

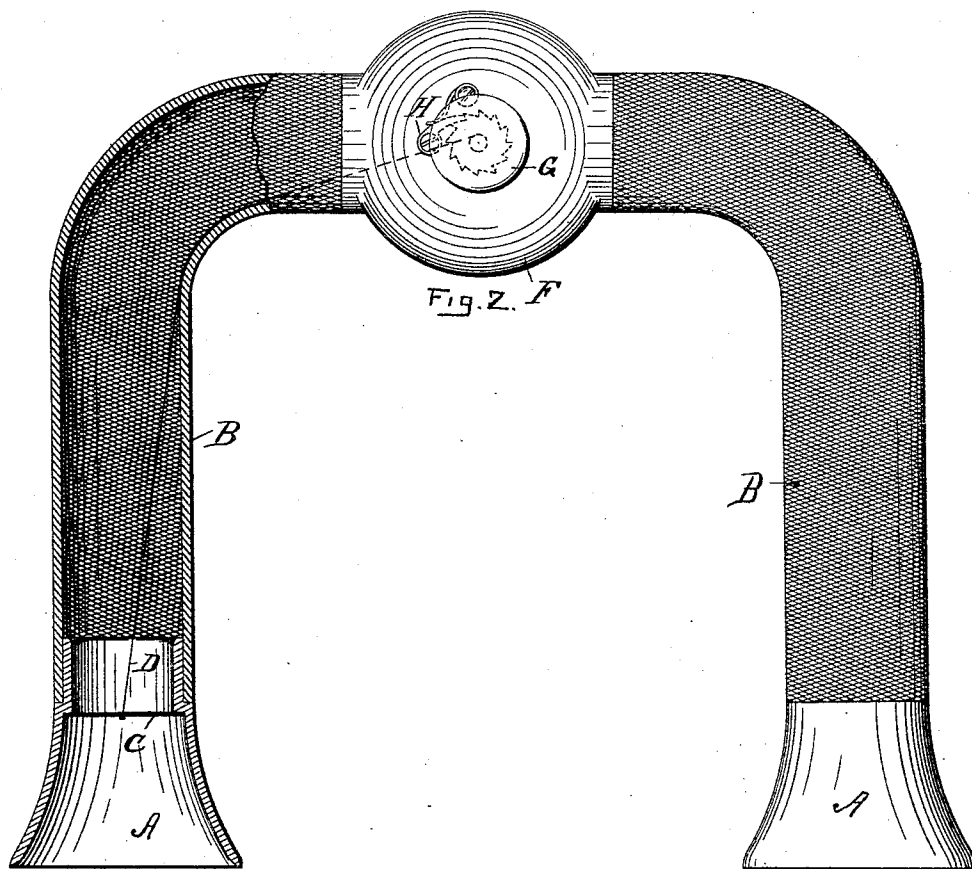
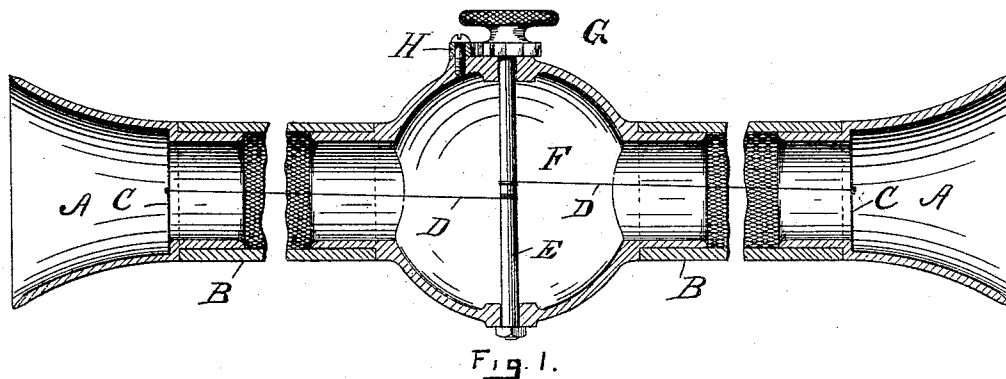
(No Model.)

2 Sheets—Sheet 1.

J. PRINCE.  
EAR TRUMPET.

No. 525,058.

Patented Aug. 28, 1894.



WITNESSES

*Dwight H. Day.*  
*Chas. Alexander.*

INVENTOR

*Jerome Prince*  
by *A. H. Hewes*  
ATTY

(No Model.)

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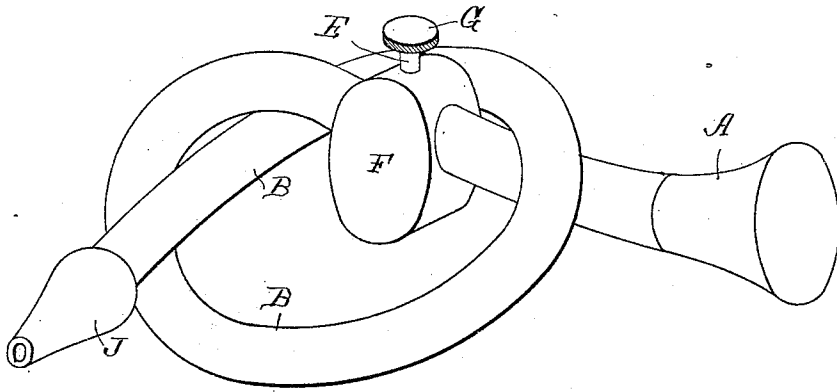


FIG. 3.

