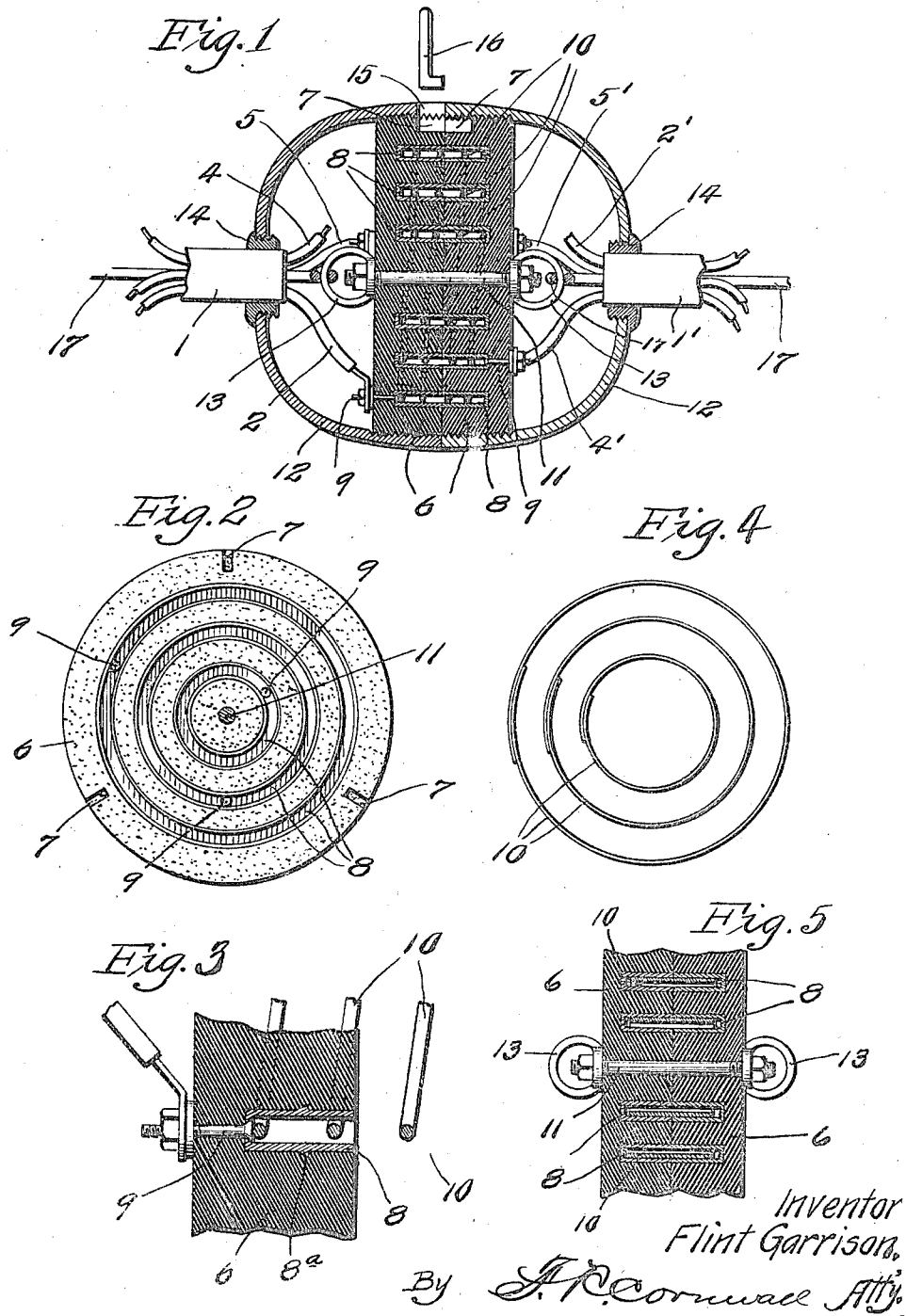


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 SWIVEL CONTACT FOR ELECTRICAL CONDUCTORS.
 APPLICATION FILED DEC. 6, 1916.

1,247,660.

Patented Nov. 27, 1917.



