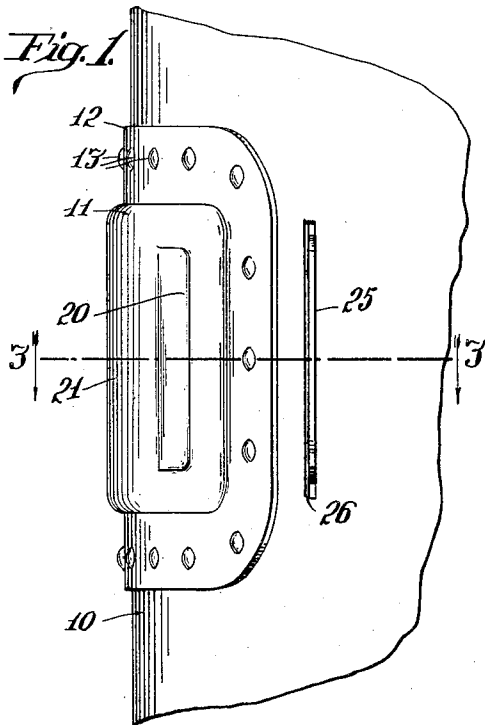
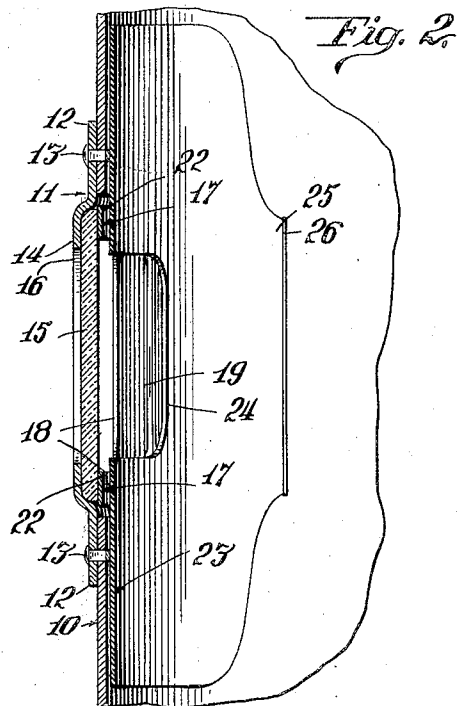
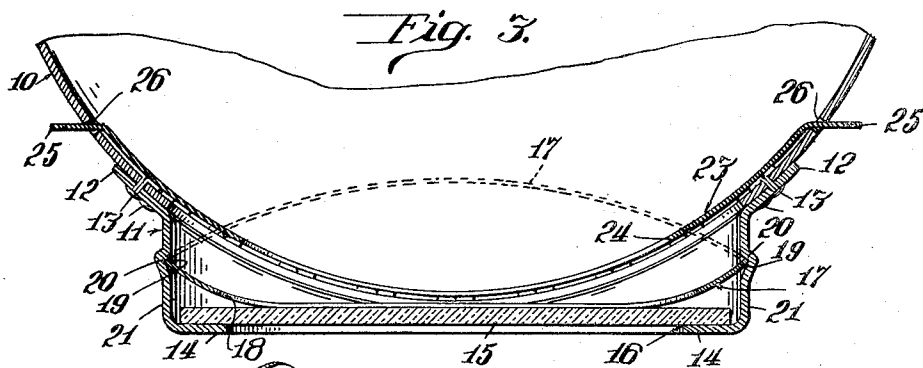
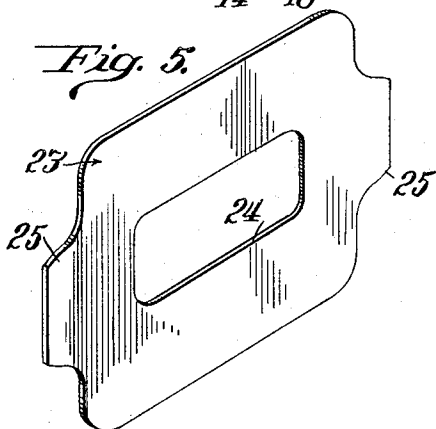
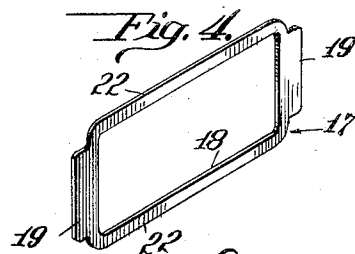


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FACE PROTECTOR

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UNITED STATES PATENT OFFICE

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FACE PROTECTOR

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My invention relates to a protective face shield or helmet designed for shielding the eyes and face of workmen who are engaged in welding operations and other operations requiring proper protection.

