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POTENTIOMETER ADJUSTABLE BY SLIDE OR SCREW

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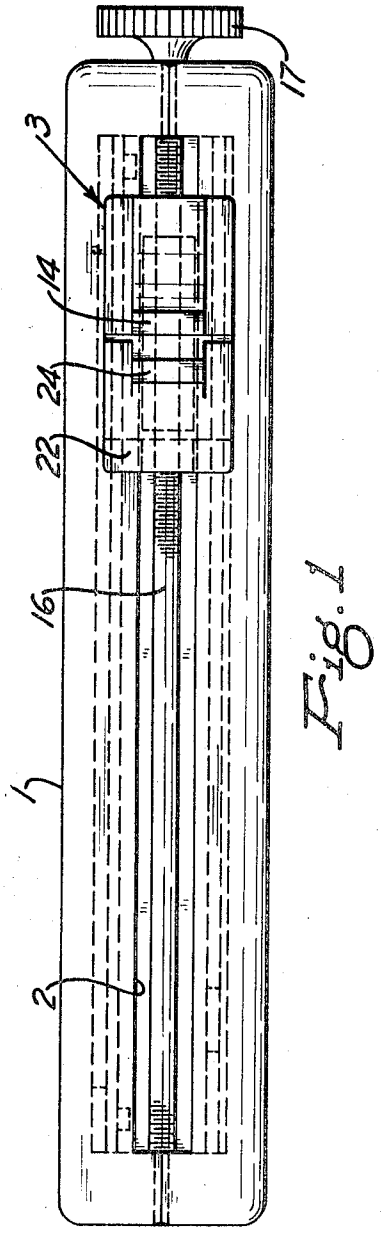

