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2,233,124

ELECTRIC CONTACT

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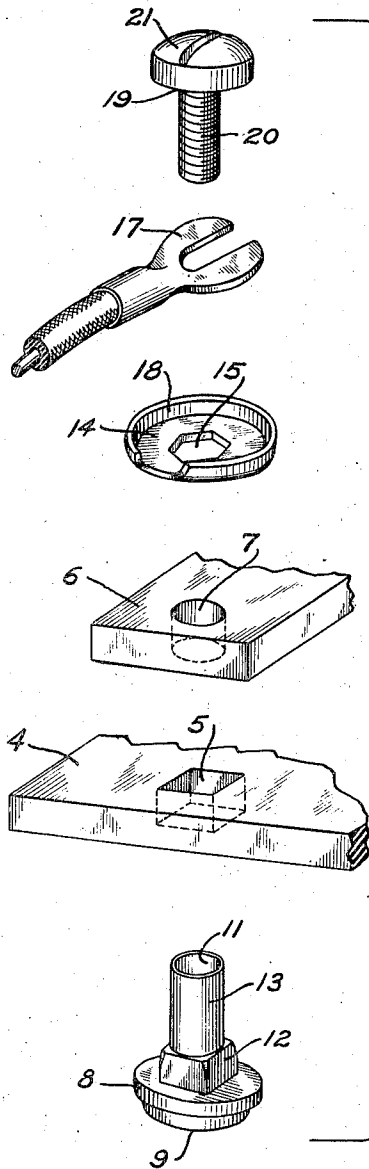
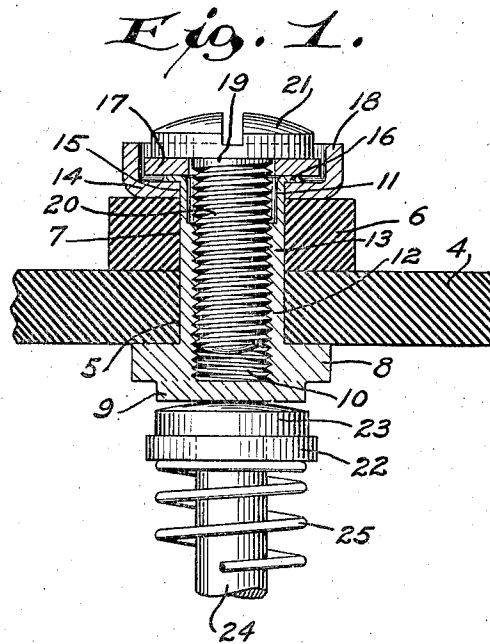
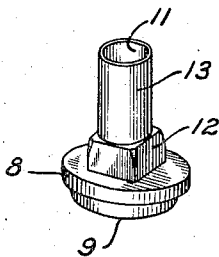


Fig. 2.



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ELECTRIC CONTACT

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8 Claims. (Cl. 200—166)

The present invention relates generally to improvements in the art of transmitting electric current, and relates more specifically to improvements in the construction and operation of electric switch contacts and the like.

Generally defined, an object of the invention is to provide an improved switch contact which is simple, compact and durable in construction, and which is moreover highly efficient in use.

A more specific object of my present invention is to provide a new and useful electric switch contact assemblage which can be quickly and firmly attached to a support, and which will not loosen due to repeated operation of the switch.

Another specific object of this invention is to provide an improved switch contact adapted to be rigidly attached to a relatively brittle support without chipping, cracking or otherwise damaging the latter.

A further specific object of my invention is to provide a switch contact structure with which a terminal may be quickly associated so as to provide an effective electric connection, and from which the terminal may be just as readily detached.

An additional specific object of my present invention is to provide a simplified and more durable stationary contact for electric switches or the like, having a contact face formed of material of relatively high electrical conductivity, such as silver.

Still another specific object of the invention is to provide an improved switch contact structure comprising several parts which may be conveniently assembled to provide a compact and extremely durable construction in which the parts are properly insulated.

Another specific object of my invention is to provide a simplified stationary contact for electrical devices which is firmly fixed against possible rotation or other displacement, and which can be manufactured and assembled at moderate cost.

A further specific object of the present invention is to provide an improved electrical contact especially adapted for use in switch assemblages of the fluid pressure actuated type and as shown in the co-pending Furnas and Hansen application, Serial No. 233,520, filed October 6, 1938.

