March 13, 1956 J. GRAY 2,738,472

ROLLER CONTACT FOR TRANSFORMER COIL

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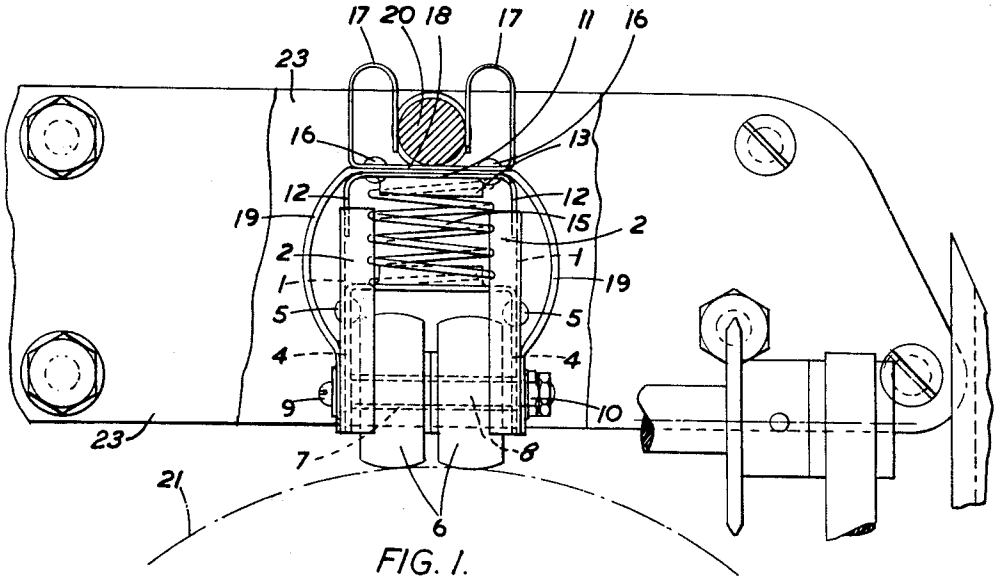


FIG. 1.

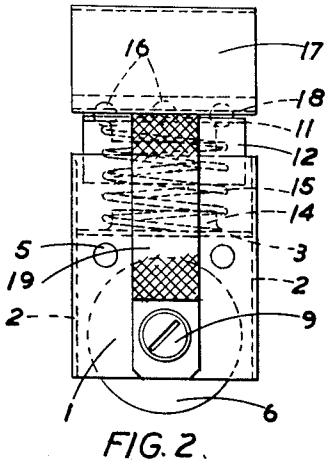


FIG. 2.

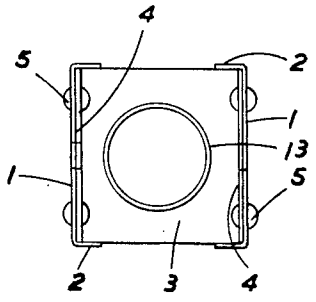


FIG. 3.

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ROLLER CONTACT FOR TRANSFORMER COIL

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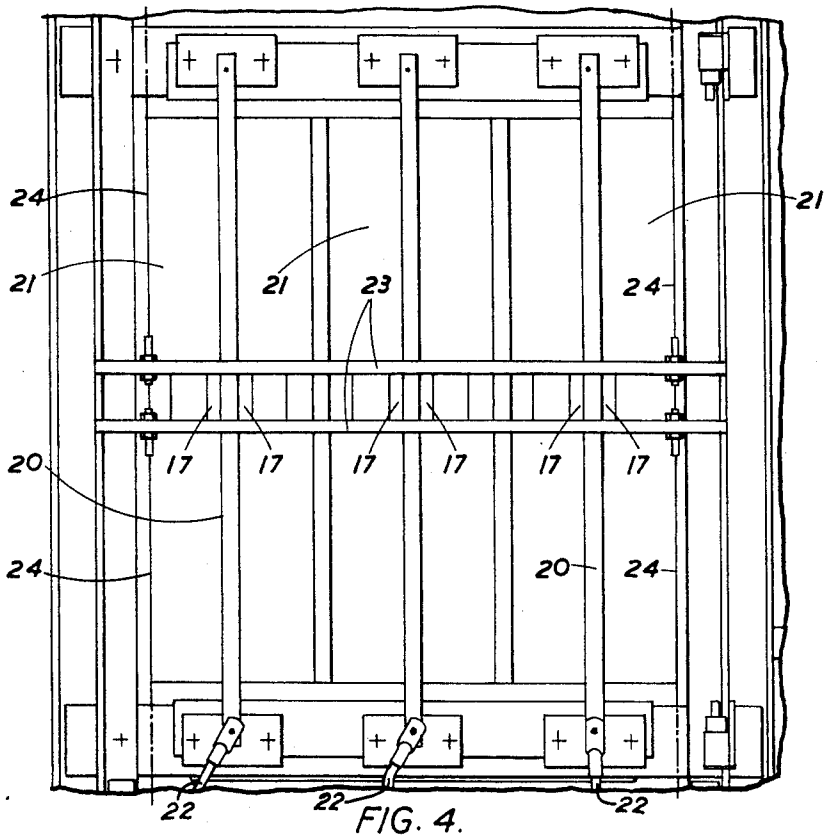


FIG. 4.

