W. R. POND.

Sphygmoscope.

No. 167,785. Patented Sept. 14, 1875.

Fig. 1

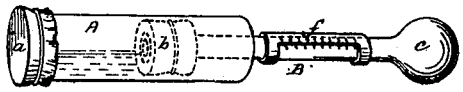


Fig. 2.

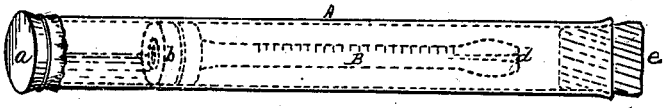


Fig. 3.

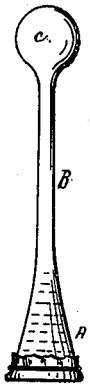


Fig. 4.

Fig. 5.

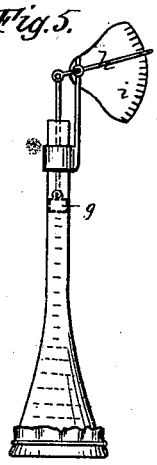
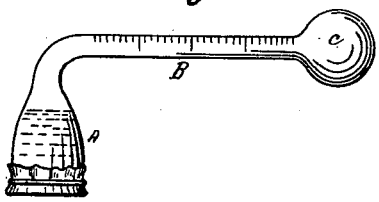


Fig. 6.



Witnesses:

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UNITED STATES PATENT OFFICE.

WALLACE R. POND, OF STOCKTON, CALIFORNIA.

IMPROVEMENT IN SPHYGMOSCOPES.

Specification forming part of Letters Patent No. **167,785**, dated September 14, 1875; application filed August 30, 1875.

To all whom it may concern:

Be it known that I, WALLACE R. POND, of Stockton, California, have invented certain new and useful Improvements in Sphygmoscopes, of which the following is a specification:

My present invention comprises improvements upon the invention for which Letters Patent No. 161,821, were issued to Erasmus A. Pond on the 6th April, 1875. In common with the said patented invention I make use of a fluid-receptacle provided with an opening, preferably closed by a membrane, and combined with a terminal tube of small diameter. I also contemplate the use of a piston-like device to regulate the normal height of the fluid-column in the instrument.

For the purpose of regulating at will the height of the column, I make use of one end of the terminal tube as a piston, to fit in the contiguous end of fluid-receptacle, which forms, in this respect, a cylinder. By moving the piston end of the terminal tube up or down in the cylinder, the normal height of the fluid-column can be readily regulated. I prefer to form or provide the outer end of the terminal tube with a bulb or enlargement, which constitutes a chamber closed to the atmosphere, to prevent evaporation of the liquid, but yet of such size as not to interfere with free movement of the column in the index-tube. For some purposes I prefer to form the receptacle that has the opening which is applied over the pulsating body, the terminal or indicator tube, and the terminal closed bulb or enlarged chamber, in one piece. An index or scale can be formed permanently on the terminal tube. A sliding adjustable scale can also be mounted on this tube, to be used or not in conjunction with a permanent index or scale, as desired.

The nature of my improvement will be readily understood by reference to the accompanying drawings.

Figure 1 is a perspective view of an instrument having a terminal tube, which serves at once as a piston and as an index.

A is the receptacle, which I shall term the fluid-receptacle, which, in this instance, has the form of a hollow tube or cylinder, open at both ends, with one of the ends closed by a membrane, *a*. In the other end is inserted the end of the terminal tube B, provided with a packing that forms a piston, *b*, which fits snugly the interior of the cylinder, and can be moved up and down therein. The outer end of the terminal tube terminates in an enlarged bulb or chamber, *c*, communicating with the tube but closed to the atmosphere, for the purposes hereinbefore mentioned. This outer end or head of the terminal tube can, however, be left open, as indicated at *d*, Fig. 2, where like letters indicate the same parts as in Fig. 1. In this case, to prevent evaporation or escape of the liquid, the fluid-receptacle can be prolonged, as indicated, so as to inclose the tubes and have its outer end closed by a cork, *e*. This arrangement serves the same purpose, the prolonged part of the receptacle answering to the air bulb or chamber *c*. For most purposes, however, I prefer the arrangement shown in Fig. 1.

The terminal tube may be marked with a permanent scale, as indicated in Fig. 2, or it may have a movable and adjustable scale, as shown at *f*, Fig. 1, or both of these scales may be combined with the same tube.

In Figs. 3 and 6 are shown two forms of instrument, combining in one piece the fluid-receptacle A, or enlarged end that is applied over the pulsating body, the terminal tube B, and sealed bulb or chamber *c*, communicating with the tube, but closed to the atmosphere.

These instruments can be used either with or without closing membranes, according to the conditions of the case, and the kind and quantity of the fluid employed. They may or may not have an index or scale, and this scale may be either fixed and permanent or adjustable, or both scales may be used on the same instrument, as hereinbefore provided.

A simple tube, such as seen in Fig. 4, terminating in an enlarged end, may be used, as, for instance, to carry a float or other device to indicate, and, if need be, to register, the movement. Such an arrangement is shown in Fig. 5, where a float, *g*, in the tube, is jointed to a pivoted hand or index, *h*, that moves over a scale, *i*. This is simply an indicating apparatus; but the same principle can be applied, as will be readily understood, for recording or registering the movements, thus making the instrument a sphygmograph.

I would remark, in conclusion, that the same instrument may have a number of interchangeable points or tubes, and be used either closed or open. It forms an instrument that can be used for various purposes, *e. g.*, as a barometer, thermometer, dynometer, sphygmograph, thermograph, and thermoscope.

Having described my improvements, what I claim, and desire to secure by Letters Patent, is—

1. A sphygmoscope provided with a terminal or indicator tube, whose outer end terminates in a bulb or enlarged chamber closed to the atmosphere, substantially as set forth.

2. The combination of a fluid-receptacle, a terminal or index tube, and a bulb or air-chamber closed to the atmosphere, and communicating with said tube, substantially as set forth.

3. In a sphygmoscope, the combination, with the terminal or indicator tube, of a scale adjustable thereon, substantially as set forth.

4. The combination, with the fluid-receptacle, of a terminal tube or indicator, provided with a piston end, and fitting and movable in the fluid-receptacle, to regulate the height of column in the instrument, substantially as set forth.

In testimony whereof I have hereunto signed my name this 19th day of July, A. D. 1875.

WALLACE R. POND.

Witnesses:

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W. L. HOPKINS.