Sept. 14, 1948. C. W. JOHNSON ET AL 2,449,385

DENTAL CHAIR UNIT

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Fig. 1

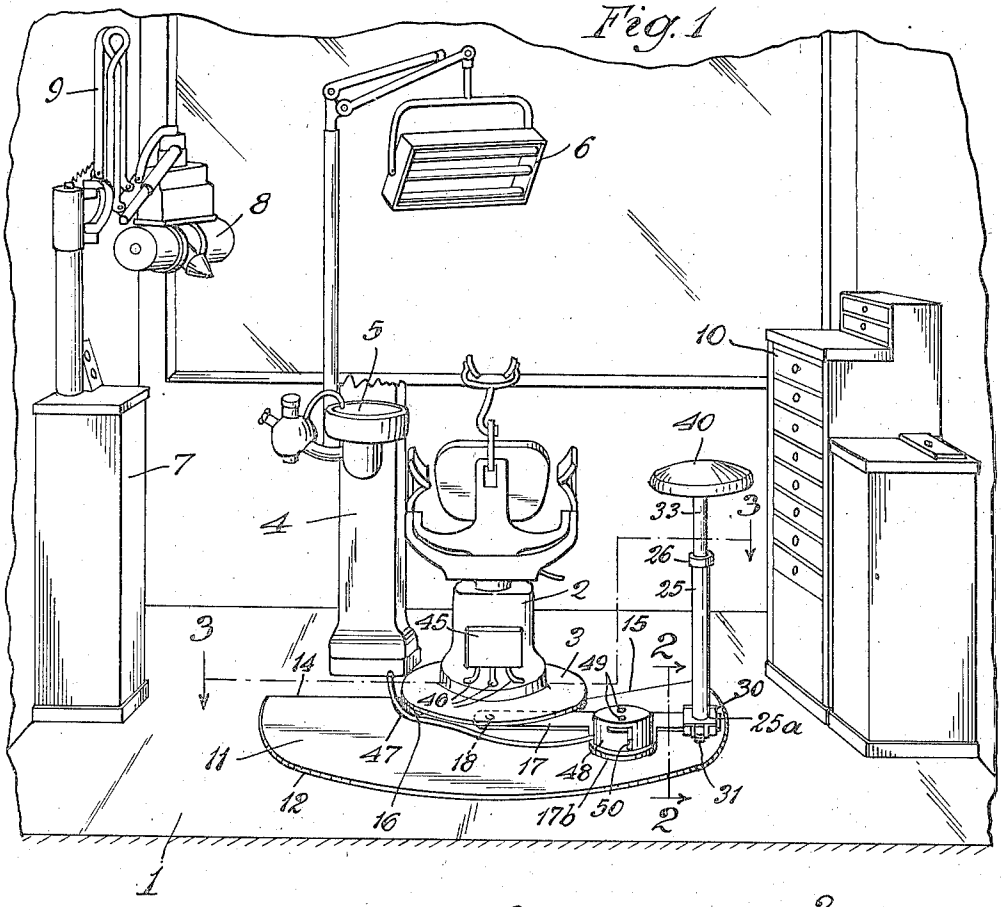
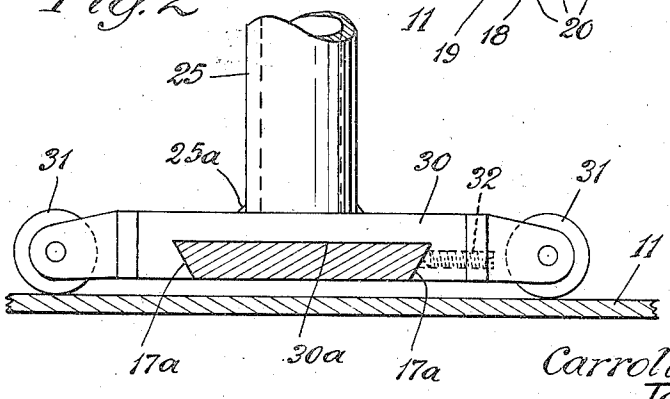


