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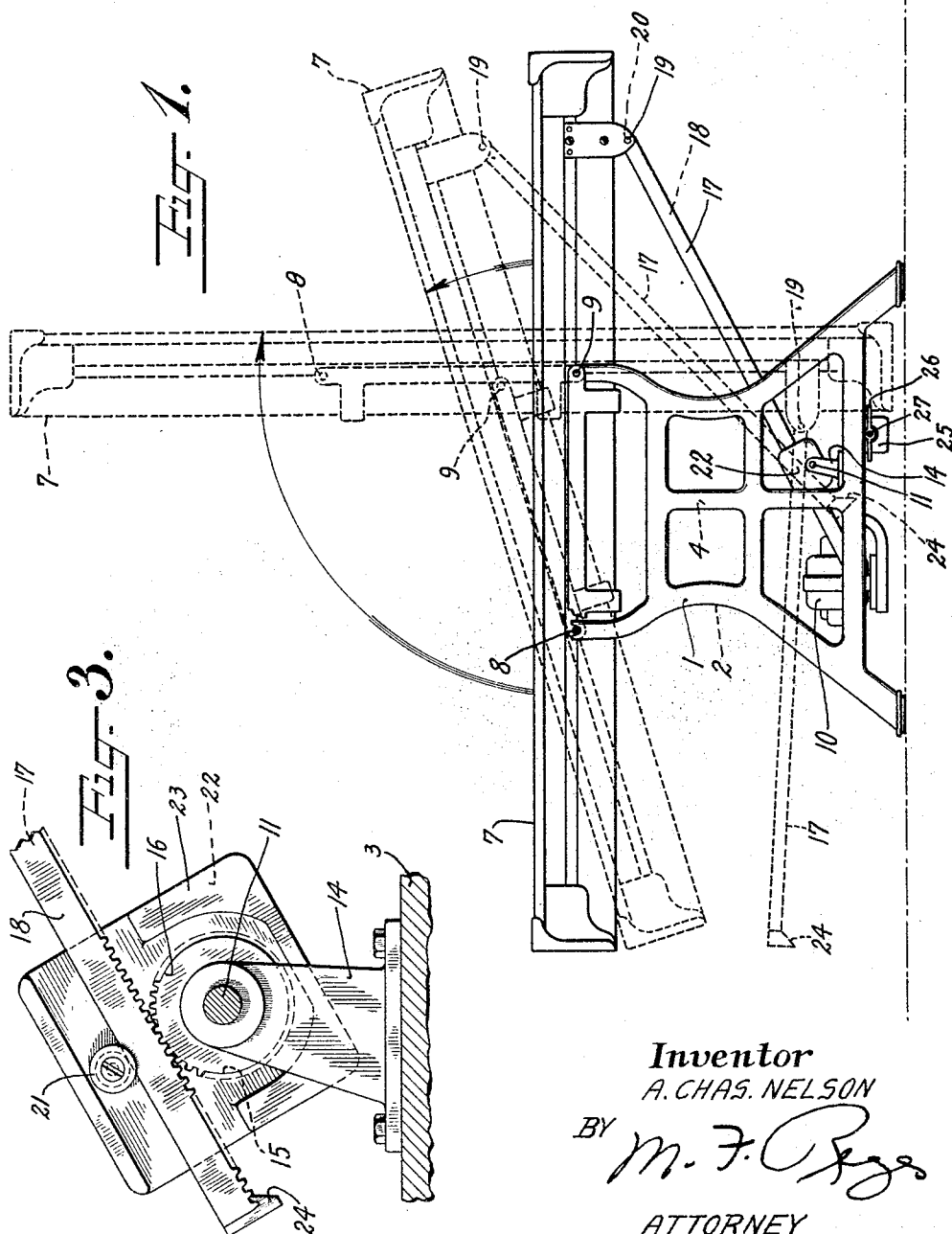
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TILT TABLE

