March 1, 1960 G. Z. EDWARDS ET AL 2,926,357

QUICK-COUPLING WELDING HELMET AND HEADGEAR COMBINATION

Filed Dec. 31, 1956

FIG. 1.

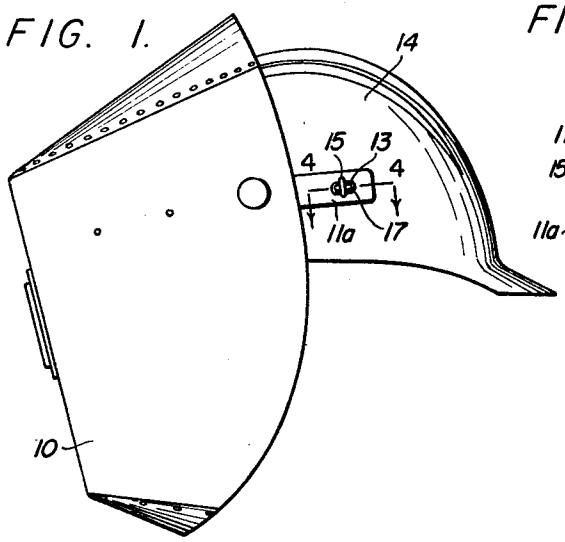


FIG. 2.

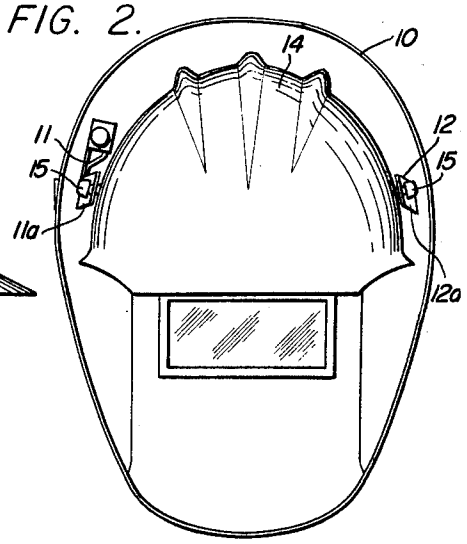


FIG. 5.

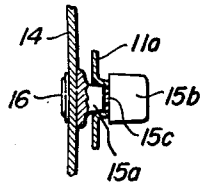


FIG. 3.

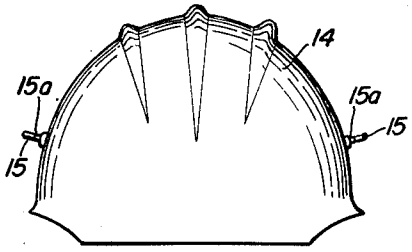


FIG. 4.

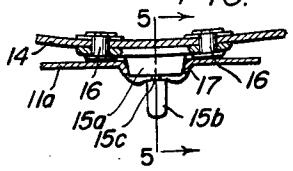


FIG. 6.

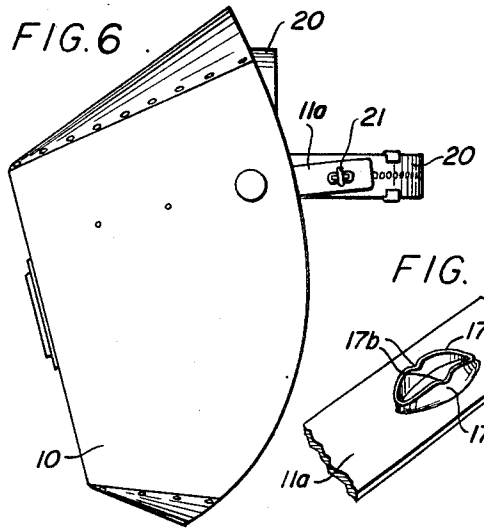
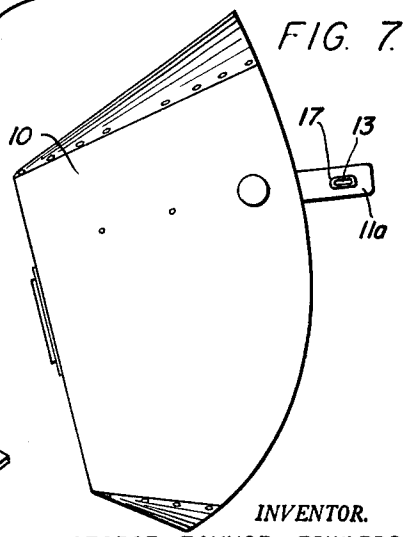


FIG. 8.

FIG. 7.



