United States Patent [19]

Hogan

[11] **3,757,129**

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[54] **X-RAY TABLE PATIENT ROTATOR BASKET**

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[51] **Int. Cl.** **G03b 41/16**

[58] **Field of Search** 250/55, 56, 57; 269/323

[56] **References Cited**

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3,482,094 12/1969 Hogan 250/439

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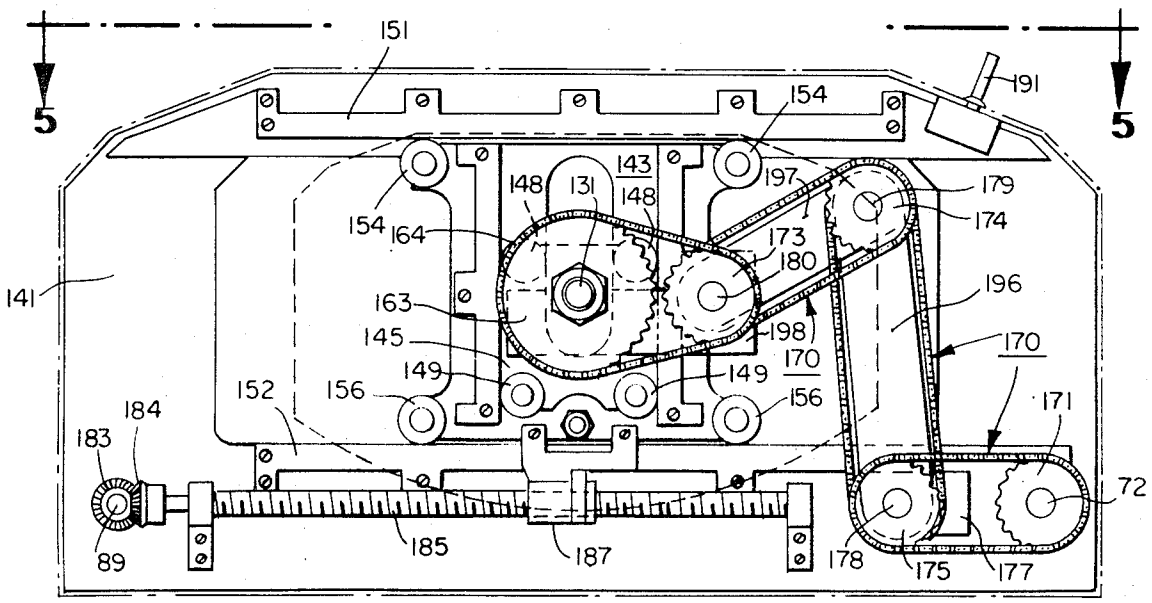
Assistant Examiner—C. E. Church
Attorney—Henry N. Paul, Jr., J. Walter Schilpp et al.

[57] **ABSTRACT**

A basket for receiving a patient for full-length X-ray examination is movable laterally relative to the X-ray table. The basket is also rotatable on its own longitudinal axis, and when so rotated the level or elevational position of the basket is adjusted automatically.

