Nov. 17, 1953 L. M. SHELDON 2,659,877

WIRE CONNECTOR FOR RANGE RECEPTACLES

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Fig. 1.

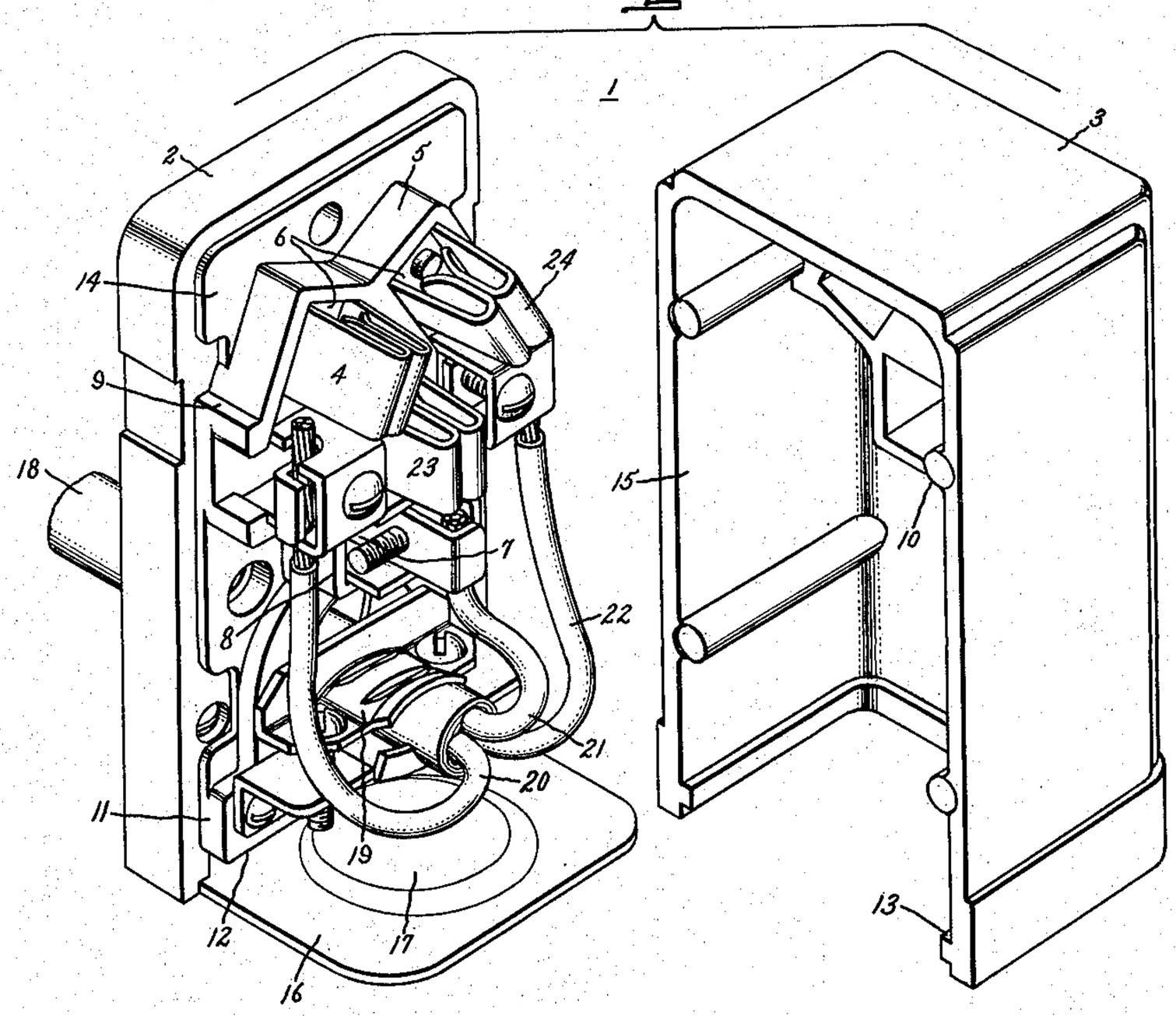



Fig. 2.

