L. D. CHILDS.

SPIROMETER.

APPLICATION FILED FEB. 15, 1909.

952,307. Patented Mar. 15, 1910.

Fig. 1.

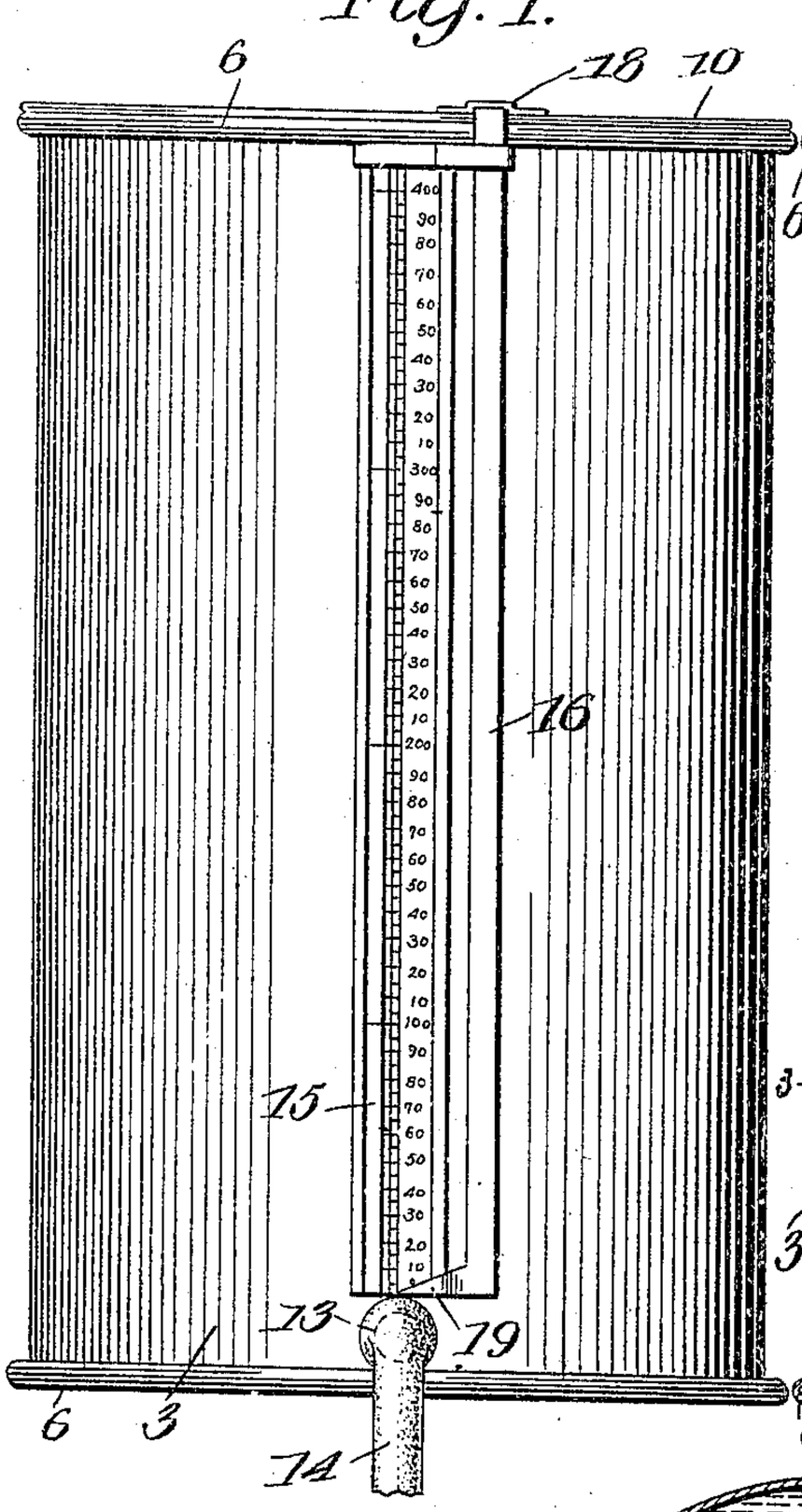


Fig. 2.

