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FLEXIBLE FACE MASKS

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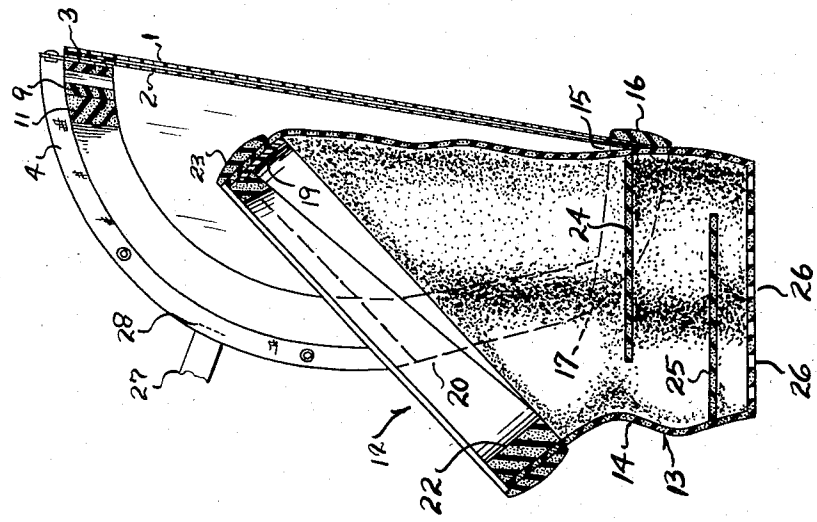


FIG. 2

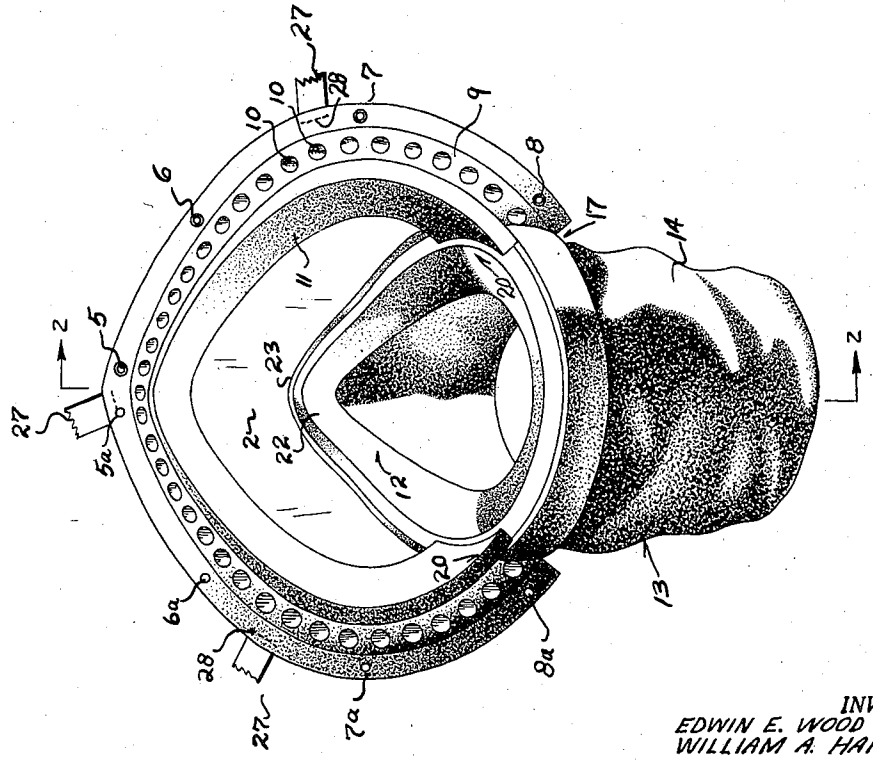


FIG. 1

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FLEXIBLE FACE MASKS

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2 Claims. (Cl. 128—146)

The present invention relates to an improvement in a flexible cold weather face mask and more particularly to an improvement in our prior Patent No. 2,665,686, patented January 12, 1954, and Patent No. 2,667,161, patented January 26, 1954.

In the prior patents issued to us, a structure was provided which effectively maintained normal facial temperatures by means of a mask which did not interfere or cause any discomfort to the wearer. These masks, however, are somewhat bulky, particularly when they the not in use and are being carried by the person who intends to wear them. As they are designed primarily for individuals who are outside for prolonged periods and may, therefore, have to be carried quite a bit, the problem of bulkiness is important. It is, therefore, an object of the present invention to provide a mask which may be folded or rolled to a compact size and transported or carried in a compact, neat and small package.

