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2,167,969

COMBINATION WELDING HELMET AND SAFETY HAT

Filed Oct. 1, 1937

2 Sheets-Sheet 1

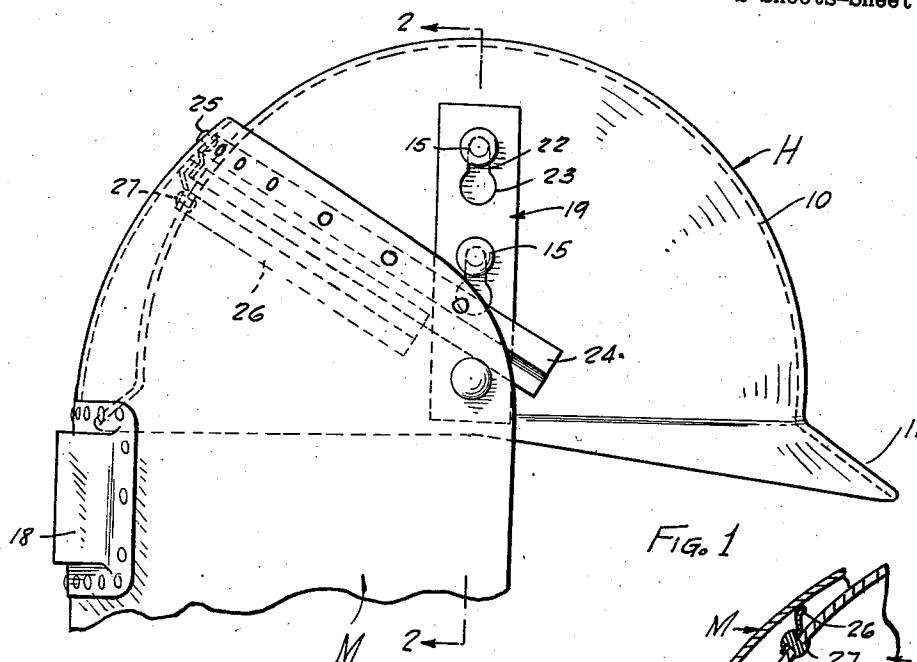


Fig. 1

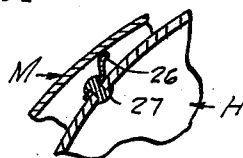


FIG. 7

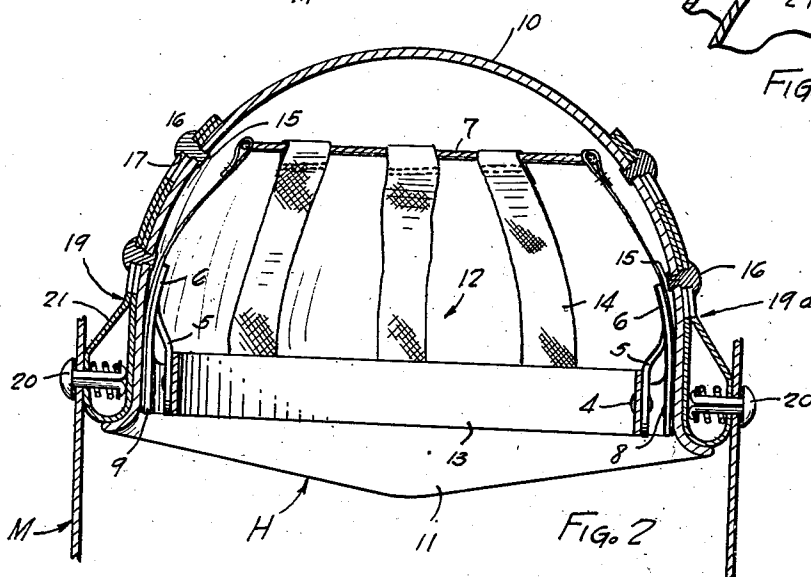


FIG. 2

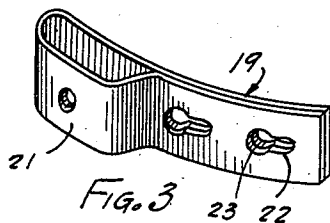


FIG. 3

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2 Sheets-Sheet 2

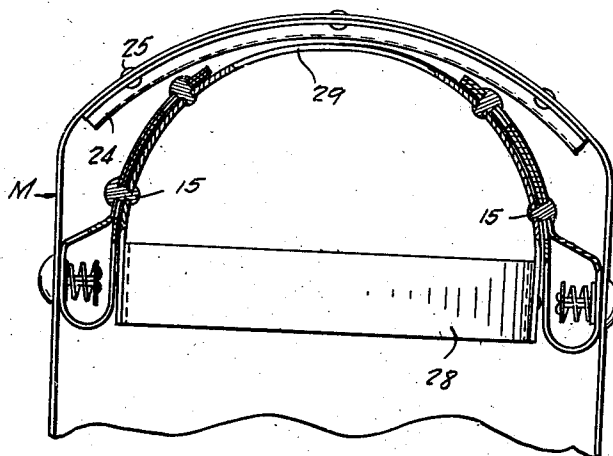
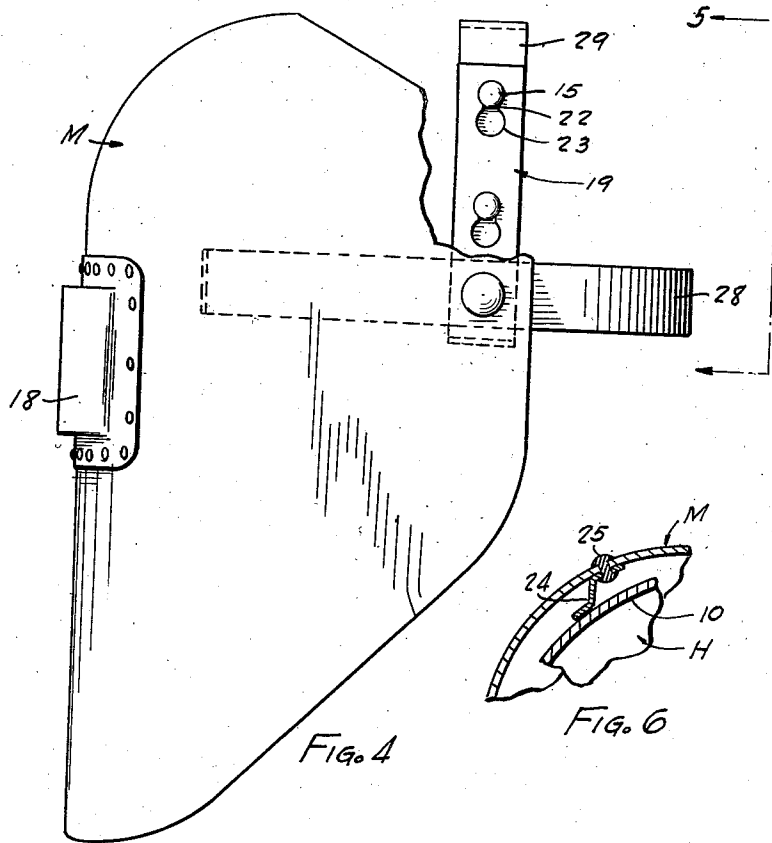


FIG. 5

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UNITED STATES PATENT OFFICE

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COMBINATION WELDING HELMET AND
SAFETY HAT

Frederick M. Bowers, Chester, Pa.

Application October 1, 1937, Serial No. 166,800

9 Claims. (Cl. 2-8)

This invention relates to welding helmets, shields and similar protective devices and is concerned more particularly with the relationship of such protective devices to so-called safety hats.

At the present time in various of the industrial arts it is the practice for the workmen, while performing their duties, to wear these so-called safety hats; the wearing of the hats being either a voluntary matter or made compulsory by state law. Obviously the purpose of these safety hats is to protect the head of the wearer from injury which might be caused as an incident to his working.

While as a general rule it is necessary that all of the workmen on any particular job wear these safety hats, those on the job who are engaged in arc welding operations must wear a welding helmet or shield to protect them from the flying particles of steel and oxide which are thrown out by the welding operation.

At the present time it is an impractical proposition, if not an entirely impossible one, for the operator to at the same time wear a safety hat and a welding helmet, as the presence of the safety hat on the wearer's head precludes the possibility of the welding helmets of known design being positioned thereover.

