

May 19, 1953

C. L. OLSON

2,638,592

WELDING MASK

Filed May 24, 1951

Fig. 1.

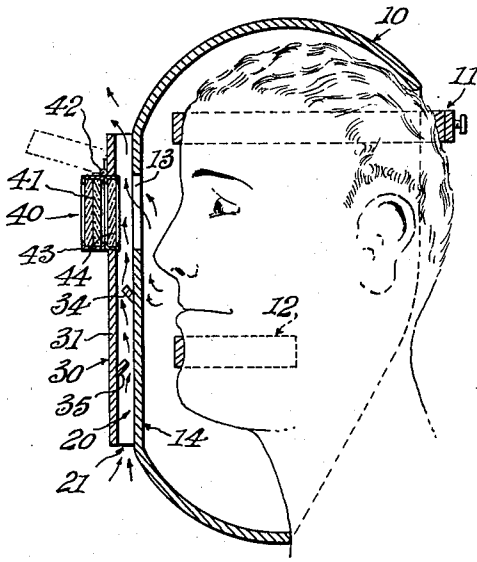


Fig. 2.

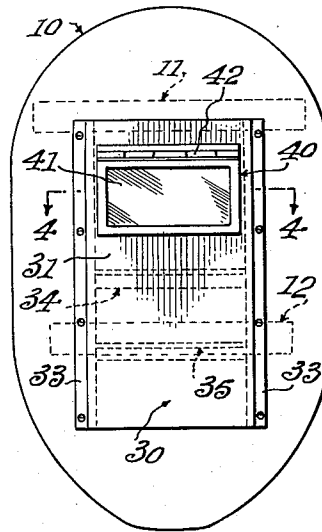


Fig. 3.

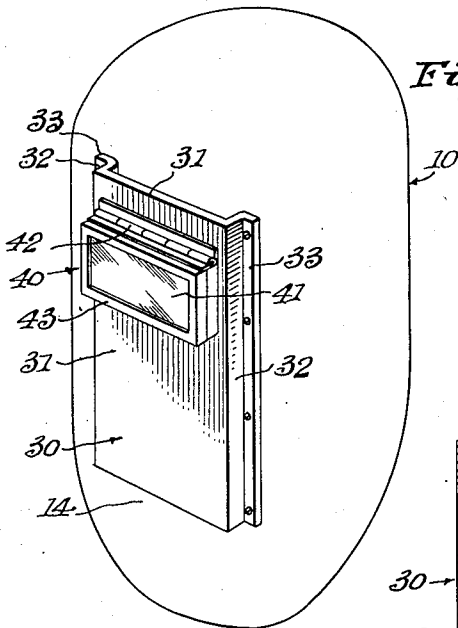


Fig. 4.

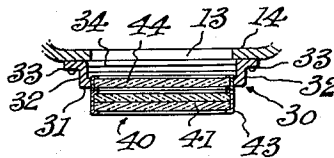
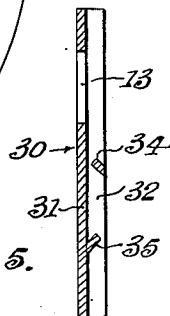


Fig. 5.



INVENTOR.
CURTIS L. OLSON
BY *James D. Mills*
Joseph T. Brown

ATTORNEYS

UNITED STATES PATENT OFFICE

2,638,592

WELDING MASK

Curtis L. Olson, Alexandria, Va.

Application May 24, 1951, Serial No. 228,107

2 Claims. (Cl. 2—8)

(Granted under Title 35, U. S. Code (1952),
sec. 266)

1

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without payment to me of any royalty thereon.