Fig. 2



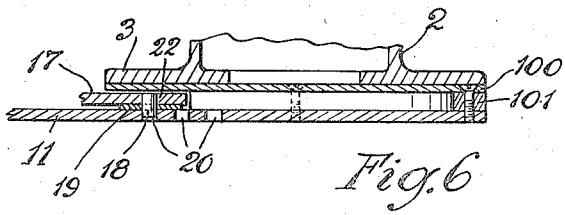


Fig. 6

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Fig. 3

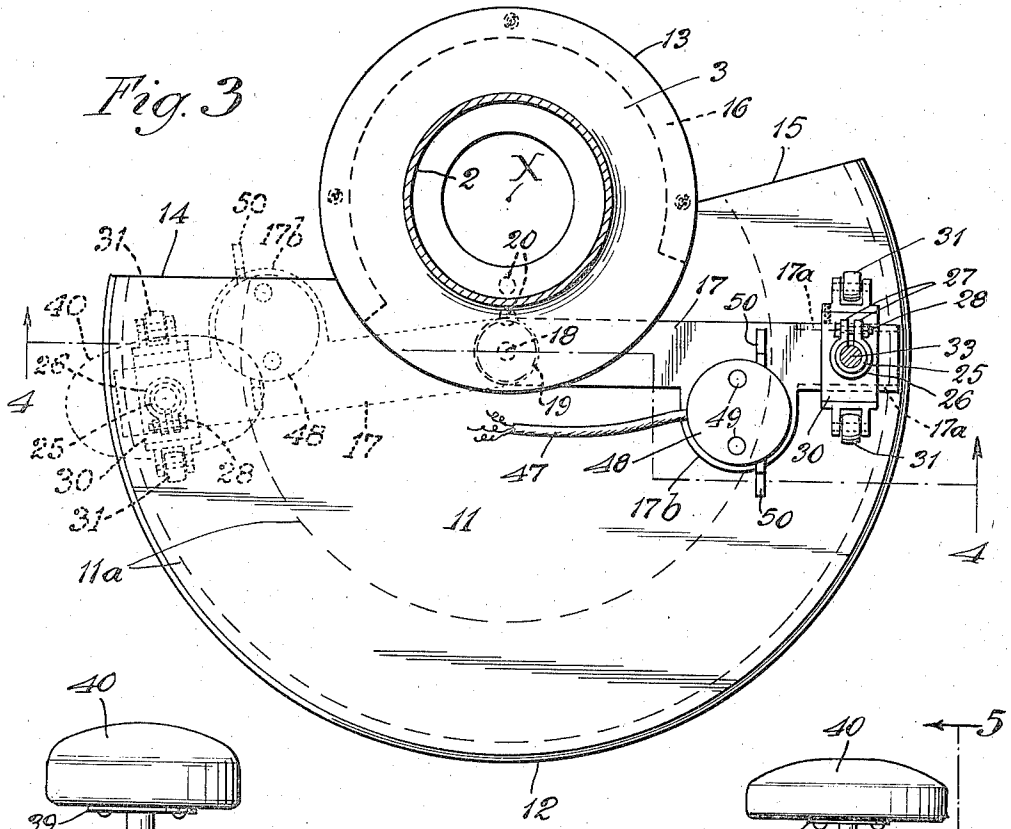
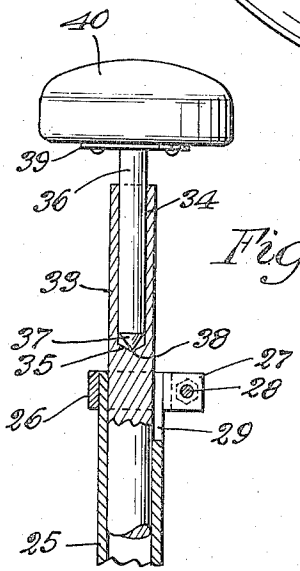


