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Herman

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[54] **LENS HOLDING STRUCTURE FOR WELDER'S HELMET**

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[52] **U.S. Cl.** **2/8**

[51] **Int. Cl.** **A61f 9/06**

[58] **Field of Search** 2/8, 11

[56] **References Cited**

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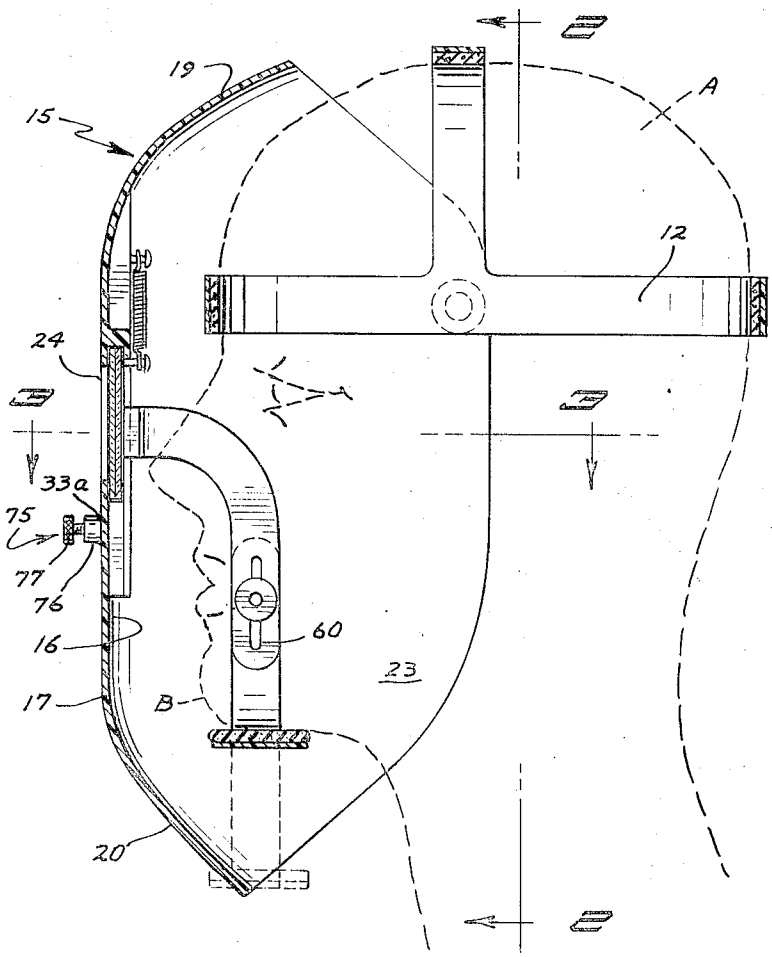
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Assistant Examiner—Wai M. Chan
Attorney—Leo Gregory

[57] **ABSTRACT**

An improvement in the lens holding structure of a welder's helmet consisting of spring means to normally position a lens to overlie the lens opening of the helmet and means operable by the jaw of the operator to move said lens away from said lens opening.