Accordingly, this invention has in view as its foremost objective the provision of a safety hat and welding helmet which may be worn at the same time on the head of the wearer. In carrying out this objective in a practical embodiment, the invention takes cognizance of the fact that for long periods of time the safety hat will be worn alone, and the invention, therefore, has in view as a further more detailed objective the provision of a combination safety hat and welding helmet which are readily detached and assembled so that one or both may be worn, as occasion demands.

Due to the need for effectively guarding the head and face of the wearer against flying particles of steel and oxide, the invention has in view as a further more detailed objective the provision of means for creating a seal between the helmet and safety hat.

Ordinarily a certain amount of space between these two articles is required so as to permit of swinging movement of the helmet with respect to the hat. However, in accordance with this invention a protective strip is interposed between the helmet and hat along a required line to prevent flying particles of oxide and steel passing therebeyond.

In view of the fact that many conditions arise

in which the welding operator will be desirous of wearing the welding helmet or shield alone and dispense with the safety hat, the invention also has in view as an important objective the provision of a welding helmet of the character above described which may be readily attached to and detached from either one of these safety hats or a headgear made along conventional lines.

It is now common practice in the art of welding helmets to employ a headgear which consists substantially of a headband that extends about the head of the wearer, and which headband is provided with a cross strip that extends across the top of the wearer's head. In accordance with this invention, this headgear is manufactured as a single unit, and is provided with means for attaching a welding helmet thereto in such a manner that it may be readily detached therefrom. Thus the welding helmet may be applied either to one of these headgears or to a safety hat, as occasion demands.

Various other more detailed objects and advantages such as those which arise in connection with the carrying out of the above noted objectives will in part become apparent and in part be hereinafter stated, as the description of the invention proceeds.

The invention, therefore, comprises a combination welding helmet and safety hat, and in which the welding helmet is readily attached to or detached from a hat when the latter is in position on a wearer's head. Associated with the helmet and hat are means for guarding against the passage of flying particles of steel and oxide therebetween. An essential part of the invention also lies in the combination of the welding helmet with a headgear made along conventional lines, which is adapted to have the welding helmet attached to or detached therefrom.

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 side view developing a safety hat in the position in which it will be worn on a wearer's head. In this view the upper part of a welding helmet is also brought in to bring out the relationship of the welding helmet to the safety hat.

Figure 2 is a sectional showing taken at right angles to the showing of Figure 1, and in this view only that portion of the welding helmet which is connected to the safety hat is developed.

This view is taken about on the plane represented by the line 2—2 of Figure 1.

Figure 3 is an enlarged detailed view in perspective of one of the extensions on the welding helmet which connect the latter either to the hat or headgear.

Figure 4 is a view somewhat similar to Figure 1, developing the welding helmet substantially in its entirety by bringing out the relationship of this helmet to a headgear to which it may be attached; part of the helmet being broken away to develop the construction of the headgear.

Figure 5 is a sectional showing normal to the showing of Figure 4 and taken about on the plane represented by the line 5—5 of Figure 4.

Figure 6 is an enlarged detailed view in section of one modification of the shell which may be employed between the helmet and hat, and

Figure 7 is a similar view of still another modification.

Referring now to the drawings, wherein like reference characters denote corresponding parts, a safety hat is shown in Figures 1 and 2 and referred to in its entirety by the reference character H. Safety hats of this type are well-known and are available to the public as such. Ordinarily they include an outer shell 10 which may be made from a canvas base Bakelite or an appropriate vulcanized fibre. This outer shell is hard and rigid, and is intended to provide the required protective effects.

This shell 10 assumes the dome-like shape illustrated in the drawings, and along its free lower edge is formed with an outwardly extending flange designated 11. The dimensions and curvature of this flange 11 may vary at different points about the hat, but along each side assume the dimensions and curvature particularly illustrated in Figure 2.

The outer shell 10 is supported from an inner harness, 12 which is designed to snugly fit the head of the wearer, the outer shell 10 being maintained in spaced relationship from the harness. This harness 12 may be made from fabric or strips of vulcanized fibre. Ordinarily it includes the headband shown at 13, and strips which extend upwardly therefrom and towards the top of the wearer's head; these being designated 14.

