

Oct. 10, 1944.

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2,359,918

CHAIR

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2 Sheets-Sheet 1

Fig. 1.

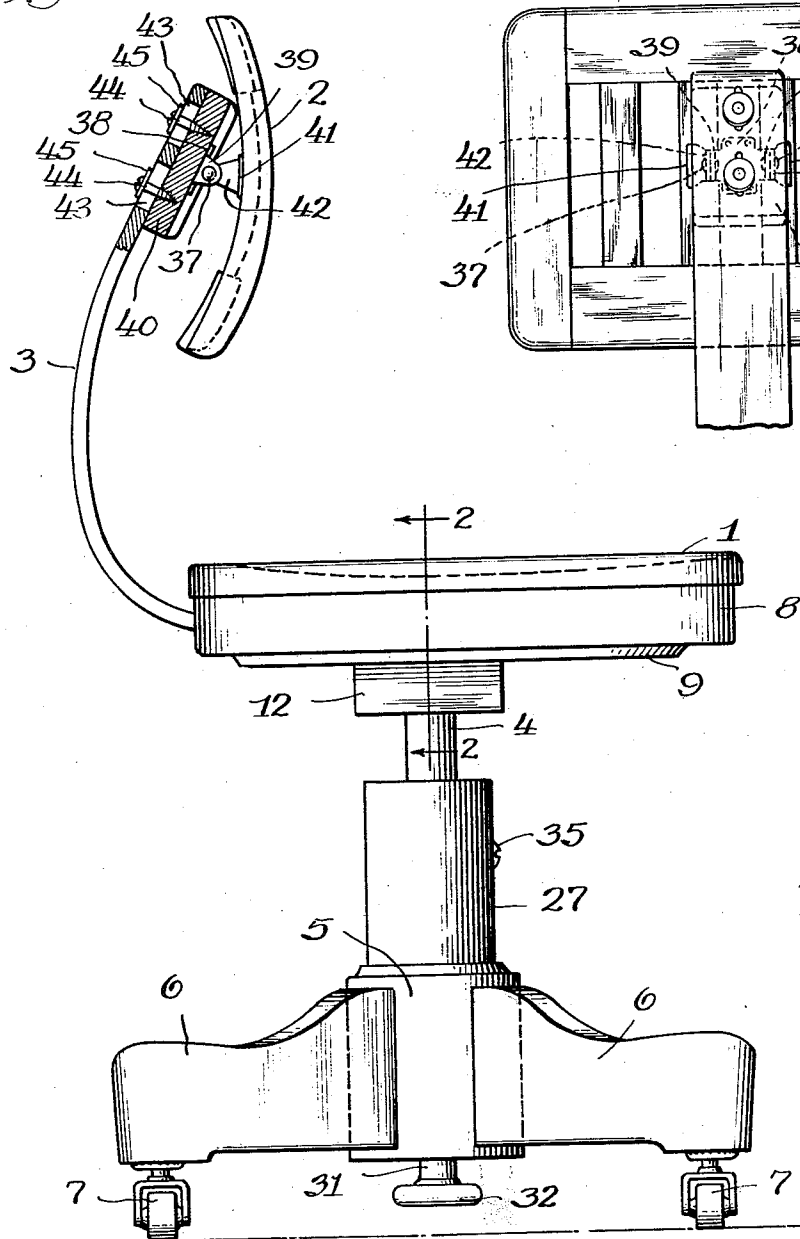
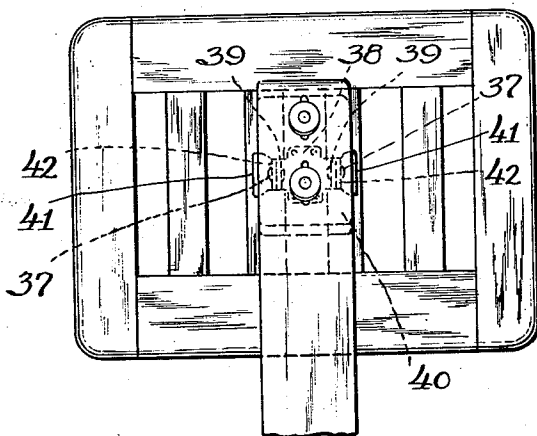


Fig. 5.



