E. O. SESSIONS.

HIGH TENSION INSULATOR SUPPORT FOR BUS BARS.

APPLICATION FILED AUG. 16, 1915.

1,228,142.

Patented May 29, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

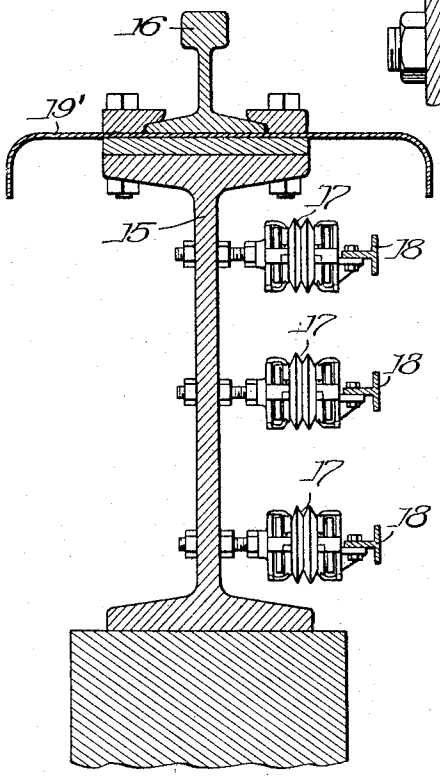


Fig. 2.

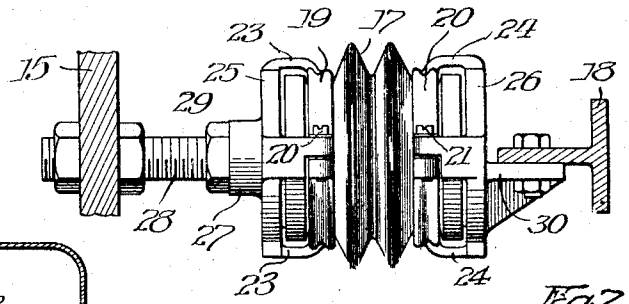


Fig. 7.

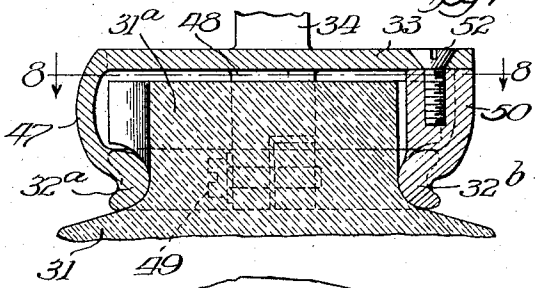


Fig. 8.

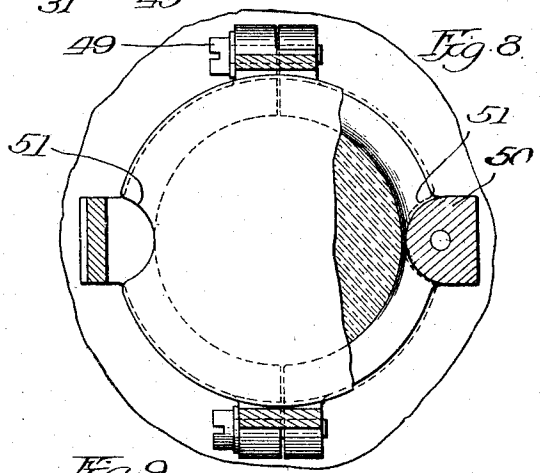


Fig. 10.

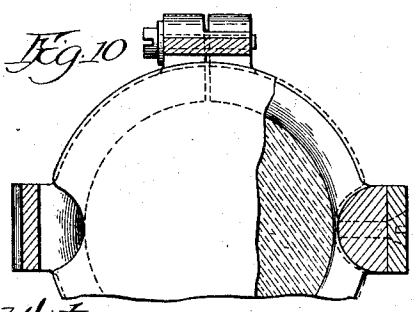
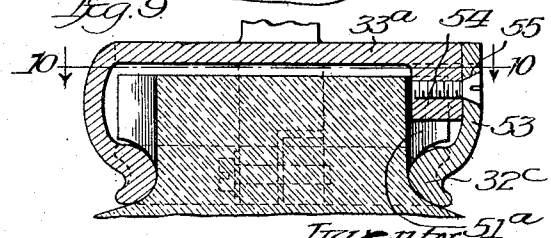


Fig. 9.



