Feb. 12, 1929. 1,702,175

A. W. SCHRAMM

DENTAL CHAIR

Filed Feb. 12, 1925 4 Sheets-Sheet 1

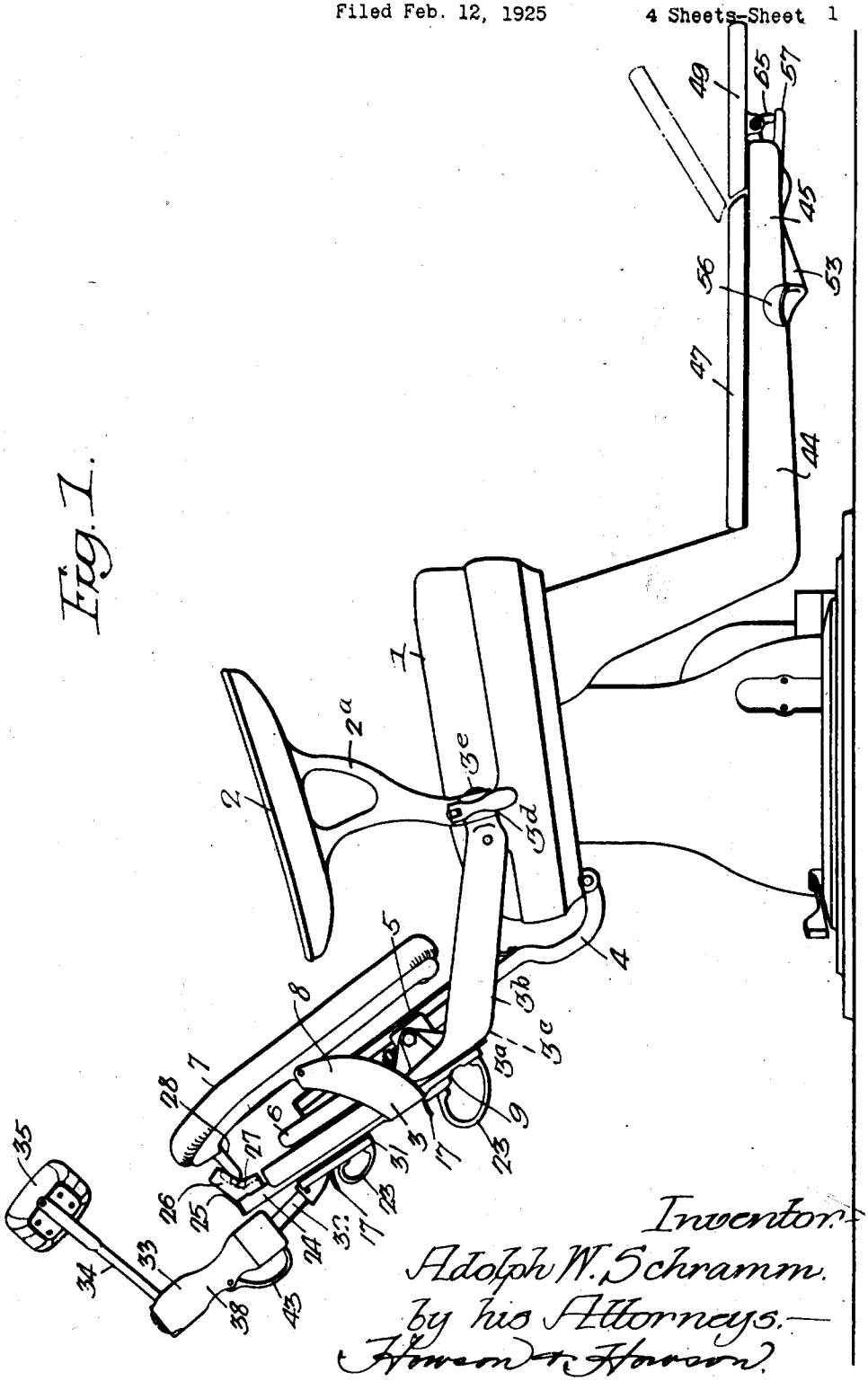


Fig. 1.

