

Oct. 5, 1926.

1,601,830

F. D. HUNTSMAN

WELDER'S MASK

Filed Oct. 9, 1924

2 Sheets-Sheet 1

Fig. 1.

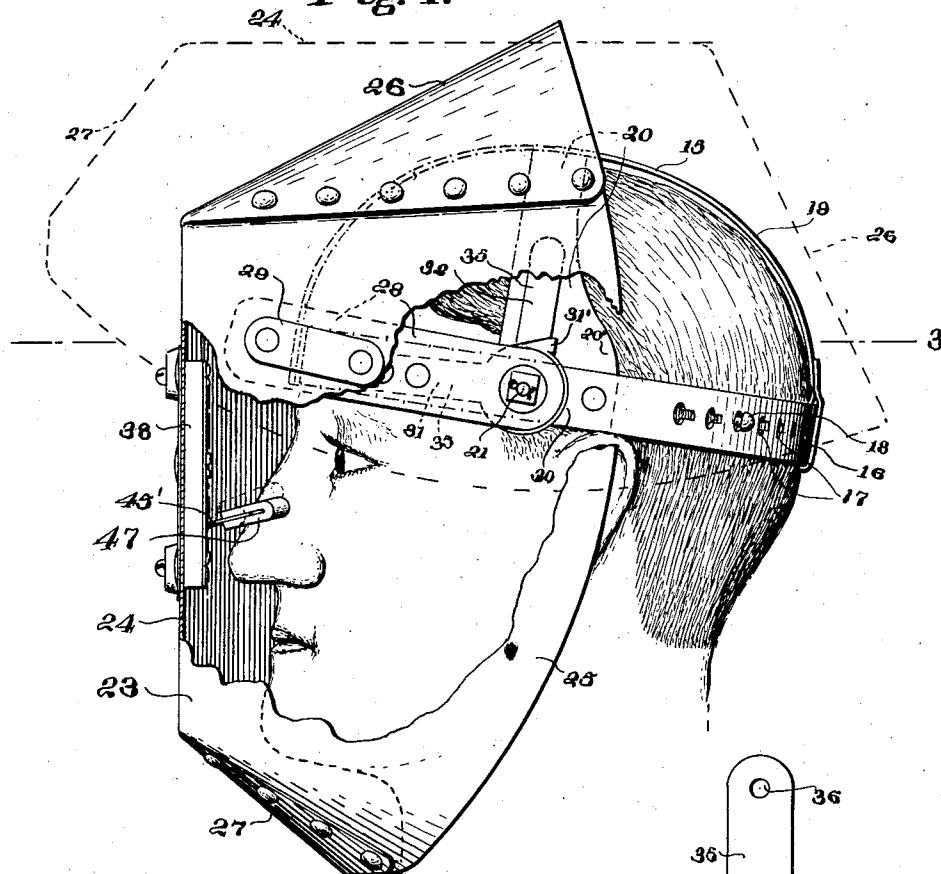


Fig. 10.



Fig. 2.

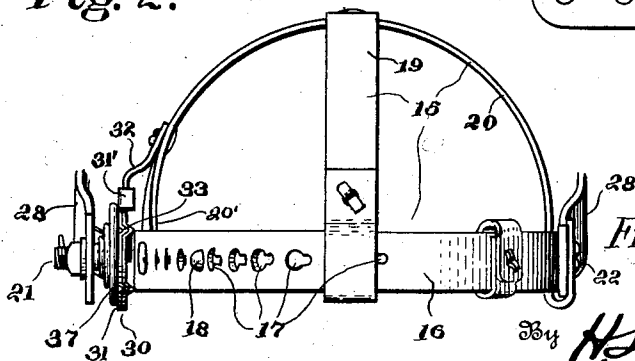
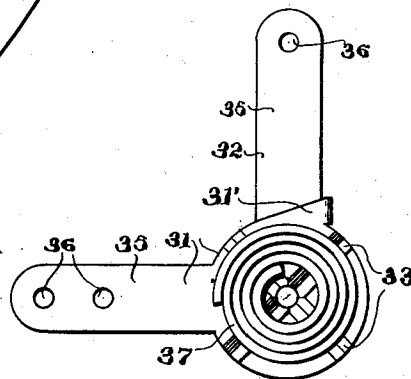


Fig. 7.

