

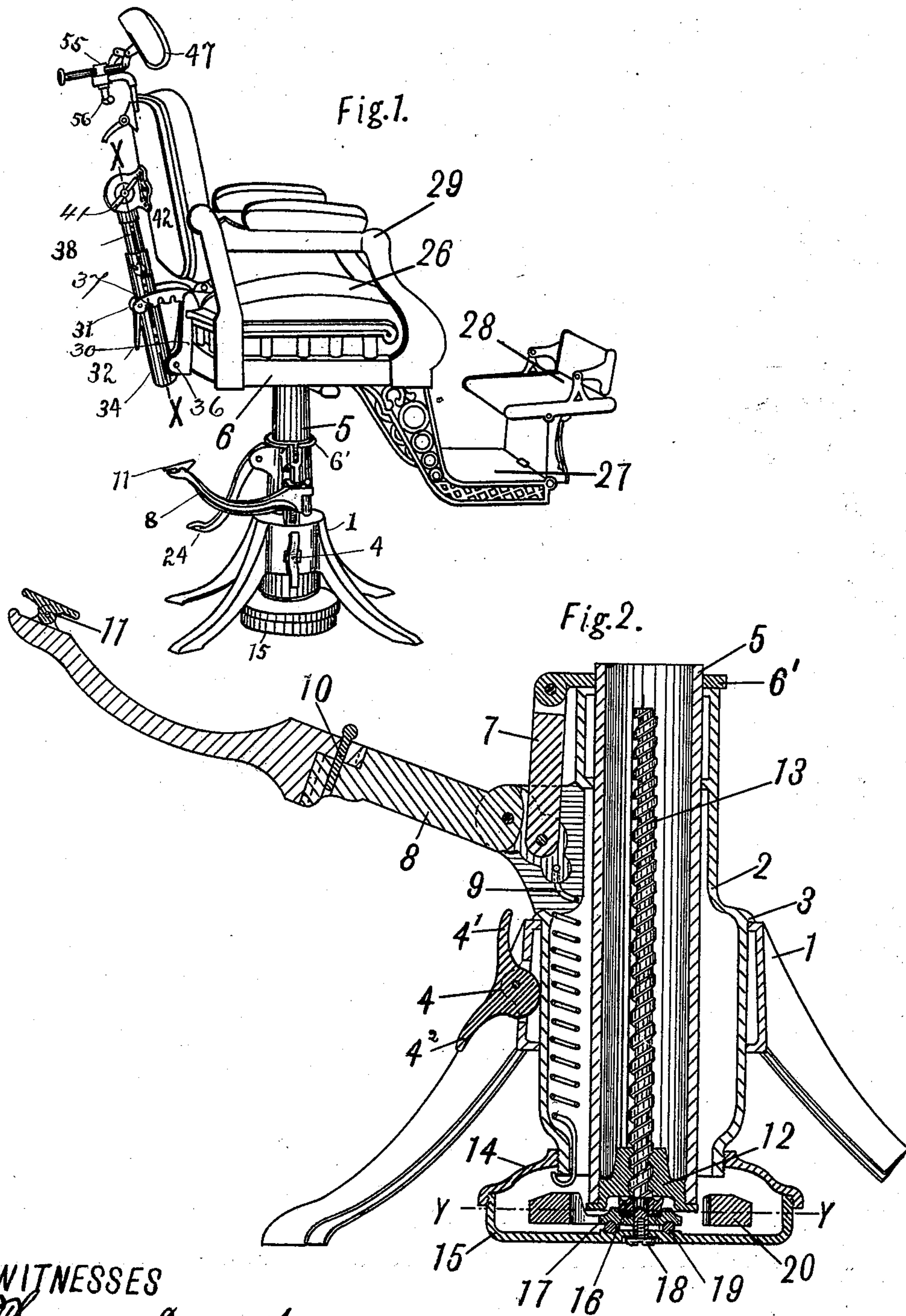
(No Model.)

3 Sheets—Sheet 1.

G. W. ARCHER.  
DENTAL CHAIR.

No. 506,200.

Patented Oct. 10, 1893.



WITNESSES  
Thomas Durant  
Anna M. Kelly.

Inventor.  
George W. Archer  
by Churchill & Co.  
Attys.

