

Nov. 10, 1953

C. E. BOWERS, SR  
ADJUSTABLE STOP FOR PIVOTALLY MOUNTED  
HEAD PROTECTIVE EQUIPMENT

2,658,200

Filed Sept. 22, 1951

2 Sheets-Sheet 1

Fig. 1.

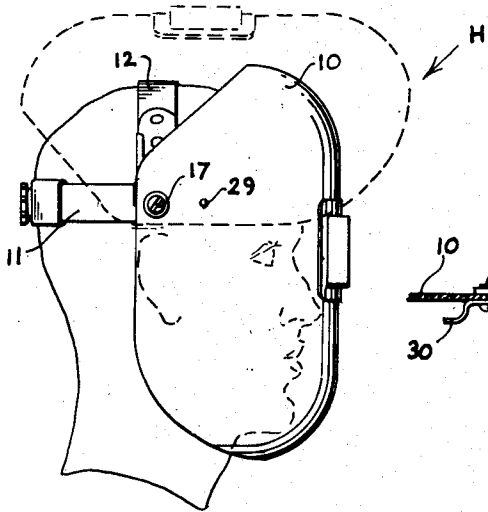


Fig. 3.

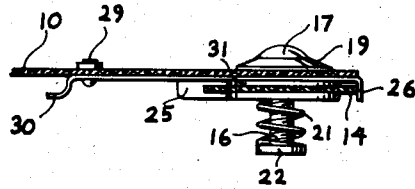


Fig. 4.

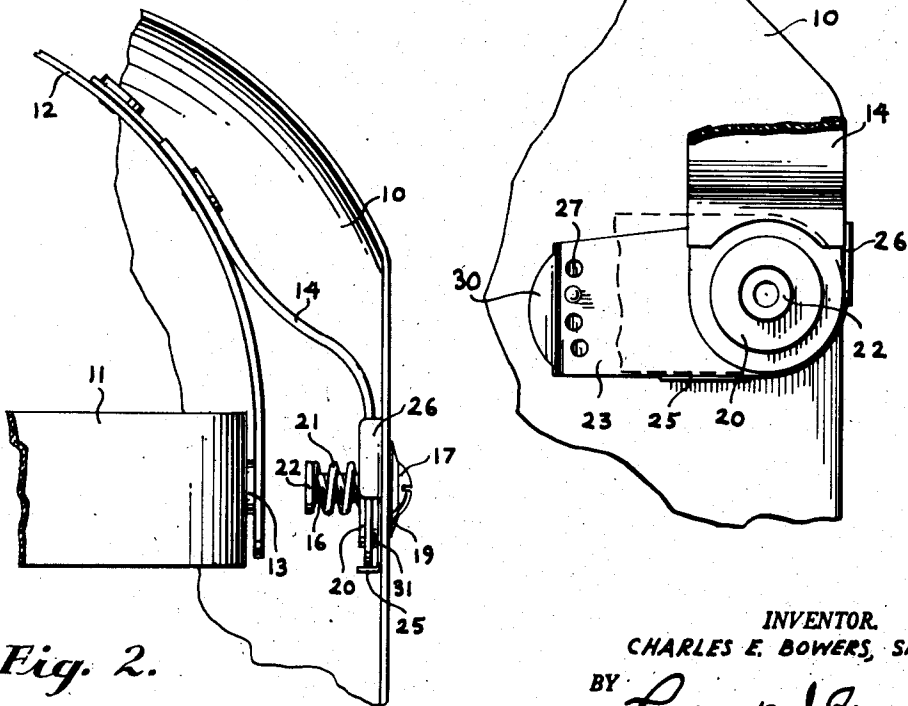


Fig. 2.

INVENTOR,  
CHARLES E. BOWERS, SR.  
BY *Loftis and Brune*  
ATTORNEYS.