UNITED STATES PATENT OFFICE.

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SWIVEL-CONTACT FOR ELECTRICAL CONDUCTORS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FLINT GARRISON, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Swivel-Contacts for Electrical Conductors, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates broadly to electrical distribution, and specifically to a form of swivel contact for use in electrical conductors for the purpose of permitting relative rotary movements between the parts of the conductor electrically connected by the contact member.

As is familiar in the art, it is frequently desirable that one portion of an electrical conductor be susceptible of rotative movement relative to another or continuing portion of the conductor without necessitating the breaking of the electrical connection of the two portions. For example, in the use of various, portable electrical instruments, such as stand telephone instruments, portable or movable lamp carrying devices, electric flat irons, and similar manually movable sorts of apparatus wherein the current is supplied by conductors connected to an exterior source, the conductors are subject to becoming twisted due to the manipulation of the movable device. Not only is a twisted condition of such a conductor inconvenient, but it also contains possibilities of danger, as it tends to wear the insulation at certain places, and give opportunity for the crossing or grounding of the conductors.

The general purpose of my invention is to provide an effective swivel contact device which may be utilized in any electrical conductor wherein relative rotation of portions thereof is desirable, and by virtue of which such relative rotation of portions of the conductor is permitted while the conductive integrity of the conductor is maintained.

A more particular object of my invention is to provide a device of the character just specified which is compact, light, applicable to a great variety of situations, readily installed and economical in cost.

Other and further objects of my invention will be obvious or pointed out hereinafter, reference being had to the accompanying

drawing wherein, for the purpose of illustration, a single embodiment of my invention is shown, and in which—

Figure 1 represents a longitudinal sectional view of my improved swivel contact;

Fig. 2 represents a front or face view of a contact carrier;

Fig. 3 is an enlarged detail illustrating the assembly of certain parts;

Fig. 4 represents a side view of intermediate conducting members of a modified form; and

Fig. 5 is a detail illustrating the use of the modified form of conducting members.

Referring to the said illustrations by the characters of reference, let it be understood that 1 and 1' represent the respective portions of a composite electrical conductor which are designed for relative rotation. The numerals 2, 4 and 5 represent the component conductors of the portion 1, and 2', 4' and 5' represent the component conductors of the portion 1'. The portions 1 and 1' may be considered as either flexible or rigid, as my invention is susceptible of use with either sort of conductor.

My invention resides in the device for conductively joining the relatively rotatable portions. It includes a pair of identical contact carriers 6 formed of any suitable rigid dielectric material, and preferably of circular contour. These contact members may have screw threads cut on their peripheries for attachment of the casing members hereinafter described, and they are pierced at their centers for the reception of a suitable connecting member. The members 6 are formed with one or more concentric grooves extending but part-way the thickness of the members 6, and with one or more marginal notches 7. In each of the concentric grooves is seated a reëntrant contact member 8 of conductive material. These members 8 may be drawn into the shape illustrated out of sheet metal, and may be secured in the contact carriers 6 in any suitable or convenient fashion. In case the members 6 are formed of plastic material, the members 8 may be seated therein in the forming operation, and retained by the anchoring members 8^a as illustrated in Fig. 3. The contact members 8 seated in one of the members 6 are completely insulated from one another, and form continuous concentric open channels about the center of the carrying member. Conducting members, which

may be in the form of posts 9, lead from the contact members to the ungrooved side of the carrying member 6, and their portions projecting from the carrier, are suitably fitted for the attachment of the terminal of the conductor.

I have shown the members 9 in the form of posts seated in the abutments of the members 8 and having binding nuts on their projecting ends. However, it is obvious that the members 9 may be electrically connected with the members 8 in other fashions, and any other form of attaching means for securing the terminals may be used.

Due to the fact that the members 6 are identical, when they are placed together face to face on the same axis, the grooves and re-entrant contact members 8 on one carrier will register or coincide with the similarly disposed grooves and re-entrant contact members on the other carrier so that, when the carriers are thus held together, the re-entrant contact members 8 form closed concentric annular receptacles insulated from one another.

