Jan. 22, 1929. 1,699,781

W. R. ELLIS

CONDUCTOR CLAMP

Filed July 27, 1927

Fig. 1.

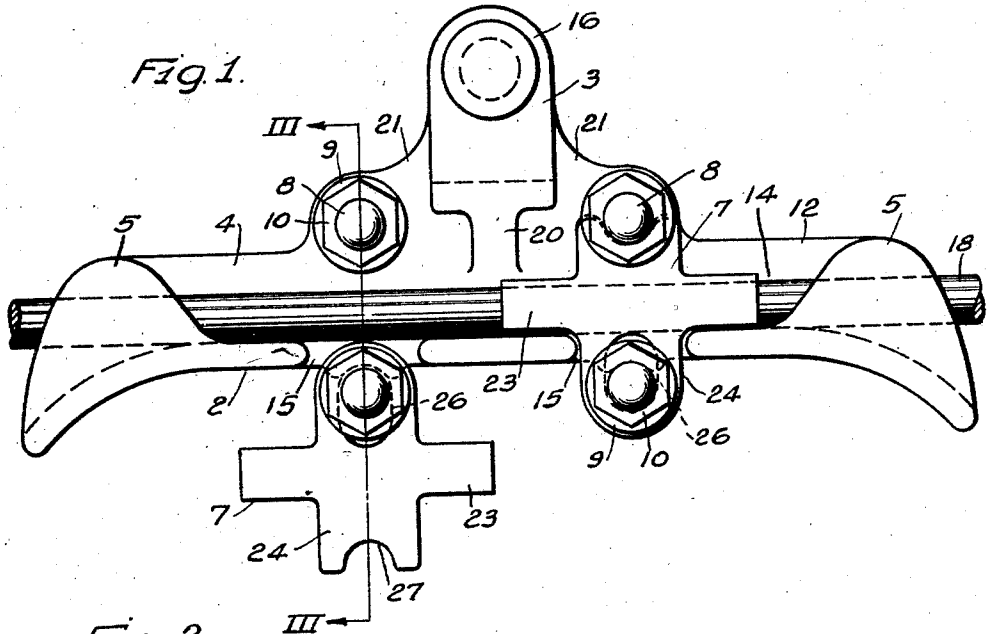


Fig. 2

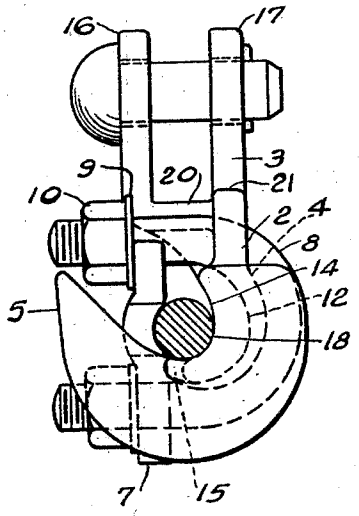
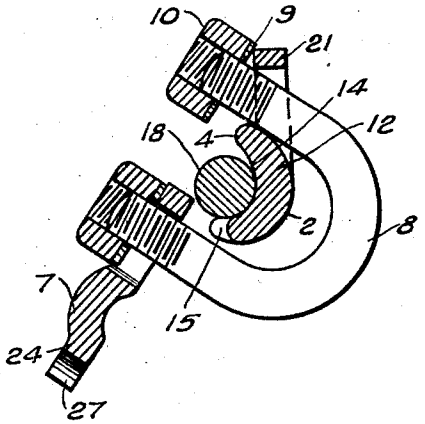


Fig. 3.



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UNITED STATES PATENT OFFICE.

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CONDUCTOR CLAMP.

Application filed July 27, 1927. Serial No. 208,693.

My invention relates to conductor clamps and particularly to clamps for suspending high-voltage transmission-line conductors.

One object of my invention is to provide a clamp, of the above-indicated character, that shall have all of its parts permanently and operatively connected to greatly facilitate the mounting and dismounting of a conductor relative thereto.

Another object of my invention is to provide a suspension clamp in which an elongated clamping portion shall so substitute for a side of a channel member thereof as to materially reduce the weight of the clamp as a unit.

Another object of my invention is to provide a suspension clamp that shall embody a clevis suspending portion connected to a conductor-receiving portion, entirely at one side of the latter, whereby the conductor may be placed in the clamp without passing it between the arms of the clevis.

Another object of my invention is to provide a conductor clamp that shall permit the ready mounting and dismounting of the conductor relative thereto, while the clamp is mounted on an insulator.

A further object of my invention is to provide a suspension clamp that shall be simple and durable in construction, economical to manufacture, and effective in its operation.

Heretofore, suspension clamps have employed channel members, U-bolts, J-bolts and other elements in various combinations, but, to the best of my knowledge, and especially in a clamp where a clamping shoe has been used in conjunction with bolts for clamping the conductor in the channel, the entire separation of certain of the parts has been necessary to mount the conductor in the clamp.

