

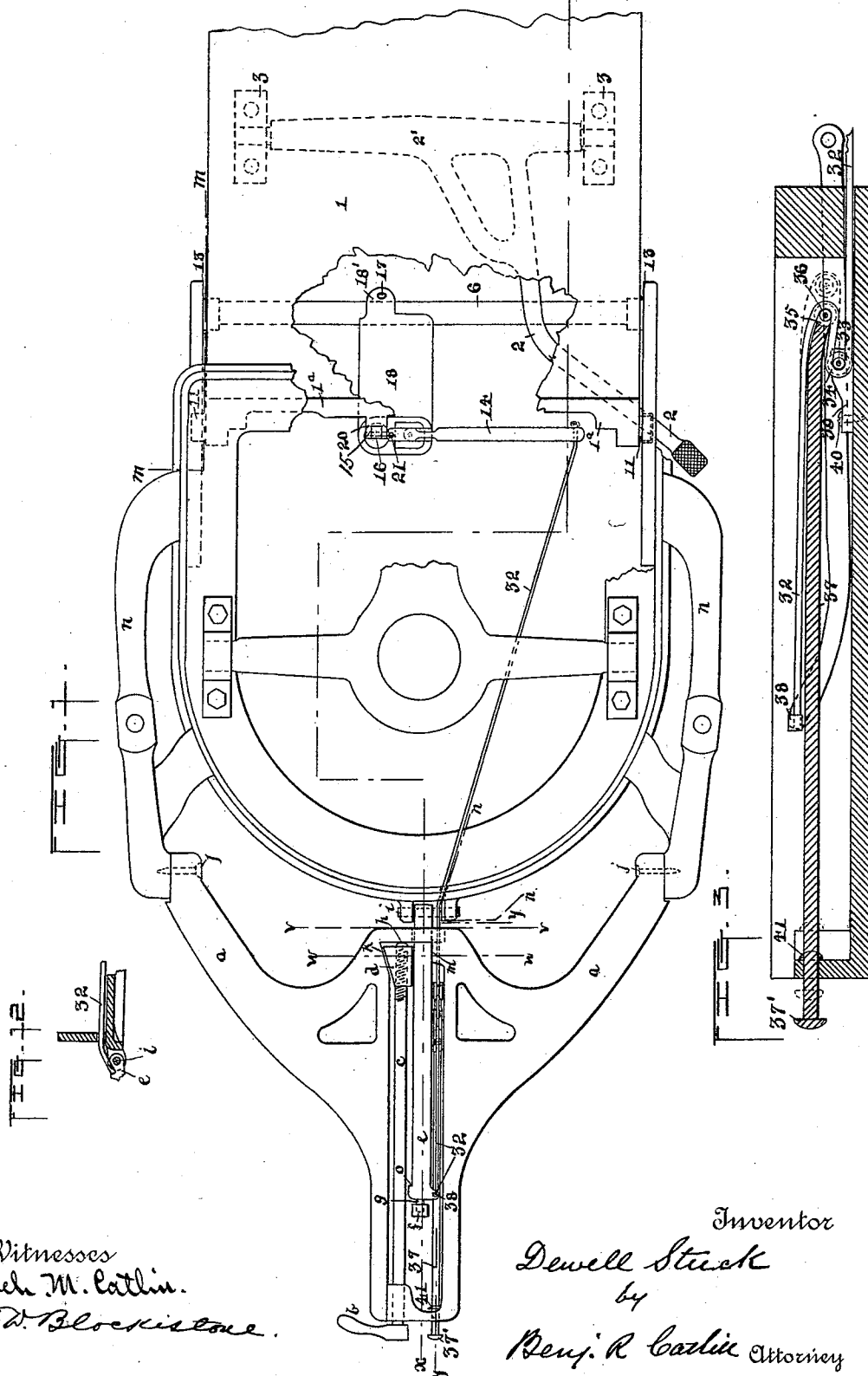
(No Model.)

