

**May 21, 1946.**

**C. E. BOWERS**

**2,400,480**

FACE PROTECTING HELMET

Filed March 13, 1944

2 Sheets-Sheet 1

*Fig. 1.*

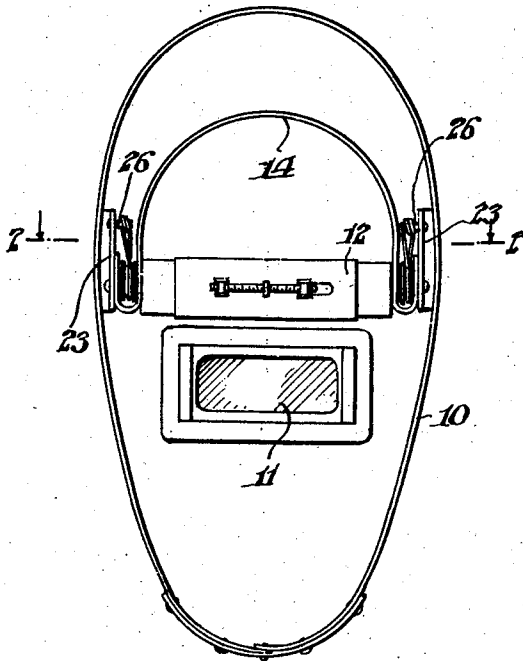


*Fig. 2.*

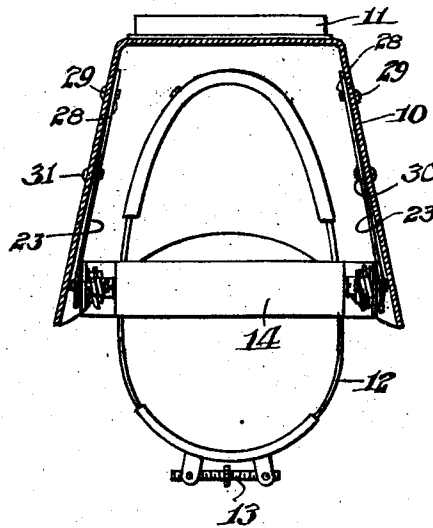


*Fig. 3.*

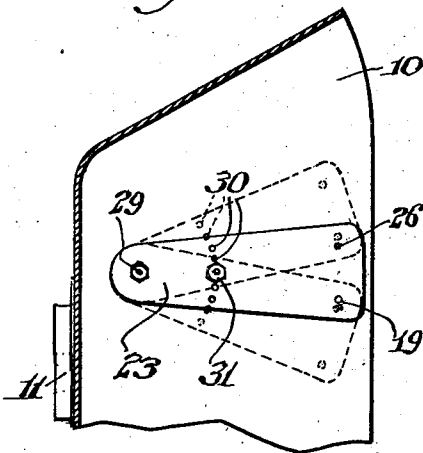
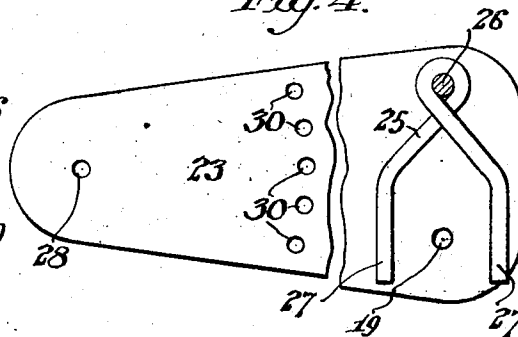


