

June 23, 1925.

J. L. A. PASCAUD

1,543,612

CHAIR

Filed Dec. 27, 1921

2 Sheets-Sheet 1

Fig. 1.

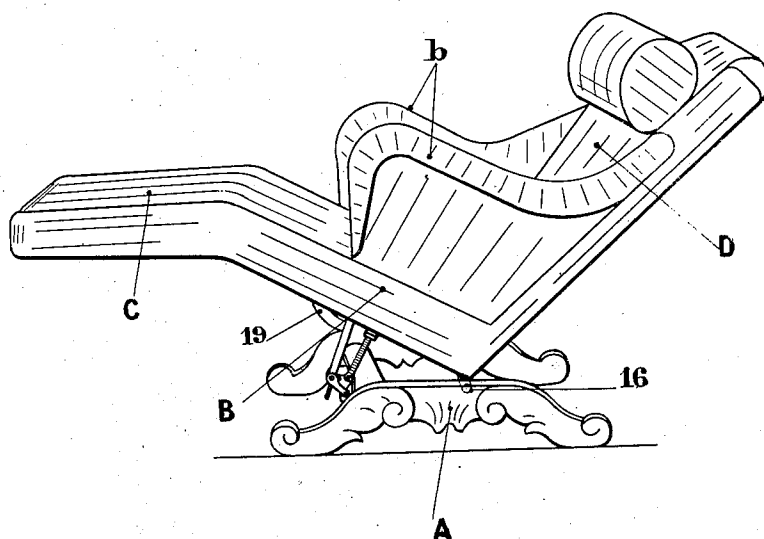
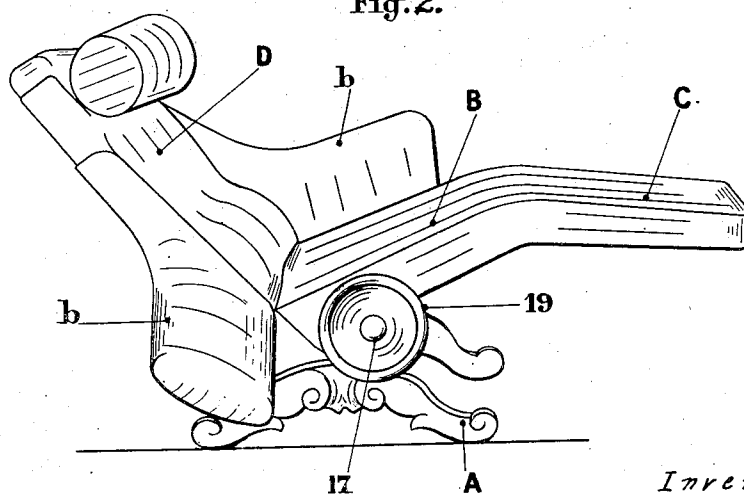


Fig. 2.



Inventor:

