and a sling adjustable along said bracket for support of the arms of a person in any desired position.

3. A universally adjustable chair comprising a back, a seat, and a leg drop, each comprising two opposed members telescopically connected for adjustment of the width, each of said opposed members comprising two members telescopically connected for adjustment as to length, said back and said leg drop being hingedly connected to the respective ends of said seat, a telescopic strut cooperative between said back and said seat for adjusting said back relative to the perpendicular, and a second telescopic strut cooperative between said back and said leg drop for adjusting said leg drop relative to the perpendicular, whereby said chair is adjustable to the body of a person to be supported therein.

4. A structure as defined in claim 3, a foot board supported at the lower end of said leg drop, two pairs of foot positioning members adjustable on said foot board for span between the pairs, and for span between the foot positioning members of each pair, and securing means for each pair for securing the foot of a person against movement between the foot positioning members.

5. A structure as defined in claim 4, said leg drop having an upward extension on each side, with said second telescopic strut hingedly connected between said back and said upward extension for adjustment of the leg drop and coincidentally functioning as an arm for the chair.

6. A structure as defined in claim 5, a table bracket vertically adjustable on each side of said back and a table removably mounted on said brackets.

7. A structure as defined in claim 6, a sling bracket having a forwardly extending arm and vertically adjustable on each side of said back, and a sling supported by and adjustable along each arm, for support of the arms of a person in any desired position.

8. A structure as defined in claim 7, a pair of head supports adjustably mounted at the upper end of said back for cooperation with the sides of the head of a person supported in the chair, and cooperative strap members on the respective sides of the chair for securing the person in position in the adjusted chair.

9. A universally adjustable chair comprising, a back, a seat, and a leg drop, each consisting of laterally opposed members telescopically connected, each of said laterally opposed members consisting of two sections telescopically connected for longitudinal adjustment, said back and said leg drop being hingedly connected to the respective back and front ends of said seat, the sides of said leg drop having each an arm projecting upwardly above the plane of said seat, a pair of telescopic struts for each side of said chair and having the respective ends of the respective struts of the pairs connected to the back, and, respectively to the seat and to the top of said arm, with one of said struts for each side forming means for adjusting the back relative to the vertical, and the other one of said struts for each side forming means for adjusting the leg drop relative to the vertical, and a foot board supported by the lower end of said leg drop, whereby the back, seat, and the foot board is adjustable to

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conform with the body and legs of the person to be supported therein.

10. A structure as defined in claim 9, head supports adjustably mounted at the upper end of said back for cooperation with the sides of the head of the person for support thereof. 5

11. A structure as defined in claim 10, said foot board having foot positioning elements for the respective sides of the respective feet of the person and being adjustable for span for each foot and for the spacing between the feet. 10

12. A structure as defined in claim 11, a table bracket for each side of the back and vertically adjustable and having forwardly projecting arms, and a table removably mounted on said arms. 15

13. A structure as defined in claim 12, a sling bracket for each side of said back and vertically adjustable and having forwardly projecting arms, and a sling on each

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arm for support of the arms of the person in any desired position.

14. A structure as defined in claim 13, cooperative securing means on said foot positioning elements for securing the feet against vertical movement, and cooperative chest straps and seat straps for the sides of said back for securing the body of the person in an erect position relative to the back.

References Cited in the file of this patent

UNITED STATES PATENTS

1,505,518	Workman -----	Aug. 19, 1924
2,170,724	Marquardt -----	Aug. 22, 1939
2,688,997	Miller -----	Sept. 14, 1954
2,694,437	Glaser -----	Nov. 16, 1954

FOREIGN PATENTS

17,950	Great Britain -----	Sept. 25, 1895
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