3 Sheets—Sheet 1.

D. STUCK.
DENTAL CHAIR.

No. 465,952.

Patented Dec. 29, 1891.



Witnesses
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A. D. Blockstone.

Inventor
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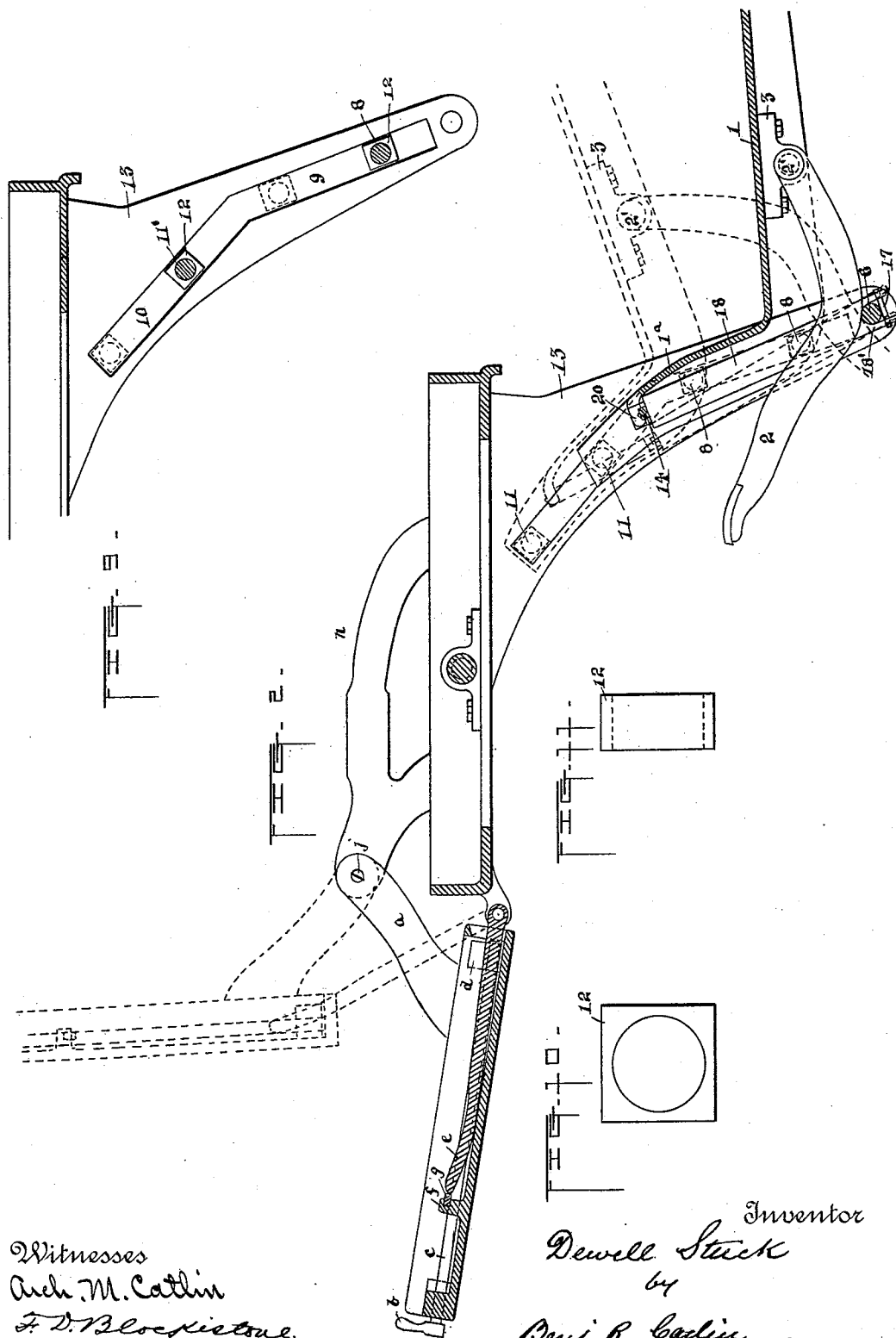