2 Claims, 7 Drawing Figures



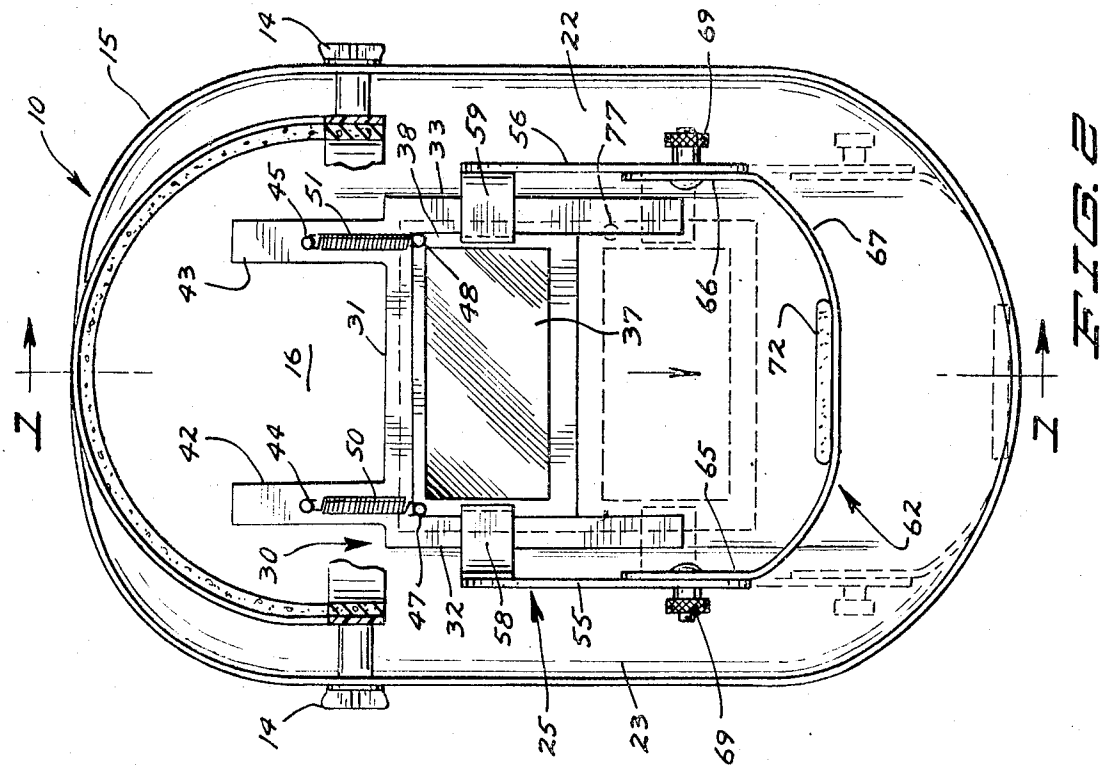

10
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69
Z
Z

FIG. 2

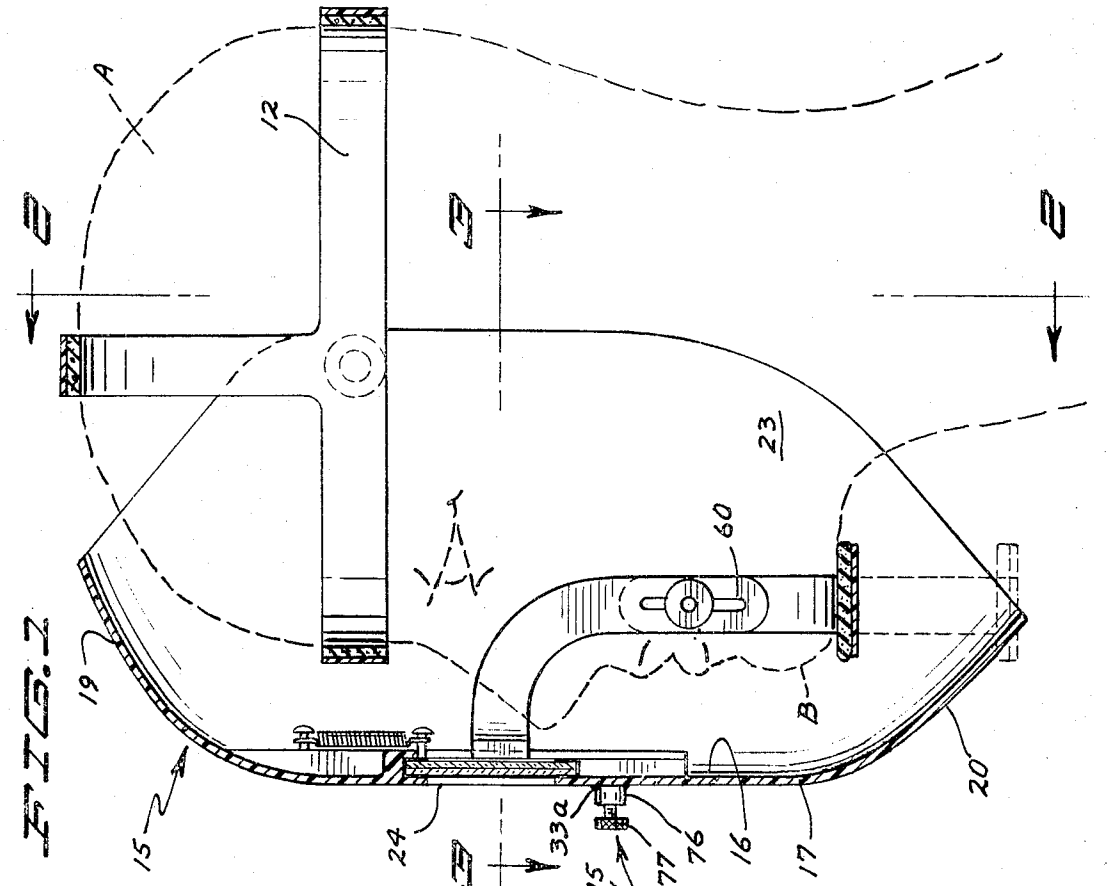
