A. SCHMIDT.

COUPLING.

APPLICATION FILED JULY 16, 1912.

1,160,534. Patented Nov. 16, 1915.

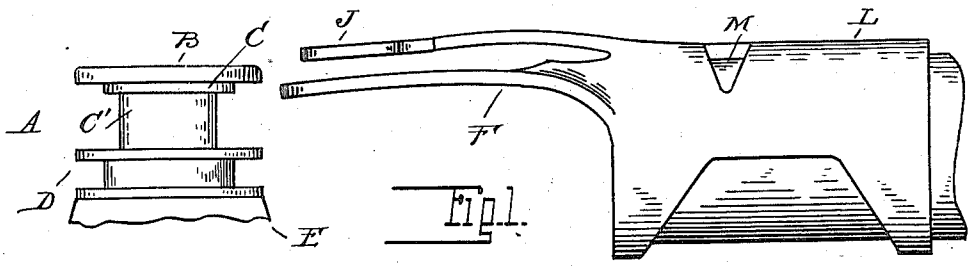


Fig. 1.

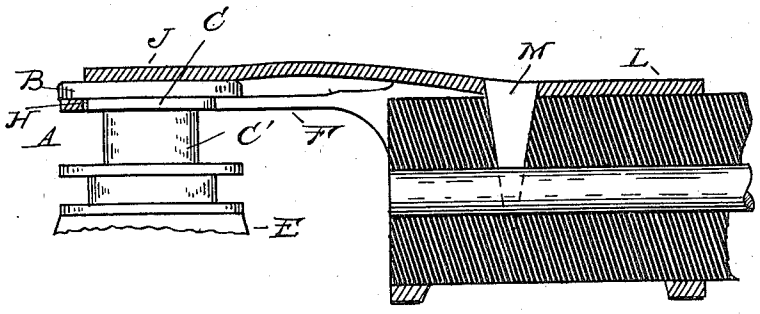


Fig. 4.

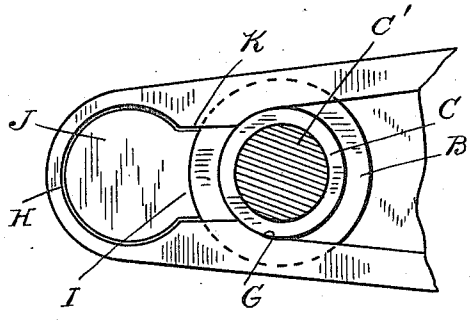


Fig. 2.

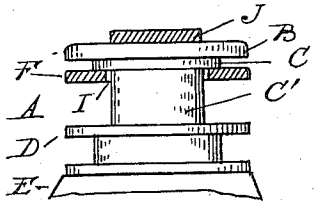


Fig. 3

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UNITED STATES PATENT OFFICE.

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COUPLING.

1,160,534. Specification of Letters Patent. Patented Nov. 16, 1915.

Application filed July 16, 1912. Serial No. 709,699.

To all whom it may concern:

Be it known that I, ALBERT SCHMIDT, a citizen of the Republic of France, residing at Flint, in the county of Genesee and State of Michigan, have invented certain new and useful Improvements in Couplings, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to couplers more particularly designed for use as electrical connectors, and it is the object of the invention to obtain a construction which may be readily engaged or disengaged when desired, but is effectively locked from accidental displacement.

To this end the invention consists in various features of construction as hereinafter set forth.

In the drawings: Figure 1 is an elevation of the coupler with the members thereof detached. Fig. 2 is a horizontal section showing the manner of engaging the two members of the coupling. Fig. 3 is a cross section of Fig. 2. Fig. 4 is a longitudinal section similar to Fig. 1 to show the members in engagement.

For the connection of electrical conductors with spark-plugs and similar electrical devices, it is desirable to provide means for quickly attaching and detaching the contacts, and for locking them from displacement when in engagement. The usual method is to provide a binding post or a threaded shank and an adjustable nut upon the spark-plug, for clamping the coöperating contact of the conductor. This construction is, however, objectionable, as the nuts are frequently detached and lost and require considerable time for their adjustment. With the present invention the coöperating contacts may be engaged or disengaged without the detachment or adjustment of any part, and by a simple movement on the part of the operator. Furthermore, when engaged, the contacts are held securely from accidental displacement.

