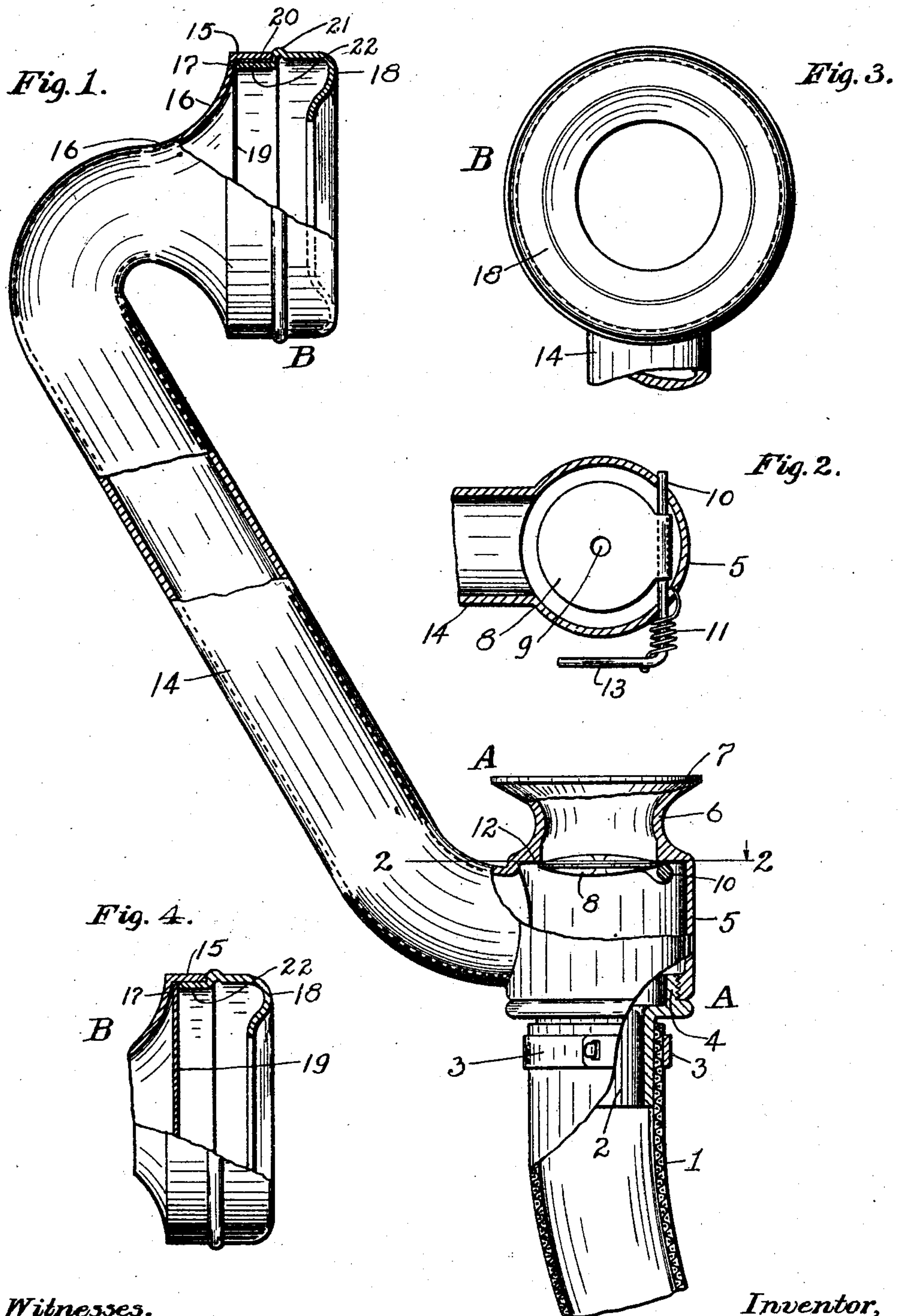


W. F. SIMPSON.
SPEAKING TUBE.

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928,554.

Patented July 20, 1909.



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UNITED STATES PATENT OFFICE.

WILLIAM F. SIMPSON, OF KNOXVILLE, TENNESSEE.

SPEAKING-TUBE.

No. 928,554.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed November 27, 1908. Serial No. 464,703.

To all whom it may concern:

Be it known that I, WILLIAM F. SIMPSON, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented a new and useful Improvement in Speaking-Tubes, of which the following is a specification, reference being had to the accompanying drawing.

My improvement relates to that class of speaking tubes in which a whistle is applied to the mouth-piece, the whistle being sounded by air blown through it by a person at the opposite end of the tube.

The object of the invention is to produce a practical and efficient speaking tube having at each end a mouth-piece and an ear-piece adapting the instrument to be used without shifting from ear to mouth and from mouth to ear.

