

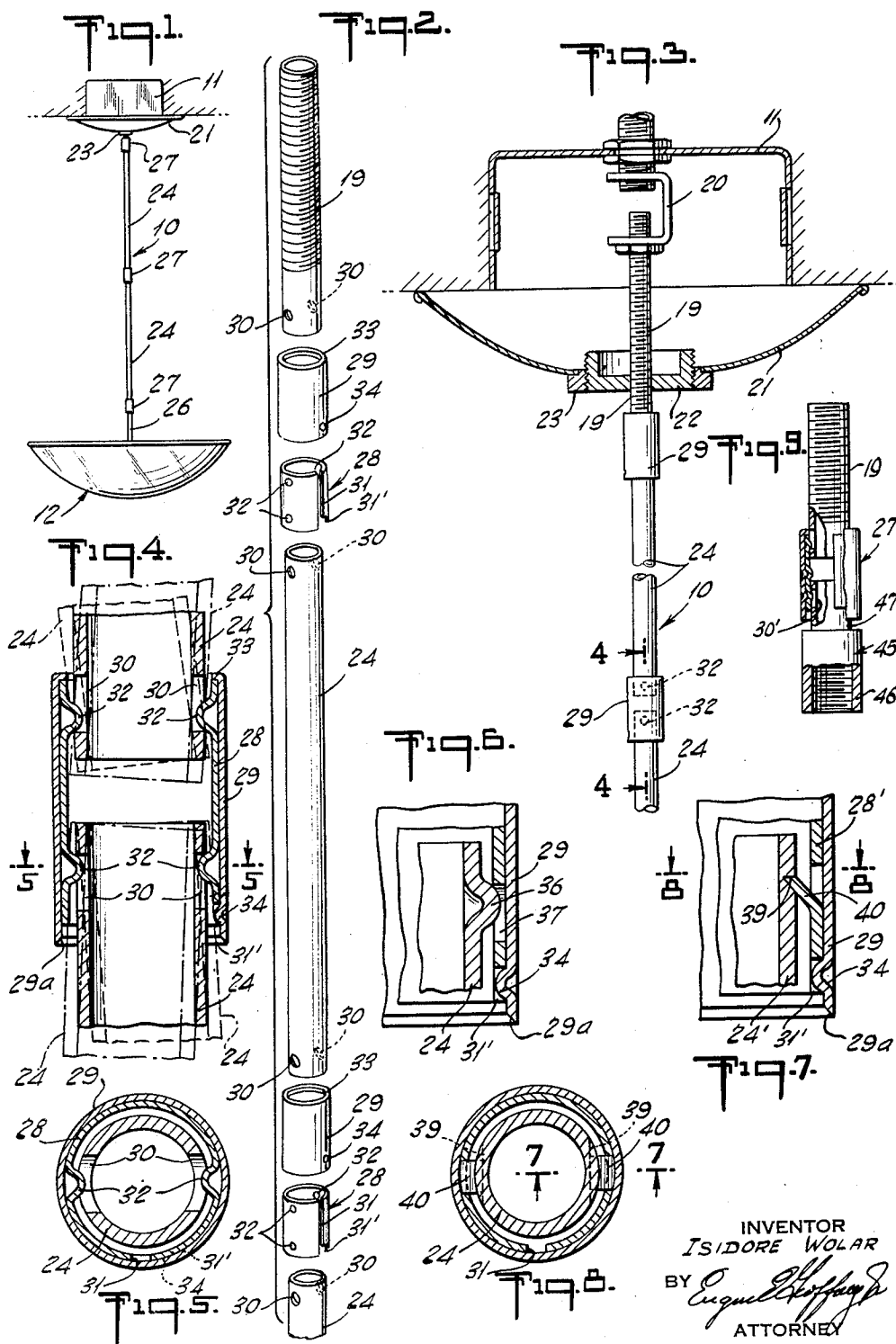
Dec. 8, 1959

I. WOLAR

2,916,309

ELECTRIC LIGHTING FIXTURES

Filed Sept. 12, 1956



INVENTOR
ISIDORE WOLAR
BY *Reginald H. Hoff*
ATTORNEY

1

2

2,916,309

ELECTRIC LIGHTING FIXTURES

Isidore Wolar, Mount Vernon, N.Y.

