Sept. 29, 1964 L. VERRONE 3,150,908

MEANS FOR LOCKING FIXTURES TO BUSWAY

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FIG. 1

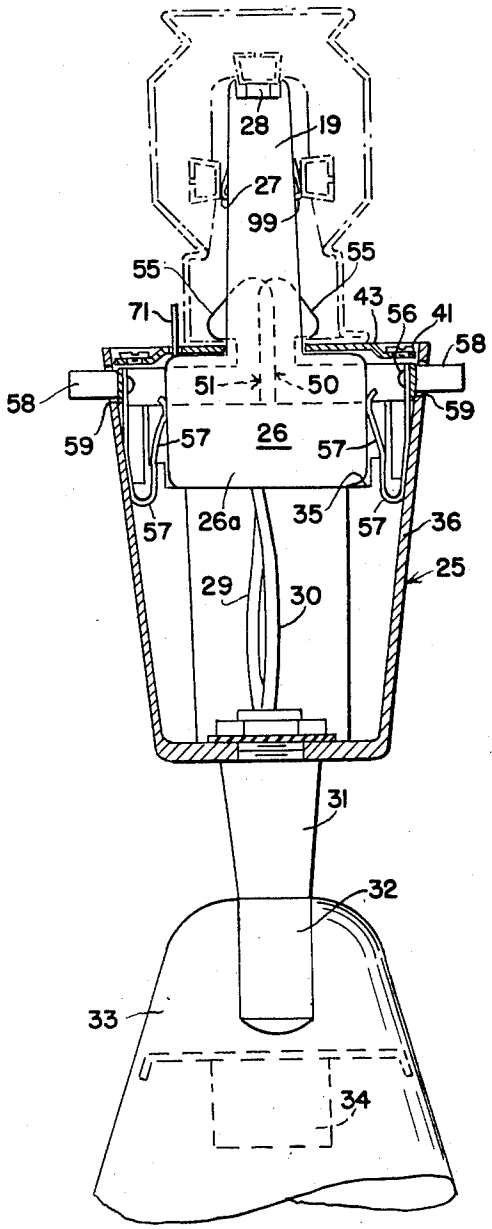

FIG. 2

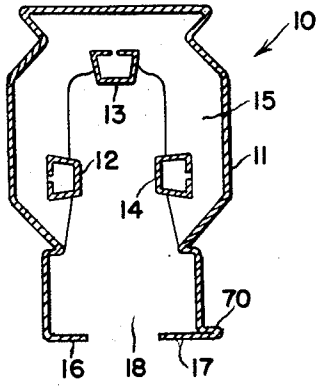

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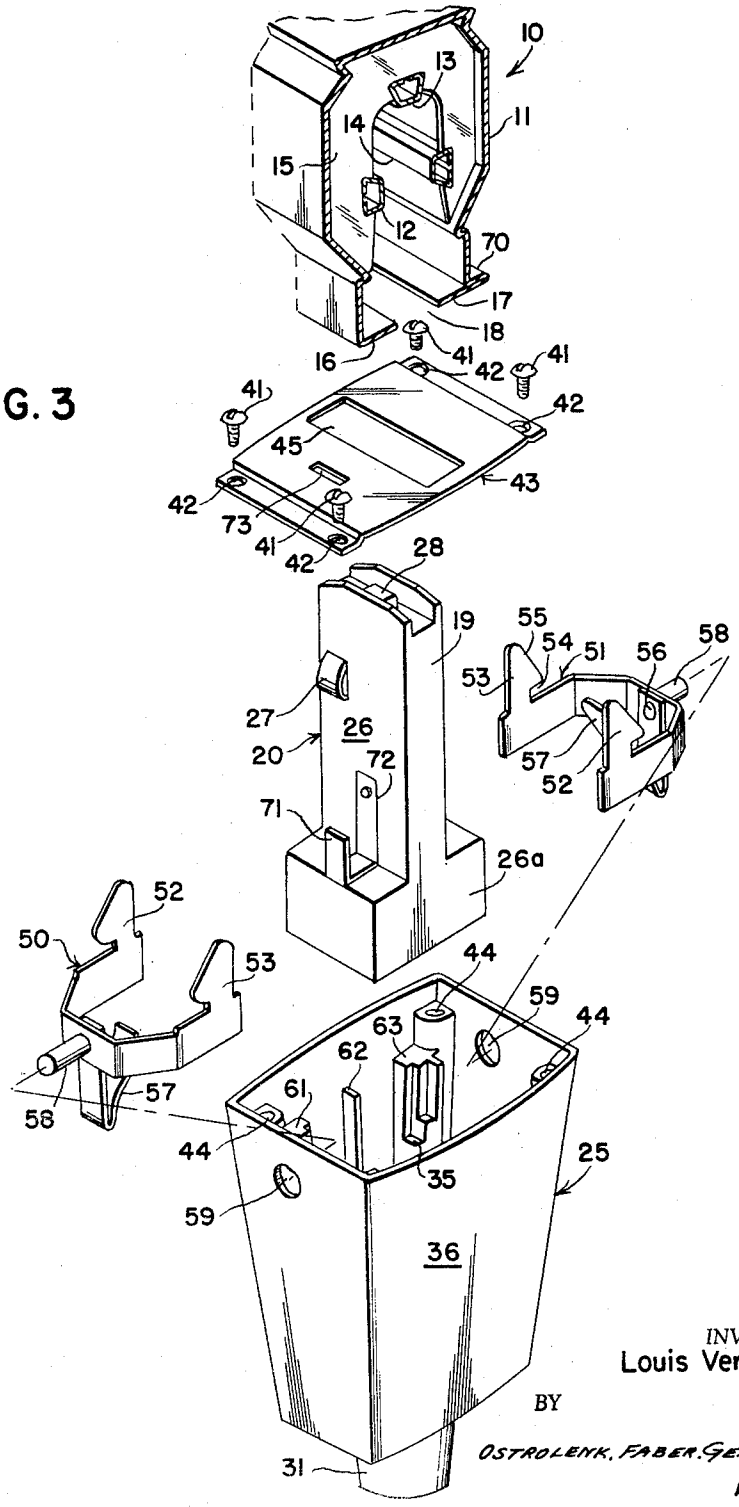
FIG. 3



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MEANS FOR LOCKING FIXTURES TO BUSWAY

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The instant invention relates to electrical fixtures in general and more particularly to a novel means for connecting and locking electrical fixtures to a busway.

A busway is a form of continuous outlet cable comprising a plurality of elongated bus bars disposed within an elongated housing and extending parallel to the longitudinal axis of the housing. One surface of the housing is provided with a longitudinally extending slot through which contact means are insertable to engage the bus bars.

The contact means in question are usually carried by an insulated member secured to an electrical fixture which is to be energized by electrical securement to the busway. It is essential that the fixture also be mechanically secured to the busway.

In the prior art the mechanical securement has been achieved by providing one or more spring brackets which engage the busway housing. With this arrangement it is only spring pressure which prevents accidental release of the mechanical securement. Quite often mechanical shocks imparted to the busway supporting members are sufficient to break the mechanical securement between fixture and busway.

In order to overcome this problem, the instant invention provides means which not only mechanically secures the fixture to the busway, but at the same time provides a locking means which prevents accidental release of the mechanical securement. The combined locking and securing means is in the form of a pair of members biased in diverging directions. Each member is provided with a pair of seating depressions and a cam surface extending from the entrance of each depression. With the fixture mounted to the busway the busway housing lips, which define the continuous slot along the length of the housing, are disposed within the seating depressions. With this arrangement, merely pulling the fixture or subjecting the same to vibration will not break the mechanical securement.

In order to dismount the fixture it is necessary to move the pair of members in converging directions until the entrances to the slots have cleared the free edges of the busway housing lips. Thereafter the fixture is merely lowered and thereby removed from the busway. For mounting, it is merely necessary to move the fixture upway with the free edges of the housing lips engaging the cam surfaces thereby forcing the members to move in converging directions against the forces of their biasing springs. As soon as the entrances of the seating depressions are aligned with the free edges of the housing lips, the biasing means forces the members outwardly to locking position.

