

D. PEELOR.

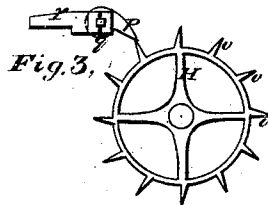
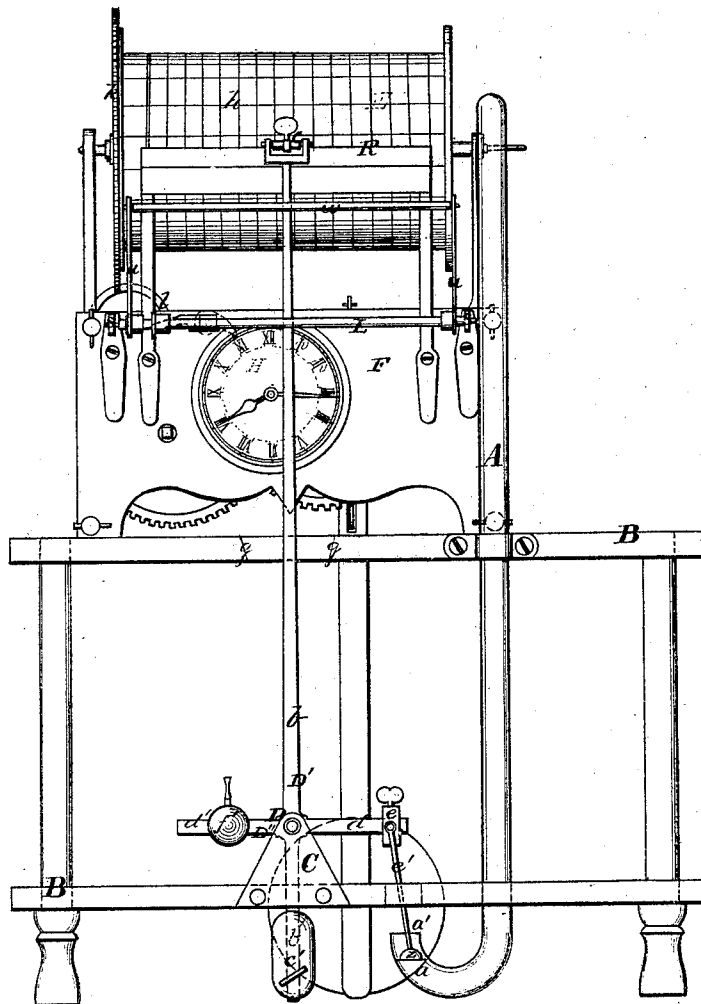
2 Sheets—Sheet 1.

Barometer.

No. 113,693.

Patented Apr. 11, 1871.

Fig. 1.



Witnesses.

Wm. Anderson.
D. B. Kane

Inventor.