It has also been usual to have eye and socket clamp-mounting portions connected to the channel member at one side of the channel, but, where a clevis has been employed, the side arms of the clevis have usually been mounted on opposite sides of the channel. This feature requires the conductor to be passed between the arms of the clevis into the channel, and, consequently, the mounting of the conductor in the clamp before the clamp is connected to the insulator, or, if the clamp is already connected to the insulator, the disconnection of the clamp for the reception of the conductor.

A clamp is known to me that has a clevis mounted entirely at one side of the channel, but the clevis is so far removed from the center of the channel and so related and connected thereto as to require excess metal and weight and to have other objectionable features not present in the clamp of my invention.

It is my aim to overcome the above-mentioned, and other objections to clamps heretofore employed and to provide a clamp of simple, compact and economical structure and effective operation.

Accordingly, in practicing my invention, I provide a suspension clamp in which all of the parts are so permanently and operatively connected, in which a clevis is so mounted entirely at one side of a channel member, at a position intermediate the ends thereof in which clamp shoe elements replace portions of one side of the channel, and in which other features are so incorporated and combined as to attain all of the objects of my invention, and to provide a clamp that is a material improvement over clamps heretofore employed.

Figure 1 of the accompanying drawing is a side elevational view of a suspension clamp constructed in accordance with my invention, with one clamping element thereof in operative clamping position and a similar clamping element in a position to permit the reception or the removal of the conductor,

Fig. 2 is an end elevational view of the structure shown in Fig. 1, as viewed from the right-hand end of Fig. 1, and

Fig. 3 is a view, taken along the line III—III of Fig. 1, but with the parts in slightly different relation from that shown in Fig. 1.

The device comprises, in general, a main body member or casting 2 having a clevis-mounting portion 3, a conductor-receiving or channel portion 4 and end lips 5, cooperating clamping elements 7, transversely-projecting elements or U-bolts 8 and washers 9 and nuts 10 mounted on the U-bolts 8.

The body member 4, preferably formed as one integral metal casting, has a rear wall portion 12, which, with the lips 5, substantially constitutes a channel of U-shape in cross section, with a portion of one side wall thereof between the lips 5 removed. The rear wall portion 4 also has a grooved portion 14 constituting a shallow channel extending substantially throughout its length. Cutaway or

notched portions 15 are provided in the lower edge of the portion 12 for positioning the element 7.

The clevis portion 3 comprises arms 16 and 17 that are preferably symmetrically disposed on either side, and extend in the direction, of a diameter of a conductor 18. The arms 16 and 17 are integrally connected by a lower portion 20, to each other and to the body 4 entirely at one side of the groove 14 and entirely at one side of the channel formed by the rear wall 12 and the lips 5.

Apertured webbed portions 21 at opposite sides of the clevis 3 provide means for permanently and movably mounting the U-bolts on the body 4.

The clamping elements 7 are of substantially cruciform construction, each having a slightly grooved or cupped arm 23 constituting a clamp shoe for disposition along the conductor 18 and a transverse arm 24 for bridging the free ends of the U-bolts 8.

One end of the arm 24 is provided with an elongated slot 26 for permanently and operatively mounting the element 7 on one leg of the U-bolt 8, and the other end of the arm 24 is provided with a recessed or notched portion 27 for embracing a portion of the other leg of the U-bolt.

In operation, since the clevis is disposed entirely at one side of the body 4, the conductor 18 may be placed in the groove 14 and between the portions 4 and 5 by relatively moving the body portion 4 and the conductor 18 transversely to the longitudinal axis of the conductor, without passing the conductor between the arms 16 and 17 of the clevis.

Before so placing the conductor 18 in the clamp, the clamping elements 7 are each moved to a position, aside the transverse entering path of the conductor to the clamp, corresponding to the position of the element 7 in Fig. 3.

The elements 7 are then turned, about the axis of the leg of the U-bolt on which they are permanently mounted, to position shown in Fig. 2 and at the right-hand side of Fig. 1, in which the elements 7 have also been rectilinearly moved in a direction parallel to the longitudinal axes of the arms 24, transversely to the conductor axis, to position the portions 27 about the opposite legs of the U-bolts 8. When the nuts 10 are advanced inwardly on the U-bolts 8, the arms 24 take positions in the notches 15 and the arms 23 are tightly clamped along considerable portions of the length of the conductor 18. The arms 23 of the clamping elements 7 are of such width as to be substantially confined within the lateral or vertical limits of the lips 5 and, with the lips 5, constitute one side of the channel, the other side of which is provided by the portion 4.

By unscrewing the nuts 10 a certain distance and turning the elements 7 to positions corresponding to the position of the left-hand element 7 of Fig. 1, the conductor may be placed in position by slightly bending it but, by also turning the U-bolts about the conductor or channel axis, as illustrated in Fig. 3, the conductor may be passed transversely into the clamp without bending it. The parts may also be shaped and related to permit the reception of the conductor without turning the U-bolts about the channel axis and without bending the conductor, as will be readily understood.

By my invention, an extremely simple, compact and effective clamp structure is provided that is of reduced weight and overall height, that requires the complete separation of none of its parts, that permits the conductor to be mounted in the clamp while the latter is either mounted on, or disconnected from, an insulator, that is effective in operation and has other advantages and features of improvement over conductor clamps heretofore employed.

