July 21, 1931. R. BARTON 1,815,606

ELECTROSCOPE

Filed Sept. 27, 1929

Fig. 1

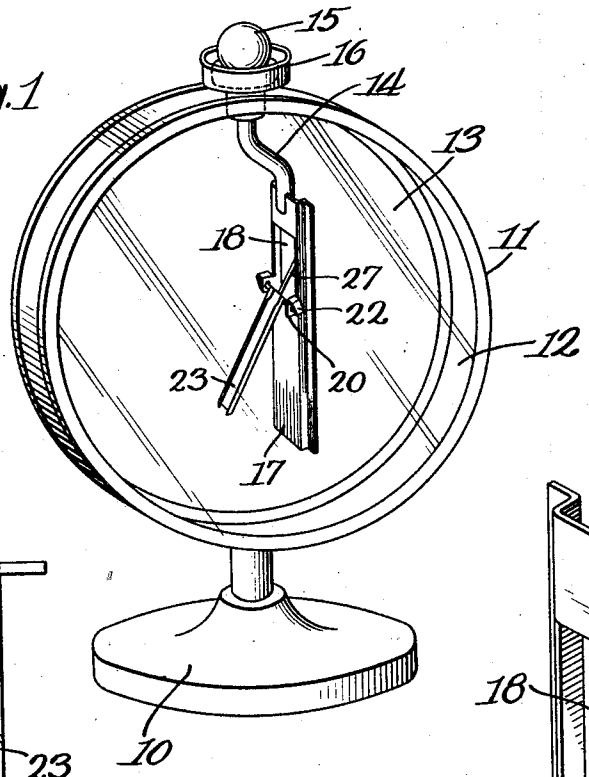


Fig. 3

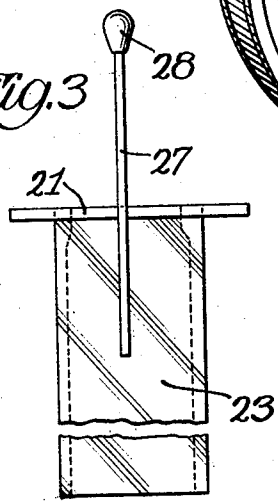


Fig. 2

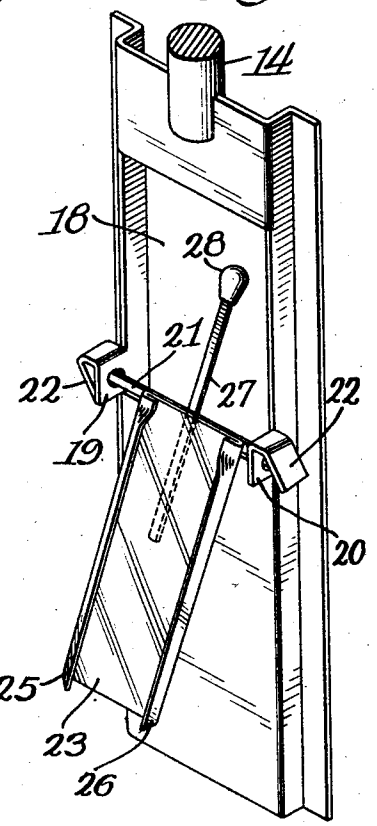
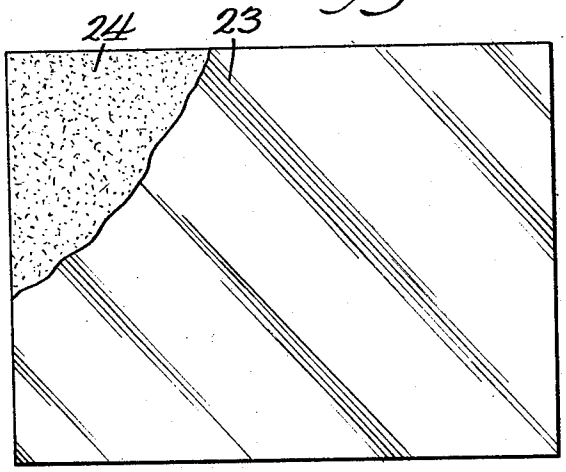


Fig. 4



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Patented July 21, 1931 1,815,606

UNITED STATES PATENT OFFICE

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ELECTROSCOPE

Application filed September 27, 1929. Serial No. 395,509.

The invention relates to electroscopes of the type in which the indicating element is a sheet of gold-leaf or other suitbale material, its object being to increase the durability and sensitiveness of the instrument.

