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J. O'REILLY

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WELDER'S HELMET

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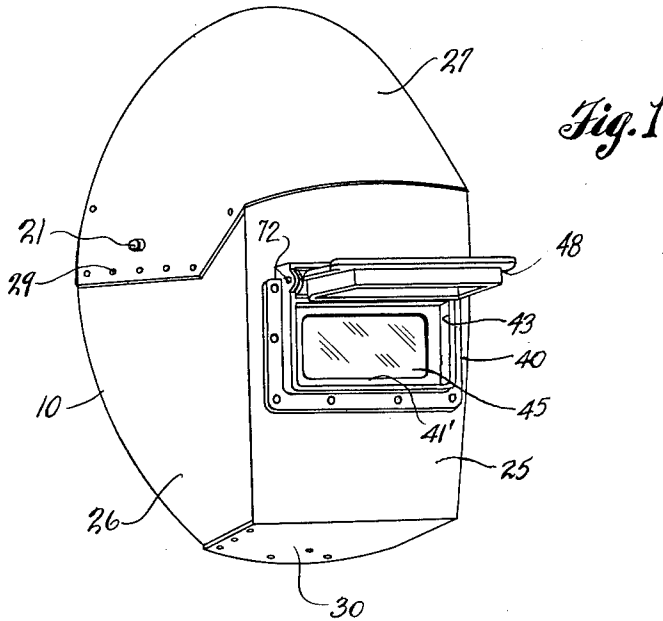


Fig. 1

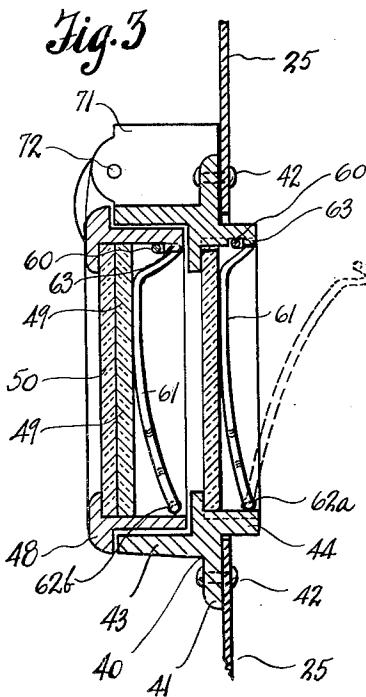


Fig. 3

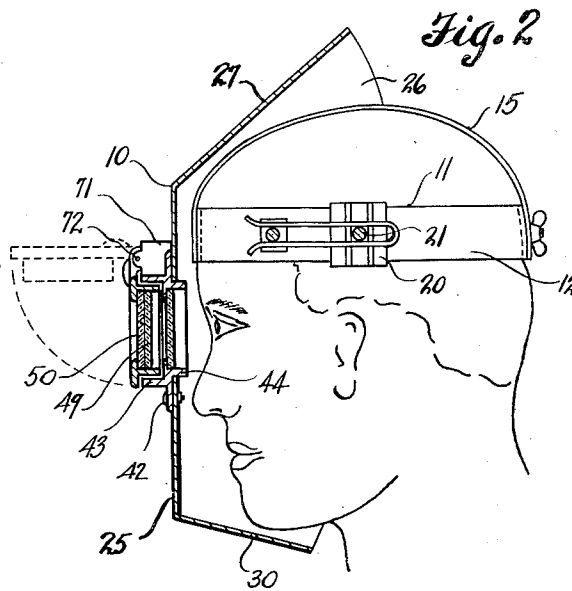


Fig. 2

INVENTOR.
JOE O'REILLY

BY
Cook & Robinson
ATTORNEYS

UNITED STATES PATENT OFFICE

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WELDER'S HELMET

Joe O'Reilly, Tacoma, Wash., assignor to Welding Service Sales, Inc., San Francisco, Calif., a corporation of California

Original application June 19, 1943, Serial No. 491,452. Divided and this application September 2, 1944, Serial No. 552,498

4 Claims. (Cl. 2—8)

1

This invention relates to welder's helmets or masks, and devices of a like character comprising a head band and a mask body that is supported therefrom for pivoted movement between a lowered, face protecting position, and a lifted position at which it is disposed out of line of vision of the user; the invention being a divisional part of an application filed on June 19, 1943, under Serial No. 491,452, and having for its principal object, first, to provide an improved type of window and ray filter glass holder within the front wall of the mask that will permit convenient and easy changing of window or filter glass when such is required, and also will permit the filter glass to be adjusted out of the line of vision without lifting the mask; second, to provide an improved type of "flip front" window and novel means for yieldingly holding it either in raised or lowered position; and, third, to provide various improved features in the general construction of parts that will simplify and lessen the cost of production of such devices.

Other objects of the invention reside in details of construction of parts, and in their combination and mode of use as will hereinafter be fully described.

In accomplishing the above mentioned and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein—

Fig. 1 is a perspective view of the present helmet or mask as seen from the front, with the filter glass frame in its raised position.