Witnesses:

Fred. C. Herron

Eugene L. Reichhofer

Inventor

Edson O. Sessions

By Albert C. Bell Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

E. O. SESSIONS.

HIGH TENSION INSULATOR SUPPORT FOR BUS BARS.

APPLICATION FILED AUG. 16, 1915.

1,228,142.

Patented May 29, 1917.

2 SHEETS—SHEET 2.

Fig. 3.

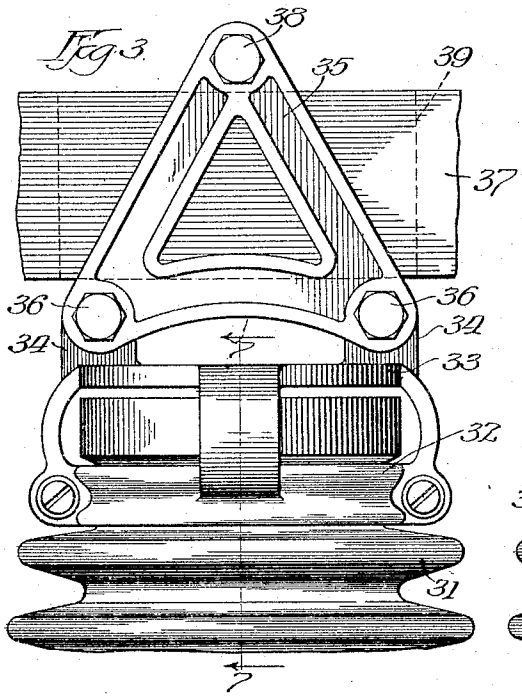


Fig. 4.

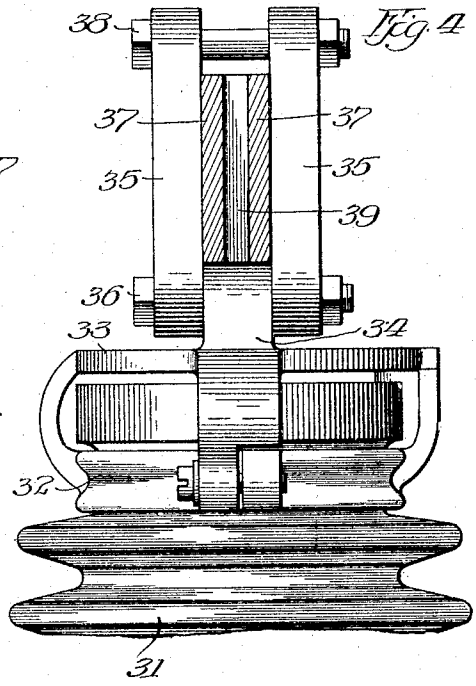


Fig. 5.

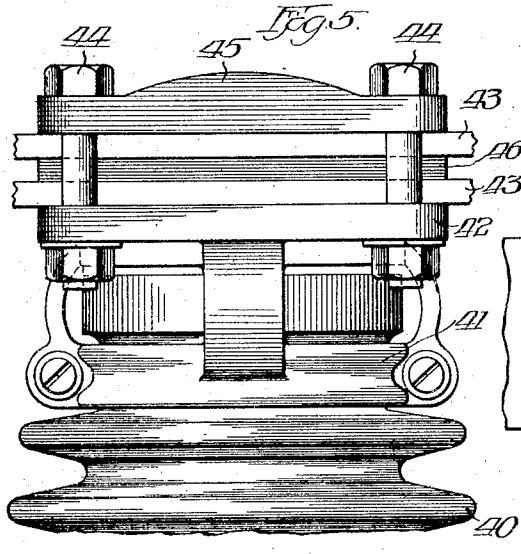
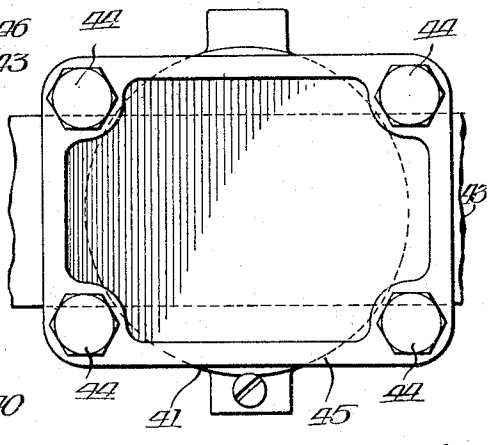


Fig. 6.



