June 27, 1939. O. F. TALLMAN 2,164,094

CLAMP

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Fig. 1

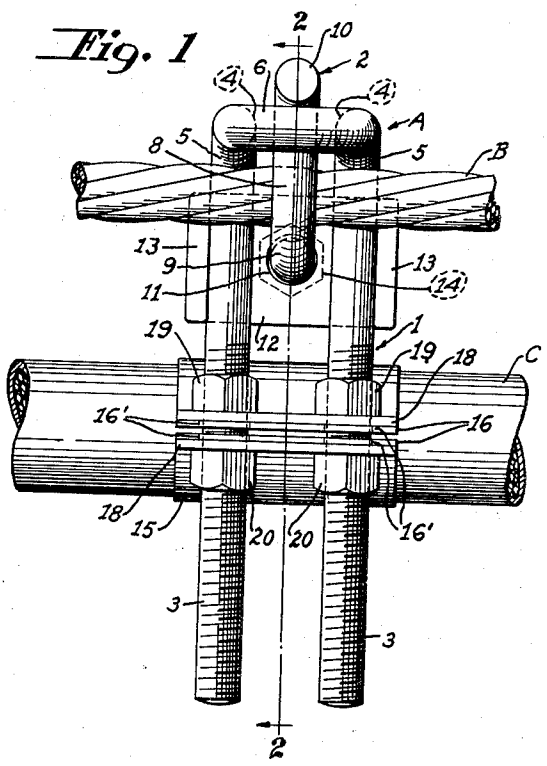



Fig. 2

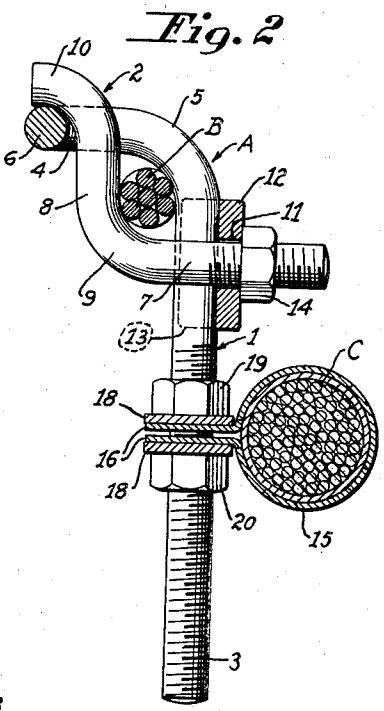
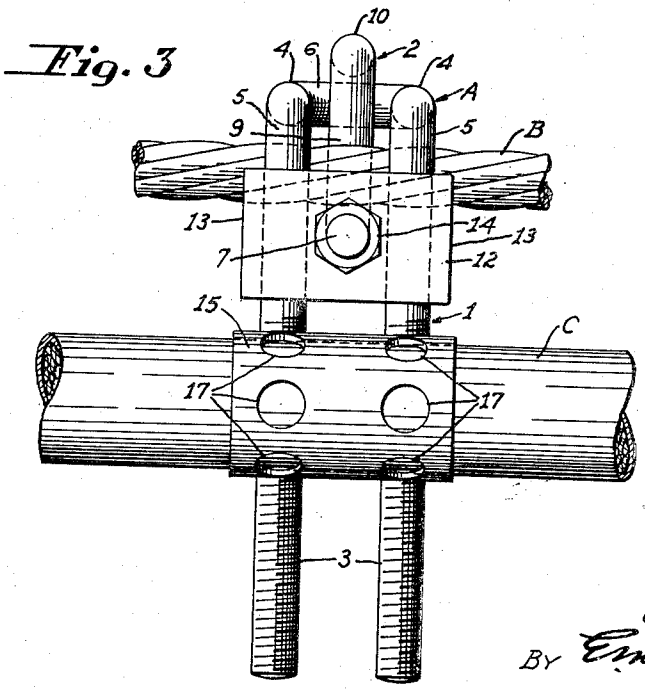