This invention relates to an attachment for use with welder's masks or hoods of the type wherein a fixed or pivoted face protecting shield is mounted in such a manner as to cover the operator's face while operating arc or flame welding equipment. More particularly, the invention pertains to an attachment which may be readily affixed to a conventional fixed or pivoted welder's hood whereby the mask or hood is ventilated in a manner to keep the lens from frosting in cold climates thus permitting the welder to work in these climates. In welding in cold climates, the welder wearing the conventional hood has been handicapped by the condensation and freezing of moisture on the lens. This moisture formation is primarily due to the breathing of the operator which produces a temperature differential on the lens causing condensation of the moisture thereon and freezing thereof by the cold climatic conditions producing a frost on the lens. With the attachment hereinafter described, a conventional welder's mask or hood may be readily but economically ventilated in such a manner as to alleviate the above-described condition. It has been broadly proposed in the prior art to pipe air to a welder's mask so that the welder will have sufficient air to breathe and remove any noxious fumes which may seep into the interior of the mask, and further, it has been proposed in the prior art to allow free air to circulate within the mask to protect the wearer from intense heat, but all of these prior devices have proven objectionable because they fail to eliminate the formation of frost upon the lens when used in extremely cold climates, and in such prior devices, their operation depends upon a forced circulation of air from a compressional source thereof.

One object of the present invention is to provide an attachment to a conventional welding helmet of a vertically disposed air passage channel member or flue which carries a lens system in spaced relation to a sight and breathing opening provided in the helmet or hood and which is open at both top and bottom ends, through which warm air is expelled into the air passage and circulates upwardly as cold air enters the air inlet located at the lower extremity of the air passage duct or flue. This movement of cold air upward and past the lens system prevents the formation of frost on the lens, the lens being in heat-exchange relation with the cold air, which continuously sweeps across the lens.

2

Another feature of this invention is the provision of spaced baffles in the air passage located on opposite sides thereof and extending in opposite relationship one to the other beneath the lens and sight opening to obstruct the air flue against the entrance of harmful sparks or arc flash through the air inlet to the welder's eyes without restricting the flow of air through the duct or flue.

Further objects and advantages of the present invention will become apparent as the description proceeds, and the features of novelty will be pointed out in particularly in the appended claims.

From the description which follows, it will be understood that various structural details and features of the improved device of the present invention may be modified without departing from the spirit of the present invention, and that therefore the accompanying drawings are to be regarded as being illustrative only of the character of the present improvements and as representing a representative, although a typical embodiment of the features upon which the present invention is predicated. The invention will be understood more readily, therefore, by reference to the accompanying drawings, in which:

Fig. 1 represents a vertical sectional elevation of an improved welding hood embracing the features of the present invention, the view showing the manner of wearing the hood during welding operations, it being taken generally on the vertical center line of the hood;

Fig. 2 is a front elevation of the improved device illustrated in Fig. 1;

Fig. 3 is a perspective view thereof;

Fig. 4 is a horizontal section, taken on the line IV—IV of Fig. 2, looking in the direction of the arrows; and

Fig. 5 is an enlarged fragmentary sectional detail of a portion of the device of Fig. 1, designed to show in greater detail certain structural features of the present device.

Referring more particularly to the drawings, reference numeral 10 indicates a welding mask or hood adapted to be secured in place by a headband 11 and a chin rest 12 when being worn, the said mask or hood protectively enclosing an operator's face, it being customary to provide such hoods with a transversely-extending combined sight opening and breather aperture 13 which permits the operator to envision the work during the progress of the welding operation.

The present improvement relates particularly to a means of ventilating a welder's mask or hood as has been indicated above, and more specifically,

3

to a simple attachment for use with a welder's hood which will prevent the formation of moisture or frost upon the lens thereof. This improvement consists in providing an air passage or duct 20, open at both ends and mounted adjacent to the facepiece 14, which duct comprises a channel 30 that encloses the breathing opening 13, the channel 30 including lateral mounting flanges 33. As shown in the drawings, Fig. 1, the channel 30 preferably takes the form of a rectangular plate 31 carrying lens assembly 40 mounted oppositely and adjacent to the breathing opening 13 and includes webs 32 vertically attached to the side edges of plate 31, said webs 32 being provided with the side flanges 33 by means of which the channel 30 is attached in any suitable manner to the facepiece 14.