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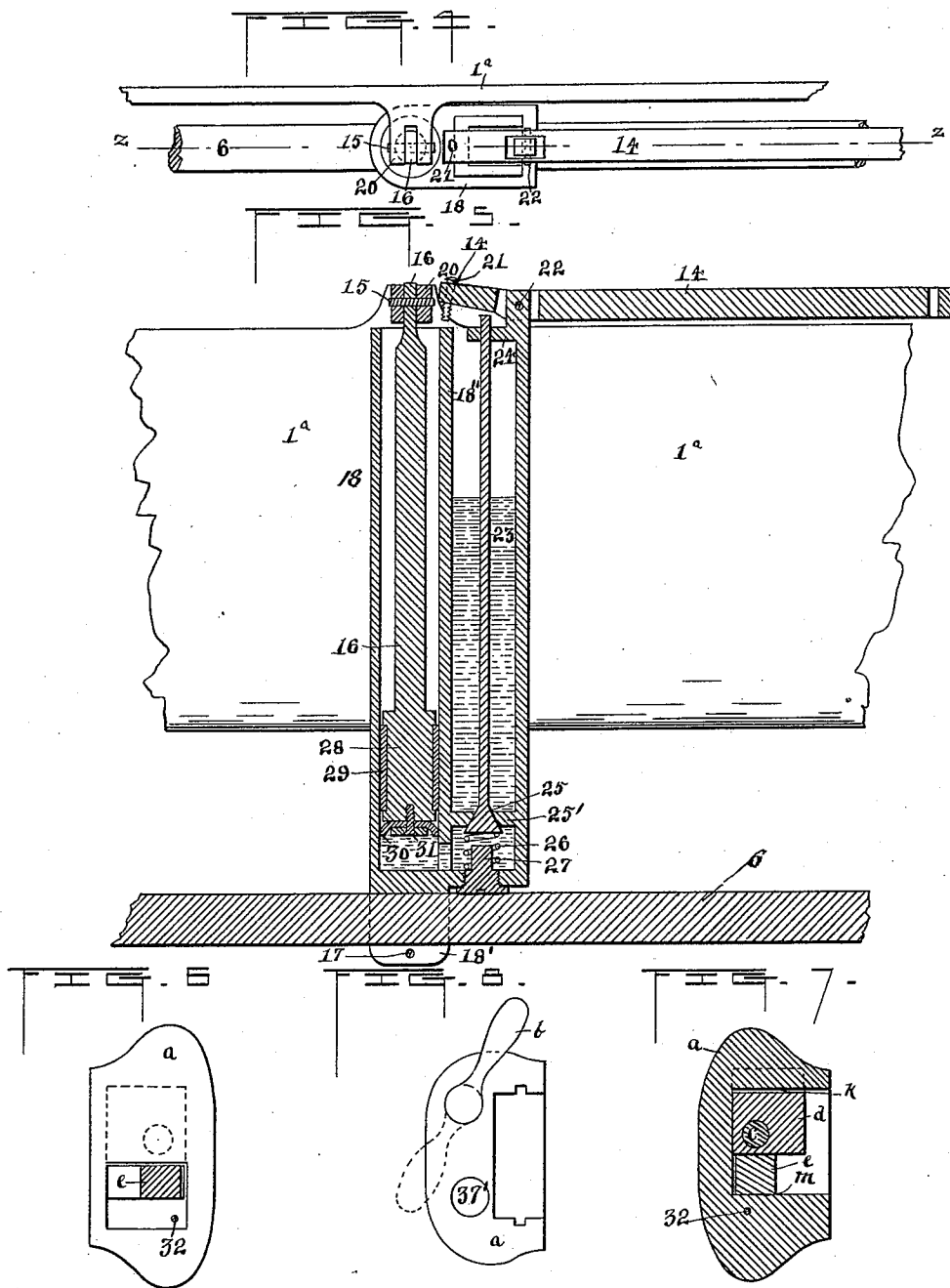
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3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

DEWELL STUCK, OF ROCHESTER, NEW YORK.

DENTAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 465,952, dated December 29, 1891.

Application filed February 5, 1891. Serial No. 380,336. (No model.)

To all whom it may concern:

Be it known that I, DEWELL STUCK, a resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Dental Chairs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

The object of the invention is to provide in a dental chair or the like means for controlling and regulating the descent of the foot-rest when in an elevated position, which shall be easily operated from the back of the chair, and which shall maintain its operative relations whatever may be the adjustment of the back; and it consists in the construction hereinafter described and pointed out.

In the accompanying drawings, Figure 1 is a plan of the chair, partly in section, the upholstery being omitted and the outer part of the foot-rest and the foot-roll or supplementary foot-rest broken away. Fig. 2 is a longitudinal section on the line *x x* of Fig. 1, except that the foot-rest lever for raising the foot-rest is not sectioned. Fig. 3 is a longitudinal section of the back on the line *y y* of Fig. 1. Fig. 4 is a plan, and Fig. 5 a section on line *z z* of Fig. 4, of a device for retarding the descent of the foot-rest. Fig. 6 is a transverse section of the pivoted bar connecting the seat-frame and the back on the line *v v* of Fig. 1, the view being from right to left. Fig. 7 is a similar section on line *w w* of Fig. 1, the view being from left to right. Fig. 8 is a top plan or end view of the back-frame, locking-lever, and operating-button for the foot-rest-lowering mechanism. Fig. 9 is a partial section on line *m m* of Fig. 1, showing the inside of a foot-rest bracket-guide provided with grooves, and also showing blocks movable in said guides, the full lines indicating their lower and the dotted lines their higher position, corresponding to the positions of the foot-rest shown in full and dotted lines in Fig. 2; and Figs. 10 and 11 are respectively end and side elevations of bearing-blocks for the foot-rest to be inserted in grooves in the bracket-guides. Fig. 12 is a partial section on line *n n* of Fig. 1.

The reference-letter *a* denotes the back-

frame, which is pivoted to the seat-frame *n* at *j*. The back-frame *a* is further connected with the seat-frame by a bar *e*, pivoted to said latter frame at *i* and extending into a recess in the back-frame.

d is a clamping-block having an inclined face and movable in a similarly-shaped recess *k*, formed in the back-frame. The block is provided with a screw-threaded opening, which receives the rod *c*, which is provided with an operating-handle *b*. The position of this handle (indicated by full lines in Figs. 1 and 8) corresponds to the position of the parts when the clamp is operative. The screw-rod *c*, the foot of which bears at *h* upon the bottom of the recess *k*, having been suitably turned, the block *d* is thereby moved up in the recess and pushed laterally against the bar *e*, forcing it against the wall of the recess at *m* (see Fig. 7) by means of the inclination of the opposite wall of said recess. To release the lock or clamp the handle *b* is turned to the position indicated by dotted lines in Fig. 8, which has the effect to lower clamping-block *d* and relieve the bar *e* of pressure from said block. By these devices the back can be adjusted to any desired position and clamped therein.

f indicates a lug provided with a seat for a rubber cushion *g*, against which bar *e* strikes when the back is lowered to its lowest position, and is adapted to obviate jarring.

o is a shoulder on *e*, adapted to engage *d* when the back is elevated to its highest position.

Numeral 1 denotes the main foot-rest of a chair. At its rear upper and outer part, near the top of the upward extension *1^a*, it is provided with pins or studs 11, and below, at the foot of said extension, it is provided with like studs 8, all of which fit in blocks 12, (see Figs. 10 and 11,) adapted to slide in grooves 9 and 10, (see Fig. 9,) formed in the inside of brackets 13 pendent from the seat-frame. The studs 11 and its blocks are above and stud 8, with its blocks, are below the angle made by the two parts 9 and 10 of each groove. The rear of the foot-rest is guided by the devices just described in such manner that the outer end of the rest is tilted toward the seat as it is raised and from the seat as it is lowered, as indicated in Fig. 2.