Accordingly, a primary object of this invention is to provide a novel arrangement for securing an electrical fixture to a busway.

Another object is to provide a novel arrangement of this type in which the mechanical securement between fixture and busway cannot be broken accidentally.

Still another object is to provide an arrangement of this type in which the same members which provide for mechanical securement also constitute a locking means.

A further object is to provide an arrangement of this type which requires the use of only a single hand for both mounting and dismounting of the fixture.

A still further object is to provide an arrangement of this type including a pair of members biased in diverging directions with each members having a pair of seating depressions and a cam surface leading from each of the depressions.

These as well as other objects of this invention shall become readily apparent after reading the following description of the accompanying drawings in which:

FIGURE 1 is an end view of a busway showing a lighting fixture mounted thereto by the novel combined mounting and locking means comprising the instant invention.

FIGURE 2 is a transverse cross-section of the busway with the fixture dismounted.

FIGURE 3 is an exploded perspective of the elements illustrated in FIGURE 1.

Now referring to the figures. Busway **10** is a continuous outlet device comprising elongated metallic housing **11** and longitudinally extending elongated bus bars **12–14** disposed within housing **11**. Housing **11** is of generally rectangular cross-section with the side walls thereof including internal formations which are disposed within cooperating formations of longitudinally spaced insulating members **15** to maintain members **15** in operative position within housing **11**. Bus bars **12–14** are hollow members disposed within appropriately shaped grooves of insulators **15**.

The bottom wall of housing **11** comprises inwardly turned lips **16, 17** and a longitudinally extending slot **18** defined by the space between the free ends of lips **16, 17**. Slot **18** is wider than the narrow cross-sectional dimension of plug unit insulating member extension **19**, but is narrower than the long cross-sectional dimension of extension **19** so that extension **19** may be entered into housing **11** only when base **25** is properly oriented.

Extension **19** constitutes the upwardly extending portion of insulating member **26** comprising plug unit **20**. Unit **20** also includes bus bar engaging contacts **27, 28** with the former extending from the side of extension **19** and the latter positioned at the top of extension **19**. Contacts **27, 28** are connected internally of member **26** to insulation covered conductors **29, 30** respectively. Conductors **29, 30** extend through nipple **31** of conventional swivel unit **32** mounted internally of conically shaped lamp shade **33** and are connected to the appropriate terminals of lamp receiving socket **34** (FIGURE 1). The connection of swivel unit **32** to shade **33** is described in detail in U.S. Patent No. 2,974,220 issued March 7, 1961, entitled "Enclosed Swivel Lighting Fixture."

Insulating member **26** rests upon four supporting surfaces **35** formed internally of hollow base member **36**. Four screws **41** pass through clearance apertures **42** at the corners of cover plate **43** and are received by threaded apertures **44** internally of base **25** for securement of cover plate **43** to member **36**. Cover plate **43** includes centrally located rectangular aperture **45** through which extension **19** projects. As should be apparent to those skilled in the art, securement of cover plate **43** also secures plug unit **20** to base **25**.

The combined locking and securing means for the instant invention comprises a pair of generally U-shaped members **50, 51** of substantially identical construction. Accordingly, only one of these members will be described in detail. Member **51** is mounted in a plane perpendicular to the longitudinal axis of base **25** and is provided with a pair of projections **52, 53** which extend through aperture **45** above cover plate **43**. A portion of each projection **52, 53** overlies an arm of member **51** and is spaced therefrom to define seating depression **54**. Further, each projection **52, 53** is provided with a cam surface **55** which is inclined with respect to the plane within which member **51** is disposed.

Retainer **56** secures one leg of V-shaped spring **57** to

the web of member 51 with spring 57 being disposed between the arms of member 51. Retainer 56 also secures pin 58 to the web of member 51 with pin 58 projecting beyond member 51 through clearance aperture 59 in an end wall of base member 36.