Inventor:
Adolph W. Schramm.
by his Attorneys.—
Howson & Howson

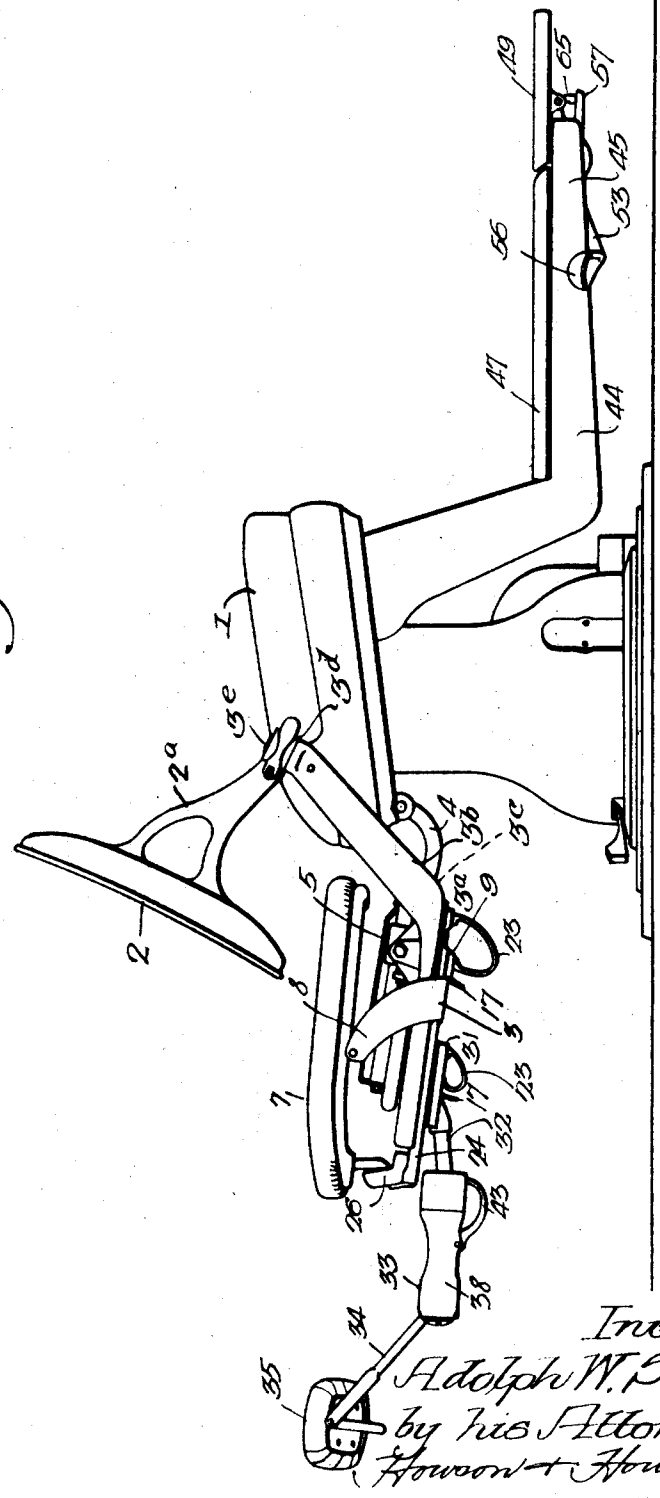
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Fig. 2.



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Filed Feb. 12, 1925 4 Sheets-Sheet 3

Fig. 7.

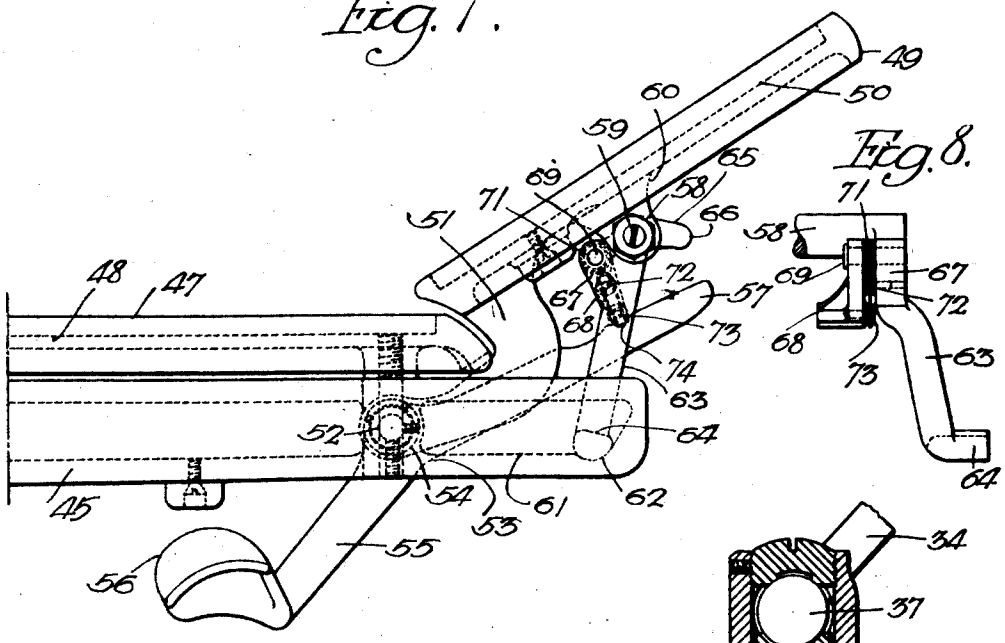
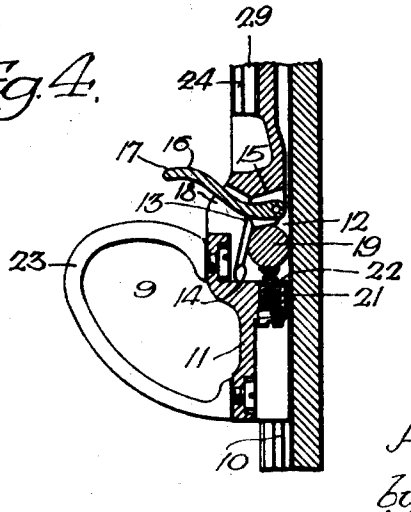