Fig. 5



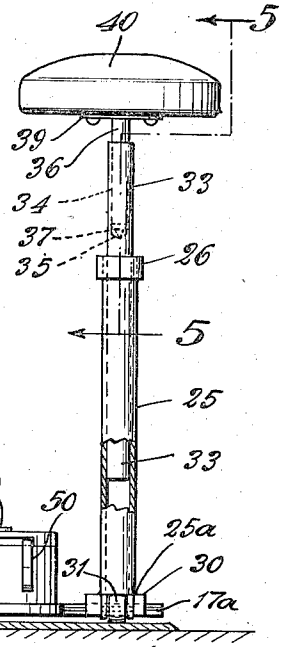
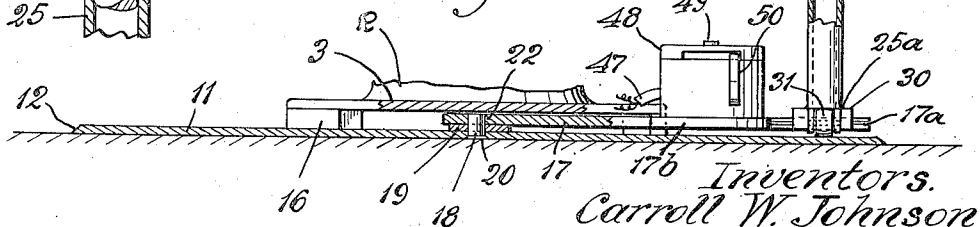


Fig. 4



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DENTAL CHAIR UNIT

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Application September 17, 1945, Serial No. 616,834

2 Claims. (Cl. 32—22)

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This invention relates to an improvement in operator supports for use with chairs in which a patient or subject is seated.

One purpose is to provide a support upon which an operator, such as a dentist, may rest his weight or be seated while he is working upon a patient.

Another purpose is to provide such a support in which the dentist or other operator may readily change his position in relation to the patient, while operating on the patient.

Another purpose is to provide an improved base and support associated, for example, with a dentist chair.

Another purpose is to provide such a support which is readily adjustable about and toward and away from such a chair.

Another purpose is to provide such a support which has associated with it efficient control means for operating mechanisms, for example, electrically operated mechanisms used in dentistry.

Another purpose is to provide an improved support which may be used in any situation where a patient or subject is seated or positioned at a generally fixed point, and where the operator, for example a dentist, surgeon or barber, may freely move himself in relation to the patient or subject, with a minimum of effort, and with a continuous control of various mechanisms employed upon the patient or subject.

Another purpose is to provide an improved assembly or layout in which the operator has ready access both to the patient or subject in a chair, and to other mechanisms, or adjacent furniture.

Other purposes will appear from time to time in the course of the specification and claims.

The invention is illustrated more or less diagrammatically in the accompanying drawings wherein:

Figure 1 illustrates in perspective a typical layout of the office of a dentist or oral surgeon, in which our invention is employed;

Figure 2 is a vertical section on an enlarged scale on the line 2—2 of Figure 1;

Figure 3 is a horizontal section on an enlarged scale on the line 3—3 of Figure 1, with some parts shown in different position in dotted lines;

Figure 4 is a section on the line 4—4 of Figure 3;

Figure 5 is a section on an enlarged scale on the line 5—5 of Figure 4; and

Figure 6 is a vertical section illustrating a variant form of support for the chair structure.

Like parts are indicated by like symbols throughout the specification and drawings.

Referring to the drawings 1 generally indicates a floor of the office or room in which our invention is employed. 2 generally indicates a chair structure, the details of which are not of themselves part of the present invention. It is shown as including a relatively extended base portion 3. In the particular showing of Fig. 1 a dental chair is indicated, but the invention may be employed in connection with a chair or support employed by eye, ear, nose or throat specialists, oral surgeons, barbers, etc. 4 indicates conventionally a dental stand which may have associated therewith various mechanisms which a dentist employs, including drills, etc. Such mechanisms are in the main omitted but we illustrate a water bowl 5 and a lamp 6. 7 generally indicates an adjacently positioned X-ray apparatus having a head 8 mounted on any suitable extendable linkage 9 the details of which do not form part of the present invention. 10 is any suitable cabinet in which tools and equipment may be stored and upon the upper surface of which tools and equipment may be laid out.