Witnesses

Fred C. Dawson

Eugene L. Wiedenhofer.

Inventor

Edson O. Sessions

By Albert C. Bell

Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDSON O. SESSIONS, OF CHICAGO, ILLINOIS.

HIGH-TENSION INSULATOR-SUPPORT FOR BUS-BARS.

1,228,142. Specification of Letters Patent. Patented May 29, 1917.

Application filed August 16, 1915. Serial No. 45,613.

To all whom it may concern:

Be it known that I, EDSON O. SESSIONS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in High-Tension Insulator-Supports for Bus-Bars, of which the following is a specification.

My invention relates to an improved form of support for use with high-tension insulators by which the insulator may be mounted upon a suitable base and by which also bus bars and similar conductors may be supported from the insulator for high-tension work. Various clamping devices have been proposed in the past for this purpose, which devices are, however, open to the objection that the insulator and parts carried thereby are not rigidly and strongly secured to the base as a result of which the conductors supported by the insulator are with difficulty maintained in proper alinement, and corresponding undue strains are exerted upon the insulator. By my invention the conductors are positively and rigidly supported and maintained in proper position, and the strains exerted upon the insulator are maintained in a direction so that they can be withstood to advantage by the insulator.

The several drawings illustrating my invention are as follows:

Figure 1 shows in vertical sectional view a portion of a support for a traveling crane from which high-tension insulators are supported to in turn support the trolley bars for the crane;

Fig. 2 shows in a view similar to Fig. 1 one of the insulators and the parts attached thereto on an enlarged scale;

Fig. 3 shows in side elevation a modified construction of support for mounting bus bars in horizontal position upon a switchboard;

Fig. 4 shows in end elevation the parts shown in Fig. 3;

Fig. 5 shows in a view similar to Fig. 3 a modified form of support for mounting bus bars in vertical position upon a switchboard by means of high-tension insulators;

Fig. 6 is a top view of the parts shown in Fig. 5;

Fig. 7 is a vertical sectional view of the insulator and clamp shown in Fig. 3 taken along the line 7—7;

Fig. 8 is a sectional view of the parts shown in Fig. 7 taken along the line 8—8;

Fig. 9 shows in a view similar to Fig. 7 a modified construction of insulator clamp;

Fig. 10 shows in a view similar to Fig. 8 the modified construction illustrated in Fig. 9.

Similar numerals refer to similar parts throughout the several views.

As shown in Figs. 1 and 2, the I-beam 15, forming the main support for the rails 16 of a traveling crane, has mounted upon its web the high-tension insulators 17, which, in turn, support the T-bars 18 used as trolley bars for supplying current to the crane traveling on the rails 16. A shield 19 is secured to the beam 15 under the rails 16 to protect the trolley bars and their supports. The insulators 17, as shown more clearly in Fig. 2, are provided with relatively deep grooves, and at their ends have cylindrical flanges, and in the grooves formed inside of the cylindrical end flanges clamping rings 19 and 20 are secured. Each ring is formed in two sections screwed together at 20 and 21, as indicated, and arms 23 and 24 extend from these rings to circular base sections 25 and 26 of the insulator clamps, as indicated. These base sections may be provided with any desired form of supporting devices, depending upon the particular work to be performed. For the trolley bar support shown in Figs. 1 and 2, each of the base sections 25 is provided with a central cylindrical boss 27 bored and threaded to receive one end of the threaded rod 28, the other end of which extends through the web of the I-beam 15. Nuts are located upon the rod 28 to hold the same in proper position laterally in the web of the I-beam, and a lock nut 29 is employed to rigidly secure the rod in the boss 27. Each of the base sections 26 is provided with a bracket 30 having a plane horizontal upper surface to which the trolley bar 18 is secured by suitable bolts, as indicated.

In the construction of support shown in Figs. 3 and 4 the insulator 31 carries a clamp 32, the base section 33 of which is provided with outwardly extending lugs 34 to which triangular clamping plates 35 are secured by bolts 36, and between these clamping plates the bus bars 37 are clamped by the bolts 36 and the bolt 38. A suitable filler 39 is interposed between the bus bars 37 to keep them separated the proper amount.

