

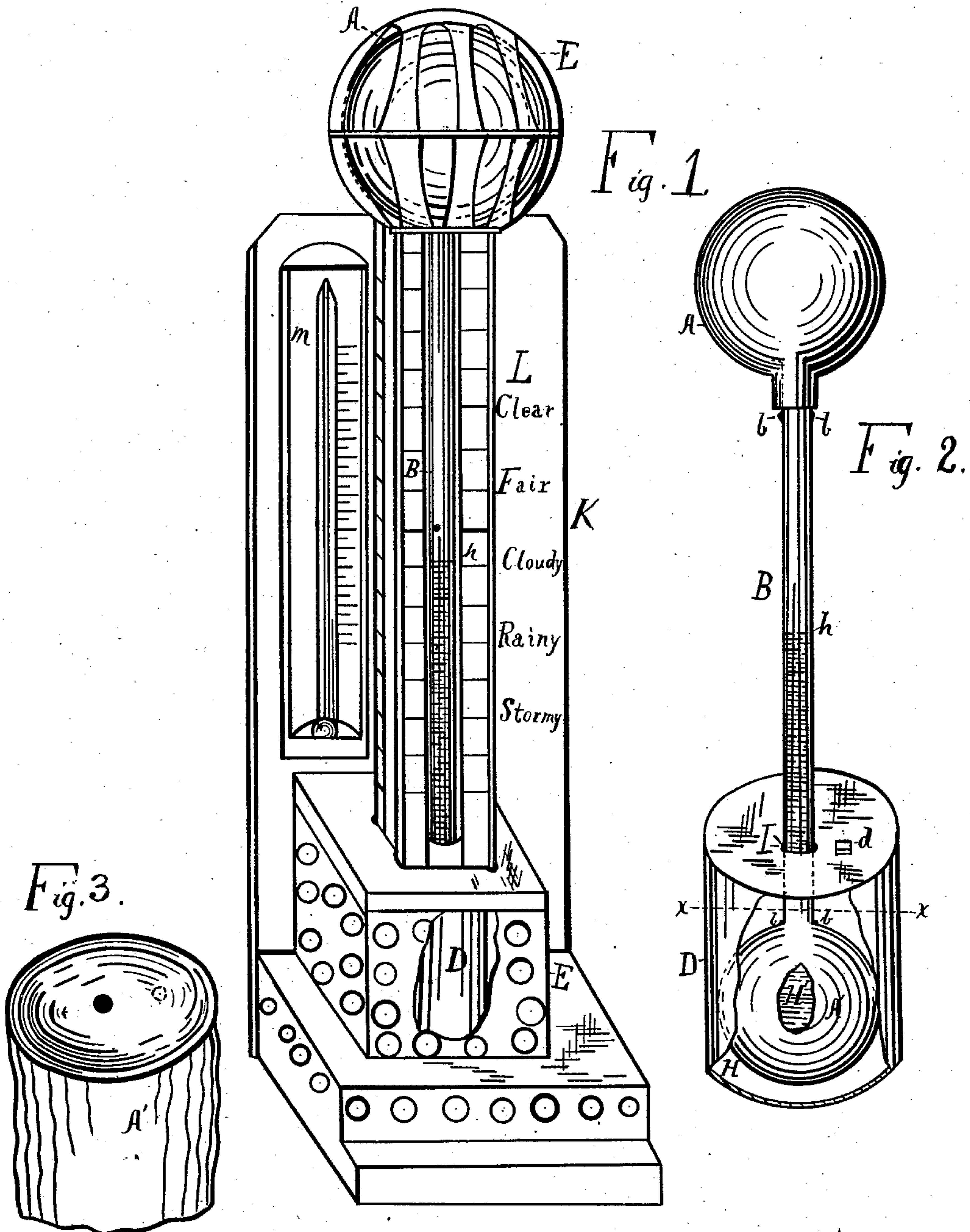
(No Model.)

J. Y. McCLEARY.

BAROMETER.

No. 301,910.

Patented July 15, 1884.



Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES YOUNG McCLEARY, OF NEOSHO, MISSOURI.

BAROMETER.

SPECIFICATION forming part of Letters Patent No. 301,910, dated July 15, 1884.

Application filed September 27, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES YOUNG McCLEARY, a citizen of the United States, residing at Neosho, in the county of Newton and State of Missouri, have invented certain new and useful Improvements in Barometers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention is a new and useful barometer, the object of which is to provide a simple, accurate, convenient, and at the same time cheap storm and weather indicator. These objects I attain by means of the device illustrated in the accompanying drawings, in which—

Figure 1 is a view in elevation showing the entire device, a part of the frame being removed to show the vessel. Fig. 2 is a detailed view.