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2 Sheets-Sheet 2

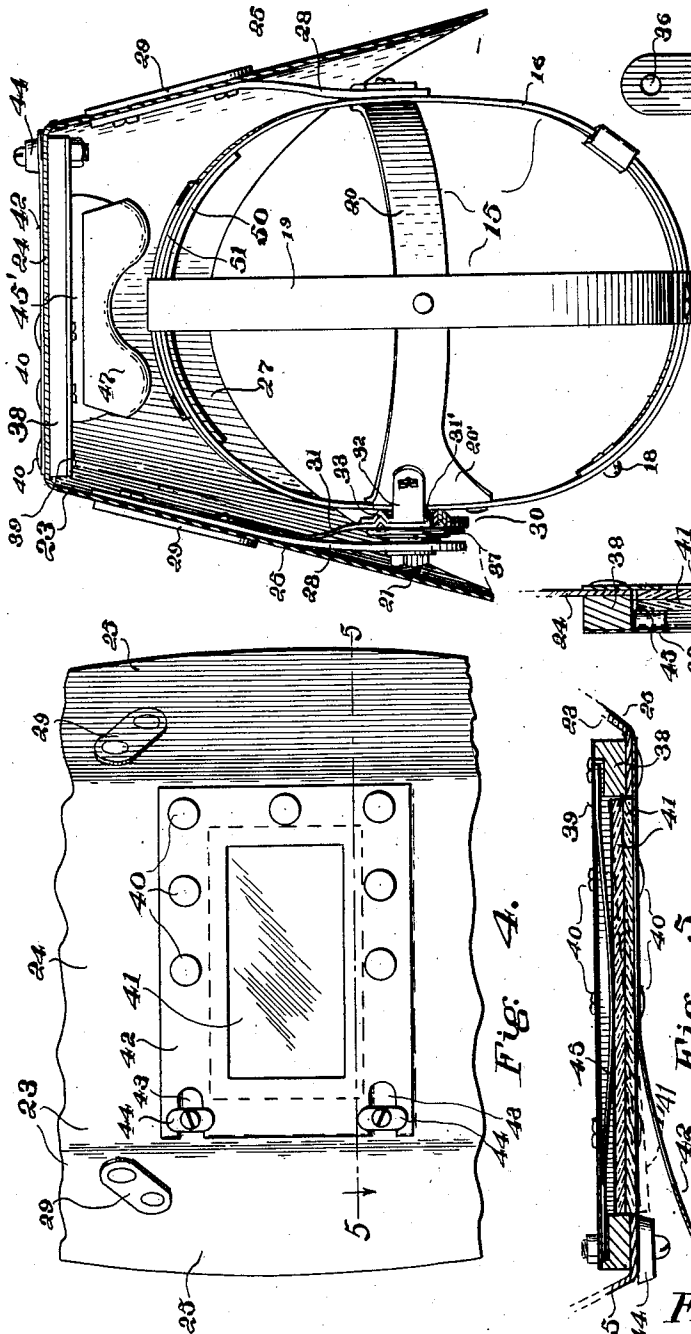
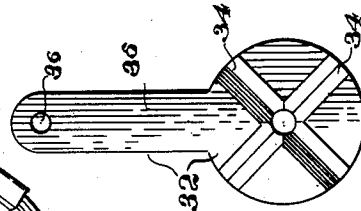


Fig. 3.

Fig. 9.

Fig. 6.