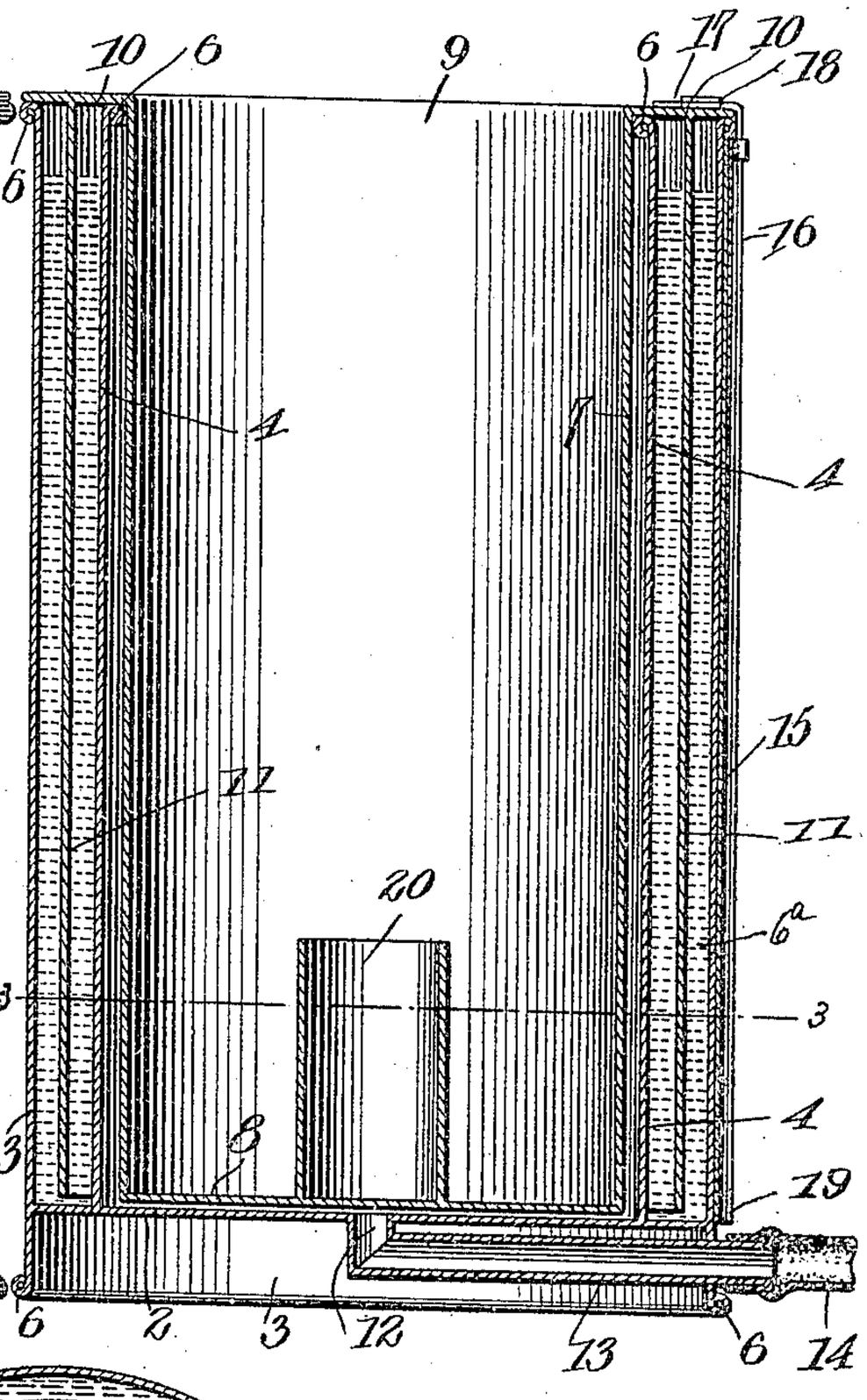
