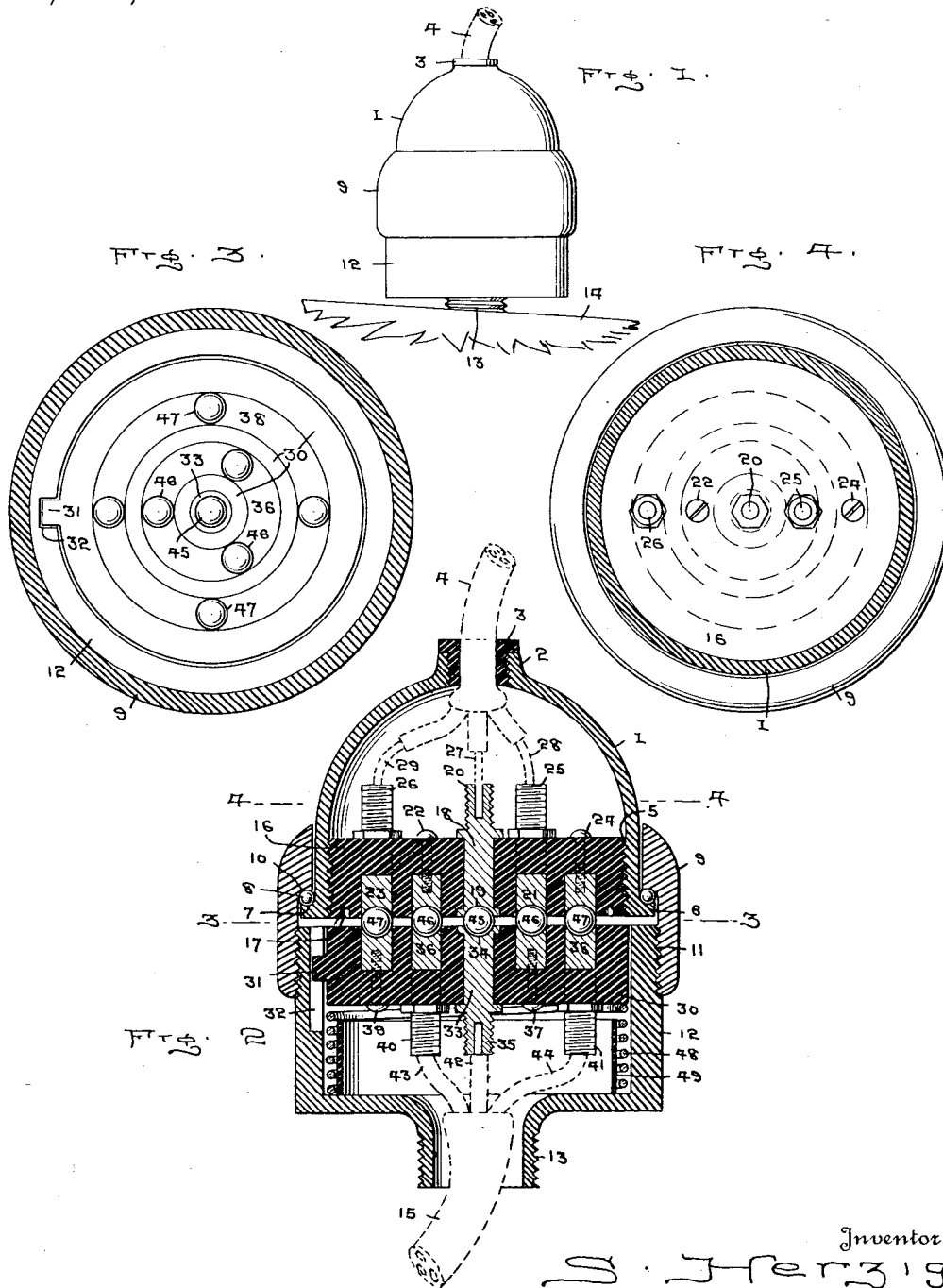


S. HERZIG.
ELECTRICAL CONNECTION.
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1,176,554.

Patented Mar. 21, 1916.



