

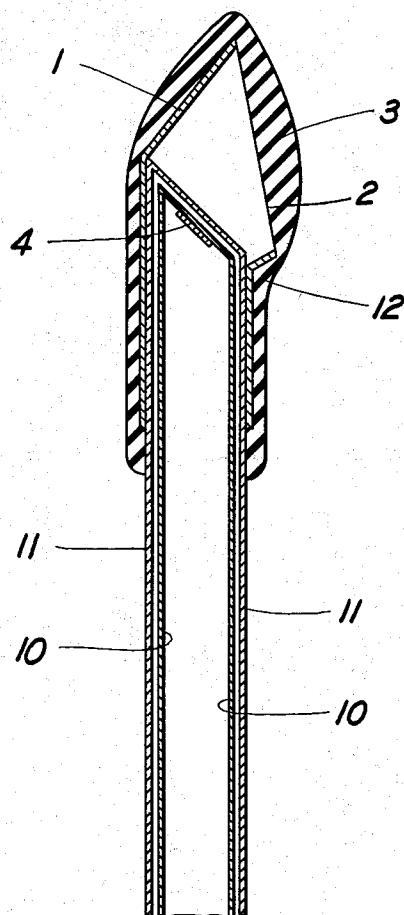
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IRRADIATION APPLICATOR FOR X-RAY THERAPY

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IRRADIATION APPLICATOR FOR X-RAY THERAPY

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3 Claims. (Cl. 250—105)

In medical radiology the general practice is to use irradiation attachment compressors for limiting the effective beam. With some kinds of irradiation, for example in the case of deep therapy irradiation, the said attachment compressors also serve for accurately fixing the distance of the focal spot from the surface of the tissue to be penetrated by the rays. This distance is important in view of the specific depth dose-decrease. The desired specific depth dose-decrease is generally ensured not only by the said distance but also by the choice of a suitable fixed filter incorporated in the attachment compressor. A so-called balancing filter permits of varying the specific depth dose-decrease, particularly at the surface of issue of the rays, by altering the filter thickness.

In the known compressor constructions it is essential that the filter made of metal (fixed filter or balancing filter) should be given a definite spatial curvature. The latter is determined by the need for a possibly uniform superficial load at the front face of the compressor, which comes into contact with the body of the patient. It goes without saying that shaping the metal filter in its due form entails difficulty.

In deep therapy, so-called "endotherapy," the tubular compressor is inserted in the body of the patient, for example, in the intestine, it being the standard practice to provide for circulation of cooling water in order to carry off the tube energy converted into heat. Since the cooled focal spot of the cylindrical hollow anode is enclosed within the irradiation compressor, the latter assumes the temperature of the cooling water in the case of metal irradiation attachment compressors hitherto known. This not only is found disagreeable by the patient but may also be harmful and endeavours have therefore been made to remedy the fault by the use of preheated cooling water. Nevertheless contact with the metal surface remains unpleasant for the patient.

The invention permits of obviating the difficulties outlined. According to the invention, this is effected in the case of an irradiation attachment compressor for X-ray therapy and more particularly for deep therapy, by providing, at least in front of the point of issue of the

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rays, an X-ray resistant plastic having the desired superficial form.

According to the invention, as an alternative the entire top of the compressor may be coated with plastic or the whole of the compressor may be made of plastic.

It has been found that hardenable cast resins are adapted to be used with advantage for carrying out the invention.

In order that the invention may be clearly understood and readily carried into effect, it will now be described in detail with reference to the accompanying drawing, in which one embodiment of the invention is shown by way of example.

Referring to the single figure of the drawing, there is shown an anode pipe 10 in the form of a long tubular elongation of an X-ray tube. At the inclined front end of the pipe 10, there is provided a transmission target 4. The pipe 10 is surrounded by a cooling-water-jacket 11. Electrons travelling through the pipe 10 and impinging on the target 4 produce X-rays which pass through the target and out the inclined ends of the pipe 10 and jacket 11. A hollow attachment compressor 12, provided with ray protection 1, fits over the end of the jacket 11. At the point of issue of the rays emanating from the target 4, provision is made of a fixed filter or a balancing filter 2. Due to the invention the form of this filter is no longer critical, the filter being preferably flat. The form of the outer surface, optimum for a minimum load and also for insertion in the body, is obtained by coating with plastic 3. By reason of its low thermal conductivity the use of this plastic ensures in addition that during operation of the X-ray tube temperature fluctuations are no longer a nuisance for the patient.

What I claim is:

1. An irradiation compressor attachment for X-ray therapy adapted to fit over an end of an X-ray tube from which radiation emanates comprising a hollow tubular elongated member having an end wall portion through which radiation of desired intensity emanates, said end wall portion being constituted of an X-ray resistant synthetic hardenable cast resin plastic and having an exterior convex curvature adapted to conform to the surface of tissue with which it is to be placed in contact.

2. A compressor as claimed in claim 1 in which the compressor is wholly made of plastic.

3. A compressor as claimed in claim 1 in which a flat balancing filter is provided in front of the end wall.

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