United States Patent

[11] **3,569,713**

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[54] **THYROID GLAND X-RAY PROTECTOR**
2 Claims, 7 Drawing Figs.

[52] **U.S. Cl.** **250/108, 2/2**
[51] **Int. Cl.** **G21f 1/12**
[50] **Field of Search** ..... 250/108 (FS); 2/2, 2.5

[56] **References Cited**

UNITED STATES PATENTS

3,052,799	9/1962	Hollands	250/108FS
3,233,248	2/1966	Bushnell	250/108FS
3,286,094	11/1966	Pretto	250/108FS

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ABSTRACT: The X-ray protector for the thyroid gland is in the form of a shield which covers the forward portion of the neck over and above the larynx for shielding the thyroid gland from primary and secondary rays from an X-ray machine. The material of the shield is formed from sandwiched layers of vinyl or other plastic, with a leaded layer therebetween.

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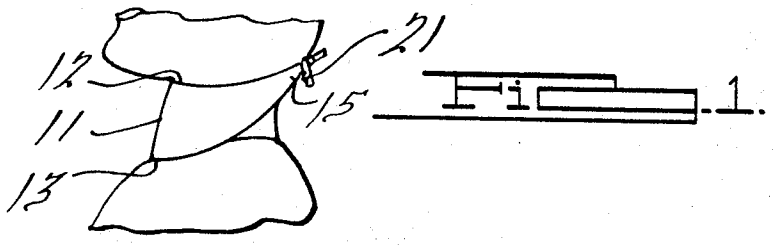


Fig. 1.

Fig. 2.

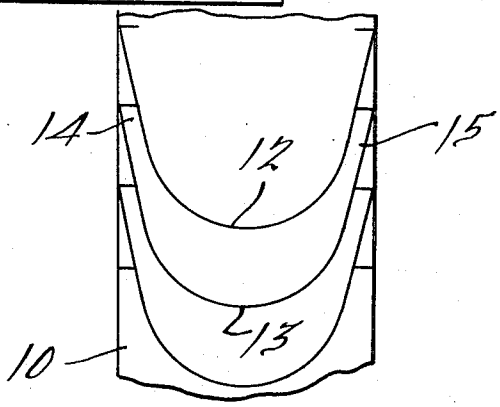


Fig. 3.

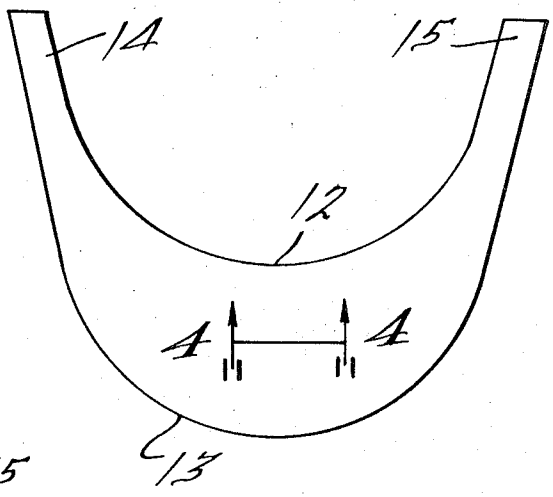




Fig. 5.



Fig. 4.

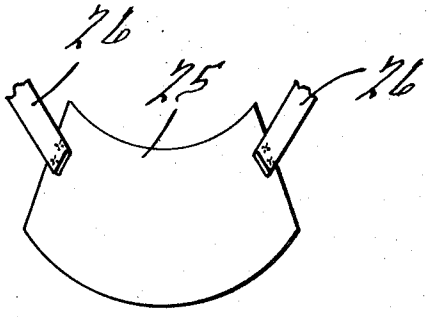
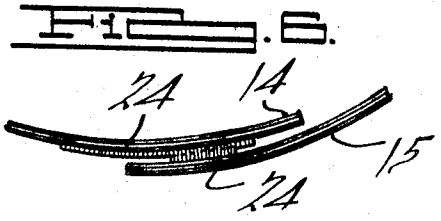


Fig. 7.

Fig. 6.



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THYROID GLAND X-RAY PROTECTOR

BACKGROUND OF THE INVENTION

There is no known type of shield as provided by the present invention for the purpose of shielding the thyroid gland of a dental patient when the teeth are X-rayed.