Filed Nov. 1, 1930

2 Sheets-Sheet 1



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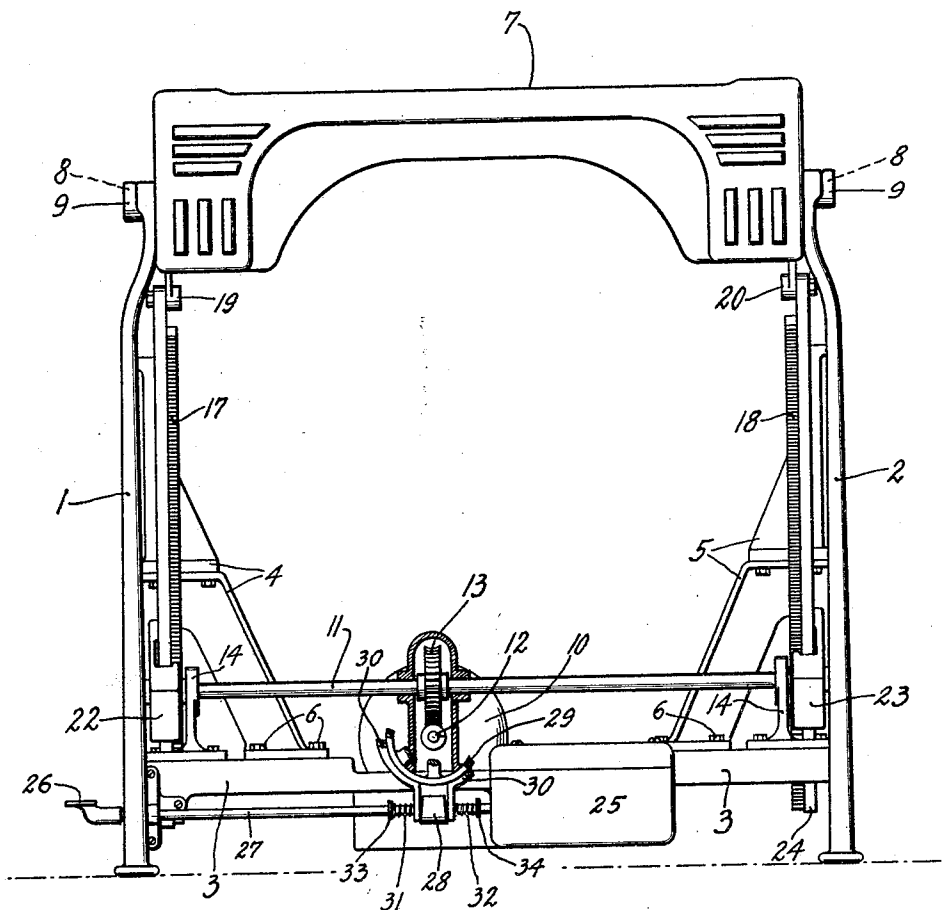
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Fig. 2.



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TILT TABLE

Application filed November 1, 1930. Serial No. 492,701.

My invention relates to tilt tables and has particular reference to that type of tables commonly used in X-ray and fluoroscopic examinations wherein the table may assume any position from below a horizontal, which is known to the art as the Trendelenburg position, to a full vertical position.

Tilt tables of this general character, known in the prior art are usually constructed to be operated by hand or, when operated in any other manner, must assume definite fixed positions at predetermined angles. Counter-weights have, heretofore, been provided to counter balance the weight of the table in its movements about its pivot and means are usually provided to lock the table in limited positions.

It is accordingly an object of my invention to provide a tilt table that may be automatically moved to any desired position about a plurality of transverse axes.

Another object of my invention is to provide a tilt table wherein the necessity for a counter-weight is dispensed with and in which the table remains in the desired position without locking, until altered by the operator.

