F. C. ASCHBURNER.

STETHOSCOPE.

APPLICATION FILED MAY 28, 1919.

1,350,767. Patented Aug. 24, 1920.

Fig. 1

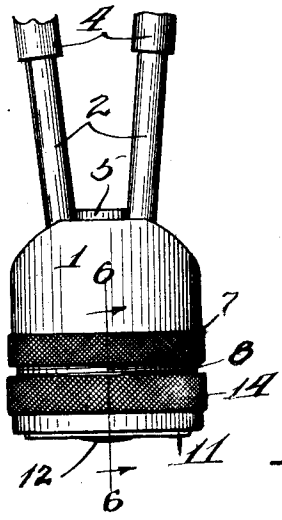


Fig. 2

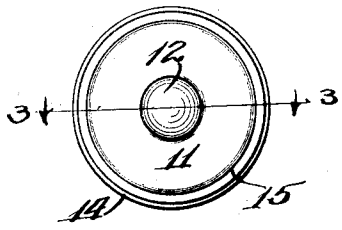


Fig. 3

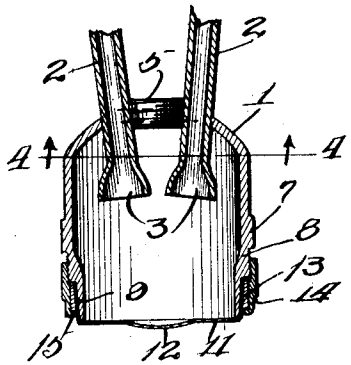


Fig. 4

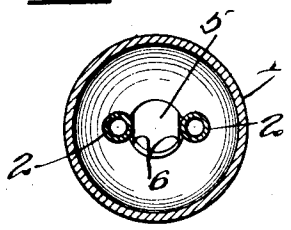


Fig. 6

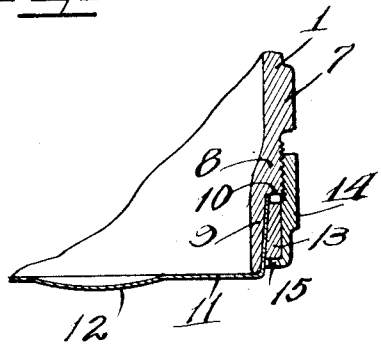
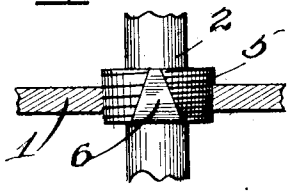


Fig. 5



Witnesses

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Atty.

UNITED STATES PATENT OFFICE.

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STETHOSCOPE.

1,350,767. Specification of Letters Patent. Patented Aug. 24, 1920.

Application filed May 28, 1919. Serial No. 300,461.

To all whom it may concern:

Be it known that I, FREDRICK C. ASCHBURNER, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Stethoscopes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

This invention relates to an improved type of stethoscope adapted for mediate auscultation and having the diaphragm provided with a convexed or projecting central portion to facilitate application of the stethoscope to a person to be examined.

It is an object of this invention to provide a stethoscope with a projecting diaphragm.

It is also an object of the invention to construct a stethoscope with a diaphragm which projects beyond the removable diaphragm retaining rings.

A further object of the invention is the construction of a stethoscope wherein the sound conveying tubes are adjustable with respect to the diaphragm.

It is furthermore an object of the invention to provide a stethoscope with adjustable sound conveying tubes adapted to be held locked in an adjusted position.

It is an important object of this invention to provide a binaural stethoscope with a centrally convexed projecting diaphragm adapted to be readily applied to a person to permit the sounds of the workings of different organs of a human body to be transmitted to both ears of an observer through a pair of adjustable tubes.

Other and further important objects of this invention will be apparent from the disclosures in the specification and drawings.

The invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is an elevation of a stethoscope embodying the principles of this invention.

Fig. 2 is an end view thereof.

Fig. 3 is a central section taken on line 3—3, of Fig. 2.

Fig. 4 is a section taken on line 4—4, of Fig. 3.

