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R. F. WALDROP

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DUAL CONDUCTOR TERMINAL

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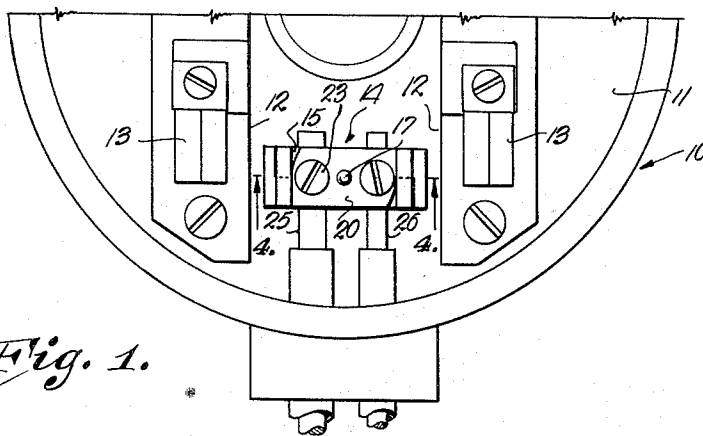


Fig. 1.

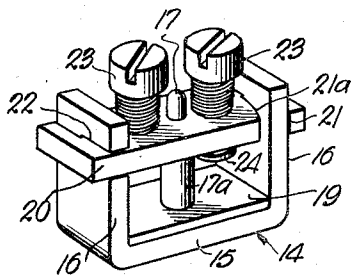


Fig. 2.

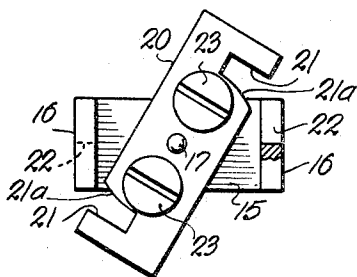


Fig. 3.

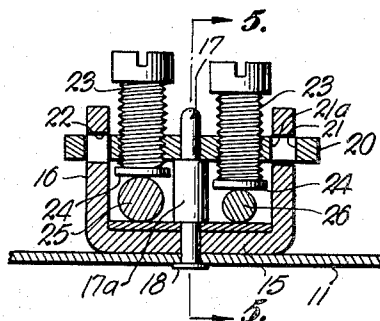


Fig. 4.

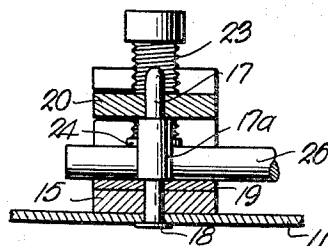


Fig. 5.

INVENTOR.
Robert F. Waldrop
BY *Thos. E. Sufeld*
ATTORNEY.

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2,947,967

DUAL CONDUCTOR TERMINAL

Robert F. Waldrop, Mission Hills, Kans., assignor to Milbank Manufacturing Co., Inc., Kokomo, Ind., a corporation of Indiana

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5 Claims. (Cl. 339—272)

This invention relates to electrical terminals and refers more particularly to a dual conductor terminal mountable in an electric meter socket to provide a common terminal for the ground conductors of the load end feeder lines.

In present day meter socket installations a source of rather considerable difficulty has been in providing suitable terminal connections in the meter socket for the ground conductors of the load end feeder lines. Since the socket casing ordinarily is a part of the ground circuit, a common terminal for both conductors is considered the best. However, in known terminals, wherever there is a difference in diameter between the ground conductors of the respective lines, the problem of obtaining a firm and permanent connection has been difficult. While this problem could be solved by providing two distinct terminals, cost considerations as well as space limitations within the socket casing make this solution inadvisable.

An object of the present invention is to provide a terminal specially designed to overcome the difficulties outlined above. It is a special feature of the invention that it provides a dual "lay-in" terminal, the conductors being firmly held in place by separate connector bolts carried by a common rotatable crosspiece which, through a unique arrangement is capable of being locked in connecting position and is firmly maintained therein by the engagement of the connector bolts with the conductors. The terminal is fully capable of providing a firm connection for conductors of different diameters and is adapted to receive the conductors in a "lay-in" arrangement, the threading of the conductors into special eyes or apertures being unnecessary.

