

2 Sheets—Sheet 1.

DEVICE TO ASSIST HEARING.

Patented Jan. 27, 1885.



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By Knight Bros.  
Atty.

*Attest:*  
Charles Pickles  
Geo. L. Wheelock.

(No Model.)

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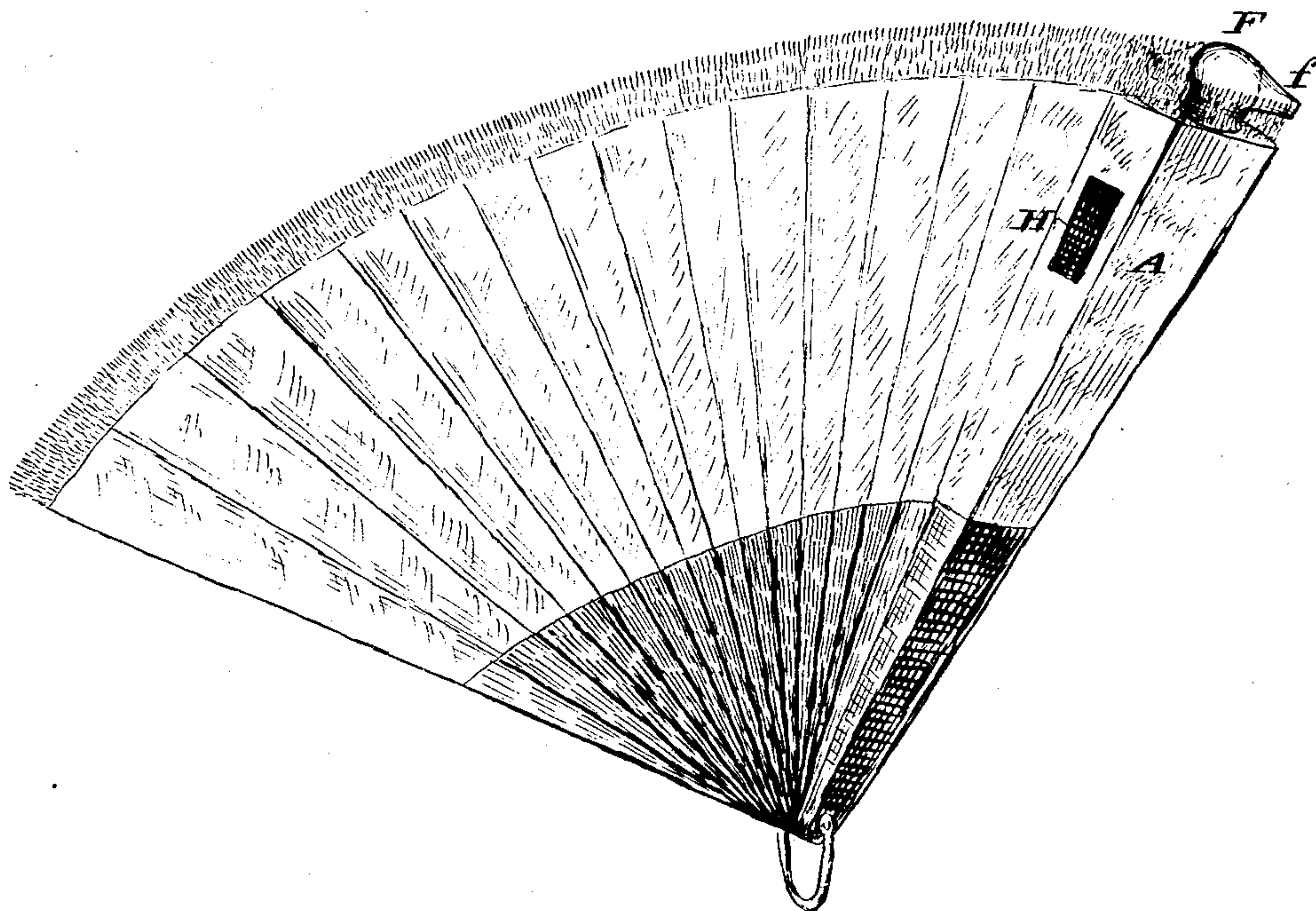
L. EHRLICH.

DEVICE TO ASSIST HEARING.

No. 311,180.

Patented Jan. 27, 1885.

*Fig. 11.*



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# UNITED STATES PATENT OFFICE.

LEO EHRLICH, OF ST. LOUIS, MISSOURI.

## DEVICE TO ASSIST HEARING.

SPECIFICATION forming part of Letters Patent No. 311,180, dated January 27, 1885.

