F. TSE.

ADJUSTABLE CHAIR.

APPLICATION FILED APR. 2, 1919.

1,357,130.

Patented Oct. 26, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

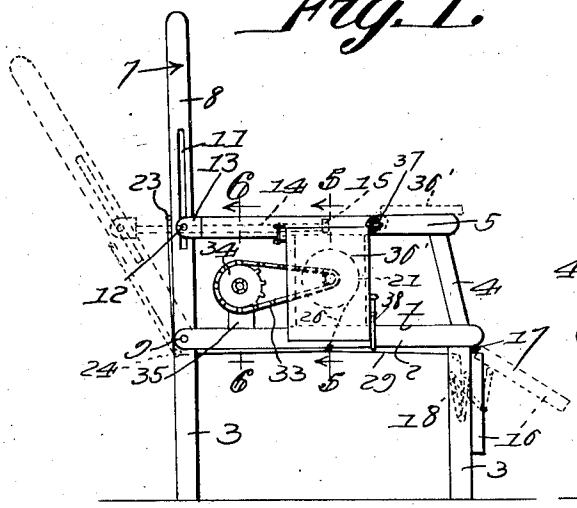
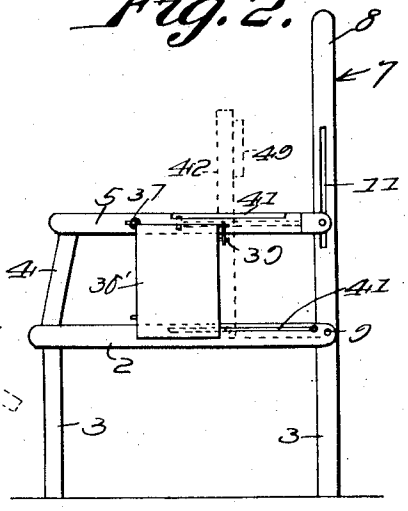
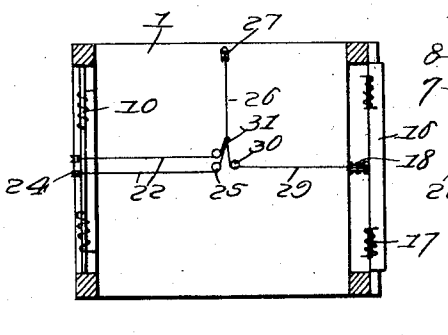


Fig. 2.





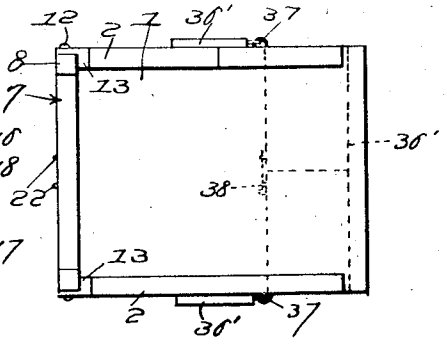


Fig. 3.

Fig. 4.

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2 SHEETS—SHEET 2.

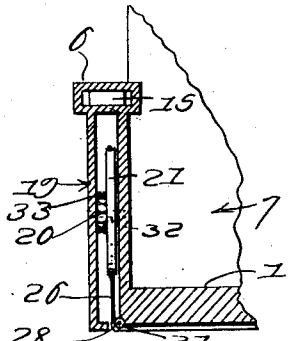


Fig. 5.

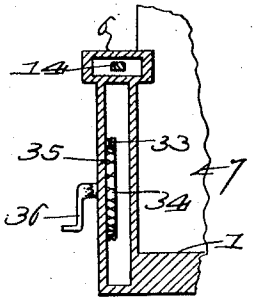


Fig. 6.

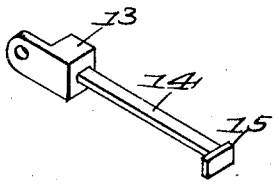


Fig. 7.