In the accompanying drawings, Figure 1 is a sectional side view of one end of a speaking tube embodying my improvement; Fig. 2 is a section on the line 2—2 of Fig. 1, looking in the direction of the arrow; Fig. 3 is an elevation of the portion of the ear-piece directed toward the right in Fig. 1; Fig. 4 illustrates a modification of the ear-piece. The opposite end of the mechanism being identical with that shown in Fig. 1, I deem it unnecessary to duplicate this drawing.

The main portion, 1, of the tube may consist of any desired material. The portion shown by Fig. 1 of the drawings is flexible, in order that the mouth-piece, A, and the ear-piece, B, may be readily brought to the mouth and ear of the operator. The mouth-piece and the ear-piece are rigid and rigidly joined to each other. The mouth-piece, A, is, in the main, constructed in the well known manner. A tubular neck portion, 2, extends into the tube, 1, and a clamping band, 3, surrounds the tube, 1, and binds it to said neck. Above the neck, 2, is a larger neck, 4, which is exteriorly threaded to receive the lower end of the interiorly threaded body, 5. At the upper end of the body, 5, is a neck, 6, terminating in a flaring or bell-shape lip, 7. Within the upper portion of the body is a hollow circular whistle, 8, provided with a central aperture, 9, and mounted upon a rock-shaft, 10, which is so engaged by a coiled spring, 11, as to normally hold the whistle upon the seat, 12, extending around the lower portion of the neck, 6. The rock-shaft, 10, has a crank arm, 13, by means of

which it may be turned so as to turn the whistle away from its seat and against the side of the body, 5, whereby a clear passage is left from the tube, 1, through the body, 5, and the neck, 6.

A branch pipe, 14, extends obliquely away from the main portion of the tube, 1, and from the body, 5, leaving the latter between the neck, 4, and the whistle, 8. The outer end of the branch, 14, turns toward the axis of the mouth-piece, A, and bears the ear-piece, B. Said end of said branch is expanded to form a short tubular portion, 15, the adjacent portion, 16, of said branch being conoidal and forming a seat, 17, at the base of said tubular portion, 15. A short, tubular, open-ended piece, 18, telescopes into the tube, 15, space being left between said piece and said tubular portion to receive the laterally-turned edge, 20, of a vibratory diaphragm sheet, 19, extending across the inner end of the piece, 18. The piece, 18, is shown provided with an annular shoulder, 21, extending outward across the outer end of the tubular piece, 15. Said piece is also shown as having at its outer end an intumed flange, 22.

The diaphragm or partition, 19, may be made of tough paper or thin dense leather or skin, or any other suitable material adapted to vibrate for the transmission of sound waves through the branch, 14, to the ear of the operator when applied to the outer end of the tubular piece, 18.

In operation, when air is blown from the opposite end of the tube, 1, said air is forced through the whistle, 8, notwithstanding the presence of the branch pipe, 14; for the latter is completely closed by the vibratory partition or diaphragm, 19. Hence the presence of said branch pipe and the ear-piece, B, in no manner interferes with the operation of the whistle for the purpose of signaling, the branch being, as will be seen by the drawing, adapted to be held by the hand. And yet the ear-piece is efficient; for the sound waves coming from the opposite end of the tube, 1, pass through the branch, 14, to the vibratory diaphragm or partition, 19, and are transmitted by the latter to the air between said diaphragm and the ear held to the outer opening in the piece, 18, and by said air to said ear. And this action is made the more effective by placing and keeping the mouth of the operator over or close to the lip, 7, whereby the mouth-piece is partially or en-

tirely closed. Thus it will be seen that the apparatus is adapted for speaking and receiving speech without changing the position of the apparatus.

5 In the modification of the ear-piece shown in Fig. 4, the vibratory diaphragm or partition, 19, is not provided with the turned edge, 20, and the inner portion of the tubular piece, 18, fits closely against the tubular portion, 15, and the inner edge of the tubular
10 piece, 18, bears the edge of the diaphragm against the seat, 17.

I claim as my invention:

15 In a speaking tube apparatus, the combination with a tube, of a rigid mouth and ear-piece structure comprising a neck and a

mouth-piece body, a tubular sectional handle, the sections of the handle telescoping over each other, a vibratory diaphragm having its edge secured between said sections and
20 serving as a wall to prevent the passage of air blown through the tube, and a whistle located between said mouth-piece body and said neck, substantially as described.

In testimony whereof I have signed my
25 name, in presence of two witnesses, this 20th day of November, in the year one thousand nine hundred and eight.

WILLIAM F. SIMPSON.

Witnesses:

CYRUS KEHR,

JNO. M. THORNBURGH.