Fig. 1

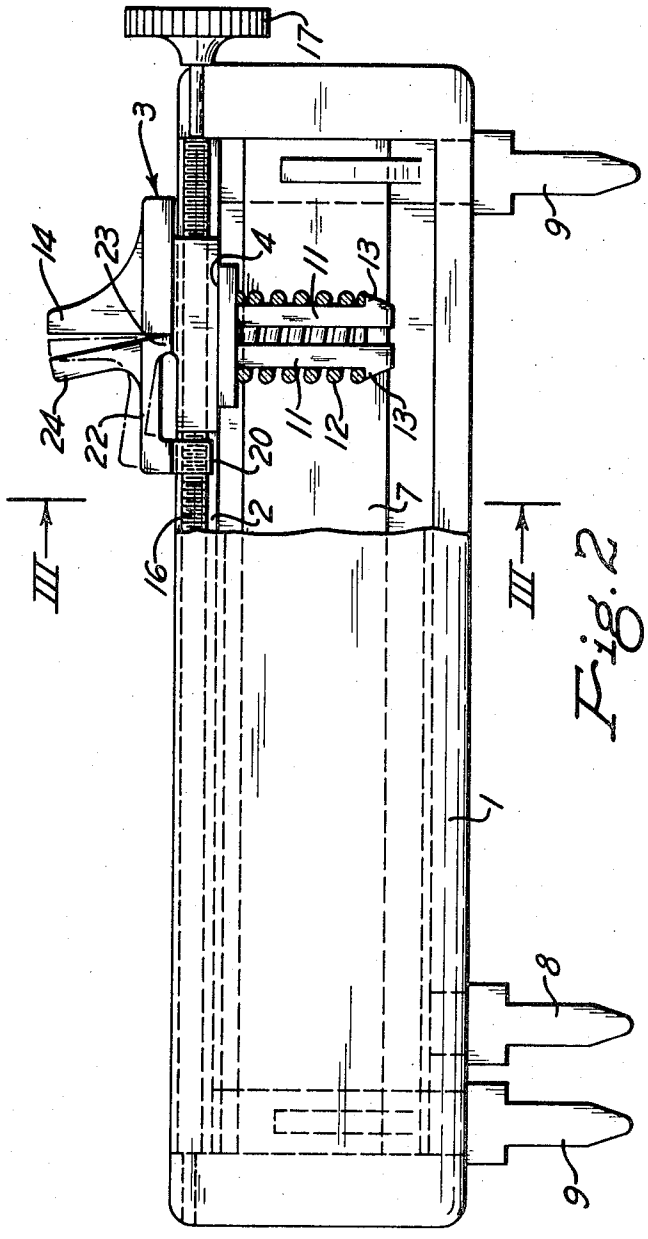

Fig. 2

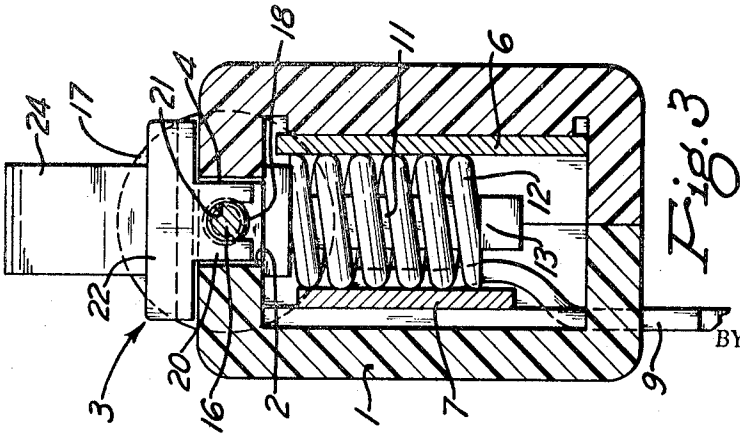

Fig. 3

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POTENTIOMETER ADJUSTABLE BY SLIDE OR SCREW

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ABSTRACT OF THE DISCLOSURE

A potentiometer has a straight resistance element, along which an electric contact can be moved by a manually operable slide. For fine adjustments, the slide can be moved by a rotatable screw extending lengthwise of the resistance element. For rapid movement, the slide is easily disconnected from the screw.

It is among the objects of this invention to provide a potentiometer, with which coarse adjustments can be quickly made, but which is provided with means for making very fine adjustments when desired.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which

FIG. 1 is a front view of a potentiometer;

FIG. 2 is a side view thereof with parts broken away; and

FIG. 3 is an enlarged cross section taken on the line III—III of FIG. 2.

Referring to the drawings, the long rectangular case **1** of a linear motion potentiometer may be formed from any suitable material, such as a molded plastic or other rigid material. Preferably, the case is made from two molded half sections that have meeting edges that extend from front to back across the ends of the housing and likewise along its back or base. The half sections are joined together in any suitable manner, such as by an adhesive for example. The front or top of the case has a longitudinal slot **2** through it extending lengthwise of the case for most of its length. Slidably mounted in the slot is a slide **3** that has laterally opening grooves **4** receiving the side walls of the slot so that the slide is locked in the slot and can move only lengthwise of it. A metal collector strip **6** and an electric resistor strip **7** are mounted inside the case on opposite sides thereof. The collector strip is provided with an integral terminal **8** that extends out through the back of the case; while clamped upon each end of the resistor strip is a metal terminal **9** that likewise extends through the back.

Inside the case, integral with the slide, is a rearwardly extending pair of spaced parallel legs **11**. Encircling these legs is a wire coil **12** that is held on them by laterally projecting feet **13**. The coil projects from opposite sides of the post and slidingly engages the resistor and collector strips, thereby forming a bridging contact between them. One end portion of the slide, equal to about half its length, has at its inner end an integral outwardly projecting knob **14** that can be used for moving the slide rapidly back and forth in the case slot.

It is a feature of this invention that the slide also can be moved extremely short distances under the full control of the operator, whereby to make very fine adjustments. Accordingly, a lead screw **16** extends lengthwise of the case along its slot **2** and has its reduced opposite ends rotatably mounted in the case. Preferably, the screw is disposed in the center of the slot, with its reduced ends journalled in the end walls of the case. One end of the screw extends out of the case and has a thumb wheel **17** or the like rigidly mounted on its outer end for turning the

screw. With the screw in the case slot, the body of the slide inside the slot is provided with a longitudinal passage **18** through it, through which the screw extends. This is a smooth unthreaded passage that permits the slide to be moved lengthwise of the case while the screw is stationary.