A further object of the invention is to provide a socket meter terminal of the character described in which the connector bolts serve not only to secure the conductors in place but also to assist in maintaining the crosspiece in firmly interconnected condition with the other portions of the terminal.

Another object of the invention is to provide a terminal to which the conductors can be quickly and easily connected and disconnected.

A further object is to provide a terminal which can be manufactured at low cost and yet is capable of withstanding long and rugged use.

Other and further objects of the invention together with the features of novelty appurtenant thereto will appear in the course of the following description.

In the accompanying drawing which forms a part of the instant specification and is to be read in conjunction therewith, and in which like reference numerals indicate like parts in the various views:

Fig. 1 is a fragmentary elevation of a typical meter socket which includes a terminal according to my invention;

Fig. 2 is an enlarged perspective view of the terminal unattached to the socket and with the conductors removed;

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Fig. 3 is a top plan view of the terminal showing the crossbar rotated toward the open position, parts being broken away for purposes of illustration;

Fig. 4 is an enlarged sectional view taken along the line 4—4 of Fig. 1 in the direction of the arrows; and

Fig. 5 is a sectional view taken along the line 5—5 of Fig. 4 in the direction of the arrows.

Referring to the drawing, I have chosen to illustrate my terminal as a ground terminal for a conventional shell-like electric meter socket indicated generally at 10. As is usual the socket has a flat back wall 11 on which are mounted insulating blocks 12 which carry jaw terminals 13 for detachably receiving the blades of a conventional electric meter (not shown). Since the details of construction of the meter socket play no part in my invention, only a portion of the socket has been shown.

The terminal according to my invention is indicated generally at 14 in Fig. 1 and is detailed in the remaining figures. The main body of the terminal comprises a U-shaped structure which may be bent from a metal bar to provide a flat bottom portion 15 flanked on either side by upwardly or outwardly projecting leg portions 16, 16. The bottom of the U-shaped structure is secured to the back wall of the socket by a center post 17 which extends through a central aperture in the bottom portion 15 and a corresponding aperture in the back wall (Figs. 4 and 5). The end of the center post outside the back wall may be flattened as at 18 to complete the attachment or alternatively it may be threaded and a securing nut applied.

In the preferred embodiment the center post is located equidistant between the leg portions 16. Intermediate its ends the post is provided with a medial portion of enlarged diameter, indicated at 17a. The lower end of this medial portion forms an annular shoulder which engages and clamps to the bottom portion 15 a strip 19 of electrically conductive material (for example, copper). Preferably strip 19 is of equal area with the area of the bottom portion 15 and it is generally apertured so that the lower end of the post extends therethrough.

Rotatably and slidably mounted on the outer or free end of post 17 is a crosspiece or bar 20. Preferably crosspiece 20 comprises a rectangular bar centrally apertured to fit over the pin and to descend to a point where it rests upon the upper annular shoulder provided by the enlarged medial portion 17a of the post. The bar is of greater length than the spacing between the legs 16 of the U-shaped structure. During assembly the crossbar is lowered on the post with the bar disposed at such an angle with the bottom portion 15 that there will be no interference between the edges of the bar and the upstanding leg portion 16. (See Fig. 3.) Near the opposite ends of the bar the respective edges of the bar are provided with notches 21 which are of slightly greater width than the thickness of the leg portion and which cooperate with confronting notches 22 formed in the edges of the legs 16, so that the crosspiece can assume a position in which its long axis is normal to the planes of the legs 16. (See Figs. 1 and 2.) The width of notches 22 is slightly greater than the thickness of the crosspiece 20. It will be noted from Fig. 3 that the inboard edges of notches 21 are curved slightly as at 21a so as to provide the necessary clearance permitting swinging of the crosspiece clockwise from the Fig. 3 position to the Fig. 2 position.

Carried by the crosspiece on opposite sides of the post 17 are thrust or clamping members in the form of threaded connector bolts 23, which are received in and extend through suitably tapped apertures in the crosspiece. The connector bolts 23 preferably have slotted heads adapted to receive the blade of a conventional

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screwdriver. The lower ends of the bolts may be provided with pressure plates 24.

Reference numerals 25 and 26 indicate respectively the ground conductors for the load and feeder lines. To illustrate more clearly one of the principal features of my invention, I have shown these conductors as being of different diameter, the conductor 25 being of greater diameter than conductor 26.

