Dec. 18, 1956 H. J. BROWN 2,774,885

X-RAY APPARATUS

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Fig. 1

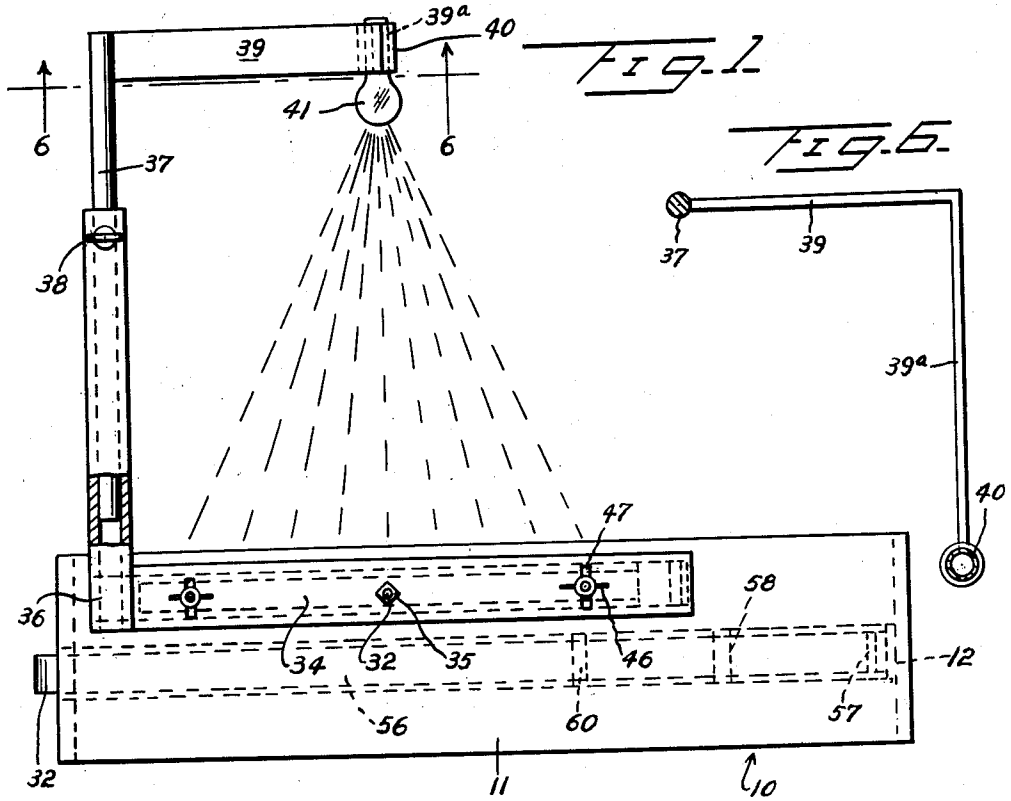


Fig. 6

Fig. 4

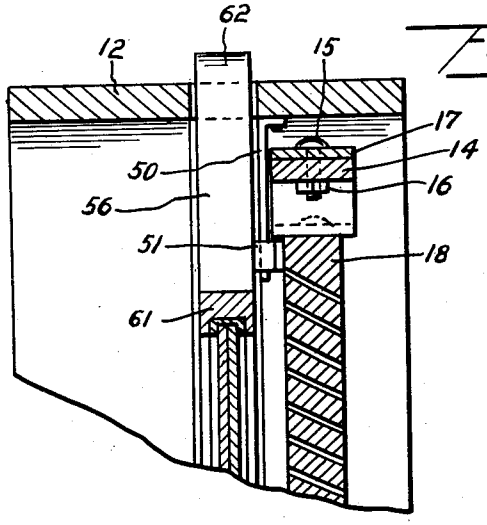
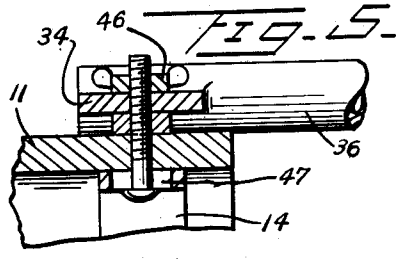