At the end of the slide opposite its knob there is a rearwardly projecting narrow portion **20** that extends into the case slot. This portion is provided with a notch **21** (FIG. 3) and straddles the screw. The notch contains partial screw threads so that a partial nut is formed that normally fits around approximately the front half of the screw, with the nut threads and the screw threads operatively engaging one another. Consequently, when the screw is turned by the thumb wheel **17**, the screw causes the nut and thereby the entire slide to move along the screw. The parallel sides of notch **21** help to prevent the nut from skewing or moving laterally on the screw.

In order to permit the slide to be moved along the screw by means of its knob, the nut **20** must be disengaged from the screw. To make it possible to accomplish this, the stiff end portion **22** of the slide that carries the nut is connected at its inner end to the rest of the slide by means of a transverse integral elastic portion **23**, as shown in FIG. 2. This elastic portion is strong enough to normally hold the nut in operative engagement with the screw. Joined to the inner end of this end portion **22** of the slide is an outwardly extending operating member in the form of a lug **24**, which normally is inclined away from knob **14**. When it is desired to disconnect the slide from the screw, this operating member is tilted or squeezed toward the knob, which causes the operating member to swing toward the knob as it flexes elastic portion **23** and thereby tilts stiff portion **22** of the slide away from the screw far enough to disengage the nut from the screw as indicated in dotted lines in FIG. 2. Then the slide can easily be moved rapidly along the screw to the approximate position desired, whereupon the operating lug **24** is released so that the elastic portion **23** of the slide can swing the nut back into engagement with the screw. Fine adjustment of the potentiometer then can be made by simply turning wheel **17**.

It will be seen that with this invention the desired fine adjustment can be made, and it can be made quickly because the slide can be moved independently of the screw to the approximate location before the screw is operated. Also, this dual drive is accomplished with no more parts than a potentiometer adjusted only by a screw.

If desired, both ends of the slide can be made tiltable and both provided with partial nuts normally engaging the screw. In case fast adjustment of the slide by its knob is not wanted, the knob and lug **24** can be omitted and all adjustments made by the screw. Even in this case, however, the nut is connected to the rest of the slide by an elastic portion so that if the operator continues to turn the screw after the slide reaches the end of the case slot, the nut will not be damaged because the rotating screw threads can push the nut threads out of registry with them.

I claim:

1. A linear motion potentiometer comprising an elongated case having a front and back connected by side walls, the front of the case having a longitudinal slot therein, spaced parallel resistor and collector elements mounted in the case and extending lengthwise thereof, a lead screw in the case extending lengthwise thereof along the slot and having its opposite ends rotatably mounted in the case, a slide disposed in said slot, a bridging contact in the case carried by the slide in sliding engagement with both of said elements, the slide having a portion forming a partial nut normally fitting part way around the screw and held in operative engagement therewith by an elastic portion of the slide connected with the nut, and means

for rotating the screw to cause said nut to move the slide along the screw, said elastic portion of the slide permitting said nut to be moved bodily out of operative engagement with the screw.

2. A linear motion potentiometer according to claim 1, in which said slide is provided with a smooth passage therethrough receiving said screw.

3. A linear motion potentiometer according to claim 1, in which said screw is disposed in said case slot, said slide is provided in the slot with a smooth longitudinal passage receiving the screw, and said nut is movable outwardly in the slot.

4. A linear motion potentiometer according to claim 1, in which said elastic portion is a central transverse portion of the slide, and said partial nut is at one end of the slide and is rigidly connected with said elastic portion.

5. A linear motion potentiometer according to claim 1, in which the slide is provided with a manually operable member for temporarily disengaging said nut from the screw to permit the slide to be moved lengthwise of the case while the screw is stationary.

6. A linear motion potentiometer according to claim 5, in which said elastic portion is a central transverse portion of the slide, said partial nut is at one end of the slide and is rigidly connected to said elastic portion, said manually operable member is formed to tilt the nut forward away from the screw, and said elastic portion of the slide is

formed to swing the nut back against the screw when said member is released.

7. A linear motion potentiometer according to claim 6, in which the slide has a knob, said manually operable member is rigidly connected with said nut and normally spaced from said knob, said member being tiltable toward the knob.

8. A linear motion potentiometer according to claim 6, in which said screw is disposed in said case slot, the slide has a knob and is provided in the slot with a smooth longitudinal passage receiving the screw, said manually operable member is rigidly connected with said nut and normally spaced from said knob, and said member is tiltable toward the knob to disengage the nut from the screw.

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