United States Patent

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[72] Inventor **John J. Condon**
S. 1927 Post, Spokane, Wash. 99203

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[54] **DENTIST CHAIR**
6 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **297/346,** 297/188, 297/217
[51] **Int. Cl.** **A47c 1/02**
[50] **Field of Search** 5/81, 83, 85; 32/22; 108/149; 248/161, 404, 157, 419, 424, 333; 297/188, 330, 345, 346, 217; 312/209

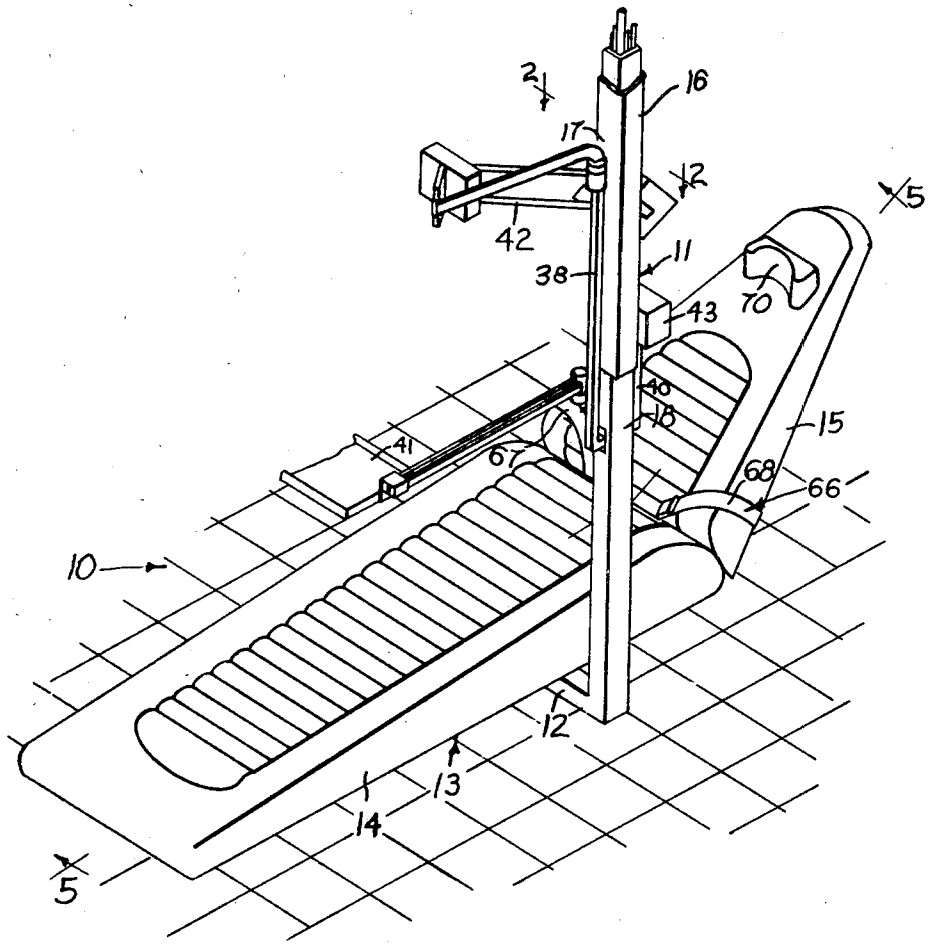
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Primary Examiner—James C. Mitchell
Attorney—Wells & St. John

ABSTRACT: A dentist chair is described that is suspended from the ceiling on a telescoping post having a horizontally extending arm for supporting the chair above a floor without any obstruction between the chair and the floor. The chair may be raised and lowered as desired by extending or contracting the post. The chair can also be moved horizontally parallel with the major axis of the chair.