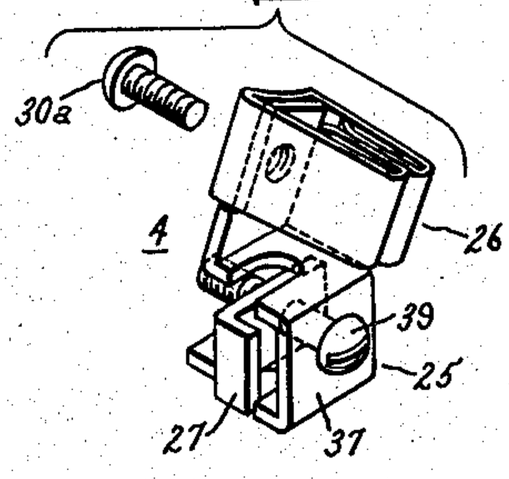
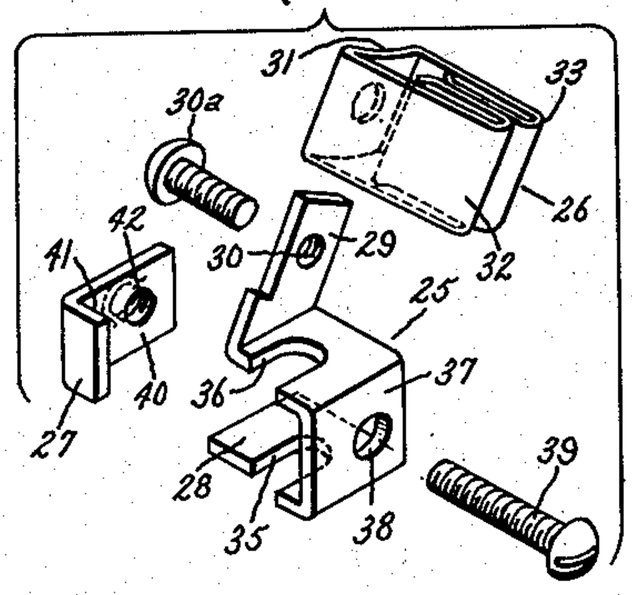



Fig. 3.

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## WIRE CONNECTOR FOR RANGE RECEPTACLES

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4 Claims. (Cl. 339—263)

1

This invention relates to range receptacles and, in particular, to a new and improved wire connector therefor.

A range receptacle is that type of electrical outlet usually having three female openings for the reception of a male plug of an electric range. Electric ranges draw high current and commonly are powered by 220 volts, consequently the electrical conductors connected in a range receptacle are of a heavy rigid type wire that is difficult to bend.

Accordingly, it is a feature of this invention to provide an improved wire connector which is particularly adapted to the accommodation and connection of large diameter electrical conductors.

It is a further object of this invention to provide a new and improved wire connector.

It is a still further object of this invention to provide a new and improved wire connector which is adapted particularly for the connection of heavy electrical connectors and in which the conductor will be positioned securely by tightening a single screw.

Further objects and advantages of this invention will become apparent and the invention will be more clearly understood from the following description, referring to the accompanying drawing, and the features of novelty which characterize this invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

Briefly, this invention relates to an improved wire connector which is peculiarly adapted for positioning on an electric range receptacle. The connector comprises a prong contacting portion, a base portion, and a clamping portion movable in guides furnished by the base portion, thereby avoiding the necessity of holding the clamping portion while it is being tightened against an electrical conductor.

While, for the purpose of this description, the new and improved electrical connector is described in relation to a range receptacle, it is to be understood that such use has been chosen primarily as an example to point out more clearly the use and adaption of this wire connector for connecting heavy electrical conductors.