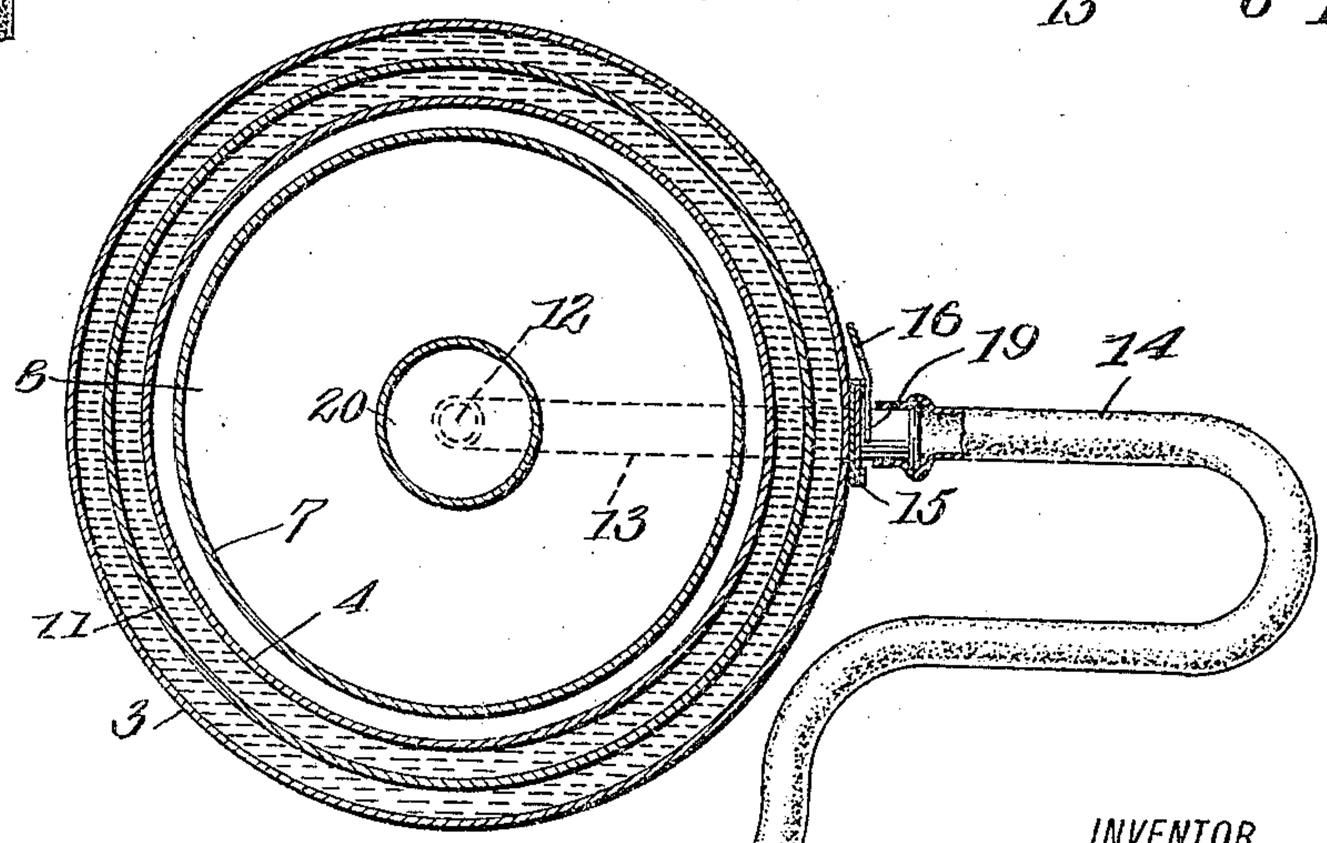