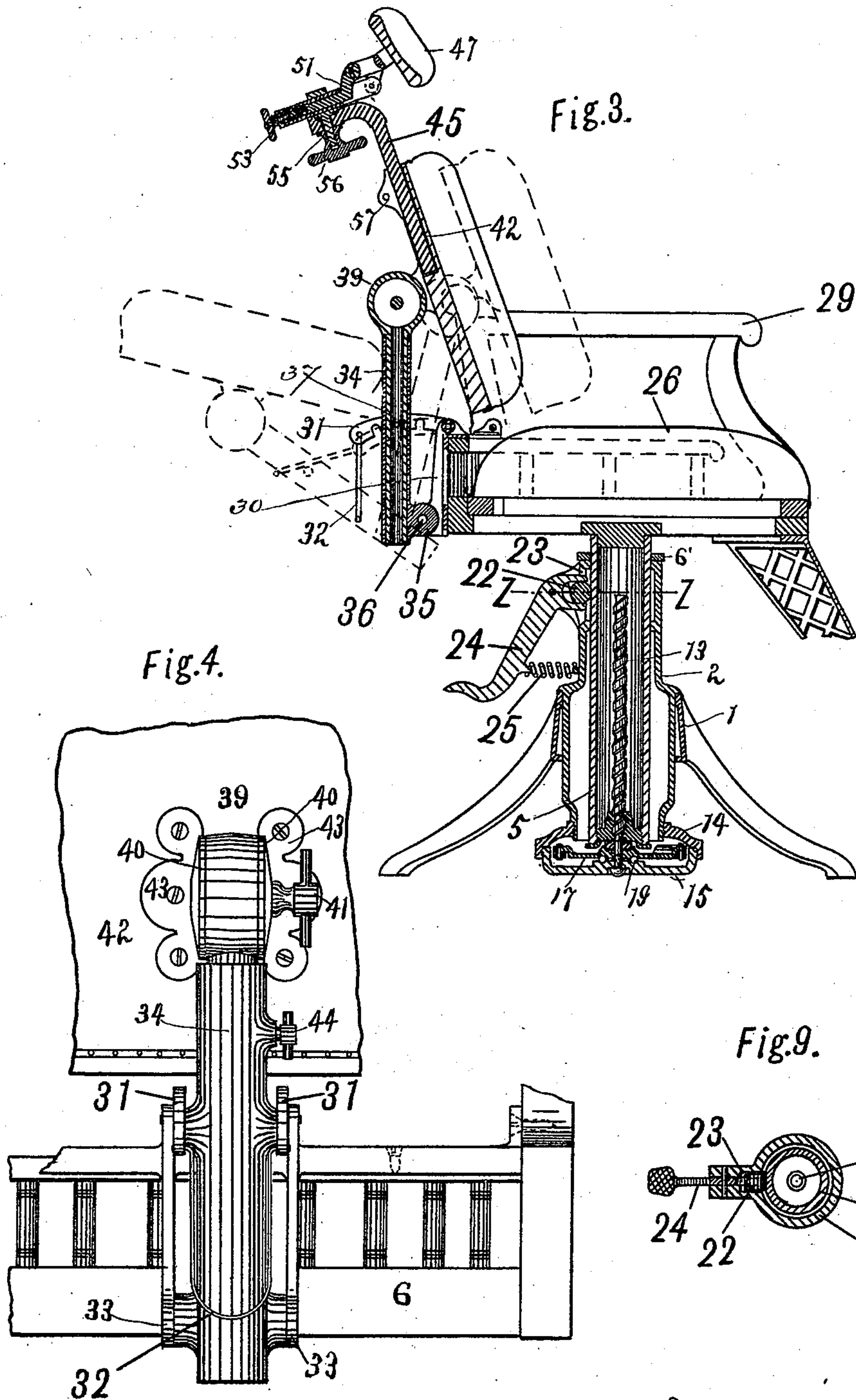
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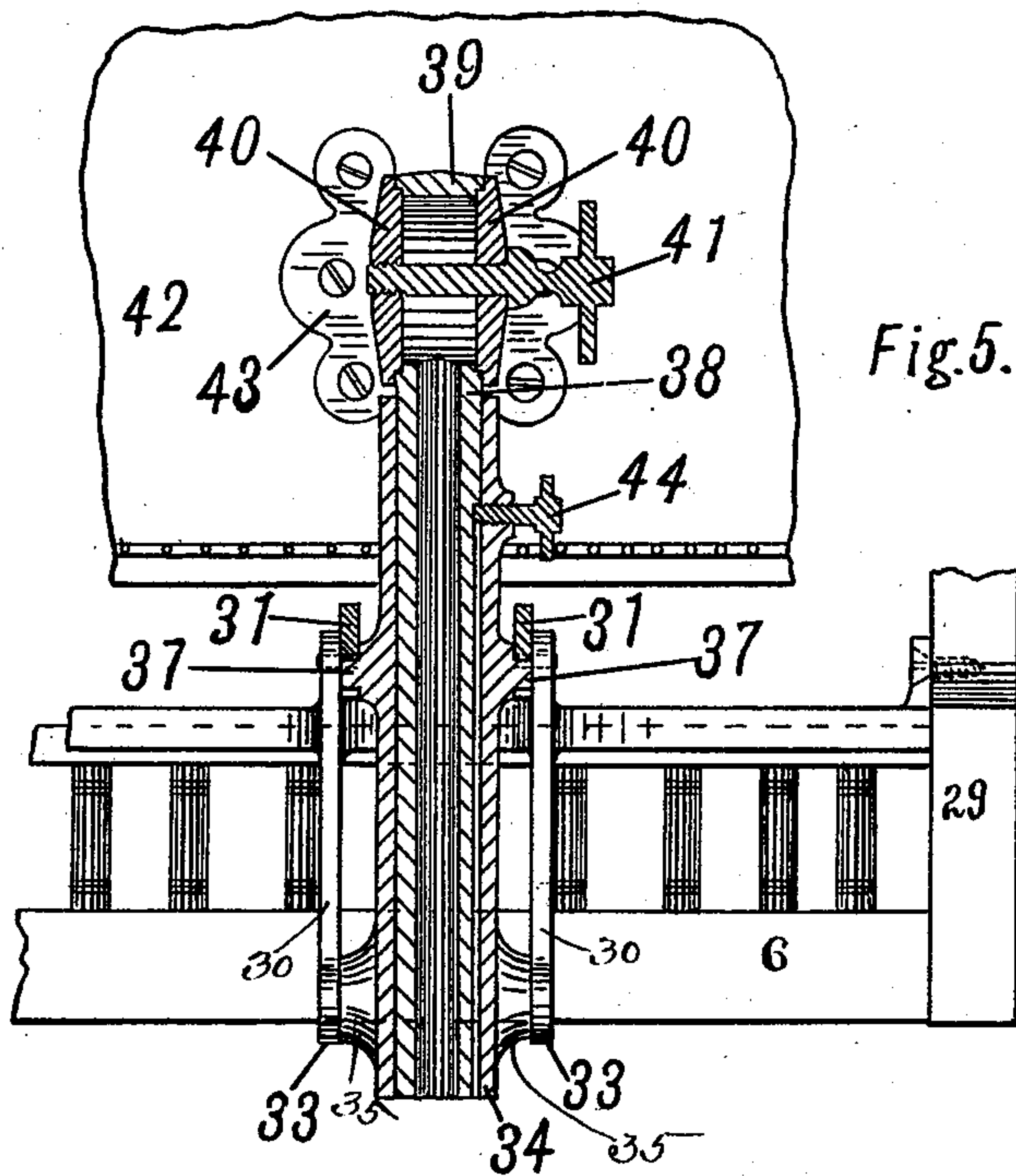


