March 4, 1924. 1,485,789

F. A. LOGAN

EYEPIECE FRAME

Filed Jan. 8, 1923

Fig. 1.

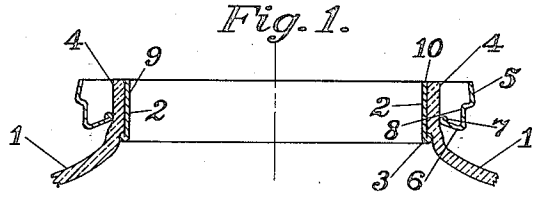


Fig. 2.

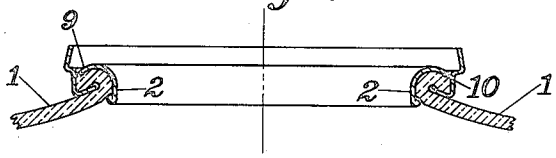


Fig. 3.

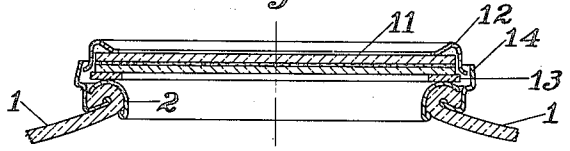
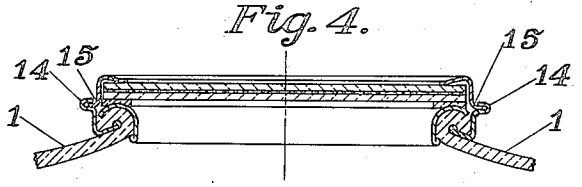


Fig. 4.



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UNITED STATES PATENT OFFICE.

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EYEPIECE FRAME.

Application filed January 8, 1923. Serial No. 611,449.

To all whom it may concern:

Be it known that I, FRANK A. LOGAN, a citizen of the United States, residing at Edgewood, Maryland, in the county of Harford and State of Maryland, have invented certain new and useful Improvements in Eyepiece Frames, of which the following is a specification.

This invention relates to improvements in eye-piece frames of gas masks and the like and to the manner of securing the frames thereto.

Among the objects of this invention is to provide a novel eye-piece frame and means for securing it to the fabric of gas masks or the like, and more particularly, fabrics such as pliable rubber with or without outer coverings or inner layers of stockinet or rubberized fabric, such as rubberized duck, sail cloth, etc.

A still further object of this invention is to provide an eye-piece frame and means for fixing same to such fabrics so that the union will be permanent and the durability and life of the fabric remain unimpaired.

According to present means for securing eye-piece frames to such fabrics, the metal frames are fastened to the fabric so as to give a tight initial grip over a small area of the fabric. This initial grip results in substantially complete compression of the rubber of the fabric and the effect is to deaden the rubber of the fabric at the portions subjected to such great strain very soon after the eye-piece frame is attached thereto. When this occurs the fabric becomes so weakened that a slight strain or pull will destroy the gas tightness of the mask and often cause the fabric to break at such place, which causes the eye-piece to part from the rest of the mask.

My invention is designed to overcome these disadvantages incident to the prior types of eye-piece frames and the means for securing same to the fabric. In carrying out my invention, I have provided a new construction of eye-piece so that the maximum compression of the rubber is only about 20–50% of the possible amount. Furthermore, the compression is not local as in the prior types of gas mask eye-pieces, but is distributed over a large area. I obtain absolute gas tightness at the junction of the eye-piece frame with the fabric and also a tighter grip of the fabric without subjecting the rubber stock to the injurious action incident to the other methods of fastening the prior types of eye-piece frames to the fabric. The effect is to give lasting qualities to the gas mask, and when my new type of eye-piece is secured to the fabric according to the means to be later illustrated the fabric will not pull or break away from the eye-piece frame even after a long interval from the time that the eye-piece frame has been attached thereto.

Reference is to be had to the accompanying drawings, wherein I have illustrated a specific embodiment of my invention. Fig. 1 is a cross-sectional view showing the relative position of the fabric to the inner ring and outer retaining ring before the fabric has been secured to the frame. Fig. 2 is a cross-sectional view showing the fabric of the mask secured by the inner ring and the outer retaining ring. Fig. 3 is a cross-sectional view showing the lens and lens holder upon the eye-piece frame after the fabric has been secured thereto and before the lens has been permanently fastened thereto. Fig. 4 is a cross-sectional view showing the lens and lens holder permanently secured to the eye-piece frame.

The fabric 1 of the gas mask or the like is stretched over the inner ring 2 commonly known as a grommet ring. One end of this ring has the bead 3, which is preferably on the outer periphery of the ring. The original opening in the fabric has a perimeter less than the outer circumference of the ring 2 so that when the fabric 1 is stretched over this ring the portion 4 at the edge of the opening will assume a position alongside of the ring 2, as indicated in Fig. 1. The retaining ring 5 is then placed over the fabric as shown in Fig. 1. These rings are made of metal, preferably brass having good drawing quality. This retaining ring 5 has a portion 6 turned inwardly and this inturned portion

6 is beaded at 7. This bead 7 is preferably designed not to reach the inner wall 8 of the retaining ring 5 so as to receive a portion of the fabric 4 in the intervening space and thus afford a better grip for the fabric when it is secured to the eye-piece frame as will be shown later.

