

A. P. GOULD
DENTAL CHAIR.

No. 491,097.

Patented Feb. 7, 1893.

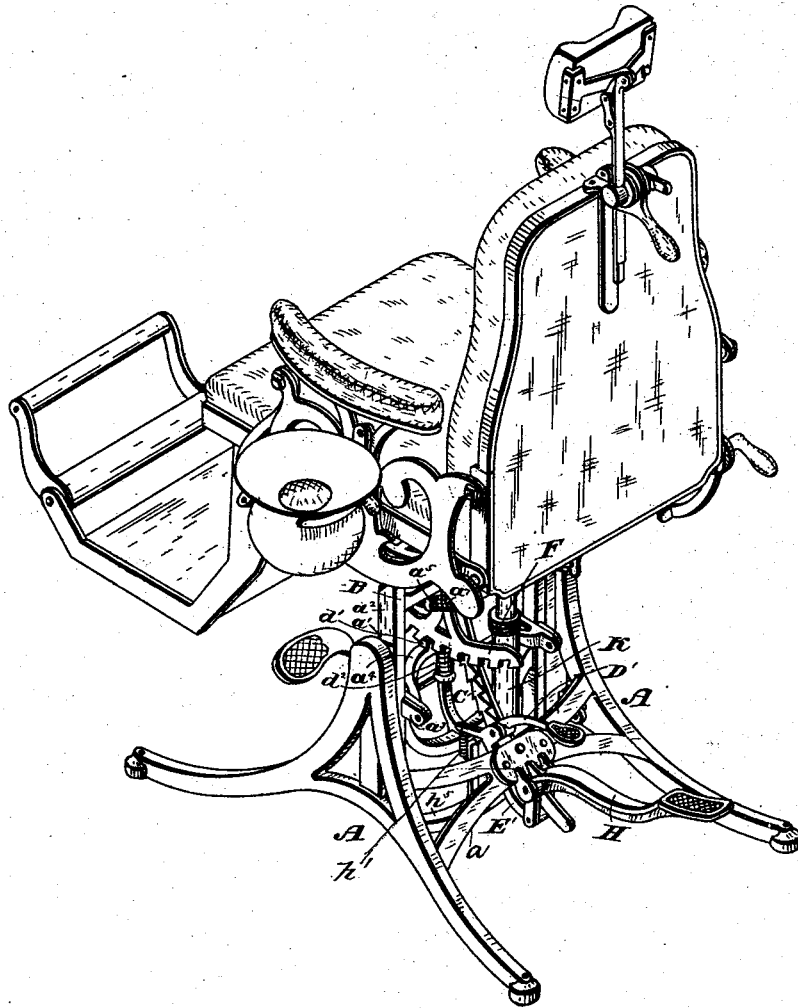


Fig. 1.

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Aaron P. Gould INVENTOR

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(No Model.)