Fig. 5.

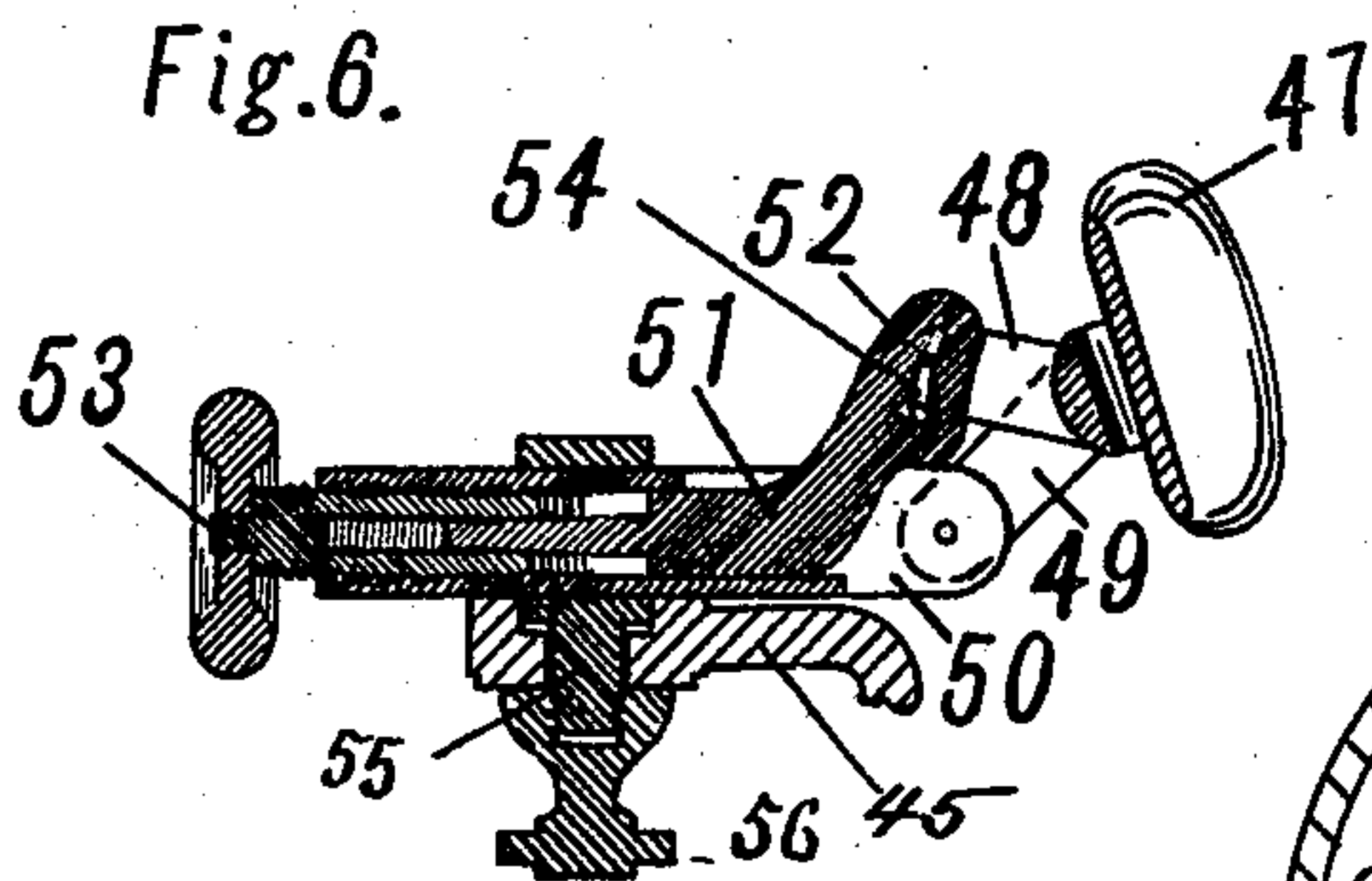


Fig. 6.

