March 6, 1934. M. MORRISON 1,950,035

BUCKY GRID FOR SECONDARY RADIATION

Filed June 30, 1931

Fig. 1.

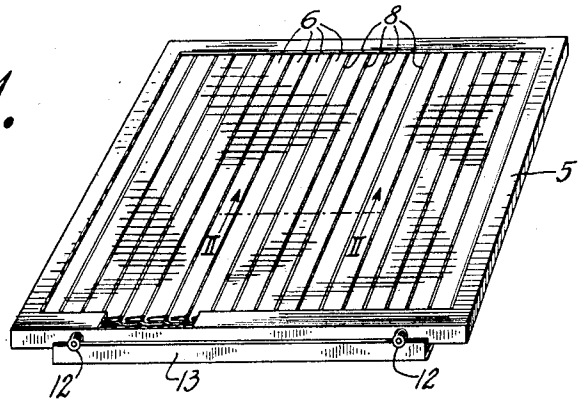


Fig. 2.

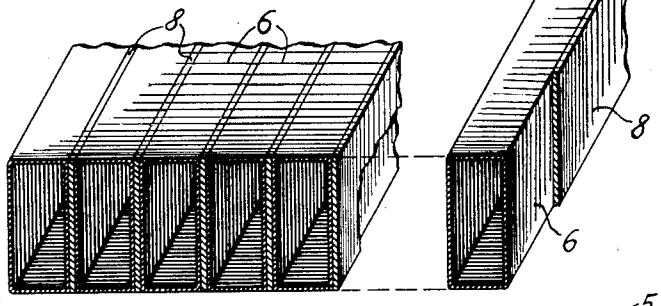


Fig. 3.

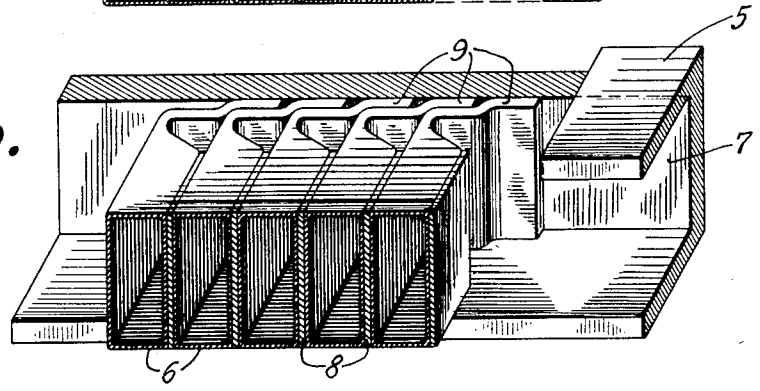
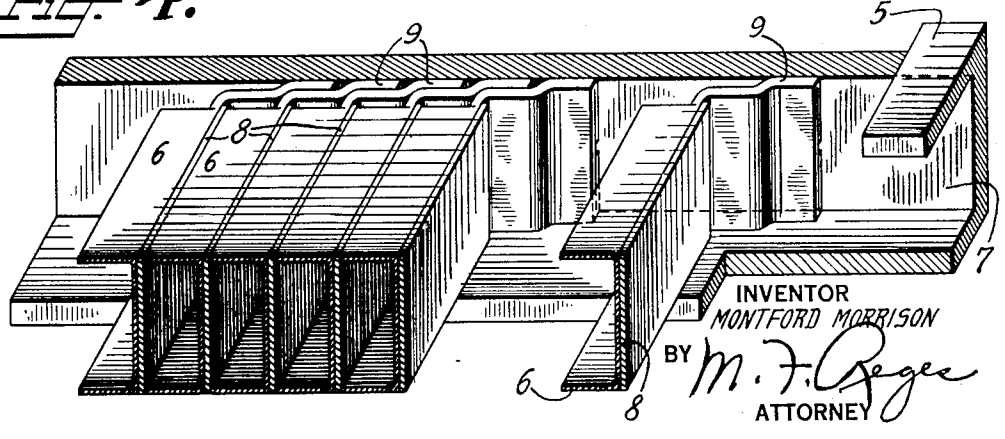


Fig. 4.



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BUCKY GRID FOR SECONDARY RADIATION

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Application June 30, 1931, Serial No. 547,890

3 Claims. (Cl. 250—34)

My invention relates to grids of the so-called bucky type commonly utilized in the X-ray art for preventing the secondary rays around the bones and tissues of a patient from causing a blurredness on a sensitive film or fluorescent screen during a radiographic exposure. Grids of this general type are well known to the art and have heretofore consisted mainly of alternate strips of material pervious and impervious to X-rays which are presented edgewise to the X-radiation and prevent the scattered secondary rays striking the grid at an oblique angle from fogging the radiographic film.

The alternate strips of material employed that are pervious to X-rays usually consist of wood or celluloid and are separated by strips of material of high atomic weight such as lead, which are impervious to X-rays. These alternate strips must be firmly secured together in the form of a sheet or board which in its completed form causes the grid to have considerable weight. These grids are difficult and costly to manufacture and are not very efficient in operation especially in making a fluoroscopic examination.