It is further an object of the present invention to provide a cold weather face mask which is formed completely of flexible material whereby it may be rolled or folded into a small and compact package.

Another object of the present invention is to provide a face mask for cold weather which has means incorporated into its structure to make the mask a self-contained package unit.

Another object of the present invention is to provide a cold weather face mask in which a fastening device is formed about the periphery of the mask, which device may be used both to provide a self-contained package and to provide attachment means to secure the edge of the mask to a hood or other wearing apparel.

These and other objects of the present invention will be more clearly understood when considered in connection with the accompanying drawings, in which:

Figure 1 shows a perspective view of the rear of the mask and

Figure 2 shows a cross sectional elevation taken substantially along the lines 2—2 of the Figure 1.

The present invention is formed entirely of material which is pliable or flexible in nature, and which wherever possible has substantial resiliency. Flexible and pliant in this specification are defined as referring to material which may be easily bent and readily yields to pressure without likelihood of breaking. Thus, in the present invention, the face is enclosed and covered by a pair of thin transparent plastic sheets 1 and 2 which have substantial flexibility such as may be obtained by the use of "Mylar" plastic. Other plastics may be used, provided they have a substantial amount of flexibility and provided they will withstand temperatures over a substantial range and in particular temperatures well below the freezing point, down to approximately 60° F. below zero.

These two sheets 1 and 2 are secured together about their peripheral edges by a very thin layer 3 of cement which also should be flexible in nature. These two sheets of plastic material 1 and 2 are spaced apart one from

the other, only by the layer 3 of cement. Thus, the space between the two sheets is in the nature of several thousandths of an inch. This space for improved insulation, may be partially evacuated of air, thus forming somewhat of a vacuum between the two sheets. The cementing bond formed by the cement 3 should be sufficiently strong and wide enough to hold these two sheets of material together at all times and to permit the sheets 1 and 2 to be rolled, bent or otherwise flexed. The sheets 1 and 2 are coextensive and are shaped to fit substantially around the face from the forehead to the chin and to the sides of the face just forward of the ears. Cemented or otherwise suitably secured to the inner marginal surface of the sheet 2 is a fabric strip 4. This fabric strip 4 extends around the sheet 2 from the lower portion on one side to the lower portion on the other. Affixed to the fabric sheet are a series of snap fasteners having male halves 5, 6, 7 and 8 and complementary female halves 5*a*, 6*a*, 7*a*, and 8*a*, located symmetrically on either side of the fabric as indicated. These snaps are adapted to close together to hold the mask in a closed position with the other elements comprising the mask rolled within the sheets 1 and 2 as hereinafter described, or alternately they may be used when the mask is worn to secure the mask to the edges of a hood or other wearing apparel.

Covering this fabric material and also extending about the periphery of the sheet 2 is a soft yieldable resilient strip of material 9, preferably formed of foam rubber. This strip 9 has formed in it a series of opening 10 which pass from the top to the bottom of the strip 9. A second strip 11 coextensive with the strip 9 or, if desired, formed integral with it, is cemented or otherwise suitably secured to the strip 9. This second strip 11 is designed as a cushion or gasket-like element to fit against the wearer's face and forms an airtight seal between the mask and the face. This strip 11 should be made of material similar to that from which strip 9 is made and should accordingly be soft, resilient, yieldable and flexible. It is desirable, however, that strip 11 be somewhat softer than strip 9 and somehat more yieldable, for strip 9 must support the openings 10 when the mask is in use.

Positioned partially within the transparent sheet 2 is the nose and mouth section generally designated 12. This nose and mouth section 12 is formed with a baffle chamber 13 substantially cylindrical in shape and having a wall 14 made of flexible material, such as rubber. This baffle member 13 is secured to the other portions of the mask near its base by cementing it at 15 to the lower portion of the sheet 2 about the lower peripheral margin of this sheet and by a binding strip 16 made also of flexible rubber which has its upper portion cemented to the outer side of the sheet 1 and its lower portion cemented to the outer surface of the baffle chamber 13. This strip 16 extends across the sheet 1 to the lower portion of its edge as indicated at one end in dotted outline at 17. The side and upper portion of this baffle chamber are secured directly to the strip 9 which extends at its lower ends down to the lower end of the mask at 17. The upper end of this baffle chamber 13 is open and is shaped to receive and cover the nose and mouth of the wearer from approximately the bridge of the nose to just below the point of the chin. The shape of this opening is substantially triangular and is maintained in this position for wearing by a plastic strip 19 which extends in an inverted V shape from a point near the center of the mask downwardly to points 20 at opposite positions on either side of the mask adjacent the edges of the plastic sheets 1 and 2. This plastic strip 19 should be resilient and flexible and yet be stiff enough to maintain its shape when the mask is ready for use.