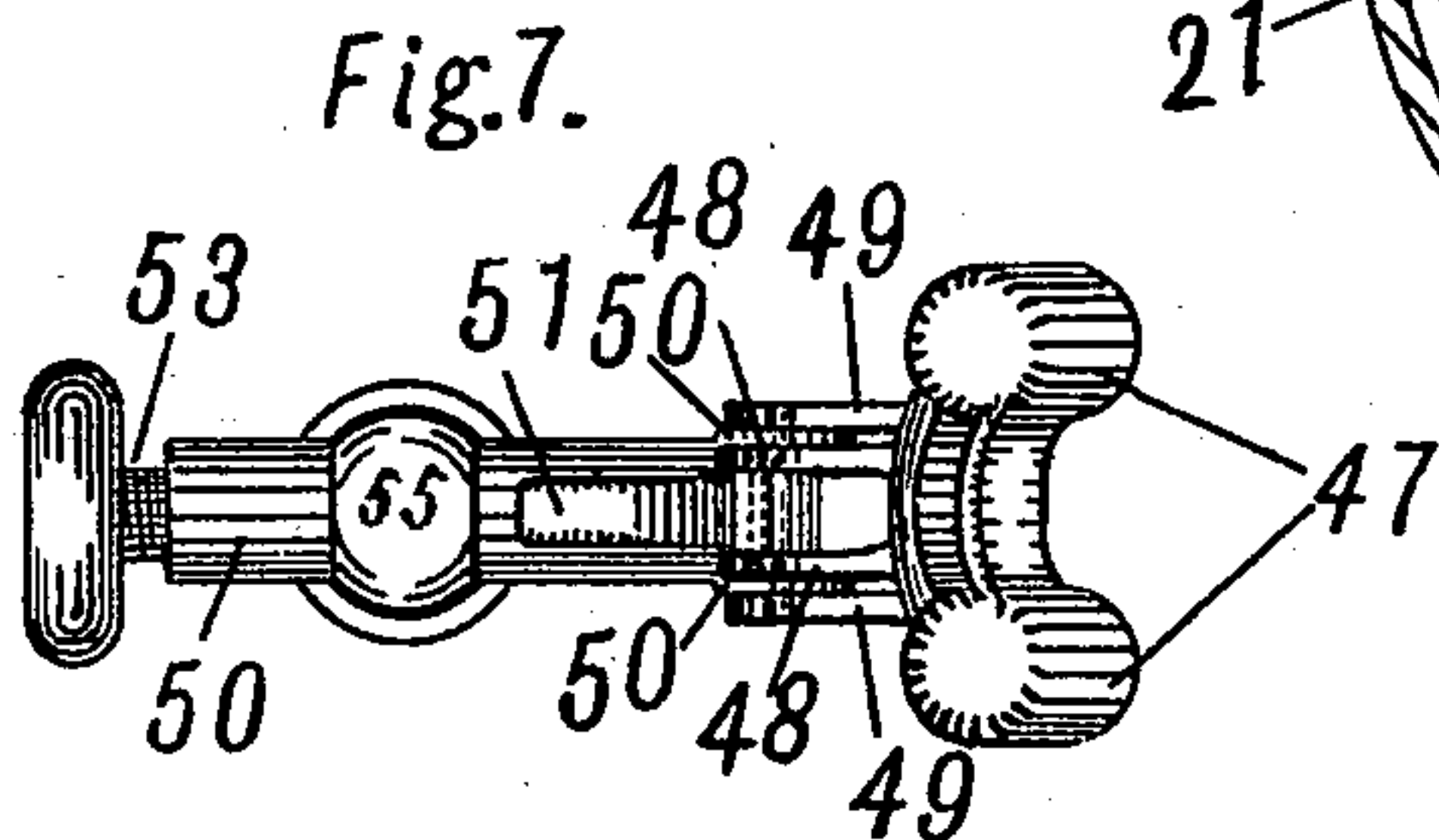


Fig. 7.