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SHEET 1 OF 2

Fig-2

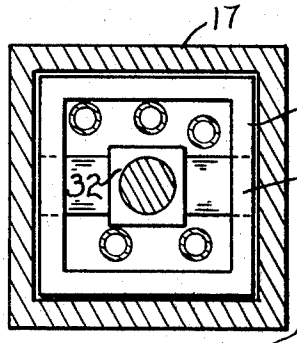
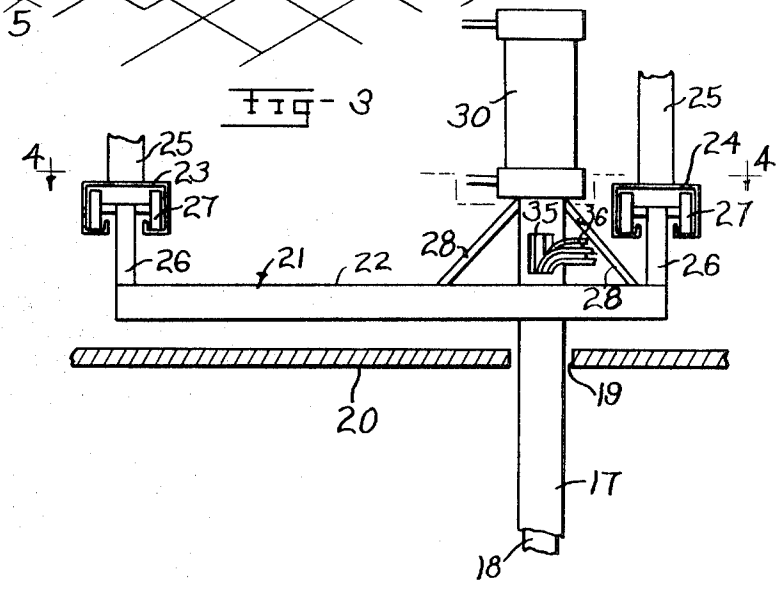


Fig-1

Fig-3



INVENTOR.

