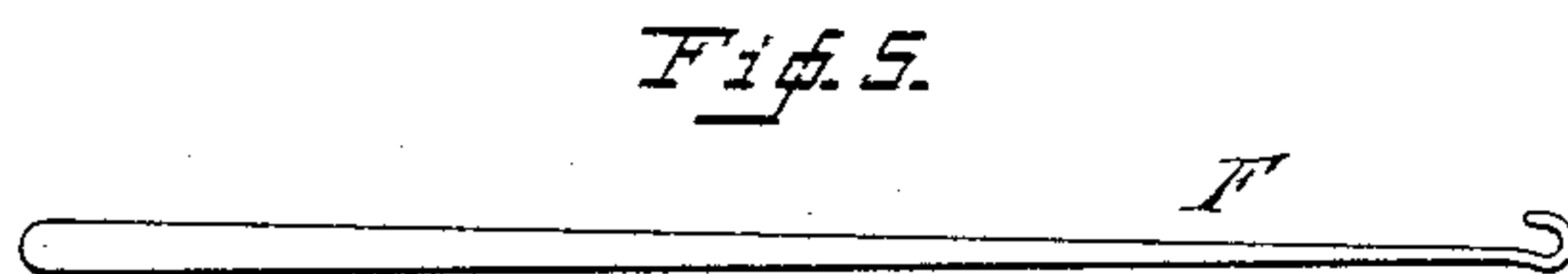
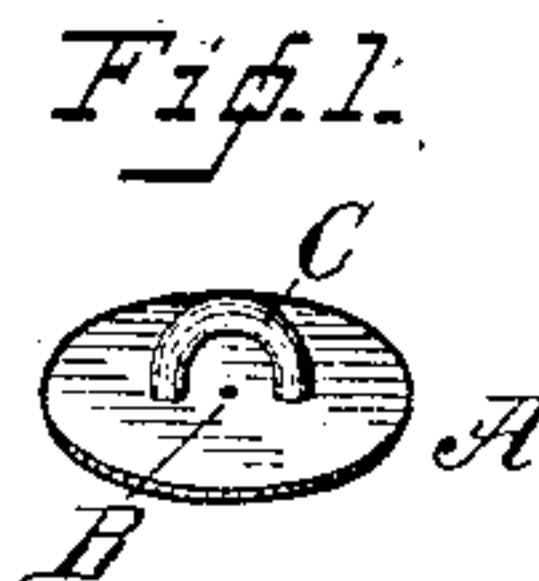
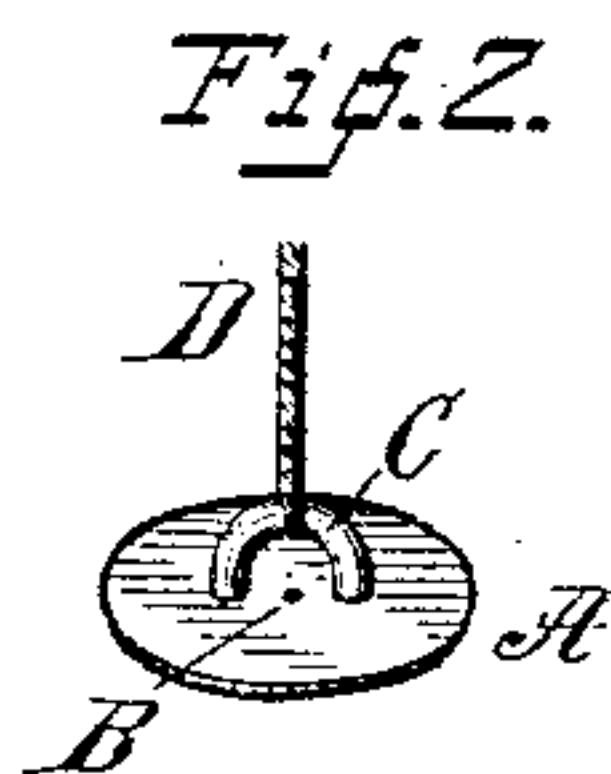
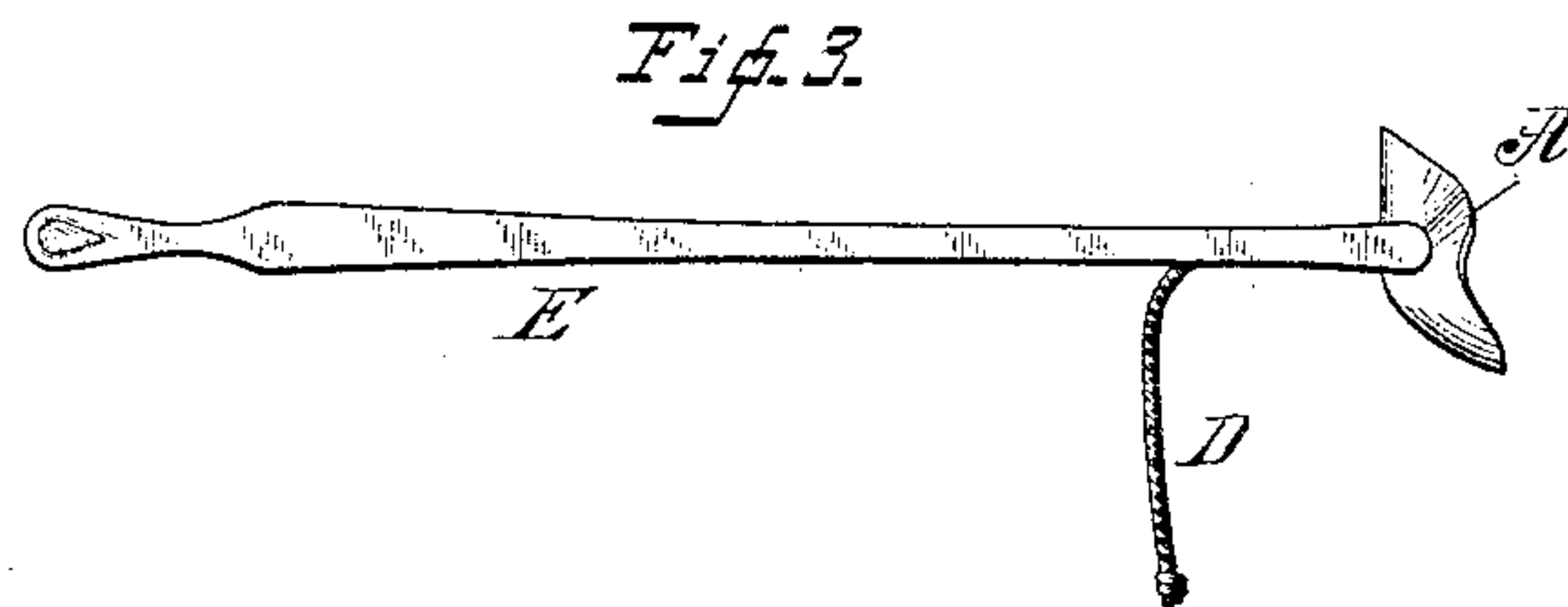