17 Claims, 8 Drawing Figures



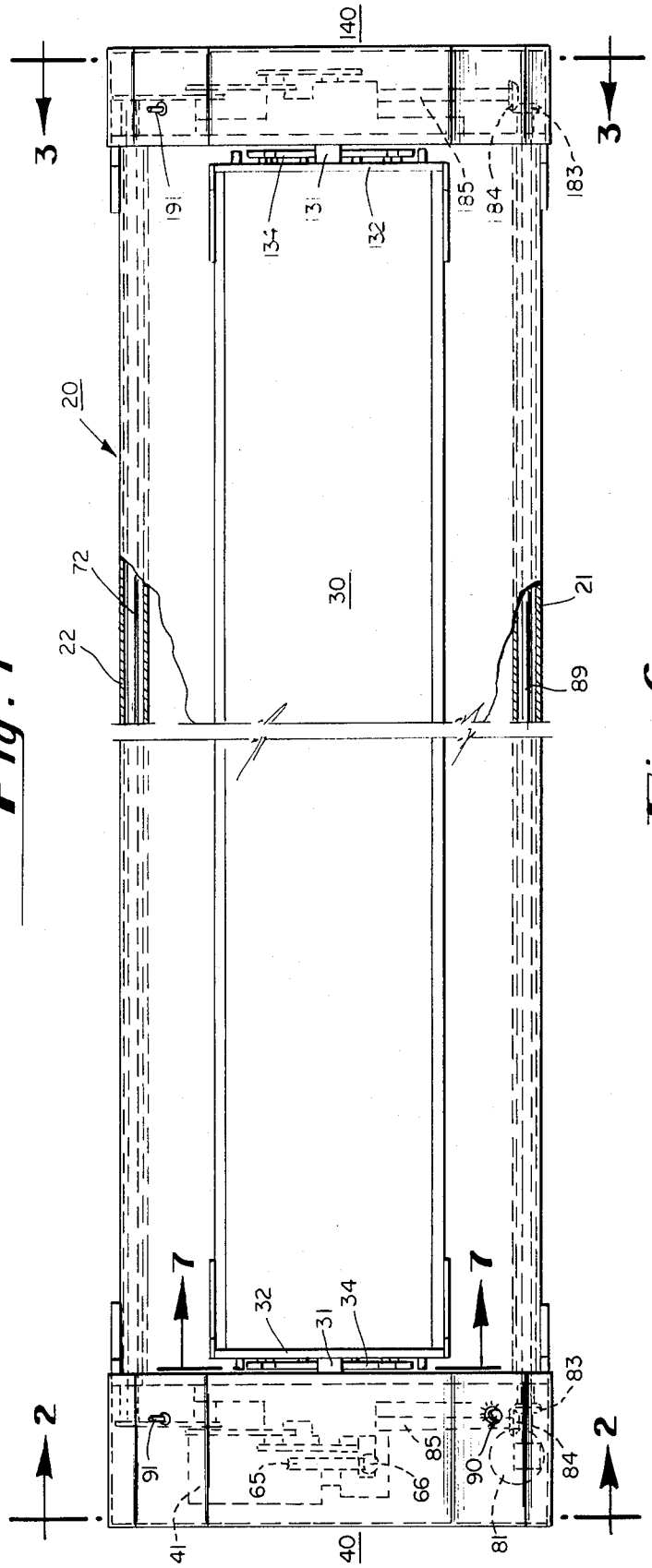

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Fig. 1

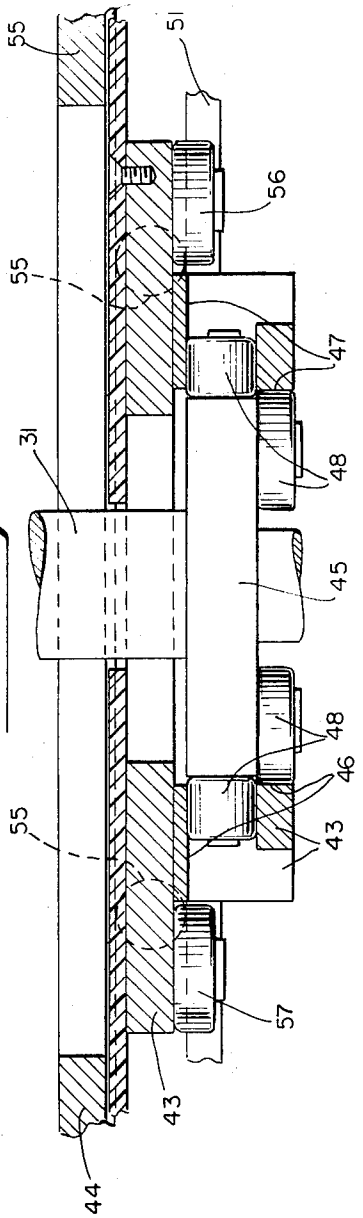
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Fig. 6

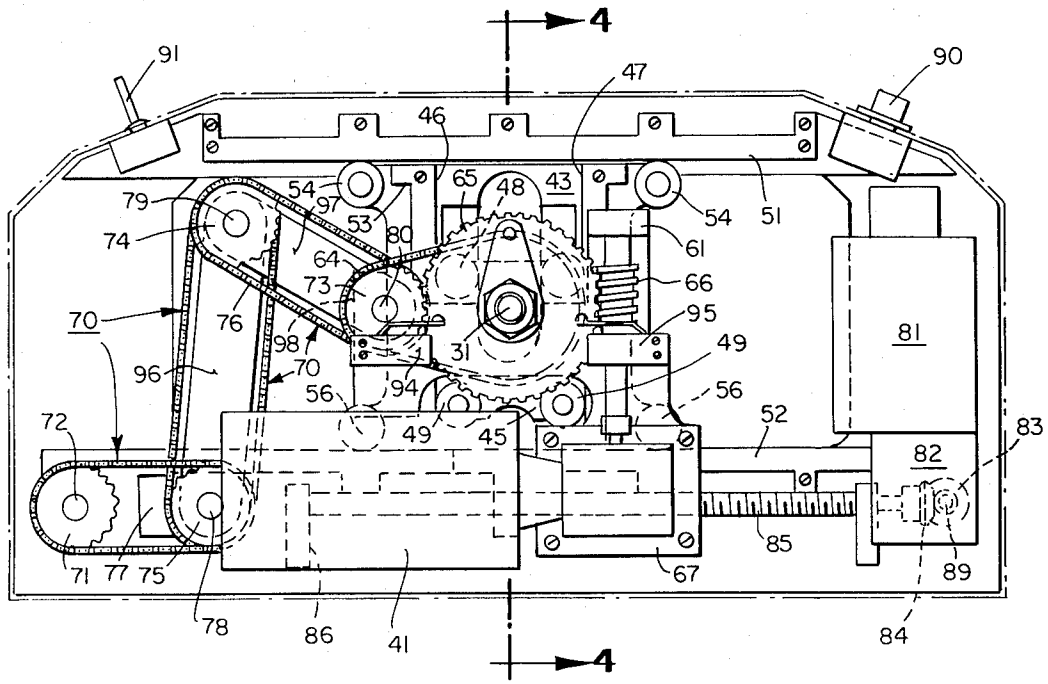
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Fig. 2

