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G. C. LECHENGER

X-RAY MACHINE

Filed May 12, 1921

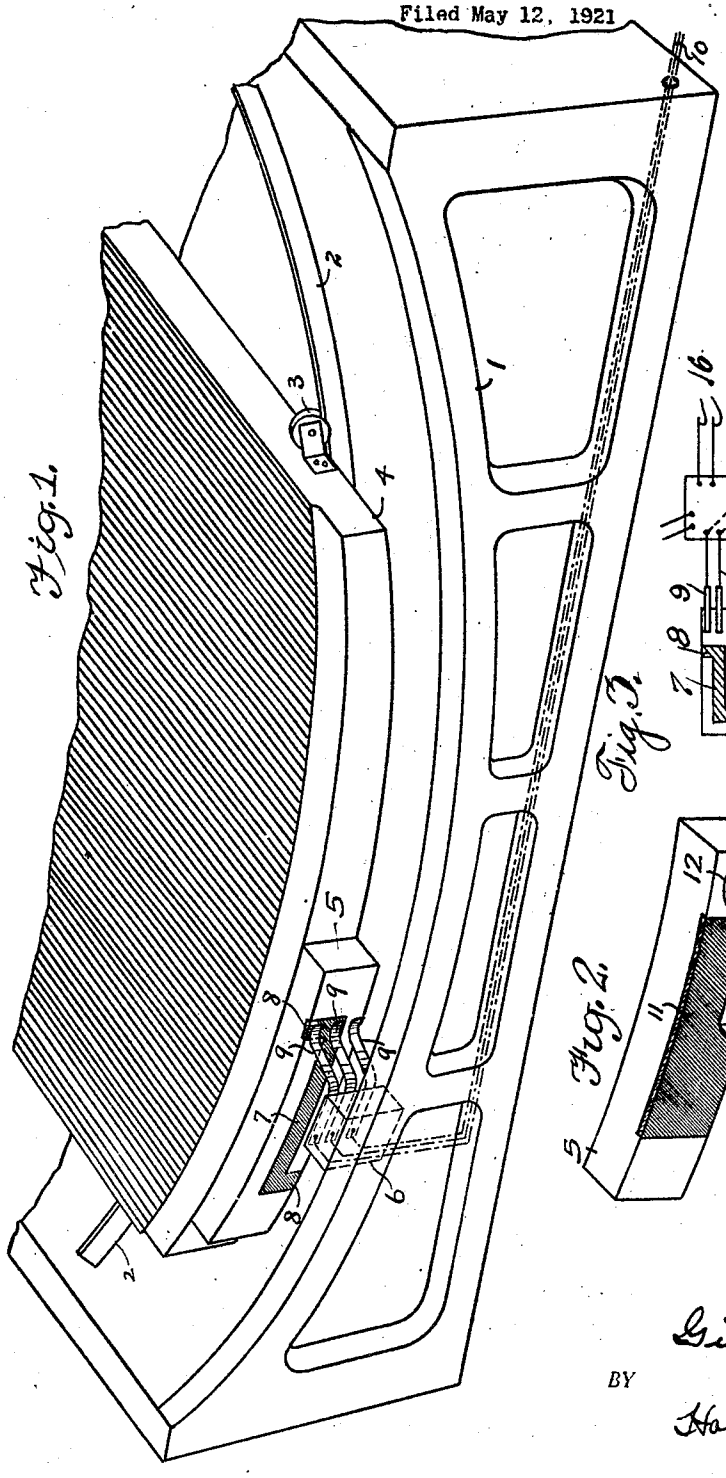


Fig. 1.

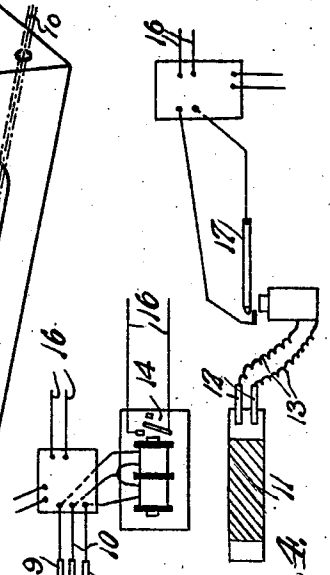


Fig. 4.

Fig. 3.

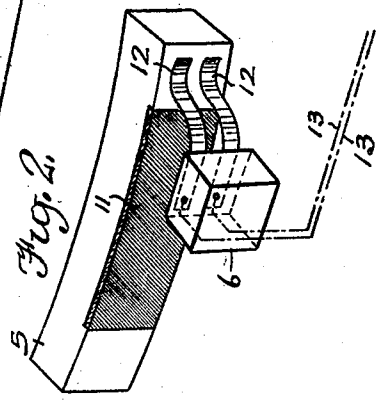


Fig. 2.