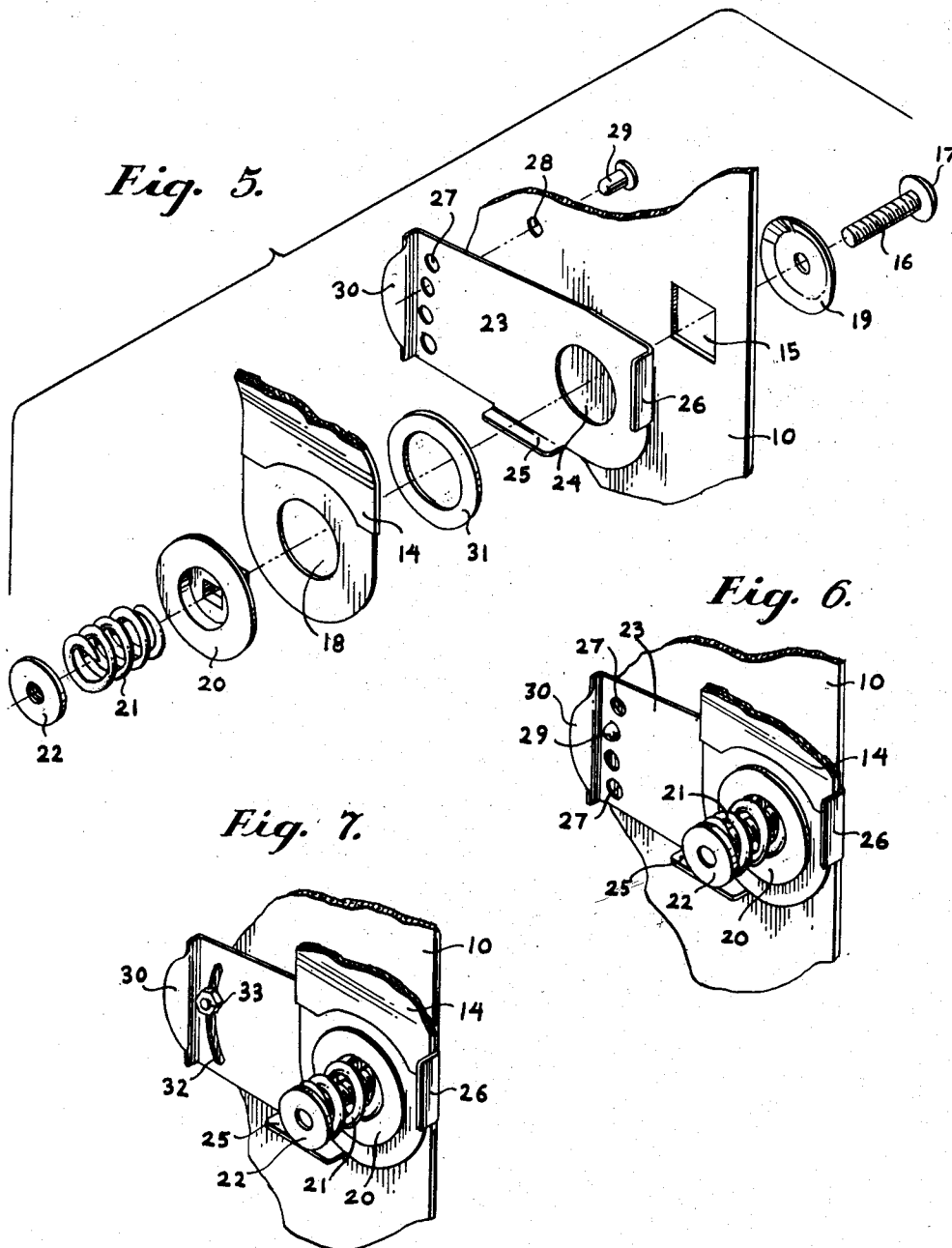
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INVENTOR.  
CHARLES E. BOWERS, SR.  
BY *Robert M. Brown*  
ATTORNEYS.