Referring to the drawing, Fig. 1 is a perspective view of a range receptacle having the cover removed; Fig. 2 is a perspective view of the new and improved wire connector; while Fig. 3 is a perspective view of the disassembled wire connector.

In the drawing, a range receptacle 1 is shown comprising a base 2 and a cover 3. The base is a molded phenol resin having a plurality of grooves and bosses thereon adapted to position a plurality of wire connectors 4 and to engage the cover 3. For example, a boss 5 is shown positioned on the face of the base 2 to provide an outer boundary of a pair of recessed sockets 6 that each hold one of the wire connectors, for

2

example connector 4, to prevent them from turning. Another receptacle 7 is provided by the boss 8 to define the socket for the third wire connector which is used with this range receptacle. The boss 5 serves a dual capacity, since in addition to providing a boundary for the sockets 6, it furnishes a guide 9 which cooperates with the under side of a lip 10 on the cover to align the cover 3 for matching relationship with the base 2. To achieve this same end, another boss 11 is provided on the base 2 and its under side 12 cooperates with the top surface of raised lip or member 13 on the cover portion 3. The combination of the interaction of the top surface of the guide 9 with the under surface of the lip 10 and the under surface 12 of the boss 11 with the upper surface of the raised lip 13 provides a guide structure on either side of the base 2 which assures the matching fit between the cover 3 and base 2. The raised portion 14 on the base 2 furnishes an outer periphery that is engageable with the inner periphery 15 of the cover 3 to align the cover 3 and the base 2 after they have been fitted together to prevent any twisting of the cover relative to the base whereupon a single screw (not shown) is all that is required to hold the cover in contact with the base.

A metal plate 16 comprises a pair of intersecting sides to form the bottom of the range receptacle and to provide a connection to the base 2. Plate 16 has a plurality of knockouts 17 in both its bottom and rear faces (not shown) to supply an entrance port for a range cable 18, which in this particular embodiment is shown passing through the rear portion of the plate 16.

Range cable 18, in a usual embodiment, comprises three conductors 20, 21, and 22 within an insulating sheath. The cable 18 is brought into the range receptacle and secured by a clamp 19 which in this particular embodiment has a fixed bottom and a movable top permitting the cable to be inserted therebetween, whereupon the movable top is clamped onto the fixed bottom to hold the cable 18 securely. The conductors 20, 21, and 22 are then fastened respectively to the connectors, 4, 23, and 24 to connect the range receptacle for operation.

The connectors, one of which is shown in Figs. 2 and 3, comprise a body 25, a clip 26, and a clamp or nut 27. The body 25 in turn comprises a flat base 29 and a raised U-shaped element 28. The flat base 29 is of a size complementary with sockets 6, 7 and it is provided with a threaded bore 30 engageable by a screw 30a which is passed through the base 2 of the range receptacle to engage the threaded bore 30. Clip 26 includes a cross member 31 and a pair of spring elements or legs 32, 33, each of which has a reverse bend portion to furnish a snag-free surface for engaging a male prong of the range plug. The legs 32, 33 have a resiliency tending to force them together to insure good electrical contact with the male element of the range plug.

The tightening of screw 30*a* rigidly secures the body 25 and the clip 26 to the receptacle base 2 and presses the cross member 31 into engagement with the base 2 to flatten the cross piece 31 and further bias the arms 32 and 33 towards one another. The recesses 6 which are provided by the bosses 5 on the base 2 make it unnecessary to use more than one screw 30*a* since the recesses prevent any turning or twisting of the body 25; thus a saving in assembly cost is effected.

The U-shaped element 29 of the body 25 has a pair of notches 35 and 36 of a size that accommodate the conductor to be secured by the connector 4. The notches, preferably, are spaced a slight distance from the cross member 37 to permit the crimping of the connector, thus giving a strain relief effect as clamp 27 is tightened. The cross member 37 has a clearance hole 38 which permits the free passage of a screw 39 therethrough to engage the threaded bore of clamp 27.