4 Sheets—Sheet 2.

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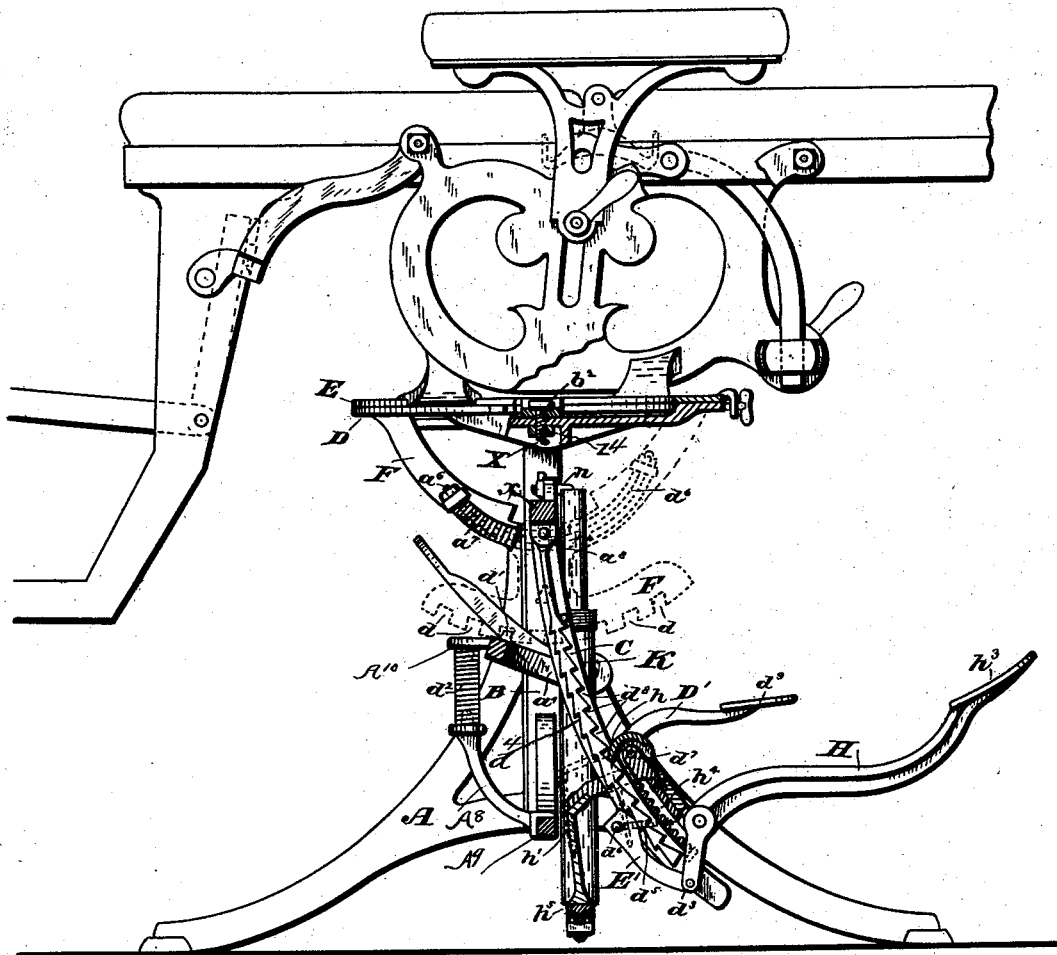


Fig. 2.

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(No Model.)

4 Sheets—Sheet 3.

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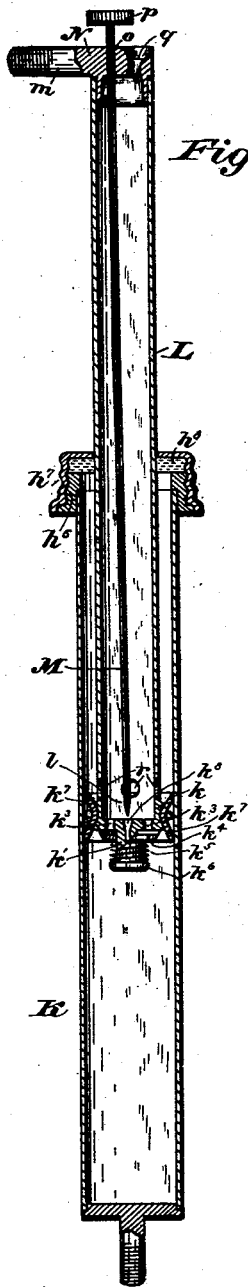


Fig. 4.

