J. S. LAWSON.

SWIVEL CONNECTION

APPLICATION FILED NOV. 15, 1917.

1,305,909.

Patented June 3, 1919.

2 SHEETS—SHEET 1.

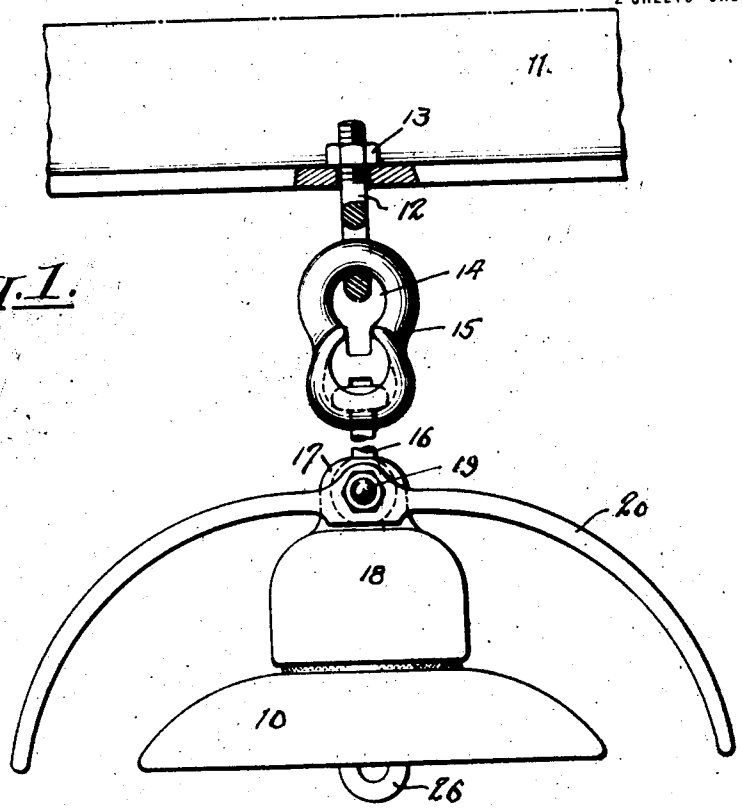

Fig. 1.

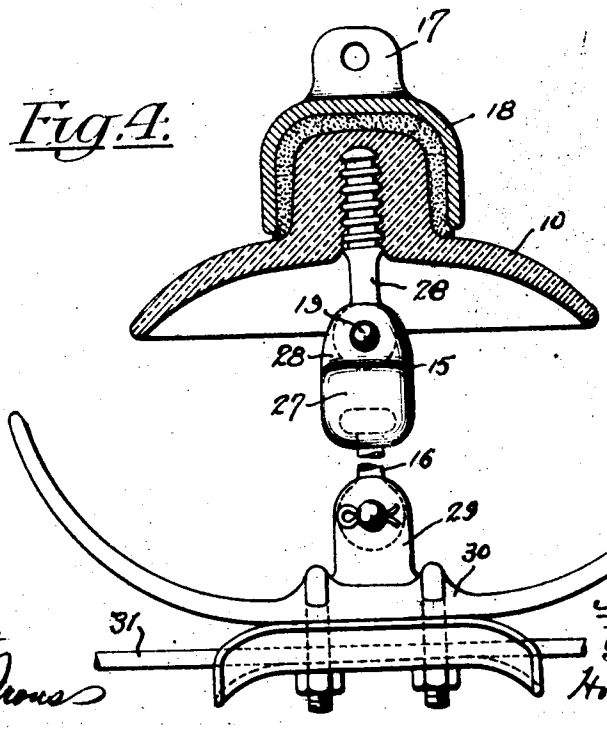

Fig. 4.

Witness:

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2 SHEETS—SHEET 2.

Fig. 5.

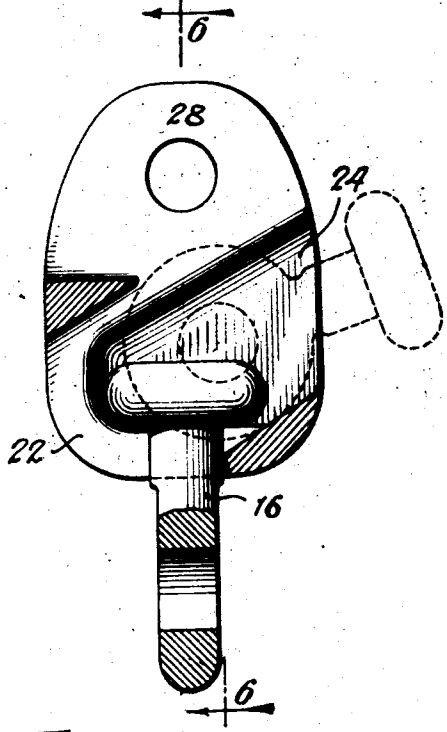


Fig. 6.