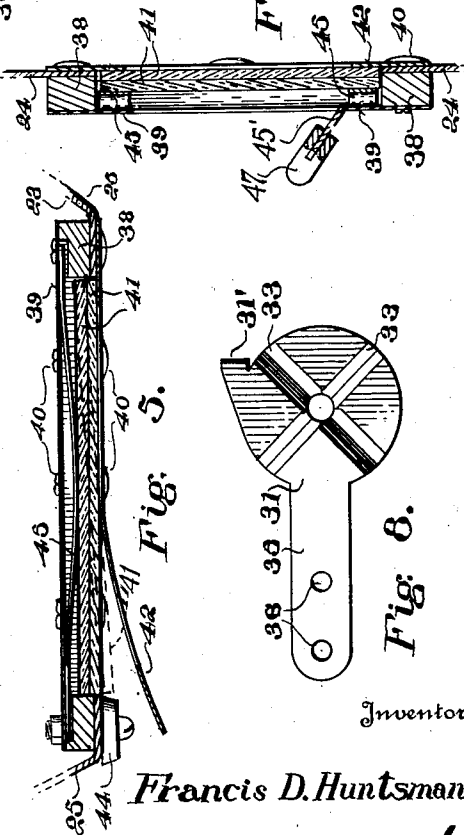
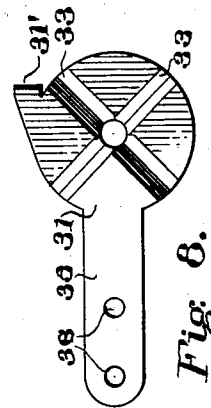


Fig. 4.

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WELDER'S MASK.

Application filed October 9, 1924. Serial No. 742,606.

This application is a continuation in part of my prior application Serial 537,910, for welder's mask, filed Feb. 15, 1922.

The invention has for an object to effect improvements in welders' masks and masks of this general type. It aims specifically to effect improvement in the means for mounting light-screen glasses in such masks; to improve the means for holding the mask in raised and lowered positions; and to effect improvements in structural details.

The use of such masks has now become quite extensive and masks having head engaging parts to remain fixed upon the head and a shield movable thereon are well known and largely used. In such masks the simplification of the glass mounting, and the means for accomplishing the various functions now regarded as essential in the best masks, is imperative, for several reasons. Among these is the fact that these masks are often worn for many hours at a time, the weight—and especially the weight at the front portion—is an important consideration. Also, as small fractional variations in cost largely affect the sale, it is important to reduce the material, number of parts, and manufacturing operations required in the production of such masks. Simplification in this way is one of the most important objects of this invention, but in addition, there are certain specific improvements whereby new functions or improvements of functions are attained. Thus, I provide a breath shield in a form which may also be adjusted to accommodate different facial types; glass retaining means comprising only two main elements of very light construction, yet permitting ready removal and replacement of screens; and a check or lock regulating the position of the shield on its mounting, which may be embodied as the pivot at one side.

A further important aim is to provide a novel means for positively stopping movement of the mask on its mounting at the lower limit of its movement while yet enabling its easy manipulation for movement to or from raised position.

Additional objects, advantages and features of invention may be understood from

the following description and accompanying drawings, in which—

Figure 1 is a side elevation of the mask partly in section, and head mounting in operative position.

Figure 2 is a rear view of the head mounting only.

Figure 3 is a top view with the mask in section on the line 3—3 of Figure 1.

Figure 4 is a fragmentary front view of the mask showing the window and glass retaining means operative for removal or replacement of a screen.

Figure 5 is a horizontal section of the window on the line 5 of Fig. 4.

Figure 6 is a vertical section of the window.

Figure 7 is an elevation of the check device.

Figure 8 is an elevation of the outer member of the check device.

Figure 9 is a similar view of the inner member of the lock.

Figure 10 is a fragmentary bottom view of the head piece at the front part.

There is illustrated a head piece or mounting 15, comprising an adjustable horizontal head band 16 having end portions overlapped at the rear, one being provided with pear-shaped slots 17, while the other has a headed stud or button 18 adapted to be inserted through the larger part of a slot and drawn into the smaller part for retention as adjusted, as is well understood. Longitudinal and transverse overhead straps 19 and 20 are also connected to the band 16. The rear connection of the strap 19 is a loop in which the overlapped ends of the band 20 are slidable. The forward end of the strap 19 is fixed to the band 16. The connections of the transverse strap 20 to the band 16 comprise a pivot bolt 21 at the left and a rivet 22 at the right, as shown. Upon these a shield 23 or mask proper is pivoted. This shield is adapted to be formed of various materials but for lightness and efficiency combined it is customarily made of thin pressed fiber sheeting, of which the bands and straps referred to may also be made. The shield comprises a planiform front part 24, integral rearwardly extending and slightly divergent sides 25, an integral upwardly and

rearwardly inclined top part 26 and an integral downwardly and rearwardly inclined bottom part 27, the last two overlapping the sides 25 and being joined thereto by rivets.