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QUICK-COUPLING WELDING HELMET AND HEADGEAR COMBINATION

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2 Claims. (Cl. 2—8)

Our invention relates to face and head protective apparel for welders, and is concerned particularly with providing an improved form of welding shield and headgear combination adapted for quick coupling and uncoupling on the job.

This art has been highly developed to meet the exacting needs of modern industry. Yet, it is not static, for new ways are constantly being sought to provide greater comfort, convenience, and safety for these important workers, whose well-being and available work time are of the utmost concern in insuring effective production by a variety of industries. Manufacturers of this type of apparel continue to strive toward maximum effectiveness at minimum cost.

There has long been a trend toward requiring all industrial workers entering or laboring in hazardous areas to wear so-called hard hats. Welders are often required to work in such hazardous areas, and must be able to wear their face-protective shields along with their hard hats.

It has been recognized by both manufacturer and user that safety requires a construction enabling quick coupling and uncoupling of the welding shield with respect to the hard hat, so as to minimize the time that the latter has to be off the head of the welder while preparing for and after finishing any actual use of the welding torch. Various quick-coupling arrangements have been developed in the past for the purpose, yet, so far as we are aware, none have effectively provided for coupling and uncoupling while the hard hat remains on the head of the wearer.

Heretofore, in our manufacturing of such a combination, we have had to rely on what we considered to be the best of the known constructions, but have found it stiff and awkward in operation and impossible to manipulate satisfactorily without removing the hard hat from the head.

Now, however, we have hit upon an arrangement that is far superior in speed and ease of handling than anything previously available, that is more economical to manufacture, and, of perhaps the greatest significance, that truly enables coupling and uncoupling of the shield relative to the hard hat to be accomplished quickly and easily while the hard hat remains in protective position on the head of the wearer.

The arrangement is an exceedingly simple one, and makes use of known devices. Yet it solves a previously unsolved problem that has faced the art for a long time.

The outstanding feature of our invention is the use of ordinary turn-buttons as couplers between a welder's shield and the headgear to which it is to be attached. We have found that such turn-button couplers may be easily applied to both hard hats and the more conventional supporting head gear worn by a welder not working in a hazardous area. Thus, the same shield may be used wherever a welder is called upon to work. It is not necessary for a welder to invest in two different shields, as is the case with many quick-coupling combinations now on the market.

In addition to the above, we have found that hard hats constructed as a part of our combination actually nest together better than previous types, and are therefore easier and more economical to ship and store.

Additional objects and features of our invention will become apparent from the following detailed description of the preferred form thereof illustrated by way of example in the accompanying drawing.

In the drawing:

Fig. 1 represents the hard hat and welding shield combination of the invention in closely coupled, working condition;

Fig. 2, a rear elevation of the working combination of Fig. 1;

Fig. 3, a similar rear elevation of the hard hat alone, the turn-buttons being in unlocked, receiving and disengaging position;

Fig. 4, a fragmentary horizontal section taken on the line 4—4 of Fig. 1 and drawn to an enlarged scale;

Fig. 5, a vertical section taken on the line 5—5 of Fig. 4;

Fig. 6, a view corresponding to that of Fig. 1, but showing the ordinary headband type of head gear in place of the hard hat;

Fig. 7, a similar view of the welding shield alone, with coupling arms extended in coupling position applicable to either the hard hat of Figs. 1–3 or to the headband of Fig. 5; and

Fig. 8, a fragmentary perspective view of one of the coupling arms of Fig. 7 drawn to an enlarged scale.

Referring to the drawing:

A welding shield, conventional in all respects except for headgear-coupling means, is indicated by the reference numeral **10**. It includes, as permanently attached parts thereof, headgear attachment mechanisms **11** and **12**, see particularly Fig. 2.

In the form illustrated, the mechanism **11** is adjustable in accordance with the disclosure of our copending application Serial No. 673,074, filed July 19, 1957, entitled "Headgear Attachment Mechanism for Face-Protective Shields," while the mechanism **12** is merely pivotal in character.

Both the mechanisms **11** and **12** are provided with headgear-attachment arms, the same being indicated **11***a* and **12***a*, respectively. Such arms project rearwardly from the welding shield **10** at opposite sides thereof.

Each of the headgear-attachment arms **11***a* and **12***a* are provided with turn-button receiving openings **13** adjacent its free extremity, see particularly Fig. 7. The shield proper is pivotally secured to the opposite extremity of each of such arms in customary fashion, so as to be swingable from the working position of Figs. 1, 2, and 4 to an out-of-the-way rest position astride the headgear (not shown).

For co-operation with the welding shield and its rearwardly projecting, attachment arms **11***a* and **12***a* as described above, the shield-supporting headgear worn by the user of the equipment is provided with a pair of turn-buttons of conventional character rigidly secured at respectively opposite sides thereof.

