Oct. 24, 1939. C. H. HAVILL 2,177,564

EXPANSIBLE ELEMENT

Filed July 21, 1936

Fig. 1

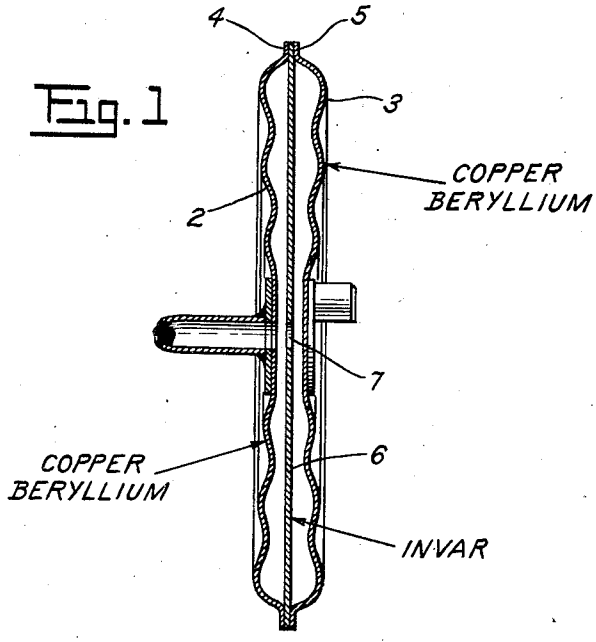
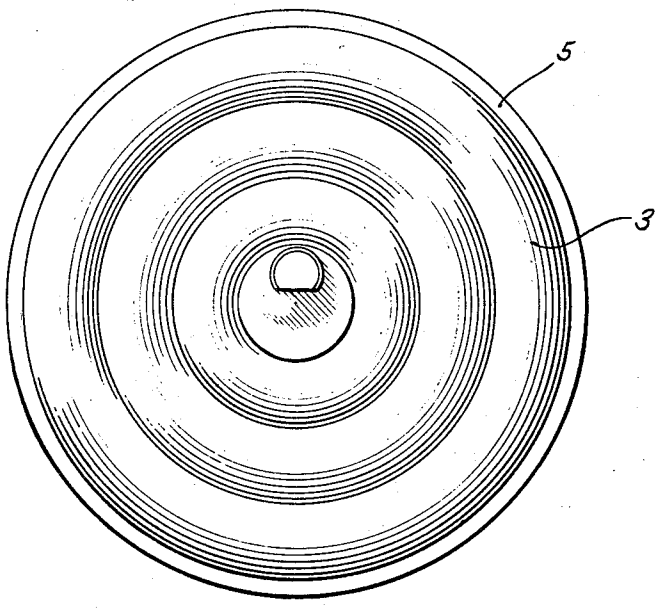


Fig. 2



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EXPANSIBLE ELEMENT

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Application July 21, 1936, Serial No. 91,795

1 Claim. (Cl. 137—156)

This invention relates to expansible elements and particularly to expansible elements of the character employed in diaphragms or bellows to vary the volume of a chamber formed by one or more of such expansible elements, in combination with one or more relatively fixed elements, such as an end wall or an enclosing frame or rim.

In such devices the end wall, enclosing frame, or encircling rim, while relatively fixed, is nevertheless subject to at least slight movement or expansion, as a result of either temperature or pressure changes; and an object of this invention is to prevent, or reduce to a minimum, such thermally induced movement or expansion.

In a pressure responsive mechanism, or aneroid, of a barometer or altimeter, a bimetallic thermostat has heretofore been employed to act upon the indicating mechanism in such a manner as to correct for the effect of temperature variations on the presure responsive expansible element. It has been found, however, that the correction factor does not always function as intended due to the intervention of an additional disturbing factor, namely, the tendency of the entire mechanism to shift due to expansion or contraction of the supporting frame. To overcome this difficulty I propose to employ, in lieu of such supporting frame, a disc of a metallic alloy, such as that commercially known as "invar", having a very low thermal coefficient of expansion, the disc to be located adjacent the expansible element or elements and secured thereto in any suitable manner, as by welding, riveting, etc.

With the illustrative construction indicated in the accompanying drawing, which shows Fig. 1 as a transverse sectional view, and Fig. 2 as a side elevation of the device, the outer rims **4** and **5** of the elements **2** and **3**, respectively, are held fast regardless of temperature variations, and their tendency to "curl" inwardly or spread outwardly, is effectively checked by virtue of the engagement with the substantially non-expanding and non-contracting disc **6**. At the same time the freedom of expansion and contraction, in an endwise direction, is not restricted and remains as heretofore.

In order to maintain pressure equality on both sides of the disc **6**, one or more openings **7** are provided.

What I claim is:

In an aneroid, the combination with a pair of diaphragms movable to infinitely numerous different positions in response to correspondingly numerous pressure changes, of means engageable with said diaphragms to hold the outer rims thereof against movement in their own planes, said means including a metallic disc interposed between said diaphragms and of substantially uniform dimensions at all temperatures, said disc being apertured to create equality of pressure on both sides thereof.

CLINTON H. HAVILL.