Aug. 29, 1933. A. I. PASTERNACK ET AL 1,924,329

FOLDING CHAIR

Filed March 25, 1930 2 Sheets-Sheet 1

FIG. I.

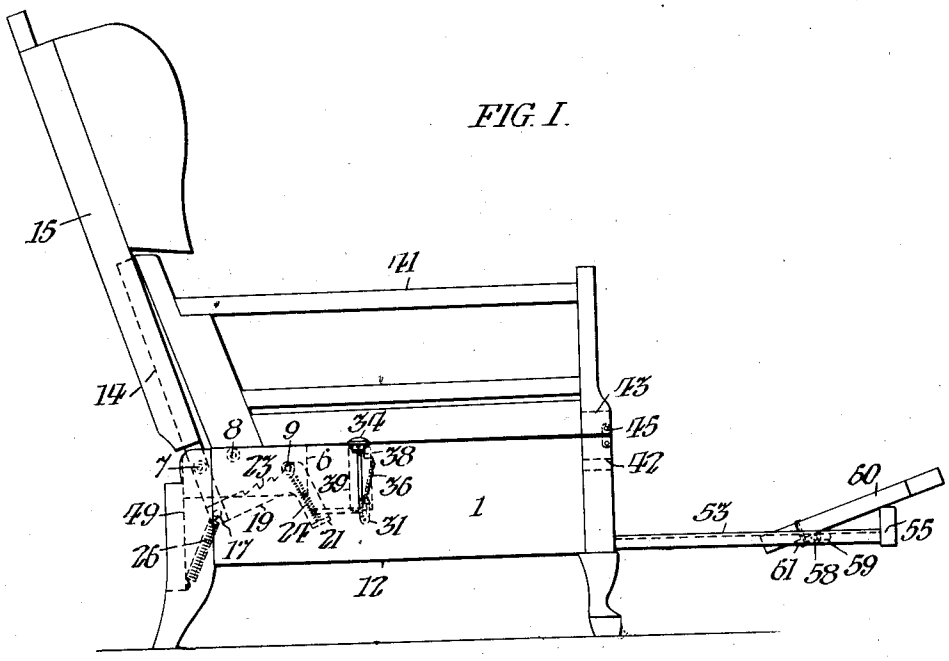
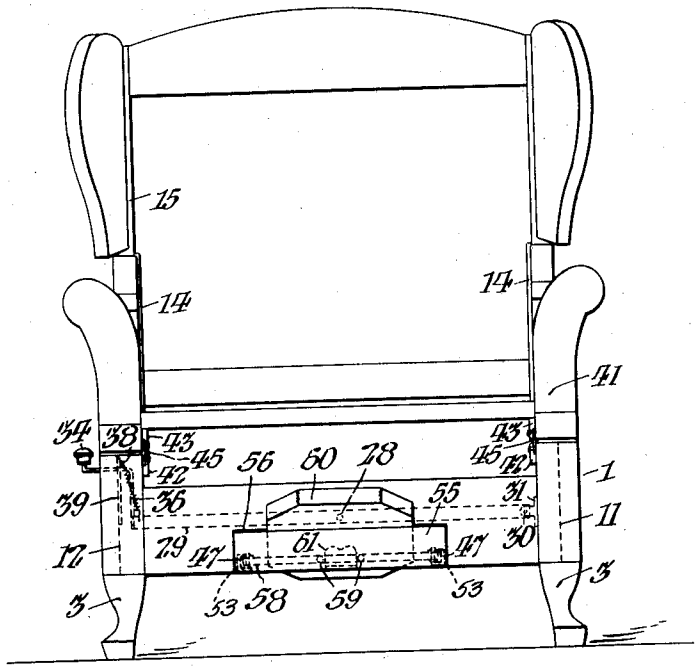


FIG. II.



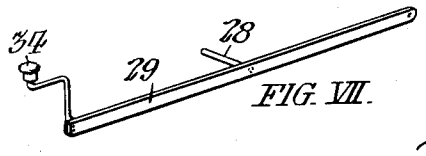


FIG. VII.

