Oct. 28, 1941. F. M. BOWERS 2,260,849

FILTER GLASS HOLDER

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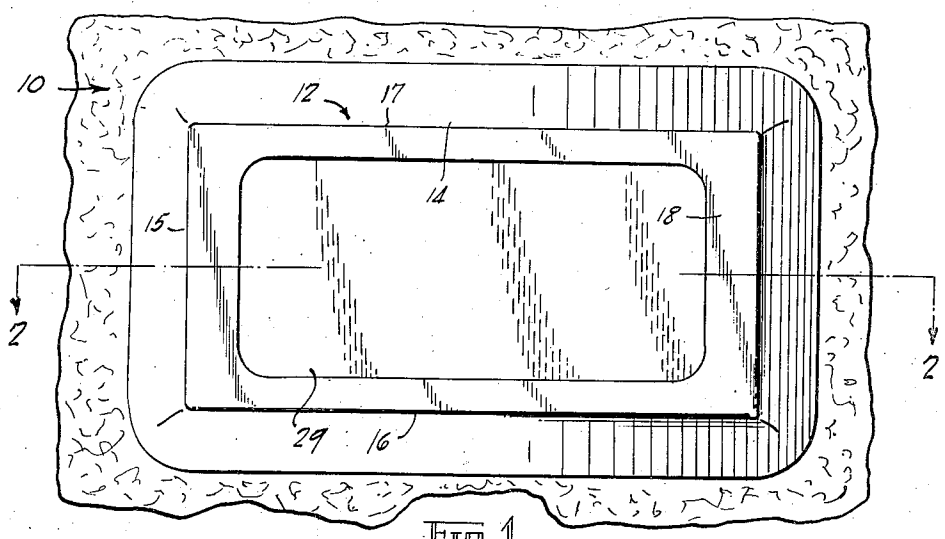


Fig 1

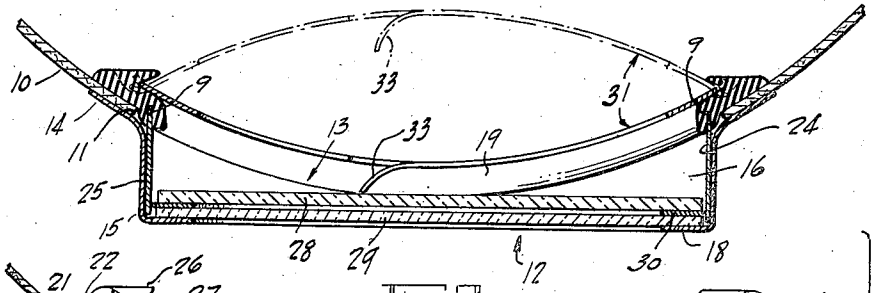


Fig 2

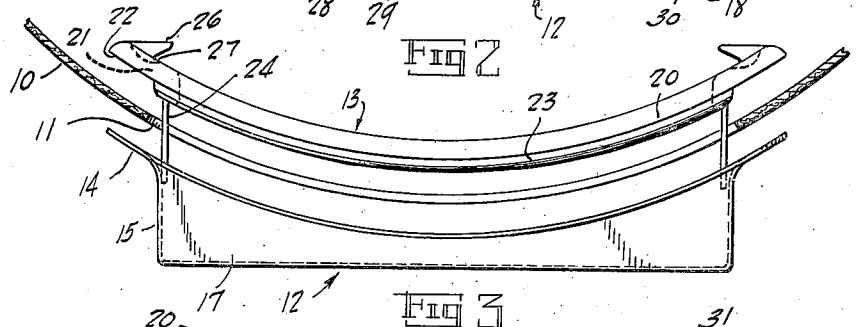


Fig 3

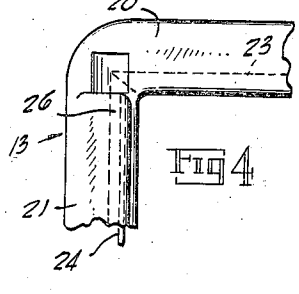


Fig 4

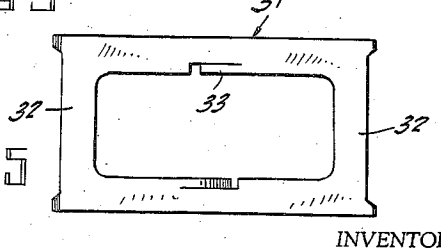


Fig 5

INVENTOR.
FREDERICK M. BOWERS.
BY Joshua R. H. Potts
ATTORNEY.

