R. A. WILLSON.

SUSPENSION CLAMP.

APPLICATION FILED APR. 15, 1911.

1,173,400.

Patented Feb. 29, 1916.

2 SHEETS—SHEET 1.

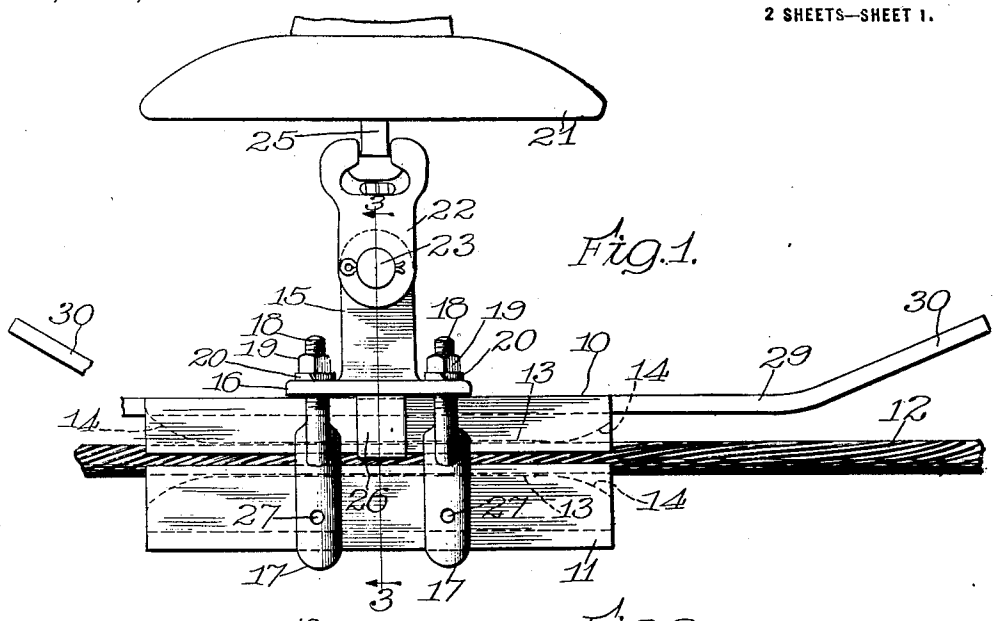


Fig. 1.

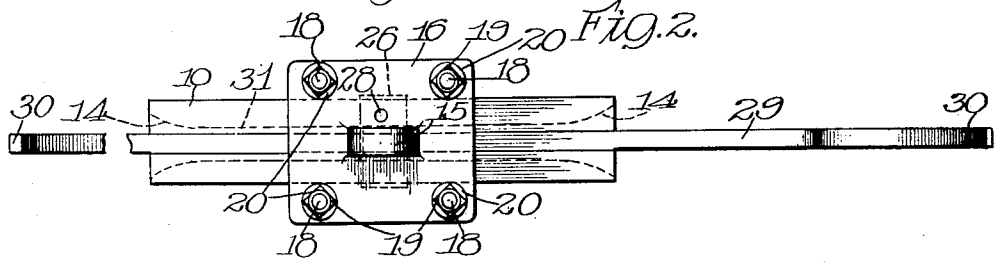


Fig. 2.

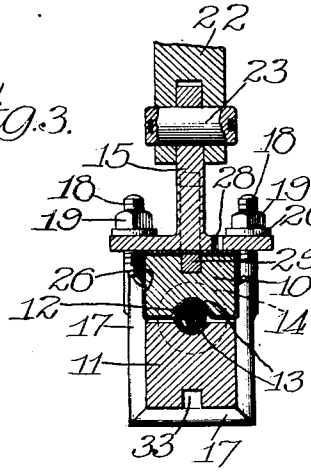


Fig. 3.

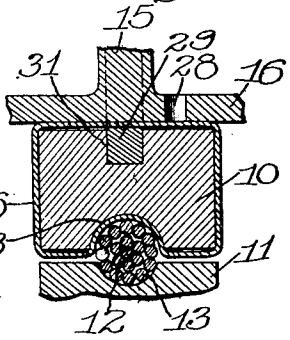


Fig. 4.

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2 SHEETS—SHEET 2.

Fig. 5.

