Dec. 8, 1959 F. T. REX ET AL 2,915,756

FACE SHIELD

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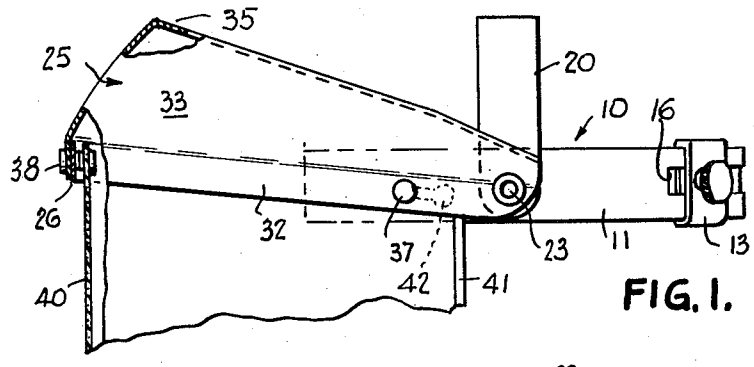

FIG. 1.

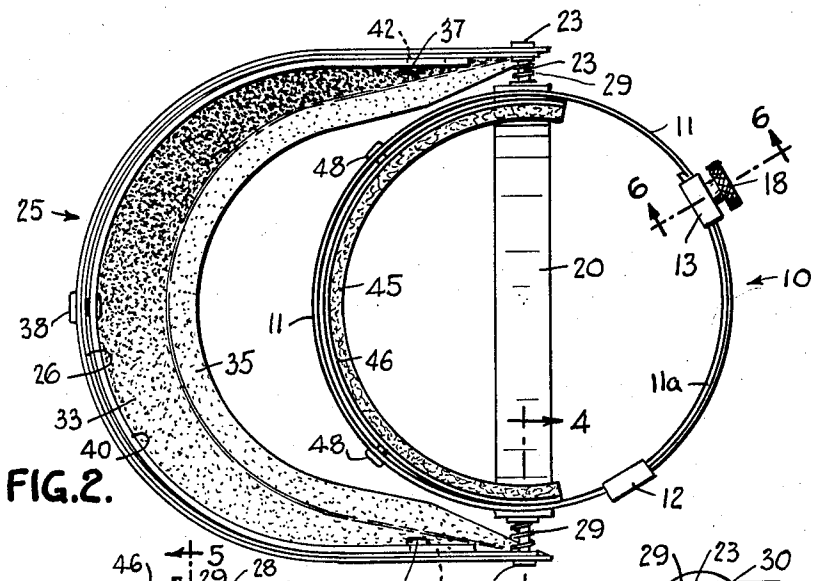

FIG. 2.

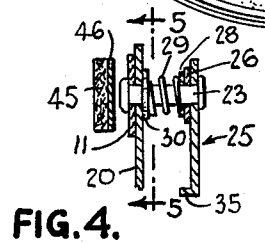

FIG. 4.

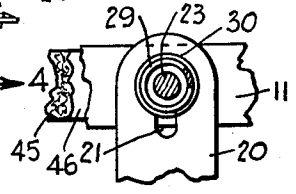

FIG. 5.

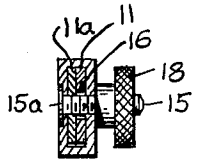

FIG. 6.

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FACE SHIELD

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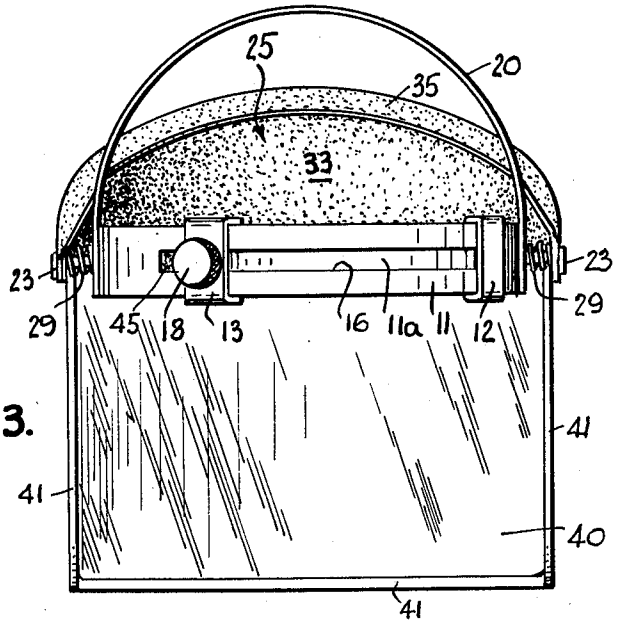

FIG. 3.

