W. F. QUINN.

EAR PROTECTOR.

APPLICATION FILED JULY 9, 1909.

993,620. **Patented May 30, 1911.**

Fig. 1.

Fig. 2.

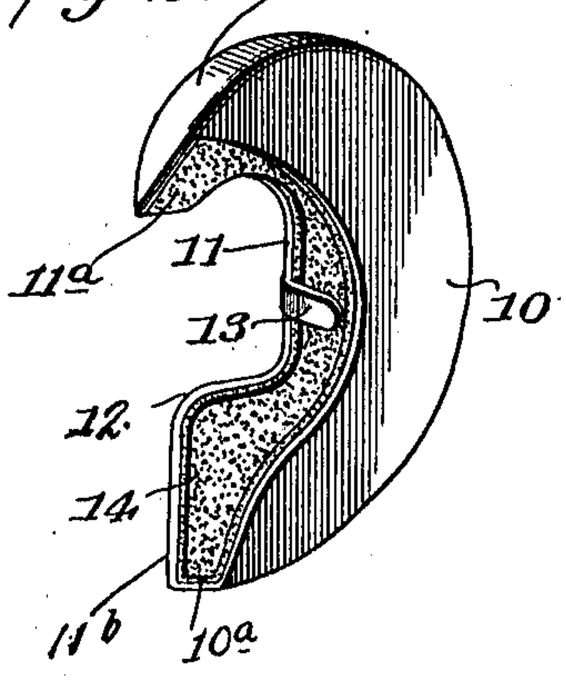
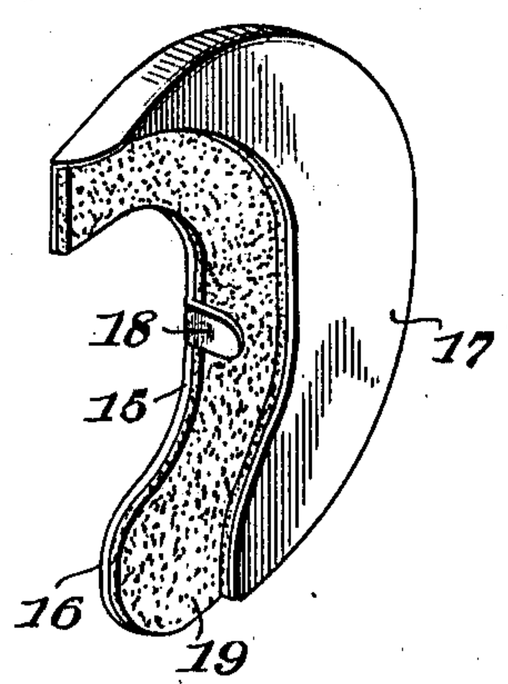


Fig. 3.



Witnesses

W. F. Woodcock,

Juania M. Fallin,

Inventor

W. F. Quinn,

By R. H. Macy, Attorneys.

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM F. QUINN, OF PROVIDENCE, RHODE ISLAND.

EAR-PROTECTOR.

993,620. Specification of Letters Patent. Patented May 30, 1911.

Application filed July 9, 1909. Serial No. 506,823.

To all whom it may concern:

Be it known that I, WILLIAM F. QUINN, citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Ear-Protectors, of which the following is a specification.

This invention relates to ear muffs or ear protectors, and the object of the invention is to provide a protector which will not prevent the passage of sound to the ear and which is retained about the ear without the employment of head bands and the like retaining devices.

The invention further aims at the provision of an ear protector conforming very closely to the shape and color of the ear so that the same shall not be unduly conspicuous.

A still further object is to provide an ear protector composed of a thin stiff material which shall retain its shape, but at the same time have sufficient resilience to permit the outer wall of the protector to act as a diaphragm whereby the sound waves will be conducted to the inner ear.

For a full understanding of the invention reference is to be had to the following description and accompanying drawing in which:—

Figure 1 is a perspective view of the improved protector as applied to the ear. Fig. 2 is a detail perspective view of the inner side of the protector. Fig. 3 is a detail view of the inner side of the protector, the same being disclosed in a slightly modified form.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawing by the same reference characters.