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Referring particularly to the structure of the invention, 11 indicates a flat base portion which may be of any suitable form and which for convenience we illustrate as having an outer generally arcuate edge 12 and an arcuate edge 13 of smaller radius, the two edges being connected by generally rectilinear edge portions 14 and 15. The portion 13 preferably conforms generally to the contour of the base 3 of the dental chair 2. The dental chair may be supported upon the base 11 by any suitable contact members 16, which are effective to space the bottom of the chair 3 somewhat above the upper surface of the base 11 as shown for example in Fig. 4. The portion 11 of the base surrounded by the edge 12 may be generally concentric with the center of the chair indicated at X which may also form the center of the arc 13, although other forms may be practical. It will be understood, however, that wide variations in size, shape and proportion may be made, and the enlarged portion of the plate may be omitted, if desired.

17 generally indicates a radius member or supporting arm for the below described seat or support structure. It may be pivoted for example by the pin 18 which is centered preferably somewhat to the rear of the chair axis X. The base plate 11 may be provided with a plurality of apertures 20. Penetrating these apertures we show the pivot pin 18 which extends into an aperture 22 in the arm 17. If desired a plurality of such pins may be employed which may be selectively received in the aperture 22, of the member 17 or a single pin may be employed, connected to the member 17 itself, which may be selectively inserted in anyone of the apertures 20. It is desirable however, that the center about which the member 17 rotates be somewhat adjustable toward and away from the center X, and it is practical to have such center adjustable gener-

ally along a line rearwardly extending from the central axis X of the chair 2. A washer 19 may be employed to eliminate friction. We may employ a wide variety of seats or supports but we illustrate a seat including the outer hollow rod 25 with its upper strengthening or reinforcing and locking enlargement 26, shown as a split ring having ears 27, and a locking element 28. The upper end of the rod 27 may be split as at 29 to permit ready locking adjusting. The rod 25 is supported upon a movable base 30 to which it may be welded or otherwise secured as at 25a. This constitutes in effect a supporting carriage which may have any suitable rollers or supports 31, which rest upon the upper surface of the plate 11, or upon the floor 1, if the plate is reduced in size. The carriage 30 is radially adjustable along the radius member 17. The terminal portion of the member 17 may for example be undercut at its sides as at 17a. The member 30 is apertured as at 30a to conform generally to the terminal portion of the member 17. It may be slid therealong toward or away from the center about which the member 17 rotates and may be locked in any desired adjustment, for example by the set screw 32. 33 is an inner rod vertically adjustable in the hollow sleeve 25. It may be locked in position at any desired adjustment, within a substantial range, by the locking action of the member 28. It has an upper bore 34 terminating at the bottom in an upwardly concave bearing seat 35. 36 is a rotatable seat carrying stem having a concave lower end 37 terminating in the bearing point 38 which rests upon the center of the seat 35. 39 is a flange supporting any suitable seat element 40. The seat element 40 may be of sponge rubber or any other suitable material, of the proper form and consistency to support the user. 45 is any suitable control box for the chair, having any suitable elevating, locking or lowering means, such as the various pedals 46. 47 is a flexible conduit, which may carry a plurality of electric conductors, not herein shown, such as may be necessary for operating the various mechanisms upon the pedestal 4. 48 is a control box, which may be mounted on the member 17. It may for example be mounted on a lateral enlargement or extension 17b of the member 17. It may have any suitable actuating members, control switches or the like, indicated as at 49 and 50, the former being buttons and the latter levers, both of which are readily operated by the feet of the operator while he is sitting upon the seat 40. It will be observed that the arc of movement of the seat is so located that the operator, without leaving the seat 40, and using his feet to control his position, may have access to the patient from about an arc exceeding 180 degrees. While he is on the seat 40, the control members 49 and 50 of the control box are readily available, as are the control pedals 46 of the chair. He may readily propel himself by engaging the floor or the base 11 with his feet, throughout the possible arc of movement of the support 17. At one limit of movement he has access to the cabinet 10. At the other limit of movement he has ready access both to the pedestal 4 and the X-ray mechanism 7. We find it advantageous to so lay out the various equipment used for example by a dentist or an oral surgeon, that the dentist or surgeon, has access to all the material he needs, and to all the mechanisms he normally uses, without leaving the seat 40.