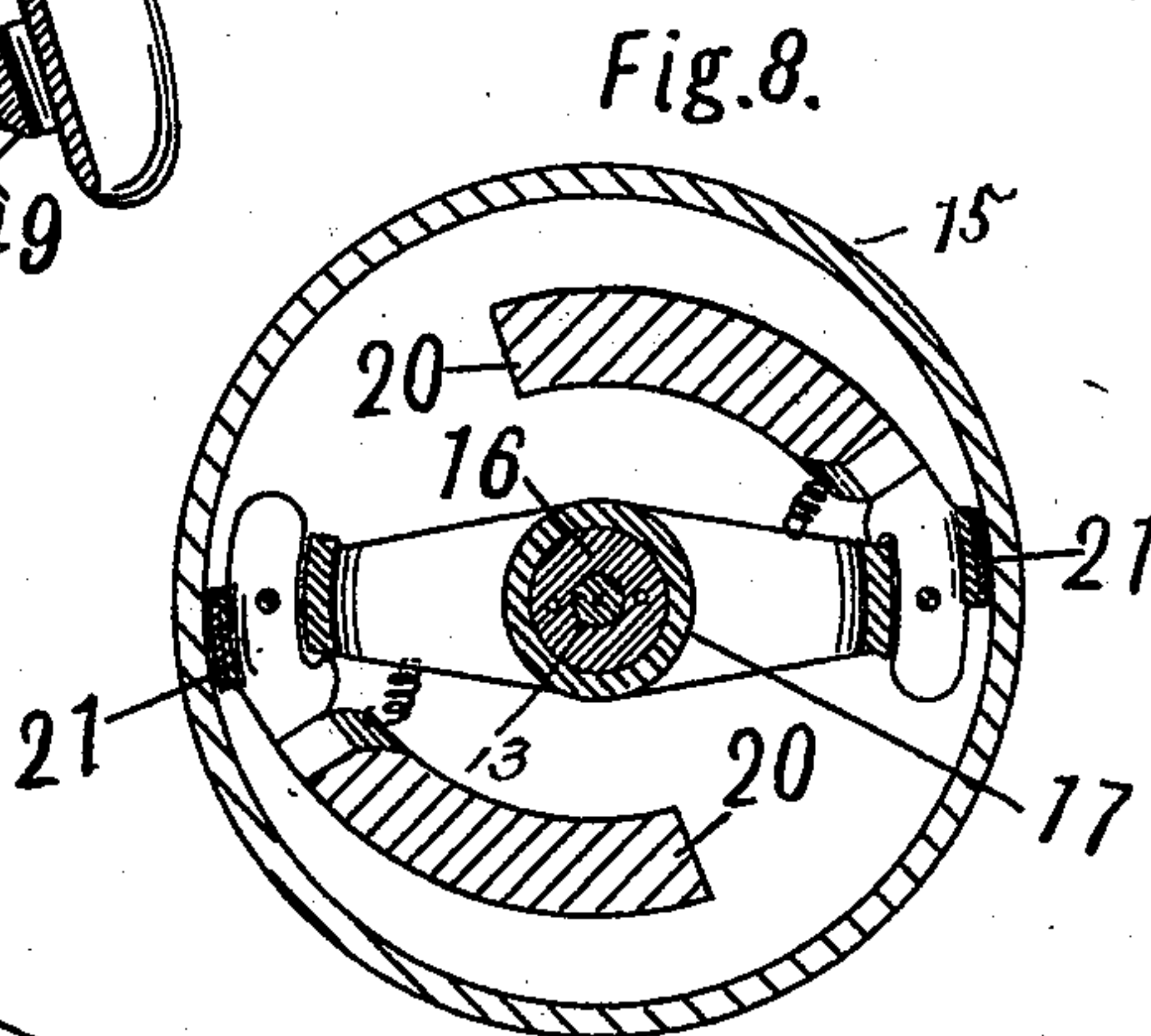


Fig. 8.