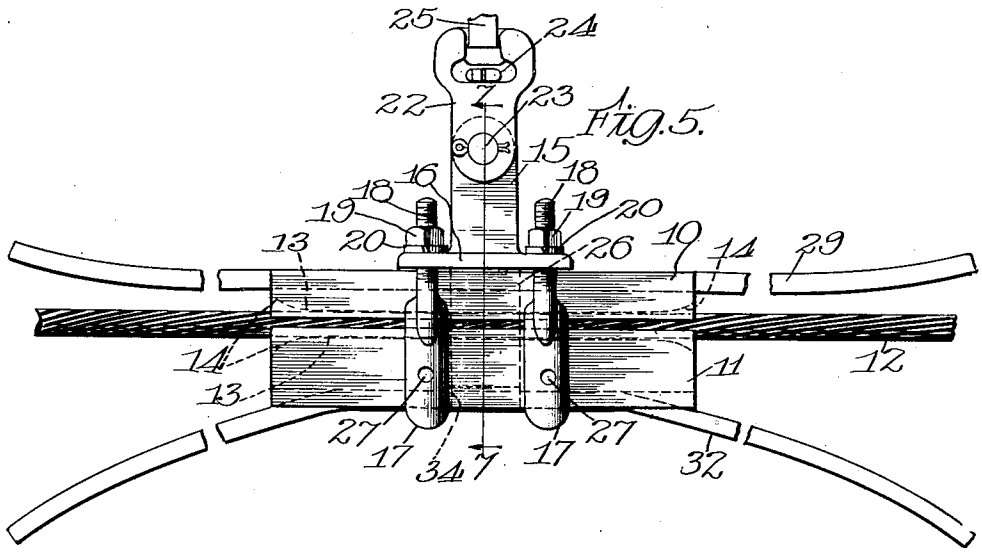


Fig. 6.

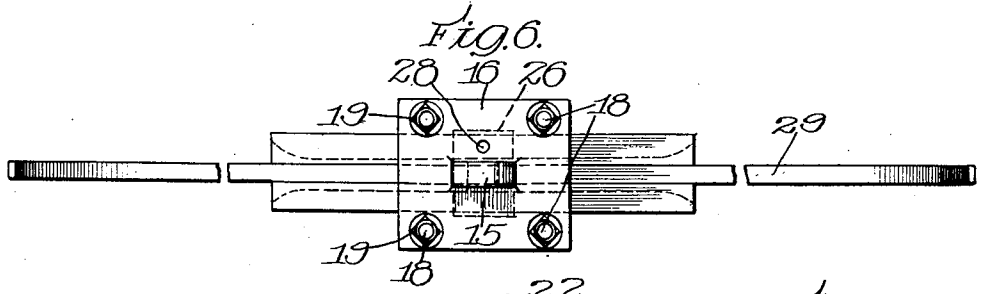


Fig. 7.

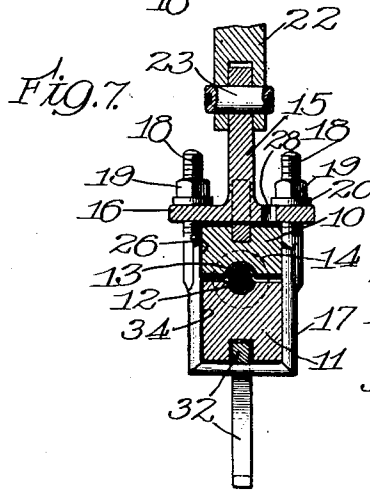
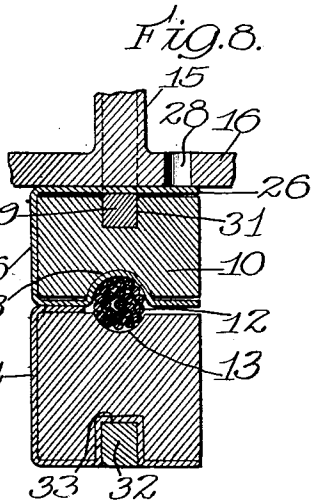


Fig. 8.



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UNITED STATES PATENT OFFICE.

RUSSELL A. WILLSON, OF SPOKANE, WASHINGTON.

SUSPENSION-CLAMP.

1,173,400. Specification of Letters Patent. Patented Feb. 29, 1916.

Application filed April 15, 1911. Serial No. 621,274.

To all whom it may concern:

Be it known that I, RUSSELL A. WILLSON, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented certain new and useful Improvements in Suspension-Clamps, of which the following is a specification.

This invention relates to improvements in suspension clamps particularly adapted for use in supporting cables or wires, especially those employed for conducting high tension electric currents, and one of the objects of the invention is to provide an improved device of this class having efficient and durable clamping means for securing the wire without injuring the latter and which may be readily adapted for varying sizes of wire or conductors.

A further object is to provide an improved device of this class having means for electrically connecting the wire with the hanger piece for preventing the formation of an arc across the space between the hanger piece and the wire, which arc would destroy the clamping members.

A further object is to provide an improved device of this class having means for preventing a "flash over" from burning the wire.

A further object is to provide an improved device of this class having means whereby arcing rods or members may be readily attached or secured thereto.

A further object is to provide an improved device of this class which will be simple, durable and cheap in construction and which may be readily installed.

