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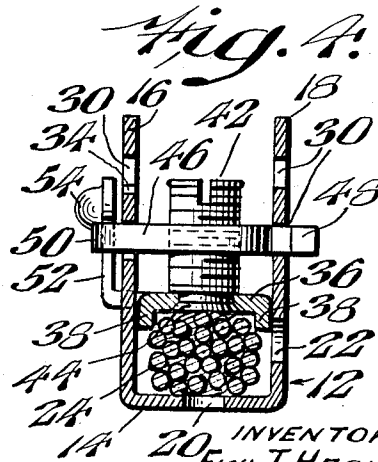
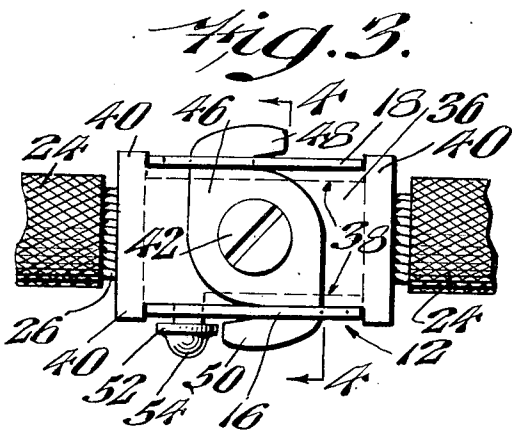
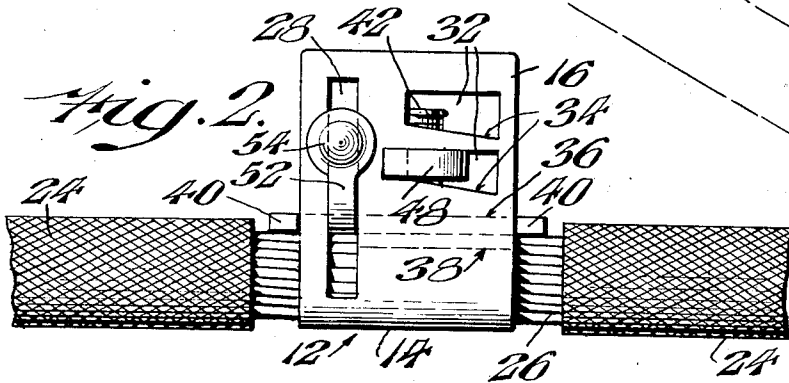
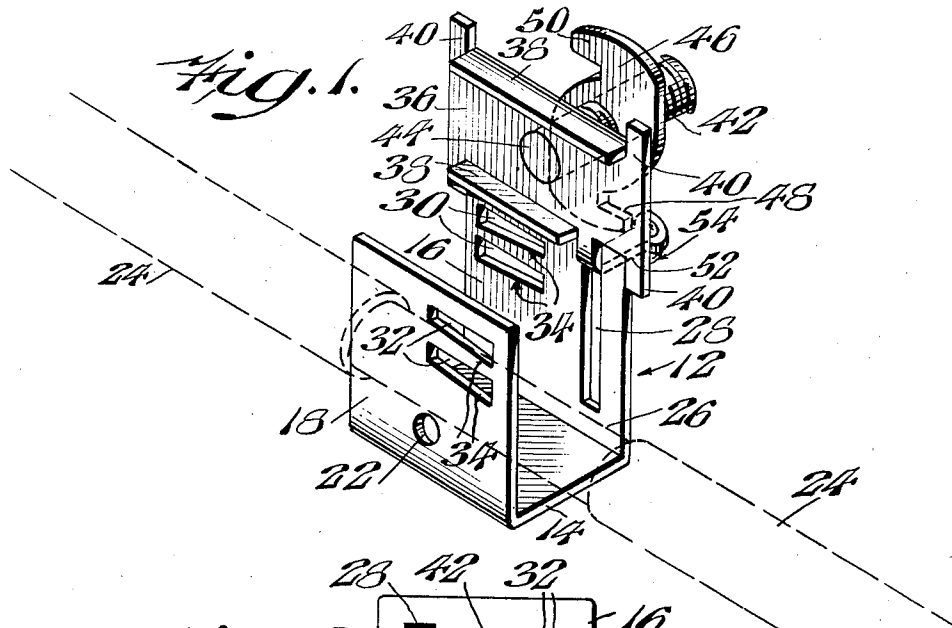
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2,147,160