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FILTER GLASS HOLDER

Frederick M. Bowers, Chester, Pa.

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4 Claims. (Cl. 2—8)

This invention relates to filter glass holders such as are commonly included in welding helmets and similar protective devices for the purpose of holding a ray filter in position.

A welding helmet ordinarily includes a mask or shield that may be made from an appropriate rigid and preferably insulating material. This mask or shield is formed with a window opening designed to be disposed in front of the user's eyes. Following conventional practice in this art a filter glass holder is associated with the window opening for detachably holding in effective position a ray filter and one or more protective glasses.

Due to the fact that the major part of the filter glass holder projects forwardly in front of the mask to assume an external position with respect thereto, together with the nature of the work with which the helmets are used, namely electric welding, it has become accepted practice to employ some good electric insulating material in the manufacture of the glass holders; obviously to guard against transmission of electrical shocks to the wearer in the event the holder might contact an electrical conductor.

The insulating materials employed generally have been of the class of phenol condensation products such as Bakelite, because such compositions possess the ability to be molded while in a plastic state and yet assume a final state of rigidity.

However, certain undesirable characteristics are inherently present when such a material is employed in the making of the holder. In the first place, it chips and breaks easily and under conditions of practical usage will not provide a long service life. Moreover, the manufacture of filters from such a material is a comparatively complicated and costly process.

With the foregoing conditions in mind the invention has in view, as its foremost objective, the provision of a filter glass holder that is designed for mounting in a window opening of the shield of a welding helmet to present a portion of the holder disposed externally of the shield, and this exteriorly disposed part is made of sheet metal.

The use of sheet metal as the material from which this part of the holder is made is extremely advantageous from the aspect of the manufacturer, and also is desirable from the viewpoint of the user in that the likelihood of chipping and breaking is substantially obviated and the service life of the holder prolonged.

However, the use of sheet metal in manufacturing this part of the holder immediately creates the hazard of the possible transmission of electrical shocks to the wearer of the helmet. Accordingly the invention has in view, as a further object, the provision of a filter glass holder of the character above noted including the metallic external part, and which metallic part is fully insulated from the inner portions of the holder which might contact the user's person.

In carrying out these objectives in a practical embodiment the invention contemplates an arrangement in which the outer metallic holder part is disposed exteriorly of the shield about the window opening, while the inner part that is disposed on the inner face of the shield includes structure interlocking with the outer part to maintain the assembled relationship.

More in detail the invention has in view, as an object, the provision of a filter glass holder including inner and outer parts that are welded together on the shield to maintain the assembly.

Yet another object of the invention is the provision of a filter glass holder of the character above described including an inner part that is made from a good insulating material such as Bakelite, and in which material are embedded metallic members that are welded to the outer part.

Various other more detailed objects and advantages of the invention will in part become apparent, and in part be hereinafter stated, as the description of the invention proceeds.

The invention, therefore, comprises a filter glass holder including inner and outer parts, the outer part being of metal with the inner part of insulation and carrying members designed for interlocking with the outer part to maintain the holder assembled on the shield of a welding helmet.

For a full and more complete understanding of the invention reference may be had to the following description and accompanying drawing, wherein

Figure 1 is a front elevational showing of a portion of a shield of a welding helmet with a filter glass holder applied thereto in accordance with the precepts of this invention,

Figure 2 is a horizontal sectional view taken about on the plane represented by the line 2—2 of Figure 1,

Figure 3 is a view developing the parts of the filter glass holder and the shield in exploded relationship showing the mode of assembly,

Figure 4 is a fragmentary view of one part of the holder, and

Figure 5 is a plan view of the spring employed

to hold the ray filter and protective glasses in position.

Referring now to the drawing, wherein like reference characters denote corresponding parts, the shield or mask of a welding helmet is shown at 10 and is formed with the usual window opening 11. Following conventional practice in this art the shield 10 is made from a material having insulating qualities such as a fibrous material that may be molded into the required shape and ultimately attain properties of stiffness and rigidity. Shields and masks of such fibrous material are well-known in this art. It will be noted that this shield 10 is curved in one direction, taking the form of a segment of a cylinder.

