Aug. 25, 1931. R. MALCOM 1,820,237

FACE AND HEAD PROTECTOR

Filed Feb. 1, 1929

Fig. 1.

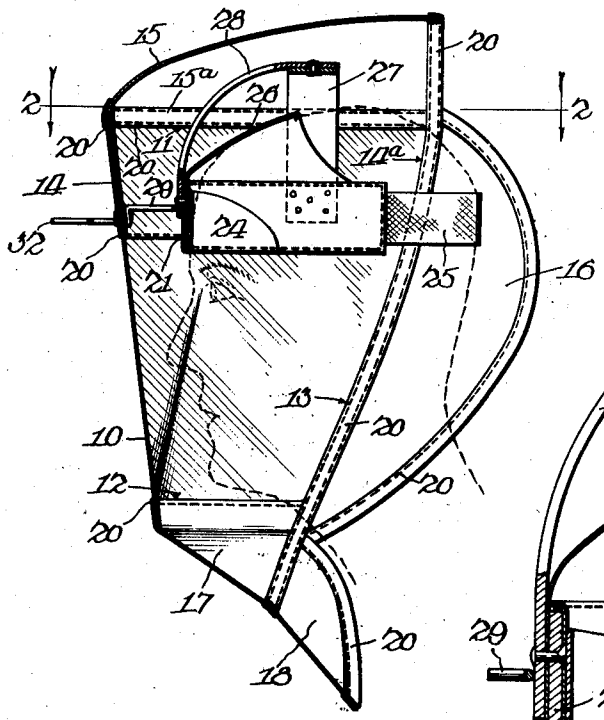


Fig. 3.

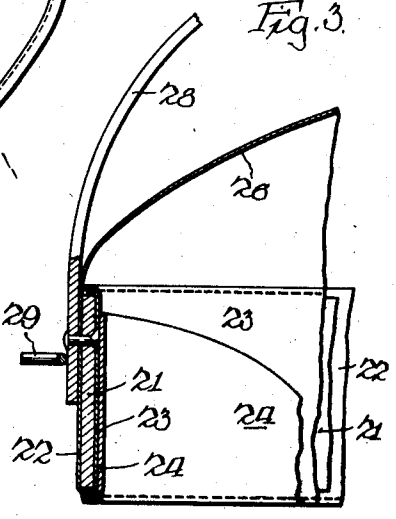
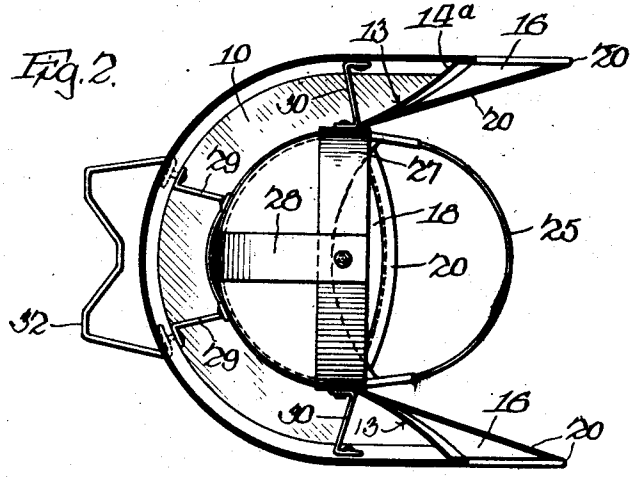


Fig. 2.



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FACE-AND-HEAD PROTECTOR

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These improvements relate to face-and-head protectors.

There are various grinding operations, with fixed and portable grinders, which result in the discharge toward the workman of fine particles of metal and other substances. In some instances the particles come with great force, and without suitable protection would enter the eyes, nostrils and mouth, fill the hair of the head and cover the face. The workman becomes exceedingly dirty, and otherwise suffers discomfort and disadvantage during this kind of work. At some places attempts have been made to overcome such bad effects in part through the use of goggles and respirators.

While I am aware that various kinds of head-and-face protectors have heretofore been suggested for various purposes, I am not aware that anyone heretofore has suggested a shield for the head parts which is satisfactory under the conditions mentioned.

