March 3, 1931. L. M. ROSE 1,795,042

ORTHODIAGRAPHY

Filed May 31, 1928

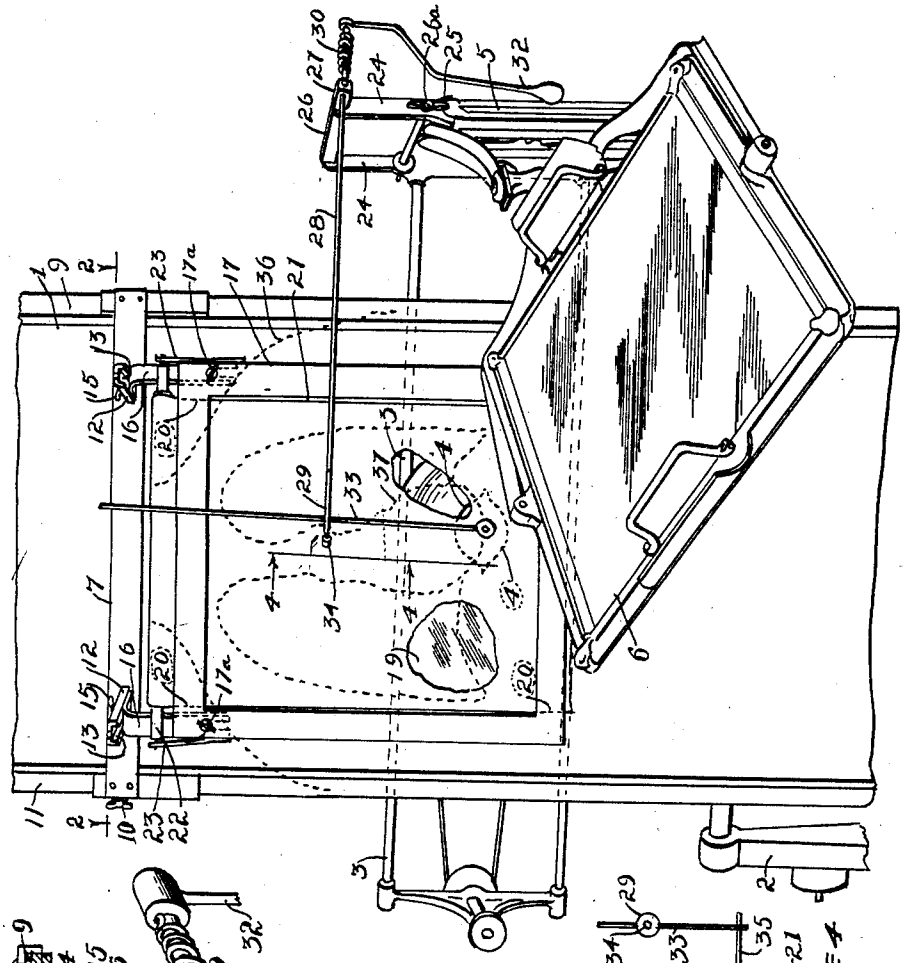


FIGURE 1

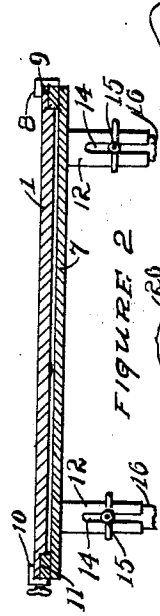


FIGURE 2

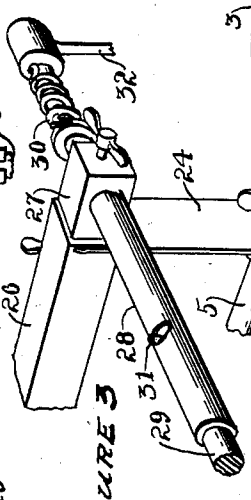


FIGURE 3

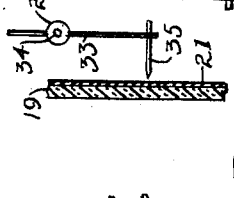


FIGURE 4

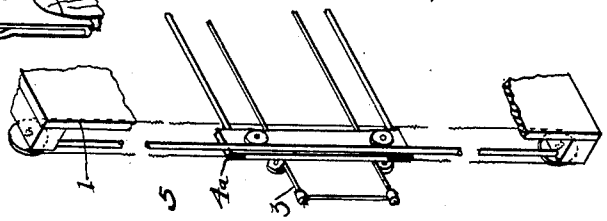


FIGURE 5

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ORTHODIAGRAPHY

Application filed May 31, 1928. Serial No. 281,859.

This invention relates particularly to a means for outlining a viscus, such as the heart, through the utilization of parallel roentgenographic rays.

It is one object of the invention to provide a means of the character indicated wherein the exact size of the organ to be delineated may be marked on a suitable surface positioned directly in front of the patient and between the patient and the fluoroscopic screen whereby accurate results may be quickly obtained.

It is another object of the invention to provide a simple means for supporting a suitable material, such as paper, directly in front of the patient and adjustable both in a plane parallel with the table and also at right angles thereto.

It is still another object of the invention to provide a simple and positively acting marking device readily adjustable relative to the surface to be marked upon when positioned as above set forth, and movable as an integral part of the X-ray tube carriage, and adjustable relative to the tube itself.