My invention has for its object the provision of means whereby the transparent element or lens of the protector may be firmly and at the same time removably held in place.

The invention also has for its object the provision of means whereby the metallic portions of the protector, namely the glass-holding metallic frame and the metallic fastening means on the face side of the protector, will not be exposed to the face and eyes of the user but will be insulated therefrom by non-heat and non-current conducting means so arranged that its placement and removal may be quickly accomplished in order that proper access to the lens and lens-holding means may be readily had when occasion requires.

That is to say, my invention involves the provision of means of such construction and arrangement that it may be readily applied to shields or helmets of the general character at present employed and whereby the face and eyes of the user will be fully protected as required in certain operations and as specified by certain governmental requirements.

The invention has for its object the provision of a protector which is comparatively light in weight while at the same time providing the necessary protection against injurious light-rays and the conduction of heat to the face of the user, while at the same time permitting easy replacement of the lens or glass when occasion requires; the invention being applicable for use either in what is known as a hand-shield or a helmet having head-gear for fastening the helmet on the head of the user.

The objects and advantages of my invention will be readily comprehended from the detailed description of the accompanying drawing, wherein:—

Figure 1 is a side elevation of a portion of a protector provided with my invention.

Figure 2 is a vertical sectional view thereof.

Figure 3 is a transverse sectional view

taken substantially along the lines 3—3 of Figure 1.

Figure 4 is a detail perspective view of the lens-holding means.

Figure 5 is a detail perspective view of the insulating means.

As my invention is adapted for use both in connection with a hand shield as well as a helmet, only a portion of the main wall (which is substantially identical in both types) is shown at 10. This main wall consists of any suitable heat resisting material, such as fiber board which is preferably used; the sheet being bowed into proper arcuate formation to fully cover the face of the user and is therefore made to extend about the sides of the head in the manner usual with protectors of this type.

The forward bowed portion of the body 10 is cut away to provide a fenestral or sight opening which is provided with a suitable metallic frame 11 secured to the outer side of the body 10; the sight opening and frame being usually substantially rectangular and disposed transversely of the shield or helmet at a point intermediate of the top and bottom so as to be disposed opposite to the eyes of the user.

The metallic frame 11 is provided with an attaching flange 12 which is usually riveted to the body portion adjacent to the sight opening by means of the metallic rivets 13 which extend through the body portion to the inner face thereof; while the forward side of the frame has an inturned flange 14 to provide a seat for the transparent glass or lens 15; it being understood that the flanges 12 and 14 extend about all four sides of the metallic frame as shown; with the flange 14 arranged to provide the sight opening 16.

In order that the lens 15 may be readily replaced when occasion requires, means are provided for firmly holding the glasses or lens within the frame 11 against the inturned flange 14. My improved lens-holding means comprises an open or skeleton frame 17 composed of thin flexible sheet metal having a rectangular cut-out portion or sight opening 18 of size substantially the same as the size of the sight opening 16 in the main frame 11.

The two opposite end walls of the skeleton frame 17 are provided with ears or extensions 19.

- The opposite side walls of the main frame 11 are shown provided with indentations or sockets 20 which extend in a vertical direction; and these indentations or sockets are adapted to receive the extensions or ears 19 of the lens clamping or holding frame 17.
- The length of the skeleton frame with its side or end extensions 19 is somewhat greater than the distance between the indented side walls 21, 21 of the main frame, thus necessitating the flexing of the skeleton frame 17 in order to insert it in place.

- After the glass or lens 15 has been placed in the main frame on the face-side of the protector, the lens holding frame or means 17 is then put in place by first inserting the ears or extension 19 at one end in an indentation 20 and then flexing or bowing the skeleton frame in the manner shown in dotted lines at 17 in Figure 3, thereby permitting the ears or extension 19 at the other end of the frame 17 to be inserted in the indentation or recess 20 at the opposite end of the main frame 11.

- With both ends of the skeleton frame 17 inserted in the respective indentations as shown and described, the skeleton frame 17 is then pressed or flexed into the full line position shown in Figure 3. The inward flexing of the skeleton frame 17 toward the glass as described causes the upper and lower longitudinal walls 22 to press against the lens as shown in Figure 3, thereby firmly holding the lens within the frame 11 against the inturned flange 14.

- To remove the lens for renewal or replacement, a slight outward pressure or pull on the skeleton frame 17 exerted from the inner or face-side of the protector will cause the skeleton frame 17 to flex into the position shown in dotted lines which permits the ends of the skeleton frame to be easily removed from the indentations or sockets 20, thereby freeing the glass or lens 15.

