

No. 657,658.

Patented Sept. 11, 1900.

I. HOGELAND.
LUNG TESTER AND DEVELOPER.

(Application filed Nov. 18, 1899.)

(No Model.)

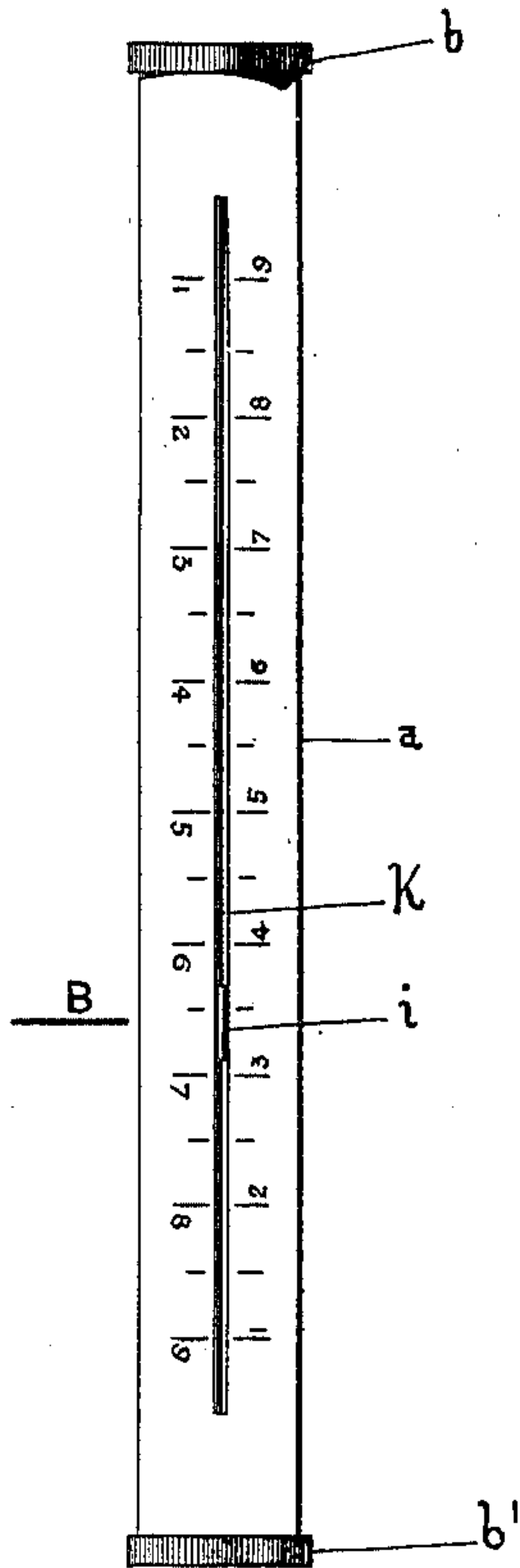


Fig. 1.