It is also an object of the invention to provide a device of the character indicated that will be economical to manufacture, simple in form and construction, and highly efficient in its practical application.

In the drawing:

Figure 1 is a perspective illustration showing the preferred embodiment of my invention in operative position relative to a fluoroscopic screen, table and X-ray tube.

Figure 2 is a section on 2—2, Figure 1.

Figure 3 is a perspective illustration of a portion of the marker supporting mechanism.

Figure 4 is a detail section on 4—4 of Figure 1.

Figure 5 is a diagrammatic perspective illustration showing the mounting of the carriage for the fluoroscopic screen and the X-ray tube on the table, parts broken away.

Referring now more particularly to the drawing, I show at 1 a portion of a combination X-ray table mounted in the usual manner upon standards as 2 and fitted with a carriage 3. The carriage 3 carries the tube indicated in dotted lines at 4 and may be moved at will in any direction in a plane parallel with the table 1 through the medium of parts 4*a*. On arm 5 and extending forwardly of the table 1 is mounted a fluoroscopic screen 6, the arm and screen, of course, moving as an integral part of the carriage. Inasmuch as this mechanism is common in the art its structural details are not shown.

In effecting my invention I first provide a bar 7 fitted with a hook 8 on one end adapted to engage the flange 9 on one edge of the table 1, and a clamp 10 on the other end adapted to engage the flange 11 on the other edge of the table. Mounted on bar 7 are outwardly directed and spaced arms 12 provided with grooves 13 on their under sides and slotted as at 14. Slidably mounted in grooves 13 and adjustably secured therein by bolts 15 are arms 16 extending downwardly in parallel relation to table 1 and supporting a frame 17 by means of bolts 17*a*.

The frame 17 is slotted at the top and bottom as at 20 so that a sheet of paper as 21 may be drawn therethrough from a roller 22 mounted on brackets 23 on frame 17. A sheet of glass as 19 is fitted in the frame 17 just back of the paper 21 to form a support therefor during the marking process. By means of this construction the paper may be renewed as desired and it must be readily adjusted as to distance from table 1 and also longitudinally thereof.

The marking portion of the device is constructed in the following manner. At 24 are provided a pair of brackets having sockets 25 formed in their lower ends to seat on shoulders as 25*a* on arm 5, the brackets being held rigidly in position on the arm by means of bolts 26*a*.

Horizontally mounted upon the upper ends of the brackets 24 is a square tube 26, this tube being also vertically positioned relative to the plane of table 1. Adjustably mounted in the tube 26 is a bar 27, and adjustably mounted in the forward end of bar 27 is a tubular element 28, this element lying at right angles to the axis of the bar 27 and parallel with the supporting bar 7 on table 1. The tube 28 is normally held in a fixed position

relative to the bar 27, and in this tube is revolubly mounted a rod 29. A spring 30 is inserted between the tube and rod as shown and is so connected to them as to urge the rod into engagement with stop 31. A tripping arm 32 is mounted on the rod 29 as shown.

A finger is shown at 33 passing through the free end of rod 29 at right angles to its longitudinal axis and normally lying in a plane parallel with the plane of table 1. This finger is adjusted longitudinally of its axis by means of a set screw 34 in the end of rod 29. In one end of the finger 33 is mounted a pencil as 35 with its point positioned directly over the paper 21.

In preparing the device for use the point of the pencil 35 is adjusted to coincide with the axis of the rays from the X-ray tube. Since the tube, pencil and screen are all mounted on the one carriage 3 their relative positions will not be altered during the marking process. The patient having been placed in the position desired relative to the table 1, the frame 17 is adjusted over the part to be outlined and the point of the pencil adjusted to a position spaced a little from the surface of the paper 21 in the said frame.

The screen having been placed in position the carriage 3 is now moved to bring the point of the pencil on the edge of the shadow depicting the area to be outlined. A touch on the tripping arm will now throw the pencil forwardly into contact with the paper to make a mark at that point. In this manner the pencil is moved along the edge of the shadow and operated at spaced intervals to record its path of travel on the surface of the paper 21. A partial outline of the human body is shown at 36, and a dotted outline of the heart as made by the mechanism herein described is shown at 37.

It is to be understood, of course, that while I have herein shown but one specific embodiment of the invention, changes in form, construction, and method of assembly and operation may be made within the scope of the appended claims.

I claim:

1. The combination with an X-ray tube and fluoroscopic screen carriage operatively mounted relative to an X-ray table, of a record sheet mounted in spaced relation to the face of the table, a revoluble arm mounted on the carriage and extending over the record sheet, a marker mounted on the arm and overlying the record sheet, means for normally holding the marker in spaced relation to the sheet, and means for rotating the arm against said holding means.

2. The combination with an X-ray table an X-ray tube and fluoroscopic screen carriage operatively mounted relative to the table, of a record sheet mounted in spaced relation to the face of the table, an extensible arm mounted on the carriage at one side of the table and at right angles to the plane of the table, a revoluble rod mounted on the arm and extending over the record sheet, a marker arm adjustably mounted in the rod, a marking element mounted in the marker arm, and spaced a distance from the rod, resilient means for normally holding the marking element in spaced relation to the sheet, and means for rotating the rod against the tension of the resilient means.

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