

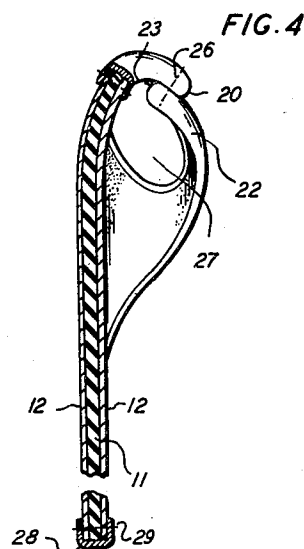
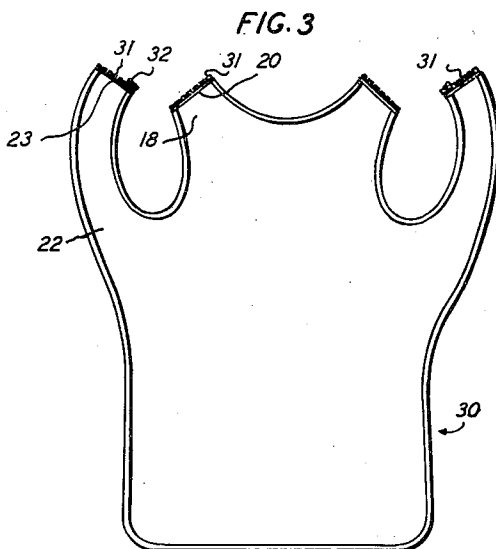
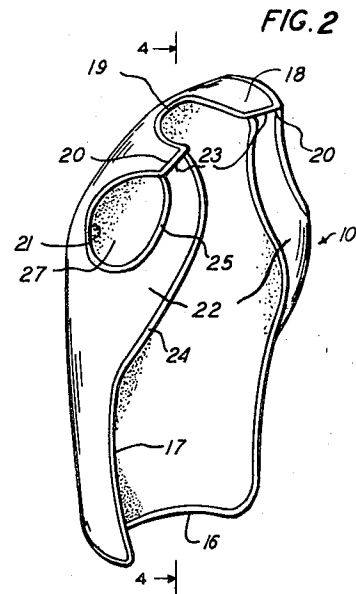
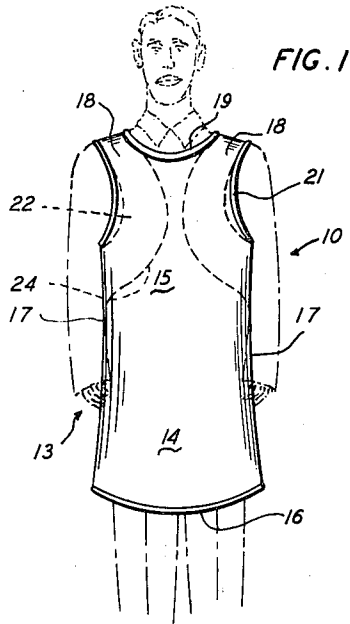
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X-RAY PROTECTIVE APRON

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X-RAY PROTECTIVE APRON

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This invention relates to protective garments. More particularly it concerns aprons which protect the wearer against the harmful action of X-rays.

X-ray protective aprons have been made which include one or more sets of straps, strings or the like for retaining the apron in conformed relation to the body of the wearer. In addition to the problem of attaching such straps or strings to the apron, there is also the inconvenience of tying and untying the straps or strings. Accordingly, an object of this invention is to provide an improved apron which is designed to be worn without the need for straps or strings to keep the apron in conformed relation to the body of the wearer and which is adapted to be applied or removed from the body of the wearer with a minimum number of motions.

Another object of this invention is to provide an improved X-ray protective apron made from flexible sheeting loaded with heavy materials which are opaque to X-rays, the apron being designed to more uniformly distribute the weight of the apron as a whole relative to the shoulders of the wearer, whereby the apron may be worn with maximum comfort.

A further object of this invention is to provide an improved X-ray protective apron made from an integral sheet of rubber or plastic loaded with heavy material opaque to X-rays, and comprising a front body covering portion and a pair of back covering portions, the last mentioned portions being adapted when the apron is being worn, to curve the front body covering portion into closely conforming relation to the hips and thighs as well as the frontal portions of the wearer, without the need for retaining straps or strings.