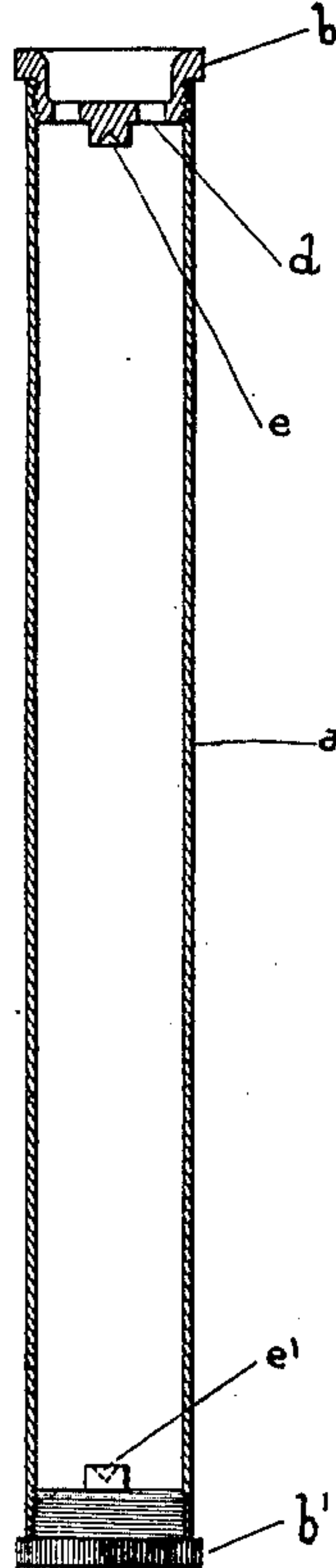


Fig. 2.

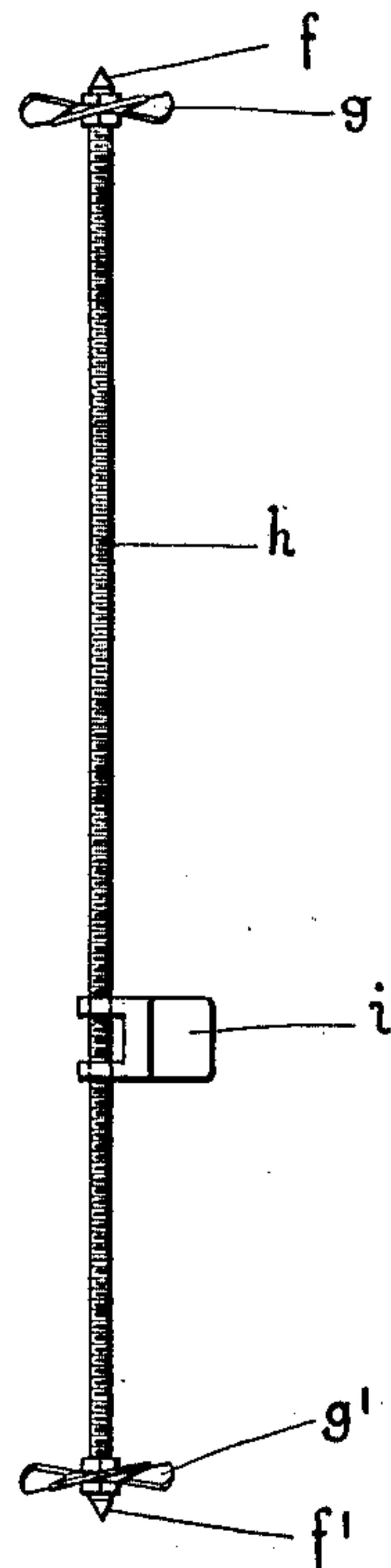


Fig. 3.

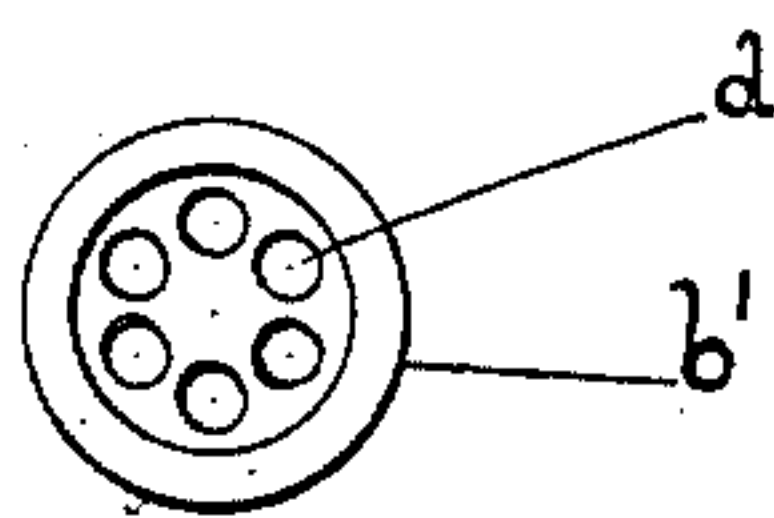


Fig. 4.