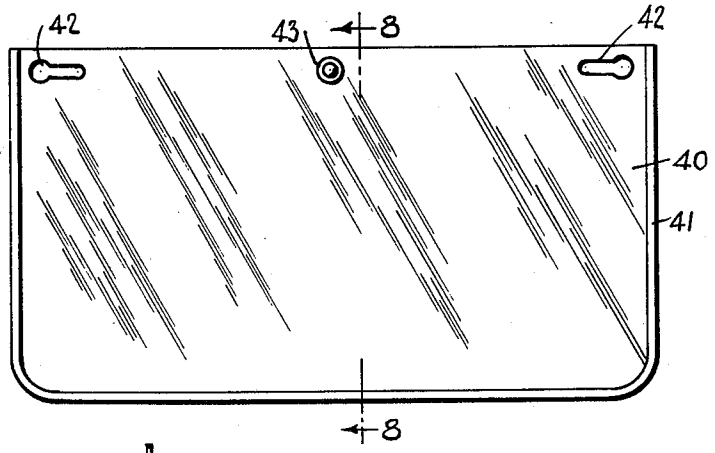

FIG. 7.

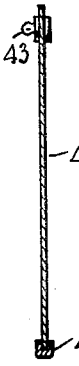

FIG. 8.

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FACE SHIELD

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1 Claim. (Cl. 2—8)

This invention relates to industrial safety equipment and, more particularly, to a light weight and adjustable safety face shield for protecting the wearer against various shop hazards.

Modern industrial safety programs require the use of face shields during the operation of certain equipment, such as grinding machines, welding equipment, and the like. As a result, it has been found highly desirable to provide such safety equipment that is comfortable, affords good visibility, and which may be conveniently worn by the operators, so as to encourage the workers to use the safety devices.

An object of this invention, therefore, is to provide a safety face shield for use by operators of various types of industrial equipment that is extremely comfortable, of light weight, and which is completely adjustable to the head size of the wearer.

Another object of this invention is to provide a safety face shield having both a head size and height adjustment.

A further object of this invention is to provide a safety face shield that is provided with a replaceable sweatband, whereby such may be replaced when worn and also to permit the sanitary use of the shield by a plurality of workers.

An additional object of this invention is to provide a safety face shield having a spark deflector that extends upwardly beyond the level of the forehead of the wearer and is adapted to removably support a transparent flexible face shield of any desired size and color, whereby the device may be converted to use for various machine operations.

A further object of this invention is to provide a safety face shield adapted to be supported upon the head by a headband and has a pivotally mounted shield that is maintained in constant spaced relationship with the headband so as to be maintained clear of contact with the face and eye glasses of the wearer.

All of the foregoing and still further objects and advantages of this invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing, wherein:

Fig. 1 is a side elevational view, with parts broken away, of a safety face shield made in accordance with the present invention.

Fig. 2 is a bottom plan view of the device shown in Fig. 1.

Fig. 3 is a rear elevational view of the device shown in Fig. 1.

Fig. 4 is an enlarged cross-sectional view taken along line 4—4 of Fig. 2.

Fig. 5 is an enlarged cross-sectional view taken along line 5—5 of Fig. 4.

Fig. 6 is an enlarged cross-sectional view taken along line 6—6 of Fig. 2.

Fig. 7 is a plan view of a face shield made in accordance with the present invention.

Fig. 8 is a sectional view on line 8—8 of Fig. 7.

Referring now to Figs. 1 to 3 of the drawing, a safety face shield made in accordance with the present invention is shown to include a flexible head frame **10** which includes a headband **11** that is adapted to encircle the head of a machine operator. One end of the headband **11** is provided with a slide element **12** that slidably receives a portion associated with the opposite end **11***a* of the band. Similarly, a slide element **13** is secured to the other end **11***a* of the band and slidably receives the adjacent portions **11** of the first mentioned part of the band, whereby the adjacent ends are secured in telescopic-like assembly. A threaded stud **15** is secured against rotation by its head **15***a* at one side of the slide **13** and extends through a longitudinal slot **16** in the opposite end of the band **11**. A knurled nut **18** threadingly engages with the studs **15**. The inside diameter of the headband **11** can be adjusted by releasing pressure on the nut **18** so that the adjacent ends of the headband may be moved with respect to each other. By tightening the nut **18**, the adjacent elements are brought into bearing engagement with each other so that the adjusted size of the headband can be fixed.

An adjustable height band **20** is provided with a longitudinally extending slot **21** (Fig. 5) at each end, that is adapted to slidably receive a connecting pin **23**. These pins are in axial alignment and thus secure the headband and height band, and a safety shield support **25**, together for individual rotation with respect to each other.

