J. F. LAMB AND F. E. CARLSON.

GAS MASK.

APPLICATION FILED AUG 27, 1918.

1,388,959. Patented Aug. 30, 1921.

Fig. 3.

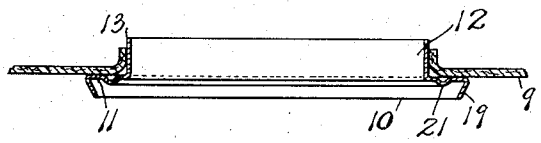


Fig. 4.

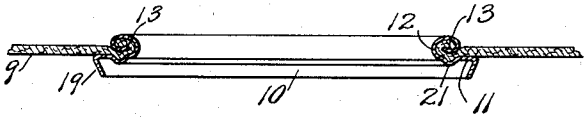


Fig. 5.

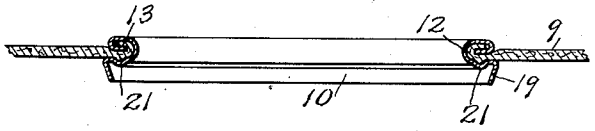


Fig. 6.

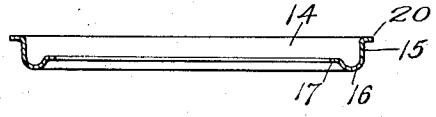


Fig. 7.

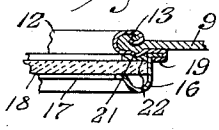
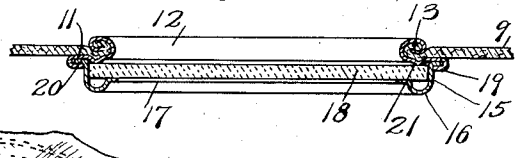


Fig. 2.



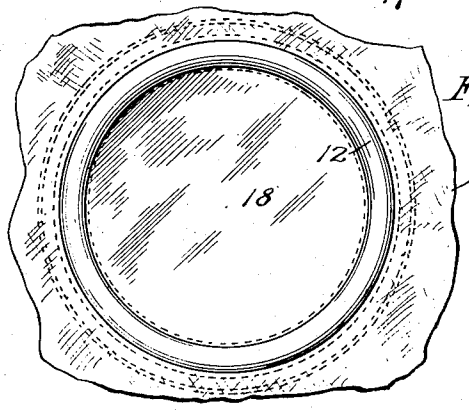


Fig. 1.

Inventor:

Joseph F. Lamb

and Frederick E. Carlson

by their Attys.:

Philipp Sawyer Rice & Kennedy

UNITED STATES PATENT OFFICE.

JOSEPH F. LAMB AND FREDERICK E. CARLSON, OF NEW BRITAIN, CONNECTICUT, ASSIGNORS TO LANDERS, FRARY AND CLARK, OF NEW BRITAIN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

GAS-MASK.

1,388,959. Specification of Letters Patent. Patented Aug. 30, 1921.

Application filed August 27, 1918. Serial No. 251,600.

To all whom it may concern:

Be it known that we, JOSEPH F. LAMB and FREDERICK E. CARLSON, each a citizen of the United States, each residing at New Britain, county of Hartford, and State of Connecticut, have invented certain new and useful Improvements in Gas-Masks, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in the eye portion of gas masks and the like and to the method of producing the same.

In the manufacture of gas masks as heretofore known, there has been considerable breakage of the lenses due to the pressure brought to bear thereon in securing the fabric to the lens carrying members.

A further objection to gas masks as heretofore known has been the lack of a sufficiently secure connection between the lens carrying parts and the fabric. The result has been that many gas masks have been rendered useless because the fabric was pulled away from the lens carrying members.

It is an object of the present invention to provide a gas mask and the method of producing the same, such that there is little or no danger of lens breakage during manufacture and such that the fabric is so firmly secured to the lens carrying members that it cannot be pulled away therefrom under any ordinary usage.

With these general objects, and others which will be obvious to those skilled in the art, in view, the invention consists in the methods hereinafter set forth, and the features, details of construction and combinations, which will first be described in connection with the accompanying drawing and then more particularly pointed out.

In the drawings:—

Figure 1 is a front face view of the eye portion of a gas mask constructed in accordance with the present invention.

Fig. 2 is a transverse sectional view taken on a diameter of Fig. 1.

Fig. 3 is a similar view showing the eye piece frame removed before the fabric and lens holder are secured in place.

Fig. 4 is a similar view showing the fabric secured to the eye piece frame.

Fig. 5 is a similar view showing a modified form of construction for securing the fabric.

Fig. 6 is a transverse sectional view of the lens holder removed; and

Fig. 7 is a view similar to Fig. 2, with parts broken away, showing the addition of a gasket.