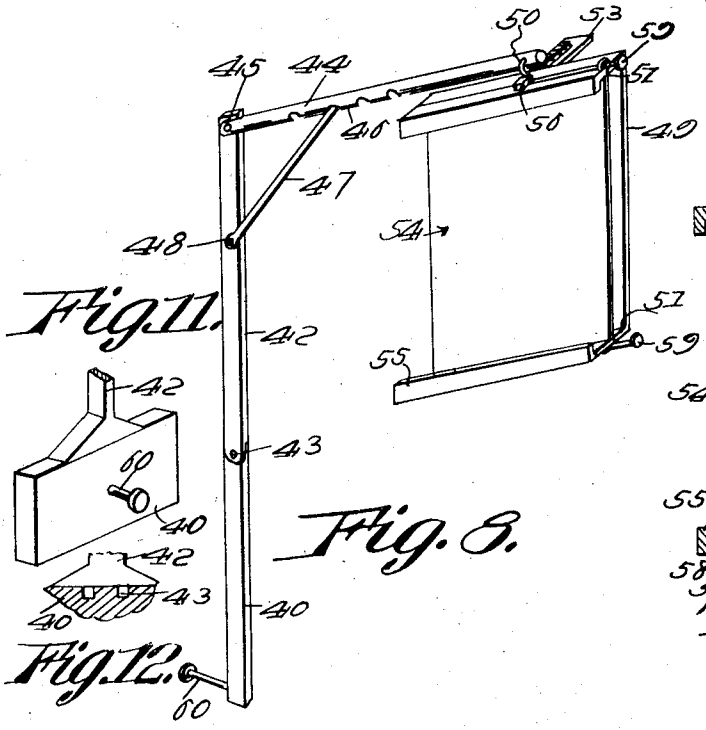


Fig. 11.

Fig. 12.

Fig. 8.

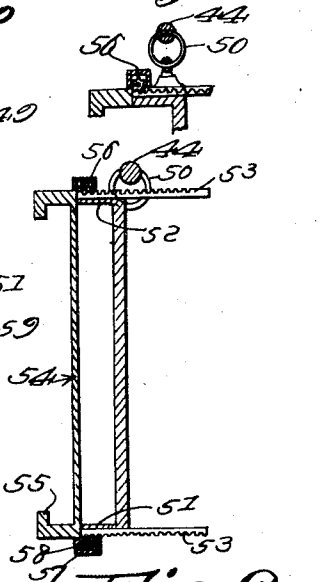


Fig. 10.

Fig. 9.

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UNITED STATES PATENT OFFICE.

FRANK TSE, OF HONGKONG, CHINA.

ADJUSTABLE CHAIR.

1,357,130. Specification of Letters Patent. Patented Oct. 26, 1920.

Application filed April 2, 1919. Serial No. 286,892.

To all whom it may concern:

Be it known that I, FRANK TSE, a subject of the Emperor of China, residing at Hongkong, in the Empire of China, have invented certain new and useful Improvements in Adjustable Chairs, of which the following is a specification.

The present invention comprehends generally improvements in that class of inventions known as chairs and more particularly relates to an adjustable chair.

The invention has for its primary aim and object to provide a device of the above mentioned character the component parts of which are novel in construction and capable of being adjusted relative to each other so as to occupy an upright position or a reclining position for the convenience of the occupant.

As an additional object, this invention contemplates the provision of a device of the above mentioned character designed to accommodate a table attachment which is capable of being arranged in an operative or inoperative position relative to the arms of the chair and to also adjustably accommodate an adjustable book rest attachment.

More particularly this invention embraces the provision of a device of the above mentioned character wherein an adjustable back and adjustable rest are associated with the rear and front edges of the seat while acting in conjunction therewith is improved manually operable means for effecting an adjustment of said parts.

It is a more specific object of this invention to provide a device of the above mentioned character wherein improved means is employed for mounting the leg rest; to also provide improved means for adjustably connecting the back to the arms of the chair.

Among the other aims and objects of this invention may be recited the provision of a device of the above mentioned character wherein the number of parts are comparatively few, the construction simple, the cost of production low and the efficiency high.

Other objects, as well as the nature, characteristic features and scope of this invention will be more readily apparent from the following description taken in connection with the accompanying drawings, and pointed out in the claims, forming a part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation of the improved chair, the dotted lines showing the same in a reclining position.

Fig. 2 is another side elevation of the chair,

Fig. 3 is a bottom plan of the improved chair,

Fig. 4 is a top plan view thereof,

Fig. 5 is an enlarged sectional view taken on line 5—5 of Fig. 1 in the direction in which the arrows point,

Fig. 6 is an enlarged fragmentary sectional view taken on line 6—6 of Fig. 1 in the direction in which the arrows point,

Fig. 7 is a perspective detail of the adjustable connection between the back and the arms of the chair,

Fig. 8 is a perspective detail of the book rest attachment when detached, and

Fig. 9 is a vertical sectional view through the holder forming a part of the book rest.