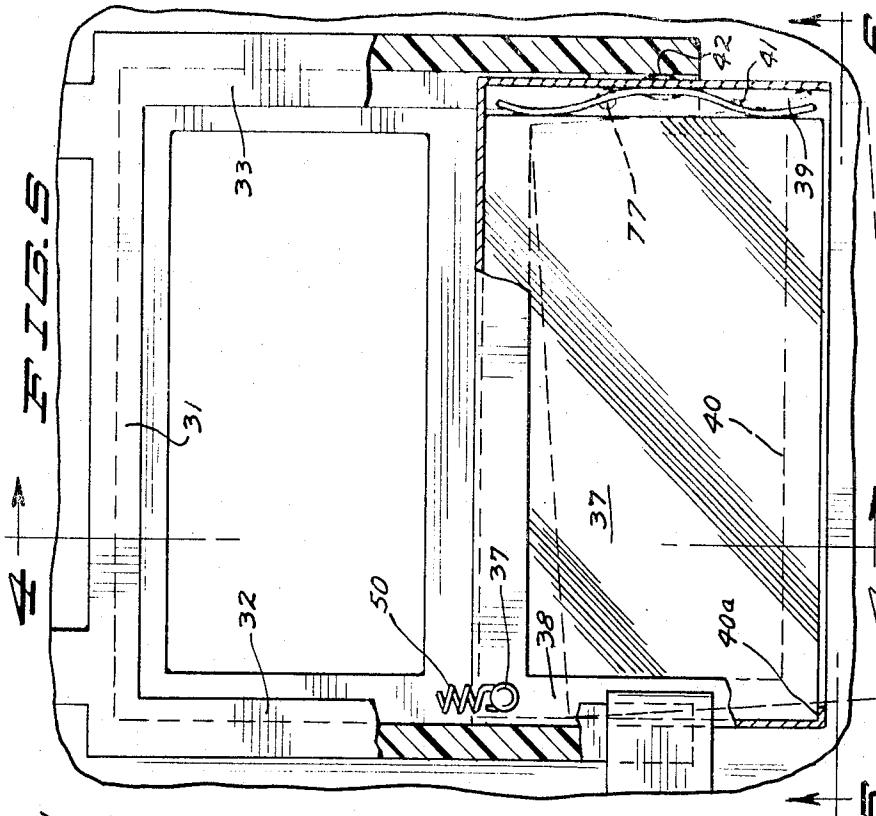
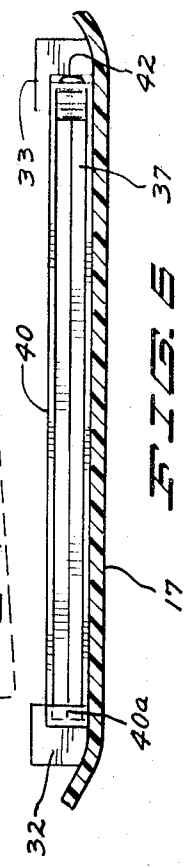
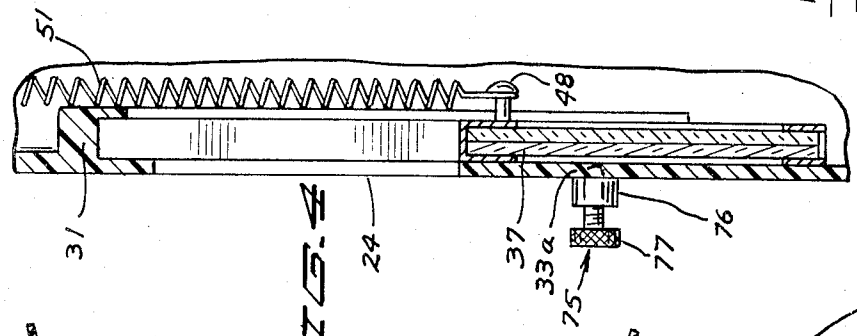
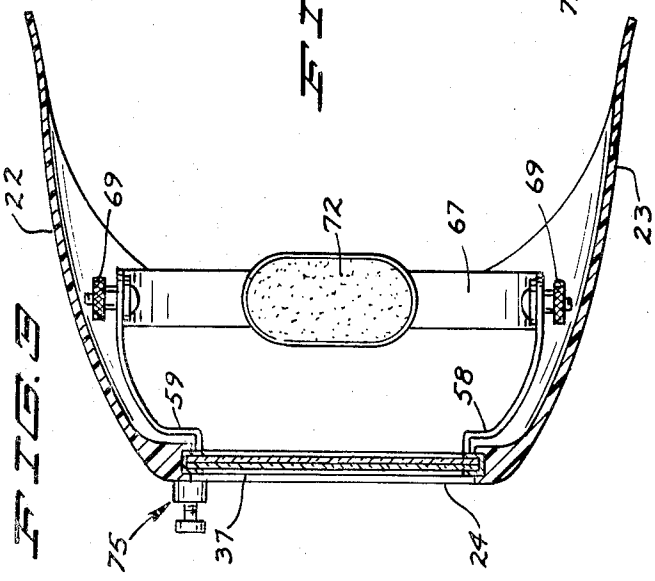