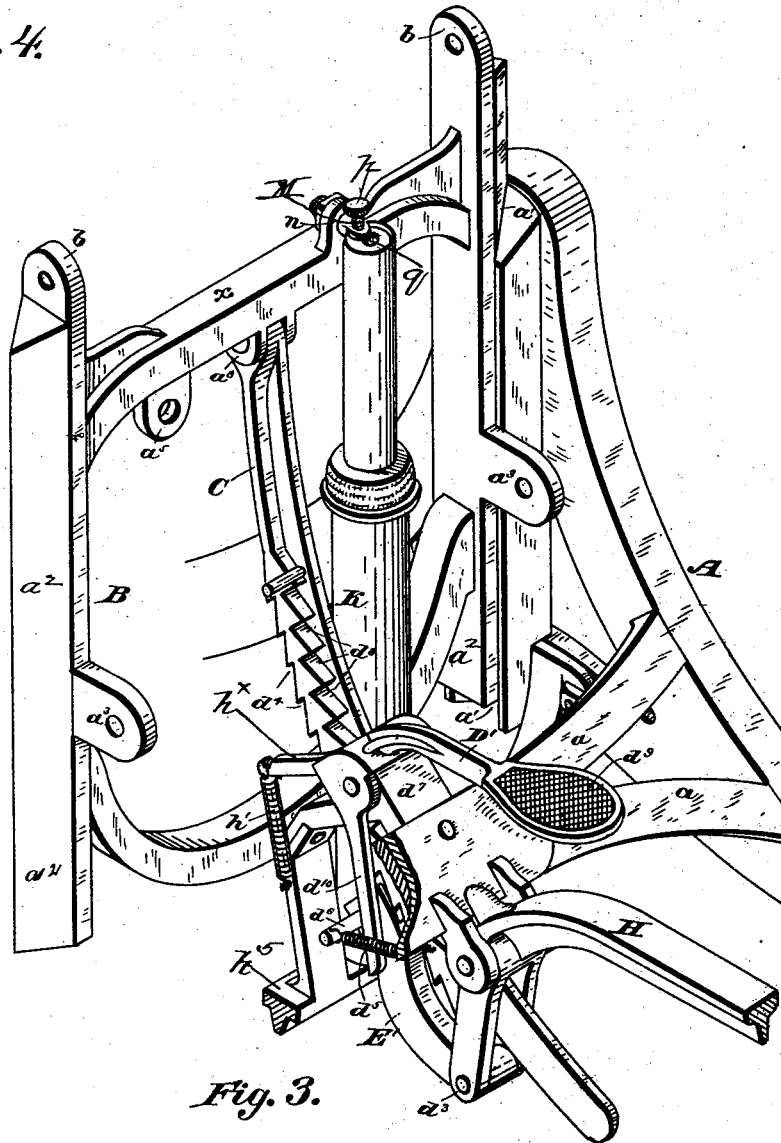


Fig. 3.

