Dec. 22, 1931. H. F. SHINDEL 1,837,591

RESPIRATOR

Filed May 8, 1930

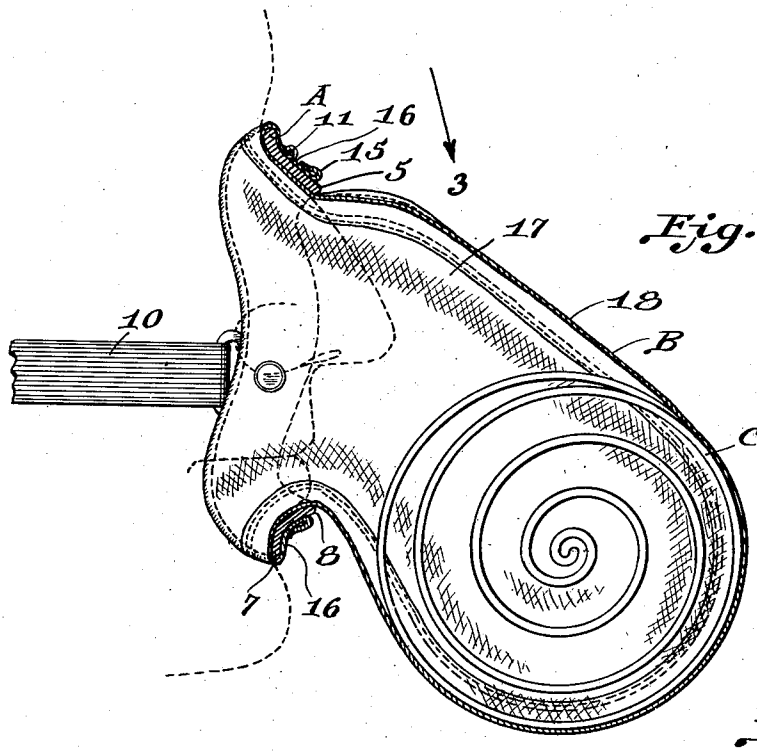


Fig. 1.

Fig. 2.

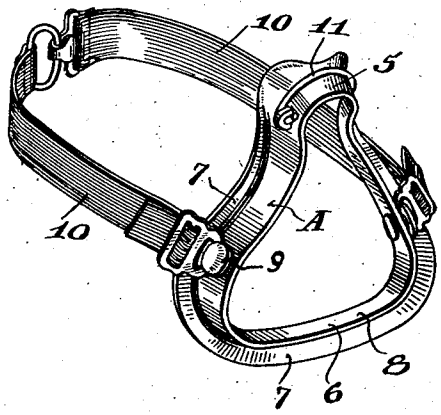
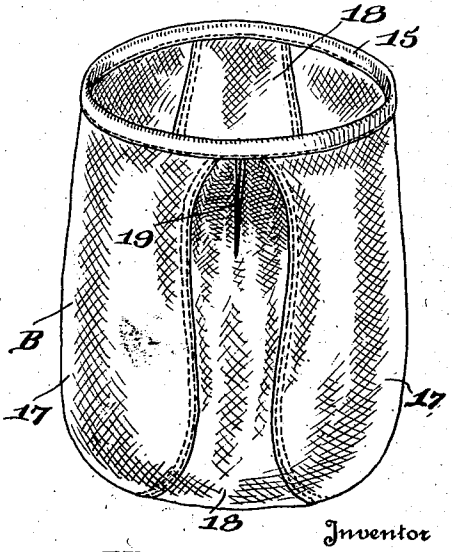


Fig. 3.



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UNITED STATES PATENT OFFICE

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RESPIRATOR

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My invention relates to respirators comprising a strainer element suitably held to the face so as to protect the wearer against harmful inhalations; and it consists in a simplified construction providing primarily for ready and satisfactory employment of such an element with a face-secured frame, as fully described in connection with the accompanying drawings and clearly defined in the subjoined claims.

Fig. 1 is a sectional elevation of a complete device embodying the invention in preferred form, indicated as applied to the face of a wearer.

Figs. 3 and 2 are separate views of the specially constructed strainer bag and face-secured frame ring respectively, Fig. 3 being a top view of the bag looking in the direction indicated by arrow 3 Fig. 1, but showing the turning-over edge portion in its normal unturned form.

