No. 764,546. PATENTED JULY 12, 1904.

H. BARDSLEY.

LUNG TESTER.

APPLICATION FILED JULY 30, 1902.

NO MODEL.

Fig. 1.

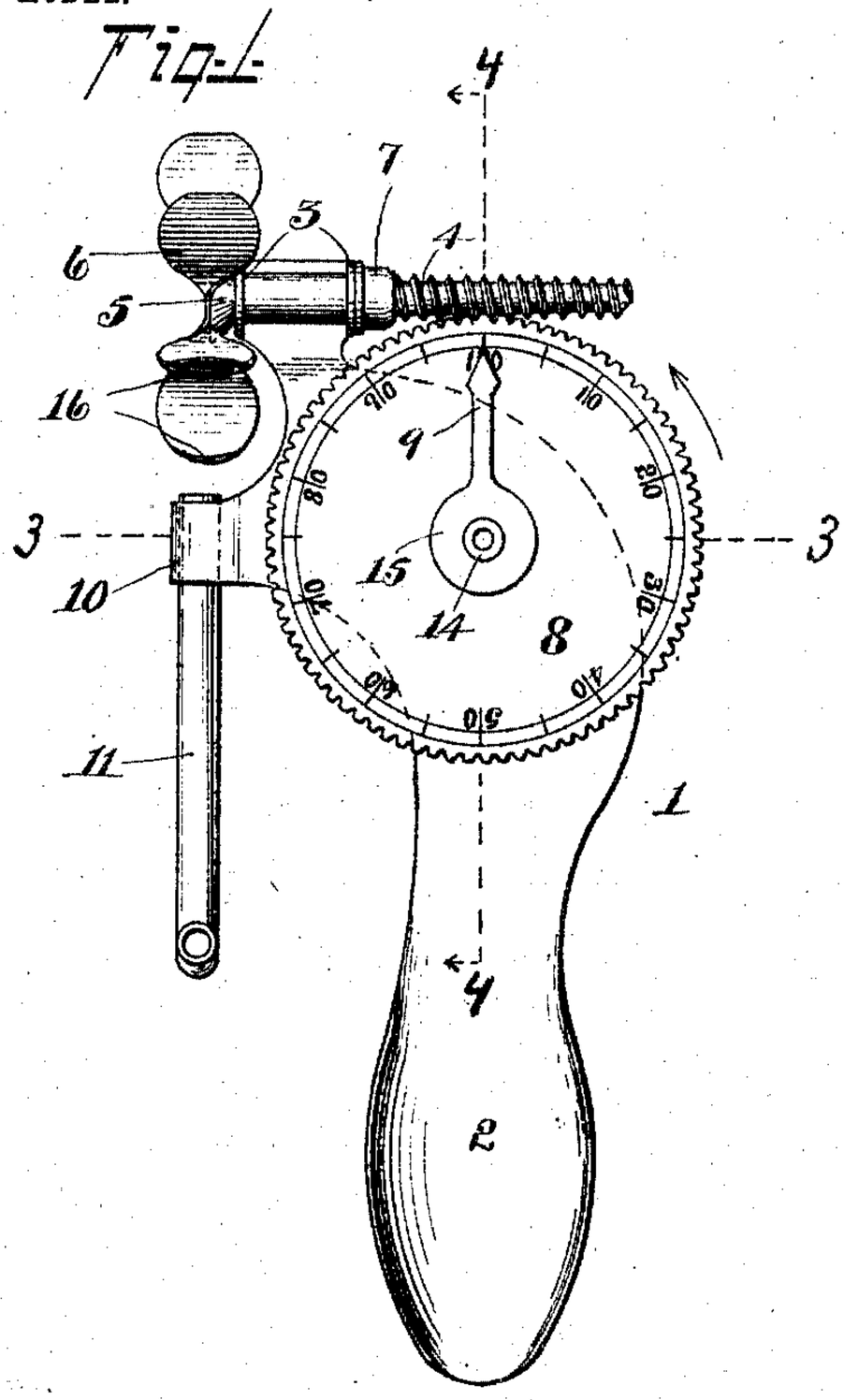


Fig. 2.