Fig. 5



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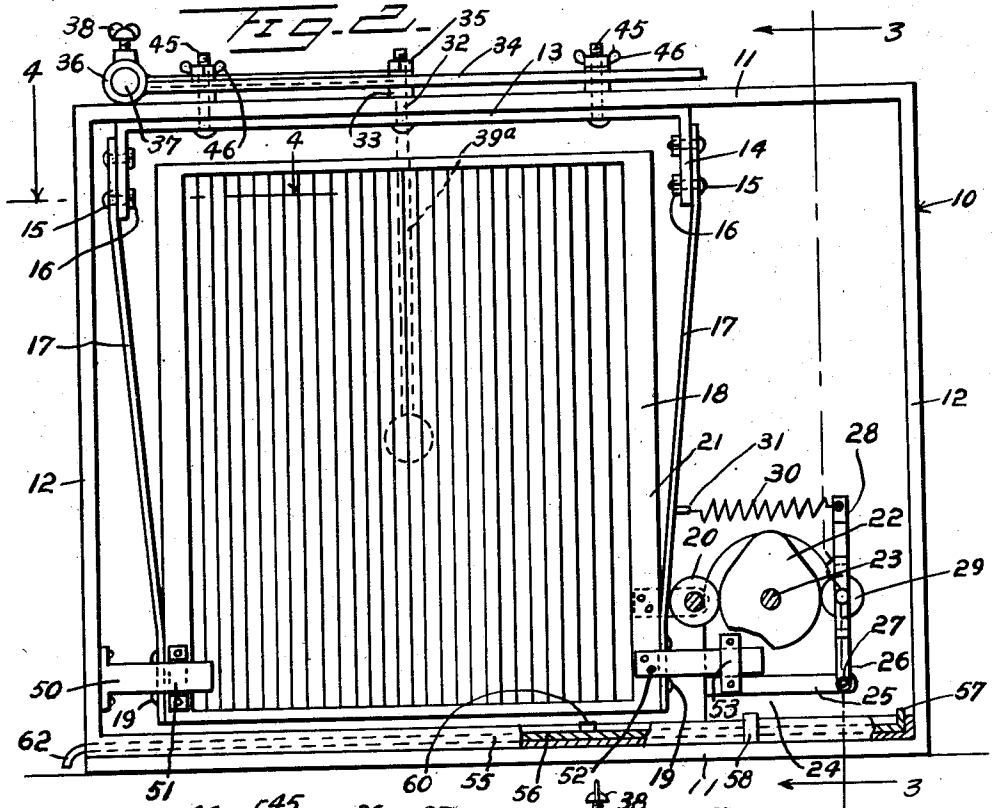
ATTORNEYS

