

A. KNEISEL.
TEST CONNECTOR FOR ELECTRIC WIRES.
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1,055,305.

Patented Mar. 4, 1913.

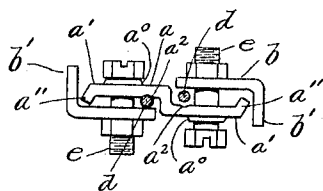


Fig. 1

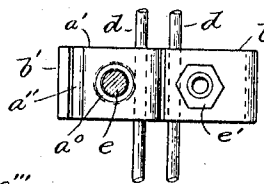


Fig. 2

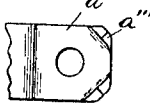


Fig. 2a

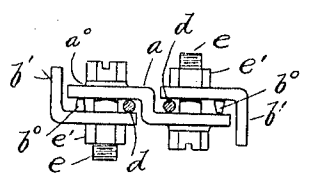


Fig. 3

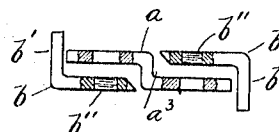


Fig. 4

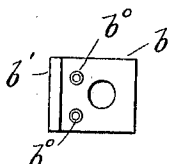


Fig. 5

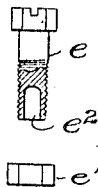


Fig. 6

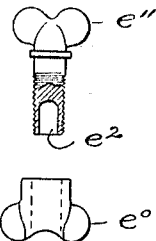


Fig. 7

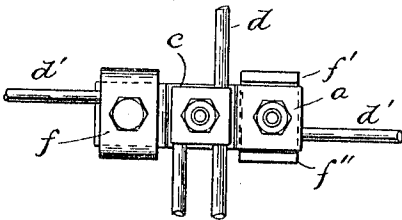


Fig. 8

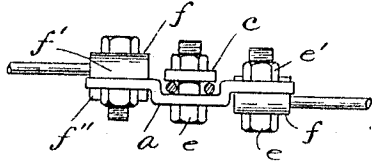


Fig. 9

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TEST-CONNECTOR FOR ELECTRIC WIRES.

1,055,305.

Specification of Letters Patent.

Patented Mar. 4, 1913.

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To all whom it may concern:

Be it known that I, ARTHUR KNEISEL, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Test-Connectors for Electric Wires, of which the following is a specification.

My invention relates to improvements in test-connectors for electric wires, and has for its object the provision of a connecting member which will be extremely simple in construction, while possessing the advantages of securing the maximum efficiency, coupled with a low cost of production.

The principal utility of my improvement consists in mechanically and electrically connecting two or more wires carrying the electric current, such as telephone party line wires, in an improved manner. Inasmuch as these devices commonly are used out of doors, the need for efficiency, simplicity and cheapness is obvious, since devices of this character are required in very large numbers, and rarely ever are they used a second time.

Accordingly, I have devised several types of test-connector which are herein shown and described in typical forms, as embodiments of my said invention.

Certain features shown herein are set forth and claimed in my prior co-pending application, Ser. No. 662,569, filed Nov. 27th, 1911.

Referring to the drawings which I shall later describe in detail, it is seen that the test-connector comprises a common metallic strip or body-member in association with a plurality of clips, structurally adapted thereto and secured in place, preferably by screw-bolts. Either the body member or the clips are suitably formed to fit one within or upon the other, so as to hold these members in proper relation and clamp the interposed wires firmly in place.

In order to accommodate various sizes of wire within the connector and secure a direct, even pressure thereon, the body portion preferably is formed with an annular elevated rim to be engaged by the bolt, while adjacent to the outer ends, there are provided elevated portions or lugs adapted to space the clips at a distance from said body portion. The clips preferably are of rectangular form, and are so positioned as to engage the wires, closely adjacent to the

central portion of the body, while providing down-turned ends for holding the members in alinement. Thus the strain of the connected wires is best resisted, as they are held closely together, and said wires are afforded practically no leverage for working loose. The lugs or their equivalents, may be provided upon the clips, if desired; the body portion may be suitably bent to accommodate several sets of wires, when necessary; the rectangularly-bent ends of the clips may also be positioned to engage laterally against the body portion, instead of at its ends, and other changes may be adopted in meeting different requirements of use.

Further details of my improvements will be explained in connection with the accompanying drawings, wherein:—

Figures 1 and 2 are side and plan views of a two-wire connector embodying my invention. Fig. 2^a is a fragmentary view showing upturned corner lugs. Figs. 3 and 4 are side views of connectors illustrating further details and modifications. Fig. 5 is a plan view of a modified clip. Figs. 6 and 7 show two types of screw-bolts partially in section, and Figs. 8 and 9 are top and side views of another modification providing connections for a plurality of wires.

The same character of reference is employed to designate similar parts throughout each of the several figures of the drawings.

The body portion *a* in each of the illustrated structures, is formed from a strip of metal, preferably copper and suitably bent, shaped and off-set, to accommodate a plurality of retaining clips *b*, washers *c* and wires *d*.

Referring to the test-connector of the type shown in Fig. 1, the body portion *a* is seen to comprise two integral off-set portions *a'* having central annular elevations *a''* and upturned lugs or corner portions *a'''*. The cooperating clips *b* are rectangularly formed from strip copper, and have down-turned lugs *b'* extending beyond the ends of the body portion *a*; said clips being positioned upon opposite sides thereof. Both the body portion and clips are suitably stamped out or bored, to receive the screw bolt *c*, and if desired the clips may be threaded therefor, as at *b''*, so that the nut *c'* may act as a lock for said bolt, when the clips engage wires *d*.