These and other specific objects and advantages of my present invention will be apparent from the following detailed description.

A clear conception of an embodiment of the several features constituting my present invention, and of the mode of constructing, of assembling and of utilizing electric switch contacts made in accordance with the improvement, may be had by referring to the drawing accompanying and forming a part of this specification wherein like reference characters designate the same or similar parts in the various views.

Fig. 1 is an enlarged central vertical section through one of my improved stationary switch contacts showing the same applied to a fragment of a support and engaged by a resiliently urged movable contact; and

Fig. 2 is an exploded perspective view showing the several parts of the improved electrical contact.

While the invention has been shown and described herein as having been specifically embodied in a silver faced contact applied to a fixed support, it is not my desire or intent to thereby unnecessarily restrict the scope or utility of the improvement.

Referring to the drawing, the improved contact portion of the switch assembly shown in Fig. 1, comprises in general a fixed contact support or plate 4 formed of relatively brittle moulded insulating material and having a polygonal hole or through opening 5 therein; a reinforcing plate or bar 6 formed of similar insulating material, and having therein a circular hole 7 in substantial alignment with the opening 5; a stationary contact 8 formed of relatively ductile metal such as copper or brass and having a harder contact facing 9 formed of silver or the like, at its extreme lower end, a threaded bore 10 above the facing 9, and a smooth bore 11 at its upper end, the contact 8 also being provided with a polygonal section 12 adapted to fit the support opening 5 and with an approximately cylindrical outer portion 13 which is snugly cooperable with the bar hole 7; a cup shaped washer 14 having a polygonal hole 15 therein adapted to receive the upper end portion of the contact 8, and to be riveted in place by distortion of the extreme upper end 16; a removable bifurcated terminal 17 adapted to fit within the rim 18 of the washer 14 and to coact with the flanged contact end 16; a terminal clamping screw 19 having a threaded shank 20 engageable with the threaded bore 10 of the contact 8, and being provided with a slotted head 21 which is cooperable with the terminal 17; a movable contact 22 having a contact facing 23 adapted to engage the facing 9 of the contact 8, and being provided with an actuating stem or support 24; and a compression spring 25 coacting with the movable contact 22.

The supporting plate 4 and reinforcing bar 6 may be of the general shape and may be mounted as shown in co-pending application Serial No. 233,520, and the movable contact 24 may be actuated in any suitable manner as my mechanism such as shown and described in said application. The plate 4 and bar 6 are preferably formed of insulating material, and while these parts may be formed integral with each other, the cost of manufacture may be minimized by utilizing standard sheet stock and by rigidly interconnecting the two pieces with the aid of the fixed contact 8 and washer 14.

The improved stationary contacts 8 which are formed of rather ductile metal having good electrical conductivity, are preferably constructed by first forming the central aligned bores 10, 11 therein and by threading the bore 10, after which the silver contact facing 9 may be brazed, soldered or otherwise firmly attached to the lower headed end of each contact 8 to close the bore 10 therein. After each contact 8 has been thus properly initially formed, it will appear as shown at the bottom of Fig. 2, and it may thereafter be applied to the aligned opening 5 and hole 7 in a plate 4 and bar 6 from beneath. While the opening 5 and contact section 12 are shown as being square, these parts may be of any other polygonal shape which will prevent the contact 8 from rotating after insertion thereof within the plate 4. The upper section 13 of each contact 8 is preferably circular in external cross-section, but may be slightly tapered so as to facilitate assembly; and the washer opening 15 should rather snugly engage the upper end of the contact 8 when these parts are assembled preparatory to rivetting, so as to centralize the washer 14 relative to the contact 8. When the plate 4, bar 6, contact 8, and washer 14 has been assembled and the extreme contact end 16 has been peened over or rivetted as in Fig. 1, the plate 4 and bar 6 will be rigidly united and the contact 8 cannot rotate or move in any direction relative to its support. While the washer opening 15 is shown as being hexagonal, it may be of any other polygonal shape; and such polygonal shape is preferable in order to prevent rotation of the washer 14 relative to the contact 8 after rivetting has been effected.