Fig. 3




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Fig. 4

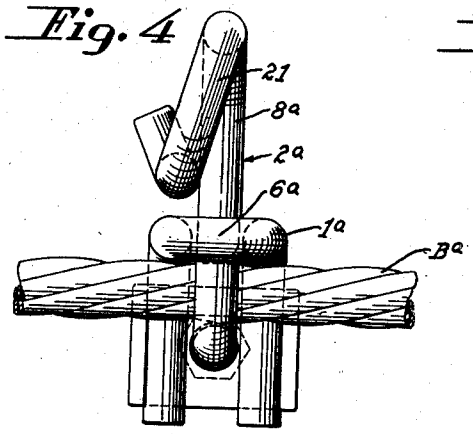



Fig. 5

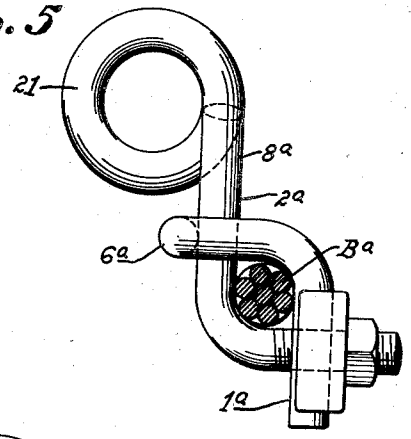



Fig. 6

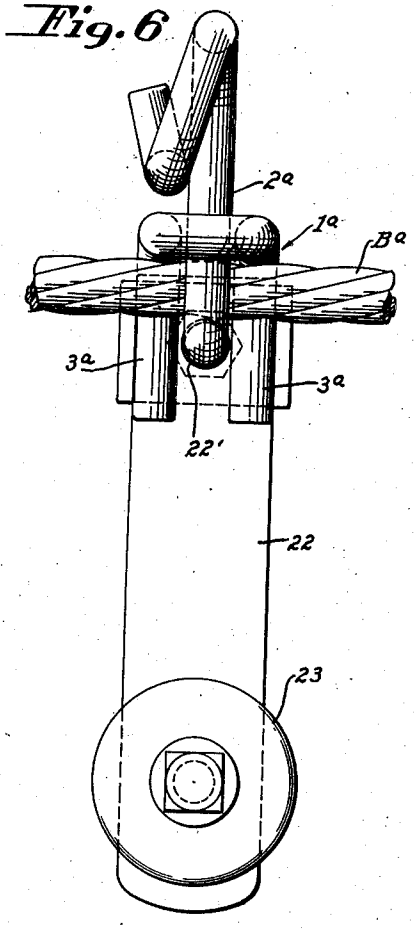
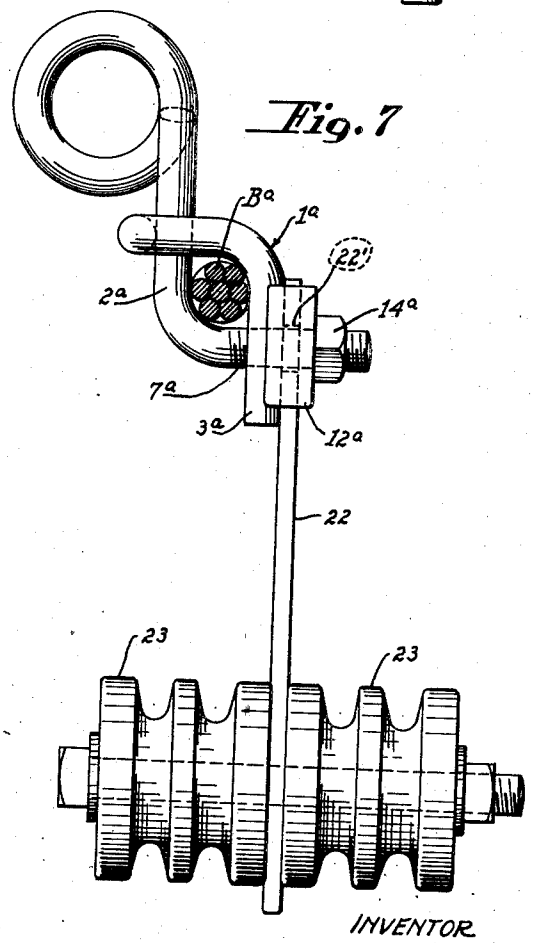