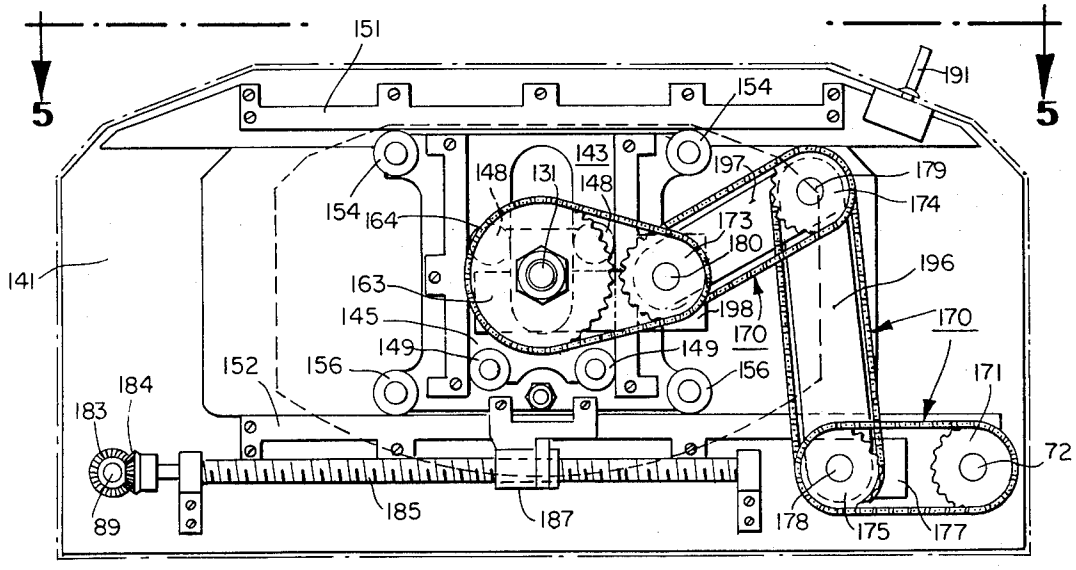
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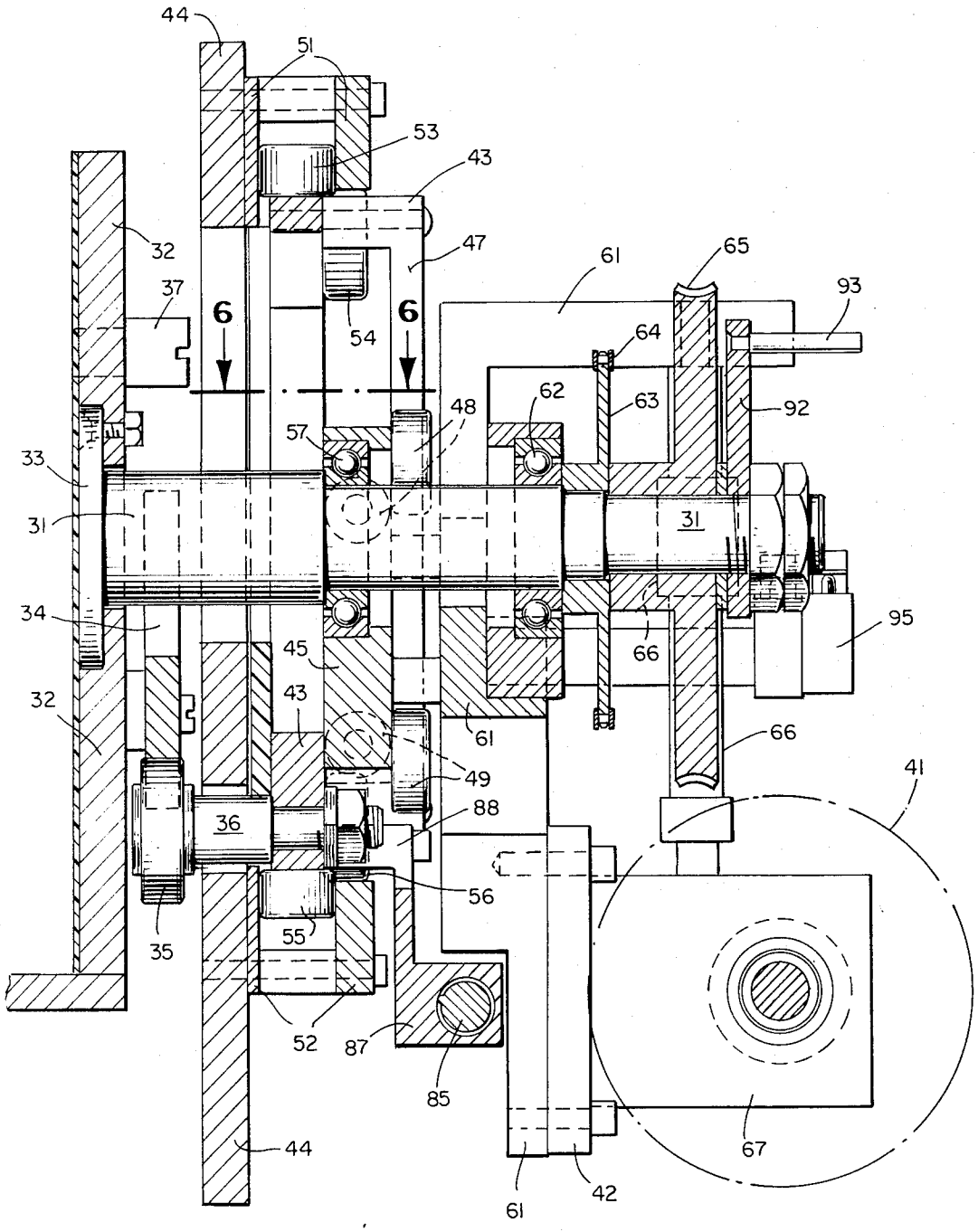
Fig. 3

Fig. 4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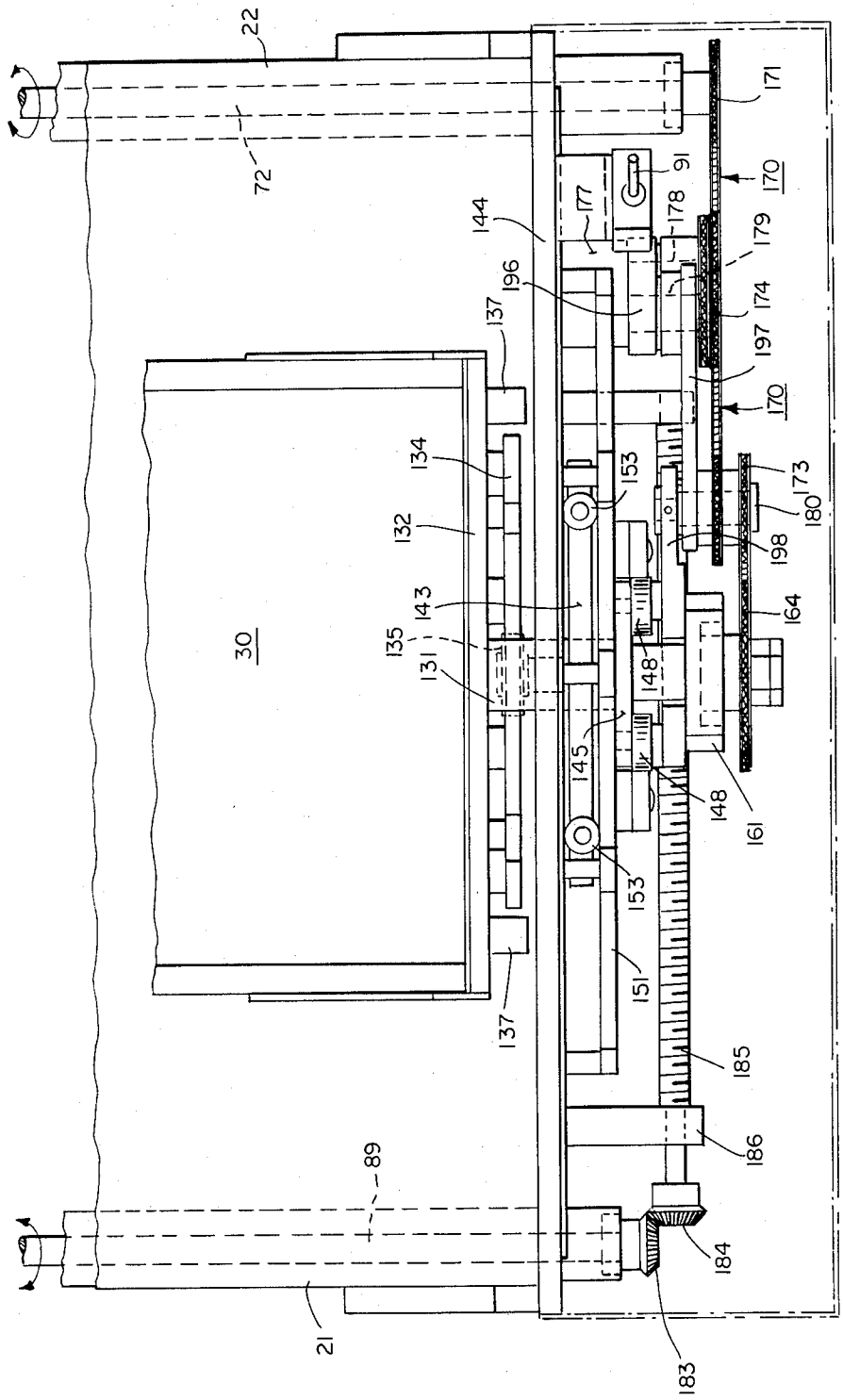
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Fig. 5