A
12
2
3
2
23
60
19
B
15
24
33a
75
77
76
16
17
20

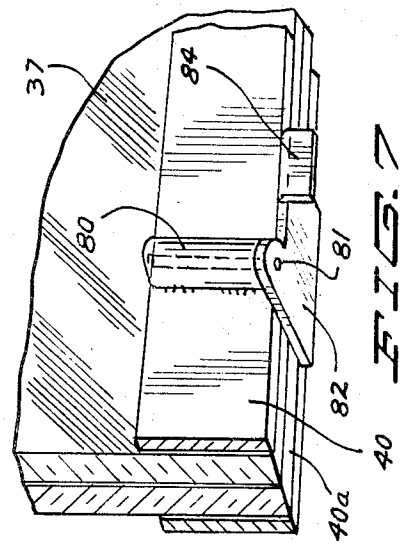
FIG. 1


FIG. 5
33
42
41
39
77
31
40
37
50
32
38
40a
6
6


FIG. 6
42
33
37
40
17
40a
32


FIG. 4
51
48
31
24
37
33a
76
77
75


FIG. 3
22
69
72
67
69
23
59
58
75
37
24


FIG. 7
37
84
80
81
82
40
40a

LENS HOLDING STRUCTURE FOR WELDER'S HELMET

SUMMARY AND BACKGROUND OF THE INVENTION

In the use of a welder's helmet, the welder or operator is commonly required to use one of his hands to swing the hood of the helmet upwardly above his head or to swing open the lens to provide clear vision for arranging his work and positioning his electrode prior to commencing welding. In many types of welding one of the hands of the operator is required for use in positioning or holding the work piece and this is the hand that will be used to move the lens to provide the operator with clear vision to position his electrode with respect to the work piece. Thus it frequently is necessary that the operator clamp the work piece in position which he conveniently could hold manually if one of his hands was not otherwise required to move the lens.

It is desirable to have an improvement in the lens holding structure of a welder's helmet whereby the lens may be operated as desired without using of the hands of the operator.