In each of these channels is disposed an intermediate or floating conducting member in the form of a resilient member 10. This resilient member in the preferred form is a spiral spring having a degree of expansive spring tendency so that it will bear always in intimate contact with the bottoms of the re-entrant contact members which inclose it. A connecting member 11, upon which the carriers 6 have rotary movement, is inserted through the central apertures of the carriers and suitably secured to hold the latter in close, but relatively rotatable engagement. The connecting member also may be fitted with the rings 13.

Identical shell or casing members 12 are provided, one being attached to each of the carriers 6, as by means of the screw threads illustrated, the said casing members meeting on the line of contact of the carriers 6, and together forming an inclosure for the carriers and all the parts mounted thereon. Each casing member is provided with an aperture which may be fitted with a suitable insulating bushing 14, and with one or more marginal notches 15 extending through the material and of proper width to register with any of the notches 7 of the carriers.

In Figs. 4 and 5 is illustrated a modified arrangement, in which the intermediate contact members 10, instead of being in the form of a spiral spring, are in the form of a flat spring which has a certain amount of expansive tendency. When the carriers 6 are placed together with the intermediate contact member of this form seated in the re-entrant contact members, the spring is put under a certain amount of compression, so that it will be positively held in bearing upon the side portions of the re-entrant con-

tact members. This arrangement, as in the case of the spiral spring, insures an effective electrical connection of the re-entrant contact members.

From the foregoing description, the use of the device will be obvious. In applying the device, the casing members 12 are detached from the carriers 6, and the conductors passed through the bushings 14.

To hold the carriers against movements with the casing member in the unscrewing operation in case they are screw mounted, a suitable key member 16 is passed through the aligned slots 15 and 7 of one casing member and carrier, and pressed laterally into a registering slot 7 of the other carrier, thus anchoring the latter so that the attached casing member may be unscrewed therefrom. The terminals of one of the relatively movable conductors are then attached to the binding posts 9, on one of the carriers 6, and the terminals of the other relatively movable conductor are attached to the binding posts on the other carrier, the component conductors which are designed for electrical connection being connected to the binding posts leading from re-entrant contact members 8 which are in register with each other. The rings 13 provide attaching points for the strain strands 17, if such are included in the conductors. With the connections thus made, the shell members 12 are screwed onto their respective carriers 6, which operation completes the installation of the device. When so installed, the device provides an efficient contact between the relatively movable portions of the conductor while permitting the desired rotation of the latter. Furthermore, the device is readily attached and detached, and due to the fact that multiplicity of different parts is reduced to a minimum by duplication, the device may be manufactured in quantities at a low cost.

I am aware that the invention may be incorporated in forms differing from the illustrative embodiment herein shown and described without departing from the scope and spirit of the invention as indicated in the claims.

What I claim is:

1. A swivel contact for electrical conductors comprising the combination of a pair of carriers of dielectric material coaxially mounted for relative rotation, a re-entrant contact member carried in each carrier and extending continuously concentric therewith, the disposal of the carriers being such that the re-entrant contact members are in register, an intermediate contact member housed completely by the re-entrant contact members and movable relative thereto about the axis of the carriers, and means for electrically connecting a conductor to each re-entrant contact member.

2. A swivel contact for electrical con-

ductors comprising the combination of a pair of carriers of dielectric material mounted for relative rotation upon a common axis, a reëntrant contact member carried by and
5 extending concentrically of each of said carriers, means for attaching a conductor to each of said contacts, and an extensible contact member housed within the reëntrant contact members and independently movable
10 about the axis thereof.

3. A swivel contact for electrical conductors comprising the combination of a pair of carriers of dielectric material mounted for relative rotation upon a common axis, a
15 contact member carried by and extending continuously concentrically of each of said

carriers, said contact member having a contact surface extending longitudinally of the axis of the carriers, an intermediate contact member housed within the carriers and having
20 contact with the longitudinally extending walls of the first mentioned contact members, and means for electrically connecting each of said first mentioned contact
25 members with a conductor.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 13th day of November, 1916.

FLINT GARRISON

Witnesses:

MARY A. BLASS,

HUGH F. CHILDE.