

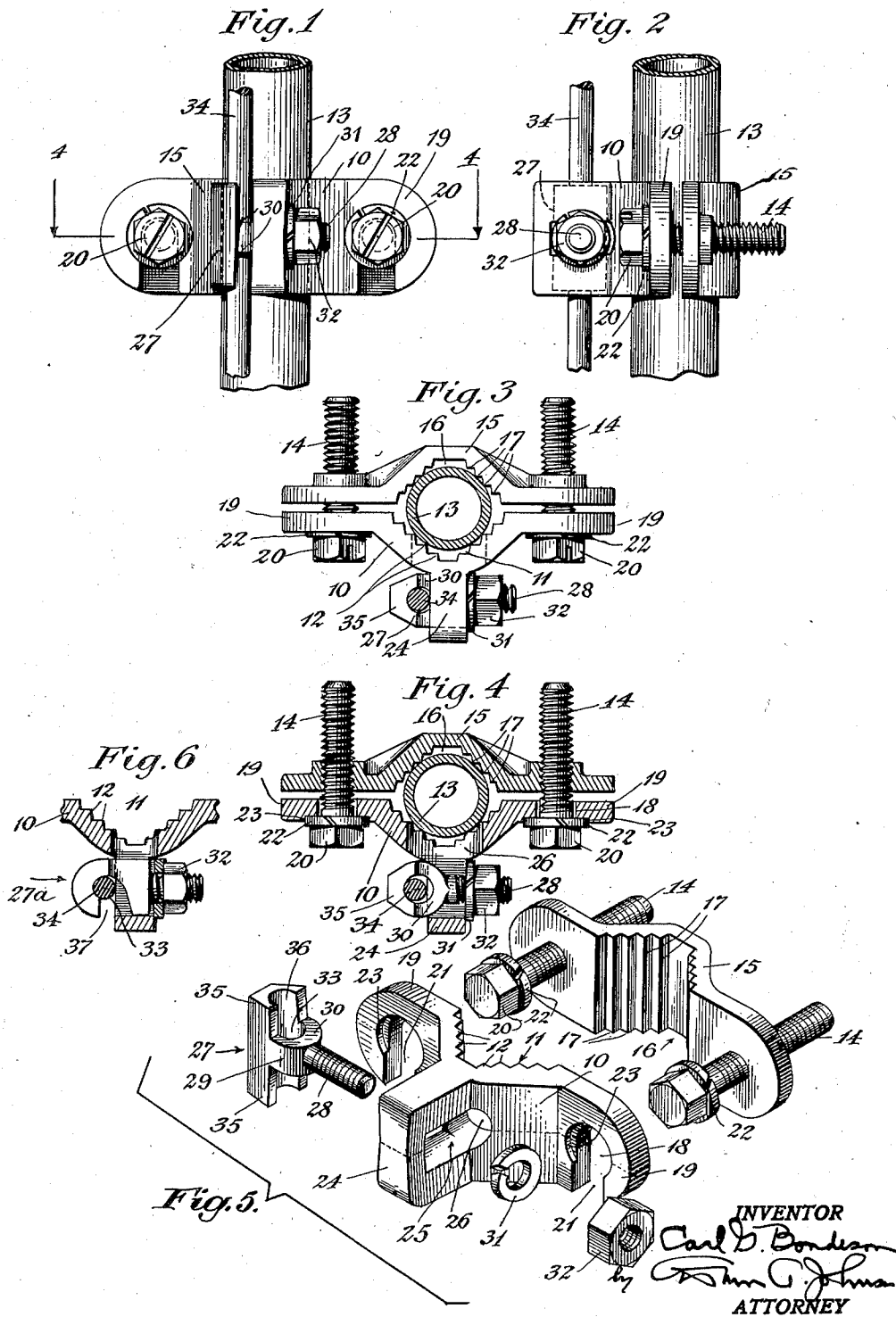
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GROUND FITTING

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GROUND FITTING

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This invention relates to electrical devices, and more particularly, to means for connecting a wire to a pipe, so that good permanent, electrical and mechanical connection is established between the wire and the pipe. The device of the present invention is principally used for connecting grounding wires to water pipes, etc., but it may be advantageously used to electrically bond together various conduits of an electrical system.

An object of the present invention is to provide a fixture for the above purposes in which the wire is securely and conveniently clamped to the fixture and is brought into direct mechanical and electrical engagement with the part of the fixture which in turn directly, electrically and mechanically engages the pipe or conduit.

A further object of the invention is to provide a fixture which may be first clamped to a pipe and later connected to the grounding wire.

A still further object of this invention is to so clamp the wire to the fixture as to prevent appreciable weakening of the wire, and also to prevent the wire from slipping out of clamping position.