The terminal 17 is of standard and well known construction, and is shown bifurcated in order to permit the same to be applied laterally to the attaching screw 19 and within the retaining socket formed by the rim 18 of the washer 14. This rim 18 may be locally interrupted as shown in Fig. 2 in order to clear the terminal 17; and when the cap screw 19 is driven home within the threaded bore 10 of the contact 8, the terminal 17 will be held in intimate contact with the end 16 of the contact 8 and will be in direct electrical communication with the facing 9 which is integrally connected to the contact 8. The enlarged bore 11 in the upper end of the contact 8, obviously facilitates rivetting of the contact end 16 by thinning the metal at the zone of rivetting, and also avoids marring the threads in the bore 10 during the fastening operation.

From the foregoing detailed description it will be apparent that my present invention provides an extremely simple, compact and durable contact assemblage which can be quickly and firmly attached to a relatively brittle support, without danger of damaging the support. By

virtue of the fact that the facing 9 is formed integral with the contact 8, and that the terminal 17 is caused to coact directly with the opposite integral end of this contact, most effective electrical connection is assured when the screw 19 is driven home. The polygonal formation of the opening 5, contact portion 12, and of the opening 15 in the washer 14, will obviously prevent possible rotation of the several parts relative to each other, when the screw 19 is applied to a terminal 17, and the flanged end 16 will effectively prevent separation of the parts due to repeated operation of the switch. The improved contact assemblage has proven highly satisfactory and successful in actual commercial use, and the contacts can be quickly applied and will permit the use of several superimposed supporting plates, thereby minimizing the cost of construction of the switch assemblage.

It should be understood that it is not desired to limit the invention to the exact details of construction, or to the precise mode of use, herein shown and described, for various modifications within the scope of the claims may occur to persons skilled in the art.

I claim:

1. A contact assemblage comprising, coaxing supporting plates having polygonal and circular aligned openings, a washer coaxing with one of said plates adjacent said circular opening, an internally threaded contact having polygonal and circular portions snugly coaxing with said polygonal and circular openings, respectively, said contact also having end portions formed to clamp said plates and said washer together, and a terminal attaching screw coaxing with the internal threads of said contact.

2. A contact assemblage comprising, a support having an opening therein, a washer coaxing with said support adjacent said opening and having a polygonal hole therethrough, a hollow contact fitting said opening and said hole and being rivetted to said washer, said contact having a threaded bore and an enlarged smooth bore located adjacent the rivetted outer end thereof, and a terminal attaching screw coaxing with said threaded bore and being of lesser diameter than said smooth bore.

3. A contact assemblage comprising, a pair of supporting plates having polygonal and circular aligned openings, a washer coaxing with one of said plates adjacent said circular opening and having a polygonal hole aligned with said opening, a contact having polygonal and circular portions coaxing with said openings and with said hole and having a headed end portion coaxing with one of said plates, said contact having a threaded bore and an enlarged smooth bore remote from the headed end thereof and the portion of said contact adjacent said smooth bore being rivetted over said washer, and a terminal attaching screw adjustably associated with said threaded bore and having a head cooperable with the rivetted portion of said contact.

4. As an article of manufacture, a switch contact having a headed end and polygonal and circular sections, the interior of said contact being provided with a threaded bore adjacent said headed end and with a larger bore adjoining said circular portion and extending to the end of said contact remote from the head.

5. An article of manufacture comprising, a switch contact having its major portion formed of ductile metal and having a facing of harder

metal, the interior of said contact adjacent said harder metal being provided with a threaded bore and the end of said contact remote from said harder metal being of reduced thickness to permit rivetting thereof.

6. An article of manufacture, a switch contact comprising a tubular portion formed of ductile metal and a contact facing formed of harder metal, the exterior of said contact being provided with polygonal and circular surfaces and the interior thereof having a threaded bore adjacent said polygonal surface and having an enlarged smooth bore adjacent the end of said circular surface.

7. As an article of manufacture, a switch contact having a headed end and polygonal and circular sections, the interior of said contact being provided with a threaded bore adjacent said headed end and an unthreaded bore adjoining said circular portion and extending to the end of said contact remote from the head.

8. A contact assemblage comprising, a supporting plate having a polygonal opening, a second plate one side of which coacts with said supporting plate and having a circular hole aligned with said opening, a washer contacting the opposite side of said second plate and having a polygonal hole aligned with said circular hole, a contact having a head engageable with said supporting plate and being provided with polygonal and circular portions fitting said opening and said holes respectively, said contact having an internal thread and being of reduced thickness at the end thereof remote from said head and adjoining said washer to facilitate rivetting of said reduced end within said polygonal washer hole, and a terminal attaching screw coacting with said screw threads.

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