Further objects of my invention will become apparent to those skilled in the art by reference to the accompanying drawings wherein;

Fig. 1 is a side view in elevation of my device showing the table tilted in various positions;

Fig. 2 is an end view of my device with part of the structure broken away to more clearly illustrate the mechanism; and

Fig. 3 is a sectional view showing in detail one of my swivel housings containing the guide roller for the gear racks.

Referring now to the drawings in detail I have shown a main base comprising standards 1 and 2 which are connected together by means of a base member 3. Angular brackets 4 and 5 extend from the base member to the standards, for the purpose of strengthening the structure, and are rigidly secured thereto, in a suitable manner, such as cap screws 6.

The standards, near their upper ends, form a forked portion of substantially U shape to

which a table 7 is fulcrumed at two transverse axial points. The table 7 is positioned upon the standards so that the center thereof approximates the center of the standards, thus equalizing the weight. The table is fulcrumed at 8 to one side of the center thereof to permit movement in one direction to below horizontal or into the Trendelenburg position.

Another fulcrum point 9, positioned the opposite side of the center from the axial point 8, upon the other portion of the fork, is provided to allow movement of the table about this axis to a vertical position. As illustrated in Fig. 1 movement of the table 7, in a counter-clockwise direction about the axis 8, moves the table into the Trendelenburg position, while movement about the axis 9, in a clockwise direction permits movement into the vertical position.

An electric motor 10 is secured in the usual manner to the base member 3 and is arranged to drive a shaft 11, by means of a worm 12 and worm-gear 13.

The shaft 11 is journaled in suitable bearing brackets 14 which are also secured to the base member 3. Pinion gears 15 and 16 are secured to each end of the shaft 11 for rotation therewith and engage gear racks 17 and 18. These racks are pivoted, at their upper ends 19 and 20 to the table 7 and are maintained in mesh with the pinion gears 15 and 16, by suitable means, such as rollers 21 within swivel housings 22 and 23 (see Fig. 3).

A stop 24 is affixed to the free end of the gear racks to prevent movement of the racks out of the swivel housings when the table is moved to below horizontal or the Trendelenburg position. The worm and worm-gear, together with the shaft, racks and pinions, constitute a speed reduction gearing which may be proportioned, relative to the speed of the motor, to give the speed at which it is desired to move the table.

An electric switch 25 is secured to the base member 3 and is controlled by means of a winged foot pedal 26, secured to one end of a shaft 27. A cam collar 28, provided with oppositely tapering ends, is rigidly secured to the shaft 27, at a point in axial alignment

with the worm 12. A brake drum 29 is secured to the shaft of the motor 10 and is in turn surrounded by a brake band 30.

This brake band is provided with lugs positioned each side of the cam collar and coil springs 31 and 32 are disposed between these lugs and fixed collars 33 and 34. These springs tend to bias the lugs toward each other thus contracting the brake band about the drum.

The electric switch 25 is connected to the motor 10, in a well known manner, so that movement of the winged pedal 26 in either direction, operates the switch. The switch upon being depressed in one direction completes a circuit to the motor, thus moving the table to the Trendelenburg position. A depression of the pedal 26 in an opposite direction will likewise operate the motor in an opposite direction to move the table to a vertical position.

When the pedal is depressed in either direction the cam collar 28 is rotated with the shaft 27, so that the widest portion thereof contacts the lugs and expands the brake band 30 against the bias of the springs 31 and 32. After the table has moved to the desired position the operator returns the winged pedal 26 to the horizontal or "Off" position. This movement again brings the narrowest portion of the cam collar 28 into contact with the lugs thus allowing the biasing effect of the springs 31 and 32, to contract the brake band 30 around the drum 29 preventing any coasting of the table.

In this manner the brake is always applied except when the switch is moved to the "On" position and the table is maintained at the desired angle by the speed reduction gearing and the brake band.

It can thus be seen that I have provided a tilt table that is simple in construction wherein the necessity for a counter-balance is dispensed with and which can be automatically moved and maintained in any desired position from the Trendelenburg to a vertical position.