Fig. 5 is a side elevation of the set screw shown associated with fragmentary parts of the stethoscope casing and one of the tube stems.

Fig. 6 is an enlarged fragmentary detail section taken on line 6—6, of Fig. 1.

As shown on the drawings:

The binaural stethoscope comprises a casing 1, open at one end and closed at the other end and made of metal or any other suitable material. The closed end of the casing is provided with a central threaded passage, and two stem openings disposed on opposite sides of said passage and communicating therewith. Adjustably projecting through the casing openings are two metal stems or pipes 2, the inner ends of which are enlarged to form mouth pieces or bells 3. Secured on the outer projecting end of each stem 2, is one end of a rubber sound conveying tube 4, having an ear piece (not shown) attached on the other end thereof. The stems 2, are held in a predetermined adjusted position by means of a set screw 5, removably threaded in the casing passage between the stems 2, and having portions cut away from two opposite sides thereof to afford the tapered plain surfaces 6, as shown in Fig. 5.

Integrally formed peripherally on the casing 1, is a knurled ring 7. The casing below the knurled ring 7, is of reduced diameter and threaded as indicated by the reference numeral 8. Below or to the outside of the threaded casing portion 8, is a plain slightly tapered rim 9, which is integral with the threaded casing portion 8, and of less diameter to afford a shoulder 10. The open end of the casing is closed by means of a diaphragm 11, which is made of celluloid or other suitable material, stretched across the rim 9, and engaged around the outer surface thereof. The central portion of the diaphragm, is bulged outwardly or convexed to form a contact dome 12. The diaphragm is removably retained in position by a plain ring 13, which engages around the upturned marginal portion of the diaphragm and holds the same pressed against the casing rim 9. A knurled internally threaded retaining ring 14, is provided with an inwardly directed flange 15, to engage the plain ring 13, and force the same toward the casing shoulder 10, as the knurled retaining ring 14, is threaded onto the threaded portion 8, of the casing 1.

As clearly shown in Figs. 1 and 6, the diaphragm is permitted to project beyond the flange 15, of the knurled retaining ring 14. This construction together with the diaphragm contact dome 12, permits the stethoscope to be readily applied over a selected part of the body of a person to be tested by mediate auscultation. The sounds, from the part of a person being examined, are transmitted by means of the diaphragm to the enlarged mouth pieces 3, of the stems 2, through the tubes 4 to the ear pieces of the device. Should the hearing in one ear of the examiner be defective, the inner enlarged end of one of the stems 2, may readily be adjusted. This is accomplished by turning the set screw 5, until the flat surfaces 6, thereof are positioned adjacent the stems 2, whereby the respective stem is permitted to be moved inwardly toward the diaphragm 11. After adjustment of the stems 2, the set screw 5, is again turned to lock the stems in their adjusted positions. The sound conducting stems are mounted with the inner ends converging and directed toward the center of the diaphragm. The stethoscope parts are all adapted to be conveniently assembled or removed for cleaning or replacement.

I am aware that numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted otherwise than necessitated by the prior art.

I claim as my invention:

1. The combination with a stethoscope, of tubes projecting thereinto, and a set screw for retaining said tubes in adjusted position, said set screw in certain positions thereof adapted to permit said tubes to be slidably adjusted.

2. The combination with a casing, of tubes projecting thereinto, a set screw engaged in said casing for holding the tubes in adjusted position, said set screw having flat surfaces adapted to be positioned adjacent the tubes to permit the tubes to be slidably moved with respect to the casing.

3. A stethoscope embracing a casing open at one end, a diaphragm closing the open end of the casing, said casing at its closed end provided with a central threaded passage and two openings on opposite sides thereof and communicating therewith, adjustable sound conveying tubes projecting into said casing through said openings, and a set screw removably threaded into said passage and engaging said tubes to hold the same locked in their adjusted positions.

4. A stethoscope comprising a casing, two ear tubes which project adjustable distances into the casing, and means for holding the tubes in the desired positions relative to the casing.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

FREDRICK C. ASCHBURNER.

Witnesses:
FRED E. PAESLER,
CHARLES W. HILLS, Jr.