Jan. 5, 1926. 1,568,366

M. DE MICHELI

TESTING TOOL FOR INSULATION

Filed June 21, 1924

Fig. 1

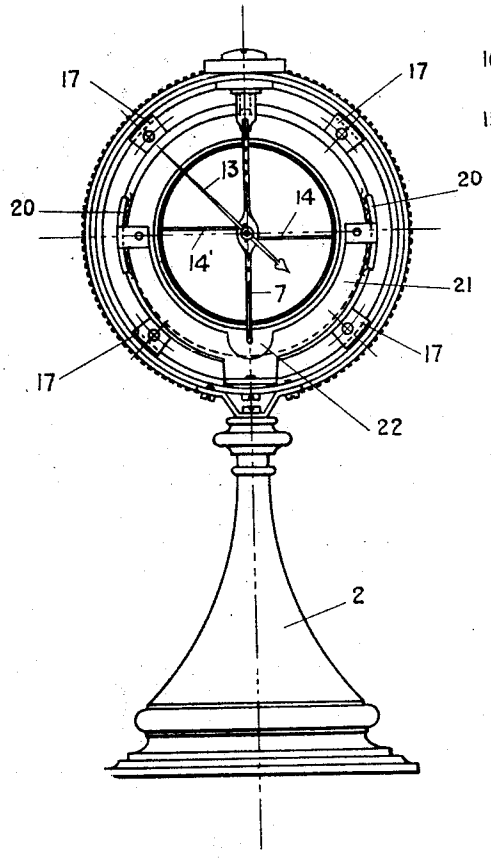
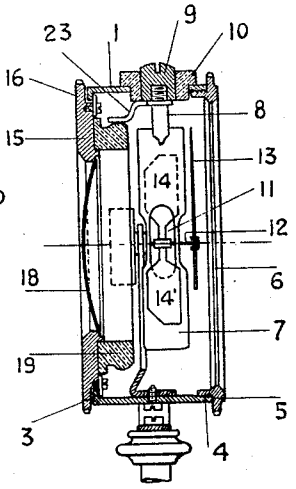


Fig. 2



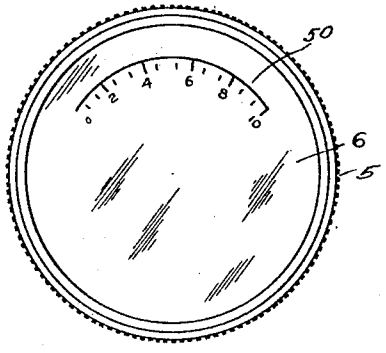


Fig. 3.

Inventor
M. De Micheli
By Marks & Clerk
Attys.

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UNITED STATES PATENT OFFICE.

MARIO DE MICHELI, OF GENOA, ITALY.

TESTING TOOL FOR INSULATION.

Application filed June 21, 1924. Serial No. 721,528.

To all whom it may concern:

Be it known that I, MARIO DE MICHELI, a citizen of Italy, residing at Genoa, Italy, have invented a new and useful Testing Tool for Insulation, of which the following is a specification.

The object of the present invention is a testing tool for insulating materials which essentially consists in an electroscope in which the gold leaves are replaced by an oscillating lever. The electric charge is not communicated to the tool from the outside by rubbing and contact, but by means of a device consisting of a rotatable part and a stationary part forming elements of the tool.

The invention also includes an indicator connected with the oscillating lever, which indicator cooperates with a graduation to point out the degree of insulation of the material under test.

The invention has also for its purpose to provide a testing tool for insulating means of very strong construction and sensitiveness which is as efficient as the known electroscopes provided with gold leaves. The tool operates safely and all its parts are enclosed in a casing.

The invention is illustrated in the accompanying drawing.

Fig. 1 shows a front view of the tool with the cover omitted;

Fig. 2 is a vertical sectional view of the same, with the cover in position.

Fig. 3 is a face view of the cover.

1 is a metal casing arranged on the pedestal 2. The casing 1 carries at the back side a flange 3 and at the front side a threaded edge 4 for the metal ring 5 which carries the glass cover 6. In the vertical middle plane in the casing 1 is arranged a rectangular metal leaf 7. This leaf is carried by a pin 8 threaded in the metal head 9. This latter is fastened on the casing 1 by means of the ebonite plug 10. In the central part of the leaf 7 is an opening 11 limited axially of the casing by two ribs. In these ribs is supported a shaft 12, which at its front end carries a pointer 13. Upon the part of the shaft 12 within the opening 11 on either side of the metal leaf 7 are applied two thin aluminum leaves 14 and 14′. The same are situated in planes parallel to each other and in vertical position they can adhere against the faces of the leaf 7. As the weight of the leaf 14′ is slightly less than the weight of the upper leaf 14, these leaves maintain this position of contact if the tool is not charged.