Fig. 10 is a fragmentary detail vertical sectional view of certain of the parts shown in Fig. 9.

Fig. 11 is a fragmentary detail perspective view of the lower portion of the supporting member for the book holder.

Fig. 12 is a fragmentary elevation thereof showing an adjunct part in section.

Similar characters of reference are employed in all of the above described views, to indicate corresponding parts.

Referring now, more particularly, to the accompanying drawings there is provided a seat 1 to the side edges of which are connected bars 2, while rigidly connected to the projecting ends of the side bars and depending therefrom are supporting legs 3 for the seat. Upwardly inclined front bars 4 rise from the forward ends of the side bars 2 and support the forward extremities of the opposed side arms 5 of the chair, the inner portions of which arms 5 are hollow in cross section as indicated at 6 for a purpose which will presently appear. A back generally indicated by the numeral 7 is employed and consists of a main body and spaced side bars 8 the lower ends of which are rigidly engaged by an elongated pintle 9 and this pintle is also swingably engaged in the adjacent projecting ends of the side bars 2 while coiled springs 10 are arranged about the pintle having the respective ends secured to the pintle and to the seat being tensioned to normally hold the back in an upright position. The side bars 8 are formed medially

of their ends with longitudinal slots 11 while operating in the slots are pins 12 carried in turn by the enlarged end portions 13 of the sections 14 which latter are in turn slidably engaged in the hollow portions 6 of the arms of the chair. It is to be noted that the inner ends of these sections 14 terminate in heads 15 which conform substantially to the shape of the hollow portions 6 of the chair to guide the movement of these sections when they are being extended in a manner that will hereinafter become apparent.

A leg rest 16 is connected by spring hinges 17 to the front edge of the seat 1 while a plurality of links 18, connected to each other in lazy tong formation, are operably arranged between the rear edge of the rest 16 and the front legs for a purpose that will presently appear.

As intimated, improved means has been provided for placing the leg rest and the back of the chair in a reclining position and in reducing this feature of the invention to practice, a casing generally designated by the numeral 19 is provided between one of the arms 5 in the side bars 2 therebeneath, the rear end of the casing being open while journaled centrally through the sides of the casing is a shaft 20 on which is mounted a wheel 21. A pair of cables 22 have their outer ends connected as at 23 to the rear face of the back of the chair and are trained about idlers 24 at the lower edge of the back and other idlers 25 on the under surface of the seat being joined with a main cable 26 which is trained about a main idler 27 and then passed through an opening 28 which communicates with the casing while the terminal of the main cable is connected rigidly to the wheel 21. Coacting with the cables mentioned is another cable 29 the outer end of which is connected with the lazy tong arrangement of links 18 while the main portion is trained about a pulley wheel 30 on the under surface of the seat preparatory to being connected as at 31 to the main cable 26. By rotating the shaft the wheel 21 will be rotated and as the cable 26 is connected thereto pulls will be exerted on the cables 22 and 29, to respectively swing the back rearwardly against the tension of the spring 10 and against the lazy tong arrangement of links to extend the latter and thereby move the rest 16 into an extended position indicated by dotted lines in Fig. 1. In effecting the rotation of the shaft 21 it is preferred that a small sprocket wheel 32 be mounted on the shaft 20, while operating thereabout is a chain 33 which also operates about a relatively large sprocket wheel 34 in turn journaled between upright brackets 35 on the side bars 2 rearwardly of the rear open end of the casing 19. A crank handle 36 is detachably connected with the sprocket wheel 34 to facilitate the rotation thereof to consequently insure of the placing of the back and rest 16 in an extended position for the convenience of the occupant thereof. It is of course apparent that the operating means is positioned so as to be easily engaged by the occupant of the chair while the arrangement of parts is such that when the occupant arises from the chair the springs 10 will act to automatically return the back into an upright position while owing to the hinges and gravity the rest 16 will move to its innermost position as indicated in Fig. 1.