In the construction shown in Figs. 5 and 6 the insulator 40 carries a clamp 41, the

base section 42 of which is of rectangular conformation and provided with a plane outer surface to which the bus bars 43 are secured in vertical position by means of the bolts 44 and an outside clamping plate 45, a suitable filler 46 being interposed between the bus bars to hold them in proper separated position.

The insulator clamp employed in the construction shown in Figs. 3 and 4 is best illustrated in detail in Figs. 7 and 8. Each ring of the clamp consists in part of a semi-circular portion 32^a, which engages and fits the groove between the outer circular flange 31^a of the insulator and the body portion thereof, this semi-circular portion 32^a of the ring being secured by arms 47 and 48 with the base portion 33 of the clamp. The remaining portion 32^b of the clamping ring is semi-circular in conformation, and conformed to engage the insulator, as described for the portion 32^a. The portion 32^b is secured to the portion 32^a by screws 49 extending through outwardly projecting bosses formed on the ends of the portions 32^a and 32^b of the clamping ring, and intermediate these bosses on the portion 32^b a projecting lug 50 is formed which serves the double purpose of engaging one of the semi-circular grooves 51 formed longitudinally of the insulator through its end flange 31^a, and to receive the threaded portion of the screw 52 by which the lug is securely held against the base section 33 of the clamp. The removable portion 32^b of the clamping ring is, therefore, rigidly held at three points so that any displacement of this portion of the clamping ring relatively to the base portion which is rigidly secured to the portion 32^a of the clamping ring is prevented, and the engagement of the lug with one of the circular grooves 51 prevents turning of the insulator relatively to the clamp. The clamp, therefore, forms a simple and convenient means for rigidly and positively holding the base section and the parts that may be connected therewith upon the insulator.

In the modified construction shown in Figs. 9 and 10 the arrangement of the parts is similar, with the exception that the section 32^c of the clamping ring is provided with an outwardly extending arm 53 intermediate its end bosses, which arm does not engage the insulator at all, but instead extends outside of the base section 33^a of the clamp, which base section has extending from it a lug 54 which engages one of the semi-circular grooves 51^a of the insulator, and receives the inner threaded end of the screw 55 extending through the outer end of the arm 53, as a result of which the clamp shown in Fig. 9 is held in substantially the same manner upon the insulator and with just as effective results as the constructions shown in Figs. 7 and 8, the only difference being the direction in which the screw 52 in one case and 55 in the other extends relatively to the insulator.

It will be understood that for some purposes it is impossible to get access to the outer surface of the base section, in which cases the construction shown in Figs. 9 and 10 would be employed, whereas in other cases it may be more convenient to insert the screw through the base section, as indicated in Fig. 7.

It will be understood that for whatever purpose the insulator clamp is employed the connection of the removable portion of the clamping ring is made to the base section of the clamp in one or the other of these ways, depending upon which is more convenient, and that whichever way is employed the result secured is substantially the same, to-wit, that the insulator is securely clamped by the clamping ring by means of the two oppositely disposed clamping screws in the groove just inside of the end flange of the insulator, and that the removable section of the clamping ring is secured to the remaining portion of the clamp at three points so that the clamp as a whole constitutes a rigid structure when in place on the insulator so as to rigidly support the base section of the clamp and make it impossible to displace the clamp relatively to the insulator so as to bring undue strains to bear upon said insulator, and, furthermore, that relative rotation between the clamp and insulator is prevented by the lug 50 or 54 engaging one of the semi-circular grooves or notches 51 formed in the end flange of the insulator, there usually being two of these grooves for convenience, although but one of them is used at the same time.

As a result of the construction described above, it will be observed that the clamping ring of my insulator clamp engages the bottom of the groove formed in the insulator to receive it, and that the clamping stress is always one of compression, and that furthermore the arms extending from the clamping ring and the base supported by the arms are not in engagement with the insulator, as a result of which it is impossible to bring undue strains to bear upon the insulator by the clamping action of the ring. Cramping and binding due to slight inequalities in the dimensions of the insulator are done away with in this way.