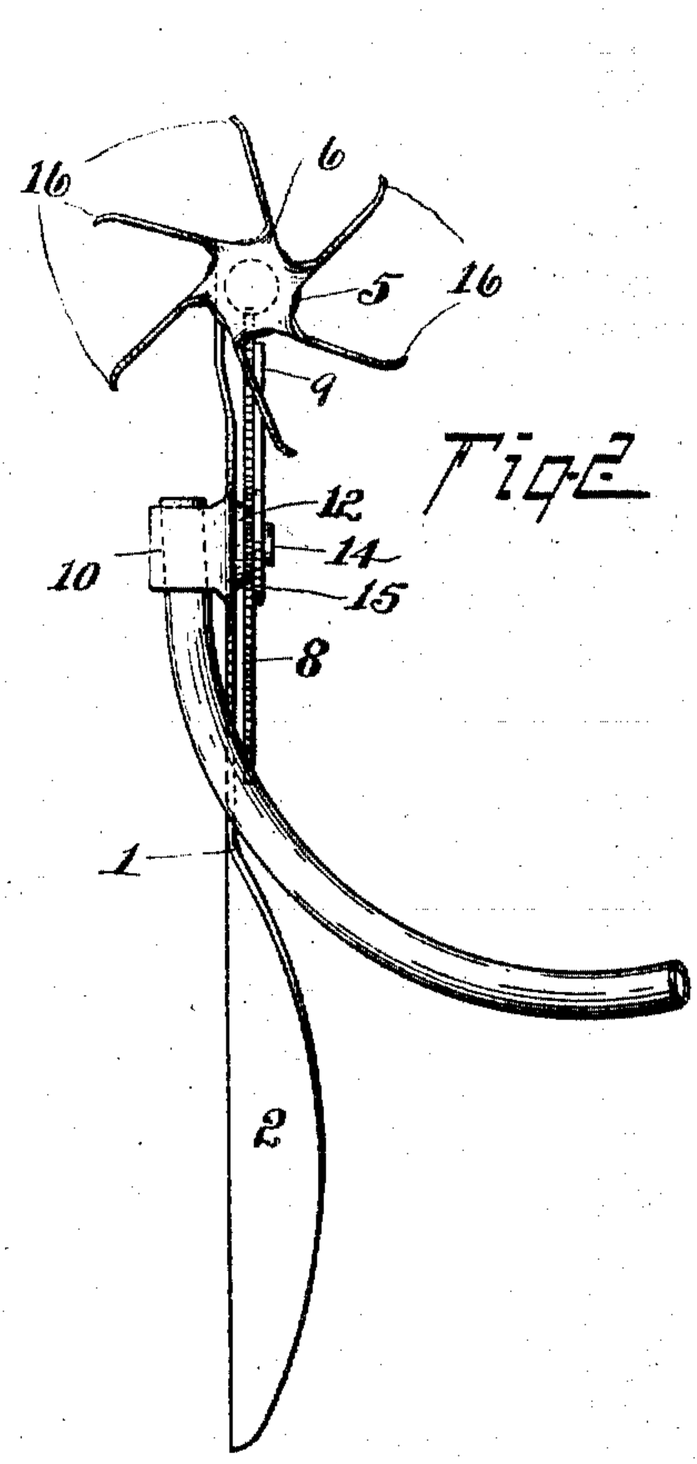


Fig. 3.

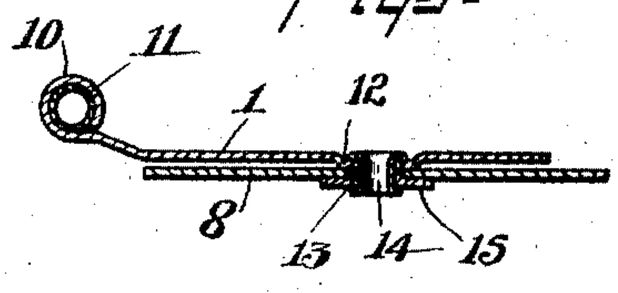
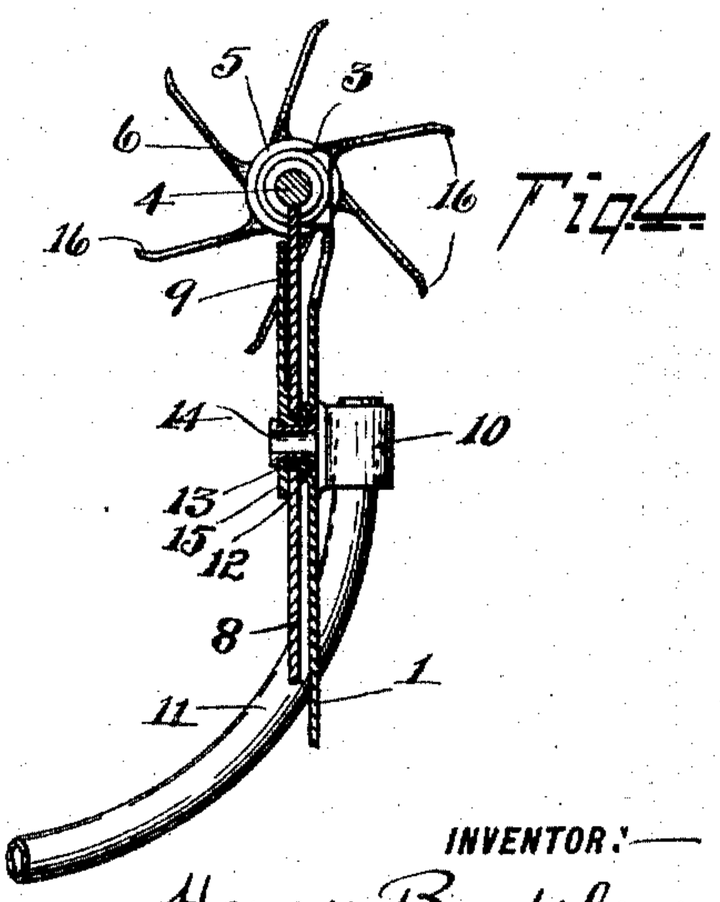