5 The top and upper parts of the sides when in operative position extend rearwardly to or beyond a vertical plane through the ears of the wearer, and are set away from the head to afford good ventilation. The bottom part 27 and lower part of the sides do not extend so far rearwardly, and the bottom is adapted to stop short of the neck of the wearer when the shield is in operative position, the bottom also clearing the chin and jaw an inch or more, whereby a free circulation of air around the sides of the face is afforded.

For the mounting of the mask upon the head piece, short flexible straps 28 of the same material as the mask but thicker, are riveted to the sides 24 at their upper parts close to the front 24 extending rearwardly and slightly downward to receive the respective pivots 21 and 22 therethrough. Reinforcements 29 are provided on the sides 25 at the points of attachment of the straps 28. At the right the end of the strap 20 there is looped and secured by the pivot at the outer side of the strap 28 as well as at the inner side of the band 16.

At the left side the strap 20 is broadened as at 20' and cut off at the inner side of the band 16 flush with the lower edge of the latter, an extra rivet being engaged through the strap and band to fix them together and securely prevent relative pivotal movement. Interposed between the band 16 and the strap 8 at this side of the device there is an automatic check device 30 which will hold the mask in operative position with respect to the head piece, and also hold it in raised or inoperative positions, yieldably permitting movement of the mask when desired from either position by slight manual force applied directly to the mask, as most convenient.

The device 30 comprises plates 31 and 32 of sheet metal each including a centrally apertured disc part receiving the bolt 21 therethrough and formed with radial V-shaped ribs 33 pressed therein extending at right angles to each other and at an angle of forty-five degrees to the medial lines of the arms 35, the ribs of one fitting in the corresponding recesses 34 of the other. From the disc parts respective arms 35 extend, the one having two apertures 36 and the other having one such aperture, to receive rivets by which they are secured respectively to the strap 28 and the broad part of the strap 20. Between the strap 28 and the device 30 there is confined a helical spring 37 adapted to be compressed to a scroll form, and by means of which the plates 31 are pressed firmly together. A

nut and washer are engaged on the bolt 21 without the straps 28 by which the parts are held together, and adjustment of compression effected.

The plate 31 is intended to lie with its arm 35 extended forwardly beside the strap 28 to which it is attached, and at its upper side is provided with an integral longitudinal extension 31', the extremity of which is bent to extend inward at right angles to the plate, positioned so as to strike the arm 35 of the plate 32 when the shield is in fully lowered position.

In the planiform front portion of the shield an oblong rectangular horizontal window opening is formed and on the inner side of the mask around this opening there is fitted a light frame 38 formed with a flange 39 smaller than the opening in the shield, the flange in the present instance comprising a very thin metal plate having a suitable opening therein and secured to the frame by the same rivets that hold the frame on the mask. The depth of the frame and the thickness of the fiber 40 of the shield are sufficient to equal slightly more than the thickness of the two or three glass screens 41 ordinarily employed in such masks. (Ordinarily an outer clear glass is employed, and one or two "protection" glasses, the latter deteriorating or cracking oftentimes and requiring frequent replacement under some conditions.) At the outer side of the window a very thin flexible resilient metal plate 42 similar in form to the plate 37 is fixed on the shield at one end portion, its opening being the same size as, or slightly larger than, that within the plate 39. The frame 38, plate 39 and plate 42 are commonly secured by the same rivets at one end, but the opposite half of the sheet 39 is left free to be flexed outwardly, and allow the insertion or removal of glasses, the frame 36 at this part being riveted directly to the material of the shield. The flexing end of the plate 42 is formed with longitudinal slots 43 opening on the edge of the sheet, and turn buttons 47 are mounted on the shield adapted to aline with the slots for passage therethrough, the buttons being turnable across the slots to engage and retain the sheet in closed position. Owing to the resilience of the plate 42 it will accommodate itself to excessive thickness of glasses, and serve also in some measure as a resilient retainer, preventing rattling of the glass. However, bowsprings 45 are set in the frame 38, having their ends slidable in small slots in the frame. These springs press the screens against the plate 42.