To the attainment of these ends and the accomplishment of other new and useful objects, as will appear, the invention consists substantially in the features of novelty in the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawings exemplifying the invention, and in which—

Figure 1 is a side elevation of an improved device of this class constructed in accordance with the principles of this invention. Fig. 2 is a top plan view of the suspension clamp shown in Fig. 1. Fig. 3 is a detail sectional view on line 3—3, Fig. 1. Fig. 4 is an enlarged detail sectional view similar to Fig. 3 with parts omitted. Fig. 5 is a view similar to Fig. 1 of a modified form of the invention. Fig. 6 is a top plan view of the suspension device shown in Fig. 5. Fig. 7 is a detail sectional view on line 7—7, Fig. 5. Fig. 8 is an enlarged detail sectional view similar to Fig. 7 with parts omitted.

Referring more particularly to the drawings and in the present exemplification of the invention, the suspension clamp consists primarily of two clamping members designated generally by the reference numerals 10 and 11. These clamping members are constructed of any suitable relatively non-conducting material, preferably of some material which will not injure the conductor wire 12. In the present exemplification of the invention these clamping members 10, 11 are shown as being constructed of wood and are each provided with a semi-circular groove 13 in their adjacent faces and which extend longitudinally of the members. These members may be of any desired or suitable length and of any desired or suitable configuration and the portions of the grooves adjacent the respective extremities of the clamping members are enlarged or flared as at 14 so as to effect a gradual release of the clamping pressure and thus prevent making any marks or dents in the wire. Furthermore, this enlarged or flaring portion of the grooves performs the function of preventing a sharp bend or kink in the wire in case the conductor 12 should break and the clamp swing on the pivot 23.

One of these clamping members is adapted to be placed on each side of the conductor wire 12 and a metallic hanger or member 15 is provided for supporting the clamping members. This hanger member 15 is preferably provided with a base 16 adapted to rest upon the upper face of the upper clamping member and the clamping members are secured together and to the hanger member in any desired or suitable manner, preferably by means of substantially U-shaped bolts or clips 17 which pass under the lower face of the lowermost clamping member and the extremities 18 pass through suitable apertures in the base 16 of the hanger member 15. These extremities 18 are preferably screw-threaded and are adapted to receive nuts or collars 19 and if desired nut locks 20 may be provided between the nuts 19 and the base 16. It will thus be apparent that when the parts are assembled in the manner just described

and the nuts 19 adjusted upon the extremities 18 of the clips 17, the clamping members will be forced together against the conductor 12 and inasmuch as the clamping members are constructed of a material which will not injure the conductor, the latter may be securely clamped.

The clamp is adapted for suspension from a suspension insulator 21 of any desired or well known structure and a connecting member 22 is pivotally connected as at 23 with the hanger member 15 and also as at 24 with a pendant portion 25 of the insulator. The pivot 23 between the members 15 and 22 is preferably arranged transversely with respect to the conductor wire 12 and the connection 24 with the pendant member 25 of the insulator is such that the suspension clamp may swing laterally with the conductor wire.

Heretofore in suspension devices of this character it has been customary when aluminum stranded cable is employed for high tension service, to provide a sleeve of metal, such as aluminum, which surrounds the cable between the clamping members, in order that the clamping members would not injure the cable. By the provision of the clamping members in accordance with the applicant's invention, this sleeve may be dispensed with, and when copper is employed in the conductor cable, the clamping members may be constructed of a material which is somewhat harder than the material employed when aluminum wire is employed, as will be understood.

In order to electrically connect the conductor 12 with the hanger member 15 so that there will be no tendency for an arc to form across the space between the hanger member 15 and the conductor 12, which arc would destroy the clamping member, a metallic member 26 such as a sheet of aluminum or the like, is employed, and this member is preferably wrapped around the upper clamping member as shown more clearly in Fig. 4 so as to contact with a portion of the hanger member 15 and with the conductor 12 and preferably extends into the groove 13 between the member 10 and the conductor 12.

For the purpose of holding the clamping members 10, 11, in position when assembling the parts, apertures 27 are provided in the bolts or clips 17 and an aperture 28 is provided in the base 16 of the hanger member 15 through which screws or fastening devices may be inserted into the respective clamping members.

In order to prevent a "flash over" from burning the conductor wire, arcing members 29 are employed which are constructed of any suitable material, preferably steel and are of any desired shape and configuration but are preferably in the form of rods rectangular in cross section. These arcing members are adapted to be secured to one of the clamping members, so as to extend longitudinally of the conductor for any desired distance and the extremities 30 of the arcing member are deflected away from the conductor. In the form of the invention shown in Figs. 1 to 4, the arcing member is placed above the conductor and the deflected extremities 30 thereof extend upwardly away from the conductor. This arcing member in the present exemplification of the invention is supported by the clamping member by being inserted in a groove or recess 31 which opens through the upper face of the latter and is of a configuration to conform to the contour of the arcing member, and the metallic member 26 which encircles the clamping member 10 preferably passes over the arcing member, as shown more clearly in Fig. 4.

