Sept. 9, 1930. E. S. PLATOU 1,775,140

OTOSCOPE

Filed May 12, 1928 2 Sheets-Sheet 1

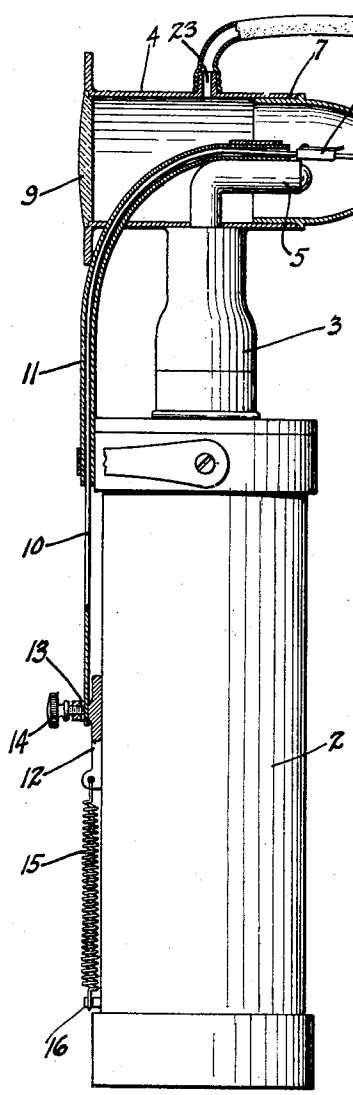


FIG. 1

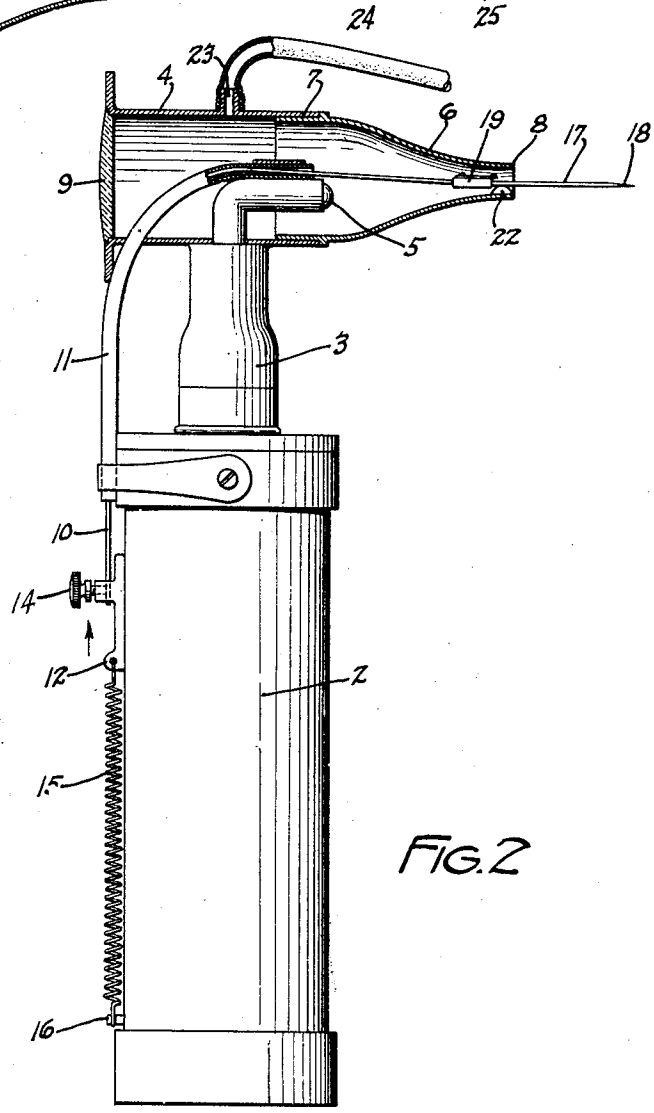


FIG. 2

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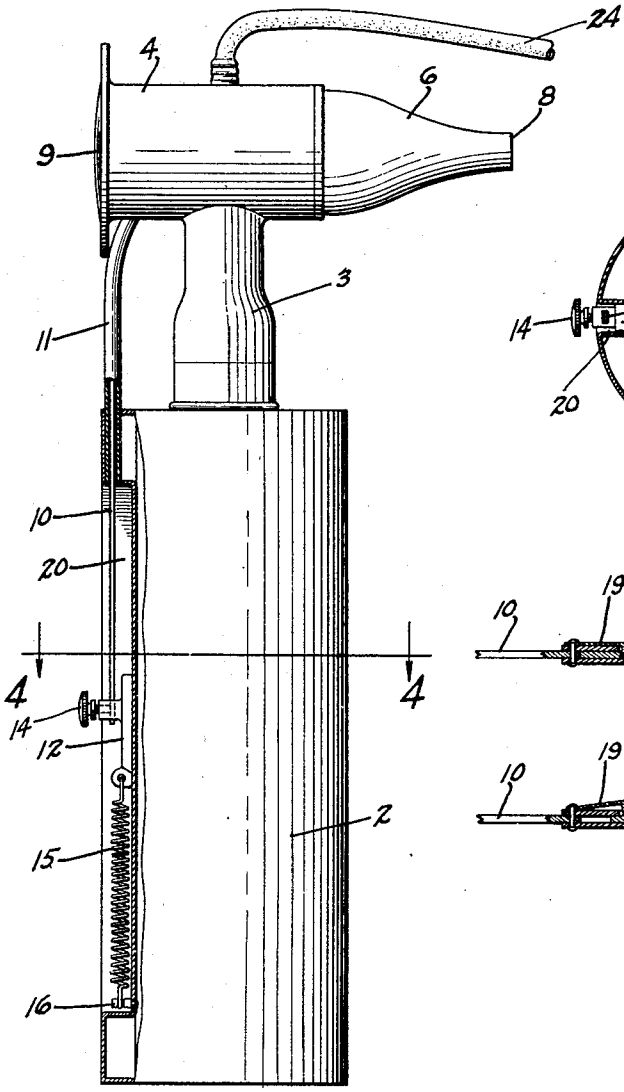


