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A. C. ROBERTSON

2,358,102

RECORDING INSTRUMENT

Filed May 21, 1943

FIG. 1.

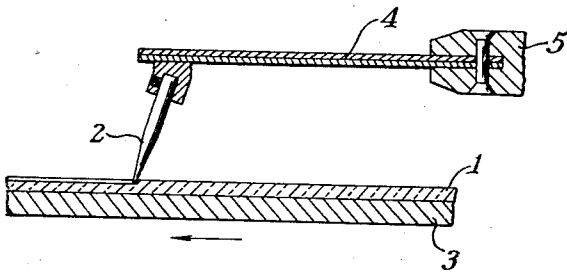


FIG. 2.

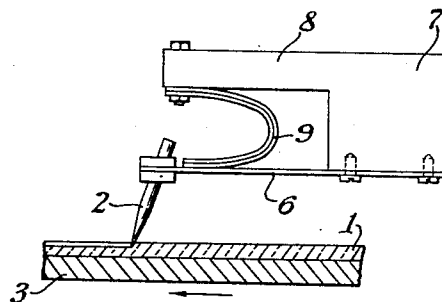


FIG. 3.

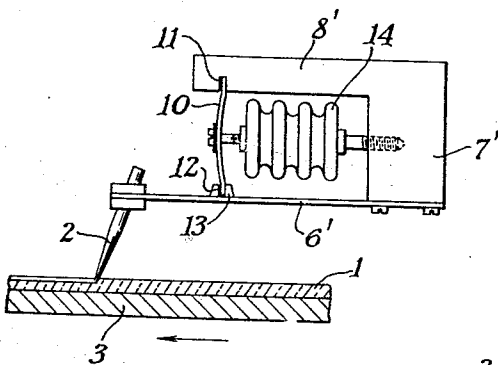
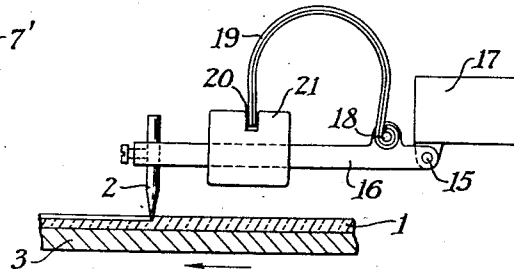


FIG. 4.



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RECORDING INSTRUMENT

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2 Claims. (Cl. 234—70)

This invention relates to an improved stylus for use in recording instruments of the type in which the stylus forms a groove in a plastic coating.

If the recording instrument is to be used over a wide range of temperatures as in airplanes which may go from a summer temperature on the airfield to many degrees below zero at high altitudes, the plastic composition in which the trace is made becomes harder at low temperatures and the stylus does not make a uniform trace at the different temperatures.

I have lessened this difficulty by using, instead of a stylus having a uniform spring pressure, one in which the pressure increases as the temperature decreases.

Reference will now be made to the accompanying drawing, the four figures of which illustrate four different embodiments of my invention.

In all of the figures the recording material is indicated at 1. This may be a coating of a plastic composition containing a pigment upon a supporting sheet of glass, paper or other material or it may be a sheet of plastic in the surface of which the stylus cuts a trace. In each figure, also, the cutting member or stylus proper is designated 2, and the support for the recording material, which moves, carrying the sheet 1, in the direction indicated by the arrow, is designated 3.

The several figures illustrate different structures by which the stylus is supported from the frame but each embodies a thermo-responsive element acting to increase the pressure of the stylus as the temperature decreases. In every case the stylus is carried by a frame, the vibration of which is transmitted to the stylus.

Figure 1 shows the simplest and preferred structure in which the stylus 2 is supported at the outer end of the bimetallic strip 4, the other end of which is rigidly secured to the frame member 5. The strip bends toward the recording plate 1 as the temperature decreases and thus presses the stylus more firmly toward the support 3.

It is to be understood that in all forms the stylus may form a groove in the plastic layer either by cutting or by displacement of material.

In Figure 2, the stylus 2 is shown as supported at the end of a leaf spring 6, the other end of which is rigidly secured to the frame member 7, which has a rigid arm 8 overhanging the spring 6. Attached to the under side of the arm 8 is an end of a bowed bimetallic strip 9, the other

end of which bears against spring 6, the pressure increasing with decrease in temperature.

In Figure 3, the stylus is also shown as carried by a leaf spring 6', attached to frame 7' having an overhanging arm 8'. A slightly bowed resilient metal sheet 10 has one end lying in the slot 11 in arm 8' and the other end in slot 12 in a projection 13 on spring 6'. A volume expansion device 14 is secured to the center of the sheet 10 and to the frame 8'. This expands with heat and contracts with cold, decreasing or increasing respectively the pressure of sheet 10 upon spring 6' and hence upon the stylus.

In Figure 4, the stylus 2 is mounted on one end of arm 16, the other end of which is pivoted at 15 to the frame 17. Pivoted at 18 to arm 16 is a bowed bimetallic strip 19, the other end of which engages loosely in a slot 20 in the weight 21 which slides freely along arm 16. The bimetallic strip tends to bow outwardly with decrease in temperature moving the weight toward the outer end of arm 16 and thus increasing the pressure on stylus 2.

The details and purpose of the particular recording instruments are immaterial to the present invention. They may be any type for recording sound, temperature, speed, barometric pressure, electrical or magnetic variations or any other variable.

The above instructions are shown by way of example but many other equivalents could be devised utilizing the principles of my invention.

Having thus described my invention, what I claim is:

1. An apparatus for making a record by making a groove in a plastic layer comprising a stylus, a supporting frame, means for supporting a sheet of record material, and means for supporting the stylus from the frame, said last named means including an element responsive to decrease in temperature to increase the pressure of the stylus toward the supporting means.

2. An apparatus for making a record in a layer of plastic material by means of a stylus and comprising a supporting means for the layer, a frame, a bar carried by the frame and carrying a stylus, the apparatus including a bimetallic strip responsive to decrease in temperature and effectively connected to the stylus to increase the pressure of the stylus toward the supporting means and thereby increase the record made by the stylus.

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