Application September 12, 1956, Serial No. 609,426

10 Claims. (Cl. 285—86)

This invention relates to electric lighting fixtures, and more specifically, to a new and improved tubular support for pendant type fixtures that affords a high degree of flexibility and, at the same time, completely encloses the electric wires connecting the fixture to the electric outlet from which it is supported.

The support of pendant type fixtures has heretofore been accomplished primarily by stiff tubes or chains with the electric wires being woven through the chain links in order to connect the fixture to the ceiling outlet. While fixed tubular supports embody flexible universal joints at the upper and lower ends in order to compensate for irregularities in the positions of the ceiling supports. Very often, a ceiling connector is disposed at an angle to the vertical so that means must be employed in order to permit the fixture to hang in a straight, pendant manner.

Accordingly, one object of the invention is the provision of an improved hanger for pendant type fixtures that affords the electric wiring and, at the same time, is readily adjustable to position the fixture at any desirable distance from the ceiling. These ends are attained through a novel and improved arrangement and construction of elements that facilitate the ready engagement and disengagement of hanger sections and, at the same time, afford a high degree of flexibility between the sections.

Another object of the invention resides in a tubular hanger assembly for pendant type electric fixtures formed of a multiplicity of disconnectable sections with each section being coupled to the adjoining section or sections to permit vertical alignment of the hanger but prevent movement about the hanger axis.

Still another object of the invention is a novel and improved connector for tubular members that will afford a positive and dependable coupling between the tubular members and, at the same time, afford a high degree of flexibility therebetween.

Still another object of the invention resides in the provision of an improved coupling means for tubular members that permits angular movement of the tubes relative one to the other end, at the same time, enables the tubes to be readily connected or disconnected for the purpose of removing or inserting additional tubular sections. In utilizing this invention for the support of pendant type fixtures, this improved coupling means greatly facilitates the adjustment of the length of the tubular member so that the fixture can be supported in any desired distance from the ceiling.

The above and other objects of the invention will become more apparent from the following description and accompanying drawings forming part of this application.

In the drawings:

Figure 1 is a side elevation of a hanger in accordance with the invention and supporting a pendant type fixture;

Figure 2 is an exploded perspective view of a portion of the hanger shown in Figure 1;

Figure 3 is a cross sectional view of an outlet box and the upper end of the hanger;

Figure 4 is an enlarged vertical cross sectional view taken along the line 4—4 of Figure 3;

Figure 5 is a horizontal cross sectional view taken along line 5—5 of Figure 4;

Figure 6 is a fragmentary cross sectional view of a modified tubular connector in accordance with the invention;

Figure 7 is a fragmentary cross sectional view of still another embodiment of a tubular connector in accordance with the invention;

Figure 8 is a cross sectional view of Figure 7 taken along the lines 7—7 thereof; and

Figure 9 is a side elevational view in partial cross section showing another embodiment of the invention.

In the illustrated embodiment of the invention, the fixture hanger may be formed of two or more tubular members coupled one to the other in a manner that will afford substantial vertical angular displacement of one tubular section relative to the other. With the invention, any number of tubular sections may be joined together to provide a support of any desired length. In normal practice, the end sections of the support in accordance with the invention would be threaded for cooperation with the ceiling outlet and the fixture. By using one or more intervening sections, it is apparent that a hanger assembly of any length may be formed. Actual tests with the hanger in accordance with the invention have indicated that it will withstand substantially greater axial loads than conventional chain assemblies and, by reason of the improved structure of the connecting means, the central opening of the hanger assembly is wholly unobstructed and free from jagged or sharp edges that may damage or abraid the wires housed therein. Thus, the wiring is completely protected from mechanical damage, and the resultant assembly provides a more dependable and better looking hanger than prior chain type hangers. At the same time, the hanger in accordance with the invention may be readily cleaned without the possibility of damaging the wires or endangering the person coming in contact with them.

