Oct. 28, 1930. D. H. BARRY 1,780,108

RAYPROOF STRUCTURE

Filed March 20, 1929

Fig. 2.

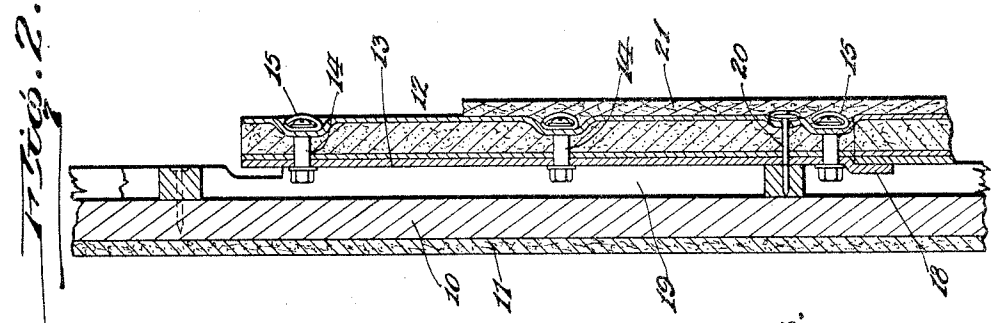



Fig. 3.

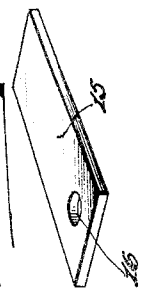



Fig. 1.




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WITNESS:

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# UNITED STATES PATENT OFFICE

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## RAYPROOF STRUCTURE

Application filed March 20, 1929. Serial No. 348,509.

This invention relates to improvements in ray-proof structures for use in the erection of walls or partitions in hospitals, doctors' and dentists' offices and like places where X-ray machines and the like are installed for use, to prevent the passage of the rays beyond the limits of the wall. It has been the usual practice to apply a lining of lead to the ordinary wall structure but difficulty has been experienced in properly closing the seams between the lead plates, and in plastering over the lead plates to conceal the same. My invention aims to overcome these difficulties by providing separate ray-proof panels which may be readily applied to the wall structure in lapped arrangement and which are capable of receiving the usual outer layer of plaster to conceal the same.

Another object resides in a ray-proof panel which includes a rectangular shaped body of plaster-board or similar light composition, to one side of which a lead plate is applied, two of the side edges of the plate extending beyond the adjacent sides of the body, whereby the two side edges of the lead plate of one panel, overlap the free side edges of two adjacent panels when a plurality of panels are arranged in proper position upon a wall.

Another object is to provide a ray-proof wall panel which is simple of construction, easy to handle, and which may be secured in position in rapid time.

With these and other objects in view, the invention resides in certain novel construction and combination and arrangement of parts, the essential features of which are hereinafter fully described, are particularly pointed out in the appended claims, and are illustrated in the accompanying drawing, in which:—

Figure 1 is a fragmentary sectional perspective view of a wall made ray-proof by the application of my ray-proof panels thereto.

Figure 2 is a vertical sectional view on the line 2—2 of Figure 1.

Figure 3 is a detail perspective view of the ray-proof plate for the fastening elements.

Referring to the drawing by reference characters, the numeral 10 designates an ordinary wall structure having an outer layer of plaster 11 on one side thereof and which is incapable in itself of interrupting the passage of X-rays or the like therethrough. However, the same is made ray-proof by the application by my improved ray-proof panels or units 12 thereto, a description of which will now be given.

Each ray-proof panel or unit 12 is substantially flat and rectangular in configuration and includes a body of composition plaster board, beaver board or the like, which is relatively light in weight and strong and durable in use. Secured to one of the flat faces of the body is a layer or plate of lead 13, it being understood that lead is considered an insulator or barrier against the penetration of X-rays and the like. The lead plate is held in position by suitable fastening elements such as bolts or rivets 14 which have their outer heads countersunk into the body to provide an outer smooth surface. These fastening elements being of such metal which would permit the penetration of the rays therethrough, I find it necessary to cover the outer end of each fastening element with a lead clip or plate 15. The plate is provided with an opening 16 adjacent one end for the passage of the shank of the fastening element while the opposite end is bent over the end of the element which entirely covers the same and makes the same ray-proof. This ray-proof fastening is fully explained in a separate application Serial Number 348,508.

