Dec. 28, 1926. 1,612,344

R. ARNISON

ANEROID BAROMETER

Filed April 28, 1926

Fig. 1

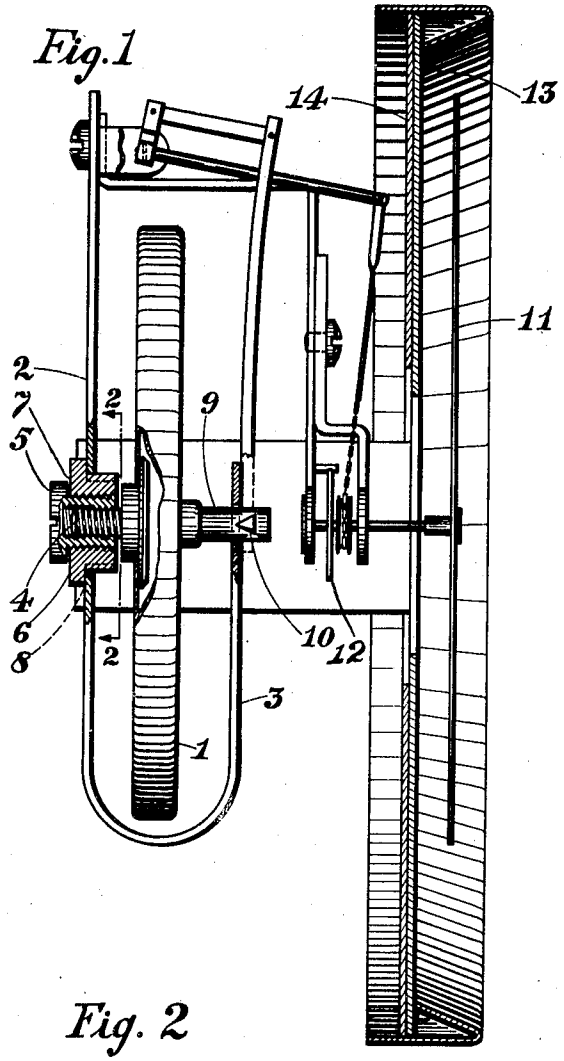
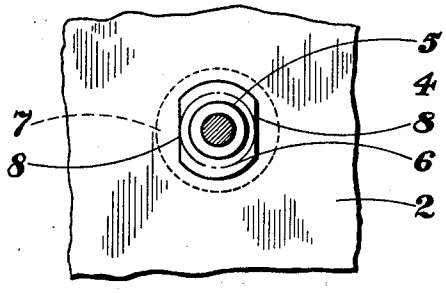


Fig. 2



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Patented Dec. 28, 1926. 1,612,344

UNITED STATES PATENT OFFICE.

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ANEROID BAROMETER.

Application filed April 28, 1926, Serial No. 105,199, and in Great Britain May 26, 1925.

This invention is for improvements in or relating to aneroid barometers and has for its object to provide a simpler means of mounting the vacuum drum or drums, together with the adjustment for the spring tension, than has heretofore been proposed.

According to one feature of this invention an aneroid barometer mechanism is provided with connecting means whereby the drum may be anchored to a relatively fixed member and the opposite side is provided with connecting means for engaging with a tension element, characterized in that one of said connecting means comprises a device (for example a longitudinally adjustable pin) for adjusting the length of the connecting means.

The term "barometer mechanism" as used herein includes the magnifying mechanism, but excludes the dial and pointer. The term "drum" as used herein includes a drum-system. By the term "side" is meant either of those parallel faces of the drum which move relatively to one another under the atmospheric pressure.

Each of the aforsaid connecting means may comprise a centrally disposed pin.

According to one feature of the invention the carrier for the drum may comprise a tension device formed with parts adjacent both of two opposite sides of the drum, which parts are connected to the drum by the connecting means aforesaid; and the latter may constitute the sole means of support for the drum.

The tension device may comprise a flat plate of resilient material bent into U-form and arranged to receive the drum between the limbs of the U and to hold the same under tension by means of the aforesaid connecting means, and one limb of the U may constitute the relatively fixed part aforesaid.

The invention further includes an aneroid barometer mechanism in the form of a unitary structure comprising in combination a drum, a flat plate of resilient material bent into U-form, with the drum disposed between its limbs and with the opposite sides of the drum operatively connected respectively with the adjacent limbs, and a magnifying mechanism and tensioning-means also carried on said resilient plate.