An anchoring band 9 may be secured about the inner side of the edge of the shell 10 as by rivets 8, and interposed between this band 9 and the shell 10 are the extremities of the strips 14. At their upper ends these strips 14 may cross or be connected together by the cord shown at 7. The band 9 is formed with upwardly extending ears 6 from which are struck tabs 5 that, at their lower ends, are secured to the headband 13 as by the rivets 4. Thus the shell 10 is supported in spaced relation to the headband 13.

At each side the outer shell 10 of the hat H is provided with a pair of spaced shoulder rivets 15. These rivets 15 have heads 16 that are enlarged and spaced from the outer surface of the shell 10, providing shoulders designated 17, for a purpose to be hereinafter pointed out.

The upper part of a welding helmet is shown in Figure 1 as comprising a mask member M having the usual curvature by which it is adapted to fit about the wearer's face and provide the desired protective effects. This mask M is provided with the usual filter glass at 18.

The mask M is pivotally mounted at each side to a pair of extensions designated 19 and 19a respectively. The pivotal mountings at each side of the mask M are referred to generally by the ref-

erence character 20, and the detailed construction of these pivotal mountings need not be described here in detail. It suffices to say that the mountings are effective to provide a required amount of frictional resistance to pivotal movement of the mask M with respect to the extensions 19 and 19a whereby the mask will remain in any position into which it may be adjusted. A friction device for this purpose is clearly illustrated and described in the co-pending application of Frederick M. Bowers, Serial No. 166,787, filed Oct. 1, 1937, and entitled "Headgear friction joint device for welding shields."

The extensions 19 and 19a are of duplicate construction, and only one of them needs be described for the purpose of this specification. At the lower extremity the extension 19 is of the loop formation represented at 21, and which loop formation receives the pivotal mounting 20. As shown in Figure 2, this loop formation 21 snugly fits in the curvature of the flange 11.

Above the loop formation the two thicknesses of the material defining the extension 19 are joined together, and for all effective purposes constitute a single unitary strip, this strip being provided with elongated openings 22 that are enlarged, as shown at 23. These openings 22 are spaced apart a distance corresponding to the spacings of the rivets 15 on the hat H.

At this point it is well to note that the mask M and extensions 19 and 19a may be made from any appropriate material, but a vulcanized fibre has now assumed a definite status in the art of welding helmets and is indicated as a preferred material, as it is particularly adapted to the manufacturing operations.

The enlarged portions 23 of the elongated openings 22 are designed to have the heads 16 of the rivets 15 pass therethrough. Thus the extensions 19 and 19a may be detachably anchored in position on the hat H by causing the enlarged head 16 to pass in the enlargements 23 of the openings 22, after which lateral movement is imparted to the extensions 19 and 19a to cause the rivets 15 to move upwardly in the elongated openings 22 whereby the shoulders 17 of the rivets engage the extensions 19 and 19a to securely hold them in position on the outer shell 10 of the hat H. With the extensions 19 and 19a thus positioned the mask M is pivotally mounted on the hat H.

In order to effectively guard against flying particles of metal and oxide when the mask M is in effective position, the invention has in view the use of interlocking angle irons which are carried by the shield and hat respectively, to provide a seal in the space between these parts. As shown in Figure 1, the mask M carries a strip of angle iron 24 that may be anchored thereto in any appropriate manner, as by the rivets shown at 25. A second angle strip that is complementary to the strip 24 is shown at 26 as being carried by the shell 10 of the hat H and secured thereto by rivets 27. When the mask M is in position in front of the wearer's face these angle strips 24 and 26 will interlock in the manner illustrated, and provide an effective seal.

In some instances the interlocking arrangement shown in Figure 1 may be dispensed with and a single strip that is carried either by the shield or hat employed. For instance, as shown in Figure 6 the strip 24 that is carried by the mask M substantially fills the space between this mask M and the shell 10, to provide the desired protective effects, or as shown in Figure 7 the strip 26

that is carried by the shell 10 will alone provide the protective effects.

Referring now more particularly to Figures 4 and 5, a headgear which is made along conventional lines is shown as comprising a headband 28 that is adapted to extend about the head of a wearer, and which carries the cross piece 29 that fits over the top of the head of a wearer. The headband 28 and 29 is made from the usual fibrous material, and is comparable to the conventional headbands now incorporated in the welding helmets and shields.

At each side the cross piece 29 carries a pair of spaced rivets which are in all respects similar to the shoulder rivets 15 that are carried by the hat H. Thus the extensions 19 and 19a of the mask M are adapted to be anchored to the headgear in the same manner as they are secured to the hat H.