It will further be understood that as a result of the 3-point support of the semi-circular removable portion of the clamping ring from the base the removable portion of the clamping ring is secured rigidly to the base when the clamp is in position upon the insulator, so that in addition to preventing angular motion between the insulator and clamp this support of the removable por-

tion of the clamping ring also provides positively that the two parts of the clamping ring cannot at any time become displaced relatively to each other while the clamp is secured to the insulator. If the removable portion of the clamping ring were secured to the base only at the ends of said removable portion, opportunity would be afforded for a small amount of give of the central portion of the removable half of the clamping ring, so that strains brought to bear upon the base would readily produce undue strains upon the insulator tending to loosen the clamping ring, and, furthermore, permitting the base to become somewhat displaced relatively to the insulator, and thus throw the parts carried by the base out of position and alinement, assuming, for example, that the clamps were required to support switching mechanism. With the 3-point support for the removable portion of the clamping ring it is impossible for the removable portion to become displaced relatively to the base and portion of the clamping ring rigidly secured thereto, and the strains exerted upon the insulator are at all times in directions such that they can be best withstood by the insulator.

While I have described my invention in connection with the above embodiments, it will be understood that I do not limit myself to the exact mechanical constructions shown, as I may employ other equivalent constructions without departing from the spirit of my invention.

What I claim is:

1. A supporting clamp for high-tension insulators, comprising a base section, a semi-circular member for engaging a groove in the end of the insulator, a plurality of arms rigidly connecting said semi-circular member with said base section without contact between said insulator and said arms and base section, a removable semi-circular member for also engaging said groove, clamping devices at the ends of said members for holding them together, and a lug extending from said removable member intermediate its ends and secured to said base section.

2. A supporting clamp for high-tension insulators, comprising a base section, a semi-circular member for engaging a groove in the end of the insulator, a plurality of arms rigidly connecting said semi-circular member with said base section without contact between said insulator and said arms and base section, a removable semi-circular member for also engaging said groove, clamping devices at the ends of said members for holding them together, and a lug extending from said removable member intermediate its ends and secured to said base section, said lug conformed to engage a longitudinal groove in the outer surface of the end portion of said insulator to prevent rotation between said clamp and said insulator.

3. A supporting clamp for high-tension insulators, comprising a base section, a semi-circular member for engaging a groove in the end of the insulator, a plurality of arms rigidly connecting said semi-circular member with said base section without contact between said insulator and said arms and base section, a removable semi-circular member for also engaging said groove, clamping devices at the ends of said members for holding them together, a lug extending from said removable member intermediate its ends and secured to said base section, and conductor supporting means carried by said base section.

4. A supporting clamp for high-tension insulators, comprising a base section, a semi-circular member for engaging a groove in the end of the insulator, a plurality of arms rigidly connecting said semi-circular member with said base section without contact between said insulator and said arms and base section, a removable semi-circular member for also engaging said groove, clamping devices at the ends of said members for holding them together, a lug extending from said removable member intermediate its ends and secured to said base section, said lug conformed to engage a longitudinal groove in the outer surface of the end portion of said insulator to prevent rotation between said clamp and said insulator, and conductor supporting means carried by said base section.

5. A supporting clamp for high-tension insulators, comprising a base section, a semi-circular member for engaging a groove in the end of the insulator, a plurality of arms rigidly connecting said semi-circular member with said base section without contact between said insulator and said arms and base section, a removable semi-circular member for also engaging said groove, clamping devices at the ends of said members for holding them together, a lug extending from said removable member intermediate its ends and secured to said base section, lugs extending from said base section, and clamping plates secured to said lugs for rigidly supporting desired conductors from said clamp.

6. A supporting clamp for high-tension insulators, comprising a base section, a semi-circular member for engaging a groove in the end of the insulator, a plurality of arms rigidly connecting said semi-circular member with said base section without contact between said insulator and said arms and base section, a removable semi-circular member for also engaging said groove, clamping devices at the ends of said members for holding them together, a lug extending from said removable member intermediate its ends and

secured to said base section, said lug conformed to engage a longitudinal groove in the outer surface of the end portion of said insulator to prevent rotation between said clamp and said insulator, lugs extending from said base section, and clamping plates secured to said lugs for rigidly supporting desired conductors from said clamp.

7. In a support for engaging a high-tension insulator, the combination of a clamp consisting of a base section, a semi-circular member rigidly secured to said base section, a second semi-circular member removably secured to said base section, devices for securing the ends of said removable semi-circular member to the other semi-circular member, and devices for securing the mid portion of said removable semi-circular member to the base section, said semi-circular members together constituting a clamping ring for engaging a circular groove near the end of the insulator.