Fig. 8.

Fig. 4.



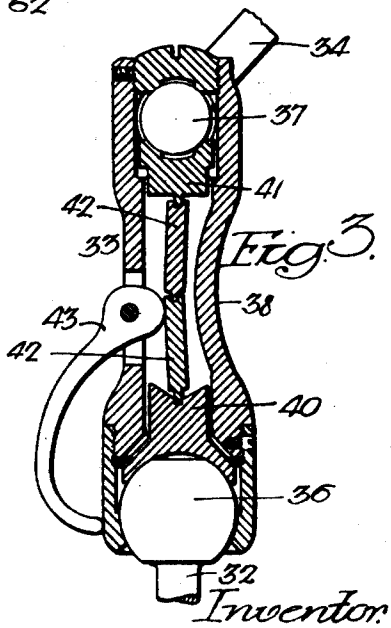


Fig. 3.

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Feb. 12, 1929. 1,702,175

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DENTAL CHAIR

Filed Feb. 12, 1925 4 Sheets-Sheet 4

Fig. 5

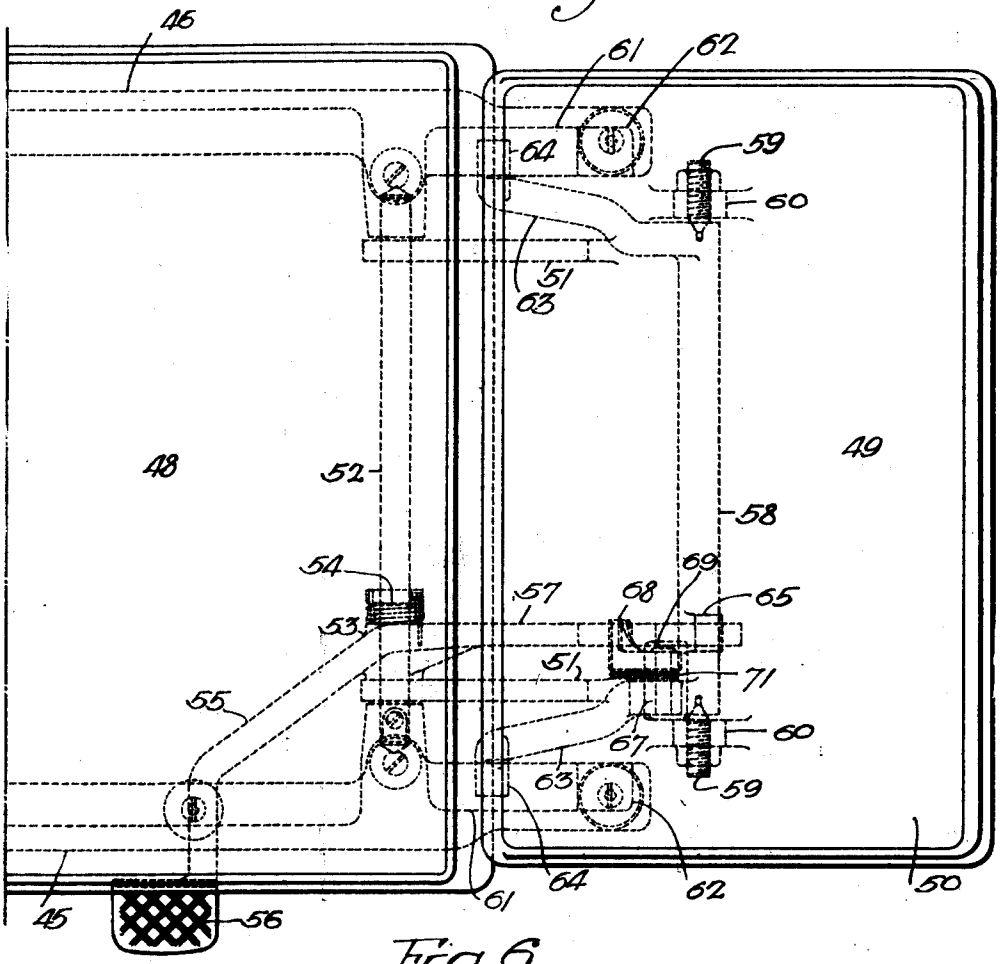
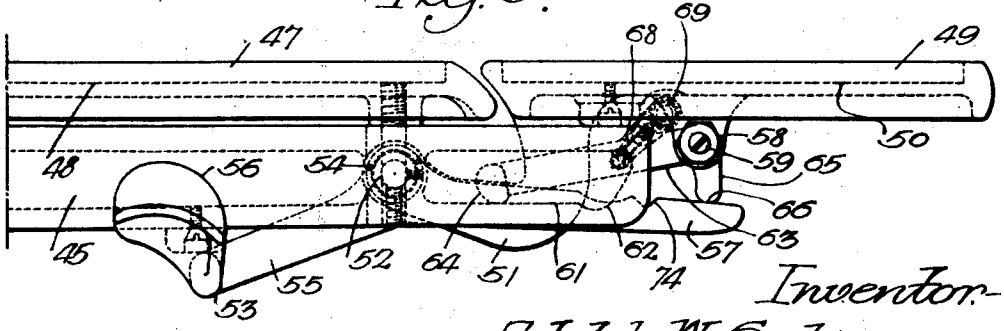


Fig. 6.



Inventor.
Adolph W. Schramm.
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Patented Feb. 12, 1929. 1,702,175

UNITED STATES PATENT OFFICE.

ADOLPH W. SCHRAMM, OF RIVERTON, NEW JERSEY, ASSIGNOR TO ELECTRO DENTAL MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DENTAL CHAIR.

Application filed February 12, 1925. Serial No. 8,804.

My invention relates to chairs, and it has particular relation to such chairs as are adapted for surgical purposes.

One object of my invention is to provide a chair of the class described which is provided with a self aligning or floating back.

Another object of my invention is to provide a dental chair, wherein the arms move simultaneously with the back, whereby greater comfort may be afforded to a patient and any tendency for garments to catch in the chair mechanism practically avoided.

A further object of my invention is to provide an improved form of foot-rest which embodies a novel operating mechanism for elevating and depressing the movable end-portion of said foot-rest.

A still further object of my invention is to provide operating mechanism for the movable end-portion of a foot-rest, whereby the latter may be moved to its raised and lowered positions by successively actuating a foot pedal in one direction only.