Fig. 7




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# UNITED STATES PATENT OFFICE

2,164,094

## CLAMP

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Application June 18, 1938, Serial No. 214,451

7 Claims. (Cl. 248—61)

This invention relates generally to clamps and more specifically to an improved clamp adapted for use in attaching electrical cables and electrical service conductors to messengers, the predominant object of the invention being to provide an improved clamp of this type which is capable of performing its intended function in a highly efficient manner.

It is quite well known to persons familiar with such matters that considerable trouble was encountered in properly attaching electrical cables to messengers associated therewith with the aid of the clamps or brackets heretofore employed for that purpose. This was particularly true where the messengers and cables were disposed on a grade, as in this case a relative creeping action between the messenger and the cable resulted from the fact that said messenger and cable were not properly gripped by the clamps or brackets which attached the cable to the messenger.

The main purpose of the present invention is to provide a clamp which is of such improved construction and arrangement that both the messenger and the cable associated therewith are securely gripped by the clamp so that relative creeping of the messenger and cable is effectively prevented even though the associated messenger and cable are arranged on a grade. Additionally the improved clamp disclosed herein, in a slightly modified form, is capable of efficient use as a span bracket, said clamp being secured to a messenger at a point between poles so that a service connection may be extended from the messenger to a customer's location at any point where clearance for the drop wire is obtainable.

Fig. 1 illustrates in elevation one form of the improved clamp, fragments of a messenger and cable being associated with said clamp.

Fig. 2 is a vertical section-elevation taken on line 2—2 of Fig. 1.

Fig. 3 is a view similar to Fig. 1 but illustrating the opposite side of the clamp.

Fig. 4 illustrates in front elevation a modified form of the improved clamp adapted for use as a span bracket, a fragment of a messenger being associated with said clamp.

Fig. 5 is a side elevation of the clamp illustrated in Fig. 4 with the messenger shown in section.

Fig. 6 is a front elevation of still another modified form of the improved clamp which resembles the form illustrated in Figs. 4 and 5 but includes knobs for attaching service connections to the clamp.

Fig. 7 is a side elevation of the clamp illustrated in Fig. 6 with the messenger associated therewith shown in section.

In the drawings, wherein are shown for the purpose of illustration, merely, several embodiments of the invention, A designates in Figs. 1, 2, and 3 the improved clamp generally. Also in Figs. 1, 2, and 3 a messenger is designated by the reference character B and a cable is designated by the reference character C. The clamp A of Figs. 1, 2, and 3 includes a clamping member 1 and a clamping member 2 which are so constructed and arranged that the messenger B is clamped between said clamping members, said clamping members preferably being formed from rod stock. The clamping member 1 is preferably in the form of a U-bolt and includes a pair of spaced, vertically disposed, parallel portions 3 which are shaped at their upper ends to provide parallel horizontal portions 4, the portions which connect the vertical portions 3 and the horizontal portions 4 being of arcuate formation as indicated at 5 in Fig. 2, and the ends of the horizontal portions 4 opposite to the ends thereof into which the arcuate portions 5 merge being joined by a bridge portion 6. The vertical portions 3 of the clamping member 1 are externally screwthreaded throughout considerable portions of the lengths thereof for a purpose to be hereinafter explained.