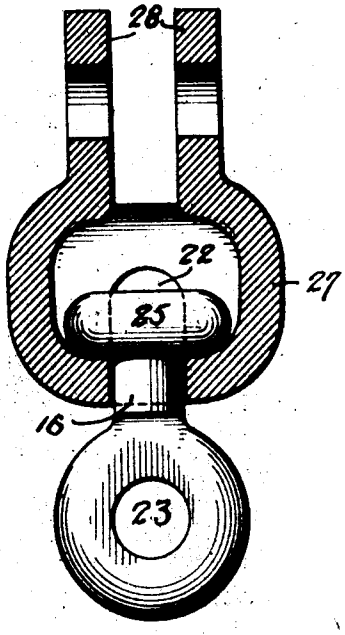


Fig. 2.

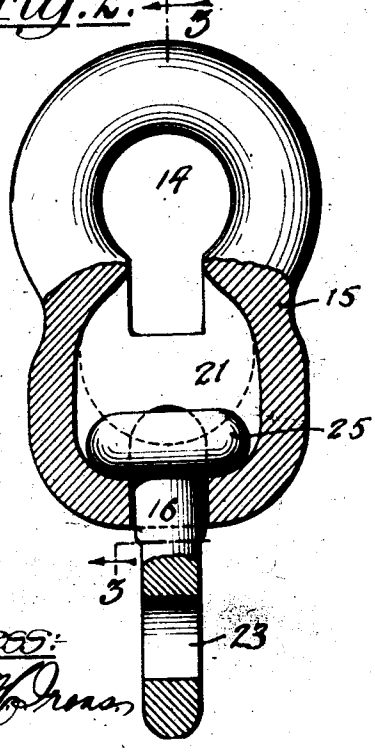
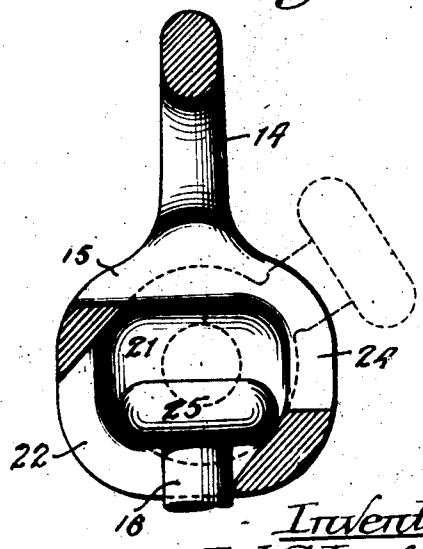


Fig. 3.



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UNITED STATES PATENT OFFICE.

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SWIVEL CONNECTION.

1,305,909. Specification of Letters Patent. Patented June 3, 1919.

Application filed November 15, 1917. Serial No. 202,162.

To all whom it may concern:

Be it known that I, JOEL S. LAWSON, a citizen of the United States of America, and residing at St. James, Long Island, in the county of Suffolk and State of New York, have invented a certain new and useful Improvement in Swivel Connections, of which the following is a specification.

My invention relates to insulators and particularly to insulators of the suspension type, the object of my invention being to provide an improved connection between the insulator and its support or the line wire, by which the angular position of the line wire with relation to the support may be adjusted in accordance with the needs of the installation without necessitating a change of parts.

In the accompanying drawing,

Figure 1 is a side elevation of the top unit of a suspension insulator showing a connection to its support and in which my invention is embodied in one form;

Fig. 2 is a broken section through the link connection;

Fig. 3 is a vertical section on the line 3—3, Fig. 2;

Fig. 4 is a vertical section through the bottom unit of an insulator showing its connection to the line wire and in which my invention is embodied in a modified form; and

Figs. 5 and 6 are respectively vertical sections through the swivel connection and at right angles to each other.

Suspension insulators for high power transmission lines are generally hung from cross arms on towers and carry the line wire either substantially parallel to or at right angles with the cross arm from which the insulator is suspended. To permit this it has heretofore been necessary to provide two different types of connection fittings depending upon the position of the line wire with respect to the cross arm. These fittings have been of such character that they permit practically no freedom of oscillation around the axis of the insulator but hold the line wire with relative rigidity in either one position or the other with respect to the cross arm.

The present fitting obviates the necessity for carrying different styles of fittings for installations in which the line wire occupies different positions with relation to the cross arm and furthermore permits the wire to automatically adapt itself to various angular positions with respect to the cross arm where the nature of installation requires this.

Referring to the accompanying drawings, I have shown in Figs. 1, 2 and 3 a swivel connection of type suitable for use between the top unit 10 of an insulator and the cross arm 11 of the tower carrying the insulator. The cross arm is indicated as an angle iron pierced to receive the shanks of the U bolt 12, the nut 13 for which overlies the lower flange of the angle iron. The eye 14 of the socket 15 of the present swivel connection is engaged by the shackle of bolt 12. A swivel pin 16 extends from the socket 15 to the clevis flanges 17 on the cap 18 of the insulator and is pivoted thereto by a cross bolt 19 which also carries arcing horn 20.