It is an object of this invention therefore to provide an improvement in the lens holding structure of a welder's helmet whereby the lens thereof may be moved away from and return to overlie the lens opening by a head action of the operator.

It is another object of this invention to provide an improvement in the lens holding structure of a welder's helmet wherein the lens is readily removable for replacement.

It is also an object of this invention to provide an improvement in the lens holding structure of a welder's helmet whereby means are provided to normally hold the lens in position overlying the lens opening of the helmet and means are provided operable by movement of the jaw of the operator to move said lens away from the lens opening of the helmet and means are provided to secure said lens in position away from said lens opening.

More generally it is an object of this invention to provide an improvement in the lens holding structure of a welder's helmet wherein a pair of channel members are provided at either side of a lens opening of said helmet and extending therebelow, a lens is slidably disposed between said channel members, yielding means hold said lens in position overlying said lens opening and means are attached to said lens operable by the jaw movement of the operator to move said lens away from said lens opening and means are provided to lock said lens in position away from said lens opening.

These and other objects and advantages of the invention will be set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which:

FIG. 1 is a view in vertical section taken on line 1—1 of FIG. 2 as indicated;

FIG. 2 is a view in vertical section taken on line 2—2 of FIG. 1 showing some portions in dotted line and some portions thereof are broken away;

FIG. 3 is a view in horizontal section taken on line 3—3 of FIG. 1 as indicated;

FIG. 4 is a broken view of a detail of structure on an enlarged scale in vertical section taken on line 4—4 of FIG. 3 as indicated;

FIG. 5 is a fragmentary view of an enlarged scale of a detail of structure shown in elevation with alternate positions of a portion thereof being shown in dotted line and portions thereof being broken away;

FIG. 6 is a broken view in horizontal section taken on line 6—6 of FIG. 5 as indicated; and

FIG. 7 is a fragmentary view of a detail of structure on an enlarged scale showing a modification.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring to the drawings, illustrated therein is a welder's helmet **10** shown positioned on the head A of an operator.

The conventional portion of said helmet structure comprises a headband **12** having secured thereto by pivots **14** a hood member or hood **15.**

Said hood comprises a front wall **17** housing upper and lower curved end portions **19** and **20** to overlie the forehead and underlie the jaw of the operator. Curved about the face of said operator from said front wall are side walls **22** and **23.**

Formed in said hood is a lens opening **24** which will be at the eye level of the operator for clear vision therethrough.

Carried by said hood member **15** at the inner side **16** thereof is a lens supporting means or lens holding structure **25** which comprises the essential subject matter of the invention herein. Disposed about said lens opening as here shown is a U-channel frame member **30** having a top wall **31** and side walls **32** and **33.** Formed within said frame member is a channel **35.**

Slidably retained within said channel **35** between said side walls **32** and **33** is a lens **37** which is removably disposed within a rim or frame member **38** having a channel **39** therein and an open bottom or slotted bottom rim portion **40** having a lip **40*a*** at one end thereof as shown in FIG. **5.**

Carried within one side **39** of said rim **38** oppositely of said lip **40*a*** is a longitudinally curved pressure plate spring member **41** held by a rivet **42.** Said pressure plate bears against said lens **37** sufficiently to hold the same within said rim **38.**

Extending upwardly from said top wall **31** of the frame member **30** and spaced apart substantially the width of the lens **37** are a pair of finger like members **42** and **43** each having knob like projections **44** and **45** with said top wall **31** having corresponding projections **47** and **48** and respectively extending between said corresponding projections are yielding means here shown as spring members **50** and **51.** Said spring members normally hold said lens **37** in an upward position within said frame **30** overlying said lens opening **24.**

Extending downwardly along either side of said lens rim **38** are arms **55** and **56** having inwardly angled portions **58** and **59** secured to said rim as by welding. At the bottom portion of each of said arms is a longitudinal slot **60** with one of said slots being shown in FIG. **1.**