The clamping member 2 is shaped as shown to the best advantage in Fig. 2; that is to say, said clamping member is formed preferably from a single length of rod which includes a horizontal portion 7, a vertical portion 8 which is connected to the horizontal portion by an arcuate portion 9, and an arcuate portion 10 which extends from the upper end of the vertical portion 8. In use the arcuate portion 10 of the clamping member 2 overlaps and engages the bridge portion 6 of the clamping member 1 as shown to the best advantage in Fig. 2, and the horizontal portion 7 of said clamping member 2 extends through an aperture 11 formed through a plate 12. The plate 12 contacts with the upper portions of the vertical portions 3 of the clamping member 1 as shown in Fig. 2 and said plate is provided with flanges 13 at its opposite ends which extend at approximate right angles to the main body of the plate and engage opposed outer portions of the vertical portions 3 of the clamping member 1 (Figs. 1 and 2). The horizontal portion 7 of the clamping member 2 is screwthreaded inwardly from its outer end and a nut 14 is mounted on said screwthreaded portion and is screwed into engagement with the plate 12 to force said plate in close contact

with the vertical portions 3 of the clamping member 1.

Arranged about the cable C is a band 15 formed of metal or other suitable material, said band being provided with parallel, horizontal extensions 16 as shown in Figs. 1 and 2. The extensions 16 of the band 15 are provided with alined apertures 16' through which the vertical portions 3 of the clamping member 1 extend, and the band proper is provided with similar apertures 17 spaced thereabout so that when the band is reduced in diameter apertures will always be present in the portions of the band which provide the extensions through which the vertical portions 3 of the clamping member 1 may pass. Located in contact with the extensions 16 of the band 15 is a pair of plates 18 which are also provided with apertures through which the vertical portions 3 of the clamping member 1 extend, and contacting with the top face of the upper plate 18 and the bottom face of the lower plate 18 are pairs of nuts 19 and 20 which are mounted on the screwthreaded portions of the vertical portions 3 of the clamping member 1. Obviously when the associated nuts 19 and 20 are screwed toward each other the plates 18 and the extensions 16 on the band 15 will be likewise forced toward each other with the result that the band will be drawn tightly about the cable, and the extensions of the band will be securely gripped between the plates 18 and the nuts 19 and 20 to rigidly fix the cable to the clamping member 1.

In applying the improved clamp illustrated in Figs. 1, 2, and 3 to a messenger and cable the cable is connected loosely to the vertical portions of the clamping member 1; that is with the nuts 19 and 20 only partially adjusted to their cable-gripping position. The horizontal portions 4 of the clamping member 1 are then hooked over the messenger and the clamping member 2 is arranged in place with its arcuate portion 10 overlapping and engaging the bridge portion 6 of the clamping member 1. The plate 12 is then passed over the screwthreaded end portion of the clamping member 2 and arranged in place in engagement with the vertical portions of the clamping member 1, after which the nut 14 is applied to the screwthreaded portion of the clamping member 2 and is drawn into loose engagement with the plate 12. With the clamp loosely held in place by the partially drawn up nuts the clamp is adjusted to its proper position after which the nuts 14, 19, and 20 are drawn up tight to securely fix the clamp in place.

An important feature of the invention is that the messenger B is engaged by the arcuate portions 5 and 9 of the clamping members 1 and 2 and as a result each arcuate portion engages at least two of the strands of the messenger as shown clearly in Fig. 2. This provides much greater and more secure gripping action between the clamping members and the messenger than was possible in the use of clamps heretofore used for this purpose where flat plates were employed and contacted each with only the high spot of one strand of the messenger. Also because the clamping members are formed of rod stock which possesses considerable spring the nut 14 is drawn at all times by the spring of the clamping member 2 into close frictional contact with the plate 12 whereby unintended rotation of said nut is prevented without the use of a lock washer or the like. Additionally, unintended rotation of the nuts 19 and 20 is prevented by the tendency of the extensions 16 of the band 15 to spread apart which forces the plates 18 into close frictional contact with said nuts 19 and 20.

