Jan. 11, 1938. L. G. TATTER 2,105,018

WELDING SHIELD

Filed April 2, 1936

Fig. 1.

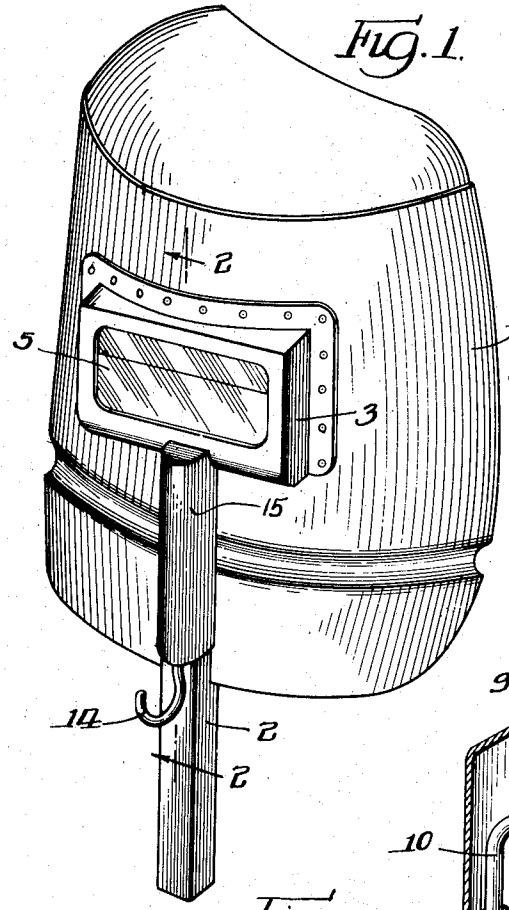


Fig. 2.

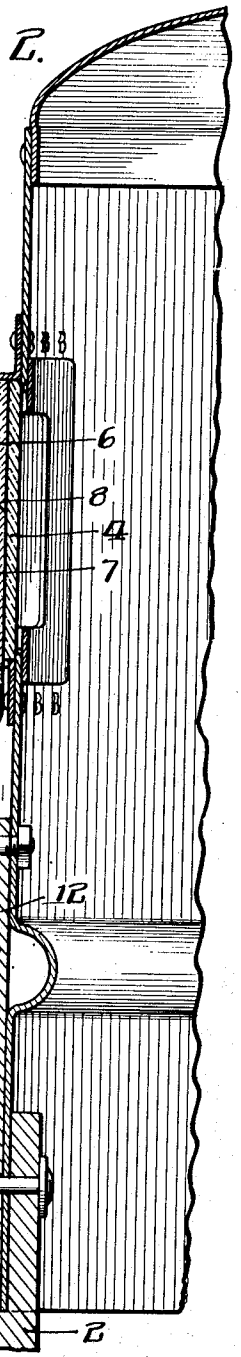


Fig. 3.

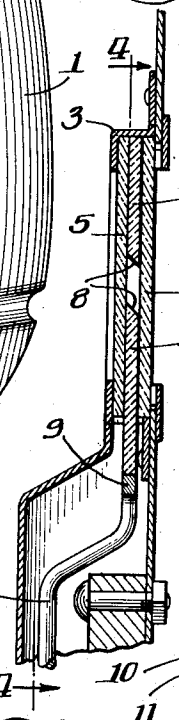
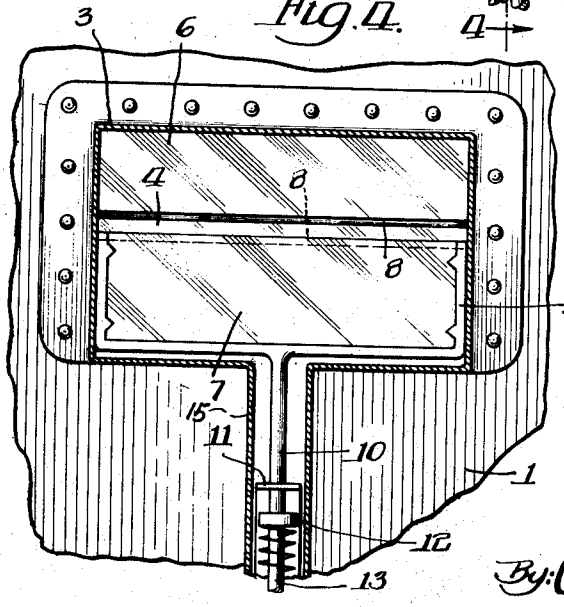


Fig. 4.