WITNESSES

Thomas Durant  
Anna M. Kelly

Inventor.  
George W. Archer  
by Churchill  
his attys.



# UNITED STATES PATENT OFFICE.

GEORGE W. ARCHER, OF ROCHESTER, NEW YORK, ASSIGNOR TO THE  
ARCHER MANUFACTURING COMPANY, OF SAME PLACE.

## DENTAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 506,200, dated October 10, 1893.

Application filed October 7, 1892. Serial No. 448,097. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. ARCHER, of Rochester, in the county of Monroe and State of New York, have invented certain new and  
5 useful Improvements in Dental Chairs; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and  
10 to the reference-numerals marked thereon.

My present invention has for its object to provide an improved chair particularly adapted for the use of dentists, which is simple in construction and capable of easy and rapid  
15 adjustment to any position in which it is desired to place the patient, and it consists in certain improvements in construction and combinations of parts, all as will be hereinafter fully described and the novel features  
20 pointed out in the claims at the end of this specification.

In the drawings: Figure 1 is a perspective view of a complete chair constructed in accordance with my invention; Fig. 2 an enlarged sectional view of the base of the chair showing the lifting and lowering mechanism; Fig. 3 a longitudinal section through the whole chair; Fig. 4 an enlarged view of the back  
25 adjusting device; Fig. 5 a sectional view of the same on the line  $x-x$  of Fig. 1; Fig. 6 an enlarged sectional view of the adjustable head-rest; Fig. 7 a plan view of the head-rest; Fig. 8 a sectional view of the lowering mechanism; Fig. 9 a sectional view on the  
30 line  $z-z$  of Fig. 3.

Similar reference numerals in the several figures indicate similar parts.

The base of the chair consists of a base casting 1 having spreading legs and a central  
40 recess or socket for the reception of the hollow pedestal 2 in which the raising and lowering devices and the seat carrying standard are arranged to operate. The pedestal 2 is provided with a flange 3 resting on the upper  
45 edge of the socket in the base and is adapted to be turned thereon so that the rotary position of the chair may be adjusted and is secured in position by means of a cam 4 pivoted in the base casting and provided with the  
50 upper and lower extensions 4', 4'', respectively, by means of which latter the cam may

be operated to lock or release the pedestal by pressing on one or the other of said extensions, as shown in Fig. 2.

5 indicates the standard on which the chair  
55 seat frame 6 is mounted; said standard being suitably guided in the pedestal and adapted to be elevated by a vertically movable and tilting clamping ring 6' pivoted at one side to a link 7, which in turn is pivoted to the end  
60 of a foot lever 8, the end of said lever being extended beyond the connection with the link and having attached to it a spiral spring 9 passing down inside the pedestal and connected to it at its end as shown, or by any  
65 other suitable means, this spring operating to return the outer end of the lever to an elevated position, (shown in Fig. 2,) and thereby bring down the tilting clamp ring 6'; the operation of this form of lifting device will at  
70 once be understood by those skilled in the art and no further description of it is therefore necessary. The operating foot lever 8 is preferably made of two parts pivoted together at 10 so that it may be broken and the outer  
75 end swung beneath the chair body out of the way. On the outer section of the lever is pivoted a foot piece 11 which enables the operator to maintain a firm pressure on the lever when elevating the chair and reduces the liability of his foot slipping off, as is apt to be  
80 the case when a pivoted lever with a solid end is employed. The chair standard 5 is preferably hollow and at its lower end is secured a nut 12 tapped with a comparatively  
85 steep pitch thread with which co-operates a vertically extending screw 13, which is rotated when the standard is elevated or depressed, as will be described. To the lower  
90 end of the pedestal 2 is attached a collar or cover 14 which serves to support a pan or bottom plate 15 screwing on to it; said pan constituting a support for the standard when it is being lowered.

Connected rigidly to the lower end of the  
95 screw 13 is a tapered plug or block 16 arranged to engage a correspondingly shaped aperture in a spider 17, the end of the screw passing through said block, spider, and through the bottom of the pan 15, but the  
100 connection between the extension of the screw and the spider is a loose one excepting when



the tapered block 16 is forced into the tapering aperture in the spider by the weight of the chair. The upward movement of the screw is limited and the parts held properly in position by means of a small securing screw 18, the head of which engages loosely the lower side of the aperture in the pan.