The form of the invention illustrated in Figs. 4 and 5 is made substantially the same as the form illustrated in Figs. 1, 2, and 3, in so far as gripping the messenger is concerned. However because the form of the invention shown in Figs. 4 and 5 is intended for use as a span bracket and not as a clamp for securing a cable to a messenger the screwthreaded portions of the portions 3 of the clamping member 1 are not present in the form of the invention illustrated in Figs. 4 and 5. In Figs. 4 and 5 the clamping member which corresponds to the clamping member 1 of Figs. 1, 2, and 3 is designated by the reference character 1*a*, and the clamping member of Figs. 4 and 5 which corresponds to the clamping member 2 of Figs. 1, 2, and 3, is designated by the reference character 2*a*. The clamping member 2*a* of Figs. 4 and 5 differs from the clamping member 2 of Figs. 1, 2, and 3 in that it does not include the arcuate portion 10 of Figs. 1, 2, and 3, but instead the vertical portion 8*a* contacts with and extends vertically above the bridge portion 6*a* of the clamping member 1*a* as shown in Fig. 5 and is provided with an eye 21 formed in its upper portion.

In the use of the form of the invention illustrated in Figs. 4 and 5 the device is secured to the messenger B*a* in the manner already explained in connection with the use of the form of the invention shown in Figs. 1, 2, and 3. A suitable wire gripping device, of which a number of types are available, is connected to the service connection which it is desired to attach to the messenger and to the eye 21 of the span bracket, said service connection being extended from the wire-gripping device to the customer's premises. If desired the device shown in Figs. 4 and 5 may be reversed to locate the eye 21 below the messenger.

The form of the invention illustrated in Figs. 6 and 7 is constructed just as is the device illustrated in Figs. 4 and 5 with the addition of a downwardly extended arm 22 which supports a pair of porcelain knobs 23 at its lower end. The arm 22 is provided with an aperture 22' formed therethrough at a point adjacent to its upper end, and the upper end portion of said arm 22 is interposed between the plate 12*a* and the vertical portions 3*a* of the clamping member 1*a* so that the horizontal portion 7*a* of the clamping member 2*a* extends through the aperture 22' of said arm. Obviously the nut 14*a* in addition to performing the function of drawing the clamping members 1*a* and 1*b* into clamping engagement with the messenger B*a* serves also to secure the arm 22 in place, and the service connection is secured to one or the other of the knobs 23 in the usual manner.

I claim:

1. A clamp adapted to engage an elongated element of substantially circular cross-section, comprising a pair of clamping members each of which partially surrounds the article being clamped, one of said clamping members being in detachable engagement with the other clamping member, and means for drawing said clamping members into clamping relation with respect to the article being clamped, said means comprising an element arranged in contact with one of said clamping members and provided with an aperture through which a portion of the other clamping member extends, and a nut mounted on said

clamping member portion that extends through the aperture of said element, said nut tending to force the element into close contact with the clamping member with which it contacts and draw the clamping member portion on which the nut is mounted longitudinally of the aperture of said element.

2. A clamp adapted to engage an elongated element of substantially circular cross-section comprising a pair of clamping members each of which includes an arcuate portion that contacts with and partially surrounds the article being clamped, one of said clamping members being provided with a portion which overlaps a portion of the other clamping member to provide detachable engagement between said members, and means for drawing said clamping members into clamping relation with respect to the article being clamped, said means comprising an element arranged in contact with one of said clamping members and provided with an aperture through which a portion of the other clamping member extends, and a nut mounted on said clamping member portion that extends through the aperture of said element, said nut tending to force the element into close contact with the clamping member with which it contacts and draw the clamping member portion on which the nut is mounted longitudinally of the aperture of said element, and means for clampingly engaging a second article, the last-mentioned means comprising a band which embraces the second-mentioned article being clamped and is provided with a portion having an aperture formed therethrough through which a part of one of said clamping members extends, and means on said part of one of said clamping members for clampingly engaging said portion of said band.