WIRE CLAMP AND CONNECTER

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2 Sheets-Sheet 1



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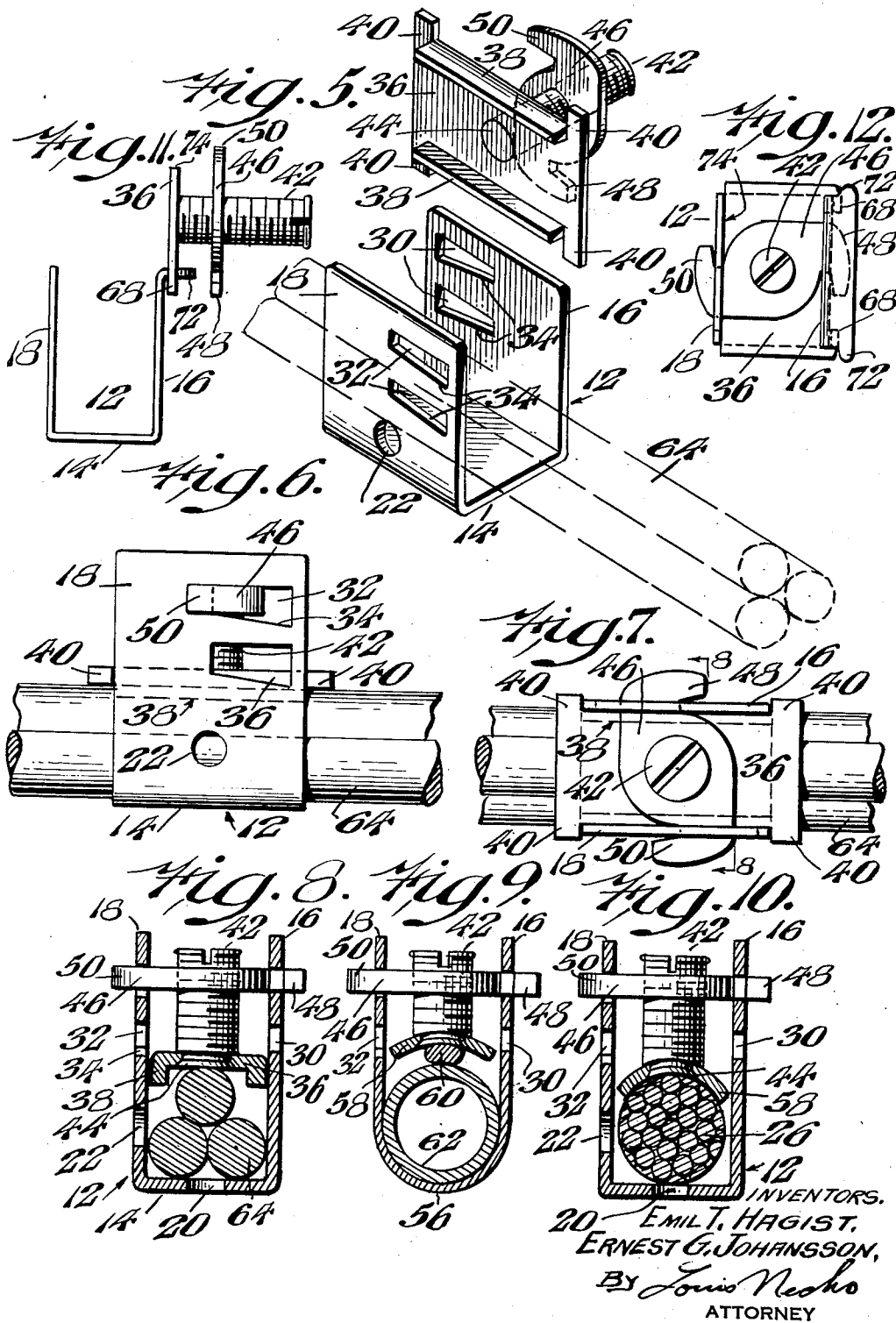
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.2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,147,160

WIRE CLAMP AND CONNECTER

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7 Claims. (Cl. 173—263)

Our invention relates to a new and useful wire clamp and connector especially adapted for mechanically clamping or electrically connecting one or more wires or cables together or for mechanically clamping or electrically connecting the wire or cable to a pipe or other support.