The frame 38 may be formed of aluminum, wood, papier mâché, etc. Part of the material from within the opening in the plate 39 is left attached at the lower side and as at 45' bent inwardly and shaped and

5 padded to set closely before but not engaging the nose of the wearer when the shield is in lowered position. This affords a guard 47 preventing the breath of the wearer from passing directly to the surface of the glass, where, in cold weather, it would condense objectionably. The metal of this breath shield being readily bendable manually, it may be easily turned or otherwise shaped to accommodate it to various facial types.

10 In the use of the mask, to place it upon the head, the band 16 is adjusted to a size to fit snugly around the head after the manner of a hat band, and with the mask in raised position as dotted in Figure 1, the head piece 15 is adjusted upon the head of the wearer. The mask will be securely held in this raised position by the engagement of the ribs 33 in the grooves 34. Movement of the ribs and grooves out of alignment will be resisted by the spring 37 which is further compressed by the resultant separation of the body parts of the plates when the ribs of the plate 31 ride onto the major inner faces of the plate 32 between the grooves. The mask may be lowered by grasping the part 27 and drawing it downwardly. The position of the breath guard 47 is then noted, and if necessary, this is adjusted so as to lie closer to the nose, or if it engages the nose when the mask is first lowered, it is bent so as to clear the nose slightly, and avoid all contact with the face.

35 As before indicated, in the lowering of the mask the part 31' engages the arm 35 of the plate 32 and positively stops further downward movement of the mask relatively to the head piece. Consequently, the mask having once been properly adjusted, each time it is raised and lowered on its pivot it will be returned to exactly the same position relatively to the face of the wearer, so that no shifting and twisting are required each time it is lifted and lowered in order to assure efficient use.

Also, the ribs 33 being snugly engaged in the grooves 34, coincidentally with engagement of the stop 31 against the arm 35, liability of the mask being accidentally displaced upwardly is minimized and many interruptions to work from such causes thus eliminated.

55 In the removal of the glass screens, the buttons 44 are turned to permit the plate 42 to swing outward, after which the screens are manually pressed outward adjacent the free end of the plate 42 until the end of one is presented outwardly of the front 24 of the mask, after which the finger of the operator is pressed against the outer surface thereof within the plate 42, and by friction

the screen pushed longitudinally from the window opening, moving in its major plane. After removal of the outermost screen, the 65 next may be brought into a similar position and likewise removed. To replace screens they are simply thrust longitudinally inward under the free end of the plate 42, and the springs 45 will automatically position them properly. 70

The band 16 is provided at the forward part with a pad 50 on the inner side to engage the forehead of the wearer; and to the outer side of the band 16 at this part a plate 75 spring 51 has its ends secured.

The spring is formed so as to tend to flatten the band 16 or lessen the curvature, so that the pad will press firmly on the forehead at the medial part. This enables the 80 device to accommodate itself more readily to heads of different sizes and shapes and adds to the comfort of the wearer.

I claim:

1. In a device of the character described, 85 a head piece, a shield shiftably mounted thereon, two check plates connected one to the shield and the other to the head piece and pivotally connected together, one plate having a plurality of recesses around the 90 pivot, the other plate having corresponding raised portions to nest with said recesses and both spaced to correspond to the limits of movement of the shield on the head piece, resilient means to press the plates together, 95 and means on the plates respectively positioned and constructed to coengage positively as a stop at the limit of lowering movement of the shield.

2. In a mask of the character described, 100 a head piece, a shield carried thereby having a window opening in the front part, glass retaining means including an inner retaining frame plate having a reduced opening, the material of the plate within the 105 opening being left attached at the lower side, extended inwardly therefrom, shaped and positioned to lie in close relation to the nose of a wearer, and being bendable for adjustment as described. 110

3. In a device of the character described, a head-piece and pivoted shield, a check plate fixed on each, said plates having grooves and ribs adapted to nest, and spaced to co-engage at opposite limits of movement 115 of the shield on the head piece, resilient means to press the plates together, the plates having peripheral projections, a projection of one being bent to strike a projection of the other at the limit of movement of the 120 mask in lowering.

In testimony whereof I affix my signature.

FRANCIS D. HUNTSMAN.