

Aug. 6, 1957

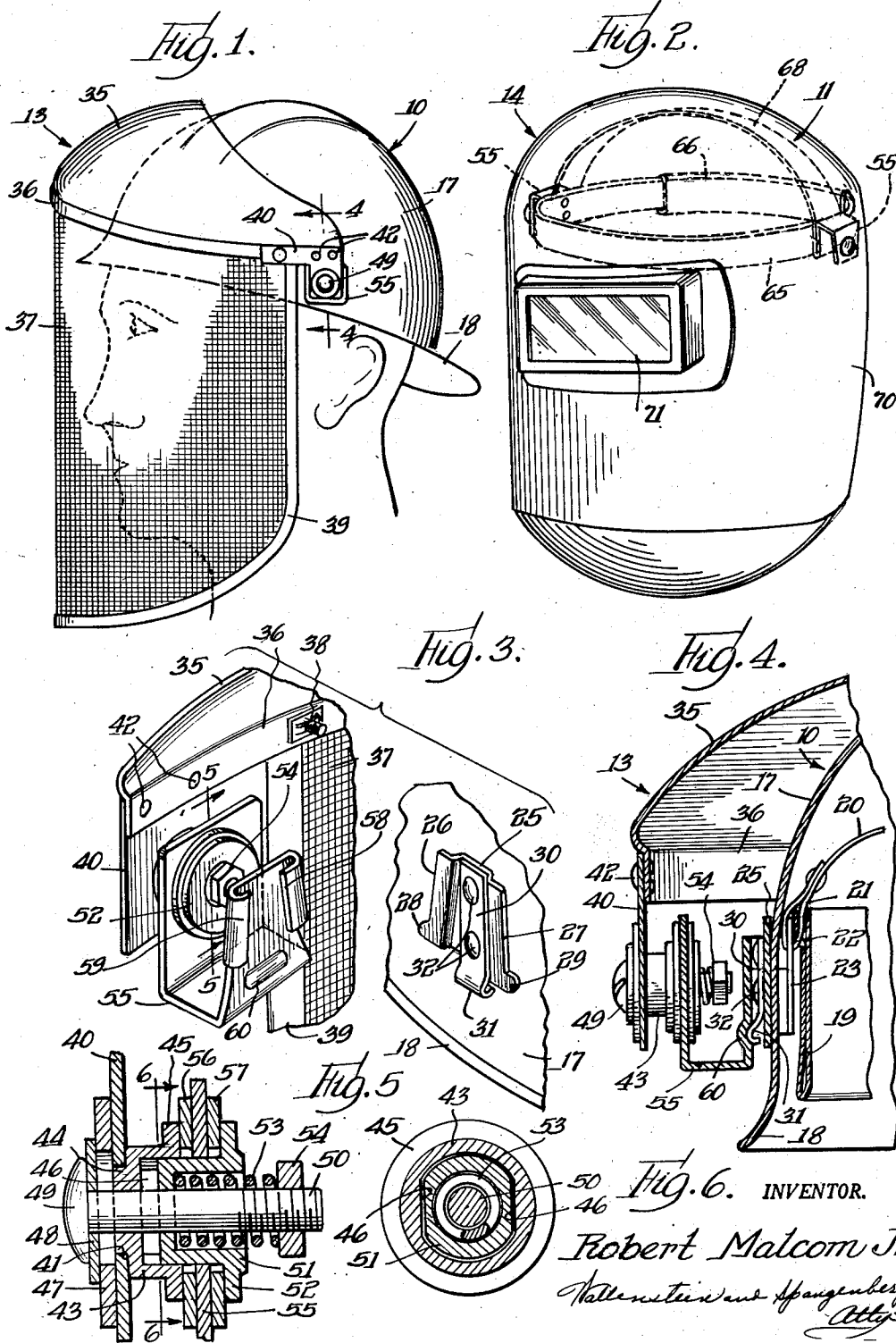
R. MALCOM, JR

2,801,420

PROTECTIVE APPARATUS FOR WORKMEN

Filed March 11, 1954

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Fig. 7.

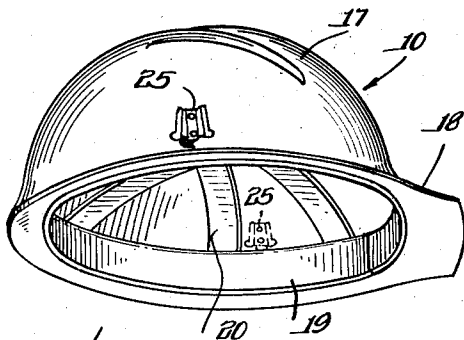


Fig. 8.

