July 31, 1956 J. GRAY ET AL 2,757,348

ROLLER CONTACT DEVICE FOR ELECTRICAL COILS

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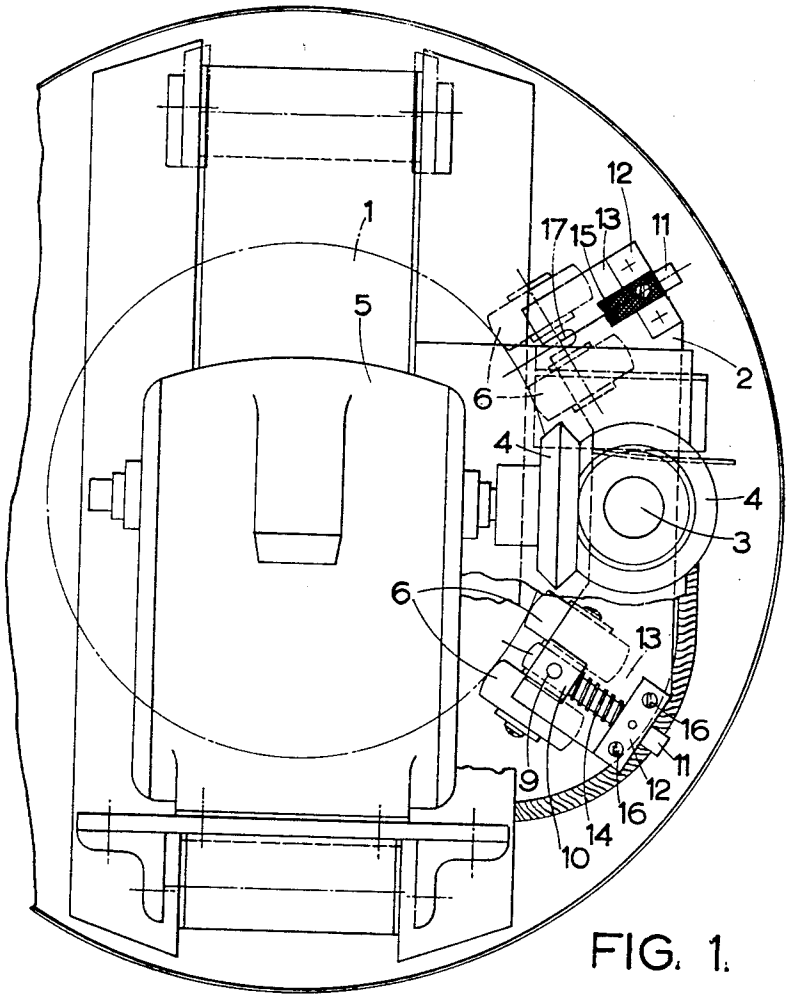


FIG. 1.

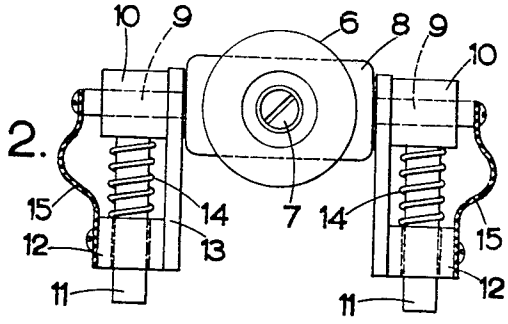


FIG. 2.

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ROLLER CONTACT DEVICE FOR ELECTRICAL COILS

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Claims priority, application Great Britain December 22, 1953

1 Claim. (Cl. 339—9)

This invention relates to contact devices adapted to be moved along a current-carrying coil which is bare at least over the part along which the contact is to be moved, the contact device being movable along a contact rod which serves to guide the movement of the contact device and to conduct the current to a fixed terminal. Such contact devices are employed in regulating transformers or similar apparatus employing a coil or winding of which a variable part is to be connected into a circuit.

Such contact device includes means for resiliently pressing the contact element or elements against the bare coil or winding and the present invention has for its main object to provide an improved contact construction of the kind in which a pair of spaced rolling contact elements are employed and wherein the contact pressure of the two rolling elements is substantially equalized.

A further object of the present invention is to provide a mounting for such contact devices which will permit a better engagement of the rolling contact element with the coil in all positions of such contact element along the coil than has hitherto been possible.

The foregoing and further object of the present invention will be apparent from the following description of one embodiment of the invention which is illustrated in the appended diagrammatic drawings, in which:

Figure 1 shows a voltage regulator coil in plan with two pairs of roller contacts according to the present invention, and

Figure 2 is an elevation of one pair of said roller contacts.

Referring to the said drawings, the voltage regulator coil is indicated at **1** and the contacts are mounted on a carriage comprising spaced plates **2**, which is movable axially of the coil **1** by means of a shaft **3** driven through bevel gears **4** by a motor **5**. The shaft **3** is threaded to engage a nut member attached to the carriage **2**.

Each contact device in the embodiment illustrated comprises two carbon rollers **6** which are rotatably mounted

on pins **7** extending laterally from a block **8** which is provided with trunnions **9** (see Figure 2) extending at right angles to such pins.

Each trunnion **9** is rotatably mounted in a bearing element **10** and each bearing element **10** carries a plunger **11** passing through a guide bore in a lug **12** attached as by means of screws **16** to the respective plates **2**, forming the carriage or to plates attached to such carriage.

A spring **14** is disposed around each of the plungers **11** between the respective bearing element **10** and the lug **12**.

In order to ensure good electric connection, the ends of the trunnions **9** are electrically connected to the corresponding lugs **12** by strips of copper braid **15**.

To permit movement of the contact rollers **6** radially of the coil **5** under the action of the springs **14**, the plates **2** are formed with slots **17** in which the trunnions **9** are located so that as the plungers **11** slide relatively to the lugs **12**, the trunnions **9** can move in the slots **17** (see the right hand side of Figure 1 where the bearing element is omitted and the contact elements **6** are indicated only by broken lines).

It will be seen that with constructions according to the invention, the contact rollers **6** are free not only to move radially of the coil **1** but also to turn about the axis of the trunnions **9** which is parallel to the axis of the coil **1** so that pressure of the two rollers against the coil is equalized.

We claim:

An electrical contact device comprising a carrier; a pair of spaced guide members on such carrier; a guide bore in each said guide member, such guide bores being parallel; a plunger slidable in each said guide bore; a pivot bore in each such plunger, said pivot bores being disposed at right angles to said guide bores; a mounting block; two co-linear trunnions extending one from each side of such mounting block, said trunnions being rotatably disposed one in each said pivot bore; two co-linear mounting pins extending one from each side of the said mounting block, such mounting pins being disposed at right angles to said pivot bores and to said guide bores, a contact roller rotatably mounted on each such mounting pin; and resilient means urging said mounting block away from said guide members.

References Cited in the file of this patent

UNITED STATES PATENTS

2,242,453 Cochran ---------- May 20, 1941

FOREIGN PATENTS

478,664 Italy ---------- Feb. 28, 1953