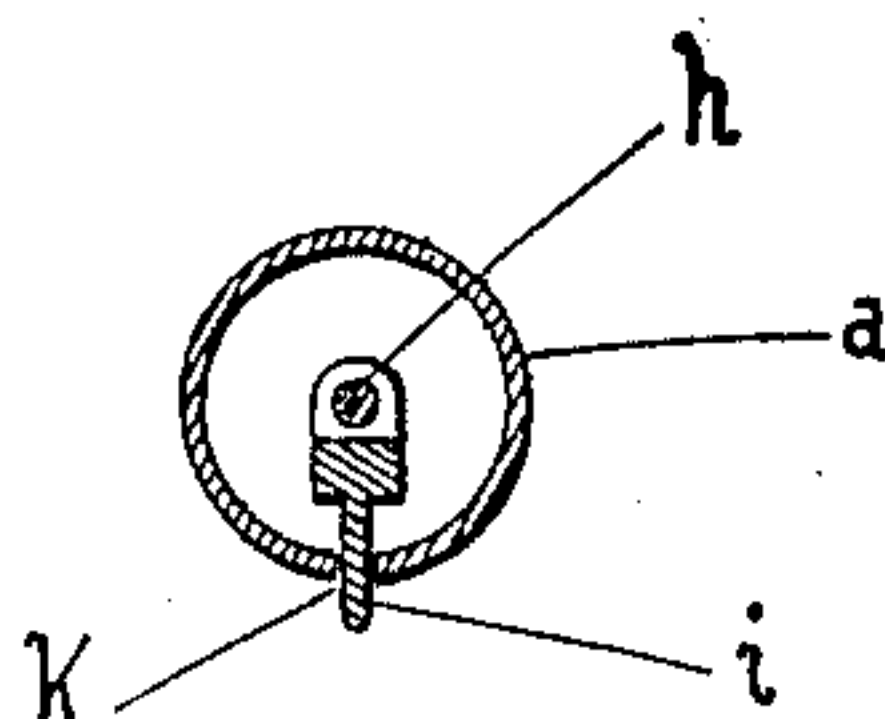


Fig. 5.

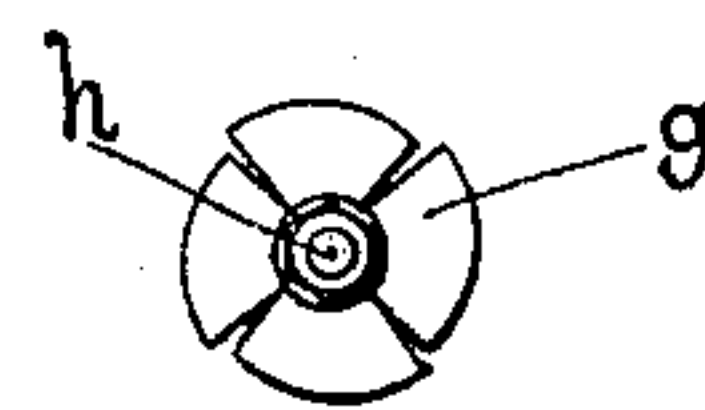


Fig. 6.

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LUNG TESTER AND DEVELOPER.

SPECIFICATION forming part of Letters Patent No. 657,658, dated September 11, 1900.

Application filed November 18, 1899. Serial No. 737,393. (No model.)

To all whom it may concern:

Be it known that I, ISRAEL HOGELAND, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Device for Testing and Developing Lungs, of which the following is a specification.

My invention relates to improvements in devices for securing that class of exercise of the lungs that strengthens the same, increasing their capacity for volume in public speaking, singing, or conversation, and combining the idea not shown in others of testing the volume of air inhaled and exhaled and recorded both ways by the device-scale. I attain these objects by the mechanism illustrated in the accompanying drawings, of which like letters indicate like parts.

