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H. E. WAITE.  
X-RAY APPARATUS FOR TREATING DISEASES.

APPLICATION FILED MAR. 8, 1902.

NO MODEL.

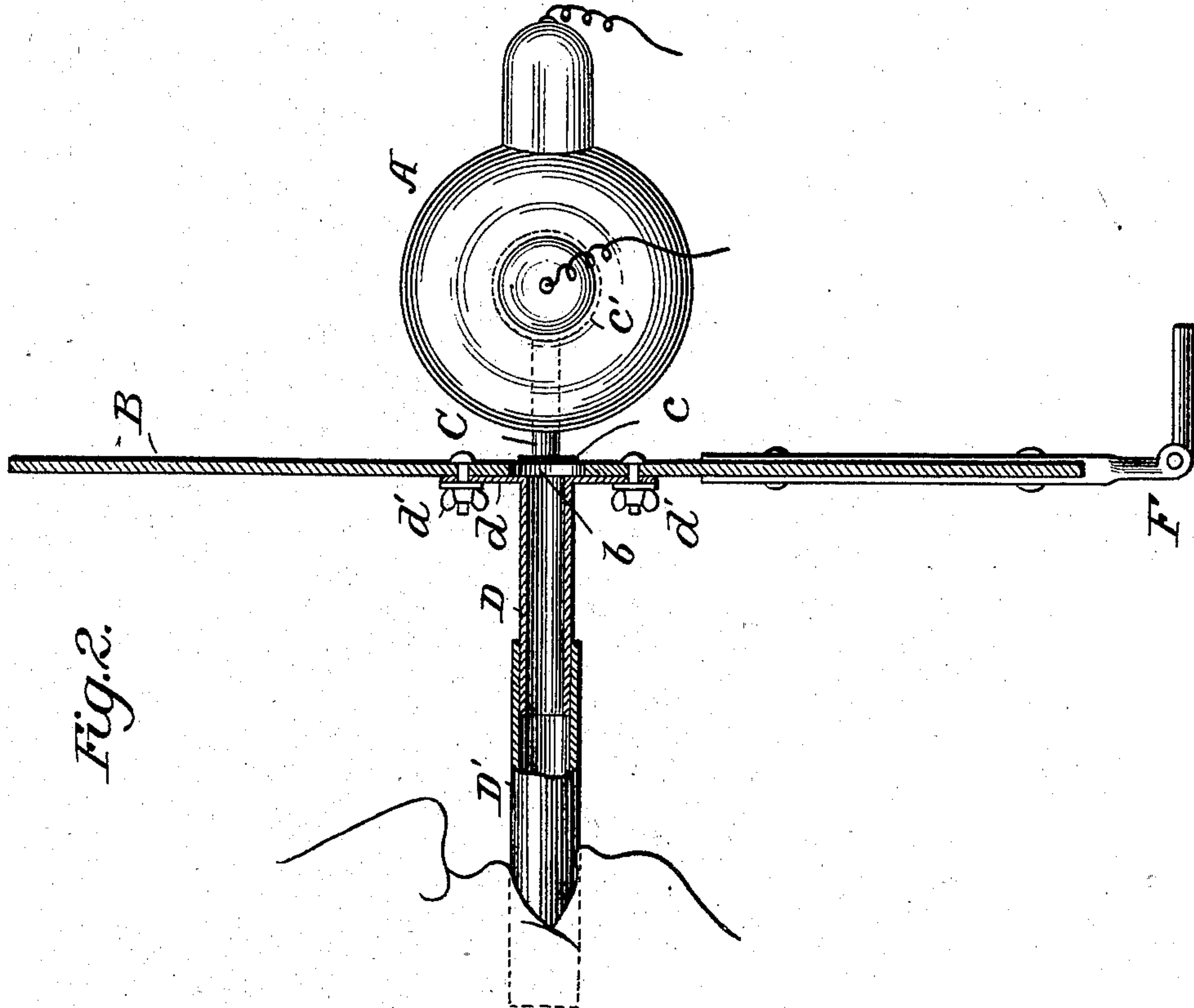


Fig. 2.