Yet another object of this invention is to provide an X-ray protective apron made from a loaded rubber or plastic sheeting which comprises a frontal body covering portion and a pair of laterally and upwardly extending portions which interconnect laterally spaced portions of the upper end of the frontal body covering portion with opposed side edge portions of the frontal body covering portion to form a pair of shoulder covering portions and a pair of arm holes, the laterally and upwardly extending portions forming transversely bent or curved portions at the juncture thereof with the frontal body covering portion, the laterally and upwardly extending portions being split transversely at their juncture points or at a point intermediate the juncture points, the adjacent split portions being detachably attached when the apron is being worn

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yet permitting the split portions to be detached when the apron is not in use, thus allowing the apron to be stored in a flat condition thereby eliminating the possibility of cracking of the sheeting at the bent portions of the apron structure.

Still another object of this invention is to provide an X-ray protective apron which may be worn with either surface exposed, which is of simple construction, is economical to manufacture, is of pleasing appearance and yet is practical and efficient to a high degree in use.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts, which will be exemplified in the construction hereinafter described, and of which the scope of invention will be indicated in the following claims.

In the accompanying drawings, in which is shown illustrative embodiments of the invention:

Fig. 1 is a front elevational view of an apron embodying the invention and being worn by the wearer;

Fig. 2 is a rear perspective view of the apron;

Fig. 3 is a front elevational view of an apron embodying the invention and illustrating a modification thereof, with the shoulder covering and wing portions detached from each other and

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 2.

Referring in detail to the drawings, 10 designates an X-ray protective apron embodying the invention. The same is formed from an integral flexible, rubber or plastic sheeting 11 which is initially compounded with materials which will render the sheeting opaque to X-rays, such as lead, lead oxide or other suitable materials having similar properties. The compounded rubber sheeting is of substantial unit weight which varies with the proportionate amount of opacifying material introduced into the sheet.

The sheeting 11 is covered on either surface thereof with a sheet textile fabric 12, such as stockinette or the like. The fabric 12 may be suitably adhered to the sheet 11 by means of cement or the like.

The composited material 11, 12, is suitably cut to provide a frontal body covering portion 13 of generally rectangular shape. The portion 13 comprises a lower skirt portion 14 and an upper portion 15 extending upwardly therefrom. The skirt portion 14 includes a bottom edge 16 and vertical side edges 17. The dimensions of the

portion 13 may be such that when the apron is worn, the bottom edge 16 may be disposed below the knees of the wearer and the side edges 17 are well wrapped about the hips, thighs and legs of the wearer to afford the maximum protection against the effect of the X-rays.

The upper portion 15 comprises a pair of relatively wide shoulder covering portions 18 integral therewith and which extend upwardly from laterally spaced portions of the top edge thereof. The portions 18 are interconnected at their inner side edges by the intermediate, concavely curved neckline edge 19. Each of the portions 18 terminates in a transverse linear edge 20 with an inwardly and concavely curved outer edge 21 extending downwardly from the outer end of edge 20.

Extending outwardly and upwardly from the opposite sides of the portion 15 at the lower ends thereof and integral therewith, are a pair of similar wing or shoulder blade covering portions 22. Each of the portions 22 terminates at its upper end in a transverse linear edge 23 which is of a width substantially equal to that of the edges 20 on portions 18. Each of the portions 22 comprises an outer, convexly curved edge 24 which extends downwardly from the outer end of edge 23 and merges at its lower end with side edge 17. Each portion 22 also comprises an inner, concavely curved edge 25 which extends downwardly from the inner end of edge 23 and merges at its lower end with the lower end of edge 21. The portions 22 may increase in width progressively from the edge 23 towards the juncture of the portion 22 with portion 15.

In forming the apron 10, each of the wing portions 22 is turned inwardly towards the back surface of body covering portion 13, thus bringing the terminal edge 23 opposite a terminal edge 20 of a shoulder covering portion 18. Each pair of edges 20, 23 is overlapped and secured together by a transverse seam 26, thus forming a pair of armholes 27 with edges 21, 25 defining the openings.

The peripheral edges of the body covering portion 13 as well as portions 18, 22, may be bound with a U-shaped marginal binding 28 secured in place by stitching 29, to give a finished appearance to the apron.

To apply the apron, it is only necessary for the wearer to extend his arms through the armholes 27. The wing portions 22 will automatically assume their normal shoulder blade covering position, as indicated in the dotted lines in Fig. 1. The portions 22 will not only lie flat against the back of the wearer but will also pull on the side edges of the body covering portion 13 as well as on the shoulder covering portions 18. The body covering portion 13 and the shoulder covering portions 18 will thus be closely conformed to the body of the wearer and retained in such conformed relation. It will be apparent that the side edge portions of the body covering portion 13 will be well wrapped about the hips, thighs and legs of the wearer to afford maximum protection against the harmful effects of the X-rays.