- I am aware that a skeleton type of frame of resilient metal has been employed for holding the lens in place, but shields employing such lens retainers require the shield to be formed with a flange about the sight-opening formed independently of the lens holding frame; in order to permit the ends of the lens retainer to be positioned back of the flanges; the flanges therefore also restricting the sight opening; and as these flanges are usually made by having the fiber board of the main body of the shield extend beyond or within the area of the glass holding metal frame, the fiber board is frequently cut or broken by the frequent insertion and removal of the stiff resilient retainer or skeleton frame.

- With my improved structure, the sight opening is not interfered with and the re-

tainer or skeleton frame interlocks with the metal frame in which the glass is seated.

In certain operations in connection with which the face protector is intended to be used and as required by certain rules and requirements, it is essential that all metal portions exposed on the face-side of the shield or protector must be covered by a non-conducting covering.

In order to meet these requirements, I have provided a shield piece or member 23 composed of non-conducting material, such as fiber board, similar to that employed for the main body 10 of the protector. This non-conducting auxiliary shield piece 23 consists of a blank of fiber board of size greater than the sight opening in the protector so as to extend beyond the riveted flange 12 of the lens holding metallic frame 11.

The auxiliary shield 23 is provided with a sight-opening 24 substantially equal to the size of the sight-opening 16 in the metallic frame 11; while the opposite sides of the auxiliary shield 23 are provided with ears or extensions 25.

The opposite sides of the shield or protector 10 are provided with slots 26 adapted to receive the ears or extensions 25.

The length of the auxiliary shield piece or covering member 23 is somewhat greater than the distance between the side walls of the protector where the slots 26 are located, and the member 23 is put into place by bowing the same in a manner somewhat similar to that of the lens-holding member 17.

The ears or extensions 25 may then be readily positioned opposite to the slots 26. Upon releasing the member 23, it will immediately flex back to normal position, causing the ears or extensions to pass through the slots 26, as shown in Figure 3, and permit the member to assume the position shown in Figure 3. The member 23 is preferably given a slight transverse curvature before it is inserted in place so as to permit it to be more easily flexed and also permit it to assume the bowed position shown in Figure 3, with the ears or extensions 25 extending through the slots 26 in the opposite side walls of the protector.

It is apparent from the construction as shown in Figure 3, that the entire inner wall of the lens holding metallic frame 11, as well as the inner ends of the metallic rivets or fastenings 13 will be covered and insulated from the face of the user of the protector, with the result that a shield is provided whereby the user is protected, not only from all injurious light rays, sparks, etc., but also from the conduction of heat or other injurious energy through the metallic portions of the shield.

The slots 26 in the side walls of the body portion of the protector and the extensions 25 on the insulating member 23 are so formed

that when the member is inserted in place, the slots 26 will be entirely closed by the extensions which,—due to the stiffness of the fiber board from which the member is preferably made,—extend rearwardly and engage the marginal walls of the slots, as shown in Figure 3.

I have illustrated what I believe to be the simplest embodiment of the invention wherein the interengaging portions of the protector side walls and the insulating member are in the nature of slots and extensions; while the lens holding member or retainer is shown with a single ear or extension at each end, and the invention has been described in terms employed merely as terms of description and not as terms of limitation, but structural modifications are possible and may be made without, however, departing from the spirit of my invention.

What I claim is:

1. In a protector of the character described having a main body provided with a sight-opening and with slots arranged beyond said opening; a lens-holding frame arranged about said opening and riveted to the forward face of the body, the opposite side walls of the frame intermediate of the front and rear sides thereof being provided with indentations on the inner faces thereof; a lens-holding skeleton member of resilient material of length greater than the distance between the side walls of the frame, the opposite ends of the member being each provided with an extension adapted to seat in said indentations; and a sheet of bendable non-conducting material provided with a sight-opening, said sheet being of dimensions greater than said frame and adapted to extend across the sight-opening in the body on the face side thereof, the ends of said sheet having tongues adapted to pass through the slots in the body and thereby removably hold said sheet flush with the inner face of the main body.

2. In a protector of the character described having a main body provided with a sight-opening surrounded by a lens holding frame, said main body on opposite sides of the sight-opening being provided with vertically disposed slots; an insulating member composed of a flat rectangular blank of bendable non-conducting material provided with a sight-opening adapted to register with the sight-opening in the main body and being of length greater than the distance between said slots, the opposite ends of said blank having integral ears adapted to be inserted through and to close said slots in the main body, while the main part of the blank flexes into flush relation with the inner surface of the main body across the sight-opening.

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