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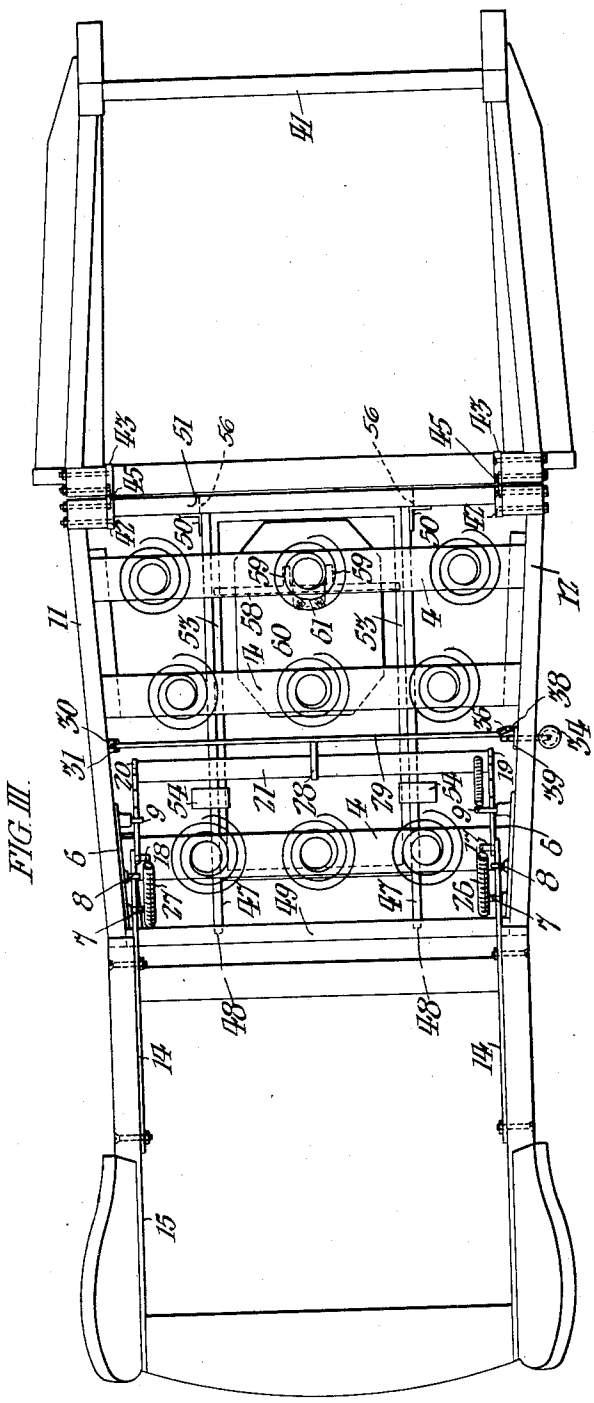


FIG. III.

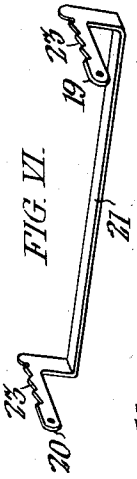


FIG. VI.

FIG. IV.

FIG. V.

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Patented Aug. 29, 1933

1,924,329

UNITED STATES PATENT OFFICE

1,924,329

FOLDING CHAIR

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Philadelphia, Pa.

Application March 25, 1930. Serial No. 438,668

1 Claim. (Cl. 155—163)

Our invention relates to what are known as reclining chairs, wherein a substantially horizontal seat frame is provided with a back frame hingedly connected therewith and adjustable rack mechanism whereby said back may be held in various positions of inclination with respect to said seat.

In the form of our invention hereinafter described, the back frame is counterbalanced by springs to facilitate its adjustment, and a third frame is normally folded upon the seat frame but may be unfolded to form a foot portion of a bed in which the head portion is formed by turning the chair back down to horizontal position.

Said chair includes a folding foot rest which may be slid to inoperative position beneath said seat frame, or withdrawn and upturned to operative position. Therefore, said seat frame is provided with a guide frame, in rigid relation therewith, in which is slidably mounted a frame for said foot rest and in which said foot rest is pivoted so that it may be oscillated to and from operative position.

Ordinarily, such seat frames are provided with upholstery springs mounted upon a support extending from front to rear thereof, above said rack mechanism and, consequently, the springs must be shallow. On the contrary, our chair seat is adapted to hold deep springs upon slats which extend transversely thereto and parallel with the adjustable rack mechanism, so that the latter may extend upwardly between adjoining series of such deep springs.

Moreover, our improved rack mechanism includes a rack frame which is a single metal casting having similar rack members at respectively opposite ends thereof adjoining the side members of the seat frame and extending parallel therewith and connected in unitary relation with a cross bar by which said rack frame may be tilted. Said rack members on said rack frame are pivotally connected at their rear ends with the tiltable chair back and are spring pressed to engage stationary studs, upon respectively opposite sides of the chair seat frame, to hold said chair back in adjusted position.