Our invention still further relates to a clamp and connector of this character which is solderless but which affords the requisite rigidity as a mechanical clamp, and which affords the requisite contact pressure and area as an electrical connector, thus making my device extremely desirable and satisfactory for use in connection with the bus wires or bars forming part of electric installations or leading into or extending through meter housings or the like.

Our invention further relates to a clamp and connector which consists in general of two parts, one in the nature of a housing for receiving the wire cable or other object to be mechanically clamped or electrically connected, and the other in the nature of a fastening and pressure-applying member, said members being equally adapted for manufacture and assembly as two separate parts, or being capable of being manufactured in pre-assembled and hinged relationship to constitute a unitary structure, the pressure-applying element including in either instance a permanently engaged, threaded member which lends itself to instant clamping engagement and operation.

Our invention still further relates to a device of this character in which the pressure-applying element, by rotation, engages the walls of said housing in such a manner as to sustain said walls against spreading or collapsing under the pressure necessary for effecting secure mechanical or adequate electrical connection.

Our invention still further relates to a clamping and connecting device which is so constructed as to permit of lateral application to a continuous wire cable and which is applied to or removed from operative position by the mere use of a screw driver or its equivalent, thus greatly enhancing the practicability of the device.

Our invention still further relates to a clamp and connector which is compact, instantly adjustable to different diameter cables, and inexpensive.

In the accompanying drawings:

Fig. 1 represents a perspective view of a wire clamp and connector embodying our invention, the wire being shown in dotted lines and the clamp and connector being shown in the open position.

Fig. 2 represents a side elevation of the clamp and connector shown in Fig. 1 after it has been applied to a wire.

Fig. 3 represents a plan view of Fig. 2.

Fig. 4 represents a section on line 4—4 of Fig. 3.

Fig. 5 represents a view similar to Fig. 1 showing a modified form of the invention.

Fig. 6 represents a side elevation of Fig. 5.

Fig. 7 represents a plan view of Fig. 6.

Fig. 8 represents a section on line 8—8 of Fig. 7.

Figs. 9 and 10 represent vertical, cross-sectional views similar to Fig. 8 showing further modified forms of the invention.

Fig. 11 represents an end elevation of a further modified form of our invention showing the device in its open position.

Fig. 12 represents a plan view of the device shown in Fig. 11 as it appears in its closed position.

Referring to the drawings in which like reference characters indicate like parts, and more particularly to Fig. 1, 12 designates a housing which is preferably U-shaped and having the bottom 14 and side walls 16 and 18. The U-shaped housing, if desired, may be secured to any suitable support by a screw or the like passing through either of the holes 20 or 22. 24 designates a cable to be mechanically clamped and/or electrically connected, and which, as shown in Fig. 1, is disposed within and rests upon the bottom 14 of the housing 12. For the purpose of electrical connection the outer insulation of the cable 24 is removed to expose the metallic part 26 as clearly shown in Figs. 2 and 3. In the wall 16 on the housing 12 we provide the vertical slot 28 and the horizontal slots 30. In the wall 18 we provide another pair of horizontal slots 32 which, while of the same height with respect to the bottom 14 as the slots 30, are, nevertheless, not in alignment or registration. It will also be noted that the slots 30 and 32 are provided with inclined bottom edges or sills 34 thus making one end of each of said slots wider and larger than the other end and also providing a wedge-shaped construction for a purpose hereinafter set forth.

In order to clamp a wire 24 mechanically, or to connect the exposed portion 26 thereof electrically, we provide a follower plate 36 which is provided with the pendant flanges 38 and the opposite ends of which are of a T-construction 40 (see Figs. 1 and 3). The screw element 42 is permanently and rotatably connected to the follower plate 36 as at 44 and threadedly engages

a bridge element 46 which is provided with the tongues 48 and 50 which engage the slots 30 and 32 in the walls 16 and 18 of the housing 12. The head of the screw 42 is preferably upset after the bridge element 46 has been threaded thereonto so as permanently to prevent disengagement of the bridge element 46 from the screw 42.