As is more clearly shown in Figs. 4 and 5, the safety shield support **25** is provided with a narrow reinforcing strip **26** which extends substantially around the entire inside surface thereof. Each connecting pin **23** extends through the safety shield support **25**, the reinforcing strip **26**, and through the adjacent ends of the headband **11** and height band **20**. A compression spring **29** encircles the mid-portion of each connecting pin **23** and is seated at one end against a washer **28** associated with the safety shield support and at the other end against a washer **30** associated with the head frame. These springs are initially loaded so as to urge the respective parts into frictional engagement with each other, thereby resisting any movement thereof out of an adjusted position. Similarly, the frictional resistance created by the pressure of the springs also limits the longitudinal movement of each end of the height band **20** that is provided for the vertical height adjustment.

Referring now to Figs. 1 and 2 of the drawings, it will be noted that the safety shield support **25** is provided with a flat annular portion **32** at the lower edge thereof, from which a spark deflector **33** extends upwardly and inwardly to provide a smooth convex spark deflector surface. The upper extremity of the spark deflector **33** has an inwardly extending web **35** that normally extends toward the head frame **10** so as to additionally protect the head of the wearer. This web also provides added reinforcement for the safety shield support **25**, which may be constructed of vacuum-formed plastic, in order to provide the desired shape and light weight. A pair of oppositely facing riveted fastening lugs **37** are secured to the lower reinforcing strip **26** and lower edge of the safety shield support **25** and are adapted to removably support a face shield **40** in proper relationship therewith. A centrally located female snap fastener **38** extends through the front of the shield support **25** and is adapted to be removably engaged with a mating male snap member **43** carried by the shield **40**. To further protect the wearer, the exposed peripheral edges of the face shield **40** are provided with safety edging **41**. It will be recognized that a face shield **40** of any desired size, color, and degree of transparency may be provided, depending upon the type of work being performed. Therefore, in welding, a very dark face shield would be desirable and in grinding operations, a perfectly transpar-

ent and clear shield would be preferable. In using the shield, it is only necessary to engage the fastening lugs 37 within the keyhole slots 42 in the shield, after which, the snap members 38, 43, may be used to secure the parts in proper position and shape.

Referring to Figs. 2 and 4, a replaceable sweat band 45, preferably of foam rubber construction, is shown in operative position within the front side of the headband 11. The sweatband may be cemented to a plastic support strip 46 that is provided with releasable snap members 48 so as to facilitate the assembly and removal of the band with respect to the head frame. Thus, each operator may have a separate sweatband that may be readily inserted and removed when the shield is used.

It will be recognized, that all of the parts may be made of unbreakable, soft, plastic material so that the parts may readily fit any head shape and thus eliminate uncomfortable pressure points. It will also become apparent that the particular shape and configuration of the spark deflector provides greater depth for added protection. One of the more important features of the present invention is that the safety shield support 25 is constantly maintined in radially spaced relationship with the head frame 10 so that the face shield 40 is constantly maintained out of contact with the face and outer closing of the wearer. This is of great importance when the machine operator is required to wear prescription glasses, since the shield may be raised or lowered at will, without interference. The spring-actuated friction means not only maintains the parts in a normal operative position, but also is sufficient to maintain the shield support in any desired rotated position.

While this invention has been described with particular reference to the specific form shown in the drawing, it is to be understood that such is not to be construed as imparting limitations upon the invention, which is best defined by the claim appended hereto.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:

A safety face shield comprising, in combination, a headband adapted to encircle a human head, a safety shield support, pivot members at opposite sides of said headband rotatably connecting said safety shield support

to said headband in radially spaced relationship therewith for limited pivotal movement about a transverse axis of said headband, said pivot members including friction means acting between said headband and said safety shield support for resisting said pivotal movement of said safety shield support, a transparent flexible face shield, and fastening means carried by said safety shield support for releasably securing said transparent face shield thereto, said safety shield support including an upwardly and inwardly converging spark deflector portion, the upper extremity of which has an inwardly extending flat arcuate web contained within a single plane, said fastening means comprising a headed stud extending outwardly from said shield support on each side of the center line thereof and one element of a pair of cooperating snap fastener elements disposed on the shield support at substantially the center line thereof; said transparent face shield having along a line parallel to and adjacent the top edge thereof, and at substantially the vertical center thereof, the mating element of said pair of cooperating snap fastener elements, and on said same line, a pair of oppositely horizontally disposed keyhole slots with their narrow portions facing each other, the enlarged portions of said slots being disposed near each side edge of said face shield whereby when the face shield is flexed from its normally flat condition, the enlarged portions of the slots will fit over the headed studs on said shield support and when the vertical central portion of said shield is moved toward said shield support for cooperative engagement of said snap fastener elements, the shanks of said headed studs will be received within the narrow portion of said slots.

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