Ordinarily, such adjustable rack mechanism is adapted to be operated by pressure upon but one side thereof, which pressure tends to twist the rack frame, with the disadvantage that it may be released for tilting upon but one side of the chair, while remaining engaged in a predetermined tilted position at the opposite side. Therefore, an advantageous feature of our invention is that the rack frame is operable, by a single lever, which is fulcrumed upon one side of said seat frame and extends thru the other side of said seat frame, exterior to the chair upholstery, and is provided with a knob by which it may be depressed to release said rack frame by pressure on the middle of the cross bar of said frame, without any stress tending to twist that frame.

In the form of our invention hereinafter described; the chair back has forwardly projecting wings at its side edges, and the third frame aforesaid has upright members at its rear end respectively extending beneath said wings on the back, and which when that frame is unfolded to form a bed as above contemplated, serve as legs, at the foot of the bed. The latter feature is advantageous in that the upholstered portion of the chair which then forms the foot portion of the bed, is upheld in spaced relation with the floor, by said leg members; thus avoiding soiling the upholstery by contact wtih the floor, and affording desirable ventilation beneath the bed.

However, it is to be understood that our invention may be embodied in a folding chair which does not include such an adjustable foot rest or third frame, as above described.

Our invention includes the various novel features of construction and arrangement hereinafter more definitely specified.

In said drawings; Fig. I is a side elevation of the complete frame members of a folding chair embodying our invention and adapted to be unfolded to form a bed. Fig. II is a front elevation of said chair in the folded position shown in Fig. I. Fig. III is a plan view of said chair in unfolded position, forming a bed. Fig. IV is a side elevation of said chair in the position shown in Fig. III. Fig. V is a perspective view of one of the side plates mounted on the seat frame; showing the staggered relation of the studs which project laterally therefrom in stationary relation with said frame. Fig. VI is a perspective view of said rack frame, which is a unitary casting. Fig. VII is a perspective view of said lever by which said rack frame may be released for tilting movement.

In said figures; the seat frame 1 is provided with four legs resting upon the floor 3 and has three transverse slats 4 respectively adapted to support a series of three springs each.

Said frame 1 has opposite side plates 6 each having three studs 7, 8, and 9 imbedded in and projecting therefrom, with their axes at right angles to the longitudinal axis of the chair; the similarly numbered studs being in coaxial relation upon opposite sides of said chair frame 1. Said plates 6 are conveniently formed of cast

metal and said studs of wrought metal cast therein, said plates 6 are so located upon the opposite side members 11 and 12 of said frame 1 that the stress of pressure on the chair back is borne by said side members.

Said studs 7 are respectively pivotally engaged with the metal side bars 14 which are in parallel relation and rigidly connected with the chair back frame 15; so that the latter is thus hingedly connected with said chair seat frame 1, and is angularly adjustable from substantially vertical to horizontal position. As indicated in Fig. IV, said studs 8 serve as stops for contact with said side bars 14 to prevent said back frame 15 from being depressed below horizontal position, and thus support the upper portion of the body of the occupant when the latter is prone. It is to be particularly noted that said studs 8 are located above the axes of said studs 7 so as to permit the lowering of the back to the desired level, without notching said side bars 14.

Said side bars 14 of the back frame 15 are provided with studs 17 and 18 which are pivotally connected with the rack levers 19 and 20. Said levers are rigidly connected with each other by the cross bar 21 with which they are in unitary relation; said levers and cross bar being preferably formed of a single malleable iron casting. Said rack levers have similar series of rack notches 23 in their upper edges adapted to selectively engage said studs 9 and are normally upheld in engagement with said studs by the single spring 24 which extends from the bar 21 to the stud 9 at the right hand side of said frame 1. However, said chair back frame 15 is arranged to be counterbalanced by the two springs 26 and 27 which are engaged at their upper ends with the back frame studs 17 and 18 and are secured at their lower ends to said seat frame 1; so that, when said rack frame is released, said back frame will automatically lower itself, slowly, but may be readily raised by even one finger of an occupant of the chair, without rising from the latter.