To obtain this object of the invention, there is provided a clamping device having a relatively broad surface to engage the wire and press it firmly against a relatively broad surface on the fixture when the clamping device is drawn viselike toward the portion of the fixture which is engaged by the wire, and the clamp is preferably provided with a hole through which the wire extends into its clamping position.

With this structure, the usual operation of bending the wire around the screw under the head or nut thereof is avoided, and this is an important advantage, for the grounding wires are usually relatively heavy and stiff and bending thereof is difficult. Besides, there is no tendency for the wire to slip out from under the head of the screw or nut due to the wire being struck a blow or due to vibrations, etc.

A further feature of this invention is the provision of a fixture which may be made by casting and which requires a minimum of finishing operations. For instance, according to the present invention, the wire is clamped against a broad substantially flat surface having an aperture through which the wire clamp extends. This aperture is open at the bottom so that in making the mold, the sand forms its own core and no additional core is needed. Likewise, the clamping piece itself may be cast without the use of baked cores.

Other features and advantages will hereinafter appear.

In the accompanying drawing, which shows several embodiments of this invention—

Figure 1 is a front elevation showing the fixture attached to a pipe and the wire clamped to the fixture.

Fig. 2 is a side view of the parts shown in Fig. 1.

Fig. 3 is a top plan view of the fixture showing the pipe and wire in section.

Fig. 4 is a horizontal sectional view taken on the line 4—4 of Fig. 1.

Fig. 5 is a disassembled perspective view of the parts of the fixture shown in Figs. 1 to 4.

Fig. 6 is a sectional view of a portion of the device shown in Fig. 4, but showing a modified form of clamp.

As shown in the accompanying drawing, the fixture of the present invention comprises a main portion 10 having at one side a V-shaped depression 11, the surface of which has ribs or teeth 12 forming one half of a clamp to engage a pipe 13. The part 10 is connected by screws 14 to a part 15, the inner side of which has a depression 16 provided with ribs or teeth 17 to engage the pipe 13. When the parts 10 and 15 are placed on opposite sides of a pipe and the screws 14 are tightened, the fixture is securely and firmly clamped on the pipe 13, the teeth 17 and 12 biting into the pipe to form a good electrical and mechanical connection therewith.

In the form of the invention herein shown, the screws 14 are threaded in the part 15 and pass through holes 18 in arms 19 on the part 10 against which the grounding wire is clamped. In this way, the heads 20 of the screws 12 are accessible for engagement when the fixture is applied to the pipe so that the part 15 is between the pipe and an adjacent wall, for instance.

Since the pipe 13 is usually installed before the fixture is to be attached thereto, it is usually necessary to completely separate the parts 10 and 15 when applying them to the pipe.

To facilitate this operation without the necessity of removing the screws 14 from the part 15, the ears 19 of the part 10, in the embodiment of the invention herein shown, are provided with slots 21 through which the screw 14 may be passed laterally to reach the hole 18. Thus, in separating the parts 10 and 15 for application to the conduit or pipe, it is merely necessary to loosen the screws 14 and lift the part 10 vertically as viewed in Fig. 1.

To avoid any tendency for the part 10 to slip

laterally relative to the screws 14 after the device is fastened to a pipe, the screws 14 are provided with washers or disks 22 located under the heads 20 and these fit in circular depressions 23 in the surface of the arms 19. When the screws 14 are tightened, the washers or disks 22 are drawn into the depressions 23 and lateral movement of the screws 14 relative to the ears 19 is prevented. If desired, the disk may be made integral with the head 20, but when it is made separate as shown, it may be employed in the form of a spring or lock washer to resist any tendency of the screw to turn.

As stated above, one of the features of this invention is the provision of means for mechanically and electrically connecting a grounding or bonding wire to a pipe. It has been shown that the parts 15 and 10 together form good electrical and mechanical connections with the pipe 13.

To clamp the grounding wire to the fixture, the part 10 is provided with a perpendicular lug 24 which extends, in the form shown, parallel to the axis of the pipe 13, but, if desired, may be disposed at right angles to the axis of the pipe. The former is preferable, however, since, with this arrangement, access to the heads of the screws 14 is not impeded by the wire.

The lug 24, as shown, is provided with a transverse slot 25 which may be formed therein in any desired way. However, when the slot 25 is continued through the part 10 to the interior or depressed portion thereof, the part may be cast with the slot 25 formed therein without the use of baked cores, because in pressing the pattern in the sand, the sand will project up through an opening 26 of the slot 25 and form its own core.