These and other objects and applications, as well as details of construction and operation, whereby my invention may be practiced, will appear more fully hereinafter, when taken in connection with the accompanying drawings, wherein

Fig. 1 is a side elevational view of a dental chair embodying my invention, illustrated in a semi-reclining position;

Fig. 2 is a view similar to Fig. 1, but showing the chair in a full reclining position;

Fig. 3 is a detail sectional view of the head rest locking member;

Fig. 4 is a similar view of the lower clamping device;

Figs. 5 and 6 are enlarged top-plan and side elevational views of the foot-rest and associated operating mechanism;

Fig. 7 is a view similar to Fig. 6 but showing the movable portion of the foot-rest in its elevated position; and

Fig. 8 is a detail elevational view of the locking lever and latch in the position shown in Fig. 7.

In the illustrated form of embodiment of my invention shown in Figs. 1 and 2 of the drawing, a dental chair comprises a seat 1, side arms 2 and a back structure 3 spaced therefrom. The back structure 3 comprises a main supporting member 3^a having a pair of forwardly projecting arms 3^b and 3^c at the lower end thereof. The arms 3^b and 3^c have a pivotal mounting 3^d intermediate the ends thereof on the opposite sides of the seat 1. These arms may be provided with cylindrical extensions 3^e, so that supporting brackets 2^a for the side arm rests 2 may have a pivotal mounting forwardly of the pivotal mounting for the back structure 3.