John J. Condon

BY Wells & St. John

Attys

Fig - 4

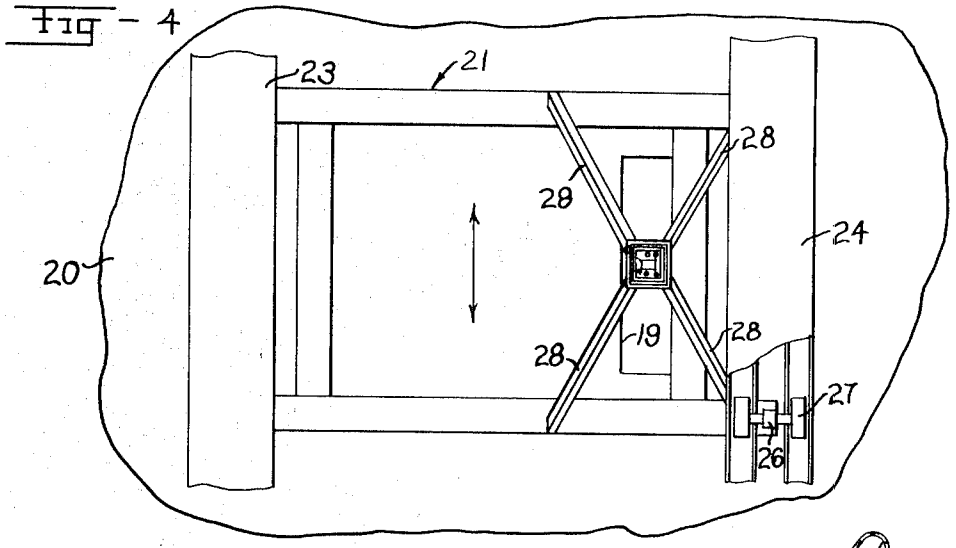


Fig - 5

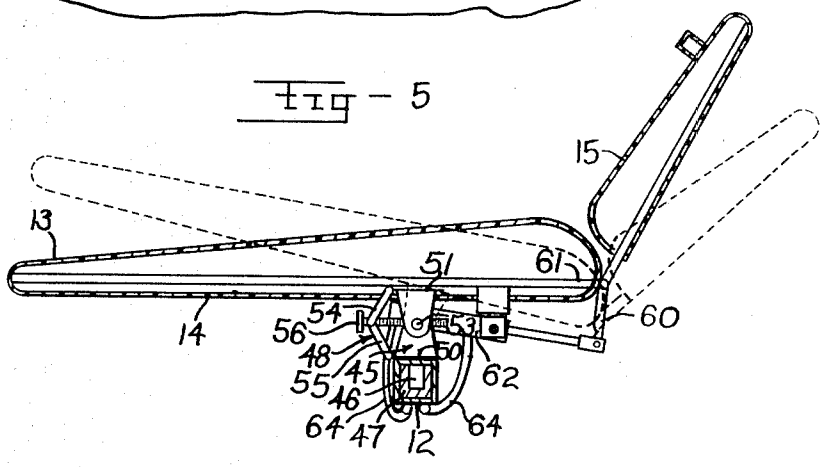
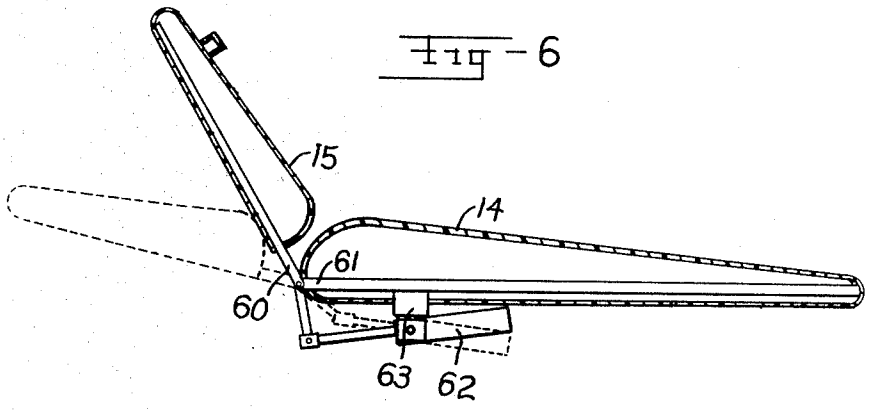


Fig - 6



INVENTOR.

John J. Condon

BY Wells & St. John

Attys

DENTIST CHAIR

BACKGROUND OF THE INVENTION

This invention relates to dentist chairs.

One of the major problems associated with present day dentist chairs is the requirement that the dentist and his assistant must stand next to the chair and bend over the patient for long periods of time in uncomfortable positions. These uncomfortable positions become very tiring and frequently result in back injury to the dentist and his assistant.

The conventional dentist chair has a bulky pedestal that is mounted on the floor prohibiting the dentist from sitting next to the patient with his knees and legs comfortably under the dentist chair while working on the patient. The conventional dentist chair is provided with armrests that hinder the capability of the dentist and the dental assistant to assume a comfortable position while working on the patient's teeth. This problem is particularly accented when working on small children because the children sit lower in the seat and are positioned further from the edge of the seat. Although the armrests serve to keep the children from falling out of the chair they present a barrier and obstacle to the dentist to obtain a comfortable position while working on the children's teeth.

One of the principal objects of this invention is to provide a dentist chair that is suspended off the floor with no obstructions between the chair and the floor to enable the dentist and his assistant to sit next to the patient with their knees and legs under the dentist chair in a comfortable position.

An additional object of this invention is to provide a dentist chair that is supported on a substantially horizontal arm, spaced from the floor to enable the floor under the chair to be conveniently cleaned.

A further object of this invention is to provide a dentist chair that does not have armrests but is provided with provisions for securing the patient securely to the chair so that the patient will not fall off the chair.

An additional object of this invention is to provide a dentist chair that is suspended from the ceiling and which may be adjusted vertically as desired by the dentist.

A further object of this invention is to provide a dentist chair that is suspended from the ceiling and which may be moved horizontally parallel with the major dimension of the chair.

An additional object of this invention is to provide a dentist chair that is suspended from the ceiling on a horizontal arm with specific features for adjusting the inclination of the chair and position of the backrest.