J. L. A. Pascaud

By

Lawrence Langue
Attorney

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Fig. 3

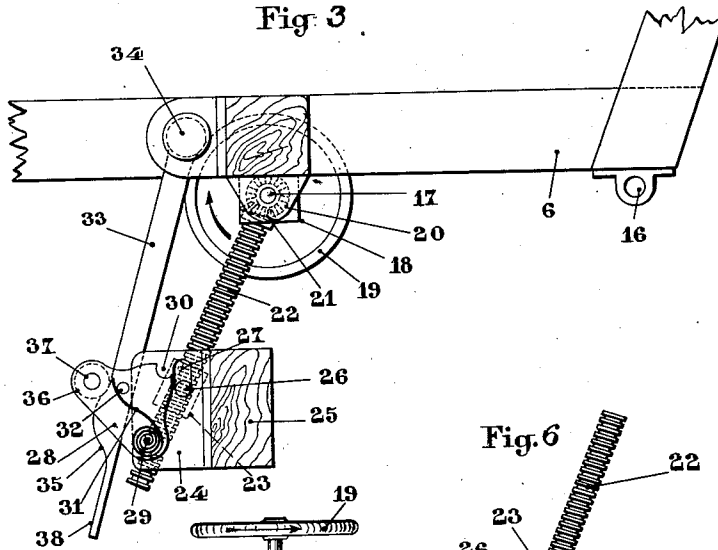


Fig. 4

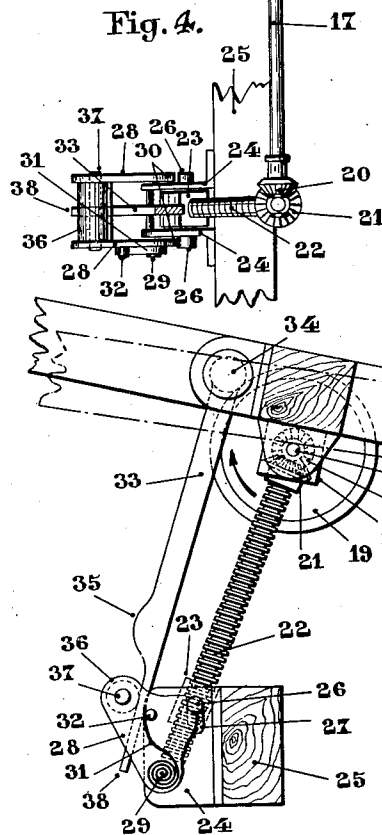


Fig. 6

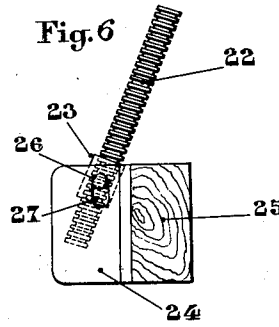
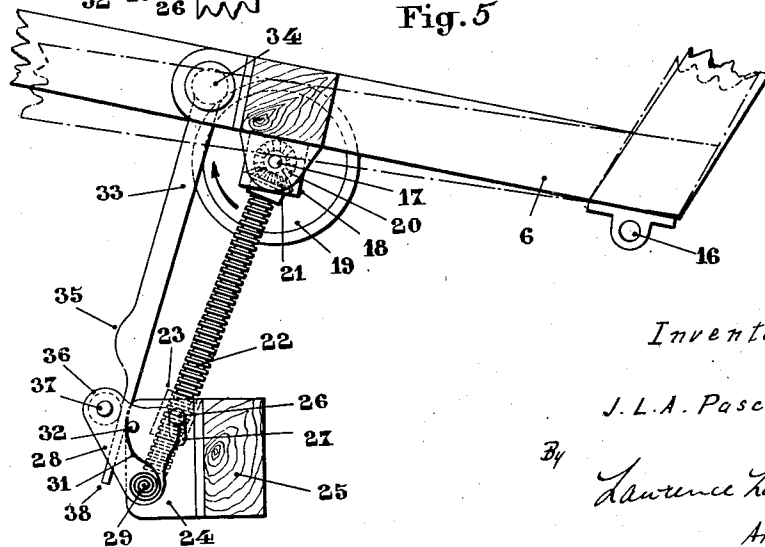


Fig. 5



Inventor:

J. L. A. Pascaud

By

Lawrence Langner
Attorney

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1,543,612

UNITED STATES PATENT OFFICE.

JULES LOUIS ADREÁ PASCAUD, OF PARIS, FRANCE.

CHAIR.

Application filed December 27, 1921. Serial No. 525,213.

To all whom it may concern:

Be it known that I, JULES LOUIS ADREÁ PASCAUD, a citizen of the French Republic, residing at Paris, France, 4^{bis} Rue de Lyon, have invented a new and useful Improvement in Chairs; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention has for its object a chair of the "invalid's chair" type specially designed for enabling the user to adjust very accurately, according to his own stature and conformation, the inclination of the back, seat and legs-support of said chair so as to obtain the maximum repose in a given time, which is not possible with the best usual patterns of arm-chairs or invalids' chairs, or even with a bed, as will be hereinafter more fully explained.