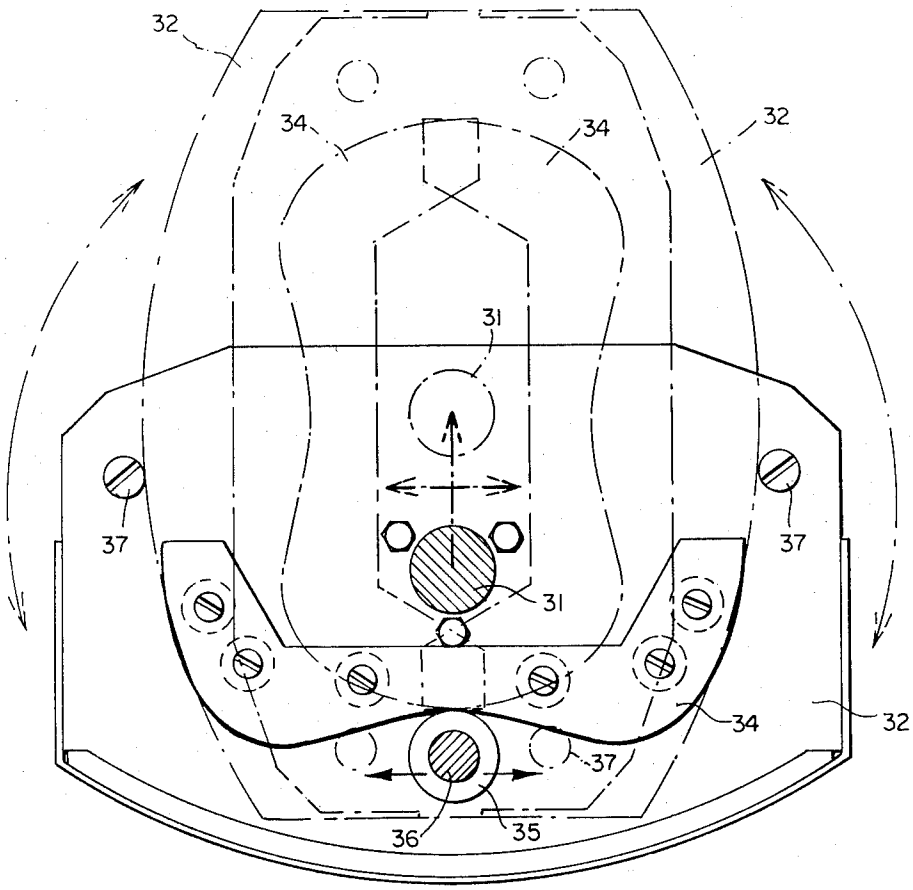

Fig. 7

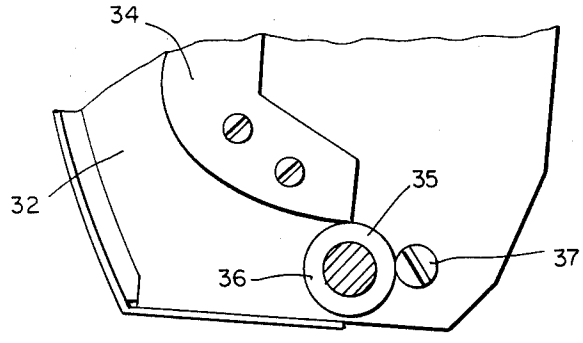

Fig. 8

X-RAY TABLE PATIENT ROTATOR BASKET

BACKGROUND OF THE INVENTION

This invention relates to an X-ray table top having a cradle or basket in which the patient is strapped in full-length on-the-back position for X-ray examination.

The invention relates particularly to means for moving the basket laterally relative to the table top, and for also rotating the basket about its longitudinal axis, and for means for adjusting automatically the level or elevational position of the basket when the basket is rotated.

In the X-ray examination of patients, it is desirable that the basket in which the patient is strapped be movable universally so that the patient may be presented to the X-rays in a variety of desired positions. The basket is rotatable about its longitudinal axis, relative to the supporting table top, so as to present the front, or back, or any side portion of the patient to the X-rays.

SUMMARY OF THE INVENTION

A principal object of the present invention is to provide a patient-receiving basket for an X-ray table wherein the basket is movable in the lateral or transverse direction relative to the table top, as well as being movable rotatably about its own longitudinal axis by means which automatically adjust the level or elevational position of the basket so as to maintain the patient on a constant level relative to a fixed X-ray image plane.

