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RESPIRATOR FILTER MOUNTING MEANS

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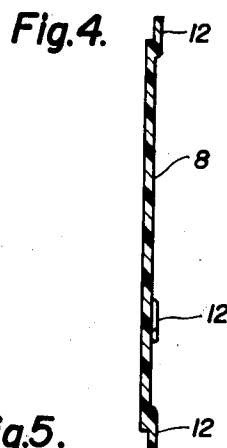
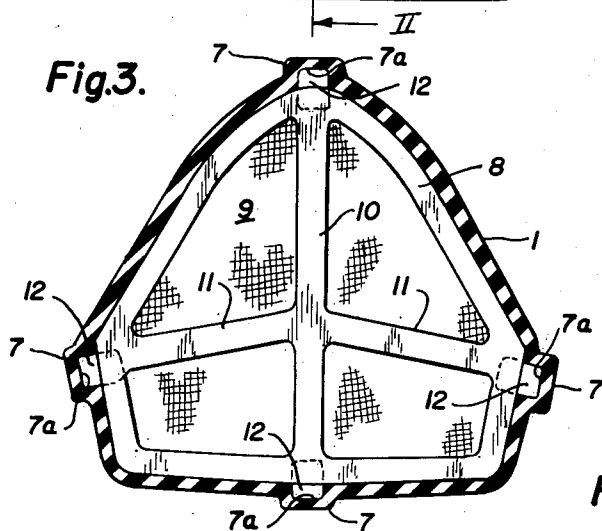
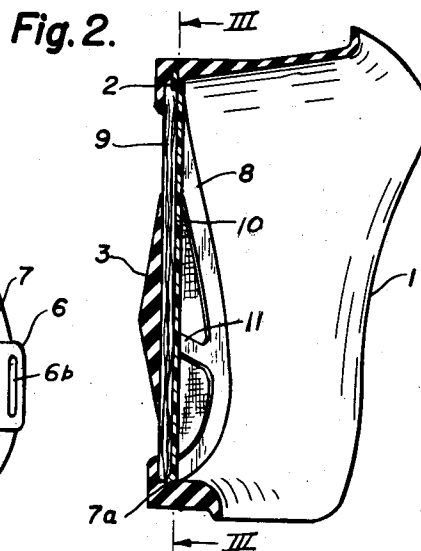
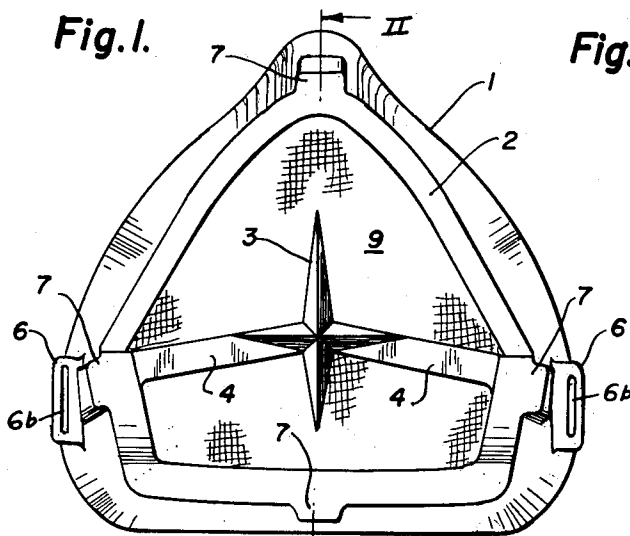
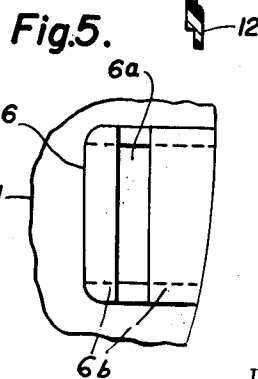
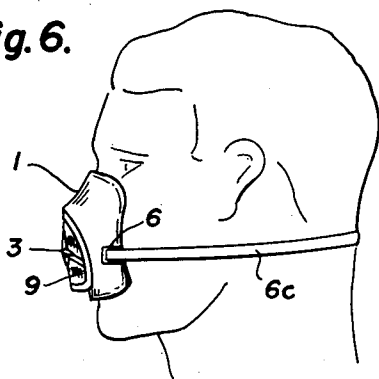


Fig. 6.



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RESPIRATOR FILTER MOUNTING MEANS

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2 Claims. (Cl. 128-146)

This invention relates to a respirator of the type which surrounds the nose, cheeks and chin of the wearer to protect him from inhaling dusts, and, more particularly, relates to means for mounting a filter within the respirator mask in a readily detachable manner.

In the past, respirators of the type having a detachable filter backing frame have been molded with complicated integrally molded projections for supporting the frame, which have involved difficulty in molding, as well as increasing the cost of production.

An object of my invention is to provide a novel means for detachably mounting a filter and filter-backing frame on an open face piece of a respirator in a readily attachable and detachable manner so as to avoid the above named disadvantages, that is, devoid of integral projections or other complicated constructional features for supporting the filter-backing frame.

