(No Model.)

L. D. RADZINSKY.

STETHOSCOPE.

No. 350,393. Patented Oct. 5, 1886.

Fig. 1

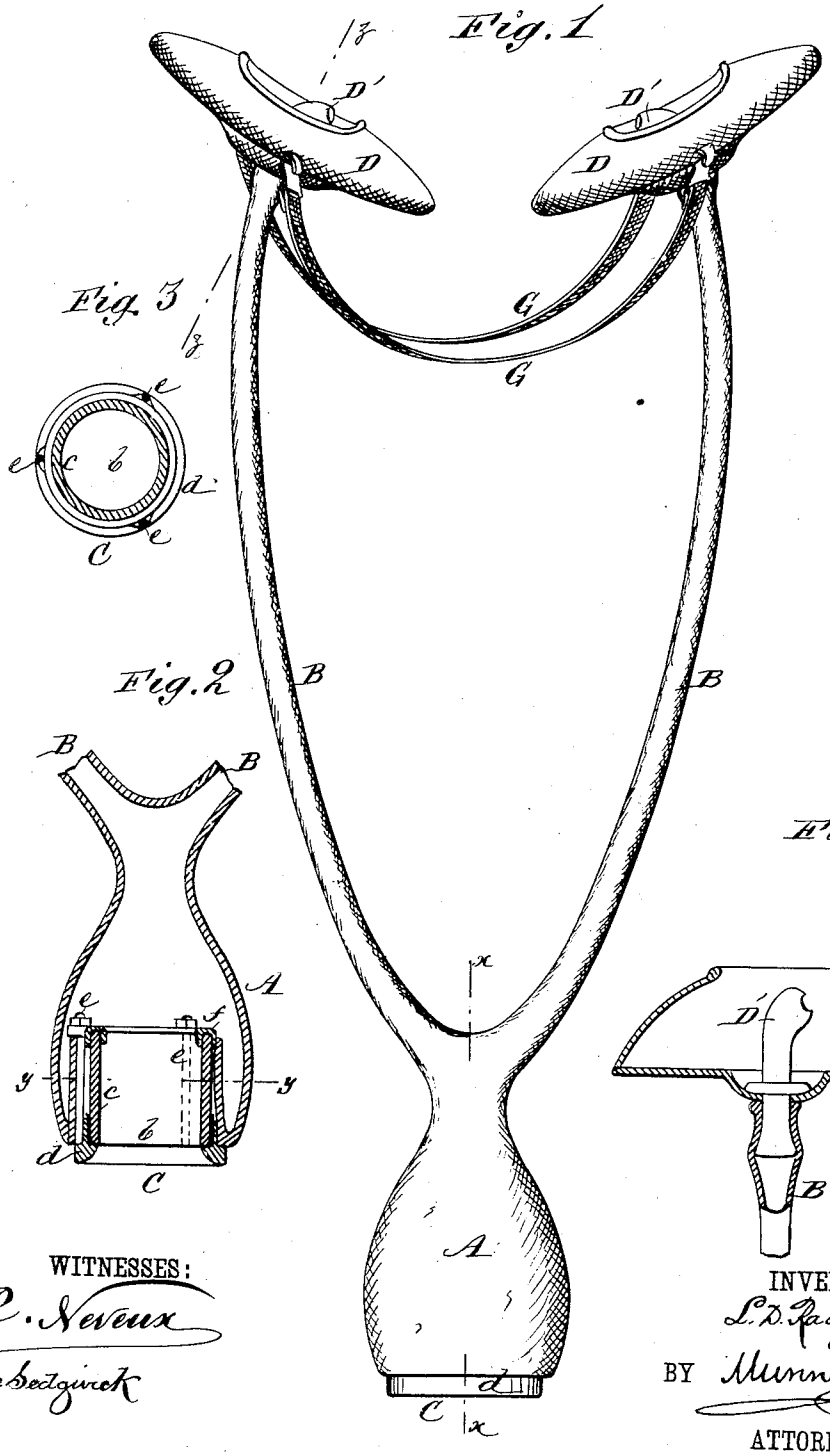


Fig. 3

Fig. 2

Fig. 4

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STETHOSCOPE.

SPECIFICATION forming part of Letters Patent No. 350,393, dated October 5, 1886.

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To all whom it may concern:

Be it known that I, LOUIS DANIEL RADZINSKY, of McKeesport, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Diagnostic Instruments for Medical and Surgical Purposes, of which the following is a full, clear, and exact description.

This invention has for its object the production of a diagnostic instrument for the more perfect auscultation of the thoracic organs, lungs, heart, and large vessels of the same.