The foregoing object, as well as other objects of the invention, are achieved by the following means:

The end panels of the X-ray table top, that is, the head panel and the foot panel, are provided with horizontal slots through which a cam-follower shaft extends at each end. Each cam-follower shaft is supported in a carriage that is movable in the transverse or lateral directions relative to the X-ray table top. This carriage is movably supported on tracks secured to the end panel of the table top. The inward end of the cam-follower shaft carries a cam-follower roller bearing which supports a cam plate secured to the end panel of the patient rotator basket. Thus, the basket is supported at each end on the cam-follower roller bearing which in turn is supported in the transversely movable carriage. Extending outwardly from each end plate of the basket is a trunnion or shaft which extends through a horizontal slot in the end panel of the table top and is journalled in a sub-carriage which is carried by, and movable vertically on tracks within, the main transversely movable carriage. Power means are provided for driving the basket shafts rotationally at both ends to rotate the basket to the desired angular position up to full 90° in either direction. When the basket is so rotated, the cam plate at each end of the basket rotates therewith on the cam-follower bearing and is of such a shape as to cause the basket shafts to change level or elevational position relative to the X-ray table top and relative to the X-ray image plane so as to retain the patient at a constant level. When the basket shaft is raised or lowered vertically, it raises or lowers the sub-carriage in which the shaft is journalled. Power means are also provided for moving both ends of the main carriage transversely relative to the X-ray table top. Such means include a nut connected to the main carriage and adapted to travel along an elongated laterally disposed screw supported on the end panel of the table top. When the main carriage is driven laterally by the nut, the basket shafts are carried along therewith, and in so doing move the basket laterally relative to the table top. Separate drive means are provided for moving the basket rotationally and for driving the basket laterally. Similar and corresponding drive means are provided at each end of the table top, with the exception that the power or motor means are provided only at one end, preferably at the foot end. Elongated shafts extend the full length of the table top and connect the motor-driven drive means at the foot end with corresponding means at the head end. The basket may be rotated while occupying any of the lateral positions. The drive means for driving the basket rotationally includes, at each end of the table top, a pair of rigid pivotal link arms which support and carry the sprockets of a chain-and-sprocket system which is used to transfer the power-driven drive of the basket shaft at one end of the table top to the basket shaft at the other end.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic plan view of an X-ray table top on which is supported a patient-receiving basket, which, in accordance with the present invention, is movable transversely relative to the X-ray table top, as well as being adjustably rotational on its own longitudinal axis.

FIG. 2 is an elevational end view of the foot end of the table top looking along the line 2—2 of FIG. 1.

FIG. 3 is an elevational end view of the head end of the table top looking along the line 3—3 of FIG. 1.

FIG. 4 is a view, in section, at the foot end of the table top looking along the line 4—4 of FIG. 2.

FIG. 5 is a plan view, at the head end of the table top, looking down along the line 5—5 of FIG. 3.

FIG. 6 is a view, in section, looking down along the line 6—6 of FIG. 4.

FIG. 7 is a schematic end view of the basket end panel illustrating its rotational movement supported by the cam plate on the cam follower roller bearing.

FIG. 8 is a fragmentary view showing the basket cam plate in a limit position on the cam-follower roller bearing.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, FIG. 1 is a plan view of an X-ray table top 20 having supported thereon a cradle or basket 30. The means for supporting the X-ray table top 20 is not shown but may comprise pedestal elevator means located under the center portion of the table top 20 and on which the table top 20 may be shifted longitudinally and transversely raised, lowered, or pivoted about its short transverse center axis. In FIG. 1, reference numeral 40 identifies the foot end of the table top while numeral 140 identifies the head end.

A source of X-rays not shown in the drawings is positioned above or below the table top to project X-rays down or up through the table top onto an image plane, not shown, located below or above the table top. The image plane may be an image amplifier, or a photographic film, or any other suitable image-forming device. Thus, the table top is disposed between the source of X-rays, which ordinarily includes a collimator, and the image plane.

The patient to be X-rayed is ordinarily strapped in the basket 30 in full length on-the-back position. The

basket 30 is made of material, such as rigid plexiglass, which is transparent to X-rays. The basket 30 is shown in FIG. 7 as having straight sides and a concave bottom.

The basket 30 is rotatable about a pair of trunnions 31 and 131 which extend outwardly, along the projected longitudinal axis of the basket, from the foot and head panels 32 and 132, respectively, of the basket. As seen in FIG. 7, the patient basket 30 is substantially wider than it is deep and, accordingly, unless compensating provision is made, when the basket 30 is rotated about its shafts 31 and 131 the distance between the nearest boundary of the basket and the X-ray image plane changes, becoming shorter as the basket is rotated from the solid-line position shown in FIG. 7, in which the patient is lying on his back, to the phantom positions shown in FIG. 7 in which the patient is lying on his side.

Heretofore, in the prior art, means have been provided for automatically adjusting the height or elevational position of the rotational axis of the basket 30 as the basket is rotated on its shafts 31 and 131. Such prior art means are shown in U. S. Pat. No. 3,482,094 issued to William J. Hogan on Dec. 2, 1969. In that patent, a flat horizontal cam rail is fixed to the foot and head end panels of the X-ray table top, and the basket is supported thereon by means of a series of cam follower rollers secured to the end panels of the basket along selected cam paths. When the basket is rotated these cam rollers go into and out of engagement with the flat cam surface and the basket shafts are caused to move upwardly or downwardly, as the case may be. The cam rollers in the patent are at spaced intervals along the cam path and, as a result, the transfer of the weight of the patient-occupied basket from one cam roller to another is noticeable to the patient, which is undesirable. This undesirable feature is not present in the rotational mechanism provided by the present application wherein the shape of the cam allows for a true and constant patient plane during rotation. In addition, the basket of the present application is also movable in the transverse or lateral direction, so that the patient may be placed in the most desirable position for X-ray examination.