The casing 1 is closed at the back by a metal disc 15, which by its edge 16 and four metal arms 17, engage the flange 3 so that the disc 15 can be rotated on the casing 1. The disc 15 carries centrally a glass pane 18 and on its inner side an ebonite ring 19 which can be rotated from the outside by grasping and turning the toothed edge 16 of the disc 15. Diametrically opposite each other in horizontal alignment are arranged two metal leaves 20 carried by a semi-circular metal ring 21, which is fastened on the casing 1 by a screw. Each of the metal leaves 20 carries on its inner side, a strip of wool against which the ebonite ring 19 rubs during its rotation. The semi-circular metal ring 21 has a notch 22 opposite the lower end of the metal leaf 7 in order to space the metal parts 7 and 21. The pin 8 carries a contact piece 23 which slides on the ebonite ring 19. The inclination of the pointer is 45 degrees from the vertical when the two leaves 14—14′ (at loaded tool) are in a horizontal position, and the pointer assumes a position 90 degrees away after the discharge, that is when the leaves 14—14′ are in the vertical position. Between these two extreme positions of the pointer, the cover of the casing carries graduations 50 which facilitate the establishment of the intermediate values of the capacity of insulation.

In order to test insulating material with the present tool the disc 15 is oscillated for about a half a revolution in one direction or the other. Due to this rotation, static electricity is generated as the annular ebonite piece 19 rubs against the strips of wool fastened on the metal leaves 20. The static electricity produced is sufficient to displace the oscillating lever, constituted by the arms 14, 14′ arranged on the shaft 12. The oscillating lever, when the tool is unloaded, rests with its arm 14′ uppermost and with this arm bearing against the left hand of the member 7 while the arm 14 bears against the right hand side of the lower portion of the member 7. The electricity thus generated is conducted by means of the contact piece 23 to the pin 8 and from this pin 8 to the member 7, against which the oscillating lever 14, 14′ is bearing. On account of the fact that bodies charged with electricity of the same sign have a tendency to repel one another, the oscillating lever is repelled by

the member 7 and it thus rotates into the position shown in Figure 1. At this time if the insulating material to be tested is placed against the metal head 9, the oscillating lever 14, 14' will maintain its horizontal position, providing the insulating material is perfect. If the material undergoing test does not have good insulating properties, the lever returns to its vertical position where it again bears against the member 7. It is to be noted that the arm 14 is slightly heavier than the arm 14', so that the lever always has a tendency to return to its original vertical position, where it remains as long as the device is not charged with static electricity. It is to be understood, that in order to establish the different degrees of insulation of the bodies undergoing test, it is necessary that the head 9 be touched for an instant only. According to the position which the indicator assumes relatively to the scale 50, the degree of insulation can be determined.

The tool is not only adapted for the examination of insulating material but may be used to distinguish cotton or mixed fabrics from those of pure wool and pure silk from artificial silk, as well as to establish if pure silk or wool have been excessively dressed.

The tool can be built in small dimensions so that it can be put in the pocket and this without affecting its solidity, sensibility and reliableness of working.

I claim:—

1. An electrostatic tool for testing insulating material comprising a casing, a rotatable ring in the casing, means for rotating said ring from the exterior of said casing, stationary brushes of textile material bearing against said ring, a metallic member in the casing, means for transmitting static electricity from the ring to said member, an element connected to said means and adapted to be contacted with the insulating material to be tested, an oscillating lever associated with said member and including a plurality of contact surfaces adapted to normally bear against said member, a pointer rotatable with the lever, and a scale cooperating with said pointer.

2. An electrostatic tool for testing insulating material comprising a casing, a rotatable ring in the casing, means for rotating said ring from the exterior of the casing, stationary brushes of textile material bearing against said ring, a metallic leaf in the casing, means for transmitting static electricity from the ring to said leaf, an element connected to said means and adapted to be contacted with the insulating material to be tested, an oscillating lever associated with said leaf and including a plurality of arms adapted to normally bear gainst said leaf, a pointer rotatable with the lever, and a scale cooperating with said pointer.

3. An electrostatic tool for testing insulating material including a casing, a ring member arranged in the casing, a brush member in the casing contacting with the ring member, said members being of such material that when one of the members is rubbed on the other, static electricity will be generated, means for moving one of the members from the exterior of the casing, a leaf of conducting material arranged in the casing, means for conducting static electricity generated by said members to the leaf, an element connected to said means and adapted to be contacted with the insulating material to be tested, an oscillating lever associated with the leaf and adapted to normally bear against the latter and to be forced away from the leaf by static electricity generated by said members, a pointer movable with said lever, and a scale cooperating with said pointer.

In testimony whereof I have signed my name to this specification.

MARIO DE MICHELI.