July 22, 1924.

1,502,451

W. H. WOOD

RESPIRATOR

Filed March 1, 1920

Fig. 1



Fig. 2

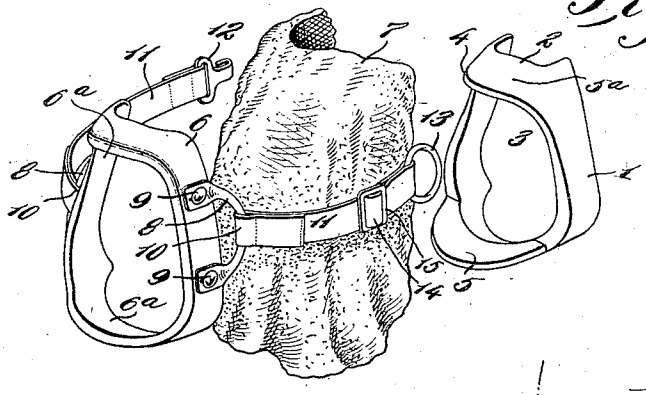


Fig. 3

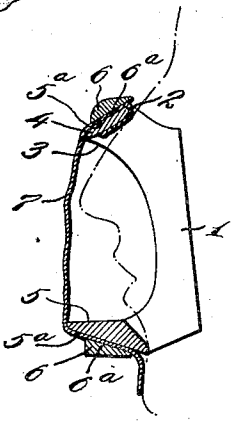
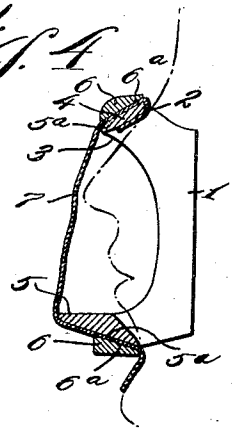


Fig. 4



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Attys.

Patented July 22, 1924. 1,502,451

UNITED STATES PATENT OFFICE.

WILLIAM H. WOOD, OF SOUTH EUCLID, OHIO.

RESPIRATOR.

Application filed March 1, 1920. Serial No. 362,195.

To all whom it may concern:

Be it known that I, WILLIAM H. WOOD, a citizen of the United States, residing at South Euclid, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Respirators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to respirators, such as are employed for the purpose of preventing the inhalation of dust and other particles in suspension by operators in various industries. It is the general object of the invention to provide a respirator of this character which is more efficient in operation than those in general use. Further and more limited advantages of the invention are to provide a respirator which is simple and economical of production; which can be worn without discomfort; which will be capable of long-continued use; which may be conveniently assembled; which can be readily adjusted to accommodate variation in facial contours; and which will permit the easy removal and renewal of the straining or collecting element.

I accomplish these objects in and through the construction and arrangement of parts illustrated in the drawings forming part hereof, wherein Fig. 1 represents a perspective view of an embodiment of my respirator showing its manner of use; Fig. 2 a similar view of the separated component parts of the respirator; and Figs. 3 and 4 vertical sectional views through the respirator.

The respirator shown herein comprises three parts, namely: a combined carrying and clamping member; a cooperating clamping member; and a straining or sediment-removing member or element adapted to be interposed between and clamped by the first two members against the face of the wearer.

Describing the parts by reference characters, 1 denotes the combined carrying and clamping member. This member is an open frame which may be made of any suitable rigid material and is so shaped as to engage and conform more or less closely at its base portion to the bridge of the nose as well as to the cheeks and chin of the wearer, being provided with a central arch 2 in the interior of one end thereof for application to the bridge of the nose.

The opening 3 within the frame of the member 1 is large, in order to provide ample strainer area, and the top and bottom of the frame are provided each with an outward projection, indicated at 4 and 5, respectively, enabling the strainer to be supported without contacting with the end of the nose or the mouth of the wearer. The outer surface of the member is extended and beveled, as indicated at 5^a, for a purpose to be explained hereinafter.

Cooperating with the member 1 is the clamping member 6, which is of the same general contour as the member 1, the inner surface of said member being extended and preferably beveled, as shown at 6^a, whereby the application of the member 6 to the member 1 will result in clamping the strainer element 7 therebetween and enable the members to be adjusted relatively to each other to force the strainer element against the bridges of the noses and the cheeks and chins of various faces. The member 6 is shown as provided with a pair of loops 8 buttoned on the heads 9 of studs secured to opposite sides thereof.

