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LAMP HOLDER ASSEMBLY

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This invention relates to an improvement in the assembly of a lamp holder for fluorescent lighting tubes and lighting fixtures and it relates more particularly to a new and improved snap fastener for use in same.

It is an object of this invention to provide an improvement in the assembly of lamp holders in lighting fixtures and it is a related object to provide a new and improved snap fastener for use in same.

Another object is to produce a snap fastener which eliminates the necessity for securing the lamp holder in a lighting fixture by the use of nuts and bolts, which permits rapid and simple assembly, which mounts to assembled relation in a manner to prevent inadvertent disengagement but in which the lamp holder may be disengaged in a simple and expedient manner for replacement or repair, which embodies means for proper alignment of the lamp holder in the assembled relation and which is simple and easy to manufacture of low cost materials.

These and other objects and advantages of this invention will hereinafter appear and for purposes of illustration, but not of limitation, embodiments of the invention are shown in the accompanying drawing, in which—

Figure 1 is a perspective top plan view of a portion of a lighting fixture embodying features of this invention;

Figure 2 is a sectional elevational view taken substantially along the line 2—2 of Figure 1;

Figure 3 is a perspective elevational view of a snap fastener of the type used in the assembly of Figure 1;

Figure 4 is a perspective top plan view of a portion of a lighting fixture embodying a modification of the invention herein;

Figure 5 is a sectional view taken substantially along the line 5—5 of Figure 4;

Figure 6 is a top view partially in section of the assembly shown in Figure 5, and

Figure 7 is a perspective elevational view of a slightly modified snap fastener adapted to be used in the assembly of Figure 4.

As shown in the drawing, the lighting fixture used to mount a number of laterally spaced fluorescent tubes is formed in part of a channel section 10 having a top wall 11 and laterally spaced side walls 12 and 13 between which there is mounted the various starters and wiring connectors. The channel section is secured by screws 14 to an upstanding flange 15 on the end plate 16 of the lighting fixture.

Each of the side plates 12 and 13 is provided with a cut-out portion in the form of a rectangular slot 17 intermediate its ends in the lower portion thereof through which a lamp holder 18 is adapted to be inserted from the inside to position a lamp holder portion 18a thereof outside the channel section in substantially contacting relation on its underside with the end plate 16 while a raised portion 19 thereof provided with wire connectors 20 is unable to pass through the opening 17 of

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smaller dimension and is thereby positioned within the channel section with the front wall 21 thereof substantially in abutting relation with the inner walls of the members 12 and 13.

In the past, the lamp holder has been secured in this assembled relation by a bolt insertable through an opening 22 in each of the side walls 12 and 13 spaced a short distance above the opening 17 but in alignment with a vertically disposed connecting slot 23 in communication with a cross slot 24 extending from the upper end of the upstanding section 19 of the holder 18. In assembly, the bolt is inserted through the opening 22 and through the connecting slot 23 into the cross slot 24 for threaded engagement with a nut member generally held in position in the cross slot. The difficulty which arises in the use of securing means of the type described resides in the difficulty of holding the small nut member in proper alignment with the bolt in the small slot 14 and the difficulty of gaining suitable access to the small bolt for manipulation thereof properly to engage the bolt member and operation thereof to thread the nut onto the bolt for effecting the assembled relation. The difficulty of operation arises by reason of the fact of the limited space available for mounting the members and for use of means to effect turning movement of the bolt for assembly. Manipulation of these small elements within the limited and relatively inaccessible space has heretofore required the use of special tools and patience and has therefore been incapable of adoption for mass production assembly.

For power driving operations to turn the screw or bolt down into the nut within the limited space available, it has been necessary to make use of a clutch head screw and it was required to produce special screws which were relatively difficult to replace and expensive when the original was rendered unsuitable for use by the power tools.

In accordance with the practice of this invention, the screw and nut means for attachment has, for the first time, been eliminated and use is made of a snap fastener which is easily positioned in the holder of present construction and which is adapted for operation with the channel members of present construction to permit simple and expedient assembly without fear of displacement or improper alignment.

A snap fastener embodying features of this invention comprises a sheet metal strip formed with upstanding rearward and forward walls 25 and 26 respectively spaced apart by a distance corresponding to the distance between the cross slot 24 and the front wall 21 of the holder and joined at their upper edges by a horizontally disposed connecting wall 27 to enable the rearward wall 25 to enter the slot 24 and resiliently engage the wall defining the forward portion thereof while the forward wall 26 resiliently engages the wall 21 of the holder to effect an assembled relation. The forward wall 26 is dimensioned to extend downwardly to the upper surface of the lamp holder portion 18. An intermediate portion of the front wall 26 may be embossed, as at 28, to enter into the opening 22 for assistance in proper alignment of the snap fastener and holder in the channel section, as will hereinafter be described. In this connection, it will be seen that Figs. 5 and 6 illustrate a modified arrangement in which the embossed projection 28 is replaced with a tongue 29, struck out of the front wall 26. The tongue 29 is adapted to enter the opening 22 during assembly to maintain proper alignment between the parts when in the assembled relation. Either the tongue 29 or the embossed projection 28 may be used in either embodiment, but the tongue generally is preferable.