2 indicates a foot-lever for raising the rest.

It is connected to a rod or bar 2', which has bearings in boxes 3, secured underneath the foot-rest.

6 indicates a rod or bar supported in the brackets 13 and constituting a fulcrum for the foot-lever. It also holds the brackets firmly in their relative position and supports the foot-rest-lowering mechanism. The foot-rest is raised by depressing the free end of foot-lever 2, the lever sliding freely over its fulcrum and the studs 8 and 11, with their bearing-blocks 12, sliding up in grooves 9 and 10, as indicated in Fig. 2.

18 denotes a fluid-column-retarding mechanism adapted to lower the foot-rest. It has downward extensions 18', which embrace the rod 6, to which they are fastened by a pin 17. The retarding device has two compartments, as usual, in one of which is a piston 28, provided with packing 29. At its foot is an elastic disk 30, held in place by a screw 31, these parts being of well-known form. The piston-rod 16 is pivoted at 15 between offsetting lugs 20 on the foot-rest.

25 denotes a valve having a seat in the diaphragm 25'.

26 is a spring adapted to hold the valve to its seat. This spring is conveniently coiled about a plug 27, passed through the end of the valve-chamber. This chamber communicates at all times with the piston-chamber. The valve stem 23 has a bearing in and passes freely through the offset 24, and is arranged in the path of the short arm of a lever 14, by which the valve may be opened. This lever is pivoted to the hydraulic retarding device at 22, and is provided with an adjustable stop 21, which is so located as to strike the partition 18'' of the retarding device when the short arm of lever 14 is depressed. By this stop the extent of the movement of the lever and valve in one direction is determined.

It will be obvious that when the foot-rest is raised by the foot-lever, as before described, it will pull up the piston-rod 16 and piston 28, the retarding device being held down by its connection with rod 6. The retarding device being supplied with oil or other liquid, it will be drawn down into the valve-chamber by the action of the ascending piston, which also opens the valve and compresses its spring. The fluid thus introduced under the elevated piston will sustain it and the foot-rest until the valve is opened by the operation of lever 14 to permit the fluid to escape from under the piston. The lever 14 is normally held out of contact with the valve-stem by the weight of its long arm.

32 is a cord or like connecting device adapted to raise the long arm of lever 14, and thereby open the valve to permit the descent of piston 28 and of the foot-rest. This cord extends from the lever to the chair-back, passing, preferably, through the seat-frame and above the pivot and through a suitable hole in frame *a*. (See Figs. 6 and 7.)

34 is a pulley having an axis or pin 33, sup-

ported in brackets 39, secured by screws 40 in the back frame.

35 is a pulley, having axis 36 supported in a rod 37 at its foot. Cord 32 passes around the pulleys, as indicated in Fig. 3, and has its upper end attached to bar *e* at 38.

37' is a push-button, and 41 a stop on the rod 37. The rod is normally held in the position indicated by full lines in Figs. 1 and 3 by lever 14, the weight of whose long arm pulls the cord about the pulleys 34 and 35. By pressing button 37' and depressing it to the position indicated in dotted lines in Fig. 3 the long arm of lever 14 will be raised and valve 25 opened, whereupon fluid can escape from under piston 28 and the foot-rest descends. By this means the descent of the foot-rest can be very nicely regulated by simply opening the valve more or less, as required, and without the use of the foot or the exercise of any material degree of strength and without the necessity of the operator leaving the head of his patient or of so exerting himself as to interfere with his proper work; and this easy and exact lowering of the foot-rest can be effected by the means described, whatever be the position of the adjustable back.