Each loop 8 extends through a loop 10 in an elastic strap 11, one of which is provided with a hook 12 and the other with a a ring 13, the ring being adjustably connected with its strap by means of a loop 14 in said strap and a buckle 15. This construction enables the respirator to be easily applied and to be secured firmly in place; to be adjusted to accommodate wide variations in contours of faces and of heads; and, in all cases, to press or force the edges of the strainer (which is preferably of yielding porous material, such as gauze or light toweling) into dust-excluding contact with the face, the inner edges of the members 1 and 6 serving as the pressing or forcing means and the member 1 conforming so closely to the faces of various prospective wearers as to secure this result.

In Figs. 3 and 4 there is shown the manner in which the beveling of the outer surface of the member 1 and the inner surface of the member 6 enables my device to conform to wide variations in the bridges of the noses of the prospective wearers and still preserve a dust-excluding contact between the strainer member and the face. In Fig. 3, the device is shown as applied to a face having a nose with a prominent bridge. In Fig. 4, it is shown as applied to the face of a wearer having a nose with a depressed

bridge. In each case, the inner edge of the strainer member, by adjustment of the members 1 and 6, is pressed into close contact with the nose, chin and cheeks of the wearer, and all three of the members are retained in such adjusted relation by means of the straps 11. This pressing of the strainer member in contact with the face is rendered possible by the cooperation between the surfaces 5^a and 6^a whereby the inner edge of one of said members is substantially flush with the inner edge of the other, the extent of their surfaces and their inclination giving a direction to the strainer member which will force it into contact with the face, even though the inner edges of the members 1 and 6 may not be actually flush.

The members 1 and 6 may be made of any light material such as aluminum or wood, and the complete device may be worn without the discomfort which is a necessary incident to the use of the ordinary, heavy respirator.

When it is desired to replace the strainer element, it is necessary only to move the member 6 away from the member 1, which will permit the strainer element to be removed from the latter member and to be sterilized and reused. The construction of the members 1 and 6 insures a maximum breathing surface, which adds materially to the comfort of the wearer. A further advantage of the invention resides in the fact that the respirator may be used indefinitely, requiring only the renewal of the strainer element from time to time; and, as pointed out, this element may be sterilized and re-used indefinitely.

Having thus described my invention, what I claim is:

1. A respirator comprising a rigid open base member shaped to conform to the face of the wearer, an open clamping member, and a strainer member of yielding material interposed between the first two members and projecting inwardly beyond the inner edge of the base member, the base member having an extended outer bearing surface, the said surface and the inner surface of the clamping member being shaped to permit the clamping member to be adjusted to various positions upon the base member and to cause the edge of the strainer member to engage the face of the wearer.

2. A respirator comprising an open base member shaped to conform to the face of a wearer; a strainer member of yielding material overlying said base member and adapted to be clamped between said base member and a clamping member in position to extend inwardly to engage the face of a wearer; and an open clamping member having that edge adjacent the face of the wearer also shaped to conform to the face of the wearer, adapted to clamp said strainer member between itself and said base member in position to extend inwardly to engage the face of the wearer, and adjustable upon said base member to permit cooperation between said clamping member and said base member to compensate for variations in the face of the wearer and thus cause said strainer member to closely engage the face of the wearer despite said variations.

3. A respirator comprising an open base member shaped to conform to the face of a wearer; a strainer member of yielding material overlying said base member and adapted to be clamped between said base member and a clamping member in position to engage the face of a wearer; an open clamping member having that edge adjacent the face of the wearer also shaped to conform to the face of the wearer, adapted to clamp said strainer member between itself and said base member in position to engage the face of the wearer, and adjustable upon said base member to permit cooperation between said clamping member and said base member to compensate for variations in the face of the wearer and thus cause said strainer member to closely engage the face of the wearer despite said variations; and means for securing all of said members to the head of the wearer.

4. A respirator comprising an open base member shaped to conform to the face of a wearer; a strainer member of yielding material overlying said base member and adapted to be clamped between said base member and a clamping member in position to extend inwardly to engage the face of a wearer; an open clamping member having that edge adjacent the face of the wearer also shaped to conform to the face of the wearer, adapted to clamp said strainer member between itself and said base member in position to extend inwardly to engage the face of the wearer, and adjustable upon said base member to permit cooperation between said clamping member and said base member to compensate for variations in the face of the wearer and thus cause said strainer member to closely engage the face of the wearer despite said variations; and means for securing all of said members to the head of the wearer.

In testimony whereof, I hereunto affix my signature.

WILLIAM H. WOOD.