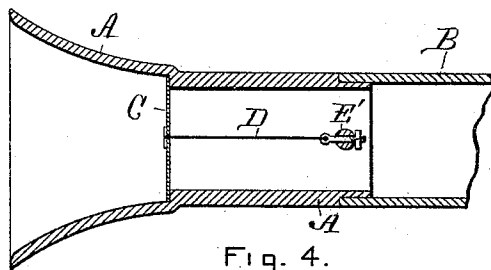


FIG. 4.

WITNESSES

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*Ch. Alexander*

INVENTOR

*Jerome Prince*  
*by S. H. Russell*

ATTY

# UNITED STATES PATENT OFFICE.

JEROME PRINCE, OF MILFORD, MASSACHUSETTS, ASSIGNOR OF THREE-FOURTHS TO FRANK C. MORGAN AND EDMUND J. DIXON, OF SAME PLACE.

## EAR-TRUMPET.

SPECIFICATION forming part of Letters Patent No. 525,058, dated August 28, 1894.

Application filed October 9, 1893. Serial No. 487,569. (No model.)

*To all whom it may concern:*

Be it known that I, JEROME PRINCE, of Milford, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Ear-Trumpets, of which the following, taken in connection with the accompanying drawings, is a specification.

The object of my invention is to provide an ear-trumpet for the use of very deaf persons, and hence to produce an article of increased efficiency for transmitting human speech and other sounds.

A further and most important object is to avoid the injury arising from blowing dust and other matters into the ear as in ordinary ear-trumpets. This end I accomplish by introducing a thin vibratory diaphragm provided with a tension wire in the mouth piece, or between it and the ear, so that the speaker's breath does not reach the hearer's ear and dust is excluded from the interior of the trumpet. The vibration of this diaphragm gives off sound waves which reach the ear through the tubular body. The tension wire is directly connected to the center of the diaphragm.

My improved trumpet has a tubular body with a mouth piece, an ear piece or receiver, and a diaphragm inclosed within said mouth-piece or the tubular body of the trumpet adjacent thereto, with a tension wire connected to said diaphragm. It also has an adjusting device to regulate the tension, preferably located in a central chamber, between the diaphragm and the ear-piece. There may be a mouth piece and diaphragm at each end of the device with a tension wire connecting them, and with means for varying the tension.

In the drawings, Figure 1 is a longitudinal section, showing one of my improved trumpets with a diaphragm at each end, parts of the body being broken away, leaving the rest on a scale of about full size. Fig. 2 is a side view of this form of the complete device partly in section, the flexible body being bent. Fig. 3 shows an ordinary trumpet provided at one end with my improvement—the mouth-

piece having a diaphragm, the tension wire and adjusting means. Fig. 4 is a section through a mouth-piece showing both ends of the wire terminating therein.

A is the mouth-piece or receiver at one or both ends of the tubular body B.

C is the diaphragm within the mouth-piece, and D the tension wire running thence to a spindle or transverse shaft E, extending through the chamber or enlargement F. The inner ends of these wires are shown in Figs. 1 and 2 as secured to and wound around said spindle or shaft which is provided with a terminal knob G, by which it may be rotated, and with a ratchet and pawl H, by which the desired degree of tension on the wires and diaphragms may be obtained. Mere friction will ordinarily suffice to maintain the tension. The adjusting device may be modified or dispensed with.

Without being limp the tubular body is flexible so that it may be doubled and put into the pocket for convenience in carrying. When so bent the tension is relaxed, since the wire need not retain a central position at the bend but may and will take the shortest course from its diaphragm to the spindle E, the intermediate portion of the wire there lying almost or quite in contact with the inner wall of the body A, see Fig. 2. Thus the wire and diaphragm may be at rest at all times except when the trumpet is in actual use. By the word "wire" as herein used I mean to include cord, catgut or other straining means for putting the diaphragm under tension.

The trumpet shown in Fig. 3 has at one end the ordinary ear-piece J, my improvement being applied at the other end only.

The mouth-piece A has within its cavity the dust excluding vibrating diaphragm, from which the tension wire, not shown, runs inwardly to the spindle E in the chamber F where it terminates.

In the form shown in Fig. 4 there is no chamber or enlargement of the tubular body and no external adjusting device, but the short tension wire terminates in a cross piece E' in the rigid neck of the trumpet just back of the diaphragm, the proper tension being

given before the mouth-piece is secured in the end of the flexible body B.

I claim as my invention—

1. An ear trumpet having a tubular body, a mouth-piece and an ear piece, and an interposed vibratory diaphragm provided with a tension wire adapted to strain the diaphragm to the desired tension, substantially as set forth.
2. An ear trumpet having a flexible tubular body, a mouth piece with a transverse diaphragm therein, and a tension wire connected to the center of said diaphragm, substantially as set forth.
3. An ear trumpet having a tubular body, a mouth-piece furnished at its inner end with a transverse diaphragm, a tension wire leading from said diaphragm toward the ear piece

and a suitable device for adjusting the tension of the wire and diaphragm, substantially as set forth.

4. An ear trumpet having a flexible tubular body, a mouth-piece and a transverse vibrating diaphragm near the inner end thereof, in combination with a chamber or enlargement in said body, a tension-adjusting device therein, and a tension wire from said device to the diaphragm, substantially as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 4th day of October, A. D. 1893.

JEROME PRINCE.

Witnesses:

A. H. SPENCER,  
THOMAS J. KENNY.