A A' are hollow elastic balls, made of india-rubber or other suitable material, and are hermetically sealed or fastened to the ends of a tube, B. A has a chamber filled with rarefied air. A' is placed in a vessel, D, and has a chamber filled with any suitable fluid, H', as water, alcohol, a mixture of water and other substance, or mercury. When desired, either or both balls may be made cylindrical in shape and of thin elastic metal, with corrugated or waved sides and ends. A', Fig. 3, shows this construction.

B is a tube, preferably made of glass, and funnel-shaped at each end. It has shoulders *b*, to assist in attaching the balls A A'. The lower part of this tube and the ball A' are hermetically sealed in a vessel, D, at the point I.

D is a vessel having a chamber containing rarefied air at the top, the lower part having a fluid, H, similar to that in the ball A', above described.

d is an opening for a purpose hereinafter indicated.

E is a wire gauze or device, made of any suitable perforated material, to inclose and protect and at the same time give the atmospheric air free access to the ball A and vessel D.

The device thus constructed is placed in a suitable frame, K, having a scale, L, and the words "Clear," "Fair," "Cloudy," "Rainy," "Stormy," &c., written or placed upon it, and also provided with a thermometer, M.

The device is put together thus: A' and B are filled with the desired fluid, having first been attached in a vessel, D, as above described. The hole *d* is then opened, and the ball A is sealed upon the upper end of the tube B. By compressing this elastic ball the fluid *h* is driven down the tube B and expands the elastic ball A', and thus, by raising the fluid H, air is expelled at *d*. While A is thus held, *d* is hermetically sealed, and thus on releasing the ball A the fluid *h* will rise only a part way up the tube again, owing to the rarefied air in D. Thus I have a column, *h*, of fluid suspended between two portions of rarefied air in a device all parts of which are airtight, either one of the said parts of rarefied air being operated upon by the atmosphere through an elastic surface. The barometer thus constructed is very sensitive to atmospheric changes. The slightest increase of atmospheric pressure upon the ball A causes the column *h* to descend, and vice versa as the pressure is diminished. The expansion of the air in A by heat and contraction by cold is neutralized by the air in D being affected by the same changes of temperature.

The device can be made of any convenient size, and easily moved from place to place. The fluid H may be dispensed with, and the rarefied air in D thus made to come in direct contact with the ball A, or the ball A' omitted and the lower end of the tube B inserted in the fluid H. In this case the rarefied air in vessel D would operate upon the surface of the fluid that supports the column *h*. I have also placed and consider within the scope of this invention the placing of the ball A', or any equivalent elastic device, including an elastic diaphragm, upon the vessel D, to permit the atmospheric air to operate upon the confined rarefied air in the said vessel. In this case I make the ball A inelastic, and the motion of the column *h* is reverse from that above explained. I prefer the first construction above described.

Having thus described the construction, use, and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A barometer comprising a tube, B, in which is a fluid column, *h*, supported between two portions of hermetically-confined rarefied

air, one portion of the said air being operated upon by the varying weight of the atmosphere by means of an elastic surface which causes the said column to rise and fall, all substantially as shown and described.

2. An improved barometer, comprising hollow elastic balls A A', having a connecting-tube, B, a vessel, D, fluid H H', and a frame, K, having a scale, L, and protector E, all substantially as shown and described.

3. A device comprising a hollow ball, A, upon the upper end of a tube, B, the lower end of said tube being hermetically sealed in a vessel, D, the said ball and the upper part of the said vessel containing rarefied air supporting a fluid column, h, substantially as described, for the purpose specified.

4. A vessel, D, containing rarefied air in its upper part, the lower part having a fluid, H, into which extends a tube, B, hermetically sealed at I in the said vessel, substantially as shown and described.

5. Hollow elastic balls A A', hermetically sealed to a tube, B, one of the said balls containing rarefied air, the other containing a

fluid, H', the upper ball being operated upon by the atmosphere, the lower one being hermetically sealed in a vessel, D, all substantially as shown and described.

6. The combination of balls A A' with a tube, B, vessel D, and fluid H H', all substantially as and for the purpose set forth.

7. A frame, K, having a scale, L, and the protector E, in combination with balls A A', hermetically sealed to a tube, B, the lower end of the said tube and one of the said balls being hermetically sealed in a vessel, D, and containing a liquid, H', all substantially as and for the purpose set forth.

8. The combination of elastic balls A A', connecting-tube B, vessel D, and fluid H' with a scale, L, and a frame, K, all substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES YOUNG McCLEARY.

Witnesses:

R. M. RANDLE,
LEE D. BELL.