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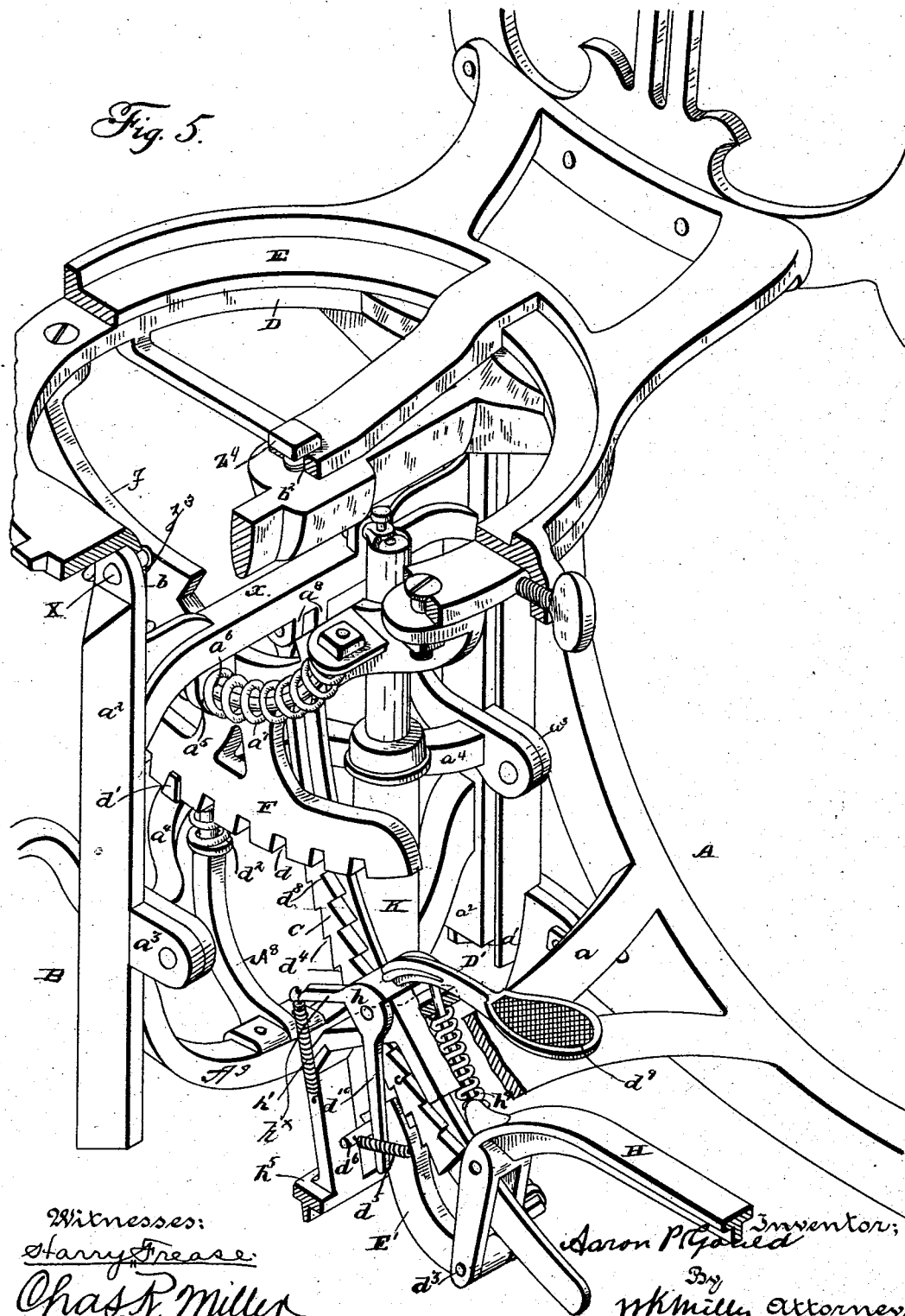
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UNITED STATES PATENT OFFICE.

AARON P. GOULD, OF CANTON, OHIO.

DENTAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 491,097, dated February 7, 1893.

Application filed April 16, 1888. Serial No. 270,757. (No model.)

To all whom it may concern:

Be it known that I, AARON P. GOULD, a citizen of the United States, and a resident of Canton, county of Stark, State of Ohio, have invented a new and useful Improvement in Dental Chairs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

This invention relates to improvements in dental chairs and particularly to providing means for raising and lowering the body of the chair vertically.

With these ends in view my invention consists in certain features of construction and combination of parts as will be herein after described and set forth in the claims.

Figure 1, is an isometrical view of a dental chair, illustrating my improvements. Fig. 2, is a side elevation showing the parts in normal position, with the side of the frame removed. Fig. 3, is an isometrical view from the left and rear the parts being enlarged. Fig. 4, is a vertical sectional view of the cylinder and piston. Fig. 5 is an enlarged perspective view of the lower portion of the chair, certain parts being broken away to show the operating parts more clearly.

Similar letters of reference indicate corresponding parts in all of the figures of the drawings.