The side arms 2 and the back structure 3 may be moved from the semi-reclining position shown in Fig. 1 to the full reclining position of Fig. 2 by means of a strut 4, one end of which is pivoted to the seat 1 and the other end of which extends through a clamping device 5 mounted on the back structure 3. It will be noted that during this movement, the spaced relation between the arms 2 and the back structure 3 remains unchanged. Thus the usual large space occurring between the end of the arm 2 and the back structure 3 when the latter is in its inclined position is entirely eliminated and with it the attending disadvantages. The clamping device 5, which may be of any well-known design, operates to secure.

A back rest or pad 7, which is designed to be engaged by a patient, is centrally pivoted on arms 8, 8, which are carried by a lower clamping device 9 slidably mounted in dovetail ways or grooves 10 (Fig. 4) formed on the main supporting member 3^a of the back structure or framework 3. Such pivotal mounting affords the back pad 7 a full floating movement, so that the back pad 7 is self-aligning or self adjustable, automatically accommodating itself to the back of an occupant of the chair.

The clamping device 9 embodied in my invention comprises a slidable block 11 which is provided with a recess 12 facing the ways 10. A side 13 of the recess 12 is provided with guide strips 14 extending downwardly and outwardly, whereby the lower portion of the recess 12 may be slightly larger than the upper portion thereof. An upper side 15 of the recess 12 has pivotally secured thereto a disengaging latch 16, a portion 17 of which extends through a perforation 18 in the clamping device 9 in order to be accessible from the outside.

A cylindrical wedging member 19 is disposed in the recess 12 and it may be normally actuated into the restricted portion thereof by means of an adjustable spring 21 extending from a lower side 22. So long as the cylindrical member 19 is in the position shown in Fig. 4, the lock or clamping device 9 is secured in position, but when the member 19 is depressed by the latch 16 out of its wedging engagement with the ways 10, the lock 9 may be readily moved. In order to avoid the necessity of using the latch 16 as a handle, as has been the practice heretofore, I provide a separate handle attachment 23, thereby facilitating the release and movement of the clamping device 9. Thus, for example, an operator in one movement may substantially simultaneously actuate the latch 16 in the direction of the handle attachment 23 into its releasing position and move bodily the device 9 as a whole by a force applied to the handle attachment 23 alone. The handle attachment 23 is also so positioned directly below the latch 16 as to constitute a shield for the end portion 17 thereof.

The clamping device 9 may be provided with a vertically projecting portion 24 (Fig. 1) having on the end thereof a shoulder 25 provided with a slot 26 on the under side thereof. The slot 26 is adapted to receive an end portion 27 of an arm 28 which extends from the upper end of the pivoted back rest 7 and operates to limit the extent of the floating movement of said back rest.

The projecting portion 24 may be formed with ways 29 (Fig. 4) for an upper clamping device 31 which may be identical in construction with the previously described clamping device 9. The clamping device 31 carries a vertically extending arm 32 (Figs. 1 and 3) which is connected by a locking member 33 to a rod 34 carrying the usual head rest 35. The ends of the rods 32 and 34 terminate in balls 36 and 37, respectively, which are disposed in the corresponding ends of a tubular casing 38. The balls 36 and 37 may be locked in any desired position by clamping members 40 and 41, respectively, the latter being interconnected by fulcrumed members 42, 42 the end portions of which are adapted to be actuated by a latch 43 pivotally mounted on the tubular casing 38.

My invention also contemplates an improved form of foot-rest, which is shown particularly in Figs. 5 to 8, inclusive, and it comprises a pair of supporting side frames 44, 44 which extend downwardly from the seat 1 and terminate in horizontal portions 45 and 46. A plate 47 is mounted on the horizontal portions 45 and 46 of the side frames 44, 44, and constitutes the stationary portion 48 of my foot-rest. A movable portion 49 of the foot-rest may comprise a plate 50 which is pivotally supported by arms 51 on a rod 52 secured in the horizontal side frames 45 and 46 directly beneath the plate 47. The extreme ends of the side frames 45 and 46 serve to support the movable foot portion 49 in its lowered and horizontal positions, as will appear hereinafter.