The frame ring A as shown, forms a face-fitting and bag-securing device of approximately triangular contour, with an apex 5 thereof shaped so as to rest upon the nose of the wearer while the widened lower portion 6 is adapted to underlie the mouth of the wearer above the chin, and preferably of angular cross-section forming a circumferential face-fitting and bag-securing portion 7, and a forwardly projecting web portion 8 adapted for attachment of connecting head bands 10, 10; the latter being attachable to suitable means as button connection 9, provided on said web portion, and serving both to hold the complete device to the head of the wearer and to more firmly secure the engaged strainer bag to the ring as hereinafter described. The form and material of the ring are adapted to give it relative rigidity when it is applied to the face with the attached bag, but with capacity for bending or warping of its shape so as to enable fitting of it to the contour of the face and satisfactory effecting of the simple and advantageous application of the strainer bag thereto as hereinafter particularly set forth. To insure a satisfactory seating of the yielding apex portion 5 upon the nose I preferably provide upon said portion a closing-together spring 11.

The strainer element B is of bag-shaped form and of suitable flexible material adapted to provide ample straining area when distended; and is adapted to permit of ready turning-over of the edge portion 15 of the bag upon the frame-ring so as to removably secure the bag huggingly to the latter as indicated. As clearly shown in the drawings, this convenient engagement of the bag with the frame ring, by turning-over upon the latter of the free edge portion of the bag, covers the inner surface of the curved face-fitting ring so as to present an inner surface of the bag for direct contact with the face, while the forwardly bent free edge 16 thereof underlies the ring. As shown the engaging portion of the bag is turned over the ring outwardly, so that the free edge 16 thereof is readily tucked-under the button-connected head-band ends 10, 10 upon the web portion 8 of the ring and the bag thus further secured in service by the clamping effect of the tensioned head bands.

To provide for thus removably engaging the strainer bag B to the frame ring with a secure hugging action of the turned-over portion thereof upon the ring, I specially form the bag with a reduced open-end or mouth, providing the turning-over edge portion 15 having a reenforced free edge 16; this bag-form being conveniently produced, as indicated, by sewing together two side-pieces of flat fabric 17, 17, and a spherical connecting-strip 18 contracted by a seaming 19 to unite with the reduced edge 16 of the bag; the main portion of the latter being thus of approximately spherical form when distended but being readily passed through the frame ring when collapsed, and the edge portion 15—16 at the reduced mouth of the bag being adapted to turn-over the frame ring so as to huggingly engage it as stated.

To provide for keeping the strainer-bag properly distended when in service, a separate distender-device C is employed which may be independently inserted and removed; this device, as shown, being preferably simply formed of helically coiled wire having the ends normally spread so as to spherically distend the bag when inserted, but being read-

ily collapsible by the user for easy insertion in or removal from the bag independently of the connection of the latter to the frame ring.

The preferred construction thus specifically set forth may obviously be readily modified in detail within the invention as defined in the claims.

What I claim is:

1. A respirator comprising a face-fitting frame-ring, an inserted strainer-bag removably secured to said ring by retaining engagement therewith of a turned-over face-contacting edge portion thereof, and a collapsible distending device independently insertable in and removable from the bag.

2. A respirator comprising a frame ring of relatively rigid but warpable construction formed with a bag-engaging face-fitting rim portion and a head-band engaging inner-web portion, and a ring-inserted strainer-bag having an open-end portion of less circumference than the adjacent portion of the bag and adapted to be outwardly turned-over and retainingly engaged upon said face-fitting rim portion.

3. A respirator comprising a frame ring of relatively rigid but warpable construction formed with a bag-engaging face-fitting rim portion and a head-band engaging inner-web portion, a ring-inserted strainer-bag having an open-end portion of less circumference than the adjacent portion of the bag and adapted to be outwardly turned-over and retainingly engaged upon said face-fitting rim portions, and a head-band connection to said inner-web portion adapted to secure the turned-over portion of the bag to the latter.

4. In a respirator comprising a frame ring formed with a bag-engaging face-fitting rim portion and a forwardly projecting inner-web portion; a specially formed strainer-bag having a ring-insertable open-end portion of less circumference than the adjacent portion of the bag and adapted to be outwardly turned-over upon said face-fitting rim portion so as to retainingly engage the bag in the ring.

5. In a respirator comprising a frame ring formed with a bag-engaging face-fitting rim portion; a strainer bag comprising three connected strips of suitable fabric forming a spherically distensible main portion with a reduced open-end portion insertable in said ring and adapted to be retainingly engaged therewith by outward turning-over thereof upon said face-fitting rim portion.

In testimony whereof I affix my signature.

HARRY F. SHINDEL.