The lead plate 13 of each panel is of a size to have two of its angularly disposed meeting side edges extending beyond the adjacent sides of the body 13 to provide offset flanges 17 and 18 for lapping the free side edges of two adjacent panels as clearly shown in Figure 1 of the drawings.

To apply the ray-proof units or panels 12 to the wall structure, I apply a frame or latticed furring strips 19 to the same and secure the panels thereto by nails or like fastening elements 20 which are also made ray-proof by the application of lead plates 15 thereto. The panels are applied in vertical

and horizontal rows, one fitting close against the other, the lead flange 17 of one panel overlapping the free meeting edge of the next adjacent panel on the same horizontal row, while the flange 18 of the same panel overlaps the free edge of an adjacent panel on the next vertical row. The lapping of the joints between the panels or units prevent any possibility of the rays passing therethrough and makes the structure absolutely ray-proof.

By making the body 13 of the material specified it is possible to directly apply a coating of plaster 21 directly thereto, which conceals the panels and imparts a finished appearance to the wall structure. This plaster adheres around the plates 15 and is thereby held in position.

While I have described what I deem to be the most desirable embodiment of my invention, it is obvious that many of the details may be varied without in any way departing from the spirit of my invention, and I therefore do not limit myself to the exact details of construction herein set forth nor to anything less than the whole of my invention limited only by the appended claims.

What is claimed as new is:—

1. In combination with a wall structure, a plurality of X-ray-proof panels secured to said wall structure, the meeting joints of said panels being overlapped, one upon the other and X-ray-proof means to secure said panels in place upon the wall whereby to render said wall structure opaque to X-rays throughout.

2. In combination with a wall structure, a plurality of X-ray-proof panels secured to said wall structures, each of said panels including a rectangular body, and a lead plate secured to said body, certain edges of said lead plate extending beyond the adjacent edges of said body to provide flanges, the flanges of one panel overlapping the meeting free edges of the next adjacent panels and X-ray-proof means to secure said panels in place upon the wall whereby to render said wall structure opaque to X-rays throughout.

3. In combination with a wall structure having furring strips on one of the flat sides thereof, and a plurality of X-ray-proof panels secured to said furring strips, one against the other with their joints lapped and X-ray proof means to secure said panels in place upon said furring strips whereby to render said wall structure opaque to X-rays throughout.

4. An X-ray-proof panel comprising a body, and a plate of X-ray-proof material covering one side of said body and extending beyond certain sides of said body, substantially as and for the purpose specified and X-ray-proof means to secure said panels in place upon a wall whereby to render said panel body opaque to X-rays throughout.

5. An X-ray-proof panel comprising a substantially flat rectangular body, and a lead plate secured to one side of said body and extending beyond two side edges thereof to provide lapping flanges and X-ray-proof means to secure said panels in place upon a wall and the like whereby to render said panels opaque to X-rays throughout.

6. In a structure of the class described comprising a frame, an outer wall portion, an inner wall portion including a body, said body attached to said frame, an X-ray-proof sheet on one side of said body, fastening elements attaching said sheet to said body, X-ray-proof plates carried by said elements and covering the latter, plastic settable material positioned on said body opposite said X-ray-proof sheet, and means including said X-ray-proof plates for holding said settable material in position on said body.

7. An X-ray proof unit for use in wall construction including a rectangular body portion, an X-ray proof plate, and X-ray proof means to secure said plate to said body portion, said plate including a flange portion projecting from and around one vertical side and one horizontal side of said rectangular body portion whereby unflanged edges of adjacent vertical and horizontal units are overlapped by said projecting flange portion to provide a wall structure impervious to X-rays throughout.

8. In building construction, a supporting wall a plurality of X-ray proof units secured to said supporting wall, each of said units including a rectangular body portion, an X-ray proof plate, X-ray proof means to secure said plate to said body portion, X-ray proof means to secure said attached body portion and plate to said wall structure, and a plastic finishing composition applied to the outer surface of said body portion, the X-ray proof plate of each of said units including a flange portion projecting from and around one vertical side and one horizontal side of said rectanglar body portion, whereby unflanged edges of adjacent vertical and horizontal units are overlapped by said projecting flange portion to provide a finished wall structure impervious to X-rays throughout.

In testimony whereof I have affixed my signature.

DAVID H. BARRY.