One feature of the invention consists, broadly speaking, in securing the fabric to an eye piece frame, and thereafter securing to such frame a separate lens holder which carries the lens. In carrying out the invention, the fabric is formed with an eye opening which is preferably circular in shape. It is understood that as the eye portions are in all respects duplications, the description applies to both. An eye piece frame is formed of a suitable size to correspond with the eye opening of the fabric. The fabric is secured to the eye piece frame in any suitable manner, as, for example, according to the method hereinafter described. A separate lens holder is formed and the lens is placed therein. The holder is then secured to the eye piece frame in such manner that the force involved is applied outside the periphery of the lens. It is to be understood that in carrying out the above described method, the steps enumerated need not be carried out in the sequence given as long as the fabric is secured to the eye piece frame before the lens is placed in position.

In producing the eye portion of gas masks according to the method described, there is substantially no danger of lens breakage because the operation of securing the fabric to the eye piece is completed before the lens is inserted and the force involved is exerted outside the periphery of the lens and there is no direct pressure on the lens itself.

A further feature of the invention is the securing of the fabric to the eye piece in such manner as to provide an interlocking relation such that the fabric cannot be pulled loose under any ordinary usage. In producing the eye portions of gas masks according to the invention, in its entirety therefore, on an eye piece frame such as before described, there is formed an internal skirt extending out from the frame substantially at right angles. This skirt is inserted in the eye opening of the fabric and the edge of the fabric is placed alongside the skirt after the

manner illustrated in Fig. 3. The edge of the flange is then turned back outwardly upon itself to grasp the edge of the fabric. And finally the skirt is furher turned outwardly and downwardly to clamp the fabric in an interlocked relation.

This last step may be carried out in various ways. For example, the skirt, grasping the fabric, may be rolled downwardly and outwardly in a substantial spiral, after the manner illustrated in Fig. 4. Or, as another example, it may be turned down flat against the frame, as illustrated in Fig. 5. The advantage of the first method is, that during the operation the fabric receives no dead blow; the advantage of the second being an exceptionally firm connection.

The eye portion of a gas mask constructed in accordance with the present invention comprises a portion of fabric having an eye opening, an eye piece frame in which the fabric is secured, and a separate lens holder secured to the eye piece frame. In structures embodying the invention to the best advantage, the eye piece frame has a skirt which is turned back upon itself to grasp the fabric and turned outwardly and downwardly to clamp the fabric in an interlocked relation. In the embodiment here illustrated as an example, the fabric 9 of the mask is provided with an eye opening of suitable size and circular in shape. For insertion in this eye opening is an eye piece frame 10. This latter member comprises an annular ring 11, and the ring is provided on one side with an internal skirt 12, which, before the parts are assembled, extends outwardly from the frame substantially at right angles, as shown in Fig. 3. In the completed mask, this skirt has a portion 13 of its edge turned back on itself to grasp the edge of the fabric and the skirt is further turned outwardly and downwardly to clamp the fabric in an interlocked relation. Fig. 4 illustrates a structure in which the skirt is turned down in a spiral manner and Fig. 5 shows a modification in which it is turned down substantially flat against the frame.

Associated with the eye piece frame is a separate lens holder. As illustrated, as an example, a lens holder 14 is provided having a cylindrical wall 15 turned inwardly and upwardly, as at 16, and terminating in an annular shelf 17 for the lens 18 to rest upon. This lens holder is secured to the eye piece frame and in structures embodying the invention to the best advantage, the lens holder and the eye piece frame are provided with coöperating securing portions located outside the periphery of the lens. For example, one of these members may be provided with a flange which is turned down against a portion of the other member to clamp the two together. Although capable of various constructions, in the present exemplification, the eye piece frame 10 is provided at its outer edge on the side opposite the skirt 12, with a flange 19. The lens holder is provided with an outwardly extending flange or ring 20 and when the lens holder has been inserted in the eye piece frame, the flange 19 is bent down against the flange or ring 20, thus clamping the parts together in the manner shown in Fig. 2. This construction provides an effective and simple means of securing the lens holder in the eye piece frame. Furthermore it will be seen that the flanges 19 and 20 are outside the periphery of the lens so that there is no direct pressure on the lens in turning down flange 19.

The eye piece frame may be provided with a bead 21 which forms a seat for the lens. It may be desirable to interpose a resilient gasket between the lens and the bead 21. Such a gasket is shown at 22, Fig. 7.

Referring to Figs. 3–5, the flange 19 of the eye piece frame before it is turned down to clamp the lens holder, is shown as being turned obliquely inwardly. With such a construction the operation of bending this flange down against the lens holder is rendered more simple, as a square punch may be utilized.