3. A clamp adapted to engage an elongated element of substantially circular cross-section comprising a pair of clamping members each of which includes an arcuate portion that contacts with and partially surrounds the article being clamped, one of said clamping members being provided with a portion which overlaps a portion of the other clamping member to provide detachable engagement between said members, and means for drawing said clamping members into clamping relation with respect to the article being clamped, said means comprising an element arranged in contact with one of said clamping members and provided with an aperture through which a portion of the other clamping member extends, and a nut mounted on said clamping member portion that extends through the aperture of said element, said nut tending to force the element into close contact with the clamping member with which it contacts and draw the clamping member portion on which the nut is mounted longitudinally of the aperture of said element, and means for clampingly engaging a second article, the last-mentioned means comprising a band which embraces the second-mentioned article being clamped and is provided with flange portions having apertures formed therethrough through which parts of one of said clamping members are extended, and nuts on said parts of said one of said clamping members for clampingly engaging said flange portions of said band.

4. A clamp adapted to engage an elongated element of substantially circular cross-section including a clamping member, in the form of a U-bolt provided with a bridge portion at one end and having spaced, parallel vertical legs, said clamping member being bent adjacent to its bridge end to provide a portion that is disposed at an approximate right angle relative to the spaced, parallel vertical legs, a second clamping member which detachably engages the bridge portion of the first-mentioned clamping member, and means for drawing said clamping members into clamping relation with respect to the article being clamped.

5. A clamp adapted to engage an elongated element of substantially circular cross-section including a clamping member, in the form of a U-bolt provided with a bridge portion at one end and having spaced, parallel vertical legs, said clamping member being bent adjacent to its bridge end to provide a portion that is disposed at an approximate right angle relative to the spaced, parallel vertical legs, a second clamping member which detachably engages the bridge portion of the first-mentioned clamping member, the first-mentioned and second-mentioned clamping members being provided with arcuate portions which contact with and partially surround the article being clamped, and means for drawing said clamping members into clamping relation with respect to the article being clamped.

6. A clamp adapted to engage an elongated element of substantially circular cross-section including a clamping member, in the form of a U-bolt provided with a bridge portion at one end and having spaced, parallel vertical legs, said clamping member being bent adjacent to its bridge end to provide a portion that is disposed at an approximate right angle relative to the spaced, parallel vertical legs, a second clamping member which detachably engages the bridge portion of the first-mentioned clamping member, the first-mentioned and second-mentioned clamping members being provided with arcuate portions which contact with and partially surround the article being clamped, and means for drawing said clamping members into clamping relation with respect to the article being clamped, said means comprising an element arranged in contact with the vertical legs of the first-mentioned clamping member and provided with an aperture through which a portion of the second-mentioned clamping member extends, and a nut mounted on the portion of said second-mentioned clamping member that extends through the aperture of said element, said nut tending to force the element into close contact with the vertical legs of the first-mentioned clamping member and draw the portion of the second-mentioned clamping member that extends through the aperture of said element longitudinally of said aperture.

7. A clamp adapted to engage an elongated element of substantially circular cross-section including a clamping member, in the form of a U-bolt provided wtih a bridge portion at one end and having spaced, parallel vertical legs, said clamping member being bent adjacent to its bridge end to provide a portion that is disposed at an approximate right angle relative to the spaced, parallel vertical legs, a second clamping member which detachably engages the bridge portion of the first-mentioned clamping member, the first-mentioned and second-mentioned clamping members being provided with arcuate portions which contact with and partially surround the article being clamped, means for drawing said clamping members into clamping relation with respect to the article being clamped, said means comprising an element arranged in contact with the vertical legs of the first-men-

tioned clamping member and provided with an aperture through which a portion of the second-mentioned clamping member extends, and a nut mounted on the portion of said second-mentioned clamping member that extends through the aperture of said element, said nut tending to force the element into close contact with the vertical legs of the first-mentioned clamping member and draw the portion of the second-mentioned clamping member that extends through the aperture of said element longitudinally of said aperture, and means for clamping a second article to the first-mentioned clamping member, the last-mentioned means comprising a band which embraces the second article and is provided with extensions having apertures through which the vertical legs of the first-mentioned clamping member extend, and nuts on said vertical legs of said first-mentioned clamping member for forcing said extensions toward each other to tighten said band about the second article.

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