Although I have shown and described one specific embodiment of my invention I do not desire to be limited thereto as various other modifications of the same may be made without departing from the spirit and scope of the appended claims.

What is claimed is:

1. In a tilt table, a pair of standards, a rotatable table top fulcrumed to revolve about two transverse axes extending between said standards, an electric motor for moving said table top, an electric switch for operating said motor in two directions of rotation, said motor when operated in one direction rotating said table top about one of said fulcrum points and when operated in the other direction rotating said table top about the other of said fulcrum points.

2. In a tilt table, a pair of standards, having a plurality of forked portions at their upper ends, a rotatable table top fulcrumed to each forked portion of said standards, an electric motor for moving said table top, an electric switch for operating said motor in two directions of rotation, said motor when operated in one direction rotating said table top about one of said fulcrum points and when operated in the other direction rotating said table top about the other of said fulcrum points.

3. In a tilt table, a pair of standards, a rotatable table top fulcrumed to revolve about two transverse axes extending between said standards, an electric motor for moving said table top, mechanism connecting said motor to said table top, an electric switch for operating said motor in two directions of rotation, said motor when operated in one direction of rotation operating said mechanism to rotate said table top about one of said fulcrum points, and when operated in the opposite direction operating said mechanism to rotate said table top about the other of said fulcrum points.

4. In a tilt table, a pair of standards, a rotatable table top fulcrumed to revolve about two transverse axes extending between said standards, an electric motor for moving said table top, speed reduction gearing connecting said motor to said table top, an electric switch for operating said motor in two directions of rotation, said motor when operated in one direction operating said speed reduction gearing to rotate said table top about one of said fulcrum points and when operated in the opposite direction operating the speed reduction gearing to rotate said table top about the other of said fulcrum points.

5. In a tilt table, a pair of standards, a rotatable table top fulcrumed to revolve about two transverse axes extending between said standards, an electric motor for moving said table top, an electric switch for operating said motor in two directions of rotation, said switch upon depression in one direction operating said motor to rotate said table top about one of its fulcrum points, and operable upon depression in the opposite direction to rotate said table top about the other of said fulcrum points.

6. In a tilt table, a pair of standards, a rotatable table top fulcrumed to revolve about two transverse axes extending between said standards, an electric motor for moving said table top, speed reduction gearing connecting said motor to said table top, an electric switch for operating said motor in two directions of rotation, a brake operably associated with said switch, said switch when operated to rotate said motor in either direction of rotation simultaneously releasing said brake.

7. In a tilt table, a pair of standards, a rotatable table top fulcrumed to revolve about two transverse axes extending between said standards, an electric motor for moving said table top, mechanism connecting said motor to said table top, an electric switch for operating said motor in two directions of rotation, said motor when operated in one direction, rotating said table top about one of said fulcrum points and when operated in the other direction, rotating said table about the other of said fulcrum points, and a brake associated with said mechanism and said motor, and operable by said switch, to prevent coasting of the table top and motor.

8. In a tilt table, a pair of standards, a rotatable table top fulcrumed to revolve about two transverse axes extending between said standards, an electric motor for moving said table top comprising a worm carried by said motor, a shaft, a worm-gear carried by said shaft and meshing with said worm, gears carried by each end of said shaft and encased in swivel housings, gear racks pivoted at one end to said table top and passing through said swivel housings, rollers in said swivel housings and a stop carried by the free end of said racks to maintain the racks in mesh with said gears, and an electric switch for operating said motor in two directions of rotation, said motor when operated in one direction operating said gear racks to rotate said table about one of its fulcrum points and when operated in the opposite direction operating said gear racks to rotate said table top about the other of said fulcrum points.

In testimony whereof, I have hereunto subscribed my name this 22nd day of October 1930.

ALBERT CHARLES NELSON.

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