Referring now to the drawings, a hanger in accordance with the invention is generally denoted by the numeral 10. It is connected at its upper end to a suitable outlet box 11 and supports a lighting fixture 12 at the lower end thereof. The outlet box 11 is secured to the upper threaded end of the section 19 by the conventional cross bar, or the hickey 20. The box 11 is closed by a canopy 21 held against the ceiling 14 by a fitting 22 threadably carried by the upper hanger section 19 and canopy supporting ring 23.

The hanger assembly 10 includes, in addition to the upper end section 19, a plurality of intermediate sections 24 and a lower end section 26 like section 19 and suitable for attachment to the fixture 12. The end and intermediate sections of the hanger are coupled by improved connectors 27 constructed to facilitate ready connection and disconnection of the several tubular elements without the need of special tools or devices. One embodiment of this improved connector is shown more clearly in Figures 2—5.

The connector in accordance with the invention includes an inner connected part in the form of a split tube and is generally denoted by the numeral 28. It cooperates with and secures the ends of the adjacent tubular members such as the members 19 and 24 and an outer connector member or sleeve 29 which holds the inner connector member 28, in the form of a slotted tube, in engagement with the adjoining tubular sections.

In the form shown in Figures 2—5, the upper tubular member 19 is provided with a pair of diametrically opposed openings 30 in the lower end thereof while the intermediate tubular sections 24 each have a similar pair of holes 30 on each end thereof. The member 28 is of

3

generally tubular construction having a longitudinal slot 31 so that it may be expanded about the slotted tube. It has two sets of diametrically opposed indents or bosses 32 somewhat smaller than the holes 30. These indents extend inwardly a distance sufficient to engage the co-
operating openings 30 when the slotted member 28 is placed about the end of one of the tubular members 19, 24 or 26. This cooperation is shown more clearly in Figure 4 wherein the upper indents of the member 28 are in engagement with the openings 30 in the lower end of the upper member 24. At the same time, the lower indents 32 engage the openings 30 in the upper end of the lower member 24 to couple the two tubular members together. It will be observed that the openings 30 are preferably made substantially larger than the diameter of the indents 32 cooperating therewith so that the members 19, 24 and 26 can be moved relative to one another.

The outer connector member 29 is in the form of a sleeve of tubular construction and has an inside diameter slightly smaller than the outside diameter of the inner connector member 28 when expanded so that the split tube is compressed when the sleeve is about it. To facilitate passing the sleeve onto the split tube, the lower end of the sleeve is cut back, as indicated at 29a, in Figure 4. The upper end of this connected member has an inwardly extending flange 33 and, at the lower end, a shallow indent 34. When the inner connector member is in position, as shown in Figure 4 for instance, the outer connector member is moved downwardly over the inner connector member, and it functions to prevent spreading of the inner connector member when under tension. In order to position the outer connector member over the split tube 28, the indent 34 in the sleeve 29 must be aligned with the slot 31. The outer connector member is then moved downwardly over the inner connector member 28 until the indent 34 clears a notch 31' at the lower end of the slot 31, whereupon the outer connector member is preferably turned into the notch. In so doing, the indent 34 will so engage the split tube 28 as to prevent its upward motion. To remove the outer connector member 29, the indent 34 must again be brought in line with the slot 31. Thus, the slot 31 cooperates with the indent 34 to provide means for locking the sleeve 29 in position to complete the coupling.

With a structure as described above, a support of any desired length can be formed by utilizing one or more intermediate sections 24 between the end sections 19 and 26. By forming the intermediate sections of different lengths, as, for instance, three and six-inch lengths, the support can be lengthened or shortened in steps of three inches. At each joint, it is possible to obtain an angular displacement of about 20°.

It has been found that this improved fixture support will sustain loads in excess of those that can be supported by conventional chain type hangers and, at the same time, the adjoining sections can be disengaged without the need of tools such as pliers, wrenches or the like needed in the case of chain type supporting means. To disengage a connector 27, the outer connector part 29 need merely be rotated until the indent 34 is in line with the slot 31 or in the inner connector 28, whereupon it is merely moved upwardly to expose the inner connector 28. Since the inner connector is made of a spring-like material, the adjoining tubular sections can merely be pulled apart. If desired, however, a screw driver or coin may be inserted in the slot 31 to spread the inner connector slightly to facilitate disengagement of the adjoining tubular sections.