Other objects and advantages will become more apparent from a study of the following description taken with the accompanying drawing wherein:

FIG. 1 is a front, elevational view of the respirator embodying the principles of the present invention;

FIG. 2 is a cross-sectional view taken along line II—II of FIG. 1;

FIG. 3 is a cross-sectional view taken along line III—III of FIG. 2;

FIG. 4 is a cross-sectional view of the filter-backing frame taken through strip 10 of FIG. 3;

FIG. 5 is an enlarged, fragmentary view of the head-strap anchoring portion 6, shown in FIG. 1; and,

FIG. 6 is a side view showing the respirator of FIGS. 1-5 in mounted position on the face of the wearer.

Referring more particularly to the drawing, numeral 1 denotes a respirator face piece of rubber, plastic or other flexible material having a substantially triangular mouth portion for surrounding and closely contacting, in a dust tight manner, the nose, cheeks and chin of the wearer. Numeral 2 denotes an integral, intumed, front marginal portion of the face piece 1 for supporting a substantially triangular filter 9 of felt, paper or any other suitable filtering material. Integrally molded with marginal portion 2 are strips 4 and a substantially cruciform element 3 which, together with the marginal portion 2, provide an open framework or grille against which is supported the filter 9.

A filter backing frame is provided for detachable mounting within the face piece as a backing for the filter 9. Such frame comprises a vertical strip 10 having integral, laterally extending strips 11, all of which strips integrally join a substantially triangular perimetrical strip 8. The backing frame is preferably made of flexible plastic material and is provided with radially outwardly extending lugs or tabs 12, which are preferably offset relative to the plane of the frame, as shown in FIG. 4, so as to provide a tight marginal seal between the backing frame marginal portion 8 and the perimeter of the filter 9. Four such tabs 12 are shown, however, this number may be increased or decreased, as desired.

At the sides of the face piece 1 are integrally formed headband strap anchors 6, preferably of the same material as the face piece 1, which are provided with grooves 6b extending therethrough from front to rear of the projection 6, and grooves 6a extending laterally and at right angles to grooves 6b. Thus the headband strap 6c

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may be inserted through the rear of groove 6b, then outwardly through groove 6a and reversely bent so as to extend rearwardly of the mask. There would be sufficient friction between the headband and anchors 6 to retain the mark in position on the wearer's face. Thus the headband strap will pull the marginal or mouth portion of the face piece inwardly to form a tighter seal with the face of the wearer since the pull on the headband is outwardly of anchors 6.

In operation, when it is desired to remove the filter backing frame and filter 9, it is necessary merely to pull outwardly and stretch the respective integral projections 7 of the mask so as to withdraw tabs 12 from the correspondingly shaped grooves formed therein, thereby releasing the filter backing frame. The filter 9 may then be easily removed from the interior of the mask and replaced with a new filter which is pushed against the marginal strip 2 and strips 4 and cruciform 3 forming a grille as an integrally molded part of the respirator face piece. Then the filter backing frame is inserted by stretching projections 7 until tabs 12 may be slipped into the grooves formed therein and held thereby.

Thus it will be seen that I have provided an efficient respirator filter, and, particularly, an efficient mounting for detachably supporting the filter in a dust-tight manner against a front grille portion of the respirator; furthermore, I have provided an easily and quickly attachable and detachable filter-backing frame involving relatively simple and inexpensive parts which are cheaply manufactured, yet which are highly effective to provide a dust-tight seal between the perimeter of the filter and the opening within the face piece; furthermore, I have provided a respirator with an integral headband anchoring element for enabling the headband strap to be easily inserted in a manner so as to hold the marginal portion of the respirator in close engagement with the face of the wearer.

While I have illustrated and described a single specific embodiment of my invention, it will be understood that this is by way of illustration only, and that various changes and modifications may be made within the contemplation of my invention and within the scope of the following claims.

I claim:

1. A respirator comprising a substantially triangular face piece of flexible material having an opening in the front thereof bounded by an intumed marginal flange integrally molded on said face piece and surrounding said opening, a grille portion integral with and extending from said flange, a filter supported against said flange and grille portion, a filter backing frame comprising a substantially triangular strip having a plurality of radially outwardly extending tabs, including tabs at substantially the corners of said strip offset forwardly of the plane of said strip, and cross strips integrally joined to said substantially triangular strip, said substantially triangular face piece including a plurality of integrally molded, radially outwardly extending projections at substantially the corners of said substantially triangular face piece corresponding to the positions of said tabs, each projection including a groove substantially in the plane of said filter for snugly receiving one of said tabs so as to hold the peripheral portion of said frame tightly against the peripheral portion of said filter while the latter is held tightly against said flange portion to form a dust-tight seal, whereby said respective tabs and projections may be easily pulled apart to enable quick removal of said frame, a headband strap and headband anchoring means at the sides of the face piece connected to the ends of said headband strap in a manner so that tension of the headband will flex and push said sides of the face piece tightly against the cheeks of the wearer.

2. A respirator, as recited in claim 1 wherein said headband strap anchoring means are in the form of projections integrally molded at the sides of the face piece, each projection having an opening extending from front to rear throughout the entire length of the projection and an opening extending sidewise through said projection and at right angles to said opening and in communication therewith, said headband strap having end portions extending through a portion of said first mentioned openings from rear to front and thence outwardly through said sidewise extending openings and

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thence extending rearwardly along the outer surfaces of said projections and about the rear neck portion of the wearer so as to tightly hold the sides of said respirator tightly against the face of the wearer.

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