*Fig. 4.*



*The Inventor:*  
Charles E. Bowers,  
*By* Ben. Bondin & Fox,  
*Attorneys.*

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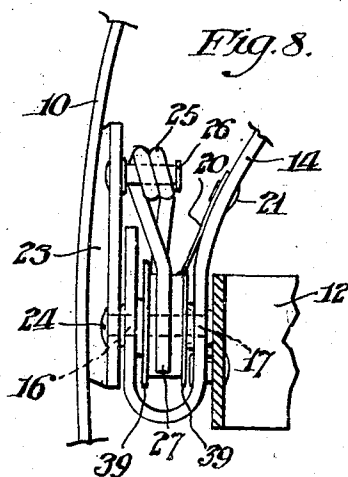
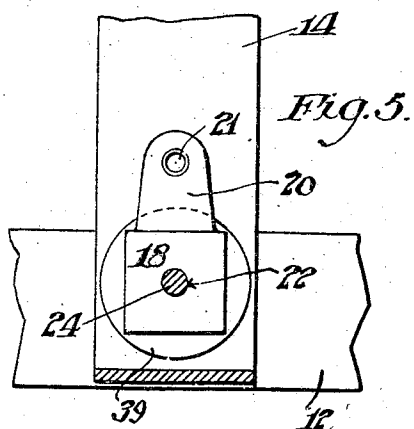
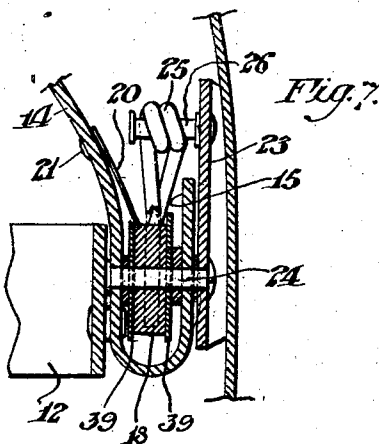
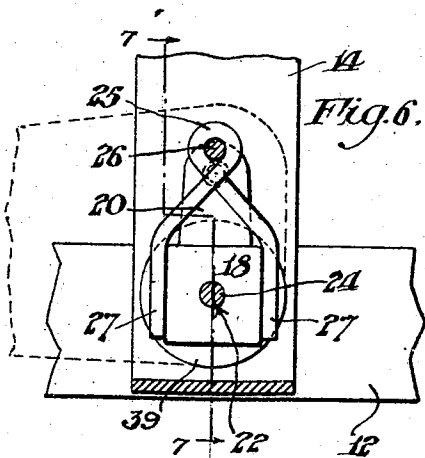
C. E. BOWERS

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2 Sheets-Sheet 2



Inventor:  
Charles E. Bowers,  
By Bass, Borden & Fox  
Attorney.

## UNITED STATES PATENT OFFICE

2,400,480

## FACE PROTECTING HELMET

Charles E. Bowers, Moylan, Pa., assignor to The Fibre-Metal Products Company, Chester, Pa., a corporation of Pennsylvania

Application March 13, 1944, Serial No. 526,210

## 5 Claims. (Cl. 2—8)

The present invention relates to helmets for welders or other uses, and more particularly to an improved headgear assembly.

In helmets of the face-protecting character here under consideration, it is customary to mount the helmet on a headgear which allows the helmet to be swung from a working or work-viewing position to a position above the head of the user so that the work can be inspected at intervals, or while a new job is made ready. Such constructions generally connect the head band directly to the helmet by a pivotal means coincident with the axis of rotation of the helmet, and since this arrangement brings the sides of the head band close to the inner sides of the helmet, there is no space or clearance for the band to spread laterally as is often necessary for heads of different thickness. While this lack of flexibility is one disadvantage, an equally objectionable feature resides in the fact that pivots so located prevent raising or lowering the headgear with respect to the plane of sight through the helmet window. This is a most important consideration because if the users eyes are not properly registered with the helmet window, the field of vision is seriously impaired.

Some of the objects of the present invention are: to provide an improved mounting for a helmet upon a headgear; to provide a helmet mounting in which the headgear has an appreciable lateral flexibility for self-adjustment upon the head of the user; to provide a helmet mounting which is pivoted upon an axis separate from the axis about which the helmet rotates with respect to the headgear; to provide a helmet mounting wherein the headgear can be raised or lowered within the helmet to vary the relation between the headgear and the helmet window and thereby make correction for different levels of the eyes of different users; to provide a novel spring-controlled retaining means for temporarily locking the helmet in either of two positions; and to provide other improvements as will hereinafter appear.

In the accompanying drawings, Fig. 1 represents a rear elevation of a helmet embodying one form of the present invention; Fig. 2 represents a section on line 2—2 of Fig. 1; Fig. 3 represents a fragmentary section showing one of the headgear supports on a larger scale ready for the attachment of the headgear; Fig. 4 represents a side elevation of one of the headgears supporting and adjusting arms on an enlarged scale; Fig. 5 represents a detail of the headgear on the same scale showing the parts for cooper-

ation with the support; Fig. 6 represents a detail on the same scale showing the headgear parts as assembled with the support; Fig. 7 represents a section on line 7—7 of Fig. 6; and Fig. 8 represents a detail in end elevation in part section of Fig. 6.

Referring to the drawings, one form of the present invention is shown as assembled upon a helmet 10 of generally conventional face-protecting shape having the usual framed glass window 11 in the front thereof for observation purposes.

For supporting the helmet on the head of a user, it is provided with a head band 12, shaped to conform to the contour of a head, and generally of oval configuration, and has a provision for size adjustment by a take-up mechanism 13, such adjustable arrangement being well known in the art. This band 12 is arranged to be supported by a top strap 14 riveted or otherwise made fast at opposite ends to the band 12, which top strap 14 in use extends laterally across and rests upon the head of the user. As shown, the ends 15 of the strap 14 are reversed in direction and lie beside the strap 14 but in spaced relation with respect thereto for a purpose to be later described. Each end 15 has a hole 16 therein to register with a hole 17 in the adjacent portion of the top strap 14.