SUMMARY OF THE INVENTION

The thyroid gland may be harmed by the primary and secondary rays from an X-ray machine especially the glands of children. The shield is formed from a material which bars most of the rays and which is procurable in the trade. One form of the material can be obtained from Bar-Ray of Brooklyn, N.Y. The material comes as a trilayer sheet having a top and bottom layer of plastic such as vinyl and a central layer of a similar or different plastic in which fine particles of lead are retained in sheet form. A shield is cut from the sheet material of such shape that it encompasses the entire frontal area of the neck from the chin down to the sternum covering the larynx and the thyroid gland. The shield protects the area from the X-ray when used in the head area, particularly when used on the teeth. The shield herein illustrated is of arcuate shape at the bottom and top edges cut in a manner to use a minimum amount of material for a plurality of the shields. The extending ends of the shield may be secured together in any manner, such as by a clip which clamps the two ends in fixed relation to each other. Snap fasteners may be applied to the ends with a plurality of the male type on one of the ends and a female type on the other end. A "stick-type" plastic layer may be placed on facing sides of the ends which secure the ends in releasable fixed relation to each other. Strips of vinyl or other plastic material may be secured to the edges of the shield body which may be tied or otherwise secured together.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a broken view in elevation of a dental patient having a protective shield of the present invention secured over the frontal neck area;

FIG. 2 is a broken plan view of a sheet of protective material with the shields of the present invention cut therefrom;

FIG. 3 is a plan view of the shield after it has been stamped from a sheet of the protective material;

FIG. 4 is a broken sectional view of the structure illustrated in FIG. 3, taken on the line 4–4 thereof;

FIG. 5 is a broken view of the shield illustrated in FIG. 3, with snap fasteners on the projecting ends which secure the shield in protective position;

FIG. 6 is a view of structure, similar to that illustrated in FIG. 5, showing another form of securing means; and

FIG. 7 is a view of a shield having securing strips attached to the edges thereof.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The X-ray protective shield 11, as illustrated in FIG. 1, is secured about the neck of a dental patient in position to cover all of the front portion of the neck including the larynx and the thyroid gland. In the illustration, the top edge of the shield engages the underside of the chin while the bottom edge thereof rests upon the sternum. The primary protection provided by the shield is that for the thyroid gland which may be permanently damaged from repeated application of X-rays thereto. A well-informed dentist will avoid the application of the X-ray to the teeth of small children because of the possible damage to the thyroid gland and the present shield simplifies the decision for the dentist to make when the question to X-ray or not to X-ray occurs.

The shields 11 are stamped from a sheet of X-ray protective material 10 in such manner as to obtain the maximum number of shields from a sheet of predetermined width and length, as illustrated in FIG. 2. The shield is of crescent shape having an arcuate top edge 12 and an arcuate bottom edge 14 which may be struck on the same or slightly different radii. Projecting ends 14 and 15 of the shield 11 are secured together by suitable means to retain the shield in a protective position over the front portion of the neck, as clearly illustrated in FIG. 1.

A sheet of protective material 10, as illustrated in FIG. 4, has a central layer 16 which is made by the use of a plastic binder for lead dust or particles which are retained in flexible sheet form and which contain a maximum amount of lead within the layer. Layers 17 and 18 of a similar or different plastic material is adhered to both surfaces of the central layer 16 to form a sandwiched relationship therewith which strengthens and protects the inner layer 16 against damage. The shield formed from the sheet bars the passage of the majority of the primary rays and, most of all, the secondary rays emitted from an X-ray machine.

As illustrated in FIG. 1, a clip 21 of the spring pressed pincher type is used to secure the two ends 14 and 15 together. This type of clip is usually found in any dentist's office and is otherwise readily available. In FIG. 5, a snap button 22 is illustrated as being applied to the end 14 of the shield while the end 15 has a plurality of projecting nibs 23 to which the button 22 is selectively securable. In FIG. 6, both of the ends 14 and 15 are shown as having adhering strips of plastic material 24 thereon which upon contact releasably secures the strips to each other and the ends 14 and 15 in releasable fixed relation. In FIG. 7, a shield 25 is illustrated having the ends 14 and 15 omitted and in the place thereof ties 26 are heat sealed or otherwise attached for drawing the shield about the neck and securing it in fixed relation thereto. It is evident from the various types of securing means herein illustrated that there are other types suitable in the art which could be employed to support the shield directly over the larynx and the thyroid gland from the chin to the sternum to provide desired protection for the thyroid gland from the X-rays.

I claim:

1. In a thyroid gland protector, a shield made of a material substantially impervious to X-rays having a width at the center to extend from the chin to the sternum and to encompass the forward area of the neck as a collar so as to shield the larynx and the thyroid gland from X-rays applied thereabove to the teeth, the material of the shield at the ends extending beyond the back of the neck so that the ends can contact each other, and means for securing the contacted ends of the shield together at the back of the neck to retain the shield in said position at the front of the neck and provide protection circumferentially thereabout.

2. In a thyroid gland protector as recited in claim 1, wherein the shield is of crescent shape having mateable top and bottom arcuate edges which blend into ends which are securable together.