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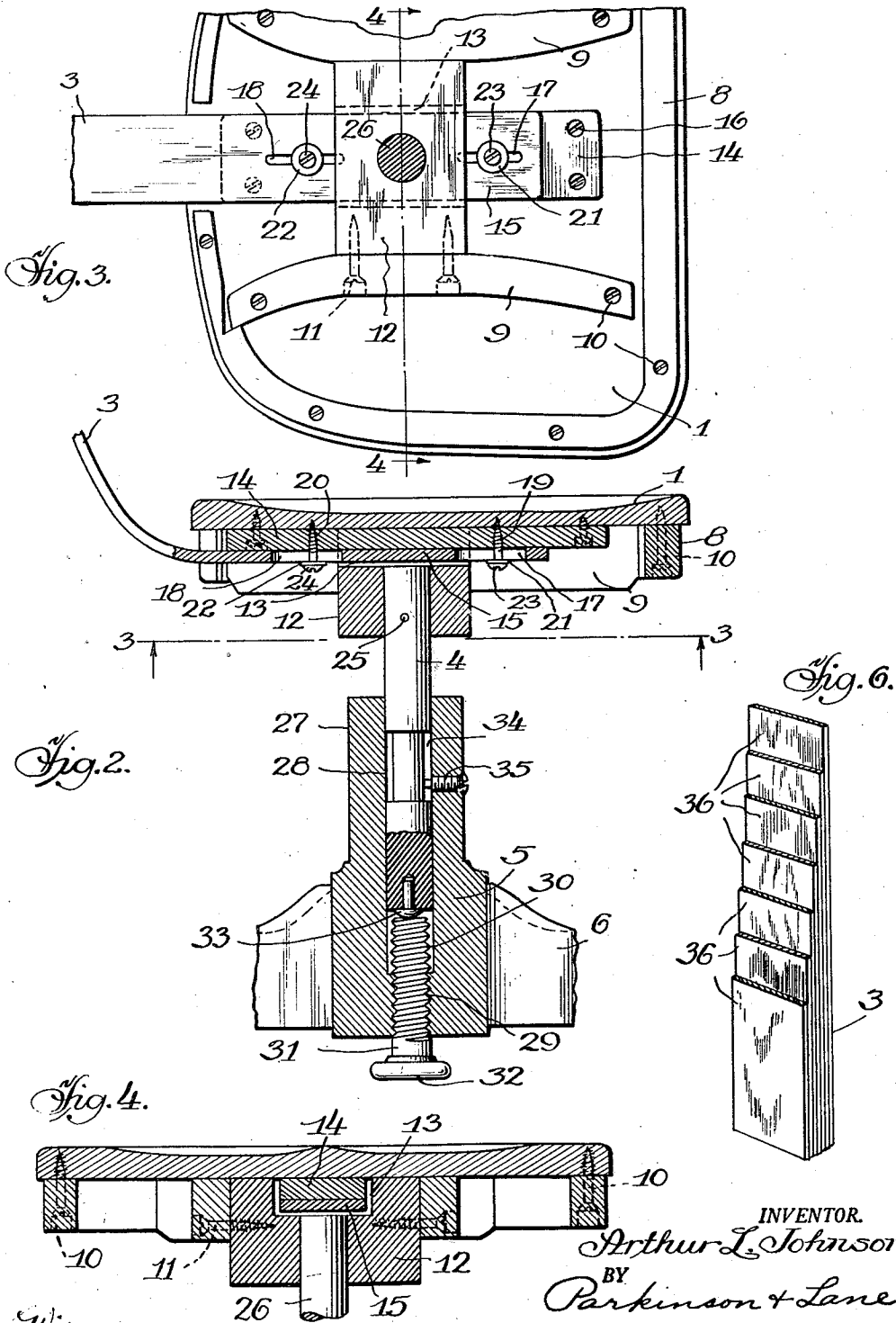
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CHAIR