Figure 1 is a view of a completed lung testing and developing device; Fig. 2, a horizontal view of the body in section; Fig. 3, a threaded rod with propelling-blades firmly secured by nuts and index-finger, also threaded; Fig. 4, a perforated end cap for forcing in or drawing out air with pivot-seat; Fig. 5, an end view of mounted machine with the cap removed; Fig. 6, propelling-blades with the outline of their flights.

In a detailed description of the device, Fig. 1 is a horizontal view of the completed machine. B is the tubular body. *b b'* are perforated caps or plugs secured on each end, having pivot-seats to provide for the interior mechanism. *k* is a slot for the index-finger *i*, that in service shows the capacity and power of the lungs of the performer by means of numerals stamped on either edge. *d* is the wall of body B.

Fig. 2 is a horizontal view of body B in section, with caps *b b'*. In section, *e e'* are the depressions for the pivoted mechanism. (Shown in Fig. 3 later.) *d* is the side of the walls of B proper in section and may be of metal, rubber, brass, or wood.

Fig. 3 is an elevated view of the threaded rod *h*, with its index-finger or threaded nut *i*, showing its thin edge that protrudes through the slot *k* in Fig. 1, that keeps it from revolving with the threaded rod when in service. The pivoted points of *f f'*, provided to fit in the seats *e e'* in Fig. 2, when in place afford

proper supports for the threaded rod *h*, and *g g'* the metal blades, with their inclined surfaces, by which the rod is caused to revolve by passage of air inward or outward, complete the mechanism for moving the threaded indicating finger or nut *i* in service.

In Fig. 4, *b'* is the cap, with the perforations *d*, over which the lips of the operator are fitted and through which the air is forced or drawn through the blades of either wheel, thus propelling the said threaded rod in either direction from either end without moving the device from the lips, and in this way forcing the air from the lungs or inflating them again by drawing back the air through said blades, so reversing instantly the course of the blades and threaded rod controlling the same, and thus moving backward or forward the index-finger *i*, as desired.

In Fig. 5, *d* is the edge of the walls, and *i* the threaded nut and index-finger in slot *k*, with threaded rod *h* protruding.

In Fig. 6 the blades *g g'* are firmly secured on a section of the threaded rod *h*, near its pivoted points, substantially and for the purpose shown.

The slot *k*, as shown in Fig. 1, may involve cutting away one-half the front of the body, as shown in Fig. 2, illustrating the pivot-seats and locating the numerals under the threaded rod *h*.

It is manifest that my invention may be made of metal, glass, wood, or other suitable material.

What I desire to secure by Letters Patent is—

1. In a lung-developing device, the combination of a cylindrical tube provided with a longitudinal slot; a screw-threaded shaft rotatably mounted axially of said tube; fan-blades fixed on said shaft; and an index-finger having a screw-thread connection with said shaft, and movable in said longitudinal slot.

2. In a lung-developing device, the combination of a cylindrical tube provided with a longitudinal slot; a perforated cap for one end of said tube; a screw-threaded shaft rotatably mounted axially of said tube; fan-blades fixed on said shaft adjacent to said cap; and an index-finger mounted upon said shaft, and

having a screw-thread connection therewith, which finger is movable in said longitudinal slot.

3. In a lung-developing device, the combination of a cylindrical tube provided with a longitudinal slot, and having an index at the side of said slot; a perforated cap for one end of said tube; a screw-threaded shaft rotatably mounted axially of said tube; fan-blades fixed on said shaft within said tube adjacent to said perforated cap; and an index-finger mounted upon said shaft, and having a screw-thread connection therewith, and adapted to register upon said index.

4. In a lung-developing device, the combination of a tube provided with a longitudinal opening, perforated caps, one secured to each

end of said tube, a threaded rod pivoted in said perforated caps, flared blades secured to said rod, and a threaded nut upon said rod carrying an index movable in the longitudinal opening.

5. In a lung-developing device, the combination of the tube having a longitudinal opening therein, a threaded shaft pivoted axially in said tube, propeller-blades on said shaft near each end thereof, and an index-finger engaging the threads upon said shaft and passing through the opening.

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Witnesses:

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