Adjustably secured to said arms **55** and **56** is a strap member **62** having slotted side portions **65** and **66** underlying and being adjustably pivotally secured to the lower end portions of said arms **55** and **56** by a conventional form of thumb screws **69** and having a central downwardly curved portion **67** having a cushion or pad **72** thereon for engagement by the jaw B of the operator. Said arms **55** and **56** together with said strap mem-

ber **62** form together an arm member for movement of said lens **37.**

With reference to FIGS. **1** and **4,** a holding member **75** is shown for engaging and locking said lens **37** in a position withdrawn from fully overlying said lens opening **24.** Said holding member comprises a threaded boss **76** projecting from said side wall **33** at a lower portion thereof with the adjacent facing portion **33***a* of said wall being apertured to receive therethrough a thumb screw **77** for holding engagement with the adjacent portion of the rim **38** of said lens **37.**

A modification of a detail of structure is shown in FIG. **7** where in lieu of the use of the spring plate member **41** a boss **80** spaced from said lip **40**a projects outwardly of said bottom rim portion **40** having a vertical hinge pin **81** disposed therethrough having a closure plate member **82** pivoted thereto to be swung to underlie the open bottom of said rim portion **40** to retain said lens **37** therein. A stop member **84** is formed as a projecting lug to be engaged by said plate member **82** when in closure position underlying said lens.

OPERATION

The helmet will be positioned upon the head of the operator in a conventional manner by means of the head band **12.** The hood may be removed completely from overlying the face of the operator by being swung upwardly to rest atop the head of the operator.

When the operator is ready to commence work, the hood is lowered in position as shown in FIG. **1.** To have clear vision for positioning the electrode with respect to the work, the operator merely moves his jaw downwardly against the tension of the springs **50** and **51** and away from the lens opening **24.**

Thus the operator in moving the lens is not required to use either of his hands for this purpose but instead has both of his hands free for the work he is doing. The lens is readily movable responsive to movement of the operator's jaw. The jaw engaging member **67** is adjustable by means of the thumb screws **69** in connection with the longitudinal slots through which said thumb screws are disposed. Jaw movement is fully adequate to move the lens away from the lens opening.

If it is desired to hold the lens in open position for some length of time, the lens is lowered by jaw movement and the holding screw **77** is threaded inwardly to engage the lens rim **38** in a desired lowered position.

The lens for a welder's helmet is commonly formed of two layers of glass. The inner layer being of smoked glass and the outer layer is of clear glass and is a protective layer and is changed frequently as it becomes pitted by flying sparks. To remove the lens **37** from the frame **38,** the lens is merely urged endwise against the spring member **41** and removed through the slot of the bottom rim portion.

As a modification of the use of the spring member **41,** reference is had to FIG. **7** wherein there is shown underlying the lens the closure plate member **82** which is merely swung outwardly away from the lens whereupon said lens will be moved endwise away from said lip **40***a* to drop through the open bottom of the lens rim for removal.

The lens holding structure comprising the essential novelty of the invention herein is a relatively simple structure arranged and constructed to be jaw operated whereby it provides substantial utility in permitting the operator to have his hands completely free for use in connection with the electrode and the work which he is handling.

It will of course be understood that various changes may be made in form, details, arrangement and proportions of the parts without departing from the scope of the invention herein which, generally stated, consists in an apparatus capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is

1. An improved lens holding structure for a welder's helmet having a headband and a hood portion supported thereby and having a lens opening therein having in combination, a lens,

lens supporting means carried by said hood portion for guiding said lens from an operative position over said lens opening to a lower unoperative position away from said lens opening,

yielding means in connection with said supporting means and with said lens for normally holding said lens in position to overlie said lens opening,

jaw operable means in connection with said lens moving the same away from said lens opening,

said lens supporting means comprising a frame member, and

said frame member having an open bottom,

a boss projecting outwardly of said frame member,

a plate member hinged to said boss swingable to overlie the open bottom in said frame member and to swing outwardly thereof to permit removal of said lens, and

a stop member carried by said frame member to be engaged by said plate member when said plate member overlies said open bottom in said frame member.

2. The structure set forth in claim **1,** wherein

said frame member comprises channels holding said lens,

a threaded boss carried by said frame member, and

a thumb screw threaded through said boss engaging said lens to hold the same in position away from said lens opening.

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