FIG. 2 is an elevational end view of the mechanism at the foot end 40 of the X-ray table top while FIG. 3 is an elevational end view of the mechanism at the head end 140 of the table top. The mechanisms at the foot and head ends are similar with corresponding components. However, motor power is provided at one end only, the foot end, with drive shafts extending the full length of the table for driving the mechanism at the head end. This has the advantage of reducing the bulk of the equipment at the head end, thereby making space available for closer examination of the patient at the head and upper regions of the patient's body. Another advantage is that by having the motors at the foot end the weight at each end of the table top tends to be more nearly balanced, since the major portion of the total weight of the patient is on the head side of the transverse center line of the table top.

FIG. 4 is an elevational view, in section, at the foot end of the table top, as seen looking along the line 4—4 of FIG. 2. FIG. 5 is a plan view at the head end of the table top looking down along the line 5—5 of FIG. 3.

Referring now to FIGS. 1–5, a first drive motor 41 is supported, as by brackets 42 and 61, on a sub-carriage 45 mounted for vertical movement within a transversely movable main carriage 43 which is supported on bearing rails secured to the foot panel 44 of the X-ray table top. The function of motor 41 is to rotate basket 30 about the vertically-movable axis of rotation of the basket. A second motor 81 is provided, supported in fixed position on the foot panel 44 of the table top, for moving the basket 30 laterally relative to the table top.

It was indicated previously that except for the motors, the drive mechanisms at the two ends of the table top are similar, and accordingly, it will only be necessary to describe in detail the mechanism at one end. Corresponding parts at the other end are identified by similar reference numerals to which 100 has been added. For example, the transverse screw at the foot end is 85, while the transverse screw at the head end is 185. The provision of corresponding drive mechanisms at both ends is desirable, as compared with driving the basket rotationally and/or transversely from one end only, in that undesirable torsional and/or lateral strain on the basket is avoided.

The manner in which the basket 30 is supported will first be described, after which there will be a description of the mechanism for moving the basket laterally relative to the X-ray table top, followed by a description of the means for rotating the basket and for automatically adjusting the level of the basket axis during rotation.

Reference numerals 32 and 132 identify the foot and head panels, respectively, of the basket 30. Secured to each end panel of the basket is a trunnion or shaft, 31 and 131, respectively, for the foot and head ends. These shafts 31 and 131 are shown to be secured by their flange portions 33 and 133. Each of the basket shafts 31 and 131 has several reduced-diameter portions, as seen in FIG. 4, forming shoulders against which bearings or other parts may abut.

Also secured to each end panel 1 and 132 of the basket 30 is a cam plate, 34 and 134, respectively, whose cam surfaces may have a contour such as is seen in FIG. 7. These cam plates 34 and 134 rest on cam-follower roller bearings, 35 and 135, respectively. The bearings 35 and 135 are rotatably supported on shafts, 36 and 136, respectively, which are secured in, and supported by, main carriage 43 and 143 respectively. By a mechanism to be described below, main carriages 43 and 143, at the foot and head ends respectively, are movably supported on the end panels 44 and 144 of the X-ray table top for transverse movement relative thereto.

The mechanism for moving the basket 30 laterally relative to the table top will now be described, after which the mechanism for rotating the basket 30 on its own long axis will be described.

The motor 81 for driving the basket 30 in the transverse or lateral direction is seen in FIG. 2. Motor 81, which is mounted on the foot panel 44 of the X-ray table top, drives, through a gear-reducing unit 82, a shaft 89 having at one end a miter gear 83 which is in mesh with a miter gear 84 secured to one end of a transverse screw 85. Screw 85 is supported by blocks 86 on the foot panel 44 and occupies a position parallel to the foot panel. Shaft 89, driven by the motor 81 through gear reducer 82, is a long shaft which extends the full length of the table top within the side rail 21. A miter gear 183 at the head end of the shaft 89 meshes with miter gear 184 on the transverse screw 185, as seen in FIG. 3. Thus, when motor 81 drives screw 85

at the foot end, screw 185 at the head end is also driven. Motor 81 may desirably be provided with a magnetic brake so that when the power to the motor 81 is shut off, lateral movement of the basket stops. The miter gears 83, 84, 183 and 184 are preferably fiber gears in order to avoid the noise which metal gears would generate and which may be bothersome to the patient.

Mounted on screw 85 at the foot end is a nut 87, preferably a ball nut, and a corresponding nut 187 is mounted on screw 185 at the head end. The nuts 87 and 187 are connected by brackets 88 and 188, respectively, to the transverse carriages 43 and 143 at the foot and head ends, respectively. These carriages, one at each end of the table top, are supported in tracks secured, as by bolts, to the foot and head panels 44 and 144 of the X-ray table top. The tracks comprise an upper set of bearing rails 51 and a lower set of bearing rails 52 secured to the foot panel 44 and corresponding sets of bearing rails secured to the head panel 144. Along these rails run the upper bearings 53, 54 and the lower bearings 55, 56 of the transverse carriage 43. Bearings 53 and 55 are lateral bearings which bear laterally against the rails 51 and 52 while bearings 54 and 56 are vertical bearings which bear vertically thereagainst.

The main carriage 43 carries a sub-carriage 45 which is adapted to move up and down on a vertical track within the main carriage 43. This track is comprised of vertical rails 46 and 47 secured to and carried by the main carriage 43. Against these vertical rails bear the upper and lower sets of roller bearings 48 and 49 of the vertically movable sub-carriage 45. Journalled in the sub-carriage 45, as by bearings 57 (FIG. 4), is the shaft 31 of the basket 30. Thus, when the main carriage 43 is moved laterally by the screw 85 and nut 87, the basket shift 31, and hence the basket 30, are carried laterally therewith. Simultaneously, at the other end of the table top, the basket shaft 131 is being carried laterally by the carriage 143.

The mechanism for rotating the basket 30 on its shafts 31 and 131 will now be described. During rotation, the basket 30 remains supported by cam plates 34 and 134 secured to the end panels 32 and 132 of the basket, and by the cam-follower bearings 35 and 135 which are supported in the main carriages 43 and 143. As has been described, the basket shafts 31 and 131 project through slots in the end panels 44 and 144 of the table tops and are journalled in the sub-carriages 45 and 145. Secured to sub-carriages 45 and 145, as seen in FIG. 4, is a support bracket 61 and 161, respectively, in which basket shafts 31 and 131, are additionally journalled, as in bearings 62, seen in FIG. 4.