In order to raise and lower the pivoted foot-rest portion 49, I provide an actuating lever 53 which is mounted on the pivot rod 52 and resiliently connected thereto by means of a spring 54, said spring operating to retain resiliently the actuating lever 53 in the horizontal position shown in Fig. 1 of the drawing. The actuating lever 53 comprises an arm 55, which extends to one side of the horizontal side frame 45 and terminates in a foot pedal 56. A second arm 57 of the lever 53 extends parallel to the side frame portion 45 and terminates directly below a rod 58 which is rotatably supported by pins 59 adjustably secured in lugs 60 depending from the under side of the movable plate 50.

The inner sides of the horizontal side frame portions 45 and 46 immediately adjacent to the rod 58 are provided with longitudinally extending slots 61 which terminate in recessed portions 62. The rod 58 is provided on opposite ends with arms or locking levers 63, 63, portions 64 of which are slidably disposed on the slots 61. The latter thus constitute tracks for the locking levers 63, 63. Similar results may be obtained by providing the horizontal frame portions 45 and 46 with ribs rather than the slots 61. An arm 65 extends from one side of the rod 58 to provide a bearing point 66 (Fig. 7) which is offset with respect to the point of support of the rod 58. The length of the arm 65 is such that it just engages the end of the actuating arm 57 of the lever 53 when the movable foot-rest portion 49 is in its lowered or horizontal position shown in Fig. 1.

When a force is applied to the foot pedal 56, a corresponding force is exerted on the arm 65, and since the bearing point 66 is disposed to one side of the supporting point of the rod 58, the end portions 64 of the arms 63 are caused to engage positively the lower surface of the slots 62. The continued application of said force to the foot pedal 56 causes the raising of the foot-rest portion 49 about the pivot rod 52 until the end portions 64 of the locking levers 63 are positively actuated into the locking recesses 62, thereby locking the pivoted foot-rest portion 49 in the raised position shown in Fig. 7. When the force on the foot pedal 56 is released, the actuating lever 53 is moved into its original horizontal position under the force of the spring 54.

In order to release the pivoted foot-rest portion 49 from the locked position shown in Figs. 1 and 6 by again pressing the foot

pedal 56, I provide an arm 67 which extends from the movable rod 58 in a direction opposite to that of the arm 65. A latch member 68 (Fig. 8) is secured to the end of the arm 67 by means of a pin 69 so as to permit the mounting of a spring 71 between the latch 68 and the arm 67. The ends of the spring 71 extend beyond an abutment 72 on the arm 67 and engage opposite sides of a pin 73 on the end of the latch 68, whereby movement of the latch 68 in either direction from a central position is resiliently resisted.

The length of the latch 68 with respect to the oppositely extending arm 65 is such that when the actuating arm 57 is again raised in accordance with the depression of the foot pedal 56, the latch 68 first engages the arm 57 rather than the arm 65. A recess 74 is formed in the end of the actuating arm 57 at the point of contact with the latch 68, whereby the latter may be secured in position.

As the actuating arm 57 is further raised, the latch 68 is caused to exert a force on the arm 67, with the result that the pivot rod 58 is so turned as to actuate the ends 64 of the locking levers 63 out of engagement with the locking recesses 62. When the levers 63 have been thus released, the movable foot-rest portion 49 may be lowered by releasing the force on the foot pedal 56. As the foot-rest portion 49 is lowered, the end of the arm 65 engages the end of the actuating arm 57, thereby moving the load from the latch 68 to the arm 65 and permitting the latch 68 to move out of engagement with the actuating arm 57. When the foot-rest portion 49 is completely lowered, the operating mechanism assumes the positions shown in Fig. 5.

While I have shown only one form of embodiment of my invention, for the purpose of describing the same and illustrating its principles of construction and operation, it is apparent that various changes and modifications may be made therein without departing from the spirit of my invention. I desire, therefore, that only such limitations shall be imposed thereon, as are indicated in the appended claims or as are demanded by the prior art.

I claim:

1. In a chair, a back structure comprising a member having a pair of arms, and a member constituting a back rest so mounted on said arms as to have a floating movement, permitting the same to accommodate itself automatically to the back of an occupant of the chair, one of said members having a recess, the other member extending into said recess, whereby the extent of said floating movement may be controlled.

2. In a dental chair, a back structure comprising a movable member having a pair of supporting arms, and a back pad pivotally mounted intermediate the ends thereof on said arms, whereby said back pad may automatically accommodate itself to the back of an occupant of the chair, an upper end of said member having a recess, said back pad having a shoulder extending into said recess, whereby the extent of movement of said back pad may be limited.

ADOLPH W. SCHRAMM.