# UNITED STATES PATENT OFFICE

2,658,200

## ADJUSTABLE STOP FOR PIVOTALLY MOUNTED HEAD PROTECTIVE EQUIPMENT

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

Application September 22, 1951, Serial No. 247,803

5 Claims. (Cl. 2-8)

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The present invention relates to head protective equipment of the type including a mask or face shield that is pivotally mounted on a headgear and is concerned primarily with the provision of an adjustable stop for limiting swinging movement of the mask or face shield relative to the headgear.

The exact nature of the objects and advantages of the invention will be set out in conjunction with a welding helmet. However, it is to be clearly understood that the invention is equally applicable to face shields of the type commonly worn by workmen around factories and similar places where it is necessary to protect the faces of the workmen.

A welding helmet ordinarily includes a headgear that is adjustable to accurately fit the head of any particular wearer. Pivotaly mounted on this headgear is the mask, and frictional devices are ordinarily associated with the pivotal mountings so that the mask will remain in any position into which it may be swung. Thus, if the mask is swung upwardly it will remain in its upraised position or if swung downwardly into face protecting position it will remain in that position.

Under conditions of practical usage, it has been found that welders are prone to adjust the frictional devices so that by shaking their heads the mask will fall downwardly. Obviously, if these frictional devices are so loosened the downward motion is continued until the lower edge of the mask strikes the wearer's chest. This condition has been recognized as undesirable and an attempt has been made to provide a stop for limiting this downward motion. Generally speaking, the stop heretofore provided has not proven satisfactory in many respects.

In the first place, the known stops are fixed and no provision is made for adjusting the limit of downward movement. Different types of welding require different positions of the mask. Thus, when overhead work is being done the mask should be in a different position as compared to that when the welder looks down on his work. Then again, the known stops do not include any means for limiting the upward swinging movement. Moreover, the known stop heretofore provided comprises nothing more than an arm which is intended to be held in a required position by a screw. During the use of the helmet the mask repeatedly strikes against this arm with the ultimate result that the positioning effects of the screw are overcome and the position of the stop is changed.

With the foregoing conditions in mind, the

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present invention has in view as its foremost objective the provision of a new and improved adjustable stop in which all of these difficulties are obviated.

More in detail, the invention has as an object the provision, in head protective equipment of the character indicated, of a stop comprising a bracket which is pivotally mounted on the mask or face shield, preferably on one of the pivotal mountings which secures that element to the headgear and which stop includes two abutment flanges spaced substantially 90° apart. One of these flanges limits the upward swinging movement while the other flange limits the downward swinging movement.

Still another object of the invention is to provide an adjustable stop for pivotally mounted head protective equipment of the character indicated with means for positively holding the stop member in an angularly adjusted position. This object is achieved by forming the bracket with a series of openings spaced from the pivotal mounting thereof. A pin or stud is carried by the mask and projects inwardly into a position in which it is adapted to be received in any of these openings. The particular opening in which the pin or stud is received determines the effective position of the stop. Various other more detailed objects and advantages of the invention, such as arise in connection with carrying out the above noted ideas in a practical embodiment, will in part become apparent and in part be hereinafter stated as the description of the invention proceeds.

The invention therefore comprises an adjustable stop for pivotally mounted head protective equipment and which stop consists essentially of a bracket having an opening which receives the pivot pin of one of the pivotal mountings and which carries a pair of abutment flanges spaced substantially 90° apart. The bracket is formed with a series of openings radially arranged with respect to the opening receiving the pivotal mounting, and any one of these openings is adapted to receive an inwardly projecting pin or stud carried by the mask or face shield.

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

Figure 1 is a view in side elevation illustrating a welding helmet as applied to the head of a wearer and bringing out in broken lines the upraised position of the mask.

Figure 2 is a fragmentary view of one side of

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the helmet looking towards the inside and showing one of the pivotal mountings with a stop of this invention applied thereto.