This result may be attained by means of a device an embodiment of which is illustrated, merely as an example, by the accompanying drawings, in which:

Figure 1 is a perspective side view of said chair in the position of maximum repose.

Figure 2 is a similar view of the same, taken from the side opposed to that of Fig. 1 (operating hand-wheel side) one of the arm supports being swung open in order to facilitate access to the chair.

Figure 3 is a view, on an enlarged scale, in side elevation, showing the details of the operating mechanism, the parts of which are illustrated in the position that they assume when the seat of the chair is in its horizontal position.

Figure 4 is a plan view of the same mechanism.

Figure 5 is a view similar to Fig. 3, but with the parts in the positions that they assume when the chair is disposed so as to afford to the user the maximum repose, the parts being locked in position.

Figure 6 is an explanatory diagram.

Figures 1 to 6 illustrate a chair enabling the user to operate the controlling mechanism (in order to obtain the most comfortable inclination) while lying in the chair.

As seen on the drawings, the latter comprises a pedestal A of any suitable form chosen so as to provide a sufficient base, a seat B, a legs support C prolonging the seat, a back D and arm supports *b*. The latter (or one of them only) may be hinged so as to enable them to be swung open, as shown

in Figure 2, in order to facilitate access to the seat B. As before stated the relative inclination of the seat, the legs support and the back has been suitably chosen for affording the maximum repose to the user.

The structure thus formed may oscillate upon an axle 16 carried by the pedestal. The swinging motion of the upper part of the chair is controlled by means of mechanism which will now be more fully described, and the details of which are shown in Figures 3 to 6.

Upon an axle 17, rotatable in bearings 19 fastened to side beams 6 of the seat B, is clamped an operating hand wheel 19 and a bevel pinion 20 keyed upon the same axle meshes with another bevel pinion 21 integral with a screw threaded rod 22 which rotates in a nut 23 carried between two plates 24 carried in turn by a cross beam 25 of the pedestal A and provided with two trunnions 26 slidable in elongated round ended slots 27 in the plates 24.

It will be readily understood that rotation of the hand wheel 19 causes, through the medium of the pinions 20 and 21, rotation of the screw 22. The nut 23, bearing through its trunnions 26, upon the stationary plates 24, causes a longitudinal displacement of the screw which results in an upward or downward swinging movement of the upper part of the chair on its axle 16, according to the direction of the rotation.

When, owing to this swinging movement, the position of equilibrium is slightly passed, that is, when the vertical line passing through the center of gravity of the rocking structure passes slightly to the rear of the axle 16, the locking device acts, as will be hereinafter explained, to automatically lock the device in the best position.

This locking device consists of two plates 28 capable of oscillating around an axle 29 carried by the plates 24. Each plate 28 is provided with a notch 30 into which can engage one of the trunnions 27 of the nut 23. A spiral spring 31 acting upon a stud 32 fastened upon one of the plates 28, tends to push the latter against the trunnions 26. So long as the position for maximum repose is not reached, the plates 28 are pressed by the spring 31 against the trunnions 26, so that, if the latter become displaced by an upward translation, at the moment when the trunnions 26 and the

notches 30 of the plates 28 are in the same horizontal plane, the spring 31 will operate to engage said notches under the trunnions 36 and lock the system, in fixed position, as it will be hereinafter explained.

A connecting rod 33, pivoted at 34 on the side beams 6, and having a boss 35 with an outline suitably designed for maintaining, at a given instant, the plates 28 far enough from the trunnions 26 to disengage the latter from the notches 30 rest on its edge upon an anti-friction roller 36 mounted on an axle 37 interconnecting the plates 28. The boss is prolonged by a tapering part 38.