In order to produce a unitary construction, a strap 52 is formed near one end of the follower plate 36 and is passed outwardly through the vertical slot 28, whereupon the end of the strap 52 is twisted, bent, upset, or otherwise deformed as at 54 to prevent disengagement of the plate 36 from the housing 12, but, nevertheless, to permit free movement of the follower plate 36, bridge element 46 and their adjuncts with respect to the housing 12. In this connection it is to be noted that the knob or other shape 54 formed on the end of the strap 52 must be sufficiently large so that, in all of its dimensions, it would exceed the width of the slot 28. The strap 52 is capable of performing all of the lateral alignment functions of the T-construction 40 on the pressure plate 36 and eliminate the necessity for the T ends.

The operation of the device is as follows:

In order to apply our novel clamp to a wire 24, the plate 36 is raised from the position in which it is shown in Fig. 4 until the bottom edges of its flanges 38 clear the upper edges of the walls 16 and 18, whereupon it is swung into the out-of-the-way position shown in Fig. 1 with the strap 52 engaged in the vertical slot 28 forming a hinge. After the wire has been laid in the casing 12, or the casing 12 applied laterally to the wire, the follower plate 36, bridge element 46 and their adjuncts are swung down into the position shown in Figs. 2, 3 and 4 whereupon the tongues 48 and 50 of the bridge element 46, by rotation, engage either the lower or upper set of slots 30 and 32 depending on the thickness of the wire 24. It will be noted in this connection that the tongues 48 and 50 of the bridge element 46 enter the slots 30 and 32 at their wide ends thus facilitating insertion of the tongues. With the parts in this position a screw driver is applied to the head of the screw 42, and, with the bridge element 46 fixed in the slots 30 and 32, the turning of the screw results in applying pressure on the follower plate 36 and tightly clamping the latter on the wire 24. The lugs 40 at the edges of the follower plate 36 engaging as they do the vertical edges of the walls 16 and 18 and/or the strap 52, engaging the slot 28, provide lateral alignment of the follower plate 36 so that, by rotation of the bridge element 46, the tongues 48 and 50 will automatically align radially with the slots 30 and 32. It will also be noted that the tongues 48 and 50 project outwardly and are deflected in opposite directions to engage the walls 16 and 18 at the edges of the slots 30 and 32 thus sustaining the side walls and preventing their spreading under the pressure applied by the turning of the screw 42.

In Figs. 5 to 8 we have shown a modified form of construction which is identical with that shown in Figs. 1 to 4 except that the strap 52, which permanently hinges the pressure-applying part of the device to the wire or cable-enclosing part, is omitted so that the bridge element 46 in assembly with the screw 42 and follower plate 36 are completely detachable from the housing 12 as best shown in Fig. 5.

In Fig. 9 we have shown a modified form of construction which is identical with the construc-

tion of Figs. 5 to 8 except that the housing 12, instead of being square as best seen in Fig. 8, is rounded as at 56, and in which, instead of the plate 36 which is provided with the pendant flanges 38, we use the curved plate 58. As shown in Fig. 9, the device is used to clamp a wire 60 onto a pipe 62 instead of clamping one wire 24 as shown in Fig. 1, or three wires 64 as shown in Figs. 5 to 8. In Fig. 10 I have shown a further modification which is practically the same as the construction shown in Fig. 9 except that, instead of the pipe 62 to which the wire 60 is secured in Fig. 9, I apply the follower plate 58 directly to the exposed portion 26 of the cable 24. Also, in Fig. 10 the bottom of the casing 15 is square as in Fig. 8 instead of being round as in Fig. 9.

In Figs. 11 and 12 we have shown a modified form of the construction seen in Fig. 1, that is, the construction in which the housing receiving the cable and the pressure-applying mechanism are permanently connected, but in which we dispense with the strap 52 and the slot 28, and in lieu thereof, we deflect the ends or corners of the follower plate 36 along one side thereof, as shown at 68, so as to engage the outer side and edge of the corresponding limb 16 of the housing 12. The corresponding corners of the limb 16 are upset or deflected as at 72 thus permanently connecting the follower plate 36, bridge element 46 and screw 42 to the cable-receiving housing 12. In actual assembly the housing 12 is made substantially like the housing 12 shown in Fig. 5 and the follower plate 36 (which may be of any of the forms shown) is then positioned on the base of the housing 12 between the limbs 16 and 18 thereof, with the deflected ends 68 slidably engaging the vertical edges of the limb 16. The corners of the limb 16 are then deflected as best shown in Fig. 12 so as to form stops which limit the movement of the plate 36 and its adjuncts to substantially the position shown in Fig. 11, which is enough to admit into the housing 12 the cable or other element to be clamped or connected. In this construction the opposite edge 74 of the plate 36 is made plain or square, as shown in Fig. 12, or the plate 36 may have the T-end construction all around as shown in Fig. 7, the feature of the construction shown in Figs. 11 and 12 being the novel manner of slidably interconnecting the follower plate 36 with the housing 12.