Mounted on basket shafts 31 and 131 are sprockets 63 and 163, respectively, about which chains 64 and 164 are respectively trained.

Mounted on, and secured to basket shaft 31 at the foot end of the table top (but omitted from basket shaft 131 at the head end) is a worm gear 65 which is in mesh with and driven by a worm 66 (FIG. 2) which is driven by drive motor 41 through a gear reducing unit 67. Thus, when the motor 41 is energized, under the control of a suitably mounted switch or switches, the worm gear 65 is driven rotationally thereby rotating the basket shaft 31. WYen basket shaft 31 is thus rotated, sprocket 63, which is keyed, pinned, or otherwise secured to the shaft 31, is rotated. Sprocket 63 drives a series of chains and sprockets, as well as suitable idler sprockets (not shown) for tension control. This series of chains and sprockets is identified comprehensively by reference numeral 70. The final sprocket of the series is identified 71. Sprocket 71 is keyed or otherwise secured to an elongated shaft 72 which extends the full length of the table top within the side rail 22. Thus, when motor 41 is energized, sprocket 71 drives the shaft 72 rotationally. For convenience, motor 41 is under the control of two switches, one at each end of the X-ray table top.

At the head end of shaft 72, as seen in the lower corner portion of FIG. 3, a sprocket 171 is keyed which, through a series of chains and sprockets 170 corresponding to those identified as 70 at the foot end of the table, drives sprocket 163 which is secured to basket shaft 131. Thus, basket shaft 131 is driven rotationally at the same time, in the same direction, and to the same extent, that the basket shaft 31 at the foot end is driven rotationally by the motor 41.

The chain-and-sprocket system 70 at the one end of the table top, and the corresponding chain-and-sprocket system 170 at the other end of the table top is specially adapted to accommodate to the fact that the basket is movable laterally relative to the table top. To this end, the chain-and-sprocket system includes a pair of rigid pivotal link arms 96 and 97 at the foot end with corresponding rigid link arms 196 and 197 at the head end. Looking at FIG. 2, it will be seen that the lower end of arm 96 is pivotally supported on shaft 78 mounted for rotation in support block 77. Shaft 78 carries the dual sprockets 75. The lower or inward end of arm 97 is pivotally supported on shaft 80 mounted on an extension 98 of the main carriage 43. The other ends of arms 96 and 97 are pivotally connected on common shaft 79 which is free to move. It will be seen that when the carriage 43 is driven to the left, as viewed in FIG. 2, shaft 80 travels along a horizontal straight path, while shaft 79 is pushed leftward along an arcuate path. In this movement the dual sprockets 73 do not rotate, and the chain 76 merely walks around the sprocket 74. Thus, the mechanism shown accommodates to the translational or lateral movement of the basket without causing rotation of the basket about the basket shafts. Rotation of basket 30 about the basket shafts only occurs when motor 41 is energized to drive the basket shaft 31 rotationally through worm 66 and worm gear 65. This driving of basket shaft 31 is transmitted through the chain-and-sprocket sYstems to the basket shaft 131 at the other end.

To prevent the basket 30 from being rotated beyond desired limits, electrical, and also mechanical, limiting devices may preferably be provided. In the drawings, worm gear 65 is shown as having keyed thereto a sector plate 92 having fixed thereto and projecting outwardly therefrom a limit pin 93 which is adapted to contact one or the other of a pair of limit switches 94, 95 to shut off the drive motor 41. One of the limit switches 94 projects against excessive rotation of the basket shaft and basket in the counter-clockwise direction (FIG. 2) while the other limit switch 95 projects against excessive rotation in the clockwise direction.

Mechanical protection against rotating the basket beyond desired limits is also provided, as seen in FIGS. 7 and 8, by affixing a pair of limit pins 37 to the end panel 32 of the basket 30. Similar limit screws 137 (FIG. 5) may also be provided in the panel 132 at the other end

of the basket. It will be seen from the schematic illustration in FIGS. 7 and 8 that when the basket has been rotated, either clockwise or counterclockwise, to the positions shown in phantom in FIG. 7, the stop pin 37 comes into contact with the bearing 35 to prevent further rotation of the basket. This assures that the basket is not rotated beyond the point where the cam plate 34 supports the basket on the bearing 35.

At least some of the component parts of the mechanism illustrated and described herein may be formed of lightweight metal in order to reduce the weight and/or cost of the equipment. For example, the bearing rails 51 and 52 for the transversely movable main carriage 43, and the bearing rails 46, 47 for the vertically movable sub-carriage 45, may preferably be formed of aluminum having a hardened surface, hardened, for example, by the Tufram process, a process of General Magnaplate Corporation of Linden, N.J. When applied to aluminum, the Tufram process produces a surface as hard as hardened steel, as well as a permanently dry lubricating surface.

Attention is called to the contour of the continuous cam surface of the cam plate 34, clearly seen in FIG. 7. This contour is specially designed to keep the exterior surface of the patient at a constant level, relative to the X-ray plane located beneath the X-ray table top, as the basket is rotated to different angular positions.

The apparatus shown and described has several features which perhaps should be summarized:

First, the basket is driven from both ends. This is highly desirable and is necessary to avoid the torsional stress and twisting of the basket which would occur were it to be driven only from one end.

Secondly, the basket is driven both rotationally and laterally. To accomplish this, and driven at both ends, the pivotal-arm sprocket-and-chain system shown and described is provided. This is an important part of the apparatus.

Lastly, the basket is supported by a continuous cam having a shape or contour specially designed to keep the exterior surface of the patient at a constant level relative to the X-ray image plane beneath the X-ray table.