It will also be observed that, in the utilization of connectors 27, the indents 32 of the inner connector member 28 need not extend completely through the openings 30 in the adjoining tubular members. As a result, the central opening through an assembled support is wholly unobstructed and, at the same time, complete protection is afforded the electrical wiring extending therethrough.

4

A modified embodiment of the invention is shown in Figure 6. In this case, the sleeve 29 is identical to the connector member 29 shown in Figures 2 and 4, including the utilization of a top flange 33 to limit the downward motion of the connector 29 and an indent 34 which functions to lock the sleeve in place. The tubular members 19, 24 and 26 are provided with projections 36 which act as trunnions in much the same way as the inwardly extending indents 32 on the inner connector member 28. In this embodiment of the invention, the inner connector member 28 is provided with diametrically composed openings 37 to cooperate with the projections 36. As in the previous embodiment of the invention, the opening 37 is made substantially larger than the diameter of the projections 36 to permit angular freedom of motion between the joined tubular members.

A still further embodiment of the invention is shown in Figures 7 and 8, with Figure 7 illustrating a fragmentary portion of a connector 27. In this embodiment of the invention, the tubular members, such as the member 24', are provided with a pair of diametrically opposed recesses 39. The connector member 28' is provided with an inwardly formed tab 40 which corresponds in effect to the indents 32 previously described in connection with the inner connector member 28. These tabs 40 are preferably formed with a flat top section to cooperate with the grooved part 39 on the tubular members such as the member 24 illustrated. All of the features of the inner connector member 28' in the outer connector member 29 correspond to those shown and described in connection with the embodiment of the invention shown in Figures 2 and 4. In the case of the embodiment shown in Figure 7, the tubular members may be disengaged from the inner connector member by rotating the tubular member relative to the inner connector member, which functions to spread the inner connector member and permit the tubular member to be withdrawn therefrom. This embodiment of the invention provides a structure wherein the inner bore of the tubular members is wholly undisturbed and avoids any possibility of jagged edges bruising or otherwise damaging the insulation on the electrical wiring.

Figure 9 illustrates a coupler for wireway tubes in accordance with the invention. The coupler is identical to the coupler 27 in Figs. 1 through 5 and is denoted by the same numeral. In this embodiment, however, the coupled elements include a threaded tubular element 19 as illustrated and described in Fig. 2 and a female element 45 having an internally threaded section 46 for threadably engaging an externally threaded wire-way tube. The upper end of the element 46 is provided with a reduced section 47 with substantially the same diameter as the element 19, having suitable openings 30' as in the case of the tubular elements 19, 24 and 26 in Figs. 1 through 5 for cooperation with the coupling member 27.

While only certain embodiments of the invention have been illustrated and described, it is apparent that modifications, alterations and changes may be made without departing from the true scope and spirit thereof.

What is claimed is:

1. A fixture hanger comprising at least two elongated tubular elements forming a wireway for the fixture, each element having at least two diametrically opposed shoulders formed on the wall thereof, an expandable connector member about the tubular elements and having at least two spaced sets of diametrically opposed inwardly extending shoulder engaging means securing the elements in end to end relationship and a surrounding collar retaining said inner connector member in fixed interlocking engagement with said shoulders, said expandable member having a longitudinal slot therein, and said surrounding collar having an inwardly extending flange on one end thereof engaging the end of the expandable member and an indent adjacent the other end thereof to traverse the slot.

