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3,082,767

HEAD STRAPS FOR RESPIRATOR

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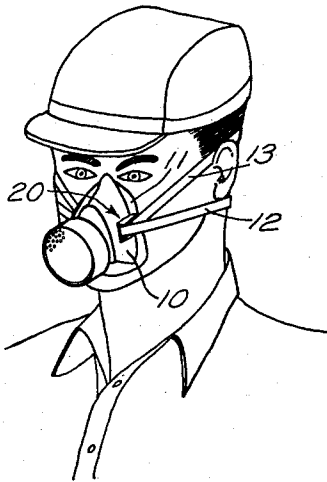


FIG. 1

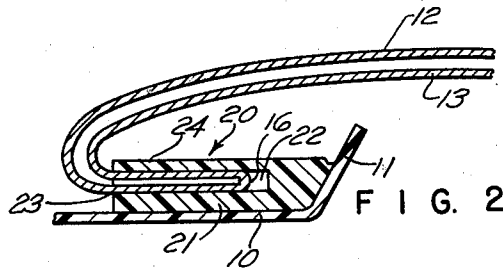


FIG. 2

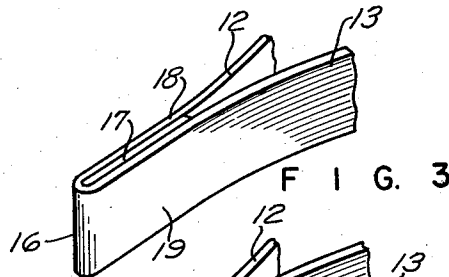


FIG. 3

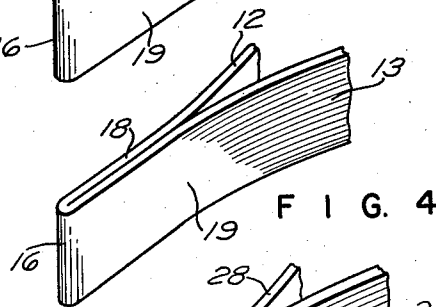


FIG. 4

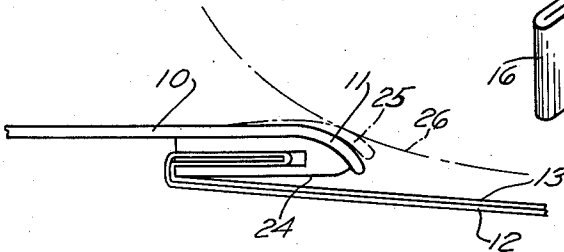


FIG. 5

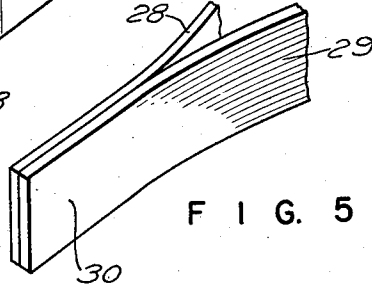


FIG. 6

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HEAD STRAPS FOR RESPIRATOR

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This invention relates to a respirator and more particularly to the straps which hold the respirator over the nose and mouth of the user.

Respirators of the type here referred to are usually held in position covering the nose and mouth of the user by a pair of elastic straps which embrace the head of the user so as to exert a retainable pressure upon the respirator, drawing it snugly into engagement with the face so as to provide a seal at the rear edge of the body of the respirator between the respirator and the face.

One of the objects of this invention is to provide straps which may be easily removed and repositioned should replacement be required.

Another object of this invention is to provide for pairs of straps which may be as easily and quickly secured as a single strap could have been secured heretofore.

Another object of the invention is to provide a pair of straps by doubling a single strap on itself and at the same time providing an arrangement so that it may be easily inserted in the respirator pocket to hold it.

With these and other objects in view, the invention consists of certain novel features of construction as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

FIG. 1 is a perspective view of the respirator mounted on the head of the user;

FIG. 2 is a sectional view taken lengthwise through the strap and illustrating one pocket and the straps extending therefrom;

FIG. 3 is a perspective view illustrating a step in the stiffening of the bight of the strap;

FIG. 4 is a view similar to FIG. 3 illustrating the finished bight of the strap stiffened in a modified way;

FIG. 5 is a perspective view of a modification showing two separate pieces cemented together; and

FIG. 6 is a sectional view illustrating how the strap flexes the side wall of the respirator into engagement with the face as pull on the strap occurs.