Members 50, 51 are for the most part disposed within base member 36 and rest upon guide surfaces 61, 63 defined by internal formations of member 36. Springs 57 bear against opposite end surfaces at the base portion 26*a* of insulator 26 and urge members 50, 51 along diverging paths thereby biasing members 50, 51 to locking position. In this position, as illustrated in FIGURE 1, lips 16, 17 are disposed within seating depressions 54 and cover plate 43 is drawn tightly against the bottom of busway housing 11. In this position projections 52, 53 of member 50 slightly overlap projections 52, 53 of member 51.

In order to dismount the fixture from busway 10 it is necessary to depress both pins 58 thereby moving members 50, 51 along converging paths to position where projections 52, 53 are aligned with slot 18 in busway housing 11. Thereafter base 25 may be freely moved downwardly.

For mounting of the fixture to busway 10, base 25 is moved upwardly with insulating member extension 19 entering housing 11 through slot 18. The free edges of lips 16, 17 engage the cam surfaces 55 of members 50, 51 respectively. This forces members 50, 51 along converging paths until such time as lips 16, 17 are aligned with seating depressions 54. Thereafter springs 57 move members 50, 51 along diverging paths to locking position.

It is noted that housing 11 is provided with polarizing rib 70 which extends from the bottom of housing 11 in the plane of lips 16, 17. Cooperating with rib 70 is polarizing projection 71 which extends through aperture 73 of cover plate 43. Projection 71 is part of member 72 which is secured to insulating member 26 of plug unit 20. Projection 71 is so positioned that base 25 can be mounted to busway 10 only in the position shown, that is, with plug contacts 27, 28 in engagement with bus bars 12, 13 respectively. If base 25 is rotated 180°, polarizing projection 71 will engage rib 70 thereby preventing the mounting of base 25 to busway 10.

It is noted that for some applications plug unit 20 will be provided with a third bus bar engaging contact 99 for engagement with the other side bus bar 14 of busway 10.

Thus, this invention provides a novel construction whereby an electrical fixture may be conveniently mounted or dismounted from a busway at any position along the length thereof. The construction is such that this mounting and dismounting may be accomplished by utilizing only one hand. Further, the mechanical securement is of such a nature that this securement cannot be broken accidentally or be broken as a result of vibrations.

Although there has been described a preferred embodiment of this novel invention, many variations and modifications will now be apparent to those skilled in the art. Therefore, this invention is to be limited, not by the specific disclosure herein, but only by the appending claims.

I claim:

1. A device of the class described comprising a hollow base; a plug unit including a base portion disposed within said base and a contact carrying projecting portion positioned externally of said base above a first surface thereof; a first and a second member disposed within said base for movement along diverging paths to a locking position and along converging paths to a dismounting position; each of said members being U-shaped with a pair of spaced arms joined at one end by a web; an individual spring for each of said members disposed between said base portion and said web urging said members in opposite directions toward said locking position; projecting means carried by each of said arms; said projecting means positioned above said first surface and cooperating therewith to define a plurality of slot means operatively positioned to receive inwardly turned lips of a busway housing when said members are in said locking position.

2. A device as set forth in claim 1 in which the webs are disposed remote from one another.

3. A device as set forth in claim 1 in which the projecting means are integral with said members; each of said members being constructed with the web and arms thereof lying in a plane generally parallel to said first surface.

4. A device as set forth in claim 3 in which the members are mounted for sliding movement in the planes containing their respective arms and web.

5. A device as set forth in claim 1 in which a first means secures one of said springs to said first member and a second means secures the other of said springs to said second member.

6. A device as set forth in claim 5 in which there is a first projection secured to the web of said first member by said first means and a second projection secured to the web of said second member by said second means; said projections extending externally of said base through apertures in opposite side walls thereof; said projections being hand depressible for operation of said members to dismounting position.

7. The device of claim 1 in which each of the projecting means includes cam means engageable with busway lips for movement of said members to said dismounting position during mounting of said device.

8. The device of claim 7 in which there is a projection extending from the web of each of said members through an aperture in a side of said base; said projections being hand depressible for operation of said members to dismounting position.

9. The device of claim 1 including a polarizing projection extending from the first surface parallel to the projecting portion.

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