5

2. A tubular fixture hanger comprising at least two tubular elements forming a wireway for the fixture each having at least two diametrically opposed shoulders formed on the wall thereof, an expandable connector member having at least two spaced sets of diametrically opposed inwardly extending shoulder engaging means loosely coupling said elements in spaced end to end relationship, a sleeve slidably engaging said expandable connector member and holding said inner connector member and said elements in coupled relationship, an inwardly extending flange on one end of said sleeve and an inwardly extending boss spaced from the other end of said sleeve, said expandable member having a longitudinal slot in the wall thereof to accommodate the last said boss upon slidably engaging said outer connector with said inner connector, said outer sleeve being rotatable to move said boss into cooperating relationship with one end of said inner connector member to hold the outer connector in position on said inner connector member against longitudinal stress.

3. A fixture hanger according to claim 2, wherein the diametrically opposed shoulders on said elements are formed by openings extending through the element wall, said openings loosely receiving the shoulder engaging means on said expandable connector member.

4. A fixture hanger according to claim 2, wherein said diametrically opposed shoulders are in the form of bosses extending outwardly from the walls of said elements and said shoulder engaging means are formed by openings formed in the wall of said expandable member, said openings having a diameter greater than said bosses.

5. A fixture hanger according to claim 2, wherein said shoulders are shaped notches formed in the walls of said elements and said shoulder engaging means are inwardly extending tabs carried by the inner connector member.

6. A tubular fixture for hangers including at least two tubular elements positioned in end-to-end relationship and forming a wire way for the fixture, each tubular element having at least two diametrically opposed openings formed in the wall thereof and spaced from the end of said tube adjoining the end of the other tube, an expandable connector member having at least two spaced sets of diametrically opposed inwardly extending indents engaging the openings in said tubular elements and holding them in spaced, end-to-end relationship, said expandable connector having a diameter exceeding the diameter of said tubular elements, a rigid sleeve slidably engaging said expandable connector and compressing said connector to fixedly engage the indents in said opening and reducing the inside diameter of the expansible connector to a value slightly larger than the outside diameter of said tubular elements, and means on said sleeve for removably locking it in position thereon whereby said tubular elements are secured in connected relationship for relative arcuate motion and against separation upon the application of longitudinal stress.

6

7. A tubular fixture hanger comprising at least two tubular elements, a first tubular expandable connector part having a nominal internal diameter materially greater than the outside diameter of said elements, cooperating means on said elements and said connector part loosely coupling the latter with said elements and a second rigid tubular connector part surrounding the first connector part to prevent expansion beyond said nominal internal diameter and fixedly interlock the connector part and said elements in coupled relationship and against disengagement by application of longitudinal stress while permitting free relative angular movement between said elements.

8. A fixture hanger comprising at least two tubular elements forming a wireway for the fixture and disposed in spaced end to end relationship, at least two inwardly extending shoulder means formed in and adjoining the end of each element, connector means having at least two sets of inwardly extending means loosely engaging said shoulders to permit substantially universal angular movement of one element relative to the other and a rigid tubular member surrounding said connector means and holding the connector means in loose engagement with said elements to secure the elements in said end to end relationship against disengagement by the application of longitudinal stress while permitting free relative angular movement between said elements.

9. In a conduit for hanging a suspended lighting fixture and providing a wireway therefor, at least two elements forming wireway means disposed end to end in spaced relationship, the outer ends of said wireway means being threaded, a longitudinally split tube about adjoining ends of said wireway means, and a rigid locking sleeve about said split tube and slidable relative thereto, the wireway means and the split tube having cooperably engaging means loosely coupling the split tube to the ends of said wireway means, said sleeve fixing the inside diameter of the split tube at a value materially larger than the outside diameter of the cooperating wireway means whereby the wireway means are secured one to the other and may be freely moved angularly one relative to the other.

10. In a conduit for hanging a suspended lighting fixture according to claim 9 wherein the engaging means are in the form of holes in the wireway means and inwardly extending members in the split tube.

References Cited in the file of this patent

UNITED STATES PATENTS

470,514	Simpson	Mar. 8, 1892
1,687,166	Little	Oct. 9, 1928
1,849,423	Everett	Mar. 15, 1932
1,975,885	Wellman	Oct. 9, 1934
2,346,426	Hait	Apr. 11, 1944
2,605,987	Brown	Aug. 5, 1952
2,748,261	Wolar	May 29, 1956