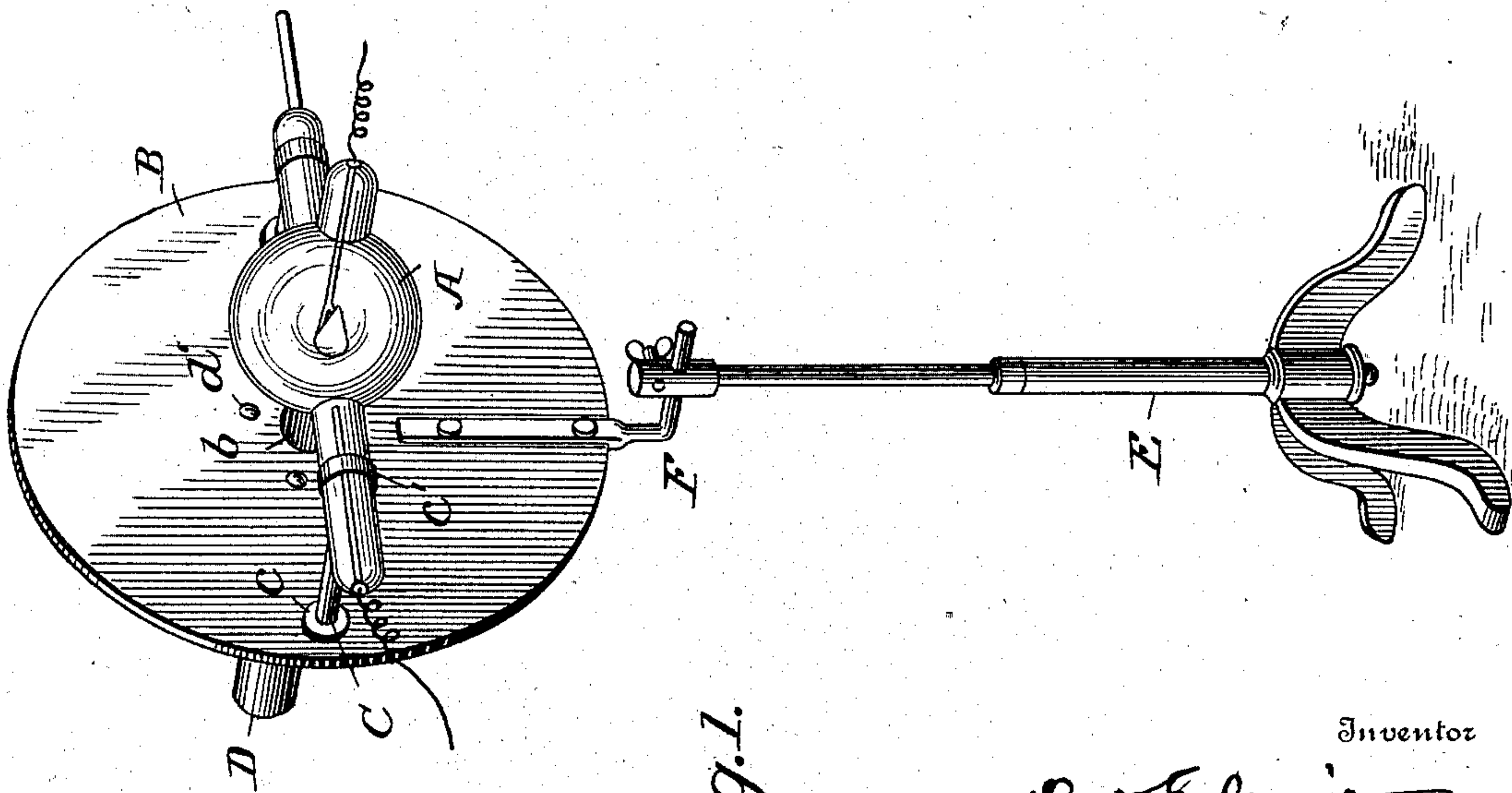


Fig. 1.

Witnesses

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# UNITED STATES PATENT OFFICE.

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## X-RAY APPARATUS FOR TREATING DISEASES.

SPECIFICATION forming part of Letters Patent No. 719,915, dated February 3, 1903.

Application filed March 8, 1902. Serial No. 97,346. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY E. WAITE, a citizen of the United States, residing at New York, in the county and State of New York, have  
5 invented certain new and useful Improvements in X-Ray Apparatus for Treating Diseases, of which the following is a specification.

My invention relates to X-ray apparatus,  
10 and has for its object to provide an apparatus whereby the X-rays can be used in treating various diseases, or more particularly whereby the rays may be confined to a specific object, while adjacent objects or portions of the  
15 object are protected, screened, or shielded from said rays; and the invention consists in an apparatus embodying the various features of construction and arrangement of parts having the general mode of operation substantially as hereinafter more particularly pointed  
20 out.

Referring to the accompanying drawings, Figure 1 is a perspective view of an apparatus embodying my invention; and Fig. 2 is  
25 an enlarged side view, partly in section, of the apparatus.

