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J. E. ERSKINE

ELECTRICAL CONTACT MOUNTING

Filed March 12, 1921

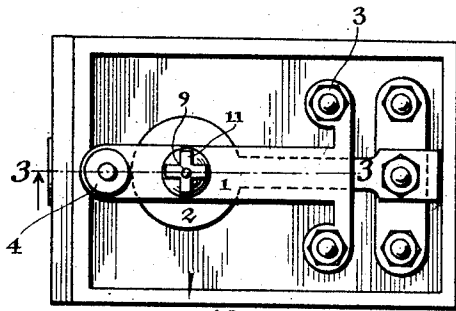


FIG. 2

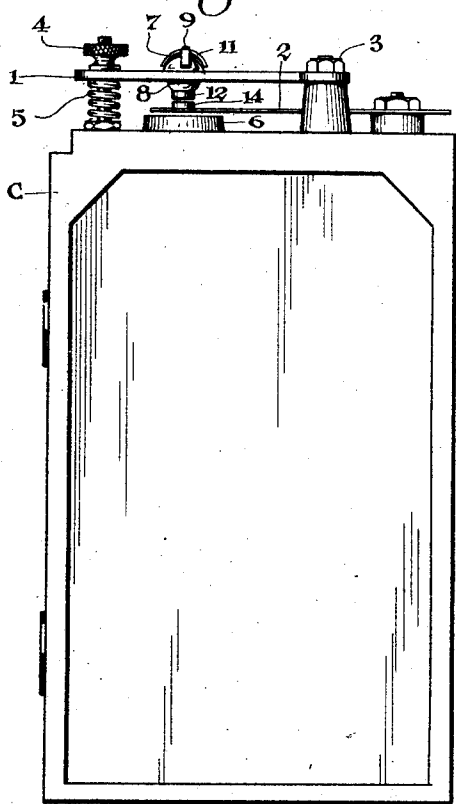


FIG. 1.

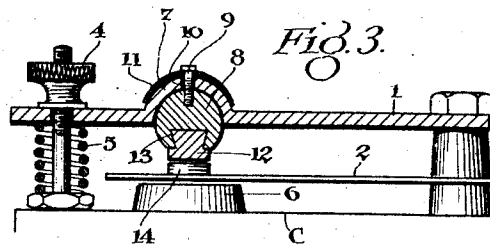


FIG. 3.

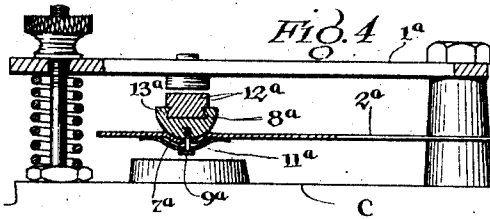


FIG. 4.

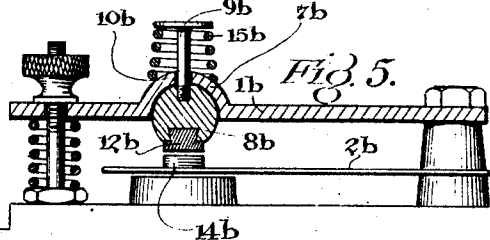


FIG. 5.

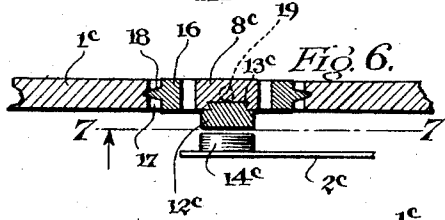


FIG. 6.

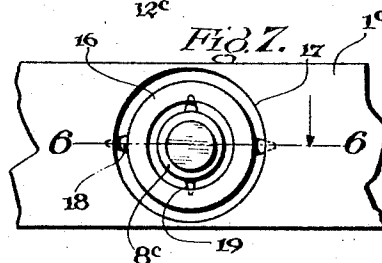


FIG. 7.

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ELECTRICAL CONTACT MOUNTING.

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My invention relates to improvements in mountings for electrical contacts, and it consists in the constructions, combinations and mode of operation herein described and claimed.

One of the foremost objects of the invention is to provide a mounting of such arrangement that the contact may seat itself perfectly.

10 A further object of the invention is to provide a universally movable mounting for electric contacts, through the functioning of which adjacent plane contact surfaces may establish complete engagement.

15 A further object of the invention is to provide a mounting of the character described, comprising a universally movable foundation of base metal, to a plane surface of which a small disk of platinum or other high resistance material is affixed.

Other objects and advantages will appear in the following specification, reference being had to the accompanying drawing, in which:—

25 Figure 1 is a side elevation of an induction coil showing the improved mounting in place on the contact arm,

Figure 2 is a plan view,

30 Figure 3 is a longitudinal section taken substantially on the line 3—3 of Figure 2,

Figure 4 is a view partly in elevation and partly in section, illustrating a modification wherein the universal mounting is carried by the vibrator instead of by the contact arm,

35 Figure 5 is a section similar to Figure 3, illustrating the modified form of spring for holding the universal mounting in place,

40 Figure 6 is a section on the line 6—6 of Figure 7, illustrating another modification, and

Figure 7 is an elevation showing how the mounting in Figure 6 appears when viewed in the plane of the line 7—7.