Baffle plates 34 and 35 are mounted on these webs and oppositely extend within channel 30 intermediate the lens assembly 40 and lower end of said channel. As shown in the drawings, the baffle 34 preferably takes the form of a rectangular bar projecting upwardly and inwardly toward the plate 31 and attached to the webs 32 by any suitable means adjacent to the flange end of the said webs, and the baffle 35 preferably is of the same shape as the baffle 34, and projects upwardly and inwardly toward the facepiece 14, and is attached to the webs 32 at a point adjacent to the plate 31. The lens assembly 40 consists of shaded lens 41 mounted in a frame 43, pivotally connected to plate 31 of the channel 30 by means of a hinge 42 and adjacent a clear glass lens 44 mounted within said plate 31.

In use, with the hood in place over the welder's face, cold air enters the air inlet 21 of the air passages 20, defined by the channel 30. Warm respiratory air exhaled by the wearer of the helmet passes through the combined sight and breathing opening 13, where it comes in contact with the cold air and passes upwardly through the duct or flue 20. This movement of cold air upwardly and past the lens 41 prevents formation of frost on the lens, it sweeping the said lens in heat exchange relation therewith. Furthermore, the baffles 34 and 35 in the air passage prevent the entrance of dangerous sparks or flash from a work-piece being welded into the air duct or flue without restricting the flow of air therein.

The lens assembly is adapted to permit the welder to perform welding operations without being exposed to harmful arc-flash and to perform weld-chipping operations without removing or raising the hood by raising only the shaded lenses which are pivotally attached to said plate of said channel.

Having thus described my invention, what I claim as new and wish to secure by Letters Patent is:

1. A welding hood assembly comprising, in combination, a welder's hood for enclosing a welder's head having a face covering portion with a sight opening in line of sight with the welder's head, plate means mounted on the hood and defining

4

a chimney-acting air passage with the hood, the said passage being vertically disposed and having opposite open ends, the bottom open end being an air inlet and the top open end an air outlet, a lens assembly mounted in the plate means in line of sight of an operator and in spaced relation to the sight opening, said sight opening providing an intake for warm air opening into the vertical chimney-acting air passage, warm air entering the vertical air passage through the sight opening rising through the said vertical air passage and aspirating cold air from the surrounding atmosphere through the open bottom end of the vertical air passage, a mixture of relatively warm and cold air passing as a natural upward draft from the vertical air passage through the open top end thereof, the resulting air draft through the vertical air passage preventing moisture from condensing on the lens assembly, and baffle plate means in said air passage to prevent entrance of arc-flash in the sight opening.

2. A welding hood comprising, in combination, a hood member for receiving and enclosing the face and head of a welding operator and provided with a breathing aperture for passage therefrom of warm air exhaled by the operator during wearing of the hood, means mounted on the hood defining a tubular vertically disposed chimney therewith having an open top end and an open bottom end and communicating interiorly with the said breathing aperture whereby ascending warm air entering the duct from the said breathing aperture aspirates air into the said chimney through the lower open end and draws the said air upwardly through the said chimney responsively to ascension of warm air through its chimney, viewing means communicating with the chimney and positioned in line of vision of the operator, the said viewing means including protective glass means for the eyes of the operator, the said glass means being swept by moving air currents in the chimney in heat exchange relation therewith, the said air currents sweeping the glass means inhibiting condensation of moisture therefrom and fogging and frosting thereof, and a plurality of baffle means mounted in the chimney below the breathing aperture in spaced staggered relation for obstructing aspiration of welding sparks from a workpiece being welded into the chimney by air currents entering the chimney.

CURTIS L. OLSON.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,342,898	DeRosier	June 8, 1920
1,504,029	DeRosier	Aug. 5, 1924
2,384,765	O'Reilly	Sept. 11, 1945
2,390,352	Bouchard	Dec. 4, 1945
2,514,990	Dewan	July 11, 1950
2,579,942	MacLean	Dec. 25, 1951