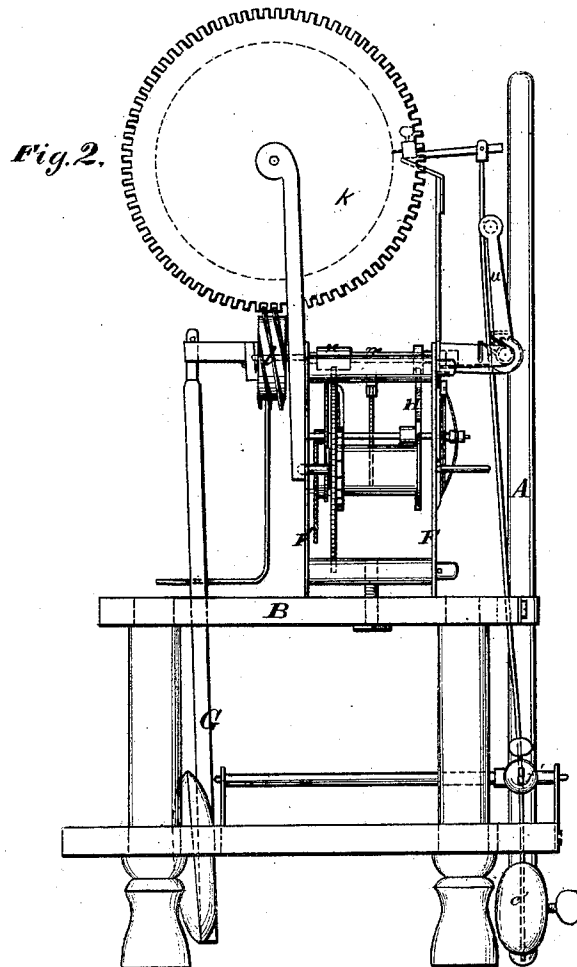
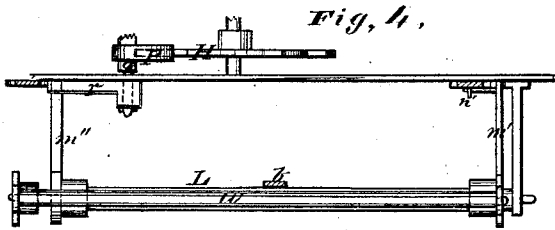
David Peelor,
Chipman, Hosmer & Co.
Attys.

D. PEELOR.

Barometer.

No. 113,693.

Patented Apr. 11, 1871.



Witnesses.

Villette Anderson
W. W. Kane

Inventor.

David Peelor
Chipman Hosmer & Co.
Attys.

United States Patent Office.

DAVID PEELOR, OF JOHNSTOWN, PENNSYLVANIA.

Letters Patent No. 113,693, dated April 11, 1871.

IMPROVEMENT IN SELF-RECORDING BAROMETERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, DAVID PEELOR, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and valuable Improvement in Self-Registering Barometers; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a front view of my invention.

Figure 2 is a side view of the same.

Figures 3 and 4 are details.

My invention has relation to an improvement in barometers; and

It consists—

First, in the construction and novel arrangement of devices, whereby the rise and fall of the mercury in the short leg is adapted to give corresponding motion to a registering point.

Secondly, in the employment of clock-work as a source of power for operating certain devices, preferably employed as means for obtaining a permanent record of the different positions of the register-point at certain definite intervals.

Premising that the specific devices hereinbelow mentioned are not the only means of utilizing directly the power obtained in the movement of the mercury, but that they are preferably employed by me, I will now proceed to describe their construction and operation.

The letter A of the drawing designates the mercury-tube, bent around and turned upward to form a short leg, *a*, which is open at its upper end *a'*, exposing the mercury.

B represents a frame, to which the mercury-tube is attached.

To the lower portion of this frame standards C C are secured, and adapted to serve as bearings for the fulcrum-points of a balanced lever, D.

This lever D is usually made in the form of an inverted cross, being provided with a long vertical bar, D', and transverse bar D'', and pivoted to the fulcrum at their intersection.

The upper arm *b* is made of spring steel or other elastic material, and is long and slender. To its upper end is attached a clamp, *e*, in which a needle or black-lead point is designed to be secured.

The lower arm *b'* is short, and balanced against the superior length of the long arm *b* by means of an adjustable weight, *c*.

One of the lateral arms, *d*, extends over the open end of the short leg *a* of the mercury-tube, and is

provided with a clamp-slide or adjustable coupling, *e*, to which is pivoted a connecting-rod, *e'*, to the lower end of which is attached a small disk, *z*, which rests on the mercury in *a*.

The disk *z* is designed to be made somewhat smaller in diameter than the tube *a*, in order that there may be little or no friction against the wall of the tube. The bottom of the disk should be smooth. Sometimes instead of a disk I may employ a globe, arranged to float on the surface of the mercury.

The other lateral arm, *d'*, is provided with an adjustable counterbalancing weight, *f*.

It is apparent that when the weights are adjusted in such a manner as to produce an equipoise, that the slightest movement on the part of the mercury will produce a corresponding but much greater movement of the needle-point at the upper end of the long arm *b*.