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WELDING SHIELD

Louis G. Tatter, Chicago, Ill.

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16 Claims. (Cl. 2—8)

This invention relates to shields for use in electric welding, for shielding the eyes against the glare of an electric arc, or for shielding the eyes against any other light, wherever such is necessary or desirable in doing certain kinds of work.

Generally stated, the object of the invention is to provide a novel and improved construction and arrangement whereby the window of the shield, which is usually provided with colored glass of some kind, to protect the workman's eyes against certain injurious rays of the light, is so constructed that a narrow opening can be opened and closed at will, to provide unobscured vision when necessary or desirable, as in the starting of the welding or other operation, but which can be closed in time to shut off the injurious rays, thereby to obviate the necessity of moving the shield sidewise, in order to enable the worker to unobstructedly view the work from time to time.

It is also an object to provide certain details and features of construction and combinations tending to increase the general efficiency and the desirability of a shield of this particular character.

To the foregoing and other useful ends, the invention consists in matters hereinafter set forth and claimed, and shown in the accompanying drawing, in which—

Fig. 1 is a perspective of an electric welding shield embodying the principles of the invention;

Fig. 2 is an enlarged vertical section of said shield, on line 2—2 in Fig. 1 of the drawing;

Fig. 3 is a duplication of a portion of Fig. 2, showing the parts in a different position;

Fig. 4 is a vertical section, on a smaller scale, on line 4—4 in Fig. 2 of the drawing.

As thus illustrated, the invention comprises a body of fibre or other suitable material 1, of suitable form, forming the main or body portion of the shield. The lower edge of the shield is provided with a handle 2, by which the shield is held in one hand, while the worker is holding or manipulating the electric welding machine in the other hand.

The front of the shield body is provided with a rectangular framing 3, containing inner and outer sections of clear glass 4 and 5, as shown more clearly in Figs. 2 and 3 of the drawing. Between these two sections of clear glass, there is an upper section 6 of colored glass, held in fixed position, and a lower section 7 of colored glass, adapted to move up and down between the two sections 4 and 5 of clear glass. It will be seen that these two sections of colored glass are beveled at their edges 8, to fit together as shown in Fig. 2 of the drawing, when the section 7 is in its normal position. The colored glass 6 and 7 is practically of the kind ordinarily employed to protect the eyes of the worker against the ultra-violet rays of the electric arc. The lower section 7 is fixed in a frame 9 that has a stem 10, which latter reciprocates up and down in the guide bracket 11, as shown more clearly in Fig. 2 of the drawing. The stem 10 has a shoulder piece 12 that normally bears against the upper end of the bracket, and a coil spring 13 is interposed between said shoulder and the lower end of the bracket, on the stem, thereby to yieldingly hold the section 7 in its normally raised position, so that the two sections 6 and 7 are nomally tight together at their beveled edges. The lower end of the stem 10 has a handle 14, preferably hook-shaped, so that it can be pulled down by a finger of the hand in which the handle 2 is held, thereby to provide an opening between the edges 8 of the colored glass, thus permitting a clear view through this space and the clear glass 4 and 5 of the work, from time to time. When the section 7 is raised, the beveled joint between the upper edge of this section and the lower edge of section 6 insures against any leakage of the dangerous light rays between them, and the colored glass is just as effective to keep out these rays as though made only in one section.