According to another feature of this invention the device for adjusting the length of the connecting means may comprise a nut and screw, one fixed to the drum and the other rotatably engaged with the tension device or the fixed member, as the case may be, and arranged to transmit the pull of the tension device to the drum. The said rotatable member may have right- and left-hand threads, one of which threads is engaged with a part of, or a part connected to, the drum and the other thread is engaged with a part of, or a part connected to, the tension device for the fixed member, as the case may be, so that for one revolution of the rotatable member the endwise displacement of the pin will equal the sum of the thread pitches.

In order that the invention may be more clearly understood one preferred form will now be described, by way of example only, with the aid of the accompanying drawings in which—

Figure 1 shows a side view of a barometer mechanism according to this invention, mainly in elevation but partly in central section, and

Figure 2 is a section on the line 2—2 of Figure 1 looking in the direction of the arrows.

According to one method of carrying out this invention a single vacuum drum 1 is mounted between the limbs 2 and 3 of a U-shaped spring whereby tension is applied to the drum constituting the carrier. Limb 2 of the U is made longer and wider than limb 3 to provide a base whereby the spring can be secured in any convenient enclosing casing. The drum has two central pins secured to its opposite sides, one of which, namely that which is towards the longer and wider limb 2 of the U-shaped carrier is longitudinally adjustable. This pin comprises a left-handed screw 4 rigidly secured to the drum and a sleeve-nut 5 on said screw, which nut has at its outer end an ordinary notched screw-head. The outer surface of the sleeve-nut is screw-threaded with a right-handed thread and engages a correspondingly threaded bush 6 in the limb 2 of the spring. Obviously, the directions of screw-threads on the pin and on the exterior of the sleeve-nut can be reversed, i. e.,

the pin can have a right-handed thread and the sleeve-nut a left-handed thread. The bush 6 has an enlarged portion to provide a shoulder 7, and the reduced portion is flatted at the sides, as shown in Figure 2 at 8, and extends through a correspondingly shaped hole in the limb 2 of the spring; the shoulder 7 bears against the underside or back of the spring. The pin 9 on the opposite side of the drum extends through a hole in the limb 3 of the spring, and is secured by a cross-pin 10 having a knife edge engaging in a notch on the outer surface of the limb 3.

The drum 1 is introduced between the limbs 2 and 3 of the spring with the latter compressed, so that, when in position, the sides of the drum are expanded against atmospheric pressure which will tend to press them in. To adjust the drum the screw-threaded sleeve-nut 5 is rotated by means of its slotted head in one direction or the other, and thereby the distance between the limb 2 of the spring and the corresponding side of the drum, or the effective length of the pin, is varied. The thread on the exterior of the sleeve-nut serves as a thrust-receiving means to prevent the sleeve-nut from being drawn through the bush under the action of the spring. The flatted portion 8 of the bush, in which the sleeve-nut screws, prevents rotation of the bush itself, and the drum is prevented from rotating by the knife-edged pin 10 engaging in the notch aforesaid on the outer surface of the limb 3.

The indicating-needle 11 and the magnifying mechanism with its return spring 12 are mounted on the limb 2 of the spring, so that the spring, with the parts thereon, constitutes the entire barometer mechanism. The dial 13 and dial-carrying frame 14 are also mounted on the limb 2 of the spring.

It will be appreciated that the means for securing the drum and that for adjusting the same are combined; further the spring itself constitutes the entire carrier for the drum, magnifying mechanism and dial, and can be secured direct into a suitable casing, or the dial-carrying frame may constitute means whereby the spring and all the parts on it are held in position on the outer casing.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In an aneroid barometer, the combination with the drum, of a U-shaped spring for co-operation with the opposite sides of the drum, a connection between one leg of the spring and one side of the drum for rigidly supporting the latter, said connection including means for varying its effective length, and a loose connection between the other leg and the opposite side of the drum.

2. In an aneroid barometer, the combination with the drum, of pin-like projections on the opposite faces of the drum, a U-shaped member of resilient material having its legs connected to the said pins and means connected with one of the projections and the corresponding leg of said member for varying the effective length of the projection, including an element movable relatively to both the projection and the leg.

3. An apparatus according to claim 2, wherein the said element is of tubular form provided interiorly and exteriorly with screw threads having corresponding screw-threaded engagement with the projection and the leg.

4. Apparatus according to claim 1, wherein the means for varying the effective length of the connection comprises a threaded projection on the drum, a tubular member exteriorly connected to the leg of the spring and provided interiorly with screw-threads, and a tubular element having exterior screw-threads co-operating with the screw-threads of said member and having interior screw threads cooperating with the screw-thread on the projection.

5. Apparatus according to claim 1, including means for translating the relative movement of the opposite faces of the drum, said means being entirely supported on the said spring.

In testimony whereof I affix my signature.

ROWLAND ARNISON.