The vibratory movement of this arm is restrained within certain limits by means of certain stops *g g* in the frame B.

In order that the floating disk *z* may not interfere with the movement of the mercury, the barometer should be graduated and tested with the disk in position.

It will thus, as it were, form a part of the mercury column, and if there should afterward be a variation, it will be so slight as to be inappreciable.

E represents a rotating cylinder, on which is wound a strip of paper, *h*, designed to receive the punctures or dots made by the needle or pencil-point at the end of the arm *b*.

This paper *h* is marked in the direction of its length with parallel lines, graduated to correspond with the variations in the weight of the atmosphere, and therefore agreeing with the graduation of the mercury-tube.

The cylinder E is provided with a toothed wheel, *k*, at its end, and is rotated by the engagement with the worm *l*, secured to the end of a shaft, *m*, which is turned by one of the wheels of the clock engaging with a pinion, *n*, thereon.

F F' represent vertical plates, between which is the clock-work, constructed in the ordinary manner.

G represents the pendulum.

H represents a toothed-wheel, which is secured to the shaft of the hour-wheel. The teeth *v v* of this wheel determine the time between each registration.

In the drawing these teeth are placed at five minutes' distance from each other, and so arranged that they will successively engage with the arm or projection P, which extends out from the rock-shaft *q*.

To the end of the rock-shaft *q* is attached another arm or projection, *r*, which is depressed whenever the arm *p* is elevated by the teeth *v v*.

L represents a rock-shaft, pivoted in the bearings s s. From the ends of this rock-shaft extend upward two arms, *u u*, whose upper ends are connected by the rod *w*, which is so arranged as to have rotary motion.

m represents an arm extending inward horizontally toward the plate F, and arranged to come in contact with a stop, *n*, when the rod *w* has been thrown back by the action of the spring *s'*, so that it does not touch the vibrating arm *b*.

m'' represents an arm extending inward from the other end of the rock-shaft L, and so arranged that its inner end shall engage with the end of the arm *r* on the rock-shaft *q*.

From this arrangement it is apparent that in the times marked by the distance between the teeth *v v* the rod *w* will be carried inward toward the cylinder E, bearing with it the spring arm *b* and its registering point. But when the pressure is relieved, the rod *w* will be thrown back out of the way by the automatic spring *s'*, and the arm *b* will be free to vibrate.

In order that the times may be measured by right lines on the strip *h* instead of curves, a rectilinear guide, R, is employed. This is secured to the frame, and is provided with a beveled upper surface, which will carry the point upward to the line, the elastic arm *b* yielding readily for this purpose; or the needle-clamp may be pivoted in bearings at the end of the arm *b*, as shown in the drawing.

The needle-point is capable of adjustment in its holder, and the degree of penetration can be regulated by means of a set-screw, according to the thickness of the record paper and the number of copies required.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a barometer, of an automatic bent registering lever, operated directly by the rising and falling of the mercury in the tube, substantially as specified.

2. The combination, with a barometer, of a balanced lever, having a positive connection with the float which rests on the mercury, operated automatically by the rising and falling of the mercury in the tube, substantially as specified.

3. The combination, with a lever provided with a registering point and operated directly by the barometer-mercury, of the moving record surface and the pressure rod, operated by clock-work, substantially as specified.

4. In a self-registering barometer, the combination with a rotating record cylinder, or its equivalent, of a registering lever, substantially as specified.

5. The combination, with the record cylinder E, the pressure rod *w*, and the elastic arm *b*, of the beveled rectilinear guide R, substantially as and for the purpose specified.

6. The cross-shaped balanced lever herein described, provided with the vertical arms *b b'*, the lateral arms *d d'*, and the adjustable counterbalancing weights *c f'*, substantially as and for the purposes specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

Witnesses:

DAVID PEELOR,

FRANK B. CURTIS,
D. D. KANE.