To overcome the disadvantages and limitations of goggles, respirators and such other forms of protectors as I have known, I have provided a protector which is very readily and easily applied and removed; one which is of notably light weight; one which holds itself comfortably yet firmly in its desired position; one which protects the face and other parts of the wearer in a peculiarly satisfactory way; one which provides for free inhalation and exhalation of breathing air; one which affords full scope of the workman's vision; one which, in its preferred form, protects the upper head parts and also the throat parts, as well as the side parts of the head; one which is formed to cooperate with the apron, overalls or the like worn by the workman to give the desired full protection to his clothes and body; one which may be of notably low cost; one which, with reasonable care, has long life in service; one which is simple in construction; and one which may be made from materials readily obtainable, and be made according to ordinary manufacturing practices. Other objects and advantages will appear hereinafter.

In the drawings Figure 1 is a side elevation of the device complete in what I now conceive to be its most advantageous form; Fig. 2 is a horizontal section on the line 2—2 of Fig. 1; and Fig. 3 is an enlarged sectional and fragmentary detail of the supporting means and associated parts.

The device illustrated includes the protecting window 10 of thin, flexible, lightweight and transparent material such as celluloid, pyrolin or the like. Its upper margin is at 11 and its lower margin is at 12, while its lateral margins are at 13. It thus extends high enough and downwardly and laterally enough to extend around the wearer's face from extreme side to side thereof, and it affords free and unobstructed vision when in use.

With the device normally applied, the wearer may look in all directions quite as unobstructedly as if the device were not present. This makes for a very unusual degree of comfort to the wearer, in comparison with the use of goggles, respirators or other sight-limiting devices. It adds also to the workman's efficiency. In this connection I may point out that confining the vision is consciously or unconsciously irritating to the mind, gives the distressing effect of being limited, constrained, hemmed in, and that such effects are cumulative and render the workman less efficient and less happy. The freedom of vision of the present device is a very notable and important factor of the advantages obtained.

The material surrounding the window 10 is preferably soft and flexible—preferably some sort of fabric. In my practice it is thin fabric surfaced with a coating of waterproofing material, and of a kind well-known under various names and of different varieties. Such materials may be described generally as "oil cloth". I use a black, soft, flexible, pebbled variety, having a good appearance. The dirt accumulating on it may readily be washed away, and thus the whole outer surface of the protector may easily be maintained clean.

At the top the fabric construction consists of a band-like substantially semi-circular or U-shaped part 14 terminating at 14*a* at the sides of the device. It is shown as being

stitched at 11 to the window-sheet 10. It overlies the transparent sheet and defines the top of the window.

Above the band-like part 14 is a canopy or cover 15, of the same material. It is shown as being stitched at 15*a* to the top edge of the band 14.

At each side of the device is a protecting extension 16, of the same fabric material, shaped as illustrated and giving further protection to the sides of the head. These flap-like parts 16 are stitched at the lines marked 13 and 14*a* (Fig. 1) to the window material 10 and to the band-like head-protecting part 14 respectively. The oppositely-disposed flaps or extensions 16 extend respectively from the top of the band 14 to the lower part of the device.

At the lower portion of the device the window material 10 is stitched to a sort of pocket-like formation 17, of the same fabric material, and this part 17 is stitched also to the part 16. There is also a throat-protecting part 18, of the same flexible fabric material, stitched to the chin-encompassing part 17.

At the various exposed edges, and also at the meeting edges, of the several parts of the protector body thus described, there is binding material of fabric, and which in all instances is marked 20, denoting a common feature of construction. Such binding or edging as 20 is provided for finish and greater security and is merely a detail of suitable manufacture.

Means for supporting the device on the wearer's head include a head-band comprising first a substantially U-shaped band 21 of substantially stiff, yet light material such as fiber, and this fiber piece is encased in an envelope 22, 23 (Fig. 3) which is suitably of thin leather as to the inner side 23 and the oil cloth material as to the outer side 22. There is a sweat band 24 overlying in part the side 23 of the envelope. The rest of the head band as shown is an elastic part 25 of ordinary elastic tape or band material.

