Mar. 20, 1923. 1,449,357

H. F. WAITE

FILTER INDICATOR FOR X-RAY SYSTEMS

Filed Sept. 28, 1921

Fig. 1.

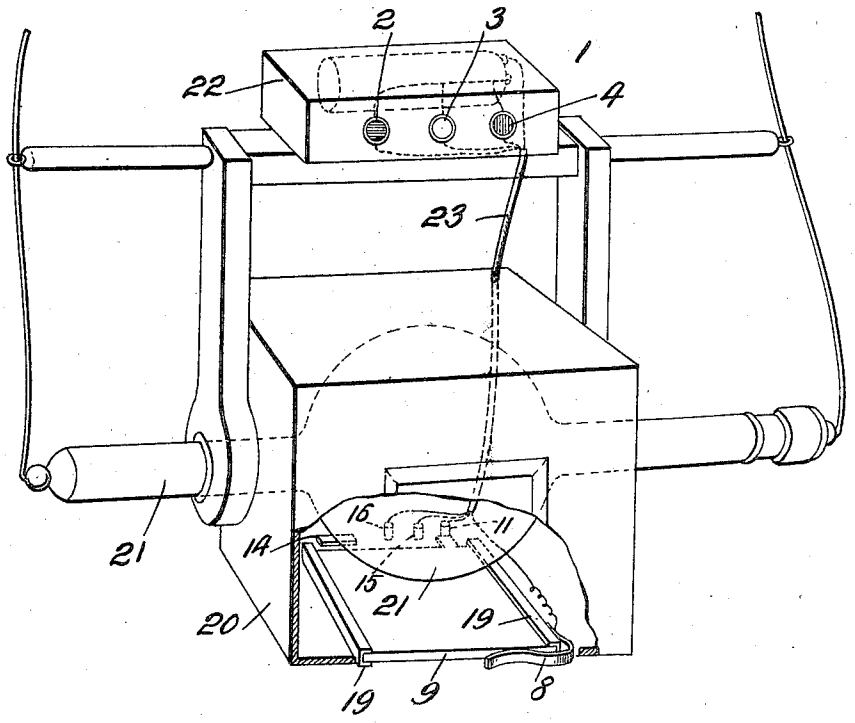
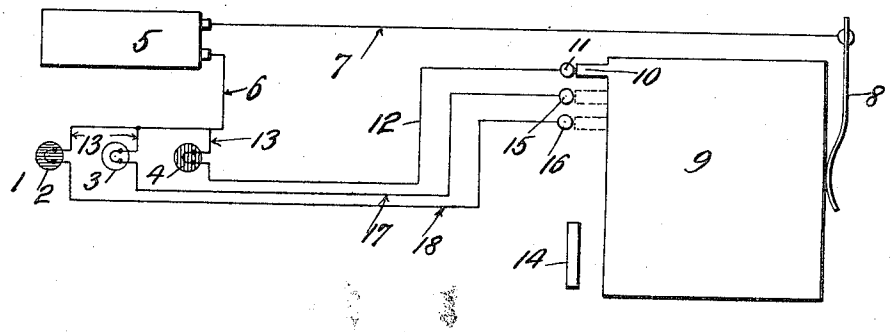


Fig. 2.



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UNITED STATES PATENT OFFICE.

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FILTER INDICATOR FOR X-RAY SYSTEMS.

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To all whom it may concern:

Be it known that I, HARRY F. WAITE, a citizen of the United States, and a resident of the city of New York, county of Queens, and State of New York, have invented a new and useful Improvement in Filter Indicators for X-Ray Systems, of which the following is a specification.

At times it is necessary to expose a patient to X-ray treatment when rays of a peculiar quality and character are used and others are not used, but are filtered out. If for some reason the filter should be omitted from the apparatus, undesirable rays would penetrate the patient and might produce serious burns or other effects of a most undesirable nature.

The object of my invention is to provide an indicator which will show whether or not the proper screen is in place and so indicate to the operator whether or not the apparatus is ready for a patient. This object is accomplished by my invention, one embodiment of which is hereinafter more particularly set forth.

For a more detailed description of my invention, reference is to be had to the accompanying drawings, forming a part hereof, in which—

Figure 1 is a perspective view of an X-ray tube holder, filter, and indicator, and Figure 2 is a wiring diagram.

Throughout the various views of the drawings, similar reference characters designate similar parts.

My improved indicator 1 has three colored lights, more or less as desired the number not being material, as blue, white and red, which are numbered 2, 3 and 4 respectively. These lights are small, incandescant glow lights which derive power from any suitable source as a dry cell 5 to which they are connected by means of a wire 6. The other pole of the battery 5 is connected to a wire 7 which runs to a spring 8 that is adapted to impress against a filter 9 of the conventional kind such as an aluminum filter. This filter 9 has a laterally extending lug 10 which is adapted to engage a contact 11 which is connected by a wire 12 to the red light 4, and this light in turn is connected to a wire 13 which runs to the wire 6.

The projection 10 is placed so that if the filter 9 is put properly in place with the right side up the projection 10 will engage the contact 11, but should this filter be put wrong side up the projection 10 will engage a stop 14 and in that event no circuit will be closed through the contact 11.

In addition to the contact 11 there are identical contacts 15 and 16 which are connected by wires 17 and 18 with the lights 3 and 2 respectively, and these lights are connected to the wire 6 by means of connecting wires 13, as above described, for the red light 4. The projection 10 from the plate 9 is located according to the style of filter for which the light is to respond, one grade having the projection 10, as shown, another grade of filter having another projection which will engage the contact 15, as indicated, and yet another grade of filter having a different projection which will engage the contact 16. All these projections are so located that any one of them will engage the stop 14 should the filter be reversed when inserted. From this, it is apparent that when the filter is in place and properly positioned, a light will glow corresponding to the filter and the operator will know by the red, white or blue light as to which of the three filters is in place and functioning. Should more filters be employed, more lights and contacts and wires will be employed to correspond, as is obvious.

The filter 9 slides between suitable guides 19 of the tube holder 20 and the tube 21 in this holder may be of the conventional kind and energized in the conventional way. In the preferred embodiment of my invention, the battery 5 and lights 2, 3 and 4 are placed in a box 22 on the tube holder 20 and the indicator wires are preferably placed in a cable 23 which runs as shown.

While I have shown and described one embodiment of my invention, it is obvious that it is not restricted thereto, but that it is broad enough to cover all structures that come within the scope of the annexed claims.

Having thus described my invention, what I claim is:

1. An indicator for X-ray filters comprising an X-ray tube, a filter, a projection extending from the filter, a light and means for causing the light to glow when the filter is in a proper position and not otherwise.

2. An indicator for X-ray filters provided with a plurality of lights, a plurality of contacts connected to said lights, means for en-

ergizing said lights, a filter with means for connecting the same with the source of energy and a projection on said filter adapted to engage one only of said contacts.

3. An indicator for X-ray filters comprising an X-ray tube, a filter, a projection extending from the filter, a light, means for causing the light to glow when the filter is in a proper position and not otherwise and means for preventing a glow of the light when the filter is up-side-down.

In testimony whereof, I have hereunto set my hand this 26th day of September, 1921.

HARRY F. WAITE.