

Dec. 7, 1926.

1,609,682

P. A. M. J. ANGEBAUD

PROTECTING DEVICE AGAINST X-RAYS AND SIMILAR RADIATIONS

Filed March 31, 1921

FIG.1

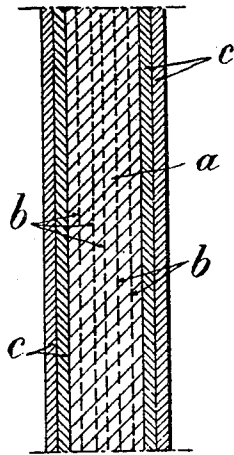


FIG.2

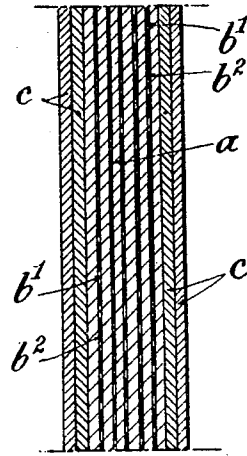
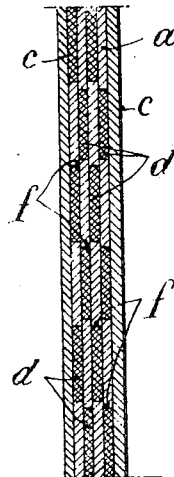


FIG.3



Inventor:

Pierre Anne Marie Joseph Angebaud

By Laurence Langner

Attorney

UNITED STATES PATENT OFFICE.

PIERRE ANNE MARIE JOSEPH ANGEBAUD, OF NANTES, FRANCE.

PROTECTING DEVICE AGAINST X-RAYS AND SIMILAR RADIATIONS.

Application filed March 31, 1921, Serial No. 457,346, and in France April 29, 1914.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

This invention has for its object a new protecting device against X-rays and similar radiations adapted to be used in the manufacture of protecting screens, plates or shields, concave discs or cups and generally speaking all articles employed in radiography.

Said device comprises an improved supporting structure and a composition opaque to X-rays and like radiations, containing lead, bismuth and like salts, to which an adhesive substance may be added in such manner as to obtain an homogeneous mass which hardens on drying. The cohesion of said mass may be increased by compression. The opaque composition is preferably reinforced by combining it with an inner structure made of fabrics, fibres, felting muslin, tarlatan and the like. The desired articles are thus formed of several layers successively disposed upon a form or mandrel and alternately of the mixture and of bands of tarlatan, silk or other light fabric crossing each other so as to increase the solidity and avoid deformations. The active salts mixed with the adhesive substance are thus enclosed on the one hand between the successive layers of fabric and on the other hand inside the body of said fabric, in the meshes thereof.

The opaque composition can also be disposed between two outer walls in one or several parts, made of wood or any other insulating substance such as rubber, fibre, etc. If the mixture is not reinforced it may for instance be cast with addition of plaster or not, said mixture being compressed or not between the aforesaid outer walls.

Similar walls may also be used in addition to the outer walls to form one or several internal structures in the body of the mass made of the mixture of salts and adhesive substance, and strengthening fabric may also be employed in addition therewith. In case of walls made of several pieces or arranged in several layers, the fibres are preferably disposed in crossing directions. The outer walls may be cast or moulded if they are made of a substance permitting such an operation. It is obvious that instead of tarlatan any felted substance or veneer may be used the different parts of material being perforated and glued together in such manner as to provide free spaces or apertures contain-

ing opaque mixture or salts only. The said walls may also not be in close contact with each other.

The articles made in the hereinbefore described manner (protecting plates, cups, discs, etc.) are as well opaque to X-rays or similar radiations as to light. They cannot be put out of shape nor broken, they are very light and non-conductive as well for high tension as for low tension currents. They do not present therefore any of the drawbacks of similar articles made of glass or mixtures containing rubber.

In the annexed drawing given by way of example:

Fig. 1 is a diagrammatical cross section of a plate or shield according to the present invention.

Figs. 2 and 3 are similar views of two modified forms of construction.

In said three figures *a* designates the opaque mixture.

As shown in Fig. 1, the shield or protecting plate comprises a body *a* formed of a mixture of opaque salts such as lead or bismuth salts. Bands of tarlatan, muslin or a similar open work fabric are embedded in said mixture as shown at *b* to act as reinforcing means and outer walls *c* formed of veneer are provided.

As shown in Fig. 2, the bands of fabric may be replaced by sheets *b*² of veneer, felt, cloth, ebonite, fibre, rubber or similar material provided with suitable apertures *b*¹ which are filled in by the opaque mixture.

As shown in Fig. 3, the body of the opaque article may be formed of veneer, felt, cloth or other sheets *d* which are cemented one upon the other and are provided with openings *f*, the latter being filled with the above described opaque mixture, said openings being out of alignment in the successive layers so that an efficient protection is assured on the whole surface of the panel or similar protecting device.

When the article has been constructed as above described, it is left to dry in an oven and then polished and varnished.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A protecting device which is opaque to X-rays and to radiations from radio-active substances comprising in combination solid

outer walls of insulating material and an opaque medium between said outer walls.

2. A protecting device which is opaque to X-rays and to radiations from radio-active substances containing in combination opaque substances, adhesive substances forming an homogeneous mixture and outer reinforcing walls of insulating substance.

3. A protecting device which is opaque to X-rays and to radiations from radio-active substances containing in combination opaque substances, adhesive substances forming an homogeneous mixture, outer reinforcing walls of insulating material and reinforcing walls incorporated in said mixture.

4. A protecting device which is opaque to X-rays and to radiations from radio-active

substances containing in combination opaque substances, adhesive substances forming an homogeneous mixture, insulating walls in said mixture and free spaces or apertures in said walls, filled with one of said series of substances or with the mixture thereof.

5. A protecting device which is opaque to X-rays and to radiations from radio-active substances formed of insulating sheets cemented one upon the other and provided with openings filled with a mixture of opaque substances and adhesive substances, said openings being out of alignment in the successive sheets.

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

PIERRE ANNE MARIE JOSEPH ANGEBAUD.