While preferred specific embodiments of the invention are hereinbefore set forth it is to be clearly understood that I am not to be limited to the exact constructions 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.

I claim:

1. In combination, a safety hat comprising a headgear adapted to fit snugly over the head of a wearer, and a hard outer shell spaced therefrom, a pair of spaced rivets on each side of said outer shell, each of said rivets having an enlarged head spaced from the outer surface of the shell, and a welding helmet comprising a mask and extensions at each side of the mask pivotally connected thereto, each of said extensions having elongated openings with enlarged portions with the spacings between the elongated openings the same as between the spacings of the rivets on the shell whereby the heads of said rivets are adapted to pass through the enlargements of said openings to secure the extensions to the shell.

2. In combination, a welding helmet comprising a mask adapted to be positioned in front of the face of a wearer, extensions pivotally connected to each side of the mask, a headgear consisting of a headband adapted to extend about the head of a wearer, and a cross piece adapted to fit across the top of the head of a wearer, and means for detachably securing said extensions to said cross piece.

3. In combination, a headgear comprising a headband adapted to fit about the head of a wearer, a cross piece carried by the said band and adapted to fit across the top of the head of a wearer, spaced rivets carried by the cross piece at each side thereof, each of said rivets having an enlarged head spaced from the outer surface of the cross piece, a welding helmet consisting of a mask and extensions at each side of the mask pivotally connected thereto, each of said extensions having spaced elongated openings that are spaced apart a distance comparable to the spacings of the rivets on the cross piece, the extremities of said openings being enlarged to permit passage of the heads of the rivets there-through.

4. In combination, a welding helmet comprising a mask adapted to be positioned in front of the face of a wearer, extensions pivotally connected to each side of the mask, and a head-

gear adapted to be positioned on the head of a wearer and carrying means cooperating with said extensions detachably and non-rotatably securing the same to the headgear, said means comprising quickly detachable interlocking parts.

5. In combination, a welding helmet comprising a mask adapted to be positioned in front of the face of a wearer, extensions pivotally connected to each side of the mask, each of said extensions being formed with an elongated opening terminating in an enlarged recess, a headgear adapted to be mounted on the head of a wearer and carrying at each side a headed rivet, the said rivet being received in the said elongated opening to effect a detachable connection of the helmet to the headgear.

6. In combination, a welding helmet comprising a mask adapted to be positioned in front of the face of a wearer, extensions pivotally connected to each side of the mask, each of said extensions being formed with an elongated opening terminating in an enlarged recess, a headgear adapted to be mounted on the head of a wearer and carrying at each side a headed rivet, said rivet being received in said elongated opening to effect a detachable connection of the helmet to the headgear, and cooperating means carried by said helmet and headgear for preventing swinging of the said extensions about the said rivet as a center.

7. In combination, a safety hat comprising a headgear adapted to fit snugly over the head of the wearer, and a hard outer shell spaced therefrom, a rivet on each side of the said outer shell, each of said rivets having an enlarged head spaced from the outer surface of the shell, and a welding helmet comprising a mask, and extensions at each side of the mask pivotally connected thereto, each of said extensions having an elongated opening terminating in an enlarged portion through which the head of one of the rivets is adapted to pass.

8. In combination, a safety hat comprising a headgear adapted to fit snugly over the head of the wearer, and a hard outer shell spaced therefrom, a rivet on each side of the said outer shell, each of said rivets having an enlarged head spaced from the outer surface of the shell, and a welding helmet comprising a mask, and extensions at each side of the mask pivotally connected thereto, each of said extensions having an elongated opening terminating in an enlarged portion through which the head of one of the rivets is adapted to pass, and cooperating means on said extensions and shell for preventing swinging movement of the extensions with respect to the shell about said rivet.

9. In combination, a welding helmet comprising a mask adapted to be positioned in front of the face of a wearer, extensions pivotally connected to each side of the mask, each of said extensions being formed with an elongated opening terminating in an enlarged recess, a headgear adapted to be mounted on the head of a wearer and carrying at each side a headed rivet, the head of said rivet being adapted to pass through said enlarged recess whereby the neck of the rivet is received in the said opening, and complementary parts of a detachable fastening carried by each of said extensions and said headgear respectively.

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