What is claimed is:

1. Apparatus for supporting a patient for X-ray examination, said apparatus comprising:
   a. An X-ray table top having a panel at each end;
   b. Support means for said table top;
   c. Main carriage means for each end and means for mounting said carriage means for transverse movement on each of said table top end panels;
   d. A basket for receiving a patient, said basket having a panel at each end;
   e. First cam means secured to each of said carriages;
   f. Second cam means secured to each of the end panels of said basket and operatively engaging said first cam means for supporting said basket thereon;
   g. Shaft means on the longitudinal axis of said basket at each end and secured to said basket end panels;
   h. Means journalling said basket shaft means in said carriage means at each end;
   i. Drive means, including means at each end and interconnecting means therebetween, for rotating said basket shaft means, said basket and basket shaft means during such rotation being adjusted vertically by the cooperative action of Said first and second cam means; and
   j. Drive means, including means at each end and interconnecting means therebetween, for moving said carriage means transversely to move said basket laterally relative to said table top while automatically adjusting the basket shaft drive means at each end to accommodate to driving said basket shaft means in its new transverse location.

2. Apparatus according to claim 1 wherein said means for moving said carriage means transversely comprises:
   a. Elongated screw means at each end supported on said table top end panels;
   b. Nut means at each end mounted on said elongated screw means,
   c. Means at each end connecting said nut means to said carriage means; and
   d. Power means at one end only for driving said screw means at each end rotationally, said screw means at the other end being driven by said interconnecting means.

3. Apparatus according to claim 1 wherein said means journalling said basket shaft means in said carriage means comprises:
   a. A sub-carriage and means supporting said sub-carriage for vertical movement within said main carriage means.

4. Apparatus according to claim 3 wherein said drive means for rotating said basket about the axis of said basket shaft means comprises:
   a. A gear mounted on and secured to said basket shaft means at one end of said basket;
   b. Gear drive means mounted on said sub-carriage and in mesh with said gear;
   c. Motor means mounted on said sub-carriage for driving said gear drive means;
   d. An interconnecting shaft extending from one end of said table top to the other;
   e. A series chain-and-sprocket means at each end of said table top, the sprocket means at one end of the series being mounted on a shaft fixed in said main carriage means, the sprocket means at the other end of the series being mounted on a shaft having a fixed position in said table top;
   f. A pair of rigid arms having their adjacent ends pivotallY mounted together on a common movable shaft, the distal end of one of said arms being pivotally mounted on said fixed shaft of said sprocket means at one end of said series, the distal end of the other of said arms being pivotally mounted on said fixed shaft of the sprocket means at the other end of the series, intermediate sprocket means being mounted on said common movable shaft, and
   g. Means connecting said sprocket means at said other end of said series to said interconnecting shaft.

5. Apparatus according to claim 4 wherein:
   a. Said means connecting said sprocket means at said other end of said series to said interconnPcting means comprises an additional sprocket mounted on and secured to said interconnecting shaft and a chain connecting said additional sprocket to said other end sprocket.

6. Apparatus according to claim 1 wherein:
   a. said end panels of said table top are slotted;
   b. Said first cam means comprises a cam shaft mounted in said main carriage and projecting through a slot in said table top end panel;

c. A cam bearing is mounted for rotation on said cam shaft;

d. Said second cam means comprises a contoured cam plate which bears on said cam bearing to support said basket, whereby rotation of said basket shaft means causes said basket and cam plate to rotate, whereby said cam plate and cam bearing cooperate to change the elevational position of said basket shafts.

7. Apparatus according to claim **6** wherein:

a. Said cam plate is so contoured as to maintain the exterior surface of a patient in the basket at a substantially constant distance above the table top during rotation of said basket.

8. Apparatus according to claim **1** wherein said means for mounting said carriage means for transverse movement on said table top end panel includes bearing rails secured to said end panel.

9. Apparatus according to claim **8** wherein:

a. Said bearing rails are formed of surface-hardened aluminum.

10. Apparatus according to claim **9** wherein:

a. Said surface-hardened aluminum bearing rails are Tufram treated.

11. Apparatus according to claim **3** wherein said means for rotating said basket about the axis of said basket shaft means comprises:

a. A worm gear mounted on and secured to said basket shaft means;

b. A worm mounted on said sub-carriage and in mesh with said worm gear; and

c. Motor means mounted on said sub-carriage for driving said worm shaft.

12. Apparatus according to claim **11** wherein said means for rotating said basket also includes:

a. An interconnecting shaft extending from one end of said table top to the other;

b. A series chain-and-sprocket means at each end of said table top, the sprocket means at one end of the series being mounted on a shaft fixed in said main carriage means, the sprocket means at the other end of the series being mounted on a shaft having a fixed position in said table top;

c. A pair of rigid arms having their adjacent ends pivotally mounted together on a common movable shaft, the distal end of one of said arms being pivotally mounted on said fixed shaft of said sprocket means at one end of said series, the distal end of the other of said arms being pivotally mounted on said fixed shaft of the sprocket means at the other end of the series, intermediate sprocket means being mounted on said common movable shaft, and

d. Means connecting said sprocket means at said other end of said series to said interconnecting shaft.

13. Apparatus according to claim **12** wherein:

a. Said means connecting said sprocket means at said other end of said series to said interconnecting means comprises an additional sprocket mounted on and secured to said interconnecting shaft and a chain connecting said additional sprocket to said other end sprocket.

14. Apparatus according to claim **13** wherein:

a. Said end panels of said table top are slotted;

b. Said first cam means comprises a cam shaft mounted in said main carriage and projecting through a slot in said table top end panel;

c. A cam bearing is mounted for rotation on said cam shaft; and

d. Said second cam means comprises a contoured cam plate which bears on said cam bearing to support said basket, whereby rotation of said basket shaft means causes said basket and cam plate to rotate, whereby said cam plate and cam bearing cooperate to change the elevational position of said basket shafts.

15. Apparatus according to claim **14** wherein:

a. Said cam plate is so contoured as to maintain the exterior surface of a patient in the basket at a substantially constant distance above the table top during rotation of said basket.

16. Apparatus according to claim **15** wherein said means for mounting said carriage means for transverse movement on said table top end panel includes bearing rails secured to said end panel.

17. Apparatus according to claim **16** wherein:

a. Said bearing rails are formed of surface-hardened aluminum.

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