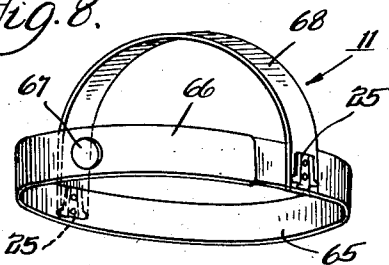


Fig. 11.

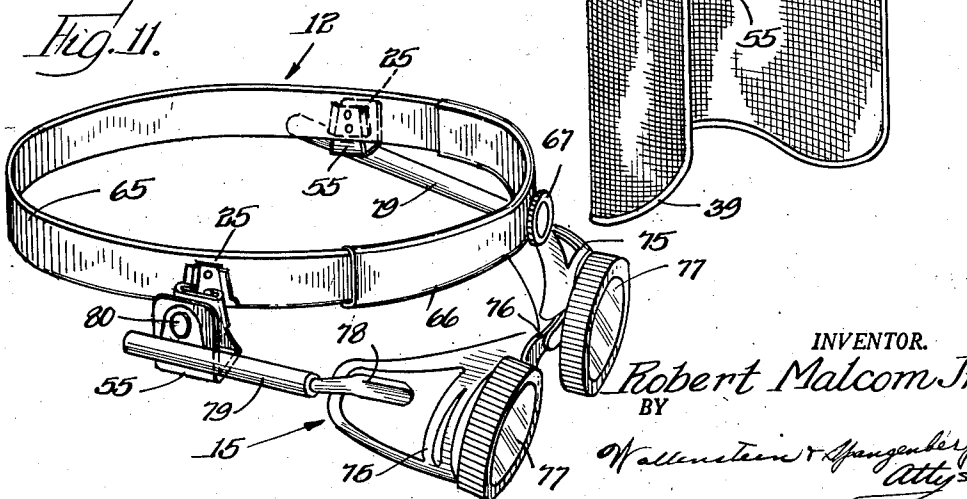


Fig. 9.

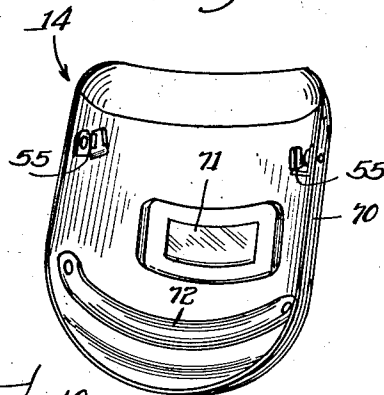
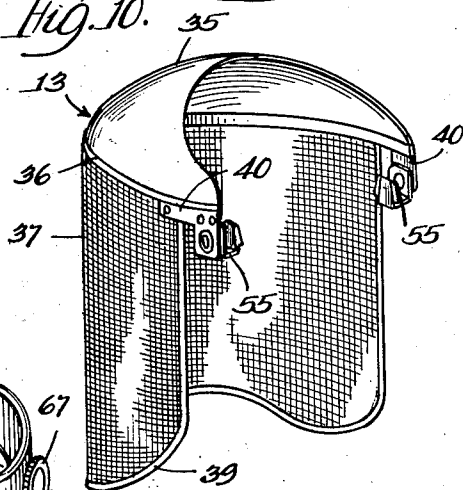


Fig. 10.



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PROTECTIVE APPARATUS FOR WORKMEN

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3 Claims. (Cl. 2—9)

This invention is directed to protective apparatus for workmen including head pieces comprising hard hats, head bands and the like for fitting the head of the workman and face pieces comprising face shields, goggles and the like for protecting the face of the workman.

The principal object of this invention is to provide releasable connecting means between the head pieces and the face pieces for interchangeably connecting the various face pieces to the various head pieces. This allows any one of the face pieces to be utilized with any one of the head pieces which is a great convenience to the workman, and it also provides a substantial reduction in stocking and inventory with great pecuniary savings where large numbers of such apparatus are utilized. The releasable connecting means is simple in construction, inexpensive to manufacture and readily and quickly operated. The connection between the face pieces and head pieces also includes pivot means so that the face pieces may be swung or tilted as desired during their use.

Further objects of this invention reside in the details of construction of the protective apparatus for workmen and in the cooperative relationships between the component parts thereof.

Other objects and advantages will become apparent to those skilled in the art upon reference to the accompanying specification, claims and drawings in which:

Figure 1 is a perspective view of a face piece in the form of a wire mesh face shield releasably connected to a head piece in the form of a hard hat.

Figure 2 is a perspective view of a face piece in the form of a welder's face shield releasably connected to a head piece in the form of a head band.

Figure 3 is an exploded perspective view showing the connecting means between the face piece and the head piece as illustrated in Figure 1.

Figure 4 is a sectional view taken substantially along the line 4—4 of Figure 1.

Figure 5 is a sectional view taken substantially along the line 5—5 of Figure 3.

Figure 6 is a sectional view taken substantially along the line 6—6 of Figure 5.

