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GB 1356961 GB 0053947 GB 0543919

(58) Field of search
H1S

(54) Variable resistance device

(57) In a rotary variable electrical resistance device according to the invention, a housing (1) has an arcuate electrical resistance track (2) supported on a substrate (3) therein. The track (2) is adapted to be traversed by a known form of conductive wiper assembly secured to a carrier (4) having a spindle (5) extending therefrom. Terminals (7) are electrically connected to ends of the track (2) and a conductive collector (9) in the form of a disc extending to a further terminal (10) is also arranged to be contacted by the wiper assembly. A screw (12) is threaded into a lid portion (8) of the housing (1) on the axis of rotation (XY) of the carrier/spindle assembly (4, 5) and contacts the underside of the collector (9) to move the collector into contact with a protrusion (11) on the carrier (4) and thereby minimise undesirable end-float of the carrier/spindle assembly (4, 5). The screw (12) is suitably locked in position after adjustment.

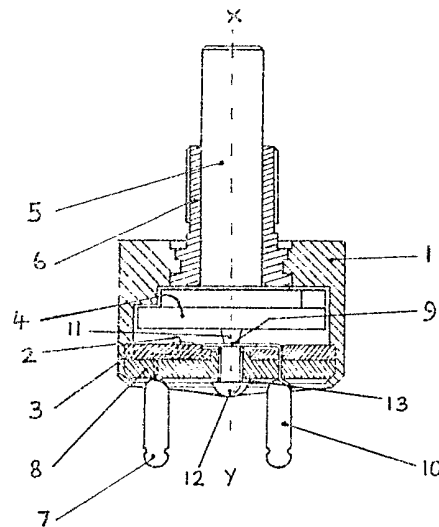
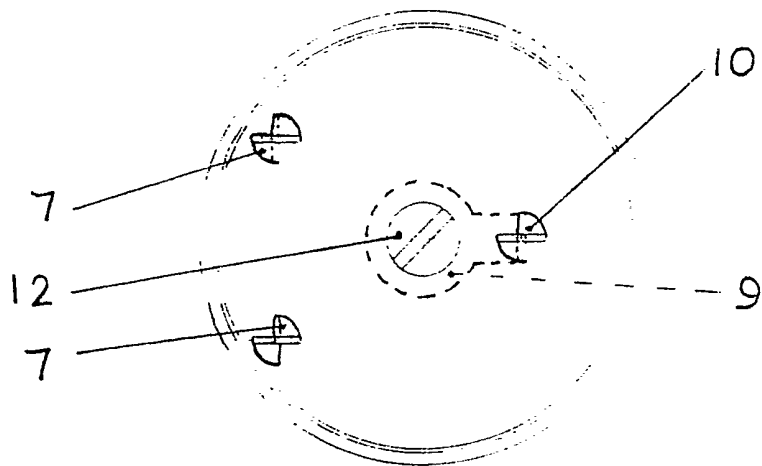
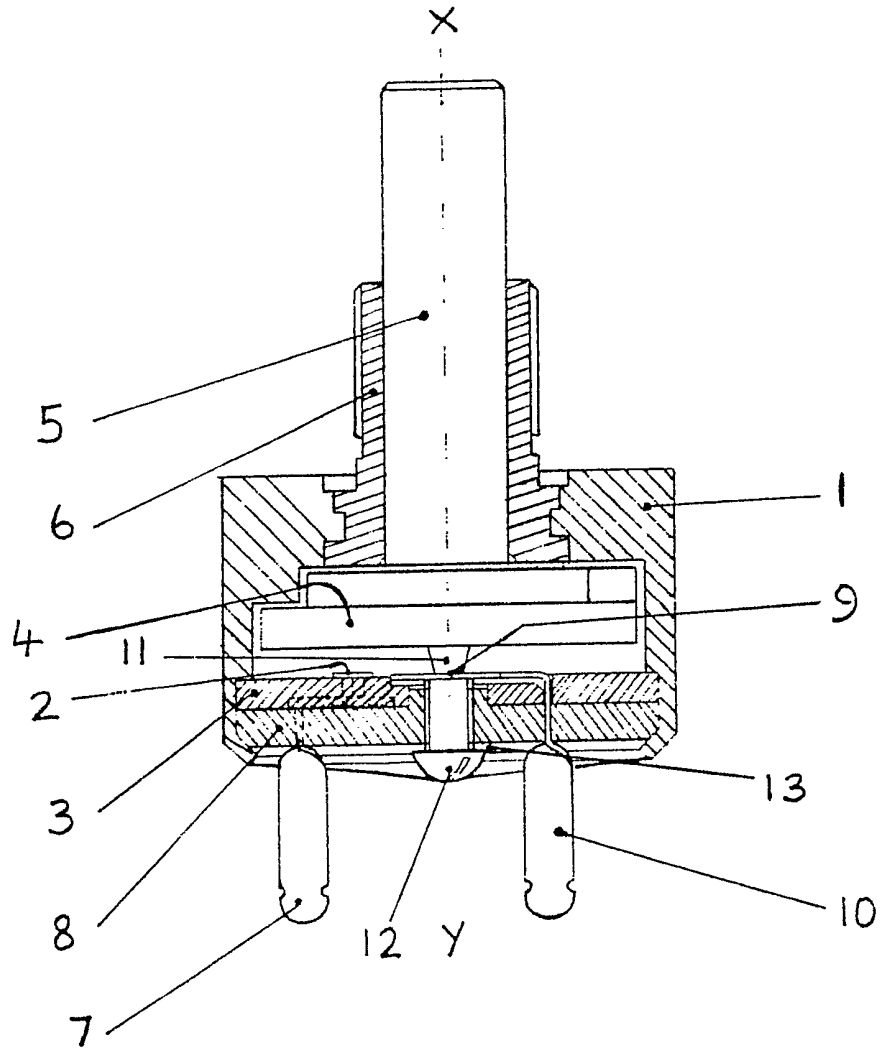