The mode of operation and the functioning of this improved chair, is as follows:—

The seat B being assumed, at the beginning, to be placed horizontally and the various parts of the mechanism in the positions shown in Fig. 3, the person who desires to rest (hereinafter referred to as the user) swings open one of the arm rests *b*, as shown in Fig. 2, lays himself upon the cushions C B and D, while taking care to bring his body thoroughly into contact with the two latter, and raises the arm rest *b* back into place.

Then with his right hand, the user rotates the hand wheel 19 in the direction indicated by the arrow, which rotation results, as aforesaid, in causing the seat B to oscillate slowly upwards on its axle 16, the trunnions 26 which, during this movement, bear upon the lower ends of the stationary elongated slots 27 (Fig. 3), opposing the movement from left to right which the spring 31 would impart to the plates 28, if they did not abut against these trunnions.

At a given moment, the position of unstable equilibrium, indicated by dash and dot lines in Figure 5, is reached and then slightly passed, and the whole movable part of the chair under the influence of its own weight and that of the user, begin to oscillate rearwardly on the axle 16. This oscillation, of very small amplitude, stops almost immediately, that is, as soon as the trunnions 26 (carried along upwards with the nut 23 and the screw 22), after having left the lower ends of the slots 27, abut, as shown in Fig. 6, against the upper ends of the slots. At this moment, the user feels a very slight shock warning him that the position of maximum repose has been reached and that he no longer needs to rotate the hand wheel 19.

The width of the connecting rod 33 is chosen so that, whatever be the precise instant when this slight oscillation takes place (said instant being dependent on the weight and form of the user and, consequently, variable according to the user), at this instant the boss 35 has amply passed the roller 36, thus opposing to the same only its sufficiently narrowed end 38 (Fig. 5).

Just at the moment when the trunnions 26 have moved upwards, the plates 28, yielding to the spring 31, oscillate from left to right, their notches 30 engaging under the trunnions 26 and locking them, without any play in the upper ends of the slots 27, so that the chair becomes firmly locked in its best position (indicated by full lines in Figure 5) and cannot rock on its axle 16, in case the user brings the upper part of his body forward.

For bringing the seat B back to the horizontal position, it suffices to rotate the hand wheel 19 in the direction opposite to that indicated by the arrow, so as to cause said seat to oscillate forward and downwards on the axle 16. The position of equilibrium is again reached, then the weight is brought forward, the vertical line passing through the center of gravity of the mass constituted by the upper part of the chair and by the user now passing through the interior of the triangle of support formed by the two pivots and the screw 22. The trunnions 26, due to this weight tends to move downwards, but remains stationary, being clamped in the notches 30 of the plates 28, until the boss 35 of connecting rod 33, which descends together with the seat, comes into contact with the roller 36 and gradually pushes plates 28 from right to left. The notches 30 then liberate the trunnions 26, which, being already urged by gravity, fall to the bottom of the slots 27 to the position shown in Fig. 3. There results a slight swinging movement, in a direction reverse to the preceding one, and felt by the user. By further rotating the hand wheel 19 still in the same direction, the seat B is returned to the horizontal position. The user in getting up from the chair, then has merely to swing open one of the arm rests *b*.

The engagement and disengagement of the mechanism is thus effected, as seen from the foregoing explanations, in two quite distinct successive stages, i. e., in the first case, limited rearward swinging movement of the seat B, then locking of the plates 28, and in the second case, disengagement of the trunnions 26 from the notches 30 of the plates 28 owing to the intervention of the boss 35 of the connecting rod 33, and then limited forward swinging movement of the seat B. The first limited swinging movement has for its purpose to warn, by the aforesaid very light shock, that the chair is reaching the position of maximum repose.

Though the inclination of the several parts of the chair be determined once for all by the manufacturer of the same, said parts may be constructed so as to be detachable from each other or capable of being folded upon each other, in view of facilitating transportation of the chair.