In use, the handle 2 is held in one hand, while the worker is using the other hand to hold or manipulate the electric welding machine, or something else, that is necessary in doing this kind of work, depending upon the exact character of the welding apparatus being used. Before the electric arc is formed, necessitating the shielding of the eyes against the ultra-violet rays, the worker needs to see the work, in order that certain things may be done correctly, and for this purpose the hook 4 may be pulled down, thereby to afford a clear view of the work between the edges 8 of the two sections of colored glass. This obviates the necessity of moving the shield from one side to the other, from time to time, when a clear view of the work is necessary. Before turning on the current to produce the arc, the space between the edges of the two sections of colored glass may be closed, so that the dangerous light rays will not be able to penetrate when the arc is formed. Thus, the opening and closing of the clear view window, afforded between the two sections of colored glass, may alternate with the opening and closing of the electric circuit. In

this way, the worker may alternately have protection against the ultra-violet rays, through the medium of the colored glass, and a clear and unobstructed view of the work, through practically one and the same window in the front of the shield, thus obviating the necessity of moving the shield to one side when a clear view of the work is desired.

It will be understood, of course, that the handle 2, instead of being held in the hand, may be supported on a stationary support, or on something supported by the head or shoulders of the worker. On the other hand, the handle 2 may be omitted, and the shield may be supported in some other manner, so that the worker will be left free to use both hands on the work being done. In such case, the invention is of special value, as it obviates the necessity of removing the shield from in front of the face of the worker, in order that the latter may have a clear view of the work from time to time, when the circuit is open and the electric arc is not at work.

It will also be understood that any suitable or desired means can be employed for controlling the sliding movement of the section 7 of colored glass. As shown, such means are manually operable by the hand, but it is obvious that this can be done by other things, including foot-control, and particularly so in connection with a shield of this kind that is supported on the head or shoulders of the worker, or on some stationary support that is not held in the hand.

As with the ordinary shield, when the worker looks through the window formed by the sections of glass, some things are barely visible through the colored glass, when the edges 8 are tight together, sufficiently so to enable the worker to do the desired work. But, when the edges 8 are separated, there is then complete visibility through the space formed, in a manner necessary for certain steps in the work.

It will be seen, therefore, that the section 6 of colored or shaded glass is stationary, as it is fixed in position in the window, and hence this section is always in position for vision therethrough regardless of whether the section 7 is down or in normal position. When the section 7 is down a distance to provide an area of clear vision, a slight relative movement as between the head and the shield body 1 is sufficient to instantly bring the line of vision through the stationary section 6, if such is desired. The spring 13, it will be seen, is capable of moving and maintaining the section 7 in normal position, and in this way the clear vision area cannot accidentally be left open. When the section 7 is up in normal position, with the beveled edges 8 tight together, there is an ample area of protected vision, practically throughout the area of the window. However, even if this section 7 is clear down, even lower than the position shown in Fig. 7, there is still the area of protected vision provided by the section 6, as the latter is stationary or fixed in position in the upper portion of the window.

It will be seen that the housing 15, on the front of the shield 1, contains the rod and the spring 13 for operating the movable glass 7, in the manner described. This housing 15 extends downwardly from the bottom of the framing 3 of the window, and its lower portion contains a guide, as explained, for the said rod by which the movable glass is operated.

What I claim as my invention is:

1. As an article of manufacture, a shield for protecting the eyes of the worker against the dangerous or injurious rays of an electric arc, as in electric welding, comprising means forming the body of the shield, means forming a framed window in the front of said body, having colored or shaded glass to protect the eyes against said rays, movable means for producing a clear vision area in said window, of variable height and fixed horizontal length from one side of the window to the other, between the upper and lower edges of said window, causing a variable area of shaded glass between the upper and lower edges of the window, as well as a variable area of clear vision, and enclosed spring means entirely external of said body and carried by the latter below the middle of said window, capable of moving and maintaining said movable means in normal position, together with means outside said body and operable for overcoming the tension of said spring means, when said clear area is desired.

2. As an article of manufacture, a face shield for protecting the eyes, comprising means forming the body of the shield, means forming a framed window in the front of said body, having a stationary section of colored or shaded glass fixed in position against displacement in said window to protect the eyes against injurious light rays, and movable means whereby a variable clear vision area may be formed in said window at will, below one horizontal edge of said stationary section, between the upper and lower edges of said window, unobstructed by any colored or shaded glass, and without disturbing said shaded glass, causing the window to have a variable area of clear vision.

3. A structure as specified in claim 2, including spring means external of said body and carried by the latter below the middle of the window, capable of moving and maintaining said movable means in normal position, keeping said area normally closed.