Fig. 2 is a central, vertical section through the mask, illustrating the mode of application of the device to the user's head.

Fig. 3 is an enlarged vertical section through the window structure, with the flip front in closed position.

Fig. 4 is a perspective view of the window frame and filter glass mounting frame, parts of which are broken away for purpose of better illustration.

Fig. 5 is an enlarged sectional detail of one of the mounting hinges of the "flip front" frame.

Fig. 6 is a section on line 6—6 in Fig. 5.

Fig. 7 is a perspective view of one of the plate holding springs clips.

Referring more in detail to the drawings—

Devices of this kind are usually worn by welders to protect their faces against heat and flying metal sparks, and to protect the eyes against the glare of the welding flame, and it is advantageous that the mask body be supported from the head

2

of the user in such manner that he may, without undue effort, or waste of time, tilt the mask upwardly out of his line of vision when not needed and to give better view of the work at hand, and may later be quickly moved back to its protective position.

In its present preferred form of construction, the device comprises a mask body which is designated in its entirety by reference numeral 10, and a head harness which is designated in its entirety by reference character 11. The head harness, as seen best in Fig. 2, comprises a band 12 that is shaped to encircle the head of the user of the mask. Another strip 15 is arched to cross over the top of the head and this is attached at its ends to the band 12 centrally at the front and at the back of the head.

Fixed to the band 12, at opposite sides, and against the outside surfaces of the band, are latch blocks 20, and also fixed in the band and extended outwardly therefrom and centrally through the blocks 20 are pivot trunnions 21 on which the opposite side wall portions of the mask body are mounted.

The mask body is made of a light, durable and fire resisting material such as fiber or sheet metal. As best shown in Figs. 1 and 2, it comprises a substantially flat front wall 25 from which opposite side portions 26 are turned back in divergence. Also, there is a top portion 27, which is rearwardly and upwardly inclined from the top edge of the front wall. The opposite side flanges of this top section are overlapped with and are attached to corresponding side portions, by rivets, or the like, as indicated at 29 in Fig. 1. Also, there is a bottom wall portion 30 that is turned back from the bottom edge of the front wall to underlie the chin of the user.

The trunnions 21 which extend from the head band 12, at opposite sides of the harness, extend pivotally through the rear edge portions of the side walls 26 of the mask, and permit the mask to be swung upwardly thereon from the position in which it is shown in Fig. 2, to a position over the head. In the latter position, it is out of the line of vision of the wearer.

In the use of such a device, it is quite advantageous that it be not required to remove the mask from the head, but that a clear view of the work be provided merely by tilting the mask to the raised position, where it will be yieldingly held during inspection of work, and then to bring it down to a lowered, protective position as soon as the welding torch is brought into use. It is required, however, that some means be provided

to yieldingly retain the mask at a set position. This means is not a part of the present invention, but is set out in the application of which this is a divisional part. Also, in the lowered position of the mask, it is naturally required that provision be made for not obstructing view of the work. Therefore, a window is placed in the front wall 25 in alinement with the user's eyes, as will be understood by reference to Fig. 2.

The window which is applied to an opening in the front of the mask comprises a rectangular frame designated in its entirety by reference character 40. This frame is preferably of plastic, having extending flanges 41 surrounding the frame and designed to engage flatly against the front wall about the opening in the mask, and to receive attaching rivets or bolts 42 therethrough, as noted in Figs. 1 and 3. The frame 40 also comprises flanges 43 and 44 that, respectively, project outwardly and inwardly with respect to flange 41. The flange 44 sets off a rectangular frame that extends through the front wall opening, as seen in Figs. 2 and 3, and fitted within this flange 44 and seated about its edges against a bottom flange 41', surrounding the window opening in the frame 40, is a plain glass panel 45 which may be of one or more layers. Hinged to the front of the frame flange 43 to swing outwardly and upwardly therefrom, is another window of the "flip front" type comprising a frame 48 in which a filter glass panel 49 is mounted. The hinge mounting for this window is best illustrated in Figs. 5 and 6 and will later be described in detail. The panel 49 is of dark glass or what may be termed ray filter glass, designed to protect the user's eyes from the glare of the welding torch, and overlying this, is placed a panel of transparent glass 50 merely to protect the more expensive ray filter panel.

In order to hold the glass panels 45 and 49 in place in their respective frames, I have provided each frame with a spring wire holding clip, one of which is shown in Fig. 7. Each clip comprises a cross portion 60 from which extend opposite side portions or leg portions 61-61, bent substantially at a right angle to the cross portion and formed with out-turned pivot ends 62-62, serving as mounting trunnions or pivots. The pivot ends 62 of the clip that is applied to the frame 40 are seated in holes 62a in opposite side parts of the flange 44 that surrounds the window opening. Likewise, the leg portions of the clip that is applied to the hinged frame 48, are applied to holes 62b in the opposite sides of that frame. The cross portion 60 of each clip is bowed away from the glass panel which it retains, as will be observed in Fig. 4. Likewise, the legs 61-61 are bowed, but inwardly so as to engage along their medial portions with opposite side edge portions of the glass panel, and there is a lug 63 projecting from the panel enclosing flange back of which the cross piece 60 may be engaged to hold the clip functionally engaged with the glass panel. When so held, the inwardly bowed legs 61-61 will be pressed tightly against the ends of the glass panel to hold it in place, as understood by reference to Figs. 3 and 4. The legs 61-61, for a major part of their length, overlie the corresponding edges of the panel, but along their inner end portions, are outwardly offset so as to lie outside the panel edges. At the ends of these offset portions, the trunnions 62 are formed. When it is desired to remove a glass panel, it is only necessary to lift and disengage the cross piece of the retaining clip 60 from the