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X-RAY APPARATUS

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Fig. 2



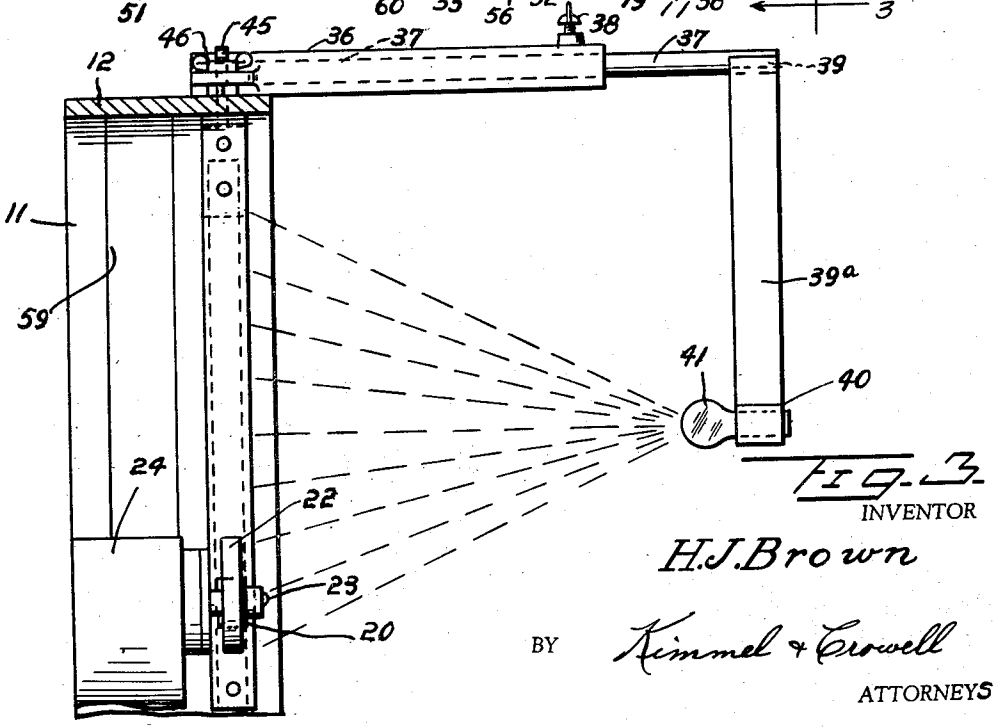


Fig. 3

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United States Patent Office 2,774,885 Patented Dec. 18, 1956

2,774,885

X-RAY APPARATUS

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Application January 22, 1954, Serial No. 405,635

1 Claim. (Cl. 250—62)

This invention relates to an X-ray apparatus, and more particularly to a grid or screen mounting for shifting movement in an improved manner, and comprises an improvement over my Patent No. 2,132,774, dated October 11, 1938, entitled X-Ray Apparatus.

A primary object of this invention is the provision of improved mechanism for shifting or reciprocating the grid in the frame in which it is mounted so that the movement thereof will be substantially continuous and pause in motion between movement of the screen or grid in opposite direction will be practically eliminated.

An additional important object of this invention is the provision of a device of this character having means whereby the grid may be readily tilted from a horizontal or vertical position to either side to a limited degree, to provide for additional X-ray views taken from slightly different angles.

Still another object of the invention is the provision of a guide means associated with the reciprocating grid or screen which tends to eliminate any slight vibration incident to the reciprocating movement thereof.

Still other objects reside in the combination of elements, arrangement of parts, and features of construction, all as will be more fully pointed out hereinafter, and shown in the accompanying drawings wherein there is disclosed a preferred embodiment of this inventive concept.

In the drawings:

Figure 1 is a top plan view of one form of device embodying features of the instant invention, certain concealed parts being indicated in dotted lines, and certain portions thereof being broken away.

Figure 2 is a side elevational view of the construction disclosed in Figure 1.

Figure 3 is an enlarged sectional view taken substantially along the line 3—3 of Figure 2, as viewed in the direction indicated by the arrows.

Figure 4 is an enlarged sectional view taken substantially along the line 4—4 of Figure 2, as viewed in the direction indicated by the arrows.

Figure 5 is an enlarged fragmentary sectional view showing a constructional detail.

Figure 6 is a sectional view taken along the line 6—6 of Figure 1, as viewed in the direction indicated by the arrows.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Having reference now to the drawings in detail, there is generally indicated at 10 a grid frame, comprising a rectangle including top and bottom portions 11 and side portions 12, and is open at both front and rear.

Secured to the inner side of top portion 11 is a plate 13, having depending lugs or flanges 14 at either end thereof. Flanges 14 have secured thereto, as by means of bolts 15 and nuts 16, inwardly extending resilient fingers or spring hangers 17, which tend to support the lower end of a grid or screen 18, being secured thereto as by means of bolts 19, thus providing a reciprocal mounting for grid 18.