4. A structure as specified in claim 2, said movable means comprising a section movable in the plane of said stationary section, below the latter, so that the lower edge of the stationary section normally engages the upper edge of the movable section, keeping said area normally closed, together with enclosed spring means entirely below the window and external of said body, capable of moving and maintaining said movable section in normal position.

5. A structure as specified in claim 2, comprising enclosed spring means entirely external of said body and carried by the latter below the middle of said window, capable of moving and maintaining said movable means in normal position, keeping said area normally closed, and manually operable means for overcoming the tension of said spring to produce said clear vision area.

6. A structure as specified in claim 2, comprising inner and outer sections of clear glass in fixed position in said window, spaced apart with their lower edges free to accommodate said stationary section and movable means between them, with said means movable up and down between the lower edges of said clear glass.

7. A structure as specified in claim 2, comprising a downwardly extending rod for said movable means, with a guide for the rod, and enclosed spring means entirely external of said body and below said window and applied to said rod, capable of moving and maintaining the latter in normal position, keeping said area normally closed.

8. As an article of manufacture, a face shield for protecting the eyes, comprising means forming the body of the shield, means forming a framed window in front of said body, having a stationary section of colored or shaded glass fixed in position against displacement in said window to protect the eyes against injurious light rays, and movable means whereby a variable clear vision area may be formed in said window at will, along one horizontal edge of said shaded section, substantially midway between the upper and lower edges of said window, unobstructed by any colored or shaded glass, and without disturbing said shaded glass, causing the window to have a variable area of shaded glass, said movable means comprising a section of colored or shaded glass movable in the plane of said stationary section, the two sections having normally engaging horizontal edges, which latter are separable to provide said variable area of clear vision.

9. As an article of manufacture, a face shield for protecting the eyes, comprising means forming the body of the shield, means forming a framed window in front of said body, having a stationary section of colored or shaded glass fixed in position against displacement in said window to protect the eyes against injurious light rays, and movable means whereby a variable clear vision area may be formed in said window at will, along one horizontal edge of said shaded section, substantially midway between the upper and lower edges of said window, unobstructed by any colored or shaded glass, and without disturbing said shaded glass, causing the window to have a variable area of shaded glass, said section of colored or shaded glass having a beveled edge, and said movable means having a beveled edge normally fitting said first-mentioned beveled edge, to prevent leakage of the injurious light rays between said edges in the normal condition of said window.

10. As an article of manufacture, a face shield for protecting the eyes, comprising means forming the body of the shield, means forming a framed window in front of said body, having a stationary section of colored or shaded glass fixed in position against displacement in said window to protect the eyes against injurious light rays, and movable means whereby a variable clear vision area may be formed in said window at will, along one edge of said shaded section, substantially at the middle of said window, unobstructed by any colored or shaded glass, and without disturbing said shaded glass, causing the window to have a variable area of shaded glass, said movable means comprising a section of colored or shaded glass movable in the plane of said stationary section, so that the edge of the stationary section normally engages the edge of the movable section, keeping said area normally closed.

11. A structure as specified in claim 2, said movable means comprising a section of colored or shaded glass movable in the plane of said stationary section, the two sections having normally engaging edges, which latter are separable to provide said variable area of clear vision.

12. A structure as specified in claim 2, said section of colored or shaded glass having a beveled edge, and said movable means having a beveled edge normally fitting said first-mentioned beveled edge, to prevent leakage of the injurious light rays between said edges in the normal condition of said window.

13. A structure as specified in claim 2, said movable means comprising a section of colored or shaded glass movable in the plane of said stationary section, below the latter, so that the lower edge of the stationary section normally engages the upper edge of the movable section, keeping said area normally closed.

14. A welding shield comprising a window for the front of the shield, having a metal framing projecting from the said front, with movable shaded glass inside thereof, a housing on said front, extending downward from the bottom of said framing, and means inside said housing to operate said movable glass.

15. A structure as specified in claim 14, said operating means comprising a rod extending downward from said movable glass, a guide for said rod, and a spring on said rod to move the glass upward to normal position.

16. A structure as specified in claim 14, and a spring inside said housing to move said glass upward to normal position.

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