The swivel socket 15 is of basket shape, the eye 14 corresponding to the bail of the basket and the swivel chamber 21 forming the body of the basket. The bottom of the chamber is slotted at 22 to permit the eye 23 of the swivel pin 16 to pass therethrough, while the side wall of the body is apertured at 24 to permit the entrance of the head 25 of the swivel pin. The aperture 24 and slot 22 are substantially alined and lie at an angle to the axis of the socket to permit the introduction of the swivel pin through the side. As indicated in dotted lines in Fig. 3 the eye portion 23 is passed in through the aperture 24 and downward through the slot 22, the head 25 following through the side opening 24 but engaging and resting against the bottom of the swivel chamber, by reason of the fact that the head 25 is of greater diameter than the slot 22. Obviously, in view of the fact that the pin 16 may take up any relative angular position on the axis of the socket 15, the insulator may be turned to any desired angle with relation to the cross arm 11. This position of the insulator will depend upon the direction in which the line wire travels with respect to the cross arm 11, since the various units of the insulator are non-rotatable with relation to each other, each being provided with an eye fastened to the clevis 17 of the subjacent insulator by a cross bolt such as 19.

It is obviously immaterial whether the swiveling connection be interposed between the insulator string and the cross arm as just described or between the insulator and the wire cable carried thereby. I have ac-

cordingly shown in Fig. 4 a modification of construction in which the swivel socket 27 is provided with a clevis 28, pierced to register with the eye of the pin 26 carried by the bottom insulator unit, and secured by the cross pin 19. The swivel pin 16 is identical in construction with that first described and its eye 23 is engaged between the clevis 29 of the upper member 30 of the clamp which grips the wire cable 31. It is somewhat less desirable to arrange the swivel joint between the line wire and the lower unit of the insulator since this construction may result in the disalinement of the arcing horn 32 carried by the cable clamp and the arcing horn 20 carried by the top insulator unit, although this is a matter of no great moment.

In both constructions it is clear that it is impossible for the swivel pin to escape from the swivel socket after the swivel joint has been assembled in the insulator installation. The construction is rugged and simple, the parts are readily assembled and afford the advantage first pointed out of obviating the necessity for different types of connections between the insulator and the cross arm or cable where the cable occupies different angular relation to the cross arm.

Various modifications in details of construction will readily occur to those skilled in the art, which do not depart from what I claim as my invention.

I claim:—

1. In a swivel joint for suspension insulators and the like, a socket member having at one end fastening means and at its other end a swivel chamber with slot opening thereto from one side of its axis to permit the shank of a swivel pin to pass therethrough, and an aperture of greater diameter than the slot and opening to said chamber from the opposite side of said axis to permit the entry of the head of said pin into the chamber.

2. In a swivel joint for suspension insulators and the like, a socket member having at one end fastening means and at its other end a swivel chamber with slot opening thereto from one side of its axis to permit the shank of a swivel pin to pass therethrough, and an aperture of greater diameter than the slot and opening to said chamber from the opposite side of said axis to permit the entry of the head of said pin into the chamber, said aperture and slot being substantially alined and arranged on an axis inclined to the axis of the socket member.

3. In a swivel joint for suspension insulators and the like, a socket member having at one end fastening means and at its other end a swivel chamber with slot opening thereto from one side of its axis to permit the shank of a swivel pin to pass therethrough, and an aperture of greater diameter than the slot and opening to said chamber from the opposite side of said axis to permit the entry of the head of said pin into the chamber, together with a swivel pin having a shank adapted to pass through the aperture and slot, and a head of greater diameter adapted to pass through only the aperture into the swivel chamber.

4. In a swivel joint for suspension insulators and the like, a socket member having at one end fastening means and at its other end a swivel chamber with slot opening thereto from one side of its axis to permit the shank of a swivel pin to pass therethrough, and an aperture of greater diameter than the slot and opening to said chamber from the opposite side of said axis to permit the entry of the head of said pin into the chamber, together with a separable swivel pin having a shank adapted to pass through the aperture and slot, and a head of greater diameter adapted to pass through only the aperture into the swivel chamber, said slot extending to the axis of the socket member to permit the pin to assume a normal position in alinement with the axis of said socket member.

5. In a suspension insulator installation, a swivel joint comprising a socket member having at one end fastening means and at its other end a swivel chamber with opposite lateral openings to permit the introduction of a swivel pin, in combination with a separable pivot pin having a shank adapted to pass through said openings and a head capable of passing through one of said openings into the interior of the swivel chamber but of too great diameter to pass through the other, and fastening means whereby said shank may be attached to an adjacent suspension element and thus hold said pin against escape from the socket in the completed installation.

In testimony whereof I have signed my name to this specification.

JOEL S. LAWSON.