A still further object of this invention is to provide a dentist chair that is relatively inexpensive to manufacture, long lasting and easy to maintain.

These and other objects and advantages of this invention will become apparent upon the reading of the following detailed description of a preferred embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of this invention is illustrated in the accompanying drawings, in which:

FIG. 1 is a fragmentary perspective view of a dentist chair that is suspended from the ceiling on the telescoping post;

FIG. 2 is a cross-sectional view taken along line 2–2 in FIG. 1;

FIG. 3 is a side elevational view of the upper part of the telescoping post showing the post extending upward through a false ceiling to a movable carriage supported from a structural ceiling;

FIG. 4 is a cross-sectional horizontal view taken along line 4–4 in FIG. 3 showing in more detail the carriage;

FIG. 5 is a cross-sectional view taken along line 5–5 in FIG. 1 showing an adjustable support element for adjusting the inclination of the chair; and

FIG. 6 is a side view showing the drive means for pivoting the backrest between an upright position and a horizontal position.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now in detail to the drawings there is shown in FIG. 1 a dentist chair 10 that is suspended above a floor by a frame 11. The frame 11 includes a horizontally extending arm 12 that is mounted for vertical movement. A contour chair 13 is mounted on the end of the arm 12 so that there is no obstruction between the chair and the floor to prevent the dentist or dental assistant from placing their knees and legs under the chair while they are working on a patient. The contoured chair 13 has a seat section 14 and a backrest or section 15. It should be noted that there are no armrests on the seat to interfere with the movement of the dentist or dental assistant while they are bending over the patient.

The frame 11 includes a telescoping vertical post 16 that is suspended from a ceiling. The post includes an outer square tube 17 that extends downwardly from the ceiling and a smaller inner square tube 18 that is slidably mounted in the square tube 17 for vertical movement. The post 16 extends upwardly through an opening 19 in a false ceiling 20 (FIG. 3) to a rectangular subframe 21. The subframe 21 includes a carriage 22 that is movably mounted on horizontal tracks 23 and 24 that extend parallel with the major horizontal dimension of the chair so that the chair may be moved horizontally as desired by the dentist. The tracks 23 and 24 are suspended by suspension elements 25 from a structural ceiling (not shown). Brackets 26 are affixed at each corner of the rectangular subframe 21 with rollers 27 mounted on the upper ends of the brackets for riding in the tracks 23 and 24. The post 16 extends upwardly through the rectangular subframe 21. Braces 28 extend between the post 16 and the subframe 21 to rigidly secure the tube 17 to the subframe. The arm 12 is affixed to the lower end of the movable tube 18.

The dentist chair includes a drive means for raising and lowering the contoured chair 13 as desired. The drive means includes a hydraulic cylinder 30 (FIG. 3) that is mounted on the upper end of the square tube 17 with a piston rod extending downwardly into the upper end of the square tube 17 with the lower end of the piston rod connected to a shaft 33 through a clevis block 32 (FIG. 2). The shaft 33 is affixed to the upper end of the square tube 18. The hydraulic cylinder 30 raises or lowers the square tube 18 within the square tube 17 to position the contoured chair at the desired elevation above the floor.

Standards 38 and 40 are mounted to the lower end of the movable tube 18 and extend upward alongside the post 16 for supporting complementary accessories to the chair. The accessories generally include a swingable service tray 41, an adjustable chair light 42, and a service console 43 having a high-speed air drill, suction tube and water nozzle. In this design the service tray 41 and chair light 42 are mounted on standard 38 and the service console 43 is mounted on standard 40.

Service lines 36 are routed to the various accessories and parts of the chair through a side opening 35 in the upper end of the tube 17 (FIG. 3) and down the inside of the tubes 17 and 18 to the standards 38 and 40. Included in the service lines are air (both positive and vacuum) lines, water line, electrical wires and possibly hydraulic lines.