It has been found that due to the surface extent and weight of the wing portions 22, the frontal body covering portion 13 and the shoulder covering portions 18 are retained closely against the body of the wearer, despite the fact that the edges 24 of portions 22 diverge from each other, when the apron is worn, as shown in Fig. 1. Furthermore, it has been found that the apron 10 will be retained in body conforming relation

notwithstanding various body movements of the wearer, including a sharp forward bend of the body at the waist, and in the absence of any tying or securing means for interconnecting back portions of the apron.

With a substantial amount of material distributed on the back of the apron wearer, as represented by the wing portions 22, it has been found that the weight of the frontal body covering portion 13 is balanced to such a degree as to provide a better distribution of the weight of the apron as a whole on either side of the wearer's shoulders and thus make the apron more comfortable to wear.

The apron may be removed readily and quickly by merely slipping the arms out of the armholes 27 and without the need for first unfastening strings or straps.

In the event that the outer fabric 12 becomes unduly worn, the apron as a whole may be turned inside out and worn with the inner fabric 12 exposed.

In Fig. 3 is shown an apron 30 embodying the invention and illustrating a modification thereof. The apron 30 is similar to apron 10 except as hereinafter described. In lieu of stitching the overlapped edges 20, 23 of the portions 18, 22, the edges 20, 23 are provided with slide fastener operated closure elements 31 which may be detachably interconnected by means of slide fastener 32. When the apron 30 is not in use and it is desired to store the same, each pair of connected portions 18, 22, are detached by means of slide 32, thus allowing the portions 18, 22 to be extended and to lie in the plane of the body covering portion 13, as shown in Fig. 3. The apron 30 may then be stored in a completely flat condition without danger of cracking the plastic or rubber sheeting 11 at the otherwise bent over portions formed by the juncture of the wing portions 22 with the body covering portion 13 and the bent over portion formed by the juncture of wing portions 22 with shoulder covering portions 18.

It is understood that the wing or shoulder blade covering portions 22 may be in the form of separate members and of a material similar to that of the body covering portion 13. In such case the portions 22 are seamed to the body portion 13.

It will thus be seen that there is provided a garment and modifications thereof, in which the several objects of this invention are achieved and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiments set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings, is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to protect by Letters Patent:

1. An X-ray protective apron comprising a flexible, plastic sheet loaded with heavy material opaque to X-rays, said sheet comprising a frontal body covering portion, a pair of shoulder covering portions of the same material as said body covering portion extending from laterally spaced upper ends of said body covering portion and a pair of wing portions extending outwardly and upwardly from opposite side edges of said body covering portion, the terminal end of each wing portion being connected to the free end of one of the

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shoulder covering portions whereby when said apron is being worn, said wing portions will be disposed flat in contact with portions of the back of the wearer, thereby curving said frontal body covering portion and said shoulder covering portions into conformation with the body of the wearer and to retain said body and shoulder covering portions in body conforming condition in the absence of supplemental securing means.

2. An X-ray protective apron as set out in claim 1, wherein each of said wing portions comprises a convexly curved outer edge extending from the terminal edge thereof to the side edge of said body covering portion whereby said curved edges are disposed in divergent relation to each other at their lower ends when the apron is being worn.

3. An X-ray protective apron as set out in claim 1, wherein each pair of wing and shoulder covering portions are detachably attached to each other.

4. An X-ray protective apron comprising a weighted flexible sheet of rubber which is opaque to X-rays, said sheet being substantially rectangular in shape and comprising a bottom edge, a pair of side edges extending from said bottom edge and a concavely curved top edge portion, a

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pair of shoulder covering portions integral with said sheet and extending therefrom on opposite sides of said curved edge portion, each of said shoulder covering portions terminating in a transverse linear edge, a wing portion of weighted flexible rubber extending outwardly and upwardly from each of the side edges of said sheet at opposed points intermediate the bottom and top edges of said sheet, each of said wing portions terminating in a transverse, linear edge and including an outer edge extending from said linear edge to the side edge of said sheet, the terminal edge of each of said wing portions being attached to the terminal edge of one of said shoulder covering portions, the width of each wing portion increasing progressively from its terminal portion toward its juncture with the side edge of said sheet.

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