In connecting the conductors to the terminal, the following procedure is employed. With the crosspiece 20 moved to the position illustrated in Fig. 3, it can be lifted off the post 17, thus exposing the bottom portion 15 of the U-shaped structure. The bare wires of the conductors are then laid on opposite sides of the center post. Following this, the crosspiece 20 is again engaged with the post, being lowered thereon until it comes into contact with the annular shoulder at the upper end of the medial post portion 17a. Before lowering the crosspiece on the post the connector bolts 23 should be threaded in a direction to raise the pressure plates 24 above the bottom portion 15, a distance greater than the diameter of the conductors.

Once the crosspiece is in the position illustrated in Fig. 3 with its lower surface in contact with the annular shoulder on medial portion 17a it is turned clockwise so that portions of the crosspiece become engaged in notches 22 and the leg portions 16 become engaged in the notches 21. This position is illustrated in Fig. 2. The connector bolts 23 are then threaded downwardly until they come into contact with the conductors, following which they are tightened to exert a firm clamping pressure thereon. The upward reaction on the crosspiece caused by tightening the connector bolts downwardly is resisted by the engagement of the crosspiece in notches 22 while any lateral or endwise forces on the crosspiece are resisted by the engagement of portions of the legs in the notches 21 of the crosspiece. While the post 17 also serves to resist lateral movement it is preferred that the full load not be taken by the post since undesirable bending might occur.

The interengagement of the end faces of the notches 21 and 22 indexes the crossbar in the proper position. The connector bolts 23 and the tapped apertures in which they are received should be given a thread such that bolts will move downwardly when they are turned clockwise as viewed in Fig. 2. By arranging the thread direction in this manner the connector bolts serve to exert a clockwise moment on the crosspiece 20 as they are tightened against the conductors, this moment being due to the differences in moment arm from the post 17 to the innermost and outermost points on the thread. This thread arrangement also promotes in moving the crosspiece from the Fig. 2 to Fig. 3 position as the connector bolts are disengaged from the conductors.

From the foregoing it will be apparent that I have accomplished all of the ends and objectives hereinbefore set forth. The connectors can be easily connected and disconnected from the terminal, the removal of only one crosspiece or retaining bar being required. The separate connector bolts are adaptable to wires or conductors of widely varying diameter. The device requires a minimum number of parts and yet the conductors are positively connected to the terminal and can be disconnected quickly and easily.

It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

As many possible embodiments may be made of

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the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. In a dual conductor terminal, a U-shaped structure comprising a bottom portion and a pair of flanking up-standing leg portions, a post extending upwardly from the bottom portion and spaced between the two leg portions to permit a pair of conductors to be disposed against said bottom portion, one on each side of the post, a crosspiece rotatably fitted on the post above the conductors, a pair of connector bolts threaded through said crosspiece, one on each side of said post, and having ends for engaging the conductors and compressing them against the bottom portions, said leg portions each on opposite edges a notch adapted to receive therein portions of said crosspiece but from which said portions are disengageable upon rotation of the crosspiece in one direction and reengageable upon rotation in the other direction.

2. A dual conductor terminal as in claim 1 wherein said crosspiece is slidable from the upper end of said post when said crosspiece is disengaged from said notches.

3. In a dual conductor terminal, a U-shaped structure comprising a bottom portion and a pair of flanking leg portions, oppositely facing edges of the respective leg portions each having a notch formed therein at a level spaced above the bottom portion, a central post rising upwardly from said bottom portion intermediate said leg portions, a cross member of greater length than the span between said leg portions, said cross member centrally apertured and slidably and rotatably fitted on the post by means of the aperture, said cross member having portions receivable in said notches, which portions are disengageable from the notches upon rotation of the crosspiece in one direction thereby to permit lifting of the cross member from the post, and a pair of thrust members carried by said cross member, one on each side of the post, said thrust members having end portions confronting said bottom portion but spaced therefrom and operable to be moved downwardly relative the crosspiece to releasably clamp conductors to the bottom portion.

4. A dual conductor terminal as in claim 3 wherein the crosspiece is provided with second notches arranged to engage portions of said leg portions when the cross member is engaged in the notches in said leg portions.

5. A dual conductor terminal as in claim 3 wherein said post extends through said bottom portion and is provided with a projecting end adapted for connecting the terminal to a base structure.

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