It is to be noted that in the construction of Fig. 1 and Fig. 11, for instance, where the follower plate 36 is permanently connected and guided into alignment either by the strap 52 and lugs 40 in Fig. 1, or by the deflected ends 68 and 72 in Fig. 11, we can dispense with the lugs 40 on the corners of the follower plate 36. Also, with respect to the openings 32 and 34 we wish to point out that they do not have to be completely enclosed within the limbs 16 and 18 as shown, and that they can be cut all the way through to the corresponding adjacent edges of the respective walls so that the lugs 48 and 50 on the bridge element 46 can enter the openings 32 and 34 through the edges of the walls 16 and 18.

It is within the scope of our invention to omit the follower plate 36 and use a conventional sharp-pointed screw 42 which can be used to clamp a cable from which the insulation has not been removed so that the screw penetrates through the insulation to engage the metal of the cable. It will also be apparent that this

suggested construction is adapted for use in connection with all forms of the invention as above shown.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a wire clamp and connector a substantially U-shaped housing adapted to receive the wire or the like to be clamped or connected, and a pressure-applying mechanism adapted to cooperate with said housing, said mechanism comprising a follower plate, a screw adapted to actuate said follower plate, a bridge element threaded on said screw, and means carried by said follower plate and engaging a slot in a limb of said U-shaped housing for movably but permanently hinging said pressure-applying mechanism to said housing.

2. In a wire clamp and connector a substantially U-shaped housing adapted to receive the wire or the like to be clamped or connected, and a pressure-applying mechanism adapted to cooperate with said housing, said mechanism comprising a follower plate, a screw adapted to actuate said follower plate, a bridge element threaded on said screw, and means carried by said follower plate and engaging a slot in a limb of said housing at an angle to the base thereof for movably but permanently hinging said pressure-applying mechanism to said housing.

3. In a wire clamp and connector, a substantially U-shaped housing adapted to receive the wire or the like to be clamped or connected, a follower plate, a pressure-applying member permanently and rotatably engaging said follower plate, and a substantially flat element threaded on and rotatable with said pressure-applying member, the ends of said element engaging corresponding oppositely flared openings in the limbs of said U-shaped housing, when said element is rotated with the rotation of said pressure-applying member.

4. In a wire clamp and connector a substantially U-shaped housing adapted to receive the wire or the like to be clamped or connected, a follower plate, a pressure-applying member permanently and rotatably engaging said follower

plate, and a substantially flat element threaded on and rotatable with said pressure-applying member, the ends of said element engaging corresponding oppositely flared non-registering openings in the limbs of said U-shaped housing when said element is rotated with the rotation of said pressure-applying member.

5. In a wire clamp and connector a substantially U-shaped housing adapted to receive the wire or the like to be clamped or connected, a follower plate, a pressure-applying member permanently and rotatably engaging said follower plate, a substantially flat bridge element threaded on and rotatable with said pressure-applying member, and oppositely deflected and disposed hooks on the opposite ends of said bridge element adapted to pass through corresponding openings in the limbs of said U-shaped housing and to engage the outer walls thereof to sustain said U-shaped housing against spreading under the influence of said pressure-applying member.

6. In a wire clamp and connector a substantially U-shaped housing adapted to receive the wire or the like to be clamped or connected, a follower plate, a pressure-applying member permanently and rotatably engaging said follower plate, a substantially flat element threaded on and rotatable with said pressure-applying member, the ends of said element engaging corresponding openings in the limbs of said U-shaped housing, when said element is rotated with the rotation of said pressure-applying member, and means for permanently but slidably hinging said follower plate to a limb of said housing.

7. In a wire clamp and connector a substantially U-shaped housing adapted to receive the wire or the like to be clamped or connected, a follower plate, a pressure-applying member permanently and rotatably engaging said follower plate, and a substantially flat element threaded on and rotatable with said pressure-applying member, the ends of said element engaging corresponding openings in the limbs of said U-shaped housing, when said element is rotated with the rotation of said pressure-applying member.

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