In Fig. 6 we illustrate a variant form of base in which an upper plate 100 receives and supports the chair base, and is spaced from the base plate 11 by supporting means 101.

It will be realized that, whereas, we have described and illustrated a practical and operative device, nevertheless many changes may be made in the size, shape, number and disposition of parts without departing from the spirit of our invention. We therefore wish our description and drawings to be taken as in a broad sense illustrative or diagrammatic, rather than as limiting us to our precise showing.

For example the supporting and pivoting means may be widely varied. The shape of the seat 40 may be varied. The shape and proportions of the member 11 may be widely varied. The control box may be positioned on the base plate 11, and provided with operating means accessible to the operator at all positions of the seat 40. Whereas we illustrate a substantially extended member of sheet material which may be of metal, we employ a base of softer or lighter material, preferably with an arcuate track 11a of metal or other suitable hard material, for receiving the rollers or wheels 31 or their equivalent. The track 11a is dotted in in Fig. 3, to indicate its location. Or we may permit the rollers 31 to engage the floor.

The use and operation of the invention are as follows:

In dentistry the dentist ordinarily works while standing on his feet. This involves a serious physical strain and frequently results in corns, fallen arches and other troubles of the feet, leg joints and spine. However, if the dentist employs a seat, the problem of shifting the seat in the course of his work necessitates the use of a movable seat. Whereas dentistry is now an old art, and dental equipment has reached a high degree of specialization, it has not up to now been possible for the dentist to find any available readily movable seat which can be practically used during his work. The present invention fills this gap and provides a seat upon which the dentist may rest a substantial part of his weight, without any sacrifice of his mobility during the work he does on his patients. With reference for example to Fig. 1, the seat 40 may be swung at will, by the feet of the dentist, to render available all of the equipment which a dentist normally uses, including the drill and tray, not herein shown, mounted on the pedestal 4, the cabinet 10 and the X-ray equipment 7. The dentist can move readily about the patient throughout the arc of sufficient extent to give him complete access to the mouth of the patient from all the angles from which he normally works. The chair also may be swung aside if necessary to permit the dentist to work on his feet. The controls of the chair are within reach of the dentist at all times, as are the foot controls for the mechanisms mounted on the pedestal 4. Thus the dentist has available at all times all of the equipment he uses, and is able to maintain a seated posture without any loss of control and without any perceptible restriction of his movements. The mechanism may be set or adjusted for the size of the dentist, the location and shape of the dental chair and the needs of the particular case. Ordinarily an initial adjustment in relation to the size of the chair and the habits and convenience of dentists is enough. This adjustment includes the adjustable, eccentric center about which the support rotates, the distance of the support from the center about which it rotates, and the height of the seat 40 upon which the dentist sits.

Whereas we have described our invention as applied to a dental office it will be understood that it will also apply, with slight changes, to the offices of oral surgeons and, in general, to offices of eye, ear, nose and throat specialists. It may also be employed by barbers and in any other situation wherein a dentist, surgeon, barber or investigator does his work upon a patient or subject seated in a predetermined position, where it is necessary for the operator to move about the patient in the course of investigation, treatment or service.

The eccentric pivoting of the seat **40**, in relation to the chair, is highly advantageous, and permits complete mobility and ready access to the patient.

We claim:

1. In a seat assembly for use with a vertically axised rotatable dental chair having a floor engaging base, a plate formed and adapted to be positioned beneath such base, said plate being adjustably fixed and frictionally held on the floor by the weight of the chair base, when positioned beneath such base, a horizontally extending arm member located adjacent the floor and pivoted to said plate for rotation about a center adjacent the edge of said base, a stool supported on the outer end of said arm, said plate being readily shiftable about the axis of the chair base to adjust the center of rotation of the arm about the center of the chair base, to vary the arc of swing of said stool, and a control box mounted on and movable with said arm, said control box having movable control elements with parts extending laterally from said control box and located closely adjacent the floor level.

2. The structure of claim 1 characterized by and including a stool adjustable toward and away from pivot of the arm.

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