FIG. 1

POOR QUALITY

2160367



SPECIFICATION

Variable resistance device.

5 This invention relates to rotary variable electrical resistance devices, e.g. rotary potentiometers or rheostats. Such devices are well known and typically comprise a housing on or in which is supported on arcuate electrical resistance track and electrically
10 conductive terminals associated therewith. A resilient electrically conductive wiper assembly is secured to a carrier which is rotably supported in the housing such that upon rotation of the carrier by a spindle connected thereto, the wiper assembly is caused to
15 traverse the arcuate resistance track.

In some applications a problem has been encountered as a result of what is known as end-float of the rotatable carrier in the housing. This means that some movement of the carrier and spindle relative to the
20 housing is able to occur along the direction of the axis about which the carrier rotates. This can be disadvantageous when the spindle is mechanically coupled to external apparatus which is using the variable resistance device in connection with some control function.
25 With some such apparatus to which the spindle of the variable resistance device is coupled, correct operation of the apparatus may be disturbed by any such axial movement of the carrier and spindle assembly and this movement must therefore be minimised. It
30 has previously been proposed to insert shims between the carrier and housing to deal with the problem, but this has been time consuming and difficult to carry out with the required precision.

It is an object of the present invention to minimise or
35 overcome the above problem.

The present invention provides a rotary variable electrical resistance device comprising: a housing; an arcuate electrical resistance track supported in said housing and adapted to be traversed by an electrically
40 conductive wiper assembly, electrically conductive terminals being provided associated with said track and said assembly; a carrier for said wiper assembly supported for rotation about an axis in said housing; said device being characterised in that a threaded
45 member is provided adapted and arranged to cooperate between said housing and said carrier whereby undesirable displaceability of said carrier along said axis in said housing is minimised.

Suitably said threaded member is in the form of a screw or bolt; it is preferably aligned on the axis about which said carrier is adapted to rotate and is preferably provided threaded into said housing and adjusted so that clearance between it and said carrier has been minimised or set to a required degree.

55 In a particular embodiment, an electrically conductive collector, suitably in the form of a disc, which is adapted and arranged to be contacted by said wiper assembly, is provided in said housing overlying said threaded member, said collector being electrically
60 connected to one of said terminals, adjustment of said threaded member being effected to displace said collector to make contact with a protrusion provided

on said carrier.

The said carrier is suitably provided with a spindle
65 for rotation thereof, said spindle extending from said housing.

