Jan. 5, 1954 D. A. GREEN 2,664,887

GAS MASK

Filed Feb. 5, 1952

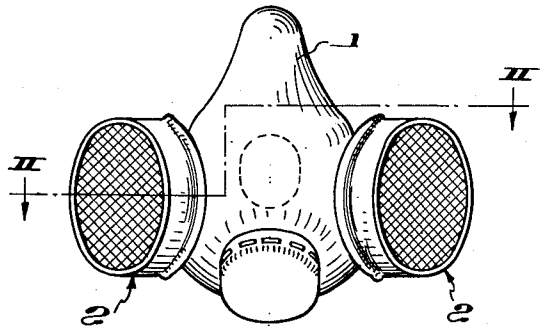


Fig. 1.

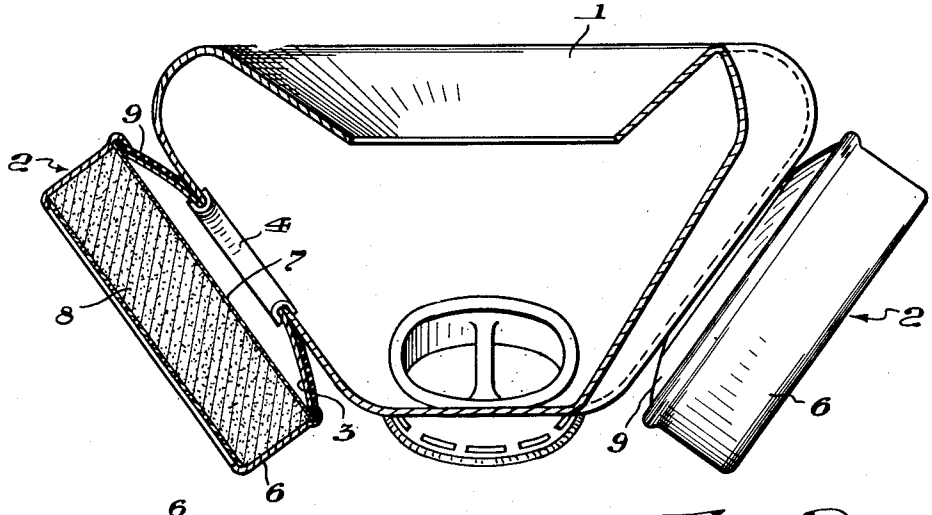


Fig. 2.

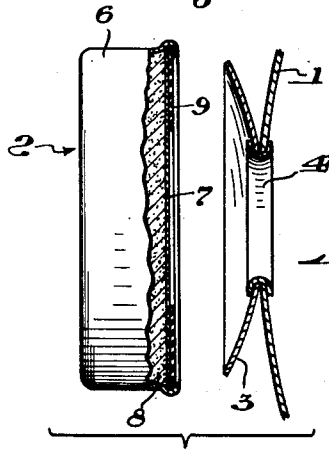


Fig. 3.

INVENTOR.
DANIEL A. GREEN.
BY
Brown, Critchlow, Flick & Peckham
his ATTORNEYS.

Patented Jan. 5, 1954 2,664,887

UNITED STATES PATENT OFFICE

2,664,887

GAS MASK

Daniel A. Green, Pittsburgh, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa., a corporation of Pennsylvania

Application February 5, 1952, Serial No. 269,967

6 Claims. (Cl. 128—146)

1

This invention relates to gas masks, and more particularly to a mask provided with a coupling for detachably connecting an air purifying canister to a face-piece.

The customary way of fastening air purifying canisters to gas mask face-pieces is to permanently attach a cup to a face-piece around its air inlet and then screw the canister into the cup so that the canister can be removed and replaced by a new one.

It is among the objects of this invention to provide a gas mask in which the air purifying canister can be quickly connected or disconnected from the face-piece without the use of screw threads or the like.

In accordance with this invention a substantially rigid annular coupling member is sealed to a face-piece around its air inlet. The outer portion of the coupling member is spaced from the outer surface of the face-piece. An air purifying canister, which is provided with an air inlet, has a resilient annular coupling member sealed at its outer edge portion to the canister around the outlet. The resilient coupling member has an area in sealing engagement with the inner surface of the rigid coupling member so as to provide an air tight coupling between the canister and face-piece. When it is desired to remove the canister from the face-piece, the resilient coupling member is merely stretched over the rigid coupling member and removed. A new canister can be put in place by stretching its coupling member over the face-piece coupling member.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which Fig. 1 is a front view of a typical gas mask in which my invention has been used; Fig. 2 is an enlarged horizontal cross section taken on the line II—II of Fig. 1; and Fig. 3 is a central cross section through a face-piece coupling member and a canister coupling member before the latter has been stretched over the former to connect them.