Filed Jan. 11, 1943

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,359,918

CHAIR

Arthur L. Johnson, Oak Park, Ill., assignor to
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Application January 11, 1943, Serial No. 471,957

2 Claims. (Cl. 155—93)

My invention relates to a chair of the revolving type especially adapted for use by stenographers and others working at desks, the chair of the present invention also being provided with a vertically adjustable pintle and a plywood spring post for the back rest.

Among the objects of my invention is to provide a revolving chair having novel means for effecting vertical adjustment, the pintle being capable of a limited amount of vertical movement to prevent it from being inadvertently entirely lifted out of the base, or to enable such entire removal when desired.

Another object is to provide novel means for reducing friction when the chair seat is revolved with relation to the base, and when the seat and upper structure are being adjusted vertically with relation to the base.

A further object is to provide a chair having greater comfort for the user when in use, and provided with a plywood spring post for the back rest of such structure and characteristics as to give a resilient movement to the back rest, without using metal except for such small parts as screws, washers, small brackets and the like.

A still further object is to provide means for enabling vertical adjustment of the back rest with relation to the spring post, as well as horizontal adjustment of the spring post and back rest with relation to the seat.

Still another object is to provide a chair of the class described substantially of all wood, the only metal used being small parts such as screws, caster mountings, washers, small brackets and the like, thus avoiding the use of metal that is so urgently needed in war production.

A further object is to make possible, a substantially all wood chair, attractive in appearance, economical to manufacture, having very little friction in its revolving, and vertically adjustable parts, extremely comfortable in use, strong and durable, and having a novel curved plywood spring post for the back rest, the curved plywood spring post being free from tendency to straighten out, and will return to original bent position when flexed during use.

Further objects, advantages and capabilities will later more fully appear.

My invention further resides in the combination, construction and arrangement of parts illustrated in the accompanying drawings, and while I have shown therein preferred embodiments, I wish it understood that the same are susceptible of modification and change without departing from the spirit of my invention.

In the drawings:

Fig. 1 is a side elevation, partly in section, of a chair embodying my invention.

Fig. 2 is a fragmentary, vertical, transverse section through the base, pintle, seat and associated parts, a portion of the pintle being shown in elevation for clearness.

Fig. 3 is a fragmentary section on the line 3—3 of Fig. 2.

Fig. 4 is a vertical section on the line 4—4 of Fig. 3.

Fig. 5 is a rear elevation of the back rest and a fragmentary portion of the upper end of the spring post.

Fig. 6 is a fragmentary perspective view of a portion of the plywood spring post, progressively broken away and showing each successive ply as shorter than the preceding one for the sake of better understanding. In actual construction the respective ends of the plywood in the spring post preferably terminate in substantially a single transverse plane.

Referring in detail to the drawings and more particularly to Fig. 1, it will be seen that I have provided a revolving chair having a seat 1, back rest 2, spring post 3, pintle 4 and base 5. As will be understood the base 5 is provided with legs 6 which in turn are mounted on casters 7 or other desirable form of supporting means. As seen in Figs. 2 and 3 the under face of the seat 1, is provided with depending marginal ribs 8 and a pair of cross ribs 9 secured to the seat by screws 10 or otherwise as desired.

Secured to the cross ribs 9 by screws 11 or other suitable fastening means and extending laterally between said cross ribs is a block 12, which as seen in Figs. 2, 3 and 4 is of a greater depth than the cross ribs and is formed in its upper face with a groove 13 extending across said face from front to rear, and of a depth to receive the bar 14 and the horizontal bottom end 15 of the spring post 3 with sufficient clearance to permit longitudinal sliding movement of the bottom end of the spring post through said groove, between bar 14 and block 12, from front to rear and vice versa when loosened as later described. Block 12 may be of a single piece, or made up of a plurality of pieces, of wood as desired.