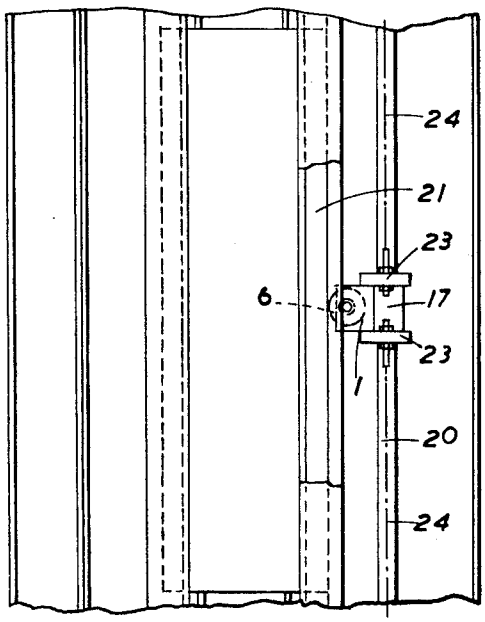


FIG. 5.

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ROLLER CONTACT FOR TRANSFORMER COIL

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Application May 18, 1953, Serial No. 355,736
2 Claims. (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.

In such contact devices it is necessary to provide means for resiliently pressing the contact against the bare coil or winding and for enabling the contacts to be readily removed for inspection or replacement when required.

Hitherto such a contact device has comprised a mounting for a pair of contact rollers, said mounting being attached by an integral spring to means for slidably mounting the contact device on the contact rod.

This construction has proved unsatisfactory in practice and the present invention has for its object to provide an improved construction of such contact device.

According to the present invention a contact device for movement along a current-carrying coil which is bare at least over the part along which the contact is to move, comprises at least one contact roller rotatably mounted in a frame, in which there is slidably mounted a carrier provided with a spring clip device for sliding engagement with the contact rod, a spring urging the carrier away from the contact roller and flexible electrical connection between the roller and said carrier.

In order to explain the invention more fully one construction according thereto will now be described with reference to the accompanying drawings in which:

Figure 1 is a front elevation of the contact device mounted on the contact rod,

Figure 2 is a side elevation of the contact device,

Figure 3 is an underplan view of the device with the contact rollers removed,

Figure 4 is a front elevation of part of a regulating transformer showing the mounting of a number of contact devices according to the invention and

Figure 5 is a side elevation of a corresponding part of said transformer.

In the construction illustrated in the drawings the contact device comprises a frame consisting of two side plates **1** each having a pair of integral flanges **2** extending at right angles thereto to form a channel member of rectangular section. The plates **1** are connected by a transverse web **3** having integral lugs **4** extending at right angles to the web and secured to the plates **1** by rivets **5**.

Mounted between the plates **1** are two carbon contact rollers **6**, these rollers being rotatable about a tube **7** through which passes a bolt **8**, which also extends through holes in the plates **1** and lugs **4**, the bolt having a head **9** at one end and being secured by nuts **10** at the other end.

Slidably mounted in the frame formed by the plates **1** and web **3** is a carrier provided with a spring clip device for sliding engagement with the contact rod (shown at **20**).

This carrier comprises a plate **11** having integral guide lugs **12** which are spaced apart by a distance such that their outer faces slidably engage against the inner faces of the plates **1** so that the channel section members **1, 2** serve as guides for the sliding movement of the carrier **11, 12.**

Projecting from the plate **11** is an annular flange **13**, and projecting from the web **3** is an annular flange **14**, said flanges being directed towards one another and serving respectively to locate the opposite ends of a compression coil spring **15** which urges the plate **11** out of the guide members **1, 2,** that is to say, away from the rollers **6.**

Secured to plate **11** by rivets **16** is a spring clip comprising two springy U-shaped members **17** connected by a plate **18** with which they are integral, and secured between plates **11** and **18** is a length of flexible conducting material, preferably copper braid of which the ends **19** are secured to the plates **1** by the bolt **8** and nuts **10.**

The manner in which the contacts, according to the invention, are used is illustrated in Figures 4 and 5 which show part of a regulating transformer including the said contacts. The transformer includes three coils **21** each of which is bared at least over the part which is engaged by the contact and associated with each coil is a fixed contact rod **20** to which is attached a lead **22.**

The contacts, according to the invention, are mounted between two horizontal plates **23** forming a carriage which is movable vertically up and down the coils **21** by chains **24** driven by mechanism not shown in the drawings.

The width of each contact is such that it fits between the plates **23,** the carrier portion **11** of the contact being engaged around the corresponding contact rod **20** by means of the spring clips **17** thus the contacts serve to convey current from the coil **21** through the contact rod **20** to the lead **22.**

The carriage **23** and the mechanism for moving it, however, form no part of the present invention.

I claim:

1. A contact device comprising in combination a frame including two side plates, a transverse web connecting said plates intermediate their ends, a contact roller rotatably mounted between said plates at one side of said web, guides on said plates at the other side of said web, a carrier in the form of a plate, parallel spaced lugs on said plate slidably mounted in said guides, a compression spring acting between said transverse web and said carrier, a flexible electrical connection between said roller and said carrier, and two inverted U-shaped spring clips carried by said carrier, each such spring clip having one limb fixed to said plate of the carrier and the other limb free to move resiliently, said other limbs being disposed parallel to one another and between the fixed limbs.

2. A contact device comprising a frame, a contact roller rotatably carried at one end of said frame; guide means rigid with said frame at the end remote from said contact roller; two U-shaped members each including side limbs and bases, said bases being connected back-to-back, side limbs of one said U-shaped member being slidably engaged in said guide means; resilient means acting between said frame and said U-shaped members to urge the latter away from said rollers; reversely inturned resilient end portions on the side limbs of other said U-shaped member, such inturned end portions being parallel to said side limbs; and connecting means electrically connecting said other U-shaped member to said roller.

References Cited in the file of this patent

UNITED STATES PATENTS

961,855	Gernsback	June 21, 1910
1,696,964	Morrison	Jan. 1, 1929
2,163,644	Ware	June 27, 1939
2,273,245	Ander	Feb. 17, 1942

FOREIGN PATENTS

584,660,	Great Britain	Jan. 20, 1947