With a view toward providing an improved table rest attachment for the arms of the chair, a pair of rectangular relatively flat plates 36′ are employed and are universally connected as at 37 to the arms of the chair so that they may be swung to occupy the position shown in Fig. 4 or to the inactive position shown in Figs. 1 and 2. The universal connection preferably consists of the loosely engaged screw eyes effectively anchored in the side bars 2 and in the adjacent corners of the plates 36. When extended, the plates are supported by the universal connection and by the arms 5 being removably held against accidental displacement by a sliding bolt 38 on the inner side edges and near the meeting ends as indicated in Fig. 4. In placing the plates in an inactive position, the same are swung upwardly and then horizontally rearwardly and then downwardly so as to occupy the position shown in Fig. 2 while they are capable of being removably held in an inactive position by the hasp fasteners 39.

In order that a book may be conveniently supported for the occupant of the chair, an improved book rest attachment is provided and in the present instance may be said to consist of a supporting member 40 slidably accommodated in suitable guides 41 on the arm of the chair opposite the casing 19 and disposed vertically. Another supporting member 42 is now employed and is detachably connected as at 43 to the upper edge of the member 40 while an arm 44 is swingably connected as at 45 to the upper edge of the member 42 and is provided in its under surface with a plurality of teeth 46 in any one of which the engaging end of a catch 47 is engaged, the opposite end of the catch in turn being pivoted as at 48 to the member 42 to insure of the removable supporting of the arm 44, the arrangement of parts being indicated in Fig. 8. A frame 49 of a rectangular configuration is loosely suspended from the outer end of the arm 44 as by a ring 50 and this frame is formed with upper and lower ends with outwardly projecting flanges 51 having guide ways 52 therein in which are arranged the upper and lower extension racks 53 which project in turn from the upper and lower edges rearwardly of the holder proper 54. The plate-

like body of the holder 54 is formed on its upper and lower ends with outwardly projecting retaining and supporting flanges 55 to insure of a proper accommodation and retention of the book (not shown) thereon. Relatively small casings 56 are formed on the flanges 51 while journaled therein are stems 57 the inner ends of which support pinions 58 which engage with the rack bar to facilitate the adjustment of the holder 54 relative to the supporting frame 49 so that the book (not shown) on the holder may be properly focused relative to the eyes of the occupant; while small wheels 59 are carried by the outer ends of the stems to facilitate the rotation thereof in order that the entire book rest may be shifted when the chair is in a reclining position. A headed stem 60 is connected to the member 40 and facilitates the manual sliding of the member 40 to ultimately slidably adjust the entire rest, as is apparent.

In view of the foregoing detailed description of the invention it is believed that a further detailed description of the operation of the invention is entirely unnecessary. Likewise, it is believed that the advantages of the invention will be readily apparent.

Still further embodiments of the invention than those herein especially defined may be resorted to as conditions or preference may dictate, as may be in keeping with the hereto appended claims.

Having thus fully described the invention, what is claimed as new and desired to be secured by Letters Patent, is:

1. A chair including a seat, supporting legs connected thereto, a back swingably connected to the rear edge of the seat, resilient means for normally retaining the back in an upright position, a leg rest swingably connected to the front edge of the seat, an operable connection between the rest and the front legs, flexible means associated with the connection and with the back, and actuating means having connection with the flexible means for extending the back and the rest.

2. A chair including a seat, supporting legs connected thereto, a back swingably connected to the rear edge of the seat, resilient means for normally retaining the back in an upright position, a leg rest swingably connected to the front edge of the seat, a lazy tong arrangement of links between the rest and the front legs, cables connected to the back, another cable connected to the links, a main cable connected with the other mentioned cables, a rotatable drum above the seat and having the main cable secured thereto and windable thereabout, and means for rotating the drum to consequently extend the back and the rest.

3. A chair including a seat, supporting legs connected thereto, a back, a pintle for swingably connecting the back to the rear edge of the seat, a coiled spring arranged about the pintle and secured to the pintle in the seat and tensioned to normally hold the back in an upright position, a leg rest swingably connected to the front edge of the seat, a lazy tong arrangement of links operably connected between the front legs and the rest, and actuating means associated with the rear edge of the back and the links for arranging the back and the rest in an extended or reclining position.

4. A chair including a seat, supporting legs connected thereto, a back swingably connected to the rear edge of the seat, resilient means for normally retaining the back in an upright position, arms connected to the seat, sections slidably engaged with the arms and pivotally and slidably engaged with the back for limiting outward swinging movement of the back, a drum rotatably mounted above the seat, a flexible connection between the rear edge of the back and the drum and windable about the drum, and means for rotating the drum to consequently extend the back against the tension of the resilient means.

In testimony whereof I affix my signature hereto.

FRANK TSE.