It will be seen that the down-turned ends

6' maintain the alinement of the clips and body portion, being of sufficient length to permit the insertion of wires *d* adjacent to the off-set sections of the body, without releasing or clearing the ends thereof. The lugs *a''* are adapted to maintain the substantially parallel relations of the clips and body portions, with the wires inserted, while the annular elevation *a°* allows the bolt to assume an angular position, for accommodating different sizes of wires without excessive strain thereon. If desired, the screw-bolt, instead of having a slotted head, may be provided with a thumb piece *e''* and thumb nut *e°*, as shown in Fig. 7.

Substantially the same results attainable by providing the lugs *a''*, may be secured by stamping the elevations or nipples *b°* adjacent to the angles of the down-turned ends upon clips *b*, as shown in Fig. 5; the desired spacing members; thus being provided upon the opposing portions of the connector. This figure also illustrates the omission of the elevated annular rim *a°*, for supporting the bolt-head, which may be dispensed with in smaller types of test-connectors, wherein wires of approximately uniform size are to be secured.

Another modification, shown in the last two figures of the drawings, affords accommodation for a larger number of wires extending at right angles to each other. Therein, the central body portion *a* is depressed to accommodate the washer *c* secured by the screw-bolt *e*. The off-set ends of said body portion are bored to receive the bolts and holding clips *f*, which have down-turned ends *f'* *f''*, respectively adapted to engage the sides of the body portion *a* for maintaining the parts in alinement, and holding the inserted wires *d'* extending from either end and opposite sides of the body portion.

The preferred type of screw-bolt *e* is shown in the detail drawing thereof, wherein the end is bored out as indicated at *e²* below the nut *e'*, so that the threaded portion of the bolt may be upset or slightly flared at the end, to prevent the accidental removal of said nut. The head is slotted to permit the release of the clip by means of a screw-driver, as well as with a wrench. Of course, if the thumb nut is employed, as in instances wherein the test-connection must be frequently opened no tools are required.

Preferably, the bodies, washers and clips are stamped from hardened copper strips, although other sheet metal blanks may be employed. The parts are so proportioned as to afford relatively broad bearing surfaces, which will hold the wires securely in place without breaking the hard outer skin thereof.

By reason of the rectangularly bent ends

afforded by the clips, for engaging the ends or sides of the body portion, these members are maintained in alinement while releasing or securing the wires in position. Moreover, the body *a³* in one type of connector, and the clip in another, respectively afford a lateral shoulder against which the wire is adapted to be independently held. For the purpose of retaining the wires closely adjacent to the central shoulder of the body portion, that member may be laterally grooved, as at *a²*, for partially accommodating the wire therein. Thus, my improved test-connector permits the disconnection of any desired wire, without interfering with any other wire or wires clamped thereto by means of a separate clip or clips; thereby affording a very convenient and secure means for connecting and disconnecting electric conductors.

Having now described preferred types of test-connectors embodying my invention, I claim as new and desire to secure by Letters Patent, the following:—

1. In a connector for electric conductors, the combination with an elongated metallic body-portion centrally bent to provide shoulders intermediate of the ends, of a plurality of angularly bent metallic clips terminally engaging the body-portion and securing means associated with each for individually attaching and releasing said clips, substantially as set forth.

2. In a connector for electric conductors, the combination with an elongated metallic body-portion centrally bent to provide shoulders intermediate of the ends, of a plurality of angularly bent metallic clips affording engaging members of greater length than said shoulders, which are adapted to bear against the body-portion and maintain the parts in alinement; said body portion and clips being provided with registering openings, and screw-bolts respectively associated with said clips for individually securing and releasing them, substantially as set forth.

3. In a connector for electric conductors, the combination with an elongated metallic body-portion centrally bent to provide shoulders intermediate of the ends, of a plurality of angularly bent metallic clips affording engaging terminals for maintaining the alinement of the parts; said body-portion and clips being provided with spacing members adapted better to secure the conductors there-between, and securing means associated with each clip for individually attaching and releasing the same, substantially as set forth.

4. In a test-connector for electric conductors, the combination with an elongated body portion having an opening adjacent to either end thereof; each being provided with an annular elevated rim, of metallic clips

having openings respectively registering with those in the body portions and screw-bolts extending through the registering openings for securing the clips in position; the same having their heads engaging said elevated rims, substantially as set forth.

5 In a test-connector, the combination with an elongated body-portion bored in different positions along its length, of a plurality of retaining members secured thereto upon opposite sides; said body-portion or retaining members being angularly bent to engage each other terminally and hold said parts in substantial alinement, and a plurality of screw-bolts adapted to secure the individual adjustment of said retaining members, substantially as set forth.

10 6. In a test-connector, the combination with an elongated body portion centrally bent to afford shoulders and terminally bent to provide spacing parts; said body-portion having openings adjacent to either end provided with annular elevated rims, of metallic clips having openings respectively registering with those in the body portions

and screw-bolts extending through the registering openings for securing the clips in position; the same having their heads engaging said elevated rims, substantially as set forth.

7. In a connector of the class described, the combination with an elongated metallic body portion centrally bent to provide an offset and engaging shoulders and bored adjacent to its ends, of rectangular clips having down-turned ends of greater length than the shoulders, adapted terminally to engage the body-portion and bored respectively to register with the openings in the latter, and screw-bolts extending through the clips and body for independently securing said clips to the opposite offset sides of the body portion, substantially as set forth.

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

ARTHUR KNEISEL. [L. s.]

Witnesses:

E. M. NICKELS,

ALBERT LYNN LAWRENCE.