Figure 3 is a section through the mask and that portion of the headgear on which it is pivotally mounted.

Figure 4 is another detailed view looking at the inside of the mask with the adjustable stop of this invention applied thereto.

Figure 5 is a perspective view of one side of the mask, the portion of the headgear immediately associated therewith, the various elements of the pivotal mounting between the two and the adjustable stop of this invention, all in exploded relation.

Figure 6 is another detailed perspective showing the adjustable stop as applied to the inside of the mask; and

Figure 7 is a perspective similar to Figure 6 of a modification.

Referring now to the drawings and first more particularly to Figures 1 and 2, a welding helmet which is referred to in its entirety by the reference character H is shown in Figure 1 as applied to the head of a wearer. The welding helmet H includes a mask 10 which is made from an appropriate fibrous material that is susceptible of being molded into the desired shape and well known in the art.

This mask 10 is pivotally mounted on an adjustable headgear comprising a head encircling strap 11 and a crossband 12. The opposite ends of the crossband 12 are secured to the head encircling strap 11 as indicated at 13.

Carried by this crossband 12, and connected thereto at points above the connection 13, are a pair of anchoring straps 14. It is on the lower free ends of these anchoring straps 14 that the mask 10 is pivotally mounted.

Referring now more particularly to Figure 5, the mask 10 is shown as formed with a large opening 15 through which passes a pivot bolt 16 having a head 17. The anchoring strap 14 is formed with an opening 18 through which the bolt 16 also passes. Between the outer face of the mask 10 and the head 17 of the bolt 16 is a washer 19. On the inner side of the strap 14 there is another washer 20 against which bears a coiled expansion spring 21. This spring 21 is compressed by a nut 22 having a threaded opening which receives the threaded end of the bolt 16.

The adjustable stop of this invention takes the form of a bracket 23 having a main opening 24 which aligns with the opening 15 in the mask 10 and through which the bolt 16 passes. Thus, the bracket 23 is pivotally mounted on the bolt 16. The bracket 23 is formed with a horizontal abutment flange 25 and a vertical abutment flange 26. The flanges 25 and 26 are substantially 90° apart.

Arranged radially with respect to the opening 24 are a series of small apertures 27 which are formed in the bracket 23. The exact number of these apertures 27 are not a limitation on the present invention. The number of apertures determines the number of positions of adjustment into which the bracket may be moved. Thus, the drawing illustrates four apertures 27 and there are, therefore, four positions of adjustment for the bracket 23.

The mask 10 is formed with a small opening 28 in which is anchored a headed pin or stud 29 with the head engaging the outer face of the mask. This pin 29 is adapted to be received in any of the apertures 27.

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The bracket 23 is made of an appropriate sheet metal and its free end is formed with a finger engaging flange 30 which adapts the bracket to being swung inwardly to free it of the pin 29 and move it into another adjusted position. Between the bracket 23 and anchoring strap 14 there is a washer 31 which maintains a desired spaced relation.

#### OPERATION

While the manner of using the adjustable stop and its mode of operation is believed to be obvious from the illustration of the drawings and the descriptions of the parts given, it may be briefly outlined as follows.

The frictional mountings for the mask 10 are first imparted the desired amount of friction by tightening or loosening the screw bolt 16 as occasion demands. The welder, before donning the helmet, will avail of the finger engaging flange 30 so as to set the pin 29 in one of the apertures 27, the particular aperture depending on the adjustment desired. After the welder dons the helmet he may swing the mask 10 upwardly into the broken line position of Figure 1 and this upward movement is limited by the abutment flange 25. When the conditions of work require the mask to be swung into face protecting position, it may be moved downwardly, either by shaking the head or by grasping the mask with the hand and this downward movement is limited by the abutment flange 26.

The particular type of work being performed will determine the position into which the bracket 23 is adjusted.