FIG. 3

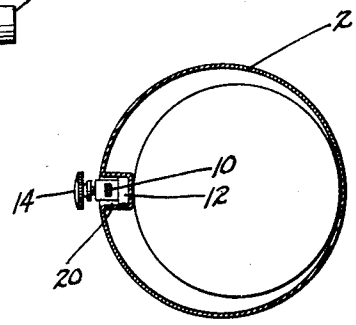


FIG. 4

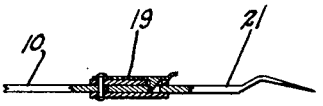


FIG. 5

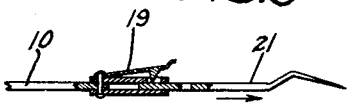


FIG. 6

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Patented Sept. 9, 1930 1,775,140

UNITED STATES PATENT OFFICE

ERLING S. PLATOU, OF MINNEAPOLIS, MINNESOTA

OTOSCOPE

Application filed May 12, 1928. Serial No. 277,132.

My invention relates to an improvement in otoscopes or instruments used in treating diseases or troubles of the ear, a cone shaped device being provided for insertion into the ear orifice and the instrument being equipped with a lens and an electric light by means of which the surgeon can use a suitable instrument inserted into the ear through the cone shaped member. In treating an abscessed ear, the surgeon inserts a suitable incising tool into the ear through the otoscope and makes an incision in the ear drum to obtain access to the abscess. This operation is quite frequently performed upon a child, and the surgeon should have one hand free to aid in holding the child still while making the incision in the drum. This is hardly possible when using instruments of this kind, as ordinarily made, as the surgeon must hold the barrel of the otoscope in one hand while the tool for making the incision in the ear drum is held in the other, the nurse or mother being relied upon to hold the child. This has proved to be an unsatisfactory manner of performing the operation, because of the difficulty in keeping the child perfectly still, and the primary object of my invention is to provide a device for use in connection with an otoscope, which will allow the surgeon to hold the instrument and operate the incising tool with the same hand, leaving the other hand free to assist in holding the child.

A further object is to provide a device which may be incorporated in an otoscope during its manufacture, or may be applied to an instrument of this kind to form an attachment therefor after the otoscope has been completed, or when it is in use.

Other objects of the invention will appear from the following detailed description.

The invention consists generally of various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification,

Figure 1 is a view partially in section of an otoscope showing my invention applied thereto, and also showing the incising tool in its retracted position;

Figure 2 is a similar view showing the position assumed by the tool when it is projected by the finger or thumb of the user;

Figure 3 is a view showing a modified manner of mounting the device on the barrel of the otoscope;

Figure 4 is a sectional view on the line 4—4 of Figure 3; and

Figures 5 and 6 are detail views showing a means for removably mounting the tool on its shank, thereby allowing the substitution of one form of tool for another.

In the drawing, 2 represents the barrel of a standard form of otoscope having a shank 3 surmounted by a hood or shell 4, within which a suitable electric light 5 is provided, connected with a source of electrical energy, not shown. A cone shaped member 6 has a sliding connection at 7 with the shell 4, and may be mounted thereon or removed as desired. This cone has an end portion 8 provided with an orifice through which the instrument for use in the ear may be inserted. A lens 9 is mounted in the rear of the shell 4 by means of which, aided by the light 5, the surgeon or user of the instrument may have a clear vision of the orifice in the ear and the surface of the ear drum. The structure above described is common to devices of this kind now on the market.