Stitched to the envelope 22, 23 is an apron-like piece 26, which as shown in Fig. 1 engages the top of the wearer's head and limits downward movement of the device as a whole when in use. It also forms, with the head band, a pocket into which the head comfortably fits, and there is thus provided such a firm seating of the device that the wearer may move about and turn his head even quickly without throwing the device awry and without the wearer's experiencing the uncomfortable feeling of slippage and dislocation. In short, due to the notable lightness of the device as a whole and the firm seating on the wearer's head, the device can be worn with but comparatively little consciousness of its presence.

The head band is held within the hollow interior of the body by a framework consisting of a transverse half-ring or substantially U-shaped member of thin, strong and light material 27 which in my practice is fiber. It is riveted at its ends to the frame-like part of the head band. There is also a similar strip of fiber 28 riveted to the part 27 at its top and extending forwardly and downwardly therefrom and is riveted to the front of the head band. This frame-work 27, 28 and the head band is supported as a unit by the wire stays or stanchions 29 in front and 30 at the sides, severally riveted or otherwise held to the body of the device as shown. The frame 27, 28 not only holds the head band open and in shape for easy application to the wearer's head, but it also cooperates to hold the face covering material in its desired shape. Lightness and strength are very important. The central frame 27, 28 enables the U-shaped band 14 to be made thin and light, and a feature of the construction in general is the extreme lightness of the parts spaced from the wearer's face, thus avoiding objectionable effects of inertia and momentum when the wearer moves his head about. The ends of the band 14 are tied together through the struts 30 and the cross piece 27, and the top frame member 28 and struts 29 are bracing elements which cooperate in holding the face covering material strongly in its desired relation to the head band.

The wire element 32 serves as a convenient handle for carrying, applying and removing the device; but its chief object is to provide a protecting rest or extension which holds the window covering 10 away from the bench on which the device may be rested or tumbled about.

If so desired, various types of fastening or holding means may be employed to provide that such elements or parts as the top or cover, the window 10, the throat protector 18, the flaps 16, and the head-piece may be readily removed; and, in general, I contemplate as being included in the invention all such changes and departures from what is thus specifically illustrated and described as fall within the scope of the appended claims.

I claim:

1. A face-and-head protector of the character described comprising a window element of transparent thin and flexible material substantially the height of the wearer's face and bowed substantially U-shaped in top view and extending rearward at the sides sufficiently to overlie the wearer's face, with a vertically-long flap at each side extending sufficiently further rearward to protect the rest of the wearer's head at the sides thereof, a cover secured to said window element at the top thereof, a chin-protecting part secured to said window element at the bottom thereof, a flexible throat-protecting flap secured to said chin-protecting part and extending downwardly and rearwardly therefrom, and

means for holding the window element and its associated parts upon the wearer's head, said means including a substantially stiff U-shaped band-like member open rearwardly, with means for holding same in spaced relation to and within the confines of said window element, flexible means adapted to rest upon the top of the wearer's head for limiting the downward movement of said band-like member, and band means for the wearer's head extending rearward from said U-shaped member to complete therewith a band for encompassing the wearer's head.

2. In a face-and-head protector of the character described, supporting structure comprising a U-shaped head band of substantially stiff material adapted to fit around the forward portions of the wearer's head, with means extending rearward from said band and adapted to coact therewith to form a complete band surrounding the wearer's head, a frame comprising a transverse substantially U-shaped member of stiff and strong material rigidly secured at its ends to the arms of said U-shaped band and extending therefrom normally above the wearer's head and a forwardly-and-downwardly-extending frame member of stiff and strong material rigidly secured to the U-shaped frame member at the top thereof and to the U-shaped head band at the front thereof, together with face covering means and means securing said supporting structure to the face-covering means, an apron-like member carried by the U-shaped head band and adapted to contact the top of the wearer's head and form a pocket therefor and to limit the downward movement of the device as a whole relative to the wearer's head when the device is normally in use.

3. A protector of the character described comprising a protector proper adapted to encompass portions of the wearer's face and head when the device is normally in use, and a supporting structure for holding the protector proper upon the wearer's head, said structure including a frame, with means securing said frame to the protector in spaced relation, band means carried by the frame and adapted to encompass the wearer's head, and an apron-like member carried by said band means and adapted to contact the top of the wearer's head and form a pocket therefor to limit the downward movement of the device as a whole relative to the wearer's head when the device is normally in use.

ROBERT MALCOM.