An embodiment of the invention is hereinafter described and is illustrated in the accompanying drawings, in which

Fig. 1 is an elevation of the instrument;

Fig. 2 is a detail in perspective of the lower portion of the inductive element, with the indicating element mounted thereon;

Fig. 3 is a detail of the indicating element; and

Fig. 4 is a face view of the indicating element before mounting, some portions being broken away.

The instrument is mounted upon any suitable standard, as 10, and comprises a chambered body, as shown at 11, circular in form and having removable, transparent side walls 12, 13.

The inductive element is in the form of a rod 14, which projects through, and is suitably secured to, the circular wall of the casing. The outer end of the inductive element is, as usual, provided with a ball or knob 15 to cooperate with a body the electrification of which is to be tested. Mounted upon the outer end of the rod 14 and between the ball 15 and the casing is a cup-shaped element 16 which serves to obviate radio-active influences.

The inner or lower end of the inductive element is provided with a flattened portion in the form of a metal plate 17, rigidly secured to the end of the element 14. The plate 17 is rectangular in form and is stiffened by having its side margins bent to angle form. The upper portion of the plate 17 is apertured, as indicated at 18, and flanking the lower end of this aperture are trunnion lugs 19, 20 which may, as shown, be formed as integral with the plate, being bent upwardly perpendicular to the face of the plate and apertured to loosely receive a pivot rod 21. Preferably, this rod is a thin bar and rests within the lug apertures upon one of its side margins which is brought to a knife edge. The lugs 19 and 20 are provided with outwardly and downwardly turned portions, as at 22, which overlap the ends of the rod 21 preventing its longitudinal shifting.

The indicating element is a small sheet of gold-leaf 23, reinforced by a backing of high grade Japanese lens paper or the like, the two sheets being secured together by means of animal glue. A suitable stain may be mixed with the animal glue for the purpose of giving to the laminated leaf structure an appearance in all ways akin to the pure gold leaf. After cementing the paper to the gold leaf, it may be further made into a homogeneous structure by pressing with a hot sadiron.

The composite indicating element is then secured to a flat face of the rod 21 by a suitable cement and it is further reinforced by having its side margins folded upwardly, as shown at 25, 26. The upper ends of these marginal portions are preferably folded against, and cemented to, the face of the gold leaf, as indicated in the drawings.

The indicating element is counterbalanced by a rod 27 secured to the rear face of the indicating element 23 and projecting upwardly therefrom. The proper weight for the counterbalance is readily secured by attaching to its upper end a lump 28 of a waxy material, such as paraffin, whose mass may be readily added to or subtracted from by manipulation of a hot needle.

The instrument, as thus described, has the requisite sensitiveness as the indicating element will swing very freely, the pivot rod being practically frictionless. The reinforcement of the indicating element, as described, prevents its flexure and consequently greatly prolongs its life.

The operation of the instrument, except for the pivotal action of the indicating element, is the same as in electroscopes heretofore in use, the polarization of the inductive element causing the outward swinging of the indicating element because it is charged with electricity of the same sign as is the lower end of the inductive element.

I claim as my invention:

1. An electroscope comprising a stand and a casing mounted on the stand and having a

transparent wall, an inductive element within the casing and projecting through the top thereof, the lower end portion of the element being flat, a pivot rod journaled across the flat portion and spaced from the end thereof, and a sheet of gold leaf depending from the rod.

2. An electroscope comprising an inductive element, a pivot rod supported by the element adjacent one of the ends thereof, a sheet of golf leaf attached to the rod, and means for stiffening the sheet.

3. An electroscope comprising an inductive element, a pivot rod supported by the element adjacent one of the ends thereof, and a sheet of gold leaf reinforced by a sheet of paper cemented to its surface.

4. An electroscope comprising an inductive element, a pivot rod supported by the element adjacent one of the ends thereof, and a sheet of gold leaf attached to the rod, the side margins of the sheet being turned upwardly.

5. An indicating element for electroscopes comprising a sheet of gold leaf and a sheet of lens paper cemented together.

6. In an electroscope a fixed inductive element, and an oscillating reinforced gold leaf element pivotally attached thereto, and a counterpoise for the last-named element.

7. The method of making a composite gold leaf for electroscopes which comprises taking a sheet of gold leaf, securing to the leaf a sheet of thin reinforcing paper by a mixture consisting of animal glue and a stain, and thereafter pressing the composite structure into intimate contact by the application of pressure and heat.

8. As an article of manufacture, a composite gold leaf for use in electroscopes comprising a sheet of gold leaf reinforced by and in intimate contact with a sheet of relatively light paper, said gold leaf and reinforcing paper being pressed together to form a substantially homogeneous sheet of material.

In testimony whereof I affix my signature.

ROGER BARTON.