Referring to the drawing the protector comprises a shell for inclosing the projecting portions of the ear, this shell being made of rubber, celluloid or other thin, stiff and somewhat resilient material, the shell having the general form of a crescent. The convex edge of the crescent is closed and the concave edge open to permit the shell to be placed upon the ear. The protector is made with an inner wall 10 and an outer wall 11. The two walls are parallel and the outer and convex edges of the walls are connected to each other by an integral rim 10^a.

The inner wall 10 is less in width than the outer wall, particularly at the upper portion thereof, and hence the ends 11^a and 11^b of the outer walls project beyond the ends of the inner wall. Thus, while the concave edge of the inner wall 10 fits around the junction of the ear with the head, the outer wall is of such width as to completely cover the helix and antihelix of the ear and the lobe of the ear. Inasmuch as the outer wall is of resonant material, and is supported against the helix of the ear it will be plain that a sound chamber will be formed between this outer wall and the face of the ear and that the thin stiff outer wall will act as a diaphragm transmitting the vibrations of the air to the chamber formed interiorly of the wall. Thus, although the ear will be entirely protected on the outer and inner face and the rim, yet this will not noticeably diminish the ability to hear distinctly,—an important feature as ear protectors which are made of velvet or a like non-resonant fabric—deaden the sound vibrations and prevent the transmission of sound waves.

To facilitate the easy entrance of sound waves, I cut away the outer wall on its inner edge so as to expose the passage to the inner ear. To hold the protector securely in place and yet prevent its easy detachment, I provide the inner edge of the outer wall with the inwardly turned lug or detainer 13, which when the protector is in position projects beyond the tragus. Both walls are lined with felt, flannel or like non-conducting material designated 14 to keep the ear warm. The lower portion of the outer wall is enlarged to form a lobe protecting portion 12.

In the form of my device shown in Fig. 3 the lower end of the inner wall 17 does not extend out as far as the lobe protecting portion 16 of the outer wall 15, and this construction permits the easier removal of the protector. In other respects, however, the form shown in this figure is precisely like that previously described. This form is also provided with the detaining lug 18 and the felt lining 19. It is to be noted that the protector is made of thin sheet metal, celluloid, or rubber, and therefore does not get out of shape, may be easily applied and removed from the ear and forms a resonant sound box that assists the hearing rather than detracts therefrom. It is also to be noted that as the lug 13 or 18 is of rubber, celluloid, or metal it has a certain amount of resiliency, so that while it normally pro-

jects into position behind the tragus, it may be turned out of the way or into alinement with the walls 11 and 15 when the device is being placed upon the ear. In placing it on the ear the protector is held with its large end somewhat downward when the lobe of the ear will enter the protector about at the end 11ª, the first finger being used to retract the lug or detainer 13. The protector is then rotated, the rim of the helix entering between the outer and inner walls, until brought into position shown in Fig. 1, when the detainer or lug is released and springs in place behind the targus.

My protector is preferably made integral, although I do not wish to be limited to this, as it might be made of thin sheets or plates, afterward joined in any suitable manner.

Having thus described the invention what is claimed as new is:—

An ear protector consisting of an integral casing formed of oppositely disposed substantially parallel flat inner and outer crescent-shaped walls of thin stiff resonant material, the outer convexly curved edges of the walls being joined to each other by a peripheral wall to protect and inclose the rim of the ear, the inner wall of the protector being of less width than the outer wall, said outer wall projecting beyond the inner wall at its lowest end to form a protection for the lobe of the ear, the outer wall being cut away on its inside edge to expose the auditory passage and being there formed with an integral inwardly projecting relatively thin resilient lug engaging behind the tragus of the ear, and an inner lining of textile fabric disposed upon the inner faces of the said walls.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM F. QUINN. [L.S.]

Witnesses:
GEORGE TWEEDY,
PATK. D. QUINN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."