It will be understood in using an instrument of this sort, that when the cone shaped member is inserted into the ear and held at a point where the user has a clear line of vision through the cone, that the insertion of a tool for use in the ear through the cone necessitates the use of one hand, while the instrument is held in the other. Frequently in treating a child, difficulty is experienced in keeping the child's head still, and the mother is not always of much assistance, particularly if she sees the knife or incising tool, when the surgeon is inserting it into the ear. To facilitate the operation and aid the surgeon in making the incision at the desired point in the ear drum, I provide a shank 10 adapted to slide in a guide 11 that is mounted on the barrel of the otoscope, and projects upwardly and forwardly on a curved line into the shell 4. A slide 12 has a socket 13 to receive the

end of the shank 10, and the latter is secured therein by suitable means such as a thumb screw 14. An extension spring 15 is connected to the slide 12 at one end and to a pin 16 at the other end, the tension of this spring normally drawing the shank 10 down to the position indicated by full lines in Figure 1, thereby concealing the incising tool 17 within the instrument. The incising tool has a cutting edge 18 at one end and its opposite end is detachable and connected with the shank 10 by a suitable coupling device 19, which will allow the convenient removal of the tool whenever desired. A suitable guide 22 is preferably provided in the orifice of the cone 6 to support and guide the tool 17, when projected from the instrument, as shown in Figure 2.

Normally this tool will be retracted to an invisible position within the cone 6 and cannot be seen by the mother or nurse, when the otoscope is inserted into the ear of the child. The cutting edge of the knife will be near the orifice of the cone 6, and when the instrument has been properly positioned in the ear, the surgeon will raise the slide 12 by pressure of the thumb thereon, and, observing the movement of the knife through the lens 9, can easily and quickly make the desired incision in the ear drum. The cutting edge of the knife being close to the end of the cone, the time usually required for the insertion of the tool through the cone after the instrument has been adjusted, will be eliminated, and the operation of bringing the cutting edge of the tool into contact with the ear drum will be greatly facilitated; the surgeon holding the instrument in one hand and manipulating the slide with the thumb of the same hand, will have the other hand entirely free to aid the mother or nurse in holding the child.

Instead of having the shank outside the circumference of the barrel, I may form a longitudinal recess 20 in the wall of the barrel and mount the slide therein so that only the clamping screw 14 will be exposed where a pressure may be exerted thereon by the thumb of the user, the shank sliding in the guide 11 in the upper portion of the otoscope in substantially the same manner as shown and described with reference to Figure 1. This manner of mounting the slide and shank will generally be employed when the device is applied to the instrument in the course of its manufacture, the wall of the otoscope being fashioned particularly for this purpose. In Figures 5 and 6 I have shown another form of tool 21, having an end to fit the clamp 19 and capable of convenient removal therefrom, whenever desired, to substitute one tool for another.

In the drawings I have shown an otoscope of the type having a substantially closed chamber provided within the shell 4 and cone-shaped member 6, and having a rubber bulb 25 communicating with the chamber through a flexible tube 24 and a nipple 23, formed on the wall of the chamber. By means of the bulb 25, a partial vacuum may be created in the chamber within the shell 4 to draw the ear drum into closer contact with the end 8 of the cone-shaped member 6.

It will be understood from the foregoing description that my improvement may be incorporated in any suitable way within or upon the barrel of the otoscope during its course of manufacture, or it can be applied conveniently to an instrument of this kind that is already in use, and hence the device is capable of universal application to an instrument of this kind.

I claim as my invention:

1. An otoscope comprising a barrel including a member adapted for insertion into the ear and having an orifice through which the ear drum may be viewed, and a shank mounted to move back and forth in guides in said member and having a tool thereon adapted to be projected through the orifice in said member to pierce the ear drum.

2. An otoscope comprising a barrel forming a hand grip and a cone-shaped member surmounting said barrel and adapted for insertion into the ear, a shank slidable in said member and having a tool thereon for projection through and beyond said member, and means connected with said shank and adapted to be operated by the hand of the user grasping said barrel.

3. An otoscope comprising a barrel and a cone-shaped member surmounting said barrel and having an end for insertion into the ear, a flexible shank slidably mounted in guides on said barrel and having a tool for projection through and beyond said cone-shaped member, and means connected with said shank and adapted to be operated by the thumb of the user grasping said barrel, for the purpose specified.

4. An otoscope comprising a barrel having a member thereon provided with an end adapted for insertion into the ear and having an orifice through which the ear drum is visible, a shank mounted to slide in a guide, a spring for normally retracting said shank, an incising tool removably mounted on said shank and adapted to be projected through and beyond said orifice, and means for operating said shank against the tension of said spring to project the tool from said orifice.

5. An otoscope comprising a barrel forming a hand grip, a member secured to one end thereof and provided with a reduced portion adapted to be inserted into the ear, said reduced portion having an orifice therein through which the ear drum may be viewed, a tool mounted for sliding movement within said member and normally concealed therein, and means on said hand grip for actuating said tool, whereby the latter may be operated

to puncture the ear drum without removing the ear-engaging member from the ear.

6. An otoscope comprising a part to be held in the hand and having a member adapted to be inserted into the ear, and through which the ear drum may be viewed, a tool movably mounted within said member and normally concealed therein, and means mounted exteriorly of the member and adapted to be operated by the hand of the user grasping the otoscope, whereby said tool may be projected from said member, for the purpose specified.

In witness whereof, I have hereunto set my hand this 1st day of May, 1928.

ERLING S. PLATOU.