The base A (see Fig. 1) is formed of two A-frames, coupled by a strut a and having on their inner faces vertical grooves a' into which the slide a^2 of frame B is adapted to fit for vertical movement, said frame having lugs a^3 to which the locking frame a^4 has a pivotal connection, and a downwardly projected lug a^5 , through which the spring supporting rod a^6 passes (see Fig. 5) and against which the coil spring a^7 rests, forming a buffer to arrest or prevent a jar when the body of the chair is quickly moved or swung about its pivotal connection with the frame B. To the downwardly projected lugs a^8 , on the cross piece x of frame B the upper end of the rack C is pivotally secured, the lower end passing downwardly and being secured between the pawls D' and E'. There is also provided on the upper ends of slides a^2 vertically projected lugs b having perforations

corresponding with perforations in lugs z^3 that project downwardly from the circular way D for a pivot or bolt whereby a pivotal connection X is formed between the frame B and the circular way D. The circular body supporting frame E is pivotally secured to the circular supporting way D by a bolt z^4 passed through the centrally located perforation b^2 on the frame E resting on the circular way D. The parts referred to in this paragraph are more fully shown and described in my patent No. 397,077, dated January 29, 1889.

A depending rack frame F is secured to the way D, its end being segmental in form and provided with notches d that engage with a tooth d' on the locking frame a^4 , the said frame having a pivotal connection with the frame B and being held in engagement with the rack F by the spring d^2 , mounted upon an arm A^8 secured to a strut A^9 of the frame B and bearing against a lip A^{10} projecting from said locking frame, as shown more clearly in Fig. 2.

The foot lever H is pivotally secured to the strut, a , as shown in Fig. 3, the pawl E' is pivotally secured thereto and held in engagement with the notches d^4 on the lift rack C by the spring d^5 , one end of said spring being secured to the strut a the other to a pin d^6 projected from the upper end of pawl E'. The pawl D' has a pivotal support d^7 on the strut a , one end of said pawl engaging the notches d^8 on the rack C, the free end being provided with a foot plate d^9 , and the other with a depending finger d^{10} which engages the pin d^6 on the pawl E' and moves the same forward, whereby the pawl E' is disengaged from the notches d^4 during the descent of the rack C. The engaging end of the pawl D' is eccentric in form the outer end of the circular portion h being slightly drawn toward its pivotal center, that it may be drawn out of the notch d^8 gradually allowing the rack to move downward slowly until its movement is resisted by the fluid in the cylinder K hereinafter described. The pawl D' is held in engagement with the rack C by the spring h' , secured at its upper end to a finger, h^x , projecting from the pawl, and at its lower end to an upright projecting from the bottom strut, h^5 , of the base, A.

To raise the frame B the foot is placed on the plate h^3 on the lever H, and by a downward pressure the pawl E' engaging the notches d^4 the rack C pivotally secured to the frame B will raise the said frame and the chair body thereon. By repeated movements of the lever H the chair may be raised to the desired height. The reverse movement of the lever H is caused by the exertion of the coil spring h^4 . The pawl D' holds the frame B and chair body in desired adjustment or elevation.

To lower the chair without jar a cylinder K, to contain a suitable fluid, is provided, the lower end resting on the bottom strut h^5 of the base A, the upper end being provided with an annular screw thread h^6 about which is fitted a cap h^7 forming a packing space and means for compressing the packing as h^8 about the hollow piston rod L. The lower end of said piston rod L has a metal head k having a downwardly projected and centrally located pin k' . Through said head are perforations k^3 , and valve k^4 having a central perforation is placed on said pin k' resting against the head k and over the perforations k^3 and is held in said adjustment by the coil spring k^5 resting on the removable screw head k^6 . About the head k is placed a packing ring k^7 adapted to the annular bore of the cylinder K. Through the pin k' is provided a perforation k^8 into which is fitted the pointed end l on the rod M. At the upper end of piston rod L is provided a metal head or support N having a portion adapted to the annular bore of the piston rod L, and an outwardly projected threaded portion m by which the piston rod may be removably secured to the frame B by a nut as shown at n , Fig. 3.