Figure 7 is a perspective view of a head piece in the form of a hard hat.

Figure 8 is a perspective view of a head piece in the form of a head band.

Figure 9 is a perspective view of a face piece in the form of a welder's face shield.

Figure 10 is a perspective view of a face piece in the form of a wire mesh face shield.

Figure 11 is a perspective view illustrating a face piece in the form of goggles releasably connected to a head piece in the form of a head band.

The drawings illustrate various types of head pieces such as a hard hat generally designated at 10 in Figures 1, 3, 4 and 7, a head band as illustrated at 11 in Figures 2 and 8 and a head band as illustrated at 12 in Figure 11. The drawings also illustrate various forms of face pieces

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such as a wire mesh face shield 13 as illustrated in Figures 1, 3, 4 and 10, a welder's face shield 14 as illustrated in Figures 2 and 9 and a pair of goggles 15 as illustrated in Figure 11. These various face pieces, in accordance with this invention, may be interchangeably and releasably connected to the various head pieces.

Referring now more particularly to Figures 1, 3, 4 and 7, the hard hat 10 includes a crown portion 17 and a brim portion 18, which may be formed of any suitable material such as a hardened synthetic plastic material or compressed fiber or the like. The hard hat is provided with a head harness including a head band 19 and head straps 20. The head straps 20 are looped at their ends as indicated at 21 and these loops extend through slits 22 in the head band 19 and through clips 23, which are detachably secured to the crown portion 17 of the hard hat. The harness is adjustable so that the hard hat may be firmly supported on the head of the workman.

A pair of members 25 are permanently secured to the crown portion 17 of the hard hat. Each of these members 25 includes a pair of offset and outwardly facing diverging legs 26 and 27, these legs being spaced from the crown portion 17 of the hard hat. The lower ends of these diverging legs 26 and 27 terminate in lugs 28 and 29 which act as stops. A leaf spring 30 provided with a cam projection 31 is located between the offset diverging legs 26 and 27. The leaf spring 30 is secured to the member 25 and the member 25 is secured to the crown portion 17 of the hard hat by means of rivets 32.

The face piece 13, in the form of a wire mesh face shield, as illustrated in Figures 1, 3, 4 and 10, includes a visor portion 35 provided with a securing rim 36 to which a wire mesh screen 37 is secured by screws 38. The wire mesh screen 37 may be provided with a reinforcing flange 39. A pair of brackets 40, each having a square hole 41 are secured to the securing rim 36 by rivets 42. A member 43 has a squared end 44 which is received in the square hole 41 of the bracket 40 and it is provided at its other end with a flange 45. It is also provided with an internal hole having flat portions 46. A fiber washer 47 abuts against the outer surface of the bracket 40 and is backed by a metal washer 48 which in turn is engaged by a head 49 of a screw 50. Thus, the member 43 is secured to the bracket 40 and is secured against rotation. A member 51 having flat surfaces is received in the member 43 and by reason of the flat surfaces, rotation between the members 51 and 43 is prevented. The member 51 is provided with a flange 52. A spring 53 is received in the member 51 and is backed by a nut 54 screwed onto the screw 50. One leg of a U-shaped bracket 55 is located between the flanges 45 and 52 of the members 43 and 51 and fiber washers 56 and 57 are mounted on each side of that leg of the U-shaped member. The parts are all clamped together by the nut 54 acting on the spring 53. These parts form frictional pivot means for pivoting the bracket 55 with respect to the face shield 13.

The other leg of the U-shaped bracket 55 is provided with a pair of diverging and opposed inwardly facing overhanging ears 58 and 59 and a cam recess 60 between the ears. In releasably connecting the member or bracket 55 and, hence, the face piece to the member 25 carried by the head piece, the diverging legs 26 and 27 are received in the diverging overhanging ears 58 and 59 and the cam projection 31 on the leaf spring 30 is received in the cam recess 60 on the member 55. The diverging legs 26 and 27 and the diverging ears 58 and 59 secure the two members 25 and 55 together and they are releasably held in this position by the cam projection 31 acting in the cam recess 60. The lugs 28 and 29 operate to limit the relative movement between the members 25

and 55. In this way the parts are securely connected together so that the face piece is firmly held upon the head piece. To release this connection all that is necessary is to separate the members 25 and 55 against the action of the leaf spring 30 and this may be readily done merely by exerting adequate force for this purpose. Accordingly, the connecting means between the face piece 13 and the head piece 10 includes frictional pivot means for permitting pivoting of the face piece with respect to the head piece and releasable connecting means for releasably connecting the face piece to the head piece.

Referring now to Figure 8, the head piece is shown in the form of an adjustable head band 65 having its ends received in a sleeve 66, the ends being adjustably clamped together in the sleeve 66 by a clamping nut 67. A transverse band 68 may be connected across the head band 65. The head band 65 carries a pair of members 25 which may be secured in place thereon by rivets. The members 25 are the same as the members 55 secured to the hard hat 10 and operate in the same manner.