Fig. 3.



WITNESSES

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SPIROMETER.

952,307. Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed February 15, 1909. Serial No. 477,910.

To all whom it may concern:

Be it known that I, LYSANDER D. CHILDS, a citizen of the United States, and a resident of Chester, in the county of Chester and State of South Carolina, have invented certain new and useful Improvements in Spirometers, of which the following is a specification.

My invention is an improvement in spirometers, and consists in certain novel constructions and combinations of parts hereinafter described and claimed.

Referring to the drawings forming a part hereof—Figure 1 is a front view of the spirometer; Fig. 2 is a longitudinal section, and Fig. 3 is a section on the line 3—3 of Fig. 2.

The present embodiment of the invention comprises a casing substantially cylindrical in form, and having an open top, and a closed bottom 2, the bottom being spaced from the lower edge of the side wall to form a base flange 3. The casing has an outer wall 3, and an inner wall 4, spaced apart from the outer wall to form an annular space 6ª for containing a liquid and the inner wall rests upon the bottom 2. The free edges of both the inner and outer walls are beaded as shown, and a reinforcing wire 6 is inserted in each bead. A second casing 7 having a closed bottom 8 and an open top 9, is arranged within the inner wall of the casing, and the free edge of the second casing is provided with an annular lateral flange 10, which rests upon the free edges of both the walls 3 and 4. A cylindrical petticoat 11 is secured to and depends from the flange between the inner and the outer wall of the first casing. The bottom of the second or inner casing rests upon the bottom of the first or outer casing, and the bottom of the outer casing, has a central opening 12, with which communicates a pipe 13, the pipe extending radially through the base flange 3, and connected with the end thereof is a hose 14. A scale 15 is arranged on the outer wall 3 of the outer casing, and to the flange is secured a strip 16, having an angular portion 17 resting on the flange, and secured by a stirrup 18, and the body portion extends downwardly alongside the scale, and is provided with a pointer or indicator 19, which coöperates with the scale.

A cup 20 is arranged concentric with the walls of the casing, which is designed to receive weights such as shot or the like, to increase the weight of the inner casing, if desired, in accordance with the increase of lung capacity of the party using the spirometer.

It will be observed that there is very little space left between the movable part of the spirometer and the fixed part 20, that when the movable part is in the position shown in Figs. 1 and 2, but little air remains to become putrid. A suitable mouthpiece 21, is connected with the free end of the hose, which may be of any suitable length.

It will be evident from the description, that the double wall of the outer casing with the liquid therebetween, forms a water seal between the inner and the outer casing, the double wall forming practically an annular chamber, and the inner casing having a flange depending thereinto.

I claim:

1. A device of the class described comprising a casing having an outer wall and a bottom spaced from the lower edge thereof, and an inner wall resting on the bottom and spaced apart from the outer wall to form a space for receiving a liquid, a pipe leading through the bottom and communicating with the interior of the casing, a second casing having an open top, an inner wall within the inner wall of the casing, a bottom resting on the bottom of the first casing, an outer wall received between the inner and outer walls of the first casing, and a flange extending from the upper edge of the inner wall and to which the outer wall is secured, said flange extending beyond the outer wall of the first casing and resting upon the same, and a cup on the bottom of the second casing for the purpose set forth.

2. A device of the class described, comprising a casing having an outer wall and a bottom spaced from the lower edge of the casing, and an inner wall resting on the bottom and spaced apart from the outer wall to form a space for receiving a liquid, a pipe leading through the bottom and communicating with the interior of the casing, a second casing having an open top, an inner wall within the inner wall of the casing, a bottom resting on the bottom of the first casing, an outer wall received between the inner and outer walls of the first casing and a flange extending from the upper edge of the inner wall and to which the outer wall is secured, said flange extending beyond

the outer wall of the first casing and resting upon the same.

3. A device of the class described, comprising a casing having inner and outer side walls spaced apart from each other to form a space for receiving a liquid, a second casing having inner and outer side walls received within the inner and the outer walls respectively of the first casing, each of said casings having a closed bottom and an open top, and a pipe extending through the bottom of the first casing for the purpose set forth.

4. A device of the class described, comprising inner and outer casings each having an open top and a closed bottom, the inner casing fitting within the outer casing, a pipe communicating with the space between the casing, said outer casing having an annular chamber for containing a liquid and the inner casing a flange depending thereinto.

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Witnesses:
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