Application filed January 23, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, LEO EHRLICH, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Devices to Assist Hearing, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 is a side view of a walking-cane with my improvement applied thereto. Fig. 2 is an enlarged side view of the improvement. Fig. 3 is an axial section of the improvement applied to a walking-cane. Fig. 4 is a transverse section at 4 4, Fig. 6. Fig. 5 is a transverse section at 5 5, Fig. 7. Fig. 6 is a detail side view with the shield-plate open, and Fig. 7 is a similar view with the shield closed. Fig. 8 is a detail side view of the tube. Fig. 9 is a section of part of tube and shield at 9 9, Fig. 4. Fig. 10 shows the improvement applied to an umbrella. Fig. 11 is a view of a fan with my improvement applied thereto.

A is a staff or rod, as a walking-cane, the stick of an umbrella or fan, or other article to which my improvement may be applied. The staff or rod is made with a socket, B, for the insertion of the tube C, with the battery-case D at the end of the tube. The socket is made with an interior screw-thread at its upper end, into which screws a thread, E, of the tube. The tube has a head, F, with a nozzle, *f*, upon one side, intended for application to the ear of the person using the instrument, the nozzle being made tubular to allow the sound-vibrations within the tube to be communicated to the air of the vestibule of the ear. The tube has side opening, G, that may, by the turning of the tube, be brought into coincidence with a similar opening, H, of the staff A, as shown in Figs. 5 and 7; or the tube may be turned in its socket so that the openings G and H do not coincide, as shown in Figs. 4 and 6. In the former case the vibration of the air from the voice or other sound extends through the opening G and up through the tube and through the nozzle.

To disguise the opening H when the parts

are in the position shown in Figs. 4 and 6, I use a shield-plate, I, to the tube C, so as to turn therewith.

As a means of fastening the shield to the tube, I show studs *i* on the shield, whose ends enter the round part of the eyelet-holes *e*, and which are notched a little distance back from the end, so as to leave a flat neck, *i'*, that occupies the slot *e'* of the eyelets when the plate I is allowed to descend after the insertion of the pins in the eyelets.

*i*<sup>2</sup> is a spring bearing against the tube, to keep the parts from rattling or shaking loose.

J is a spiral wire that extends upward through the center of the tube and through the nozzle, being out of contact with the tube or nozzle except at the outer end of the latter, where its upper end is made fast. The lower end of the wire is made fast to an insulating-block of rubber forming the top K of a voltaic battery, fitting tight in the upper end of the metal case D.

L is a cork or plug of any suitable material, closing the lower end of the case D. This case may be of copper, (or other metal.)

M is a cylinder of zinc or other metal, or other suitable material, forming one element of the battery, the said cylinder M being connected with the spiral wire J by a metal connection, N, passing through the insulating-cap K.

I prefer to pack the space of the battery with felt, O, or some porous material that will sustain an acid liquid, with which the battery is charged, on the removal of the cork L.

It will be seen that an electric current will pass through the metal of the tube C and the wire as long as the battery is in working condition, and I have found that this very much assists the hearing, and seems to be of permanent benefit to a person using the instrument by lessening his deafness. I also found the spiral wire to increase the efficiency of the instrument before I added the voltaic battery.

I prefer to make the staff or rod A of some non-conductor, such as wood or gutta-percha.

The staff or stick of the umbrella is in all respects the equivalent of that shown in Figs. 1 to 9, inclusive.

In Fig. 11 one of the ribs of the fan is formed to receive the instrument.

In substantially the same manner the instrument may be applied to other articles or the semblance of other articles not unusually carried in the hand; or the instrument may be used without any cover or with any cover making it less apparent.

The inside of the tube, head, and nozzle may be coated with shellac or other insulating substance, so as to prevent the passage of electricity from the spiral wire to the tube, or vice versa, in case they might be brought in contact. It will be understood that the spiral wire is normally out of contact with the tube, so that it is free to vibrate under the influence of the sound-vibrations in the tube.

The nozzle extending from the head is not an essential feature of the invention, as a simple aperture, *f*, in one side of the head would be an equivalent construction, although perhaps not quite so effective in very bad cases of deafness.

I claim as my invention—

1. The combination of a tube, C, with nozzle or aperture *f* and aperture G at its lower part, and a spiral wire, J, extending centrally in the tube, out of contact with the sides thereof.

2. The combination of staff or rod A, tube C, nozzle or aperture *f*, spiral wire J, and electric battery, when the staff and tube have openings G H and are made to turn on one another, for the purpose set forth.

3. The combination of staff A, having opening H, tube C, with opening G and nozzle or aperture *f*, shield I, attached to the tube C, and spiral wire extending centrally in the tube, substantially as and for the purpose set forth.

4. The combination of a tube or hollow case, with an induction opening or openings for sound-vibrations, and an eduction nozzle or opening, *f*, a conducting-wire, and an electric battery, for the purpose set forth.

LEO EHRLICH

Witnesses:

SAML. KNIGHT,  
GEO. H. KNIGHT.