8. In a support for engaging a high-tension insulator, the combination of a clamp consisting of a base section, a semi-circular member rigidly secured to said base section, a second semi-circular member removably secured to said base section, devices for securing the ends of said removable semi-circular member to the other semi-circular member, devices for securing the mid portion of said removable semi-circular member to the base section, said semi-circular members together constituting a clamping ring for engaging a circular groove near the end of the insulator, and a lug carried by the removable semi-circular member for engaging a recess in the insulator to prevent relative rotation between the clamp and the insulator.

9. In a support for engaging a high-tension insulator, the combination of a clamp consisting of a base section, a semi-circular member rigidly secured to said base section, a second semi-circular member removably secured to said base section, devices for securing the ends of said removable semi-circular member to the other semi-circular member, devices for securing the mid portion of said removable semi-circular member to the base section, said semi-circular members together constituting a clamping ring for engaging a circular groove near the end of the insulator, and conductor supporting devices secured to said base section.

10. In a support for engaging a high-tension insulator, the combination of a clamp consisting of a base section, a semi-circular member rigidly secured to said base section, a second semi-circular member removably secured to said base section, devices for securing the ends of said removable semi-circular member to the other semi-circular member, devices for securing the mid portion of said removable semi-circular member to the base section, said semi-circular members together constituting a clamping ring for engaging a circular groove near the end of the insulator, a lug carried by the removable semi-circular member for engaging a recess in the insulator to prevent relative rotation between the clamp and the insulator, and conductor supporting devices secured to said base section.

11. In a support for engaging a high-tension insulator, the combination of a clamp consisting of a base section, a semi-circular member rigidly secured to said base section, a second semi-circular member removably secured to said base section, devices for securing the ends of said removable semi-circular member to the other semi-circular member, devices for securing the mid portion of said removable semi-circular member to the base section, said semi-circular members together constituting a clamping ring for engaging a circular groove near the end of the insulator, lugs extending from said base section, and clamping plates secured to said lugs for rigidly securing to said clamp desired conductors.

12. In a support for engaging a high-tension insulator, the combination of a clamp consisting of a base section, a semi-circular member rigidly secured to said base section, a second semi-circular member removably secured to said base section, devices for securing the ends of said removable semi-circular member to the other semi-circular member, devices for securing the mid portion of said removable semi-circular member to the base section, said semi-circular members together constituting a clamping ring for engaging a circular groove near the end of the insulator, a lug carried by the removable semi-circular member for engaging a recess in the insulator to prevent relative rotation between the clamp and the insulator, lugs extending from said base section, and clamping plates secured to said lugs for rigidly securing to said clamp desired conductors.

13. In a support for high-tension conductors, the combination of a high-tension insulator having a circumferential groove near each end, a clamp for each end of the insulator comprising a base section, a semi-circular clamping member rigidly secured to said base section, and a removable semi-circular member secured to said base section, devices for securing the ends of said removable semi-circular member to the other semi-circular member, devices for securing the mid portion of said removable semi-circular member to the base section, the base section of one of said clamps having a threaded opening, a threaded rod in said opening, nuts upon said rod for holding the same in a desired support and for locking said clamp in a desired position relatively to said sup-

port, and means carried by the other clamp for supporting a high-tension conducting bar.

14. In a support for high-tension conductors, the combination of a high-tension insulator having a circumferential groove near each end, a clamp for each end of the insulator comprising a base section, a semi-circular clamping member rigidly secured to said base section, and a removable semi-circular member secured to said base section, devices for securing the ends of said removable semi-circular member to the other semi-circular member, devices for securing the mid portion of said removable semi-circular member to the base section, the base section of one of said clamps having a threaded opening, a threaded rod in said opening, nuts upon said rod for holding the same in a desired support and for locking said clamp in a desired position relatively to said support, and means carried by the other clamp for supporting a high-tension conducting bar, each clamp having a projecting lug engaging a longitudinal groove in the outer surface of the end portion of said insulator for preventing relative rotation between said clamp and said insulator.

15. In a support for engaging a high-tension insulator, the combination of a clamp consisting of a base section, a semi-circular member rigidly secured to said base section, and a second semi-circular member removably secured to said base section, devices for securing the ends of said removable semi-circular member to the other semi-circular member, devices for securing the mid portion of said removable semi-circular member to the base section, said semi-circular members together constituting a clamping ring for engaging a circumferential groove near the end of the insulator, and a lug carried by the clamp for engaging a recess in the insulator to prevent relative rotation between the clamp and the insulator.

In witness whereof, I hereunto subscribe my name this 9th day of July, A. D., 1915.

EDSON O. SESSIONS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."