Witnesses

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ELECTRICAL CONNECTION.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, SOLON HERZIG, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electrical Connections; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an electrical connection adapted to be interposed in an electric cable or cord to provide against the twisting of the cable or cord and to prevent the consequent damage to the cord.

Another object of this invention is to provide an electric connection which can be readily applied to the electric cable or cord of a sad iron, drop light, and the like, but is more particularly designed for use in connection with the cord of a telephone receiver.

Another object of this invention is the provision of an electrical connection provided with means whereby one of the contacting members is capable of rotation independently of the other contact member.

Another object of this invention is to produce an electrical connection provided with means for resiliently mounting the contacting members for retaining the contacting members in constant contact, and also to compensate for any movement of the contacting members which may be occasioned by lateral or longitudinal strains exerted upon the connection.

Other objects and advantages of this invention will be hereinafter more clearly set forth in the specification, defined in the claims, and illustrated in the accompanying drawings, in which,

Figure 1 is a side elevation of the invention showing the same secured upon a support, the latter being shown as partly broken away. Fig. 2 is a vertical sectional view of the device showing the detail construction thereof. Fig. 3 is a plan view, partly in section, on line 3—3 of Fig. 2. Fig. 4 is another plan view, partly in section, on line 4—4 of Fig. 2.

Referring to the drawings, 1 denotes the

upper shell of a casing or housing, provided with the internally screw threaded neck 2, into which is screw threaded the bushing 3, the bushing 3 being preferably a split bushing and formed of hard rubber or other suitable insulating material, and firmly grips the cable 4 for retaining the cable in the neck 2 of the upper shell 1 of the housing. Within the lower end of the shell 1 are formed the screw threads 5, and also formed upon the lower end of the shell 1 is the outwardly extending annular flange 6, having its upper surface provided with the continuous groove 7 to provide a raceway having a plurality of the anti-friction balls 8.

Loosely surrounding the shell 1 and its flange 6 and for substantially half its width is the sleeve 9, having its lower inner portion cut away so as to form an annular shoulder provided with the continuous groove 10, the shoulder of the sleeve 9 overhanging the flange 6 of the shell 1 with the groove 10 registering with the groove 7 of the flange 6, so that the groove 10 of the sleeve 9 forms the upper raceway for the anti-friction balls 8. Within the lower cut away end portion of the sleeve 9 are formed the screw threads 11, which screw threads engage corresponding screw threads formed in the outer upper wall of the lower shell 12 of the housing, the sleeve 9 thereby anti-frictionally connecting together the shells 1 and 12 of the housing. Formed upon the bottom of the lower shell 12 of the housing is the exteriorly screw threaded tubular stem 13, adapted to be screw threaded in a corresponding aperture formed in a suitable base or support, as indicated at 14 in Fig. 1, the support 14 being shown as partly broken away, and through the stem 13 is adapted to pass the cable 15.

Within the lower end of the upper shell 1 of the housing is the disk 16 having its periphery provided with screw threads for engaging the screw threads 5 for securing the disk 16 in the lower end of the shell 1, the under surface of the disk 16 being provided with the sockets 17 for receiving the ends of a spanner wrench for screwing the disk 16 into the threaded end of the shell 1. The disk 16 is formed of any suitable in-

5 sulating material, preferably hard rubber, and mounted centrally through the disk 16 is the post 18 suitably secured therein and formed of suitable conducting material, and provided in its lower end with the recess 19, and at its other end with the binding post 20. Suitably embedded in the under face of the disk 16 and concentrically surrounding the post 18 is the contact ring 21 secured in the disk 16 by the screws 22, and provided upon its outer edge with a continuous groove to provide a raceway. And concentrically surrounding the ring 21 is another contact ring 23 also embedded in the under face of the disk 16 and secured therein by the screws 24, the contact ring 23 also having formed in its outer face a continuous groove to provide a raceway. Secured in the upper portion of the disk 16 is the binding post 25, having its lower end extending downwardly into the disk 16 and contacting with the contact ring 21. Also secured in the upper portion of the disk 16 is the binding post 26 also extending downwardly into the disk 16 and contacting with the contact ring 23. Connected to the binding post 20 of the conducting post 18 is the wire 27, and connected to the binding post 25 of the ring 21 is the wire 28, and also connected to the binding post 26 of the ring 23 is the wire 29, the wires 27, 28, and 29 projecting from the cable or cord 4 secured in the upper end of the shell 1.