Bar 14 is fixed to the bottom face of the seat portion by screws 16, or other suitable fastening means, and extends in a direction from front to rear across the middle of the under side of the seat and through said groove 13. The bottom portion 15 of the spring post is formed

with spaced apart slots 17 and 18 through which extend the body portions of screws or the like 19 and 20 secured into the bar 14 as seen in Fig. 2. Washers 21 and 22 are positioned between the heads 23 and 24, respectively, of the screws 19 and 20 so that when these screws are unscrewed a small amount the bottom portion 15 of the spring post will be loosened and free to be adjusted either forwardly or backwardly in groove 13 to adjust the back rest 2 a desired amount forwardly or backwardly, and when these screws are tightened the washers 21 and 22 will be clamped against the under face of the bottom portion 15 of the spring post to tighten the same in its adjusted position.

Fixed in an opening in block 12 by a pin or pins 25 (or other suitable fastening means) is a pintle 4 extending downwardly from the block. Extending upwardly from the base 5 is a pedestal 27 formed with a central vertical opening 28, said opening extending entirely through the pedestal and the hub of the base except that this opening is of smaller diameter at the lower end where it passes through the lower end of the base hub which smaller diameter portion has threads 29 which threadably receive the complementary threads 30 of the adjusting screw 31 also made of wood and formed at its lower end with a handle 32. Concentrically fixed on the lower end of the pintle is a convex antifriction member 33 which may be of any construction desired to reduce the area of the lower end of the pintle to a small amount to correspondingly reduce the friction between the upper end of the adjusting screw and the lower end of the pintle when turning this screw for adjusting purposes. The antifriction member 33 may be what is commonly known as a dome of silence used on the bottom end of chair legs, or it may be a round headed pin driven with a drive fit into an opening in the bottom of the pintle, or any other suitable construction desired. Said member 33, being small, may be of metal if metal is available, otherwise it may be of hard wood, composition material, or the like.

At a suitable position intermediate of its length, the pintle 4 is formed with a more or less elongated annular groove 34 within which seats the inner end of a screw 35, threadably mounted in an opening extending through the wall of the pedestal 27, so that when screw 35 is screwed inwardly a sufficient distance short of binding against the pintle the shoulders at the respective ends of the groove will, because of their distance apart, permit, to that extent, vertical adjustment of the pintle, upon rotation in the desired direction of the adjusting screw 31, and yet will prevent the pintle from being pulled entirely out of the pedestal when the chair is lifted upwardly by the seat. Also when the screw 35 is unscrewed a sufficient amount the pintle may be entirely removed from the hole in the pedestal.

From the above it is evident that adjustment of the seat 1 vertically of the base may be easily effected by rotation of the adjusting screw 31, and because of the antifriction characteristic of the member 33 only slight effort is required to rotate said adjusting screw. The length of the annular groove 34 and its position on the pintle is such as to give a range of vertical adjustment suitable for the average person that would use the chair.

The spring post, for the back rest, is made of plywood, seven of such plies 36 being shown in

Fig. 6, but any other number (greater or less) that will give the desired resiliency and strength, may be used without departing from the spirit of my invention. The individual plies will each be of the desired thickness, and preferably of lengthwise grain. They will each be coated on both side faces (except the two outside plies which will be coated on the inside faces only) with a suitable adhesive, preferably glue, and placed one upon the other and then positioned between a pair of forming dies of the desired curvature (such, for example, as that shown in Figs. 1 and 2). Said dies are then tightened together, with the plywood therebetween, and let stand for the desired length of time. I have found twelve hours to give good results, but as will be understood the length of such time will be chosen as required to give the best results with the particular kind of plywood and glue being used, and any other varying factors that require to be considered. Fig. 6 shows the respective plies as progressively broken away to give a better understanding of the plywood construction, but in practice the ends of the various plies will preferably terminate in substantially the same transverse plane as seen at the ends of the spring post 3 in Figs. 1 and 2.

