No. 654,906. Patented July 31, 1900.

D. B. MARSH.

APPARATUS FOR EXAMINING CONDITION OF THE LUNGS AND HEART.

(Application filed Nov. 11, 1897. Renewed Nov. 24, 1899.)

(No Model.)

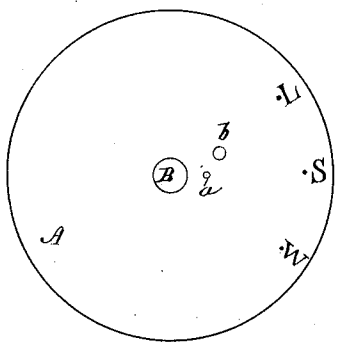


Fig. 1

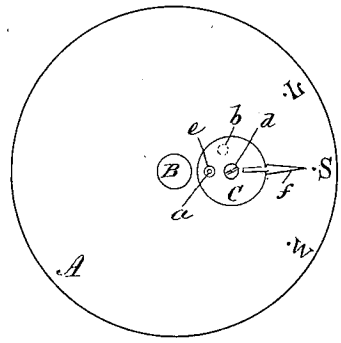


Fig. 3.

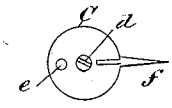


Fig. 2.

Fig. 4

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UNITED STATES PATENT OFFICE.

DANIEL BRAND MARSH, OF BLACKHEATH, CANADA.

APPARATUS FOR EXAMINING CONDITION OF THE LUNGS AND HEART.

SPECIFICATION forming part of Letters Patent No. 654,906, dated July 31, 1900.

Application filed November 11, 1897. Renewed November 24, 1899. Serial No. 738,229. (No model.)

To all whom it may concern:

Be it known that I, DANIEL BRAND MARSH, a citizen of the Dominion of Canada, residing at Blackheath, in the county of Wentworth, in the Province of Ontario, Canada, have invented a certain new and useful Improvement in Apparatus for Examining the Condition of the Heart, Lungs, &c.; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same.

The invention relates to a further improvement on the apparatus for examining the condition of the heart, lungs, &c., for which Letters Patent of the United States were granted to me on the 19th day of October, 1897, under No. 592,154.

The present improvement consists in ventilating the cavity between the disk and the diaphragm by openings in the disk and pivoting over the openings a circular movable index-plate having an opening or openings in its face to register alternately with the opening or openings in the disk and an index-finger attached to the plate to point to letters cut on the margin of the large disk. The letters are "L," "S," and "W," which represent the degrees of sound, as "L" for loud, "S" for soft, and "W" for weak.

Reference being made to the accompanying drawings, Figure 1 represents a plan of the large metallic disk. Fig. 2 represents a plan of the index-plate detached. Fig. 3 represents a plan view of disk with index-plate and finger attached thereto. Fig. 4 is a side view of the entire instrument.

A is the metallic disk; B, the central opening for the rubber ear-tube connection; *a*, the small air-opening in the disk A near the central opening; *b*, the larger opening in the disk A a short distance from the smaller one *a;* C, the index-plate pivoted to the disk A by a screw *d* and having an opening *e* through it, so as to register with both the openings *a b* in the said disk A.

f is the index-finger, attached to the index-plate C and is used for turning the plate and pointing to the letters "L," "S," and "W," as desired.

The operation of the device is as follows: When the index-plate C is pointing to the letter "L" and not registering with the openings *a b* in the disk A, there is no ventilation in the cavity formed between the diaphragm *h* and the metallic disk A, the sound is strong and loud, and the vibrations full when the ear-tips *g* are placed in the ears of the operator. When the index-plate C is turned so that the opening *e* in it is registering with the small opening *a* in the metallic plate A and the index-finger *f* pointing to the letter "S," then the sounds to the operator's ear are softer. When the index-plate C is turned farther on, so that the finger *f* points to the letter "W" and the opening *e* in said plate registers with the larger opening *b* in the disk A, the sounds are weaker and so indicated by the letter "W," which means weaker.

The above-mentioned improvement renders my first device more perfect, and under certain circumstances is very convenient to an operator when examining the condition of the heart, lungs, &c., in patients or others.

What I claim, and desire to secure by Letters Patent, is—

In combination with an apparatus for examining the condition of the heart, lungs, &c., an index-plate, pivoted to the metallic disk and provided with an opening in the plate to register with the openings of different sizes in the disk underneath, and an index-finger attached to the index-plate to point to one of the letters L, S, and W, formed on the margin of the disk, indicating the vibrations to be low, soft or weak as desired, substantially as specified.

Hamilton, Ontario, Canada, November 1, 1897.

DANIEL BRAND MARSH.

In presence of—

PERCY WEBBER,

WM. BRUCE.