35 Within the lower shell 12 of the housing and capable of vertical movement therein is the disk 30 formed of suitable insulating material, preferably hard rubber. The periphery of the disk 30 is smooth, and has formed thereon at one side the lug 31, provided for the purpose of engaging the elongated slot 32 formed in the inner side wall of the shell 12. The lug 31 is capable of vertical movement in the slot 32, which acts as a guide for the lug 31, and provides for the vertical movement of the disk 30, but prevents rotary movement of the disk 30 within the shell 12.

Suitably secured within and extending centrally through the disk 30 is the conducting post 33 provided in one of its ends with the recess 34, and at its opposite end with the binding post 35. Concentrically surrounding the conducting post 33 and embedded in the upper face of the disk 30 is the contact ring 36, secured in the disk 30 by the screws 37, and provided in its outer face with a continuous groove to provide a raceway. Concentrically surrounding the contact ring 36 is the contact ring 38, also embedded in the upper face of the disk 30 and secured therein by the screws 39, and provided in its outer face with a continuous groove to provide a raceway. Secured in the lower portion of the disk 30 is the binding post 40 projecting into the disk 30 and

contacting with the ring 36, and also secured in the under portion of the disk 30 is the binding post 41, also projecting into the disk 30 and contacting with the ring 38. Connected to the binding post 35 of the conducting post 33 is the wire 42, and connected to the binding post 40 of the contact ring 36 is the wire 43, and also connected to the binding post 41 of the contact ring 38 is the wire 44, the wires 42, 43, and 44 projecting from the cable or cord 15, which projects through the tubular stem 13 of the lower shell 12 of the housing.

For establishing contact between the respective conducting posts and contact rings of the disks 16 and 30 a plurality of contact balls are provided, the ball 45 being seated in the recesses 19 and 34 of the conducting posts 18 and 33, the balls 46 being seated in the raceways of the contact rings 21 and 36, and the balls 47 being seated in the raceways of the rings 23 and 38, and for maintaining the respective contact balls in constant contact with the respective conducting posts and contact rings, the compression spring 48 is provided. The spring 48 is interposed between the under surface of the disk 30 and the bottom of the lower shell 12 of the housing, the spring 48 forcing the disk 30 upwardly, and for preventing displacement of the spring 48, and for preventing the spring from coming in contact with the binding posts 40 and 41 of the disk 30, a cylinder or ring member 49 is provided, the cylinder 49 being of sufficient diameter to accomplish this result, but not of sufficient height to interfere with any vertical movement of the disk 30, the cylinder 49 is formed of any suitable insulating material, and may be suitably secured to the bottom of the lower shell 12 of the housing.

The construction, the application, and functions of the device are briefly stated as follows:—The shells 1 and 12 of the housing, the connecting sleeve 9, the anti-friction balls 8, are preferably formed of metal, and of course the binding posts, contacting posts and rings and the contact balls being necessarily of metal, therefore, the only parts of my device which are formed of insulating material is the bushing 3, the disk 16, the disk 30, and the cylinder 49. However, should it be desired such metallic parts which will admit of the changes may be formed of insulating material.