The contoured chair 13 is mounted on the end of the arm 12 through and adjustable support element 45 (FIG. 5). The adjustable support element 45 has a downward-projecting stud shaft 46 that is mounted in bearing 47. The bearing 47 is affixed to the end of the arm 12. The adjustable support element 45 includes a toggle assembly 48 having a bottom plate 50 and a top plate 51 with side elements extending from the plates 50 and 51 and interconnected through a horizontal shaft 53. Toggle arms 54 and 55 extend between the top and bottom plates 50 and 51 respectively with a screw 56 extending through the shaft 53. Rotation of the screw 56 causes the top plate 51 to pivot about the shaft 53 to change the inclination of the contoured chair 13. The screw 56 may be connected to an electrical motor so that the inclination of the chair may be adjusted automatically.

Brackets **61** are mounted on the back of the seat section **14** for pivotally supporting the back section **15**. The back section **15** has levers **60** that extend downward from the base of the back section pivotally interconnecting with the brackets **61**. A hydraulic cylinder **62** is mounted on brackets **63** beneath the seat section **14**. The end of the piston rod of hydraulic cylinder **62** is connected to the end of the levers **60** of the back rest so that when the hydraulic cylinder is operated the backrest will pivot between an upright position shown in solid line in FIGS. **5** and **6** and a horizontal position shown in dotted lines in FIG. **6**. Hydraulic lines **64** extend along the arm **12** to the hydraulic cylinder **62**.

To secure the patient to the chair, a seatbelt **66** (FIG. **1**) is provided having one element **67** mounted in one side of the backrest and a second element **68** mounted in the other side of the backrest. The seat belt extends over the lap of the patient and does not hinder the dentist while he is working on the patient. In this manner the patient is more intimately secured to the chair without the need of armrests that hinder the comfortable movement of the dentist. If desired, a head and neck rest **70** may be mounted on the backrest **15** to support the neck and head portion of the patient.

The contoured chair **13** is extremely comfortable with the seat section being elongated to support the legs of the patient in a substantially outright position. The head or the backrest **15** is contoured with the upper end of the backrest converging or necking down so that the dentist or dental assistant may conveniently move into close proximity with the mouth area of the patient without having to bend over in an uncomfortable position.

It should be noted that the service lines are not exposed or hanging on the exterior of the post **16**. This prevents the lines from becoming entangled and hindering the efficiency of the dentist.

Having now described a preferred embodiment of my invention, I request that a United States Letters Patent be issued to me covering my invention which I claim as follows:

1. A dentist chair for supporting a dental patient in an elevated position above a floor to enable a dentist to conveniently and effortlessly sit next to the patient along one side of the dental chair with his knees and legs under the dentist chair while he is working on the patient, comprising:

1. a frame;
2. an arm mounted on the frame for vertical movement, said arm extending horizontally outward to an end with no obstructions between the arm and the floor;
3. a contoured chair mounted on the end of the arm substantially perpendicular to the arm, said chair having a back section pivotably mounted on a seat section for movement between an upright position and a horizontal position;
4. a first drive means mounted on the frame and operatively connected to the arm for moving the arm and the contoured chair vertically above the floor and
5. a second drive means mounted on the seat section and operatively connected to the back section for pivoting the back section between the upright and horizontal positions.

2. A dentist chair as defined in claim **1** wherein the frame is suspended from a ceiling without any support from the floor.

3. A dentist chair as defined in claim **1** wherein the frame includes a subframe mounted to the ceiling with a first tube having a rectangular cross section affixed to the subframe and extending downward terminating above the floor and a second tube having a similar rectangular cross section telescopically mounted within the first tube with one end extending downward below the first tube and wherein the arm is affixed to the lower end of the second tube and wherein the drive means is operatively connected to the upper end of the second tube to move the second tube vertically within the first tube to raise and lower the chair.

4. A dentist chair as defined in claim **3** wherein the subframe is movably mounted in tracks suspended from the ceiling parallel with the chair to permit the chair to be moved longitudinally.

5. A dentist chair as defined in claim **1** wherein a seatbelt is mounted in the backrest to facilitate the securing of the patient in the chair.

6. A dentist chair as defined in claim **3** further comprising an upright standard mounted to the side of the lower end of the second tube for supporting a service tray and chair light