Slidably mounted in the slot 25 of the lug 24 is a wire clamping member 27. This comprises a screw or draught member 28 having a head 29 which is flattened off at 30 so that when the head is drawn into the slot 25, substantial rotation of the clamping member relative to the fixture 10 is prevented. The screw 28 is made long enough to extend clear through the slot 25 and at the opposite side is provided with a washer 31 and a nut 32.

The head 29 in the form shown in Figs. 1 to 5, is provided with a circular aperture 33 through which a grounding wire 34 may be passed when the nut 32 is loosened. The aperture 33 is preferably larger in diameter than the wire 34 so that the wire may be freely passed through the aperture. When this has been done and the nut 32 is tightened, the clamping member 27 tends to draw the wire into the slot 25 and causes the wire to be clamped securely against the surface of the lug and the walls of the aperture 33, thus bringing the grounding wire 34 into direct mechanical and electrical contact with the part 10 which itself is in mechanical and electrical contact with the pipe 13.

To avoid any danger of the wire 34 being sheared off when the clamping member 27 is drawn into the lug 24 and to increase the area of contact between the wire, the clamping member 27 and the lug 24, the head of the clamping member is provided with wings 35 paralleling the surface of the lug 24 and provided with a semicylindrical channel 36 aligned with the aperture 33 in the head.

It will be noted that the slot 25 in the lug 24 extends clear through from one side of the lug to the other. Therefore, the clamping mem-

ber may be inserted from either side of the lug to be placed in the most convenient position for operation.

The clamping member 27 is also preferably formed by casting, and, to enable this to be done without employing separate baked cores, the aperture 33 and the channels 36 which are extensions thereof, are tapered outwardly to provide sufficient draught in casting. To permit this construction, the surfaces of the lug 24 are slightly concave as shown in the drawing. This arrangement has the further advantage of putting a slight bend in the grounding wire 34 which tends to increase the gripping action between the wire, clamping member 27, and lug 24.

As stated above, in the forms of the invention shown in Figs. 1 to 5, the grounding wire is passed through the circular aperture 33 to place it in position to be clamped. Occasionally, the clamp is to be applied to the wire between the ends of the latter, and it is not convenient to thread the wire through the hole 33. In such cases, the clamping member 27a shown in Fig. 6, may be employed. In this form of the invention, the opening 33 has an entrance slot 37. When the nut 32 is loosened and the clamping member 27a is withdrawn from the slot 25 in the lug 24, the entrance opening 37 is made accessible so that the wire may be inserted laterally through it.

The fitting of the present invention is usually employed to connect a grounding wire to a grounding pipe. However, in some instances, it is desired to electrically connect the various conduits of an electrical system, for instance, around a junction box, and, in such cases, two fittings are used—one fitting to be placed on the conduit at one side of the box, and the other fitting to be placed on the other side of the box, and then a connecting wire is placed in the clamp 27 of the respective fixtures and the clamps are tightened.

Variations and modifications may be made within the scope of this invention, and portions of the improvements may be used without others. Having thus described the invention, what is claimed as new and for which it is desired to obtain Letters Patent, is:—

1. A ground fitting having a clamp adapted to be clamped on a grounding pipe and having a lug extending therefrom and having an aperture; a wire clamp having a wire-receiving apertured portion; and means extending through the aperture in the lug for clamping the same against the lug, the surface of the lug against which the wire is clamped being biplanar and the apertured portion of the wire clamp being provided with transverse wings extending on each side of the aperture in the lug, each wing having a wire-receiving groove longitudinally thereof, the surface of each groove being conical in nature and the grooves respectively coacting with the plane surfaces of the lug to form a wire-receiving channel having parallel surfaces.

2. A ground fitting having a rigid body arched to engage one side of a grounding pipe and having on the outside of the arched portion a lug provided with an aperture directly adjacent the body, said rigid body having laterally extending ears; a wire clamp having a wire-receiving apertured portion and a threaded stud secured to the latter, said wire clamp being slidably mounted in the aperture in said lug so that the wire-receiving apertured portion and the threaded stud project through opposite sides of the lug;

a nut carried by the projecting threaded portion of the stud and engaging the adjacent side of the lug to pull the wire clamp through said lug-aperture and to clamp a grounding wire located in said wire-receiving apertured portion between the latter and the adjacent wall of the lug; a complementary rigid body arched to engage the other side of the grounding pipe and having laterally extending ears; and means extending through said ears and the ears on the first-named rigid body for removably securing the two rigid bodies together and tightening the same

upon the grounding pipe, the surface of the lug against which the wire is clamped being biplanar and the apertured portion of the wire clamp being provided with transverse wings extending on each side of the aperture in the lug, each wing having a wire-receiving groove longitudinally thereof, the surface of each groove being conical in nature and the grooves respectively coacting with the plane surfaces of the lug to form a wire-receiving channel having parallel surfaces.

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