Arranged beneath the spider 17 are a series of balls 19 operating in suitable grooves in said spider and the bottom of the pan to reduce the friction and upon the outer ends of the spider are pivoted weighted arms or wings 20 having near their pivots brake shoes 21 arranged to co-operate with the vertical rim of the pan 15 when the spider is rapidly rotated and the weighted arms or wings are thrown outward by centrifugal force. The standard 5 is maintained in raised position by means of a small roller 22 operating in a tapering slot 23 in the upper part of the pedestal; said roller being forced down into the narrower portion of the slot by the chair standard and operating to clamp and hold the latter, this downward motion also being assisted by a foot lever 24 pivoted to the pedestal and having a bifurcated end loosely embracing the roller 22; the inner end of the lever and the roller being moved downward by a spring 25 arranged between the outer operating end and the standard, as shown in Fig. 3.

The operation of the standard and chair adjusting mechanism will now be understood. The operator by a movement of the foot lever 8 raises the standard with a step-by-step motion and it is maintained in raised position, while the foot lever is being returned, by means of the clamping roller 22, which is moved down into the narrow portion of the slot by the spring 25. During the upward movement of the standard, the screw 13 is rotated, the thread being of comparatively steep pitch and it is lifted slightly, so that the tapering block 16 is lifted out of the socket in the spider and the latter is not rotated. When it is desired to lower the chair, the operator simply presses on the foot lever 24 thereby moving the holding roller 22 into the wider portion of the slot 23 and the weight of the chair is thrown entirely upon the screw 13, which is forced down and the tapered portion engaged with the spider, causing the latter to rotate with the screw and the weighted brake shoes to be thrown out in contact with the edges of the pan with sufficient friction to effectually govern the descent of the standard and the chair, this being accomplished noiselessly and with perfect safety, and it may be arrested at any portion in its descent by reducing the pressure on the lever 24 and allowing the clamping roller to again engage the standard and the lower portion of the tapered slot. As stated the rotary movements of the pedestal can be readily governed by means of the locking cam 4.

It will be noted that by employing the automatic holding roller 22, the weight of the chair is never on the screw or braking device

until it is to be lowered, but when the sustaining device proper is released then the governing device performs its functions properly. This insures the proper operation of the latter at all times and renders it less liable to wear or strain than would be the case if the screw and braking device supported the chair even though restrained by other devices, from operation.

The seat 26 of the chair is, as usual, secured to the seat frame 6 on upper end of the standard and may or may not be provided with a tilting attachment; the usual platform and foot rest 27 and 28 being secured to its forward portion and the arms 29 being of the usual or any preferred construction.

Secured to the back of the seat, and in the present construction, the lower part of the arms, is a back supporting casting 30 having lugs at the upper portion to which are pivoted notched links 31 connected at their outer end by a loosely pivoted loop 32. This back casting is also provided with lugs 33 at its lower portion between which is pivoted the lower end of a telescoping back support, the lower hollow section 34 having the bearing portion 35 forward of the main cylindrical part and pivoted upon a pin 36 passing through it and through the lugs. The section 34 is also provided with laterally projecting lugs 37 with which the notches in the pivoted links 31 are adapted to engage to maintain it in vertical or inclined position, as may be desired.

Sliding within the section 34 is the section 38 having at its upper end a collar or rim 39 with which the bracket sections 40, 40, on the chair back are held in engagement by means of an adjusting screw 41. The operating faces of these bracket sections are provided with annular grooves engaging the edges of the circular portion 39 of the section 38, so that the chair back 42 to which the bracket sections are secured, by laterally extending flanges 43, may be adjusted around the annular portion 39 and secured in position by means of the clamping screw 41, which draws the two sections tightly in engagement with the annular end. The section 38 is adjustable vertically in the section 34 and is prevented from turning laterally, and its vertical position is also maintained, by means of a securing screw 44 passing through the side of the section 34 and entering a slight groove 60 formed in the side of the section 38. From this it will be seen that the vertical and tilting movements of the back can be readily accomplished, and when it is desired to adjust the chair-back forward and back it may be accomplished by lifting the link 31 and engaging another of the notches therein with the trunnions of lugs 37. The loop 37 connecting the links, serves not only as a handle for readily operating them, but also in case it is desired to lower the back of the chair quickly and place the patient in a recumbent position as in case of fainting or



collapse, the back support can be disengaged entirely from the links 31 and moved to lowest position, shown in Fig. 3, the loop 32 then co-operating with the back support, which as before turns on the pivot pin 35 at its lower end.