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UNITED STATES PATENT OFFICE.

GILBERT C. LECHENGER, OF HOUSTON, TEXAS.

X-RAY MACHINE.

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This invention relates to new and useful improvements in X-ray machines, and pertains particularly to a Buckey diaphragm.

One object of the invention is to provide an attachment for machines of the character specified, working through the usual relay, whereby the circuit through the transformer is automatically completed and broken.

Another object is to provide an attachment through which the movable grid operates to automatically effect the completing and breaking of the circuit through the primary wires to the X-ray transformer.

With the above and other objects in view this invention has paticular relation to certain novel features of construction, operation and arrangement of parts, an example of which is given in this specification and illustrated in the accompanying drawings, wherein:—

Figure 1 is a fragmentary perspective view of an X-ray machine showing one form of the attachment applied thereto.

Figure 2 shows a perspective view of another form of the attachment, and Figures 3 and 4 respectively, show the switches for the respective forms of attachment showing also the wiring connected therewith.

Referring now more particularly to the drawings, wherein like numerals of reference designate similar parts in each of the figures, the numeral 1 designates the framework of the machine which may be of any conventional form. The upper side of this framework is concaved and at each end thereof there are the transverse tracks 2, 2, provided to receive the grooved rollers 3, which are fastened to, and support, the grid 4. The grid is of well known construction to those familiar with this art and a specific description of the construction and use thereof is not deemed necessary, it being sufficient to say that it is formed of a suitable frame and lengthwise strips of wood and lead, alternately arranged and fastened in said frame.

In making a picture this grid moves transversely with respect to the framework and the plate carried thereby and placed underneath the grid. The patient rests on a stationary aluminum apron which is fastened onto the framework and located above the grid. Neither the plate beneath the grid, nor the apron, or tube above it, are shown in the drawings as these are conventional parts common to all machines of this character.

Fastened to one end of the grid there is an oblong block 5 formed of insulating material and fastened to the framework opposite this block is an anchor 6 formed also of insulating material.

In the form shown in Figure 1, the outer face of the block 5 has a counter-sunk strip 7 of metal, such as copper or brass, which extends lengthwise along said block and is centrally located on the outer face thereof. The ends of this strip are turned outwardly in opposite directions forming contact points 8, 8. In this form there are three flexible tongues 9, 9, 9 fastened to said anchor and formed of conducting metal, such as brass or copper, one of which is arranged to contact with the strip 7 throughout its entire length, as the grid moves across the framework above the plate, and the others of which contact successively with the points 8, 8. Current conducting wires 10 are attached to the respective tongues 9 and lead to a relay, three of these wires 10 being employed.

In taking the picture the grid is actuated, preferably by compressed air, across the framework. One of the tongues 9 will ride on the strip 7 throughout its length and the other two of said tongues will contact with the contact points 8 in succession first completing a circuit through the wires 10 and closing the relay switch 14 to complete the circuit through the primary wires 16 leading to the tube and then breaking said circuit through the wires 10 and then again completing a circuit through the wires 10 to open the relay switch to break said circuit through the primary wires, and then breaking the circuit through the wires 10.

It is to be noted that the tongues 9 travel for a distance on the block 5 both before the circuit is completed through the wires 10 to close the relay switch and after it is completed to open said switch; this is necessary in order to guard against the projection of the rays while the grid is stationary over the plate.

In the form shown in Figure 2, the block 5 has a contact plate 11 and the anchor block 6 has two contact tongues 12, 12 to which the two wires 13, 13 respectively are attached. These wires 13 lead to the relay switch 17. When the grid moves the tongues 12 contact first with the block 5 and

then with the plate 11 and then again with the block 5. The grid thus moves for a distance before the circuit is completed through the wires 13 to the relay, and after it is broken. During the time the tongues 12 are contacting with the plate 11 the relay switch 17 is closed and a circuit completed to the tube and the rays projected. When the plate 11 moves from under the tongues 12 the circuit through the wires 13 is broken and the relay switch is open and the circuit through the primary wires is broken.

What I claim is:—

In an X-ray machine, a tube circuit, a relay switch through which the tube circuit may be completed or broken, a switch circuit, contact tongues carried by the framework of the machine and insulated therefrom, current conductors connected to the respective tongues, a grid movable on the framework, a current conducting element carried by said grid insulated therefrom and arranged to simultaneously contact with said tongues to complete a circuit through said conductors to said relay switch.

In testimony whereof I have signed my name to this specification.

GILBERT C. LECHENGER.