In the head N there is provided a threaded perforation o into which the threaded end of the rod M is fitted, by which the rod may be vertically adjusted and thereby adjust the pointed end l in perforation k^8 , the said rod M being rotated by button head p . There is also provided in the head N a perforation q through which the fluid used may be passed into the piston and at the lower end of the piston perforations r through which the fluid used may pass into the space in the cylinder about the piston. It will now be seen that when the hollow piston rod is plunged downward into the cylinder, the fluid can only pass through the opening, k^8 , into the piston rod, and as soon as the downward movement of the piston has ceased and the reverse movement effected, the liquid within the same will exert a pressure upon the valve, k^4 , press the same downward and quickly escape through the openings, k^3 , and k^8 , into the cylinder.

The operation is as follows, supposing the chair to be at its lowest position and the piston rod and cylinder above the piston head filled with any suitable fluid preferably oil or glycerine. To raise the chair, the operator presses his foot upon the lever H, the pawl E'

engaging a notch d^4 of the rack C, whereby the rack within the frame B and the body of the chair are raised a given distance and held in adjustment by the pawl D' engaging a notch d^8 . This movement may be repeated until the body of the chair has reached a desired height in which adjustment it will be secured by the pawl D'. As the piston has been raised up in the cylinder the fluid will have passed down through the perforations k^3 and out over the valve into the cylinder K. To lower the chair the operator presses his foot on the pedal end of pawl D' and thereby withdrawing the cam h from the notches d^8 and d^4 which will allow the piston to settle gradually down on the fluid in the cylinder, the pointed end l of rod M being adjusted in the perforation k^8 to regulate the flow of the fluid back into the piston and thereby the descent of the chair so long as the pawls D' and E' are held out of engagement with the notches d^8 . The pawl D' when released will engage the notch and hold the parts in desired adjustment. As the pedal end of the pawl D' is pressed downwardly the depending finger d^{10} disengages the pawl E'. It is not intended nor is it so provided that the piston will hold the chair at any fixed point of adjustment. The pawl D' alone being provided for that purpose.

Having thus fully described the nature and object of my invention, what I claim and desire to secure by Letters Patent, is:—

1. The combination with the base A, of the frame B, of a rack C having co-operating pawls and levers to raise and secure the chair-body in desired vertical adjustment, a fluid-containing cylinder mounted on the base A, a hollow piston secured to the body-supporting frame B, said piston adapted for vertical movement in the fluid-containing cylinder, and having at its lower end an outwardly-moving valve k^4 , an aperture k^3 and a manually operated valve l carried by the piston by which the rapidity of descent of the chair-body may be previously determined by the flow of the fluid from the cylinder through the aperture k^8 into the piston, substantially as set forth.

2. The combination with the base A and frame B adapted to be reciprocated vertically therein of the rack C, co-operating lifting and locking pawls and levers, of a fluid cylinder mounted on said base having a hollow piston of smaller diameter than the annular bore of the cylinder, the upper end of said piston secured to the frame B, the lower end provided with a head k perforations k^3 , k^8 , in said head valves l and k^4 , for the respective perforations packing k^7 surrounding said head and perforations r above the aforesaid perforations through which fluid may pass from the space about the piston to within the piston, substantially as set forth.

3. In a chair, the combination of the base A, frame B, rack C and co-operating pawls

and levers, to raise and secure the chair in desired adjustment, of the fluid cylinder mounted on the base A, and a piston secured to the frame B, said piston provided with a
5 downwardly opening out-let valve and a central opening k^8 by which communication between the piston and cylinder is at all times established, and a stem for regulating the flow of fluid through said opening k^8 , whereby

the downward movement of the chair may be regulated, substantially as set forth.

In testimony whereof I have hereunto set my hand this 28th day of March, A. D. 1888.

AARON P. GOULD.

Witnesses:

CHAS. N. MILLER,
W. K. MILLER.