In the construction of these plywood spring posts, as described above, I do not use any steam, water or fluid (other than the glue or the like referred to) in the bending and forming operation. I am thus able to produce a plywood spring post that is free from any tendency to straighten out which straightening out tendency would occur if a solid piece of wood were used and bent to the desired shape. My improved plywood spring posts will have adequate strength and resiliency, and when moved out of their originally bent shape during use they will immediately return to their originally bent shape when the pressure against the back rest is removed. I have thus produced a spring post for the back rest that gives a very pleasing and comfortable resiliency during use of the chair, with adequate strength, and with the elimination of metal in the post.

The back rest 2 is swingably mounted at 37 upon the upper end of the post 3. This is effected by securing, by screws or other suitable fastening means, a plate 38 to the head block 40 adjustably fixed to the upper end portion of the spring post 3, said plate having a pair of upstanding, spaced apart, ears 39; and a pair of laterally spaced apart small plates 41 fixed by screws or the like to the rear face of the back rest and each having an upstanding ear 42 each pivotally connected by a pin to one of the ears 39 to effect the swingable mounting 37. This construction enables the back rest to have a swinging movement to conform to the movement of the back of the person sitting in the chair. It is also to be noted that the back rest is of a shape to give maximum comfort and ease to sitter in the chair.

The head block 40 at the upper end of the spring post is so mounted on the spring post as to be adjustable longitudinally thereof, by reason of the two longitudinal slots 43 through each of which extends a screw or the like 44 screwed into the head block and which screws or the like are each provided with a washer 45 between its head and the rear face of the spring post. When the screws are tightened against the washers the back rest will be held for swinging movement on the spring post at that posi-

tion. Upon loosening the screws the head block 40 and back rest may be adjusted by sliding the screws in the slots to a new position and then tightened in the new position.

The adjusting screw 31 will be preferably made of oak, birch, maple or any other suitable hard wood, or any suitable composition of hard nature other than metal. For the other parts such wood as is best adaptable for the intended use may be adopted. It is thus seen that I have provided a strong and comfortable revolving chair of substantially all-wood construction, in which are eliminated metal parts except for screws, washers, small plates or brackets and casters. I wish it understood, however, that if metal is available and obtainable without violating war restrictions, metal in the desired parts may be used without departing from the spirit of my invention.

Having described my invention, I claim:

1. In a chair, a seat having depending from its lower face a pintle, a base having an upstanding pedestal, the base and pedestal having a vertical opening extending therethrough, said opening being restricted in diameter at the lower end portion, screw threads in the base where the opening is restricted, a threaded adjusting screw threaded into said screw threads and extending into the larger portion of the vertical opening, a hard, antifriction member secured to the central por-

tion of the lower end of the pintle, the central portion of the upper end of the adjusting screw bearing against the antifriction member, whereby the pintle will rotate freely in the pedestal and base and the adjusting screw may be easily turned to adjust the vertical position of the seat.

2. In a chair, a seat having depending from its lower face a pintle, a base having an upstanding pedestal, the base and pedestal having a vertical opening extending therethrough, said opening being restricted in diameter at the lower end portion, screw threads in the base where the opening is restricted, a threaded adjusting screw threaded into said screw threads and extending into the larger portion of the vertical opening, a hard, antifriction member secured to the central portion of the lower end of the pintle, the central portion of the upper end of the adjusting screw bearing against the antifriction member, whereby the pintle will rotate freely in the pedestal and base and the adjusting screw may be easily turned to adjust the vertical position of the seat, the pintle having a wide circumferential groove in its outer face, and the pedestal having a projection extending into the circumferential groove to permit a limited vertical movement of the pintle and prevent its being pulled entirely out of the pedestal when lifting the chair by the seat.

ARTHUR L. JOHNSON.