Notwithstanding the very great simplicity

of the mechanism of the structure described, the characteristic features of the invention are integrally preserved therein, namely,

5 a. Suitably determined inclination of the back and of the legs support relatively to the seat, so as to give to the muscular and articular systems the position of relaxation which is the most favorable to complete repose.

10 b. Possibility of inclining the structure formed by the back, the seat and the legs support so as to place the user in a position corresponding to the position of slightly overstopped equilibrium affording the maximum repose.

Claims:

1. A chair of the invalid's chair type for securing maximum repose, comprising, a seat having arms, a back, and a leg rest 20 attached thereto, a supporting pedestal, a pivot rockingly connecting the rear lower edge of the seat to the pedestal, a hand operated screw mechanism for varying the inclination of the seat, an automatic locking 25 device for locking the seat in fixed position, after it has been rotated rearwardly on its axis beyond its point of equilibrium, said screw mechanism including slotted plates attached to the pedestal, a nut having trunnions slidable in the slots of the plates, a 30 threaded shaft having one end received in the nut, and gears connecting the other end of the shaft to the seat.

2. A chair of the invalid's chair type for 35 securing maximum repose, comprising, a seat having arms, a back, and a leg rest attached thereto, a supporting pedestal, a pivot rockingly connecting the rear lower edge of the seat to the pedestal, a hand 40 operated screw mechanism for varying the inclination of the seat, an automatic locking device for locking the seat in fixed position, after it has been rotated rearwardly on its axis beyond its point of equilibrium, said 45 automatic locking device including pivoted, notched, spring pressed plates associated with the pedestal, a roller pivoted between the plates, and a cam arm, pivoted to the seat and operable to move the roller and the 50 plates to which the roller is pivoted.

3. A chair of the invalid's chair type for securing maximum repose, comprising, a seat having arms, a back, and a leg rest attached thereto, a supporting pedestal, a

pivot rockingly connecting the rear lower 55 edge of the seat to the pedestal, a hand operated screw mechanism for varying the inclination of the seat, an automatic locking device for locking the seat in fixed position, after it has been rotated rearwardly on its 60 axis beyond its point of equilibrium, said screw mechanism including slotted plates attached to the pedestal, a nut having trunnions slidable in the slots of the plates, a threaded shaft having one end received in 65 the nut, and gears connecting the other end of the shaft to the seat, said automatic locking device including pivoted, notched, spring pressed plates associated with the pedestal, a roller pivoted between the plates, 70 and a cam arm pivoted to the seat and positioned to operate the roller and the spring pressed plates, the notches in the plates coacting with said trunnions.

4. A chair of the invalid's chair type for 75 securing maximum repose, comprising, a seat having arms, a back, and a leg rest attached thereto, a supporting pedestal, a pivot rockingly connecting the rear lower edge of the seat to the pedestal, a hand 80 operated screw mechanism for varying the inclination of the seat, an automatic locking device for locking the seat in fixed position, after it has been rotated rearwardly on its axis beyond its point of equilibrium, said 85 screw mechanism including slotted plates attached to the pedestal, a nut having trunnions slidable in the slots of the plates, a threaded shaft having one end received in the nut, and gears connecting the other end 90 of the shaft to the seat, said automatic locking device including pivoted, notched, spring pressed plates associated with the pedestal, a roller pivoted between the plates, and a cam arm pivoted to the seat and positioned 95 to operate the roller and the spring pressed plates, the notches in the plates coacting with said trunnions, the pivoted plates being pivoted on the slotted plates, the notches in the pivoted plates receiving the trunnions of the 100 nut to lock the chair in its position for repose, the cam arm automatically controlling motion of the notched plates, as the chair pivots on the pedestal, by moving the roller and therewith the pivoted plates. 105

In testimony whereof, I have signed my name to this specification.

Dr. JULES LOUIS ADRÉA PASCAUD.