While I have shown and described a particular form of my invention, changes may be effected therein without departing from the spirit and scope thereof, as set forth in the appended claims.

I claim as my invention:

1. A clamp comprising a body having a portion for receiving a conductor transversely to the longitudinal conductor axis and means permanently connected to the body including an element having an axis extending transversely to said axis and a clamping shoe on said element for clamping movement substantially parallel to said transverse axis along an appreciable portion of the conductor and turning movement about said transverse axis to admit the conductor to the clamp.

2. A clamp comprising a body having a portion for receiving a conductor transversely to the longitudinal conductor axis and means including a clamping shoe permanently connected to the body for rectilinear clamping movement relative to the body transversely to said axis along an appreciable portion of the conductor and turning movement relative to the body to a position aside the entering path of the conductor to said receiving portion and laterally-opposite means at opposite sides of the conductor for effecting said rectilinear clamping movement and holding the shoe in position.

3. A clamp comprising a body having a portion for receiving a conductor transversely to the longitudinal conductor axis and means permanently connected to the body including elements having laterally opposite axes extending transversely to said axis and a clamping shoe supported by one of said elements for clamping movement substantially parallel to said transverse axes along an appreciable portion of the conductor and turning movement about the transverse axis

of said one element, said shoe cooperating with the other of said elements for positioning thereby.

4. A clamp comprising a body having a portion for receiving a conductor transversely to the longitudinal conductor axis and means permanently connected to the body including elements having laterally opposite axes extending transversely to said axis and a clamping shoe supported by one of said elements for clamping movement substantially parallel to said transverse axes and turning movement about the transverse axis of said one element, said shoe cooperating with the other of said elements for positioning thereby and being bodily relative movable transversely to the axis thereof.

5. A clamp comprising a body having a portion for receiving a conductor transversely to the longitudinal conductor axis and means permanently connected to the body including elements having laterally opposite axes extending transversely to said axis at opposite sides thereof and a clamping shoe having a portion cooperating with one of said elements for holding relation, and movement relative thereto transversely to the axis thereof and a portion for positioning by, and releasable holding relation to, the other element.

6. A clamp comprising a body having a portion for receiving a conductor transversely to the longitudinal conductor axis and means permanently connected to the body including elements having laterally opposite axes extending transversely to said axis at opposite sides thereof and a substantially cruciform clamping shoe having an arm extending along the conductor and an arm bridging said elements and movable relative thereto to receive and clamp the conductor.

7. A clamp comprising a body having a portion for receiving a conductor transversely to the longitudinal conductor axis and means permanently connected to the body including elements having axes extending transversely to said axis at opposite sides thereof and a substantially cruciform clamping shoe having an arm extending along the conductor and an arm bridging said elements, said bridging arm having a longitudinally slotted portion through which one of said elements extends and a notched end portion for embracing the other element.

8. A clamp comprising a body having a conductor-receiving channel portion, a U-bolt embracing the channel and having one leg extending through said body, and a clamping shoe having a portion bridging the legs of the bolt including a slotted portion in which one of said legs is disposed.

9. A clamp comprising a body having a conductor-receiving channel portion, a U-bolt embracing the channel and having one leg extending through said body, a clamping shoe having a portion bridging the legs of the bolt including a slotted portion in which one of said legs is disposed, and a notched end portion for embracing the other leg.

10. A suspension clamp comprising an elongated conductor-receiving channel portion, a clamp-mounting clevis portion connected thereto entirely at one side, and intermediate the ends thereof, said clevis portion projecting substantially radially to the conductor axis and having its arms symmetrically disposed on opposite sides of the conductor, and means between each end of the channel and said clevis for clamping the conductor in position.

11. A suspension clamp for receiving only a straight portion of a conductor, comprising an elongated channel portion, a clamp-mounting clevis portion connected to said channel portion entirely at one side thereof and having its arms substantially symmetrically disposed on opposite sides of the conductor and means between each end of the channel and said clevis for clamping the conductor in position.

12. A clamp comprising a member embodying a conductor-receiving channel portion having a section of one side wall thereof removed and a plurality of clamping members movable relative to said first member and to each other and having end-to-end related clamping portions substantially constituting, and substituting for, a portion of said section.

13. A conductor clamp comprising a conductor-receiving channel member having a recessed portion of substantially U-shape in one side wall of the channel and a clamping member having a portion extending transversely to the channel axis in said recessed portion and clamping portions extending along the conductor laterally beyond the sides of the recess.

14. A conductor clamp comprising a conductor-receiving channel member, a U-bolt permanently movably mounted on said member and embracing the channel, and a clamping member permanently pivotally mounted on one leg of the bolt for removable clamping cooperation with the other leg thereof, the construction and relation of parts permitting the clamping member to be moved about said first leg and the bolt to be moved about the channel axis to place the conductor in the channel.

In testimony whereof, I have hereunto subscribed my name this 23rd day of July, 1927.

WALTER R. ELLIS.