lug 63, then to swing the wire clip outwardly on its pivots, as shown in dotted lines in Fig. 3, leaving the panel free for displacement from the frame; it being observed in Fig. 3 that the pivots 62-62 enter the frame flanges close to the longitudinal edge that is opposite that adjacent which the lug 63 is located. The glass panel is of such dimensions that when the clip is released, it can be easily displaced from within the frame.

To hingedly mount the flip front frame 48 on the frame 40, it is equipped at one of its longitudinal edges, and adjacent the ends of the frame, as noted in Figs. 5 and 6, with projecting lugs 70, each of which is located within the open upper end portion of a spring retainer housing 71 that is formed as a part of the frame 40 which is fixed to the mask. As seen in Fig. 5, each lug 70 has a pivot or hinge pin 72 extended there-through, and through the side walls of the housing, whereby to hingedly mount the flip frame 48 in such manner that it can be closed over or lifted from the frame 40. In Fig. 1, the frame 48 is shown in its raised position so that the mask user can see through the clear glass panel 45. In Fig. 2, the flip frame is shown closed over the frame 40 so that the user's eyes are then protected against glare by the panel 49.

Each lug 70 has two flat end surfaces 75 and 76 in planes at nearly a 90° angle to each other, and within each housing is seated a coiled spring 78 which at one end mounts a seat thereon. Each seat comprises a block 79 formed with a flat top surface 79' and with a stem portion 80 that extends axially into the coils of its mounting spring to hold the seat in proper position. The block substantially fits the housing, and it retains the spring against upsetting in the housing.

As will be observed in Fig. 5, the spring acts directly toward the hinge pin and therefore when the flip front is raised, the spring presses the block tightly against the flat surface 75 and thereby yieldingly retains the flip front in raised position. When the flip front is pushed toward closed position, the front mounting door swings about the hinge pin, bearing inwardly on the block, compresses the spring and finally the flat surface of the block is permitted to engage flatly with the surface 76 of the lug, thereby to yieldingly hold the flip front in its closed position. The hinge construction is such that whenever the point of the lug at the junction of surfaces 75 and 76, passes over a dead center position in swinging the flip front from one position to another, then the spring acts to snap the frame 40 to the position toward which it is being moved.

It is anticipated that a lubricant will be placed on the surface of the block so that the action of the flip front will be easy.

Assuming the parts of the present device are so constructed and have been assembled as described, there will be produced a device that has embodied all of the important features which welders or users of such equipment consider essential or desirable.

The provision of this flip front window permits clear vision when such is desired without lifting the mask, and provides for the quick and convenient closing of the ray filter window during the welding operation for the protection of the user's eyes. The novel clips for holding the glass panels in place permits easy and quick removal and replacement of the panels, when such is required.

Having thus described my invention, what I

5

claim as new therein and desire to secure by Letters Patent is:

1. In a window for shields of the character described, comprising an open, rectangular frame having an inwardly extending flange and a transparent panel removably applied in the frame and seated against said flange; a clip applied within the frame opening to retain the said panel in place; said clip comprising a cross member extending across the frame opening adjacent one edge of the panel, and opposite end legs extending from the ends of the cross member along and overlying opposite edge portions of the panel and pivoted at their ends in the frame in a manner allowing the clip to be swung outwardly from the panel for its removal, and a lug on the frame back of which the said cross member of the clip can be removably engaged thus to hold the opposite end legs of the clip pressed against the panel and the panel seated in place.

2. A clip as recited in claim 1 wherein the cross member is resilient and is bowed between its ends away from the panel and is placed under tension when holdingly engaged against said lug.

3. A spring clip as recited in claim 1 wherein

6

the opposite end legs are resilient and are bowed between their ends toward the panel and are placed under tension when pressed against the panel by the seating of the cross member against the holding lug.

4. In a window for shields of the character described comprising an open, rectangular frame having an inwardly extending flange, and a transparent panel removably contained in the frame and seated against the flange; a clip applied within the frame to retain the said panel in place; said clip comprising a spring wire cross member extending across the frame opening adjacent one edge of the panel, opposite end legs of spring wire extending from the ends of the cross member along and overlying the opposite edge portions of the panel for a substantial distance, then offset outwardly beyond the edges for a short distance, then turned outwardly to form mounting pivots that are pivotally mounted in the frame to permit the clip to swing in the frame toward and from the panel, and a lug on the frame back of which the cross member may be engaged to hold the panel in position.

JOE O'REILLY.