Referring now to Figures 2 to 9, the face piece is shown in the form of a welder's face shield 14 having a shield 70 formed of compressed fiber or the like which in turn is provided with a sight window 71. The face shield 70 may also carry a chin rest 72. A pair of U-shaped brackets or members 55 are pivotally secured to the face piece 14 in the manner described above in connection with Figures 3 to 6. This U-shaped member 55 is the same as that described above and operates in the same manner. Figure 2 illustrates the welder's face shield 14 releasably connected to the head band 11, but it may also be secured to the hard hat 10, if so desired. Likewise the face shield 13, if desired, may be releasably connected to the head band 11 instead of the hard hat 10.

Referring now to Figure 11, the face piece is illustrated as taking the form of a pair of goggles 15 which may be utilized for welding, chipping or the like. These goggles may take the form of the goggles illustrated in R. L. Malcom Patent No. 2,502,162. They include a pair of lens boxes 75 connected together by a bridge member 76 and provided with suitable lenses 77. Temples 78 secured to the lens boxes 75 are slidably received in tubes 79 which in turn are pivotally connected as indicated at 80 to a pair of brackets 55. These brackets 55 are the same as the brackets 55 discussed above and function in the same manner. Here, the head band 12 is the same as the head band 11 described above with the exception that the cross piece is omitted. Accordingly, like reference characters for like parts have been utilized. The head band 12 carries a pair of members 25 which are the same as those described above and operate in the same way. Accordingly, the goggles 15 are pivotally and releasably connected to the head band 12. In accordance with this invention the goggles 15, if so desired, may be releasably connected to the hard hat 10 or the head band 11.

While for purposes of illustration one basic form of this invention has been illustrated, other forms thereof may become apparent to those skilled in the art upon reference to this disclosure and, therefore, this invention should be limited only by the scope of the appended claims.

I claim as my invention:

1. In combination, a protective face piece for a workman, a head piece for holding said face piece on the workman's head, and cooperating connecting means on said face and head pieces for releasably connecting the same together, said cooperating connecting means comprising a first member secured to one of said head and face pieces and having a pair of outwardly facing diverging legs spaced from said one piece, a second member secured to the other of said head and face pieces and having a pair of diverging and opposed inwardly facing overhanging ears, a leaf spring provided with a cam projection secured to one of said members between said

diverging portions thereof and confronting the other of said members, said other member having a cam recess between said diverging portions thereof and located opposite the cam of said leaf spring, and the arrangement being such that the diverging legs of the first member are received in the diverging overhanging ears of the second member and the cam projection of the leaf spring is received in the cam recess for releasably connecting together the two members and hence the head piece and the face piece.

2. In combination, a protective face piece for a workman, a head piece for holding said face piece on the workman's head, and cooperating connecting means on said face and head pieces for releasably connecting the same together, said cooperating connecting means comprising a first member secured to one of said head and face pieces and having a pair of outwardly facing diverging legs spaced from said one piece, a second member secured to the other of said head and face pieces and having a pair of diverging and opposed inwardly facing overhanging ears, a leaf spring provided with a cam projection secured to one of said members between said diverging portions thereof and confronting the other of said members, said other member having a cam recess between said diverging portions thereof and located opposite the cam of said leaf spring, the arrangement being such that the diverging legs of the first member are received in the diverging overhanging ears of the second member and the cam projection of the leaf spring is received in the cam recess for releasably connecting together the two members and hence the head piece and the face piece, and said head and face pieces being respectively adapted to be selectively connected to other different types of face and head pieces having complementary connecting means like said above-mentioned connecting means.

3. In combination, a protective face piece for a workman, a head piece for holding said face piece on the workman's head, and cooperating connecting means on said face and head pieces for releasably connecting the same together, said cooperating connecting means comprising a first member secured to one of said head and face pieces and having a pair of outwardly facing diverging legs spaced from said one piece, a second member secured to the other of said head and face pieces and having a pair of diverging and opposed inwardly facing overhanging ears, a leaf spring provided with a cam projection secured to one of said members between said diverging portions thereof and confronting the other of said members, said other member having a cam recess between said diverging portions thereof and located opposite the cam of said leaf spring, the arrangement being such that the diverging legs of the first member are received in the diverging overhanging ears of the second member and the cam projection of the leaf spring is received in the cam recess for releasably connecting together the two members and hence the head piece and the face piece, the member connected to said face piece also including a pivot forming means between the member and the face piece which pivotally mounts the face piece for movement up over the head piece, and said head and face pieces being respectively adapted to be selectively connected to other different types of face and head pieces having complementary connecting means like said above-mentioned connecting means.

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