In the application of my device, it is preferable that the stem 13 of the shell 12 be suitably secured in a support, whereby the shell 12, the sleeve 9, the disk 30 and its contact members and their connections will remain nonrotatable, while the shell 1, the disk 16 and its contact members and their connections are capable of rotation simultaneously with each other and independently of the shell 12 and its accessories, this being

made possible by the construction of the connection between the shells 1 and 12, and the interposition between the respective upper and lower halves of the device of the anti-friction balls 8 and the contact balls 45, 46, and 47, whereby any twisting action exerted upon the cable or cord 4 will be duly compensated for or prevented by the rotary movement of the upper half of the device, and again, any lateral stress or longitudinal stress exerted upon the cable 4 and the upper half of the device will be duly compensated for through the action of the spring 48 upon which the disk 30 and its accessories are resiliently mounted, and permits a certain amount of rocking movement of the disk 30, as well as vertical movement of the disk 30, and by this arrangement damage to the cable 4 is eliminated, and the circuits through the device constantly maintained and without interruptions, as the electrical connection between the wire 27, the post 18, the ball 45, the post 33, and the wire 42; the connection between the wire 28, the ring 21, the balls 46, the ring 36, and the wire 43; and the connection between the wire 29, the ring 23, the balls 47, the ring 38, and the wire 44, are constantly maintained.

While I have here shown the preferred embodiment of my invention, minor variations and alterations may be made therein without departing from the scope of the invention or the claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. An electrical connection, comprising a lower casing, a nonrotatable contact member within said lower casing but having vertical movement therein, an upper casing rotatably mounted upon said lower casing, means for anti-frictionally mounting said upper casing upon said lower casing, a rotatable contact member secured in said upper casing and rotatable therewith, revoluble contact members interposed between said nonrotatable and said rotatable contact members, and resilient means within said lower casing for supporting said nonrotatable contact member and for maintaining said contact members in constant contact, said rotatable mounting and said resilient means providing for the universal movement of said rotatable upper casing and said rotatable contact member relative to said lower casing.

2. An electrical connection, comprising a lower casing, a nonrotatable contact member within said lower casing, an upper casing rotatably mounted upon said lower casing, a rotatable contact member secured in said upper casing and rotatable therewith, revoluble contact members interposed between said nonrotatable and said rotatable contact members, and a spring resting upon the bot-

tom of said lower casing and bearing against the under surface of said nonrotatable member for maintaining said contact members in constant contact.

3. An electrical connection, comprising a lower casing having a vertically disposed groove formed in its inner side wall, a nonrotatable contact member within said lower casing, a lug upon said nonrotatable contact member for slidably engaging said groove to provide for the vertical movement of said nonrotatable contact member within said lower casing but preventing the rotation of said nonrotatable contact member, an upper casing rotatably mounted upon said lower casing, a rotatable contact member secured in said upper casing and rotatable therewith, revoluble contact members interposed between said nonrotatable and said rotatable contact members, and a spring resting upon the bottom of said lower casing and engaging the under surface of said nonrotatable member adjacent its periphery for maintaining said contact members in constant contact.

4. An electrical connection, comprising a lower casing having a vertically disposed groove formed in its inner side wall, a nonrotatable contact member within said lower casing, a lug upon said nonrotatable contact member for slidably engaging said groove to provide for the vertical movement of said nonrotatable contact member within said lower casing but preventing the rotation of said nonrotatable contact member, an upper casing rotatably mounted upon said lower casing, a rotatable contact member secured in said upper casing and rotatable therewith, revoluble contact members interposed between said nonrotatable and said rotatable contact members, a spring resting upon the bottom of said lower casing and engaging the under surface of said nonrotatable member adjacent its periphery for maintaining said contact members in constant contact, and a cylinder of less length than said spring and positioned upon the bottom of said casing and within said spring for maintaining said spring in operative position.

5. An electrical connection, comprising an upper casing having contact members therein, a lower casing having contact members therein, revoluble contact members interposed between said contact members of said upper and said lower casings for establishing connection therebetween, an outwardly extending annular flange upon the lower edge of said upper casing and provided with a continuous groove in its upper surface, a sleeve screw threaded upon the upper outer side of said lower casing and provided with an inwardly extending annular portion having an annular shoulder provided with a continuous groove and over-

hanging said flange of said upper casing, the groove of said flange and the groove of said sleeve registering with each other, and a plurality of balls positioned in said grooves for rotatably and anti-frictionally mounting said casings with respect to each other.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SOLON HERZIG.

Witnesses:

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