This plastic member **19** should be cemented or otherwise suitably secured in a flexible fashion to the upper periphery of the baffle chamber **13**. An inner liner **22** of soft yieldable resilient and flexible material, such as, foam rubber and preferably of the same material from which strip **11** is made, should be secured and line the inside upper periphery of this chamber **13** substantially covering the plastic member **19**. As an additional covering member, a second binding of soft yieldable flexible material **23** may be suitably secured about the outside upper periphery of the baffle chamber **13**.

Although the plastic member **19** does not extend all the way around the upper periphery of the baffle chamber, both bindings **22** and **23** should. Within the chamber **13** are provided a pair of baffle plates **24** and **25** also made of a flexible material similar to that which the chamber walls **14** are made. Each of these baffle plates **24** and **25** should be secured about the walls of the baffle chamber **13** forming closures about three-fourths of the chamber with the openings at each plate on opposite sides of the chamber. The lower end of this baffle chamber **13** is provided with a series of openings **26** through which the air into the chamber may be drawn. A series of straps **27** may be secured to the fabric strip by the stitching **28**. These straps may be joined together to form a web for holding the mask in place in a structure similar to that described in my prior patents.

In the operation of this device when worn it fits over the face with the section **12** covering the nose and mouth, and the sheets **1** and **2** covering the entire face. The straps **27** support the mask on the wearer's head. If the wearer is wearing a hood with snap fastener halves complementary to the snap fastener halves **5** to **8** and **5***a* to **8***a*, the hood may be secured directly to the mask for added support and protection.

When the mask is being carried or stored, the baffle chamber **13** may be folded upwardly and inwardly against the sheet **2**. The sheets **1** and **2** may then be rolled over the chamber **13** so that the opposite edges of the sheets are closed together forming a compact and small package having a generally cylindrical shape. The mask may be held in this position by suitable means, but by proper arrangements of the snap halves **5** to **8** and **5***a* to **8***a* the mask may be secured in its closed position by snapping the complementary snap halves **5** and **5***a*, **6** and **6***a*, **7** and **7***a* and **8** and **8***a* together.

Having now described our invention, we claim:

1. A completely flexible, non-permanently deformable and foldable face mask comprising a transparent plastic continuous wall formed to extend around the front and side of the face of an individual from a position in the normal region of the forehead in front of the ears and around the chin covering substantially the whole face of the individual, said wall being formed of two flexible parallel plastic elements sealed together in substantially face to face relation around the periphery of the elements, a flexible flange element lying against the periphery of said wall inwardly thereof in the direction of the individual's face and having a series of spaced holes extending through the material of the flange adjacent the inside periphery of the wall, a second flange member of soft yielding non-permanently deformable material applied around the periphery of said flange acting as a seal for the mask against the face, means forming a separate chamber at the lower end of the mask for the nose and mouth, said means comprising a flexible second wall element having portions joined to said first wall in the lower sections thereof and a portion extending continuously in front of and at the sides of the nose and mouth, a nose and mouth sealing flange of soft yielding non-permanently deformable material applied continuously around the edge of the second wall in the portion which extends around the nose and mouth, the means forming said separate chamber having a flexible downwardly extending air conduit having opening in the direction towards the body of the individual when the mask is in place and means for attaching the mask to the head of the individual.

2. A completely flexible and non-permanently deformable face mask adapted to be collapsed into a compact package comprising a transparent plastic continuous wall formed to cover the face of an individual from the forehead, around the chin, to the front of the ears, said wall being formed of bendable parallel plastic elements, a thin layer of cement about the periphery of said wall sealing said plastic elements together and spacing the same in a parallel spaced relationship substantially the thickness of said cement, flexible flange means of soft flexible, yielding, non-permanently deformable material applied around the periphery of said wall and having openings formed therein, said flange means acting as a seal for the mask against the face, a flexible non-permanently deformable chamber at the lower end of the mask having yieldable edges adapted to enclose the nose and mouth, said chamber having an outwardly extending air conduit of flexible non-permanently deformable material.

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