In order to mount the entire headgear so that the helmet can be swung to either of its two positions, two square blocks 18 are provided, one for each side of the headgear, these being respectively anchored to the top strap 14 by extension strips 20 riveted at 21 to the said strap 14. Each block 18 has a bearing hole 22, and the strips 20 locate the blocks 18 so that in assembled condition of the parts, these holes 22 are in register with the holes 16 and 17.

For supporting the headgear on the helmet, two tapered arms 23 are provided with apertures 19 positioned for registration respectively with the holes 16, 17 and 22 to respectively receive bearing pins 24, each of which passes through a strap end 15, a block 18, and the strap 14, whereby two journals are formed about which these parts can turn to thus change the position of the helmet with respect to the headgear. In both the operative and inoperative positions of the helmet, it is desirable to temporarily anchor it but in a manner for easy release. As here shown, two springs 25 are coiled respectively about two pins 26 which are fixed to the respective arms 23 in such a position that the two end fingers 27 of each spring 25 can engage the block 18 which

is adjacent thereto. Each pair of spring fingers 27 receive a block 18 between them, and due to the crossed relation of the lengths 27, are placed under tension which firmly grip the block. Thus, the two spaced spring fingers 27 grip opposite flats on the block and function as releasable locks whereby the helmet is held in either of its two positions, but can be readily swung to the other position whereupon the spring fingers 27 assume gripping positions upon the new flats of the blocks 18. The arms 23 are preferably formed of some material having sufficient flexibility to permit the required lateral movement to compensate for either expansion or for self-adjustment of the head band. Retaining end washers 39 prevent displacement of the fingers 27.

As a means for mounting the arms 23 upon the helmet, each lies substantially horizontal along one inner side of the helmet and is pivoted at 28 in relatively close proximity to the inner wall of the front of the helmet, but preferably above the window 11. The pivot bolts 29 are axially aligned so that the two arms 23 swing in the same arc and thus raise or lower the headgear with respect to the window 11. Each arm 23 has a row of adjustment holes 30 laid out on an arc having a pivot 28 as a center, while a locking bolt 31 is provided for engagement in a selected hole and passes through the adjacent side of the helmet. Thus, the pair of arms 23 can be adjusted to any one of a number of positions, and locked by inserting and tightening the bolts 31.

It will now be apparent that a complete unitary helmet and headgear assembly has been devised which is novel and produces a result not attained by helmet and headgear mountings heretofore on the market. Among the new features it should be particularly noted that the journals of the headgear are respectively in the ends of two arms which are attached to the helmet eccentric to and remote from the headgear journals. Thus, the journal ends of these arms are spaced from the sides of the helmet and leave a clearance space which allows free flexing of the arms so that the head band can expand laterally as required to aid in the self-adjustment for users' head of different width. Furthermore, by releasably securing the arms eccentric to the journals but on aligned axis respectively, the arms can be swung to any one of a number of positions to change the position of the headgear vertically with respect to the window. This ensures each user being able to shift the headgear to correctly position it so that the eyes of the user are properly registered with the window.

Having thus described my invention, I claim:

1. The combination of a helmet having a window, a headgear, means for mounting said helmet on said headgear for movement about a horizontal axis, and means including pivots attached to said helmet between said axis and said window for adjustably supporting said mounting means, whereby the vertical relation of said window to the line of vision can be varied for different users.

2. The combination of a helmet having a window, a headgear, means for mounting said helmet on said headgear for movement about a horizontal axis, means including aligned pivots attached to said helmet between said axis and said window for adjustably supporting said mounting means, whereby the vertical relation of said window to the line of vision can be varied for different users, and means for locking said supporting means in any one of a number of adjusted positions.

3. The combination of a helmet having a window, a headgear, means for mounting said helmet on said headgear for movement about a horizontal axis, means including aligned pivots attached to said helmet between said axis and said window for adjustably supporting said mounting means, whereby the vertical relation of said window to the line of vision can be varied for different users, and spring controlled means for holding said helmet in either of two positions.

4. The combination of a helmet having a window, a headgear, two arms, means including pivots for attaching said arms to the respective inner sides of said helmet for swinging movement, means at the opposite ends of said arms from said pivots for journalling said headgear to and between said arms, and arm anchoring means between said attaching means and said journalling means for permitting the selection of any one of a number of arm positions, whereby the relative position of said headgear to said window can be changed.

5. The combination of a helmet having a window, a headgear, two arms, means including pivots for attaching said arms to the respective inner sides of said helmet for swinging movement, means at the opposite ends of said arms from said pivots for journalling said headgear to and between said arms, and arm anchoring means including apertures in said arms and bolts engageable in selected apertures for permitting the selection of any one of a number of arm positions, said apertures being arranged on an arc having said attaching means as a center.

CHARLES E. BOWERS.