Referring to the drawings, the face-piece 1 illustrated is one which covers the nose and mouth, but it could be a full face-piece which also covers the eyes if desired. This particular face-piece is provided with air inlets at its opposite sides, and an air purifying canister 2 is connected with each inlet. Here again one inlet and one canister could be used if desired. Encircling each inlet is a concave coupling member 3 that may be made of metal or some other suitable material that is substantially rigid. The inner edge of the

2

coupling member is clamped tightly against the face-piece around the inlet by means of a metal ring 4. All except the clamped inner edge of the concave coupling is spaced from the face-piece.

Each air purifying canister is in the form of a metal cup 6 that has a perforated outer end serving as an air inlet, and a channel around its inner end containing the edge of a screen or perforated metal plate 7. The inner end of the canister is its outlet end, which is larger than coupling member 3. The canister is filled with any suitable air purifying material 8. The inner edge of the canister is turned inward to form a flange that clamps the outer edge of an annular coupling member 9 tightly against the plate in sealing engagement with it. This coupling member is formed of rubber or other suitable resilient material and has an inner diameter which is smaller than the outer diameter of face-piece coupling 3, so that the former has to be stretched to slip it over the latter. When this is done, the resilient coupling pulls the perforated outlet plate 7 inward against the outer edge of the rigid coupling. The pressure of the resilient coupling against the inner surface of the rigid coupling holds the latter in sealing engagement with the outer surface of the resilient coupling. An air tight coupling is then formed between the canister and the face-piece.

Although it is within the scope of this invention to reverse the two coupling members, it is preferred to attach the rigid coupling to the face-piece because the face-piece inlet customarily is smaller than the canister outlet.

According to the provisions of the patent statutes, I have explained the principle of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. A gas mask comprising a face-piece provided with an air inlet, a substantially rigid annular coupling member having its inner edge portion sealed to the face-piece around said inlet with the outer portion of said member spaced from the outer surface of the face-piece, an air purifying canister provided with an air outlet, and a resilient annular coupling member having its outer edge portion sealed to the canister around said outlet and having an area in sealing engagement with the inner surface of said rigid member, whereby to provide an air tight coupling between

the canister and face-piece, said resilient coupling member being spaced from the face-piece and removable from said rigid member.

2. A gas mask comprising a face-piece provided with an air inlet, a substantially rigid concave annular member having its inner edge portion sealed to the face-piece around said inlet with the rest of said member extending away from the outer surface of the face-piece, an air-purifying canister provided with an air outlet, and a resilient annular coupling member having its outer edge portion sealed to the canister around said outlet and having an area in sealing engagement with the inner surface of said rigid member, whereby to provide an air tight coupling between the canister and face-piece.

3. A gas mask comprising a face-piece provided with an air inlet, a substantially rigid annular coupling member having its inner edge portion sealed to the face-piece around said inlet with the outer portion of said member spaced from the outer surface of the face-piece, an air purifying canister provided with an air outlet, and a resilient annular coupling member having its outer edge portion sealed to the canister around said outlet, the inner diameter of the said resilient member being smaller than the outer diameter of said rigid member but being capable of being stretched large enough to permit insertion of said rigid member, whereby to dispose an area of the inner surface of the resilient member in sealing engagement with an area of the inner surface of the rigid member, said resilient coupling member being spaced from the face-piece.

4. A gas mask comprising a face-piece provided with an air inlet, a substantially rigid annular coupling member having its inner edge portion sealed to the outer surface of the face-piece around said inlet with the outer portion of said member spaced from the outer surface of the face-piece, an air purifying canister provided with an air outlet, and a resilient annular coupling member having its outer edge portion sealed to the canister around said outlet and said rigid member, said resilient member extending inward along the inner surface of said rigid member in sealing engagement therewith, whereby to provide an air tight coupling between the

canister and face-piece, said resilient coupling member being spaced from the face-piece and removable from said rigid member.

5. A gas mask comprising a face-piece provided with an air inlet, a substantially rigid annular coupling member having its inner edge portion sealed to the face-piece around said inlet with the outer portion of said member spaced from the outer surface of the face-piece, an air purifying canister provided with an air outlet, the outer edge of said coupling member engaging the canister around said outlet, and a resilient annular coupling member having its outer edge sealed to the canister around said rigid member and extending inward along the inner surface of said rigid member in sealing engagement therewith, said resilient member holding the rigid member and canister against each other.

6. A gas mask comprising a face-piece provided with an air inlet, a substantially rigid concave annular member having its inner edge portion sealed to the outer surface of the face-piece around said inlet with the rest of said member extending away from the outer surface of the face-piece, an air-purifying canister provided with an air outlet, the outer edge of said coupling member engaging the canister around said outlet, and a resilient annular coupling member having its outer edge sealed to the canister around said rigid member and extending inward therefrom along the inner surface of said rigid member in sealing engagement therewith, said resilient member holding the rigid member and canister against each other, said resilient coupling member being spaced from the face-piece and removable from said rigid member.

DANIEL A. GREEN.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,097,676	Shindel	Nov. 2, 1937
2,160,317	Schwartz	May 30, 1939
2,342,910	Tinnerman	Feb. 29, 1944
2,427,477	Shapiro	Sept. 16, 1947