The upper portion of the back 42 is provided with a socket for the reception of the bent arm 45 carrying the head-rest, which latter embodies a pad 47 to the rear portion of which is secured a bracket having two arms 48 and 49 pivoted to the supporting stem, the latter being constructed in two sections arranged to slide one within the other, the outer section 50 being pivoted to the bracket arms 49, and the inner section 51 having the upward extension having the slot 54 in which operates a pin 52 connecting the bracket arms 48. The inner portion of the stem 50 is cylindrical and is provided with a right-handed screw thread and the outer end of the section 51 is reduced and provided with a left-handed thread engaging with the interior of the screw 53 correspondingly threaded, while the outer portion of said screw engages the thread in the outer section 50, the arrangement being such that the rapid tilting adjustment of the head-rest pad 47 can be accomplished by simply turning the screw 53 to the right or left moving the inner section in either direction by a rapid movement, the pad turning on the outer stem section 50. The stem 50 is secured to the bent arm 45 by a screw 55 having a loop in its upper portion through which the stem passes, the threaded portion of the screw passing through an aperture in the arm 45 and having on its lower end an adjustable nut or handle 56, so that by loosening the nut the stem can be moved bodily in or out and again secured. The rod 45 is secured by a split clamp 57 arranged on the chair back and can be adjusted vertically or turned around as may be desired.

By the term pedestal in the claims, except when used in connection with the particular base 1 shown herein, I wish to be understood as meaning any adequate support for the parts, using it in its broad sense.

I claim as my invention—

1. In a chair, the combination with the supporting-base having the socket, of the pedestal on which the chair is mounted, supported and adapted to be rotated therein, the locking cam pivoted in the supporting-base with its face engaging the pedestal and having the two operating arms on opposite sides of the pivot, whereby upon pressing upon one or the other of said arms the cam can be engaged or disengaged from the pedestal, substantially as described.

2. In a chair, the combination with the chair standard and lifting devices therefor, of the pedestal having the inclined groove, the roller operating on the standard located therein, the foot lever having the bifurcated end engaging the roller and the spring operating the foot lever, substantially as described.

3. In a chair, the combination with the base or pedestal, the chair standard, lifting devices therefor, and an automatic sustaining device operating directly on the standard, of the rotatable screw engaging the standard, and a brake or governor detachably connected with and actuated by the screw when moved in one direction only, substantially as described.

4. In a chair, the combination with the base or pedestal, the chair standard, lifting devices therefor, and a sustaining device, of the screw engaging the standard, and having the tapered block and the rotary brake or governor having the tapered socket for the block on the screw, substantially as described.

5. In a chair, the combination with the base or pedestal, the chair standard, lifting devices therefor, and a sustaining device, of the screw engaging the standard and having the tapered block, the rotary spider having the weighted arms and brake shoes and the socket for receiving the block on the screw, substantially as described.

6. In a chair, the combination with the pedestal, the chair standard, lifting devices therefor, and a sustaining device, of the screw engaging the standard and having the tapered block thereon and the extension at the end, the rotary spider having the tapered socket and the weighted brake arms mounted on said extension, the rim with which the arms cooperate and the securing screws, substantially as described.

7. In a chair, the combination with the base having the socket, the pedestal supported therein, the standard, the standard raising and sustaining devices in the pedestal and the bottom pan secured to the lower end of the pedestal, of the screw operating in the standard having the tapered block, the rotary spider provided with the socket and the brake arms thereon, said spider supported on the bottom of the pan and the securing screw engaging the end of the first mentioned screw, substantially as described.

8. In a chair, the combination with the seat, of the back supporting standard, the notched arms or links pivoted to the seat and engaging projections on the back support, and the depending loop loosely connected to the links and passing around the back supporting standard, whereby the back may be supported by the links, or may be lowered and supported in extreme position by the loop, substantially as described.

9. In a chair, the combination with the seat, the telescoping back support, one section having the annular head and the other pivoted to the seat, of the bracket sections secured to the back cooperating with the head, the securing screw engaging the bracket sections clamping them to the head, and the notched links pivoted to the seat and engaging the back support, whereby the back may be adjusted vertically and the support tilted, substantially as described.



10. The combination with the head rest pad  
having the two rearwardly extending arms,  
of the supporting stem constructed in two  
telescoping parts, both parts being pivoted to  
5 the head rest, and provided with right and  
left threads and a screw screwing into one  
section and onto the other to provide for

their relative adjustment, substantially as  
described.

GEORGE W. ARCHER.

Witnesses:

FRED F. CHURCH,  
GRACE A. RODA.