45 As indicated in the objects of the invention stated above, the purpose of the improved mounting is to insure cooperating contacts seating perfectly against each other so as to provide a complete path for the passage of the electric current, and therefore in a large measure eliminating sparking, which comes from imperfectly seated contacts, and pitting of the contact surfaces, which also comes from the same cause. Four arrangements for securing the ultimate result are

illustrated in the drawing and each of these is described in detail below. Take first the preferred form in Figure 3. The coil C, well shown in Figures 1 and 2, is of a conventional type. In so far as the invention 60 is concerned, the coil includes the contact arm 1 and the vibrator 2. The former is fixed at 3, but the free end is adjustable by means of the screw 4 which operates in the downward direction against the tension of the spring 5. The vibrator 2 is also fixed, but its free end vibrates between the exposed core end 6 and the contact of the improved mounting on the contact arm 1.

Instead of being perfectly straight, as is now the case, the contact arm 1 is embossed directly over the core 6 to provide a semi-spherical socket 7 in which the foundation 8 of base metal or other material, has limited oscillatory motion. It is retained by the stud 9 which passes through the hole 10 in the bottom of the socket 7, the head of the stud being held up by the spring mounting 11. This spring mounting may be made in the shape of a cross as suggested in Figure 2, or it may be made in other shapes. Its purpose is to seat the foundation 8 in the socket 7, with sufficient firmness to prevent any lost motion, but at the same time yielding sufficiently to permit the limited turning motion to which the foundation is susceptible.

A contact 12 of more precious metal, as for instance, platinum or other suitable high resistance material, is attached at 13 in the bottom plane face of the foundation 8. This contact cooperates with a similar contact 14 on the vibrator 2. After the contacts have once been alined, there is no further movement until the contacts are disturbed, then there will be a tendency toward a slight turning motion of the foundation 8 in its socket 7, insuring the perfect engagement of the companion plane faces of the contacts so that there may be a uniform current path for the elimination of sparking.

The modification in Figure 4, shows the foundation 8^a as being seated in a socket 7^a in the vibrator 2^a instead of in a similar socket in the contact arm above. The contact 14^a is now carried by the contact arm 1^a, and the contact 12^a is keyed in the foundation 8^a at 13^a, the same as before.

The stud 9^a passes through a hole in the vibrator 2^a, and a spring 11^a, similar to the

spring 11 in Figures 2 and 3, retains the foundation 8^a in its socket by virtue of engaging beneath the head of the stud.

The modification in Figure 5, is very much like the arrangement in Figure 3. The contact arm 1^b has a socket 7^b with a hole 10^b through which the stud 9^b passes to fasten into the foundation 8^b. The contact 12^b is keyed in place as in Figure 3, and it cooperates with a contact 14^b on the vibrator 2^b.

But instead of being held in place by a leaf spring in the shape of a cross, as in Figure 2, the foundation 8^b is supported by the spiral spring 15^b, and for the purpose of providing an adequate abutment on the stud against which the upper end of the spring shall rest, the head of the stud is made considerably larger than in Figure 3, and the stud itself is also considerably longer. It should be remembered that the sections in Figures 3, 4, 5, and 6 are larger than actual size, so the various dimensions shown in these views must be considered as much more when reduced to the actual working sizes.

The modification in Figure 6 comprises a gimbal ring 16, mounted in an opening 17 in the contact arm 1^c. The ring 16 has prongs 18 at diametrically opposite points, which enable lateral rocking motion.

The foundation 8^c, in this instance flat instead of spherical as in Figure 3, has prongs 19 at diametrically opposite points, but these are mounted in recesses inside of the gimbal ring 16 at places ninety degrees around from the prongs 18. The contact 12^c is keyed in place at 13^c, and this contact is as capable of adjusting itself in respect to the contact 14^c of the vibrator 2^c, as are any of the contacts in the foregoing modification.

The reader can now readily understand that in any of the various forms of the invention there is provided a universal mounting for a contact with which another movable contact cooperates, that universal mounting enabling a perfect engagement of

the companion plane surfaces, so that there may be a uniform flow of current. Needless to say, the invention is adaptable to electric devices other than induction coils, as for example, various types of current interrupters, bell armatures, etc.

While the construction and arrangement of the improved electrical contact mounting as herein described and claimed, is that of a generally preferred form, obviously other modifications and changes may be made without departing from the spirit of the invention or the scope of the claims.

I claim:

1. An electrical contact mounting, comprising an arm with an embossed recess provided with an opening, a foundation seated in the recess, with a headed stud passing through the opening; a contact keyed to the foundation, and resilient means between the stud head and arm, retaining the foundation but permitting limited oscillatory motion.

2. An electrical contact mounting, comprising a bar with an embossed recess having a central hole, a foundation of base material swivelled in the recess by a headed stud passing through the hole, and having a contact disk of rare metal keyed on a face; and a spring between the stud head and bar retaining the foundation.

3. An electrical contact mounting comprising a contact having a portion of spherical form, an element extending from the spherical portion of the contact, an enlargement on said element, a support having a concavity to receive said spherical portion and an opening larger than said element to enable the latter to pass through, and resilient means seated between the support and said enlargement to keep the spherical portion in engagement with the concavity, said enlarged opening enabling oscillating movement of the element when the contact moves in the concavity.

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