With the construction described, the lens is mounted in such manner that there is little danger of lens breakage and there is an extremely firm connection between the fabric and the lens carrying parts, so that the fabric cannot be pulled loose under any ordinary usage.

It is to be understood that changes in detail may be made from the steps and constructions above described, without departing from the invention.

What is claimed is:—

1. The herein described method of producing gas masks and the like which consists in forming an eye opening in the fabric, forming an eye-piece frame, inserting the eye-piece frame in the eye opening, securing the fabric to the eye-piece frame, forming a separate lens holder, placing the lens in the holder, and securing the holder to the eye piece frame by means of a force applied outside the periphery of the lens.

2. The herein described method of producing the eye portions of gas masks and the like which consist in forming an eye opening in the fabric, forming an eye-piece frame, forming a separate lens holder, forming a flange on one of said members, inserting the eye-piece frame in the eye opening, securing the fabric to the eye-piece frame, and turning down said flange against a portion of the other of said members to secure the lens holder to the eye-piece frame.

3. The herein described method of producing the eye portions of gas masks and the like, which consists in forming an eye

opening in the fabric, forming an eye-piece frame, forming on the eye-piece frame an internal skirt, inserting said skirt in the eye opening, placing a portion of the edge of the fabric alongside said skirt, turning back the edge of the skirt outwardly upon itself, to grasp the edge of the fabric between the edge of the skirt and the main skirt portion, and further turning the skirt outwardly and downwardly to clamp the fabric in an interlocked relation.

4. The herein described method of producing the eye portions of gas masks and the like, which consists in forming an eye opening in the fabric, forming an eye-piece frame, forming on the eye-piece frame an internal skirt, inserting said skirt in the eye opening, placing a portion of the fabric alongside said skirt, turning back the edge of the skirt outwardly upon itself to grasp a portion of the edge of the fabric between the edge of the skirt and the main skirt portion, and further turning the skirt outwardly and downwardly in a substantial spiral to clamp the fabric in an interlocked relation.

5. In combination, an eye-piece frame for gas masks and the like, having provision for attaching the fabric of the mask, a lens holder, a lens carried thereby, and coöperating securing portions carried by the eye-piece frame and lens holder respectively and located outside the periphery of the lens.

6. In combination, an eye-piece frame for gas masks and the like, having a portion for clamping the fabric of the mask between such portion and the body of the eye-piece frame, a lens holder, one of said members having a flange turned down to engage a portion of the other of said members, thereby to secure said lens holder in said eye-piece frame, and a lens carried by said holder.

7. In combination, an eye-piece frame for gas masks and the like, having provision for attaching the fabric of the mask, a lens holder having a flange, a lens carried by said holder, and a flange on said eye-piece frame turned down to engage said first named flange, thereby to secure the lens holder to the eye-piece frame.

8. In combination, an eye-piece frame for gas masks and the like, having a skirt turned back upon itself for clamping the fabric of the mask in interlocking relation, and a separate lens holder secured to said eye-piece frame.

9. In combination, an eye-piece frame for gas masks and the like, having a skirt turned back upon itself in a substantial spiral to clamp the edge of the fabric of the mask in an interlocked relation, and a separate lens holder secured to said eye-piece frame.

10. An eye-piece frame for gas masks and the like, comprising an annular ring, an internal skirt on one side of the ring for clamping the fabric in place, an external flange on the other side of the ring for clamping a lens holder in place.

11. An eye-piece frame for gas masks and the like, comprising an annular ring, an internal skirt on one side of the ring for clamping the fabric in place, and an external, inwardly oblique flange on the other side of the ring for clamping a lens holder in place.

12. In an eye piece frame for gas masks and the like, a ring and a skirt integral with the ring and turned downwardly to directly engage the fabric of the mask and clamp the same against said ring.

13. In combination, an eye-piece frame for gas masks and the like having a ring, a lens holder having a lens embracing portion and a flange extending outwardly from said portion, and a flange on said eye piece frame turned down to engage said holder flange to secure the holder to the frame.

14. In combination, an eye-piece frame for gas masks and the like having a ring portion, an internal skirt extending from one side of the ring and turned back upon itself to grasp the fabric of the mask between the turned back portion and the main skirt portion, the skirt being further turned outwardly and downwardly to clamp the fabric in interlocked relation, a lens holder, a lens carried thereby, a flange extending outwardly from the lens holder, a flange on the ring of the eye-piece frame for engaging said holder flange to secure the holder to the frame, and a resilient gasket between the lens and the ring of the eye-piece frame.

In testimony whereof, we have hereunto set our hands.

JOSEPH F. LAMB.
FREDERICK E. CARLSON.