Referring now to Figure 7 in which a slightly modified form is illustrated, it will be noted that the apertures 27 in the bracket 23 are replaced by an arcuate slot 32 which is drawn with the opening 24 as its center. In this form, the inner end of the pin 29 is threaded and carries a nut 33. This nut 33 may be tightened to maintain the bracket in an adjusted position.

It is obvious that the form of invention illustrated in Figure 7 offers a finer adjustment because the pin 29 may be positioned anywhere along the slot 32 within its limit.

While preferred specific embodiments of the invention are hereinbefore set forth, it is to be clearly understood that the invention is not to be limited to the exact constructions, mechanisms and devices 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.

What is claimed is:

1. In a piece of pivotally mounted head protective equipment including a headgear member having a pair of anchoring straps at the opposite sides thereof and a face covering member pivotally mounted on said anchoring straps by a pair of pivot bolts, the improvement consisting of an adjustable stop member pivotally mounted on one of said bolts and having a pair of abutment flanges angularly spaced apart and each of which is adapted to engage a side edge of one of said anchoring straps, the said stop member being provided with a plurality of apertures, and means on said face covering element in cooperation with said apertures for holding said stop in an adjusted position relative thereto.

2. In a piece of pivotally mounted head protective equipment including a headgear member having a pair of anchoring straps at the opposite sides thereof and a face covering member piv-

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otally mounted on said anchoring straps by a pair of pivot bolts, the improvement consisting of an adjustable stop member comprising a bracket pivotally mounted on one of said bolts swinging movement of said face covering element the said bracket being provided with a plurality of apertures, a pair of abutment flanges on said bracket and angularly spaced apart, said flanges being adapted for engagement by side edges of one of said anchoring straps to limit swinging movement of said face covering element relative to said headgear, and means cooperating with said apertures for holding said bracket in an adjusted position relative to said face covering element.

3. In a piece of pivotally mounted head protective equipment including a headgear member having a pair of anchoring straps at the opposite sides thereof and a face covering member pivotally mounted on said straps by a pair of pivot bolts, the improvement consisting of an adjustable stop member comprising a bracket pivotally mounted on one of said bolts on the inner side of said face covering element, said bracket being provided with a plurality of apertures, a pair of abutment flanges on said bracket and angularly spaced apart 90°, said flanges being adapted for engagement by side edges of one of said anchoring straps to limit swinging movement of said face covering element relative to said headgear, and means cooperating with said apertures for holding said bracket in an adjusted position relative to said face covering element.

4. In a piece of pivotally mounted head protective equipment including a headgear member having a pair of anchoring straps at the opposite sides thereof and a face covering member pivotally mounted on said straps by a pair of pivot bolts, the improvement consisting of an adjustable stop member comprising a bracket pivotally

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mounted on one of said bolts on the inner side of said face covering element, a pair of abutment flanges on said bracket and angularly spaced apart, said flanges being adapted for engagement by side edges of one of said anchoring straps to limit swinging movement of said face covering element relative to said headgear, said bracket being formed with a series of apertures, and an inwardly projecting stud carried by said face covering element and adapted to be received in one of said apertures to hold said bracket in an adjusted position.

5. In a piece of pivotally mounted head protective equipment including a headgear member having a pair of anchoring straps at the opposite sides thereof and a face covering member pivotally mounted on said straps by a pair of pivot bolts, the improvement consisting of an adjustable stop member comprising a bracket pivotally mounted on one of said bolts on the inner side of said face covering element, a pair of abutment flanges being adapted for engagement by side edges of one of said anchoring straps to limit swinging movement of said face covering element relative to said headgear, said bracket being formed with a series of apertures, an inwardly projecting stud carried by said face covering element and adapted to be received in one of said apertures to hold said bracket in an adjusted position, and a finger engaging flange at the free end of said bracket.

CHARLES E. BOWERS, Sr.

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