It consists, in part, of a stethoscope having its cup made of soft rubber of any desired pattern, such rubber being a poor conductor or practically a non-conductor of external sounds, thereby intensifying the sounds produced in the instrument or within its cup; and the invention more especially consists in a combination, with a stethoscope, of a peculirly constructed tambourine or drum, substantially as hereinafter described and claimed, the whole forming what I term a "stethoscope-tambourine;" and the invention further consists in a special construction of the tambourine or drum, whereby the sounds, normal or abnormal, conveyed from different regions of the chest or other parts of the body of a person under examination are amplified and intensified, so that the slightest murmurs, rales, bruits, or valvular sounds are plainly and distinctly heard and appreciated. The cup of the instrument being made of soft rubber does not permit of extraneous sounds interfering with the sounds looked for and obtained, as do ordinary stethoscopes made of wood, metal, or hard rubber, which materials are all conductors of sound and readily transmit all noises in the room where the examination is being made, and even noises from the street. The ear muff or muffs of the instruments are also made of soft rubber for the same purpose, with an ear-canicula of hard rubber or other suitable material.

The invention is applicable to both single and double or compound instruments; but it will here be shown applied to a stethoscope with two tubes and two ear-muffs, and, when thus constructed, it is specially made with but few joints, and provided with means for holding it steady to the ears without imparting to it a stiffness that will interfere with its general flexibility, as hereinafter described.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 represents a longitudinal view of a double or compound diagnostic instrument embodying my invention; Fig. 2, a longitudinal section of the cup portion of the instrument with its tambourine attachment; Fig. 3, a transverse section of the tambourine upon the line *y y*, in Fig. 2; and Fig. 4, a sectional view upon the line *z z* in Fig. 1.

A is the cup of the stethoscope, which may be of any desired shape or pattern, but which and also, preferably, its stem or tubes B, are made of soft rubber and in one piece up to the ear-muffs, to exclude extraneous sounds and to reduce the number of joints. Applied to the mouth of said cup A is a tambourine or drum, C, which consists, mainly, of a thin flexible dam or diaphragm, *b*, made of vulcanized caoutchouc that forms a very efficient membrane to convey to the interior of the cup, and from thence to the ear, the sounds, normal or abnormal, but amplified or intensified, of the parts of the body under examination. This membrane *b* is secured to its place at the proper stretch by turning it in at its edges and clamping the same in between an inner cylinder or deep ring, *c*, and an outer flanged lunette or ring, *d*, said parts being made adjustable to regulate the tension by screw or screw-bolts *e*, fastened to the ring *d*, and provided with nuts on the back of an inner ring, *f*, which receives within it or bears down upon the back end of the cylinder *c*, or the tension of the diaphragm *b* may be otherwise provided for. The whole tambourine or drum C is made readily insertible within the soft-rubber cup A. By thus combining a tambourine or drum with a stethoscope or cup of soft rubber very many times much stronger sounds passing through the instrument from the patient under examination are produced than is practicable with stethoscopes of ordinary construction, and this without changing their peculiar character.

The bifurcated stem or tubes B of the in-

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strument may have any suitable ear-pieces attached to their outer ends; but it will be found advantageous to use ear-muffs D made of soft rubber and fitted internally with hard-rubber tubes or canicula D′, which connect with the tubes B and enter the ear while the muffs cover or inclose it. This construction of the ear-pieces of soft and hard rubber will prevent external sounds from interfering, and allows of greater liberty of motion and application, and provides for holding the instrument steady to the ear. The whole instrument, too, is of such a flexible character as to make it readily portable and available to use without difficulty under coverings and dresses. To this end provision is made for holding it steady to the ears without the aid of metallic springs that produce stiffness, simple elastic bands or cords G connecting the ear-end portions of the tubes B, and serving to give the proper tension or hold to the instrument on the head of the practitioner or person making the examination.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A stethoscope having its cup made of soft rubber, essentially as and for the purposes herein set forth.

2. A stethoscope having its cup and stem or tube connected with said cup made of soft rubber and in a single piece, substantially as described.

3. In instruments for diagnostic purposes, the combination, with a stethoscope having its cup or cup and stem made of soft rubber, of a tambourine or drum applied to said cup, essentially as specified.

4. In an instrument for diagnostic purposes, the combination, with a stethoscope-cup made of soft rubber, of a tambourine or drum inserted in said cup, and having a dam or diaphragm of vulcanized caoutchouc, substantially as described.

5. The tambourine or drum C, composed of the membrane *b*, rings clamping said membrane to its place, and adjusting bolts or screws for regulating the tension of the membrane, in combination, with the cup A of a stethoscope adapted to receive said tambourine or drum within it, essentially as specified.

6. In an instrument for diagnostic purposes, the combination, with a stethoscope-cup and its tube or stem, of ear-pieces composed of one or more soft-rubber ear-muffs and one or more hard-rubber caniculas or ear-tubes, substantially as described.

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