It is accordingly an object of my invention to provide a grid for wiping out secondary radiation which is light in weight.

Another object is the provision of a grid for X-ray diagnostic purposes which is simple in construction and economical to manufacture.

A further object of my invention is the provision of a grid which is very efficient in operation and which may be readily utilized for radiographic or fluoroscopic operations.

Still further objects of my invention will become apparent by reference to the following drawing wherein

Fig. 1 is a perspective plan view of my grid in its completed form with a portion thereof broken away to better illustrate the device;

Fig. 2 is a sectional view in perspective taken on the line II—II Fig. 1;

Fig. 3 is a perspective view of a section of my grid showing the method of securing the individual parts to the frame member; and

Fig. 4 is a perspective view of a section showing a modification which my grid may take.

Referring now to the drawing in detail I have shown in the several figures the method of constructing my grid which consists of a channel frame member 5 of square or rectangular configuration, a series of hollow rectangular sections 6 of light metal pervious to X-rays, such for example as aluminum, extended between the frame member 5 and fitted securely in the channel section 7 thereof.

A series of sections 8 consisting of a metal having a high atomic weight impervious to X-rays such, for example as lead, are disposed between the hollow sections 6 and are firmly secured to the vertical sides of these hollow sections in such a manner that the completed grid resembles a sheet or board. These impervious sections 8 may be secured to the hollow sections 6 in various manners, such as cementing the sections together, or the impervious sections 8 may be painted or sprayed upon the vertical sides of the hollow sections.

In employing either of these latter methods it is only necessary that a coating of a substantial thickness be applied to the hollow sections. The pervious hollow sections 6 and the impervious sections 8 are firmly compressed and mounted within the channel frame member 5.

The ends of the hollow section 6 may be bent angularly as shown in Fig. 3 to prevent overlapping of the various sections and to enable a substantial surface 9 to contact the vertical inner side of channel 7 of the frame member 5. The height of these hollow sections as above mentioned is sufficient to fit substantially into the channel 7 of the frame member 5 and this in addition to the surface 9 which may be welded, screwed, or otherwise firmly secured to the interior of the channel member 7 retains the sections in the form of a sheet. The impervious sections 8 being firmly secured to the hollow sections need not extend into the channel 7 of the frame member 5 as the frame is normally out of the field of radiation when the grid is employed with an X-ray tube.

Referring now more particularly to Fig. 4 this modification differs from that shown in the various other figures in that the sections 6 are composed of channels of the same light metal as above mentioned instead of being hollow rectangular sections. The impervious sections 8 in this modification are likewise secured to the outer vertical surface of the channel section 6 by cementing, painting or spraying and both pervious and impervious sections are compressed and secured in the frame member 5 as previously described. In its completed form the grid has the same appearance as the modification previously described.

The grid frame 5 may be provided with a plurality of small rollers 12 which when placed in an X-ray apparatus, such as a table stereoscopic device or fluoroscopic device may be arranged to

move upon tracks or rails such as 13, across the field of exposure or it may remain stationary, both usages being well known to the art.

I have found that a grid constructed in accordance with my invention is exceedingly efficient for radiographic and fluoroscopic examinations. The secondary rays appear to be completely cut off or at least are indiscernible upon a sensitized film or upon a fluorescent screen.

In addition to these above noted qualities I have found that my grid is particularly adaptable to fluoroscopic examinations as the pervious metal sections act as a filter for the primary rays to register upon the fluorescent screen as well as the impervious sections preventing the passage of secondary rays to the fluorescent screen.

This constitutes an advantage not obtainable with any degree of success with grids of the prior art as the latter leave grid marks and must usually be moved out of the field of X-radiation during a fluoroscopic examination.

It can, therefore, be readily seen by those skilled in the art that I have provided a grid for preventing secondary rays attendant the exposure of an object to X-rays from striking a radiographic film or fluorescent screen which is light in weight, economical to manufacture and highly efficient in operation.

Although I have shown and described several embodiments of my invention I do not desire to be limited thereto as obvious other modifications of the same may be made without departing from the spirit and scope of the appended claims.

What is claimed is:

1. A grid for preventing the passage of secondary X-rays comprising a series of hollow sections formed of a light metal pervious to X-rays and provided with angular portions at the end thereof, a series of sections of a metal impervious to X-rays secured to said hollow sections and a frame member secured to the angular portions of said hollow sections for maintaining both pervious and impervious sections in alternate arrangement in the form of a board.

2. A grid for preventing the passage of secondary X-rays comprising a series of metal sections, alternate sections being hollow and composed of a light metal pervious to X-rays, the remaining sections being of a metal having a high atomic weight impervious to X-rays, and a frame member securing said pervious and impervious sections together in alternate arrangement relative to each other in the form of a board.

3. A grid for preventing the passage of secondary X-rays comprising a series of hollow sections of a light metal pervious to X-rays, a coating of a metal having a high atomic weight impervious to X-rays applied to the vertical side of said sections, and a frame member for maintaining said sections with their coating compressed firmly together in the form of a board with alternate pervious and impervious sections.

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