The clamp 27 has an angular shape presenting two intersecting faces 40, 41, the former of which is movable within the legs of the U-shaped element 28 in a plane parallel to the cross member 37, while the latter face 41 is substantially perpendicular to the face 40 and moves therewith. The face 40 in being tightened against the cross member 37 secures the conductor within the body 25 while the face 41 prevents the conductor from being squeezed out from the body 25. Consequently, the primary function of face 41 is that of a guard. The face 40 of clamp 27 has dimensions that are compatible with the space between the legs of the U-shaped member 28, and it has a threaded bore 42 therein engageable with the screw 39 to move the clamp towards cross member 37. The particular feature of these inter-relating dimensions is that when the screw 39 is tightened into the bore 42, the clamp 27 cannot turn since it is guided by the legs of the U-shaped element 28. Consequently, it is not necessary to hold the clamp and a conductor can be secured to the connector simply by tightening the screw 39 thereby allowing the free hand to position the conductor.

Essentially, all of the connectors 4, 23, and 24 are identical, except that the direction of the base relative to the U-shaped element 28 is different for each of the three connectors. That is, in one instance, for example the connector 4, the base 29 as shown in Fig. 3 is bent to the right relative to the U-shaped element 28; while in the connector 23 the base 29 is bent a complementary distance to the left; and for the connector 24 the base 29 would be bent straight up from the U-shaped element 28.

Modifications of this invention will occur to those skilled in the art and it is desired to be understood, therefore, that this invention is not intended to be limited to the particular embodiment disclosed, but is meant to cover all modifications within the true spirit and scope of this invention. Consequently, this invention is not to be limited to the particular embodiment disclosed.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A wire connector comprising a body, a clamping nut and screw means for securing said clamping nut to said body, said body including a base having means for securing the connector to a supporting surface and a U-shaped element having a clearance hole in the cross member



thereof, the legs of said element being for guiding said clamping nut to prevent rotation thereof, said screw means passing through said clearance hole in said cross member to engage said clamping nut to move the same into clamping engagement with said U-shaped element and a notch in each leg of said U-shaped element displaced from the axis of said screw means for receiving an electrical conductor to be clamped between said clamping nut and said cross member.

2. A wire connector comprising a body, a clamping nut, and screw means for securing said clamping nut to said body, said body having an integral base and U-shaped element with the latter having its open mouth adjacent said base, each of the legs of said U-shaped element having a notch therein displaced from the axis of said screw means to receive an electric conductor, said clamping nut having one face in a plane parallel to the cross member of said U-shaped element with said face having flat ends engageable wtih the legs of said U-shaped element to hold said nut against rotation.

3. A wire connector comprising a body, a clamping nut, and screw means for securing said clamping nut to said body, said body having an integral base and U-shaped element with the latter having its open mouth adjacent said base, each of the legs of said U-shaped element having a notch therein displaced from the axis of said screw means to receive an electric conductor, said clamping nut having one face in a plane parallel to the cross member of said U-shaped element with said face having flat ends engageable with the legs of said U-shaped element to hold said nut against rotation, said clamping nut including a second face perpendicular to said first face to hold an electrical conductor in engagement with said notches when said screw means is being tightened.

4. A wire connector comprising a body, a clamping nut and screw means for securing said clamping nut to said body, said body including a base having means for securing the connector to a supporting surface, and a down-turned U-shaped element connected to said base, the cross member of said element having an aperture therein to receive said screw means, said clamping nut being mounted on said screw means between the legs of said element said clamping nut having an end engageable with a leg of said U-shaped element so that the nut is prevented from turning, and a notch in each leg of said U-shaped element displaced from the axis of said screw means for receiving an electrical conductor to be clamped between said clamping nut and said cross member.

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