The filter glass holder comprises an outer part which is referred to in its entirety by the reference character 12, and an inner part designated generally at 13. The outer part 12 comprises a base flange 14 that is shaped to snugly engage the shield 10 about the window opening 11. Outstanding from the base 14 are side walls 15, a bottom wall 16 and a top wall 17. These side, top and bottom walls 15, 16 and 17 are turned inwardly at the outer end to provide front flanges designated 18.

The inner part 13 comprises a framework that conforms to the shape of the mask about the window opening. The framework is defined by the bottom piece 19, a top piece 20 and side pieces 21. The top and bottom pieces are curved to correspond to the curvature of the mask 10, while the side pieces 21 are straight, but these side pieces present faces at 22 designed for engagement with the shield 10 at the sides of the opening 11. If desirable, a small bead or flange designated 23 may surround the parts 19, 20 and 21 and project slightly into the window opening at 11.

Projecting inwardly from the bead 23, at the inner end of each of the sides 21, are metallic side plates 24. The inner edges of these plates 24 are embedded in the side pieces 21 of the framework, a material such as Bakelite being susceptible to such a mode of assembly. To insure of a firm anchorage of the plates 24 and the Bakelite sides 21, the portions of the plates which are embedded are formed with openings shown at 9. The Bakelite is molded into these openings 9 and provides a key structure that securely bonds the plates 24 thereto.

In assembling the holder on the mask 10 the outer part 12 is first positioned with the base structure 14 engaging the mask 10 about the window opening 11. The framework of the inner part 13 is then positioned by inserting the side plates 24 through the window opening 11 from the inner side. When the parts 19, 20 and 21 of the framework are brought into engagement with the inner face of the mask the side plates 24 will be in snug engagement with the inner walls of the sides 15.

These parts 24 and 15 are then spot welded or riveted together, as represented at 25 in Figure 2. In this position the mask 10 about the window opening 11 is firmly secured between the base structure 14 of the outer part 12 and the framework of the inner part.

The side pieces 21 of the inner part 13 also carry flanges 26 which provide undercut grooves 27. With the parts assembled in the manner aforesaid, a ray filter, such as shown at 28, together with a protective glass 29 and a gasket 30 that is interposed between the filter 28 and glass 29, are positioned in the outer holder part 12 in the manner illustrated. A spring retaining device, such as shown in Figure 5 and designated 31, may now be positioned to yieldably hold the glass plates in the position illustrated. This spring retaining device 31 has end parts 32 that are received in the grooves 27 to hold the same in position. Spring tongues 33 actually engage the filter glass 28 to yieldably maintain the glass assembly in position.

The mode of assembling the spring retaining device 31 with the holder is depicted by the broken lines of Figure 2. The end parts 32 are first positioned in the grooves 27, with the spring device 31 bowed outwardly, as brought out by the broken lines. The device may then be snapped inwardly to assume the full line position.

While a preferred specific embodiment of the invention is hereinbefore set forth it is to be clearly understood that the invention is not to be limited to the exact constructions illustrated and described, because various modifications of these details may be provided in putting the invention into practice within the purview of the appended claims.

I claim:

1. In a welding helmet, a shield having a window opening, a filter glass holder assembled in the opening, said holder comprising an outer metallic part having side walls, and an inner part of insulating material, and metallic side plates having end portions embedded in and bonded to said insulating material, said side plates extending through the window opening and engaging the said side walls to which they are welded.

2. A filter glass holder of the character described comprising an outer part of sheet metal including a base adapted to engage the shield of a welding helmet about a window opening, side, bottom and top walls outstanding from said base and terminating in inturned flanges, an inner part adapted to engage the inner face of the shield about the window opening and consisting of a framework made from an insulating material, and side plates carried by said framework and adapted to pass through said window opening and engage the side walls of said outer frame part to which they are adapted to be welded.

3. In a welding helmet, a shield having a window opening, a metallic filter glass rotating frame having a base engaging the outside margin of said window opening, a frame anchoring part of insulating material having a base engaging the inside margin of said window opening, and connecting means having one end joined to said anchoring frame with the other end extending through said window opening and secured to said retaining frame to clamp the margin of said window opening between said bases.

4. In a welding helmet, a shield having a window opening, a metallic filter glass retaining frame having a base engaging the outside margin of said window opening, a frame anchoring part of insulating material having a base engaging the inside margin of said window opening and a flange extending into and lining said window opening, and metallic connecting members having one end embedded in and bonded to said anchoring frame with the other end extending through said window opening and welded to said retaining frame to clamp the margin of said window opening between said bases.

FREDERICK M. BOWERS.