Fig. 4.



WITNESSES:-

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No. 764,546. Patented July 12, 1904.

UNITED STATES PATENT OFFICE.

HENRY BARDSLEY, OF PALMYRA, NEW JERSEY.

LUNG-TESTER.

SPECIFICATION forming part of Letters Patent No. 764,546, dated July 12, 1904.

Application filed July 30, 1902. Serial No. 117,714. (No model.)

To all whom it may concern:

Be it known that I, HENRY BARDSLEY, a citizen of the United States, residing at Palmyra, Burlington county, New Jersey, have invented certain new and useful Improvements in Lung-Testers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

Figure 1 is a side elevation. Fig. 2 is an edge elevation, the paddle-wheel being toward the observer. Fig. 3 is a horizontal section on line 3 3, Fig. 1. Fig. 4 is a vertical section on line 4 4, Fig. 1, the handle portion of the frame having been broken away. Fig. 5 is an enlarged detail sectional view illustrating the construction employed for securing the registering-disk to the frame of the device.

This invention relates to an improved toy or the like adapted to be used as a lung-tester.

The invention, broadly considered, consists of a frame on which is rotatably mounted a paddle-wheel, whose shaft is connected with suitable registering mechanism for indicating its revolutions, together with a tube or the like secured to said frame and in line with the blades of said wheel, so that when a person blows through said tube the wheel will be rotated and the rotations thereof indicated by said registering mechanism.

The invention further consists in certain details of construction and mechanism, all as hereinafter pointed out.

In the drawings, 1 designates a frame, preferably, as in this instance, struck up from sheet-metal and having a handle portion 2.

At the upper end of the frame 1 are bent or turned outwardly brackets 3, having alined holes therethrough to form bearings for a horizontal shaft 4, which latter is in this instance an ordinary screw—say a two-inch No. 10 wood-screw. The head 5 of screw 4 comes against the outside of one of the brackets 3, as seen in Fig. 1, and the said screw-shaft is retained in place in its bearings against longitudinal displacement by a washer or, as in this instance, by an ordinary eyelet 7, slipped over the free end of said screw-shaft and clamped thereto adjacent to the other bracket 3, all as seen in said Fig. 1. To the head of the screw-shaft 4 is soldered or otherwise secured a paddle-wheel 6, as seen. The threads of the screw-shaft 4 engage the peripheral teeth of a wheel or disk 8, which is rotatably mounted on said frame, which disk wheel is provided on its face with a series of indications, as shown in Fig. 1, that are adapted as the disk wheel is rotated to pass a pointer 9, secured to the frame 1.

Below the wheel 6 and projecting out from the frame 1 is a bracket or arm 10, whose free end is looped over and around the end of a flexible tube 11, whose free lower end portion is of suitable length to be inserted in the mouth of the person holding and desiring to use the device.

The end of the tube 11 held by the bracket 10 is in such relation to the blades of the paddle-wheel that a blast of air blown through said tube will successively impinge against the blades thereof, and so cause the wheel to rotate.