The advantages of the use of X-rays in treating certain diseases have been recognized, and it has also been recognized that it  
30 is dangerous to subject the body of the patient to the influence of said rays under certain circumstances, and heretofore in treating a patient it has been customary to cover the portions of the body which it is desired not  
35 to be subjected to the influence of the X-rays with some sort of a shield, which will protect the body where desired and still allow the rays to be applied at the proper point. For instance, in treating cancer of the throat  
40 it has been suggested that a mask of sheet-lead be fitted to the face except over the mouth, so that the rays will not come in contact with the body except at the particular portion desired. Such masks, however, are  
45 objectionable and uncomfortable for the patient and have to be specially prepared to fit the particular part of the body adjacent to the part being treated, and one of the principal objects of my present invention is to  
50 provide a simple, cheap, and effective apparatus whereby any desired portion of the body can be subjected to the influence of X-

rays, while other portions are shielded therefrom.

While so far I have referred to treating dis- 55  
eases, of course the apparatus can be used for other purposes, as in diagnosing diseases and the like, and my invention is not limited to the particular uses named nor to the exact details of construction and arrangement  
60 of parts, which of course can be varied by those skilled in the art without departing from the general principles of the invention.

In carrying out my invention I provide an X-ray generator, which in the present  
65 instance is indicated by the Crookes tube A, the construction of which is well understood by those skilled in the art, and which is adapted to be connected in a proper electric circuit, so that the X-rays are produced in the  
70 tube in a manner well understood. Arranged adjacent to this generator is a suitable shield B, of some material impervious to X-rays, and while various materials may be used and it may be of any desired shape I have shown  
75 it in the form of a lead disk. This shield is connected to the generator in any suitable way, and in the present instance I have shown connected with the disk standards C C, which  
80 are mounted on the face of the disk and preferably electrically insulated therefrom, as at c, and which at their free ends are provided with clips or bands c', adapted to engage and hold the X-ray generator in proper position or relation with respect to the shield.  
85 This shield is provided with a suitable opening b, adjacent to the generator and in a position to permit the denser portion of the stream of X-rays to pass through the shield, while the other rays impinging upon the face  
90 of the shield are absorbed or otherwise prohibited from passing beyond the shield. Connected to the shield on the face opposite to the X-ray generator is a tube D, and this may be of any desired shape or construction and  
95 may be attached to the shield in any suitable way, in the present instance it being shown as provided with flanges d, by means of which it is attached to the shield B in any way, as by screws or bolts d'. This tube D may be  
100 in the form of a cylinder, as shown in Fig. 1, and is preferably made of some flexible material which is capable of acting as a shield to X-rays, and this can be bent or shaped to



fit the exact portion of the body or other object to which the rays are to be applied. In Fig. 2 I have shown the tube as being telescopic and therefore extensible, the portion  
5 D' sliding on the portion D, attached to the shield.

It is manifest that various forms and sizes of tubes can be used and they can be made interchangeable, one being readily detached  
10 from the shield and another applied thereto, according to the requirements of any particular case, and the forms indicated in the drawings are simply typical to explain the nature and scope of the invention.

15 The whole apparatus is preferably mounted on a standard E by means of a bracket F, secured to the shield and adjustably secured to the standard; but any other suitably support may be used.

20 With this construction it will be seen that a safe and ready means is provided whereby the X-rays may be confined to any particular portion of an object and the other portions of the object be shielded from the influence  
25 of said rays. Moreover, the shield arranged in this way will also protect the operator as well as the patient and enable the operator to utilize the rays to the best advantage for the purpose intended.

30 What I claim is—

1. The combination with an X-ray genera-

tor, of an X-ray shield connected to the generator and having an opening for the passage of X-rays, and a tube connected to the shield opposite the opening, substantially as de- 35 scribed.

2. The combination with an X-ray generator, of an X-ray shield connected to the generator and having an opening for the passage of X-rays, and an adjustable tube connected 40 to the shield opposite the opening, substantially as described.

3. The combination with an X-ray generator, of an X-ray shield connected to the generator and having an opening for the passage 45 of X-rays, and a flexible, adjustable tube connected to the shield opposite the opening, substantially as described.

4. The combination with a standard of an X-ray shield having an opening supported on 50 the standard, an X-ray generator connected to the shield on one side thereof, and a tube through which the X-rays pass, connected to the shield on the other side, substantially as described. 55

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY E. WAITE.

Witnesses:

HARRY A. WAITE,  
E. H. OPITZ.