Reciprocation of the grid is effected through a roller 20, carried by a bracket 21 secured to the edge of grid 18, which is adapted to be moved by means of a heart-shaped cam 22 which is rotated by the drive shaft 23 of a suitable electric motor 24, the latter being suitably mounted on a support bracket 25 carried by the frame 10 and energized in any desired manner from any suitable source of current.

Bracket 25 has mounted thereon a plate 26 to which is pivotally secured, as by a pivot 27, an arm 28 which carries a rotatable roller 29, engaging the opposite side of cam 22 from roller 20, in order to provide continuous engagement of cam 22 with roller 20.

A spring 30 connected between an eye 31 carried by spring hangers 17 and the upper end of lever member 28 serves to hold roller 29 closely adjacent the cam 22.

Plate 13 is secured to the top wall 11 of frame 10 as by means of a bolt 32 and a nut 33, the bolt 32 extending through a central aperture in a bar 34, and being secured in position as by means of an outer nut 35, the tension exerted by nut 35 being sufficiently loose to permit pivotal movement of plate 13, in a manner to be more fully described hereinafter.

The bar 34 has secured to one end thereof a tubular member 36, within which is slidably positioned a rod 37, which is adapted to be secured in position by means of a set screw 38. A bar 39 extends inwardly from the top of rod 37, and supports in any suitable mounting 40, an X-ray tube 41 of conventional design.

Plate 13 is additionally secured to bar 34 through the top 11 of frame by means of bolts 45, provided exteriorly with wing nuts 46, the bolts extending through suitable bores in plate 34 into elongated slots 47 in such manner that the grid assembly may be tilted right or left relative to a normal vertical plane in order to provide for the taking of X-ray pictures from slightly different angles.

As best shown in Figure 6, the plate 39 is L-shaped and includes a forwardly extending arm 39a mounting the tube holder 40.

Guide means are provided for precluding vibration of the device, and include a horizontally extending guide plate 50 mounted on one of side walls 12, which extends through a guide bracket 51 carried by grid 18. A second guide plate 52 is secured to the opposite side of grid 18 in alignment with guide plate 50 and engages a guide bracket 53 mounted on support bracket 25 to preclude any vibration of the grid during the reciprocal movement thereof.

From the foregoing it will now be seen that there is herein provided an improved X-ray apparatus and grid mounting therefor, which is mounted for shifting movement with a minimum of stoppage between the reversal in the direction of travel thereof, in which vibration of the grid is minimized, and in which the grid may be tilted out of its normal plane to a slight extent to permit the taking of X-ray photographs from different directions, and which accomplishes all of the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

The bottom 11 of the frame 10 has a channel guide 55 secured thereto within which a slide bar 56 engages. The inner end of the bar 55 has a fixed lug 57 which is adapted to engage a fixed stop 58 carried by guide 55 when slide bar 56 is pulled outwardly or to the left as viewed in Figure 2. Bar 56 engages through an elongated opening 59 formed in a side wall 12. Bar 56 has a rubber bumber 60 secured thereto against which the cassette 61 is adapted to engage. Bar 56 also has a finger hold 62 at its outer end so that bar 56 can be easily pulled outwardly until lug 57 engages stop 58. At this time cassette 61 is exposed sufficiently so that it can be grasped and pulled completely out of the frame 10.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiment hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative and not in a limiting sense.

What is claimed is:

In an X-ray apparatus, a frame, a grid disposed in said frame, a supporting plate carried by said frame, spring hangers connecting said plate and said grid, means for imparting reciprocating movement to said grid in said frame, means for tilting said grid relative to the plane of said frame, said means including a pivotal mounting for said plate, slots in said plate in opposite sides of said mounting, bolts fixed to said frame entirely through said slots, means releasably securing said bolts in a selected position in said slot, said last-mentioned means comprising wing nuts, and adjustable supporting means carried by said plate for supporting a tube mounting, said means being movable in a direction perpendicular to said frame.

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