In Figs. 1–3, the headgear is shown as a so-called hard hat **14**, conventional in every respect except for the provision of turn-buttons **15**. Such turn-buttons **15** are fixedly secured to the hard hat in any suitable and convenient manner, for example by means of respective pairs of rivets **16**, Fig. 4, extending through the material of the hard hat to the inside of such hat.

The turn-buttons **15** are positioned on the hard hat **14** with due regard to the desired positioning of helmet **10** relative to the face of the wearer of the hat. The receiving holes or openings **13** are elongate and, as illustrated, are sloped to conform to the shape of the elongate fixed

bases 15*a*, respectively, of the turn-buttons 15, so as to snugly receive such fixed bases and the defining material at the margins of such receiving holes 13 is pushed outwardly and specially contoured to form peripheral camming and locking members 17, so that, when the rotatable button part 15*b* of a turn-button is turned to locking position on its spindle part 15*c*, Figs. 4 and 5, the particular attachment arm (11*a* or 12*a*) concerned will be tightly and rigidly locked into shield-supporting position on the headgear.

As clearly shown in Fig. 8, each camming and locking member 17 projects outwardly from the coupling arm proper and forms a camming track 17*a* of substantially oval configuration contoured low at its opposite ends and high at the middle on each side between such ends. Locking notches 17*b* are formed at the high spots, as indicated.

Thus, turning of the rotatable button part 15*b* of a received turn-button exerts a camming action against the member 17, and, in turn, insures a tight fit of coupling arm against the stationary base of the turn-button. The locking notches 17*b* serve to retain the button part 15*b* in its turned and securing position during use of the coupled headgear and welding shield combination.

In Fig. 6, the welding shield 10 is shown attached to the ordinary headband type of headgear 20, which is conventional in every respect except for the provision of outwardly projecting turn-buttons 21 at respectively opposite sides thereof.

The turn-buttons 21 are identical with the turn-buttons 15, and are preferably identically positioned on the headgear. Thus, the hard hat 14 and the headband 20 are freely interchangeable with respect to attachment to the welding shield 10.

From the above, it can be seen that a single welding shield 10 may be used with either the hard hat 14 or the ordinary headband 20, and that the user of the equipment need purchase only one welding shield for use with both types of headgear.

The coupling means are simple in construction, are quickly and easily associated with conventional welding shields and headbands during manufacture thereof, the resulting combination equipment is low in cost, the shield may be coupled and uncoupled relative to the headgear with exceptional speed and facility and without requiring the wearer of the headgear to remove it from his head. The securement of shield to headgear is positive and tight, and the support afforded the shield is firm over indefinite periods of use.

Whereas this invention is here illustrated and described with respect to a specific embodiment thereof, it should be realized that changes may be made within the scope of the following claims, without departing from the essential contributions to the art made by the teachings hereof.

We claim:

1. In a quick-coupling welding shield and headgear combination, wherein the shield is constructed to receive and encompass the front and the forward portions of the lateral sides of the headgear and is provided with a pair of coupling arms extending rearwardly therefrom at respectively opposite sides thereof for coupling engagement with the headgear at their extremiteis and rearwardly of the confines of said shield, and wherein the headgear is provided at respectively opposite sides thereof with a corresponding pair of couplers for receiving and coupling said arms, the improvement comprising a pair of turn-buttons fixedly secured to the headgear and projecting outwardly therefrom as the couplers, said turn-buttons each including an elongate base member fixedly attached to said headgear, an outwardly extending stud member similar in configuration to said base member, and means rotatably securing said stud member to said base member; and means defining turn-button receiving openings in said coupling arms substantially conforming to the shape of said base members, whereby coupling is accomplished by merely interengaging corresponding turn-buttons and receiving openings and turning said turn-buttons, and uncoupling is accomplished by the reverse procedure, said means including outwardly projecting camming and locking members peripherally marginal to the respective turn-button receiving openings and of height sufficient to provide for firm clamping of said coupling arms on said base members.

2. In a headgear and face shield combination equipped with quick-coupling means, the improvement comprising a pair of turn-buttons fixedly attached to the headgear at respectively opposite sides thereof; attachment means correspondingly carried by the face shield, said attachment means having a pair of receiving apertures formed therein in position and arrangement adapted to receive the respective turn-buttons of said pair for locking co-operation therewith, said turn-buttons each including an elongate base member fixedly attached to said headgear, an outwardly extending stud member similar in configuration to said base member, and means rotatably securing said stud member to said base member, said apertures substantially conforming to the shape of said base members; and camming and locking members peripherally marginal to the respective turn-button receiving apertures and of height sufficient to provide for firm clamping of said attachment means on said base members.

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