As it is desirable that the disk wheel 8 shall be freely rotatable, with no binding action, and I desire to attain this result in the cheapest and best manner, cheapness being a great desideratum in a device of this character, I preferably pivot the same to the frame 1 in the manner illustrated in the drawings, which is as follows:

The frame 1 is provided at the proper place with a projecting boss 12, Figs. 2, 3, 4, and 5, against the plane outer surface of which the disk wheel 8 is placed. The hub portion of the pointer 9 is provided with an inwardly-extending circular flange 13, which extends through a central hole through said disk and comes against the boss 12 of the frame, the height of the flange 13 being slightly greater than the thickness of the disk. These parts are then clamped together by a rivet or, preferably, by an eyelet 14. Thus the disk wheel 8 may freely rotate around the flange 13 between the boss 12 of the frame and the plate portion 15 of the indicator 9.

The manner of using the device is as follows: A person holds the device by the handle portion 2 in substantially the position shown in Fig. 1, inserts the free end of the tube 11 in the mouth and blows through the same, whereupon the air-blast from the tube impinging against the blades of the paddle-wheel rotates

the latter, and hence the screw-shaft 4, which in turn rotates the disk wheel 8 in the direction of the arrow in Fig. 1. The amount of exhalation is shown by the indications on the face of the disk passing the pointer 9.

In practice I prefer to slightly dish the blades of the paddle-wheel, as indicated at 16, Figs. 1, 2, and 4, thus preventing the air propelled against said blades, respectively, from too freely passing therefrom, and so giving more propulsive force to the wheel.

I remark that I do not wish to be understood as limiting myself to the precise form and construction shown and described, as many changes and alterations may be made therein without departing from the principles of the invention. For instance, instead of the screw-shaft 4 any form of worm may be substituted, or, in fact, other forms of registering mechanism may be substituted for that shown in the drawings.

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

1. In a lung-tester, the combination with a frame including a body portion, a handle carried thereby, and a bracket or arm projecting from said body portion, of a rotatable paddle-wheel journaled to said frame, a tube carried by said bracket or arm whose end is in line with the blades of said wheel, and registering mechanism operated by the rotation of said paddle-wheel, substantially as set forth.

2. In a lung-tester, the combination with a frame including a body portion, a handle carried thereby, and a bracket or arm projecting from said body portion, of a rotatable worm-shaft journaled thereon, a paddle-wheel on said shaft, a tube carried by said bracket or arm whose end is in line with the blades of said wheel, and a rotatable disk journaled to said frame and having peripheral teeth engaged by the thread of said worm-shaft, substantially as set forth.

3. In a lung-tester, the combination of the frame, the rotatable screw-shaft journaled in brackets of said frame, the eyelet on said shaft adjacent to one of said brackets for retaining said shaft in said brackets, the paddle-wheel secured to the head of said screw-shaft, the tube carried by said frame in line with the blades of said wheel, together with the rotatable disk journaled to said frame and adapted to be rotated by said screw-shaft, substantially as set forth.

4. In a lung-tester, the combination of the frame, formed from sheet metal and having the handle portion projecting downwardly therefrom, and the transversely-extending, alined brackets at its upper end, the worm-shaft journaled in said brackets, the paddle-wheel on said shaft, the tube in line with said paddle-wheel blades and carried by said frame, and the rotatable indicating-disk carried by said frame, and having the peripheral teeth engaging the thread of said worm-shaft, substantially as set forth.

5. In a lung-tester, the combination of the frame, the rotatable worm-shaft journaled thereon, the paddle-wheel on said shaft, the tube carried by said frame in line with the blades of said wheel, the rotatable disk carried by said frame and having the peripheral teeth engaging the thread of said worm-shaft, together with the indicating-pointer, carried by said frame adjacent to said rotatable disk, substantially as set forth.

6. In a lung-tester, the combination of the frame, the worm-shaft journaled at the upper end thereof, the paddle-wheel on said shaft, the tube carried by said frame in line with the blades of said wheel, the circular boss, 12, on said frame, the stationary indicator having the flanged hub portion, 13, the rotatable disk having the peripheral teeth engaging the thread of said worm-shaft, together with means for clamping said frame and indicator together, yet permitting said disk to be freely rotatable therebetween, substantially as set forth.

7. In a lung-tester, the combination of the frame, the worm-shaft journaled at the upper end thereof, the paddle-wheel on said shaft, the tube carried by said frame in line with the blades of said wheel, the circular boss 12, on said frame, the stationary indicator having the flanged hub portion, 13, the rotatable disk having peripheral teeth engaging the thread of said worm-shaft, together with the eyelet clamping together said frame and indicator, yet permitting said disk to be freely rotatable therebetween around said hub portion of the indicator, substantially as set forth.

In testimony whereof I have hereunto affixed my signature this 16th day of April, A. D. 1902.

HENRY BARDSLEY.

Witnesses:
ANDREW V. GROUPE,
WALTER C. PUSEY.