After the inner ring 2 and retaining ring 5 are positioned upon the fabric, as shown in Fig. 1, the portion 9 of the inner ring 2, opposite the bead 3, is turned into the pocket formed by the inturned portion 6 and wall 8. The portion 4 of the fabric is thereby turned into this pocket and is held gripped by the inner ring 2 and the walls of the pocket of the retaining ring 5. The part 9 of the retaining ring is turned so that there will be only partial compression of the fabric 4, preferably not more than about 20% of the greatest possible compression.

It will be seen by reference to Fig. 2 that not only does the edge 10 of the inner ring grip the fabric 4, but that substantially all of the curved portion of the inner ring 2 co-operating with the inturned portion 6 of the retaining ring acts to hold the curled fabric secured to the metal parts of the eye-piece frame. Should the edge 10 of the inner ring grip the fabric 4 excessively so as to impair or deaden the quality of the rubber at such point, any tendency of the fabric at such point to separate from the eye-piece frame would be counteracted by the grip over the wide area of the curled fabric by the curved portion 9 of the inner ring and the inturned portion 6 of the retaining ring. A portion of the fabric 4, it will be observed, enters the portion of the pocket which is between the bead 7 and the wall 8. With the fabric so secured by the inner ring and the outer retaining ring, should there be any tendency for the fabric to be pulled away from the eye-piece frame, such pull will cause the bead 7 to be drawn toward the bead 3, thus increasing the grip upon the fabric at such place, and thereby affording an additional securing means. The inside diameter of the bead on the retaining ring is only slightly larger than the outside diameter on the inner or grommet ring, so that when these beads are drawn together the grip on the rubber is tightened.

In Fig. 3 I have shown the lens 11 and the lens holder 12 seated in the retaining ring after the fabric 1 has been secured to the eye-piece frame. I prefer to place a rubber washer 13 between the lens 11 and the metal portion 9 of the inner ring, so as to protect the lens and also make a gas-tight joint. The lens 11 and lens holder 12 are permanently secured to the frame of the eye-piece by turning the flange 14 of the retaining ring 5 down upon the flange 15 of the lens holder 12, as illustrated in Fig. 4.

The present invention is not limited to the specific details set forth in the foregoing examples which should be construed as illustrative and not by way of limitation and in view of the numerous modifications which may be effected therein without departing from the spirit and scope of this invention, it is desired that only such limitations be imposed as are indicated in the appended claims.

I claim as my invention:

1. In an eye-piece frame for gas masks and the like, a retaining ring having an end beaded and an annular pocket formed by an inturned portion of the ring adjacent to said bead and the unbeaded portion adjacent to the inturned portion for receiving the fabric to be secured to said eye-piece, an inner ring beaded at an end and having the other end turned outwardly and projecting into said pocket of said retaining ring, said beads co-operating with each other to retain the fabric of the gas mask and the like secured between said rings.

2. In an eye-piece frame for gas masks and the like, a retaining ring having an end beaded and an annular pocket formed by an inturned portion of the ring adjacent to said bead and the unbeaded portion adjacent to the inturned portion for receiving the fabric to be secured to said eye-piece, said bead projecting into said pocket, an inner ring beaded at an end and having the other end turned outwardly and projecting into said pocket of said retaining ring, said beads co-operating with each other to retain the fabric of the gas mask and the like secured between said rings.

3. In an eye-piece frame for gas masks and the like, a retaining ring having an end beaded and an annular pocket formed by an inturned portion of the ring adjacent to said bead and the unbeaded portion adjacent to the inturned portion for receiving the fabric to be secured to said eye-piece, an inner ring having an outer bead at an end and the other end turned outwardly and projecting into said pocket of said retaining ring, said beads co-operating with each other to retain the fabric of the gas mask and the like secured between said rings.

4. In an eye-piece frame for gas masks and the like, a retaining ring having an end beaded and an annular pocket formed by an inturned portion of the ring adjacent to said bead and the unbeaded portion adjacent to the inturned portion for receiving the fabric to be secured to said eye-piece, said bead projecting into said pocket, an inner ring having an outer bead at an end and the other end turned outwardly and projecting into said pocket of said retaining ring, said beads co-operating with each other to retain the fabric of the gas mask and the like secured between said rings.

5. An eye-piece frame for gas masks and

like face pieces, comprising an outer retaining ring having an inturned edge forming with the wall of the ring an internal annular pocket, the fabric of the gas mask or other face piece being provided with an eye-piece opening having its edge adjacent to said opening folded around said inturned edge of said retaining ring, and an inner ring forming an external annular pocket, gripping the folded edge of said fabric and embracing the inturned edge of said retaining ring.

FRANK A. LOGAN.