(No Model.)

H. A. WALES.
ARTIFICIAL EAR DRUM.

No. 335,660.

Patented Feb. 9, 1886.



Witnesses,

C. C. Perkins.
J. S. Wooster.

Inventor,

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att'y.

UNITED STATES PATENT OFFICE.

HARRY A. WALES, OF BRIDGEPORT, CONNECTICUT.

ARTIFICIAL EAR-DRUM.

SPECIFICATION forming part of Letters Patent No. 335,660, dated February 9, 1886.

Application filed May 11, 1885. Serial No. 165,036. (No model.)

To all whom it may concern:

Be it known that I, HARRY A. WALES, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Artificial Ear-Drums; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an artificial ear-drum which will relieve deafness to a greater extent than has ever heretofore been accomplished, which may be readily inserted or withdrawn without difficulty and without the slightest pain to the wearer, and which shall be wholly invisible upon the outside. It is of course well understood that the aural passage is extremely sensitive to the insertion of any foreign body, this being the case even when the tympanum or drum of the ear has been seriously injured or even destroyed.

It has been a serious objection to artificial ear-drums as heretofore constructed that they have been complicated and difficult to manage, and, owing to rigid metallic parts, have caused serious inconvenience and frequently great pain to their users. The essential requirements of artificial ear-drums are, that they shall be soft and flexible, easy to insert and withdraw, invisible, and that they shall have no metallic or rigid parts. In order to produce a device of this class which shall be thoroughly effective to receive the waves of sound and transmit them to the auditory nerves, and which shall be invisible, free from metal, and easy to manage—which shall, in short, avoid all the objections enumerated above—I have devised the simple and novel construction which I will now proceed to describe, referring by letters to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective of the simplest form of the device complete; Fig. 2, a similar view, but slightly modified, a withdrawing-cord being made part of the device. Figs. 3 and 4 are respectively side and plan views, showing the manner in which my improved

drum is seized by a pair of aural forceps for the purpose of insertion; and Fig. 5 illustrates a hook which may be used for withdrawing it when no cord is used.

A is the drum, which consists of a single thin flexible disk of rubber, preferably provided with one or more small openings, B, for the purpose of ventilation, and C is a loop made integral with or attached to the drum. In practice I make the loop of rubber and mold it integral with the drum.

D is a cord, which may or may not be attached to the loop.

To insert the artificial drum in place, the two opposite outer sides of the loop are grasped by a pair of ordinary aural forceps, E. Upon compressing the forceps the drum will assume substantially the position shown in Figs. 3 and 4. When grasped in this manner, it may be readily inserted in the ear, owing to its extreme pliability. In the act of insertion the edges may become turned backward. The other end of the forceps, or any suitable smooth instrument, may then be inserted and the edges pushed forward, the operation being perfectly painless. Ordinarily, however, after the drum has been inserted as far as may be desired and is released, it will be thrown to its proper position by loop C, which acts as a spring to expand the drum, so that it will fully fill the auditory passage, its edges being in contact with the walls of the passage entirely around it.

It will be seen that I wholly do away with the rigidity which is a feature of all artificial drums heretofore devised, and also with the danger to the natural parts which is inseparable from the use of central wires. Moreover, by doing away with the central wires the sensitiveness of the drums is greatly increased, as they do not have to carry any superfluous weight.

When the cord is used, the end may be pushed in just out of sight, but where it can be readily reached when it is desired to withdraw the drum. When it is preferred not to use a cord, the drum is used precisely as shown in Fig. 1, and may be readily withdrawn at any time by using a hook, F, (see Fig. 5,) which readily catches the loop.

I do not, of course, desire to limit myself to

the exact construction shown, as it is obvious that the details may be varied within reasonable limits without departing from the spirit of my invention.

5 I claim—

An artificial ear-drum consisting solely of a thin flexible disk of rubber provided with a device made integral therewith—for exam-

ple, a flexible loop—whereby it may be inserted or removed.

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

HARRY A. WALES.

Witnesses:

A. M. WOOSTER,
A. B. FAIRCHILD.

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