In proceeding with this invention, the body portion of the respirator comprising front and side walls are of a rather soft, resilient material, and as an integral part of the side walls there is a pocket formed for attachment of a strap. The strap in this instance is formed of a single length of material doubled upon itself and stiffened so that it may be thrust into the pocket with two portions extending from this bight, one of which may be located above the ear of the wearer while the other may be located below the ear of the wearer so as to pull the respirator snugly against the face to seal it there.

With reference to the drawings, 10 designates generally the body member of the respirator which is formed of some moldable material which is relatively soft and pliable, an example of which is rubber or a resin such as polyethylene. The rear edge 11 thereof is of a shape to conform generally to the face of the user, and it is sufficiently soft so that when pulled against the face of the user by the head strap portions 12 and 13 on one side and similar strap portions on the other side of the body member a snug engagement will be had with the face to prevent air from entering around the edge 11.

The head strap portions 12 and 13 on both sides of the body are formed from a single length of material, and by means of doubling that material upon itself, a bight 16

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is provided, as seen in FIGURE 2, which may be suitably stiffened for purposes hereinafter described. Two single lengths might be cemented together and used but one piece doubled is usually more convenient.

The bight of each head strap is conveniently stiffened by placing a piece of resinous material 17 between the two plies 18 and 19 of the bight and then softened by solvent immersion and compressed in heated die so as to soften the material and permit it to enter the interstices of the fabric or two separate pieces might be similarly treated. The portions 18 and 19 are woven textile material and rubber so as to provide elastic straps, and as these parts are woven, there are small openings in between the warp and weft threads. The plastic material after standing will harden providing a relatively stiff portion at the bight which may be thrust into a pocket. In FIGURE 4 I have illustrated a bight which has been stiffened by the application of plastic material in liquid form such as by spraying onto the bight or by dipping the bight therein. A metal tip may also be used. The end portions of separate straps might be attached similarly.

Each of the walls on opposite sides of the respirator body are provided with a pocket designated generally 20 and are usually molded of the same resilient material of which the respirator is molded so as to provide a generally thickened portion 21 having a recess 22 therein which opens outwardly or toward the front of the respirator as at 23 and is of such a size relative to the bight of the straps that the bight which has been stiffened may be thrust into the pocket, and by reason of the resilience of the parts, there is a tight friction grip between the inner surface of the pocket and the stiffened bight so that the strap is held snugly in the pocket, although the same may be pulled therefrom by pulling directly forwardly on the straps to cause them to disengage the pocket.

It will be noticed that by reason of the pocket opening forwardly that the strap in order to engage the head must lead rearwardly, and accordingly it is bent through substantially 180° to extend over the outer surface 24 of the pocket and lead rearwardly therefrom, thus providing an additional resistance by the sharp bend pulling the strap from the pocket which must be pulled directly forwardly in order to release it. Further this leading rearwardly of the straps serves to flex the side walls of the respirator inwardly as shown by phantom lines 25 so that the edge 11 will engage the face 26 of the wearer as may be seen in FIGURE 5.

In some cases I may use two separate straps 28 and 29 with the end portions 30 stiffened and held together by a resin such as indicated above which will enter the interstices of the material or a metal tip may be used to clamp the two together.

I claim:

1. A respirator having a body part with opposite resilient side walls, the rear edges of which are adapted to contact the face of the wearer, strap means connected to the opposite side walls adjacent their rear edges for encircling and embracing the back of the head, a single resilient pocket located adjacent the rear edge of at least one of said side walls and serving as the sole means for securing the strap means thereto, said strap means comprising a pair of straps unconnected along a major portion of their extent for disposal in spaced relation about the head and secured together in superimposed plies at their juncture forming an end portion, which end portion is stiffened, with said stiffened end portion removably inserted in said pocket, said stiffened end portion being of a size to flex said pocket as inserted therein so that contraction of the pocket will grip it and also being of sufficient rigidity with reference to the pocket to be thrust therein.

2. A respirator as in claim 1 wherein said stiffened portion is stiffened by a resinous material added thereto.

3. A respirator as in claim 1 wherein said stiffened portion is stiffened by a resinous material fused thereinto.

4. A respirator as in claim 1 wherein said end portion is provided by a continuous strap doubled upon itself and stiffened at said doubled portion.

5. A respirator as in claim 1 wherein said end portion is provided by two ends in face to face contact and stiffened.

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