The means above described serve to hold said back frame 15 in any position of inclination with respect to the seat frame 1 in which it may be set with the studs 9 selectively engaged with opposite notches 23 in said rack levers 19 and 20, but said back balancing springs 26 and 27 enable the occupant to set the back frame at any desired angle by merely leaning backward or forward when said racks are released from engagement with said studs 9. Said levers may be simultaneously released from their engaging studs 9 by downward pressure upon said cross bar 21, and such pressure may be conveniently applied by the arm 28 which extends rearwardly over said cross bar, intermediate of the width of the chair. Said arm 28 is carried by the single lever 29 which is fulcrumed at 30 in the bracket 31 rigidly connected with the left side member 11 of said seat frame 1 with its opposite end extending thru the slot 33 in the right side member 12 of said frame 1. Said lever is provided with the operating knob 34 at its right hand end which is upturned exterior to the chair in position to be readily depressed by the right hand of the occupant of the chair, against the tension of the spring 36, which continually tends to lift said lever to idle position. We find it convenient to connect the upper end of said spring 36 with the lug 38 on the metal plate 39 which is rigidly connected with the inner face of the side member 12 of said seat frame 1 and forms a guide frame around said slot 33 in that frame member.

The third frame aforesaid is indicated at 41 and as shown in Fig. III, is an open frame but with cross bars at the front and rear thereof for supporting a seat which is movable toward and away from cooperative relation with said springs on said slats 4. Said third frame 41 is pivotally connected with the front edge of said seat frame 1 by hinges at opposite sides thereof, including plates 42 which are rigidly connected with the frame 1, plates 43 which are rigidly connected with said third frame 41, and links 45 which are pivotally connected at their opposite ends with said plates 42 and 43; so that said frames 1 and 41 are held in such spaced relation, both in the folded position shown in Fig. I and in the unfolded positioned shown in Fig. IV, that the textile upholstery material may extend between them without being worn or crushed by the manipulation of the chair. Said third frame 41 may be thus alternately placed in the position shown in Figs. I and IV to support said removable seat alternately upon vertically opposite surfaces of its cross bars, and when in the inverted position shown in Figs. III and IV, said hinge links 45 present a smooth surface to the textile upholstery material, througout the relative movement of said frames.

In the form shown; said seat frame 1 is provided with a foot rest guide frame conveniently formed of iron channel bars 47 which are mounted in rigid parallel relation therein with their flanges turned inwardly; preferably by forming sockets 48 in the rear members 49 which is conveniently formed of wood, and providing said guide channel bars 47 with angle brackets 50 at their front ends respectively rigidly connected with the front member 51 of said seat frame 1. Said guide frame is adapted to receive the foot rest slide frame 53, conveniently formed of angle bars rigidly connected in rectangular relation, conveniently by welding them at their corner junctions, and provided with laterally extending stop projections 54 which limit the extent to which said slide frame may be drawn out from the front of said seat frame 1, by contacting with the inner surface of said front member 51 of that frame.

Said foot rest slide frame 53 has, rigidly connected with the front end thereof, the wooden strip 55 which fits flush in a correspondingly shaped notch 56 in said front member 51 when said slide frame is thrust into its idle position beneath said seat frame 1, and from which it may be withdrawn by manually grasping said strip 55. Said slide frame 53 has the cross bar 58 secured in stationary position therein with stop lugs 59 projecting forwardly. The foot rest proper comprises the wooden panel 60 which is pivotally connected with said cross bar between said lugs, by the hinge bracket 61.

The relation of the parts last above described is such that when said panel 60 is turned back, upon said cross bar 58, to horizontal position, as indicated in dotted lines in Fig. III, it is prevented from falling below that position by said stop lugs 59, but when it is desired to use said foot rest, said slide frame 53 may be withdrawn to the position shown in Fig. I and said panel may be upturned so that it is inclined upwardly outwardly with reference to the front of said seat frame 1 and its outer end rests upon and is supported by said strip 55.

However, essential features of our invention may be embodied in chair structures which are not of the specific character above described.

For instance, chair structures which include the back tilting mechanism above described, but without the third frame, or without said adjustable foot rest, or without either of them.

Therefore, we do not desire to limit ourselves to the precise details of construction and arrangement herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of our invention, as defined in the appended claim.

We claim:

In a folding chair, the combination with a seat frame having a slot thru one side thereof; of a back frame; of means hingedly connecting said frames in angularly adjustable relation, including opposite side bars on said back frame pivotally connected with said seat frame; a rack pivotally connected with said side bars; means in said seat frame adapted to be detachably engaged by said rack frame in various positions; and means movable to release said rack frame to permit adjustment of said frames, including a single lever pivoted at one side of said seat frame within the latter with its opposite end extending thru said seat frame slot to the exterior thereof, where it is accessible to the occupant of the chair, and an arm on said lever overhanging said rack frame; and a spring normally upholding the free end of said lever with said arm above said rack frame; whereby depression of the exterior end of said lever uniformly depresses said rack frame to release it, and release of said lever permits said rack frame to engage said chair frames in adjusted position.

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