As shown in Figs. 1 to 4, A is one of the coöperating contact members which is provided with a head portion B, and a shank of lesser diameter. This shank is stepped or provided with two portions C and C′ of different diameter, being preferably integral with a base portion D, which may be secured by a threaded engagement to the shank E of the electrode, or by any other suitable means. F is the coöperating contact member which is apertured at G for the passage of the head B therethrough, and has a smaller aperture H adapted to receive the portion C of the shank. The apertures G and H are connected by a slot I, which is restricted in width to less than the diameter of the portion C of the shank, but equal to the portion C′ thereof; so that the member A may be inserted through the aperture G and then adjusted into engagement with the aperture H. J is a resilient tongue member for the member F, which is adapted to bear upon the member A so as to normally hold the larger portions C of the stepped shank in engagement with the aperture H. In this position the inwardly extending lugs K, about the opposite sides of the slot I, will prevent the member F from displacement longitudinally, or the disengagement by such a movement of the portion C from the aperture H.

The member F is preferably struck up from sheet metal. The resilient tongue portion J is formed by the portion of metal removed in forming the apertures G and H and slot I, and is struck upward to normally stand in a slightly different plane. Both portions of the blank are integral with a shank portion L, which is bent around for engagement with the insulator cover of the connecting conductor. There are also struck inward from the metal of the shank L the points M of triangular form, which will penetrate through the insulation into contact with the conductor inclosed thereby. Thus the electrical current passes from the conductor through the point M to the member J and from the latter to the coöperating contact member A when in engagement therewith.

For mechanically coupling or uncoupling the members A and F, the operator first passes the head B through the aperture G, and then presses it against the spring-tongue J, which will yield sufficiently to move the member F into the plane of the reduced portion C′ of the shank. When in this plane a relative longitudinal movement of the members F and A will throw the former through the slot I into the aperture H; the pressure may then be released, whereupon the resiliency of the spring-tongue J will force the member F into a plane where the

larger portion C of the shank is engaged with the aperture H. Thus longitudinal movement is prevented, as the slot I is of lesser width than the diameter of the portion C and consequently will not permit it to pass therethrough.

While I have described my invention as specifically applicable to electrical connectors, it is obvious that it might be employed as a connector for a purely mechanical function.

What I claim as my invention is:

1. The combination with a member having portions of different diameters providing a shoulder, and having a bearing portion on its outer end, of a member apertured for engagement with the larger diameter portion and having an entrance slot to said aperture of lesser width, engageable with a portion of the first-mentioned member of smaller diameter, and a resilient retainer extending laterally in relation to the first-mentioned member and engaging said bearing portion on the outer end, said resilient retainer serving to yieldably hold said apertured member in engagement with said shoulder.

2. The combination with a member having a stepped shank and provided with a bearing portion on its outer surface, of a member apertured for engagement with the larger diameter step and having an entrance slot to said aperture of lesser width, engageable with the smaller diameter step, and a resilient tongue engaging said bearing portion on the outer surface, said resilient tongue serving to yieldably hold said apertured member in the plane of the larger step.

3. The combination with a headed member having a cross-section of varying diameter in different planes, of a coöperating member apertured to fit the larger cross-section of said shank and having an entrance slot to said aperture of lesser width, adapted to receive the smaller cross-section of said shank, and a resilient tongue secured to said apertured member, having an outer bearing on said headed member, said tongue serving to yieldably hold the apertured portion of the coöperating member in the plane of the larger cross-section.

4. The combination with a member having a shank of different diameters in different planes and provided with a bearing on its outer surface, of a member formed of a sheet metal stamping having a socket shank for engaging an insulated conductor, and a projecting portion apertured to fit the larger cross-section of said shank with an entrance slot for receiving the smaller cross-section, and a spring tongue integral with said member engaging said bearing on the outer surface, said tongue yieldably holding the projecting portion in the plane of the larger cross-section of said shank.

5. The combination with a headed member having a stepped shank of a coöperating member formed from a sheet metal blank fashioned to have a socket portion for engaging a conductor and a portion apertured to fit the larger step of said shank with a larger aperture for receiving the head of the coöperating member, connected with the smaller aperture by an entrance slot restricted to the width of the smaller step and a resilient tongue formed from the metal removed from said apertures, for yieldably holding said apertured member in the plane of the larger step.

6. The combination with a headed member having a stepped shank, of a coöperating member having an aperture for receiving the larger step of said shank, an entrance slot to said aperture limited to receive the smaller step, the portions of said coöperating member removed to form said aperture and entrance slot forming a resilient tongue for yieldably holding the apertured portion in the plane of the larger step.

7. The combination with a member having a shank of variable size, of a coöperating member formed of a sheet metal stamping having a slot of variable width therein for receiving said shank, the smaller width of slot being at the entrance thereto and being adapted to engage the smaller size of shank, the portion of the coöperating member removed to form the slot forming a tongue for yieldably holding the slotted portion in engagement with said shank.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT SCHMIDT.

Witnesses:
MAGIBEL BRICKER,
B. DE GUICHARD.