If desired, locking means may be provided for the threaded member after adjustment thereof.

70 It will be self-evident that the threaded member will not have been adjusted to an extent that required freedom of rotation of the carrier is affected.

The invention is now described by way of example with reference to the accompanying drawings in which

75 Figure 1 represents a sectional view of a variable electrical resistance device according to the invention. Figure 2 represents an end view of the variable electrical resistance device of Figure 1.

An embodiment of variable electrical resistance device, e.g. a potentiometer or rheostat, according to the invention comprises a housing 1, constructed, for example, from a plastics material such as glass-filled nylon. An arcuate electrical resistance track 2 is supported on a substrate 3 in the housing 1 and is adapted to be traversed by an electrically conductive
85 wiper assembly (not shown) of well known form and construction secured to a carrier 4 having a spindle 5 extending therefrom. The carrier and spindle assembly 4, 5 is supported, for rotation about an axis XY, in a portion 6 of the housing 1. Electrically conductive terminals 7, extend through a lid portion 8 of the housing and are electrically connected to opposite ends of the arcuate resistance track 2. An electrically conductive collector 9, suitably in the form of a disc is adapted and arranged to be also contacted by the
90 wiper assembly (not shown) which is supported on the carrier 4. Collector 9 extends to a terminal 10 passing through the lid portion 8 of the housing. The carrier 4 is provided with a protrusion 11 which touches the collector 9, the carrier 4 and protrusion 11 being electrically insulating.

In order to minimise any undesirable end-float of the carrier/spindle assembly 4, 5 i.e. undesirable displaceability of the carrier/spindle assembly 4, 5
105 along the axis XY about which the assembly is rotatable, a threaded member in the form of a screw 12 is threaded into a hole provided through the lid portion 8 of the housing. Screw 12 is provided on the axis of rotation XY of the carrier/spindle assembly 4, 5.
110 On adjusting the screw 12, it contacts the under side of the collector 9 and moves the latter towards the protrusion 11 on the carrier 4. Screw 12 is adjusted until the carrier/spindle assembly 4, 5 is no longer displaceable axially, but without its freedom of
115 rotation being restricted, which could occur if the screw 12 was over-tightened. the screw 12 is then locked in position, if required, by applying a suitable adhesive, e.g. an epoxy adhesive, at a region 13 between the screw 12 and lid portion 8 of the housing.

120 CLAIMS

1. A rotary variable electrical resistance device comprising: a housing; an arcuate electrical resistance track supported in said housing and adapted to be traversed by an electrically conductive wiper

- assembly, electrically conductive terminals being provided associated with said track and said assembly; a carrier for said wiper assembly supported for rotation about an axis in said housing; said device
- 5 being characterised in that a threaded member is provided adapted and arranged to cooperate between said housing and said carrier whereby undesirable displaceability of said carrier along said axis in said housing is minimised.
- 10 2. A rotary variable electrical resistance device according to Claim 1 in which said threaded member is in the form of a screw or bolt.
3. A rotary variable electrical resistance device according to Claim 2 in which said screw or bolt is
- 15 aligned on the axis about which said carrier is adapted to rotate.
4. A rotary variable electrical resistance device according to claim 2 or 3 in which said screw or bolt is provided threaded into said housing and adjusted so
- 20 that clearance between it and said carrier has been minimised or set to a required degree.
5. A rotary variable electrical resistance device according to any preceding Claim in which an electrically conductive collector, which is adapted and
- 25 arranged to be contacted by said wiper assembly, is provided in said housing overlying said threaded member, said collector being electrically connected to one of said terminals, adjustment of said threaded member having been effected to displace said collector to make contact with a protrusion provided on said
- 30 carrier.
6. A rotary variable electrical resistance device according to Claim 5 in which said collector is in the form of a disc.
- 35 7. A rotary variable electrical resistance device according to any preceding Claim in which the said carrier is provided with a spindle for rotation thereof, said spindle extending from said housing.
8. A rotary variable electrical resistance device
- 40 according to any preceding Claim in which locking means is provided for the threaded member after adjustment thereof.
9. A rotary variable electrical resistance device constructed and arranged substantially as hereinbefore described with reference to the accompanying
- 45 drawings.