When the back of the chair is turned on its pivots *j* and raised, it is moved along or off the bar *e*, as indicated in dotted lines in Fig. 2. As the cord is attached to this bar, the back is also drawn off from it, and the guide-pulleys are also moved along the cord, and these movements take place without exerting any appreciable pull upon the valve-lever.

It may be observed that the handle for clamping the bar *e* that connects the back and the seat-frame is located near the button on the rod 37, whereby the clamp and the valve can be conveniently manipulated at suitable times to permit the desired lowering of the foot-rest and the adjustment of the back, which may be simultaneous or not, as desired.

Having thus described my invention, what I desire to secure by Letters Patent is—

1. In a dental chair, the combination, with the seat-frame provided with suitable brackets, of a foot-rest, the fluid-column-retarding mechanism having its piston-cylinder supported from said brackets, a valve-chamber communicating with said cylinder, a valve normally closed, valve-operating devices extending to the chair-back, and the piston connected to the foot-rest, whereby the foot-rest can be lowered by operating said devices extending to the back of the chair, and mechanism adapted to elevate the rest and the piston, substantially as set forth.

2. In a dental chair, the combination, with the seat-frame provided with suitable brackets, of a foot-rest, the fluid-column-retarding mechanism having its piston-cylinder supported from said brackets, a valve-chamber communicating with said cylinder, valve-operating devices, and the piston connected to

the foot-rest, and mechanism adapted to elevate the rest and the piston, and a flexible valve-operating connection extending to the chair-back, substantially as set forth.

5 3. In a dental chair, the combination, with the seat-frame provided with suitable brackets, of a foot-rest, the fluid-column-retarding mechanism having its piston-cylinder supported from said brackets, a valve-chamber
10 communicating with said cylinder, valve-operating devices, and the piston connected to the foot-rest, and mechanism adapted to elevate the rest and the piston, and a flexible
15 valve-operating connection extending to a pivoted chair-back frame and connected therewith, substantially as set forth.

4. In a dental chair, the combination of the seat-frame provided with brackets 13, connected by rod 6, said brackets having bent
20 grooves, the fluid-column-retarding mechanism embracing a cylinder, piston, and valve-chamber pivotally connected to said rod, a foot-rest supported on said piston and provided with studs to enter the grooves, and
25 mechanism for raising the foot-rest, substantially as set forth.

5. In a dental chair, the combination, with the seat-frame, of a foot-rest movably supported therein and provided with retarding
30 mechanism, a cord or the like attached to and adapted for operating the retarding mechanism, a chair-back frame hinged to the chair-frame, a bar pivoted to the seat-frame, upon which said chair-back frame is adapted to be
35 moved, said cord passing near the pivot of the bar and fastened to said bar, a rod supported in the back-frame and adapted to move said cord and operate the retarding mechanism,

and guide-pulleys on the chair-back and rod for the cord, whereby the back and the rest may be raised or lowered independently, substantially as set forth.

6. In a dental chair, the combination of the seat-frame, the foot-rest adjustably supported from the frame, mechanism for retarding the
45 descent of said rest, and a cord or the like for operating the said mechanism, extending therefrom through an opening in the chair-seat frame and attached to a bar pivoted to the rear of the seat-frame, the opening for the
50 cord being near the pivot of the bar, said pivoted bar and the pivoted back-frame movable on the said bar and cord, whereby the back frame can be moved on its pivot without pulling the cord, and whereby the retard-
55 ing mechanism can be independently operated at will from the back of the chair, substantially as set forth.

7. In a dental chair, the chair-seat frame, the back-frame hinged to said seat-frame, the
60 bar also hinged to said seat-frame and extending into an opening in and concealed by the back-frame, the clamping-block movable in a recess within said back-frame, having an inclined wall, said block being adjacent to
65 said bar, and the operating-rod adapted to move the clamping-block along the inclined wall of the recess to clamp the bar against the back, all combined substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

DEWELL STUCK.

Witnesses:

JAMES C. BAIRD,
WILLIAM MAGUIRE.