It will thus be apparent that as the arcing rod or member 29 is connected to the wire or conductor 12 and as it is located between the conductor and the insulator, any arc that jumps around the insulator will go to the arcing member and not to the conductor.

If desired, a second arcing member 32 may be provided, as shown more clearly in Figs. 5 to 8, and when employed may be supported from the other of the clamping members, preferably beneath the lower face of this member and in such a manner that the arcing member 32 will be disposed directly beneath the conductor 12. The clamping member which supports this arcing member 32 is provided with a recess or groove 33 similar to the recess or groove 31 in the other clamping member and this recess or groove 33 opens through the lower face of the clamping member and is of a configuration to conform to the contour of the inserted portion of the arcing member 32. This arcing member 32 is held against displacement preferably by means of the clamping bolts or clips 17 and a conductor 34 preferably in the form of a strip of sheet material may be employed for electrically connecting the arcing member 32 with the conductor 12. This member 34 may be arranged to encircle a portion of the clamping member 11 and preferably to extend into the groove 33 over the arcing member, as shown more clearly in Fig. 8 and will be held against displacement by being clamped between the arcing member and the bottom of the groove, by the clips or bolts 17 and also by being clamped between the adjacent faces of the clamping members 10, 11.

With this improved construction it will be apparent that the clamping members may be readily grooved so that they may be adapted for varying sizes of conductor wires and may be readily installed and as readily

removed. Furthermore, the pivotal support of the suspension clamp permits the latter to swing freely in case of a breakage in the line and without danger of kinking or bending the conductor as would be the case if a rigid connection to the insulator should be employed.

What is claimed as new is:—

1. In a suspension clamp, the combination with a conductor, of a pair of insulating clamping members having grooves in adjacent faces flared at the ends, arcing members separable from the clamping members, means for suspending the clamping and arcing members, and means for electrically connecting the conductor and arcing members around the clamping members.

2. In a suspension clamp, the combination with a conductor, of a pair of insulating clamping members having grooves in adjacent faces flared at the ends, arcing members adjacent the clamping members and spaced from the conductor, means for suspending the clamping members and the arcing members, and conducting means forming an electrical connection between the conductor and the arcing members.

3. In a suspension clamp, the combination with a conductor, of separate insulating clamping members having grooves in adjacent faces for engaging the conductor and having grooves in opposite faces, a pair of arcing rods removably disposed in the said opposite grooves at a distance from the conductor, a common clamping device for holding the members together and the rods in connection therewith, and means forming an electrical connection between the conductor and the rods.

4. In a suspension clamp, the combination with a conductor, of insulating clamping members engaging the conductor, a pair of arcing rods supported by the members on opposite sides of and at a distance from the conductor with the ends of the rods deflected away from each other and from the conductor, clamping means for forcing the members together and for holding the rods in place, a suspension device for supporting the clamping means, and a metallic sheathing on said clamping members forming an electrical connection between the conductor and the suspension device and the rods.

5. In a wire suspension clamp, the combination with superposed blocks of insulating material having grooves in their opposed faces for holding the wire to be suspended and having grooves in their outer faces, arcing rods disposed in the outer grooves, a metallic sheathing extending from the opposed grooves where it contacts with the conductor in the groove to the other grooves where it contacts with the arcing rods, and means for binding the clamping blocks, the rods and the sheathing together for holding the wire to be suspended.

6. In a wire suspension clamp, the combination with insulating clamping members having grooves in their adjacent faces for holding a wire to be suspended, metal clamps for binding the members together on the conductor, a support for the clamps, and a sheathing extending from the wire groove around one of the members in engagement with the clamp forming an electrical connection between the wire and the clamp.

7. In a wire suspension clamp, the combination of insulating material softer than the wire to be supported having grooves therein for receiving the wire, arcing rods extending beyond the members at a distance from the wire and with the ends bent outwardly from each other and from the wire, an electric conducting sheathing disposed in the groove and forming electrical connection between a wire inserted in the groove and the arcing rods, and a supporting clamp for binding and holding the members, the rods and the sheathing in contact with the wire to be suspended.

8. In a wire suspension clamp, the combination with a wire of insulating clamping members disposed in opposite sides of the wire, arcing rods spaced from the wire by the members and bent outwardly at the ends away from the wire and from each other, means forming an electrical connection between the wire and the rods, and a clamping support for binding the members, rods and conducting means together by the wire.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 4th day of April, A. D. 1911.

RUSSELL A. WILLSON.

Witnesses:
C. C. McEachran,
A. J. Schulthess.