Various modifications of spring clips may be provided

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in the fastener resiliently but firmly to secure the holder in the channel member. In each instance, the spring clips are adapted operatively to engage the walls of the channel section about the opening through which the holder is inserted in position of use to establish and maintain the assembled relation which resists inadvertent disengagement or looseness but which may be manually operated to permit withdrawal and replacement or repair.

In the preferred embodiment, shown in Figures 1-3, a V-shaped plate 30 formed of spring metal is provided to extend forwardly from the lower edge of the front wall 26 over a portion of the lamp holder 18 with the bottom wall 31 of the plate integral or otherwise fixed to the lower edge of the wall 26 and in surface contact with the top wall of the holder portion 18 when in the assembled relation while the free wall 32 of the V-shaped spring clip member is faced upwardly therefrom to extend rearwardly to a position just short of the front wall 26 of the fastener. It is preferred to form the plate 32 with an embossment or ridge in the end portion spaced a distance from the edge by an amount calculated to form a ridge in which the side wall 12 or 13 of the channel section may be disposed when in the assembled relation.

In assembly, the spring fastener formed preferably of a single strip of metal is first mounted in the holder 18 by positioning the spring finger or upstanding rearward wall 25 and the front wall 26 in vertical alignment with the transverse slot 24 and the front wall 21 of the holder and then displacing the spring fastener downwardly so that the spring finger 25 enters the transverse slot 24 until the plate 31 of the spring clip extending forwardly from the lower edge of the front wall 26 rests upon the surface of the holder 18. It is preferred that the connecting top wall 27 engage the upper surface of the holder portion 19 when in the mounted relation.

The holder with the spring fastener positioned thereon is then inserted from the inside through the opening 17 at the side wall of the channel member. As the forward end portion of the snap clip passes therewith through the opening, the free upwardly extending wall 32 is deflected resiliently downwardly substantially into contacting relation with the underlying wall 31 responsive to operative engagement with the side wall defining the upper edge of the opening. As the holder is advanced toward its inserted position, and the ridge or embossment 33 passes beyond the side wall 12 or 13, the embossment 28 or tongue 29 enter the opening 22 properly to align the holder while the lower edge of the side wall snaps into the groove 34 which maintains the holder in its assembled relation.

When the free wall 32 is of a length to terminate just short of the front wall 26, it will be engaged by the lower edge portion of the side wall defining the opening but it will be understood that the free wall 32 may terminate short of the front wall 26 whereby the end portion thereof will extend upwardly free of the side wall when in the assembled relation and provide a stop which prevents retrograde movement of the snap fastener and holder to which it is attached. Under such circumstances, it will be unnecessary to provide a ridge or other embossment to form a grooved section in which the side wall may seat.

For disassembly, the free wall 32 of the spring clip may be deflected downwardly to lie out of the path of the side wall 12 or 13 of the channel section so as to enable the holder with the snap fastener attached thereto to be withdrawn through the opening for replacement or repair.

In the modification shown in Figures 4-6, the spring clips forming a part of the fastener comprise extensions 50 continuing downwardly from the front wall 26 in areas beyond the side walls of the holder portion 18. Extending forwardly in the same direction from the inner edges of each extension are spring fingers 51 and 52 spaced one from the other by a distance corresponding to the width of the holder 18. Each spring finger is provided

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with an outwardly extending ridge or embossment 53 at the rearward end portion thereof spaced a short distance from the wall 50 and the forward end portions 54 of each spring finger 51 and 52 are turned slightly inwardly resiliently to engage the side wall of the holder 18 when positioned therebetween. The modification of Fig. 7 is the same as that of Figs. 4-6 except that the tongue 29 is replaced with the embossed projection 28 in Fig. 7.

In operation, the fastener is assembled in the holder in the manner previously described which positions the spring fingers 51 and 52 substantially in abutting relation with the side walls 55 and 56 of the holder portion 18. The assembly is then inserted through the opening 17 in the side wall 12 or 13 of the channel member and as the side wall of the channel section clears the ridges 53, the holder snaps into position and the side walls of the channel sections seat within the groove 57 formed between the embossment and the extension 50 resiliently to engage the side wall of the channel section in a manner to prevent retrograde movement.

It will be apparent that various other slight modifications may be made in snap fasteners of the type described for mounting in lamp holders of present construction resiliently to secure the lamp holder in position of use when inserted through the openings at the base of the channel sections. It will be understood that the rear wall 25 may be formed with curvilinear portions 58 to provide a finger which resiliently secures the snap fastener in position of use within the holder.

It will be understood that other changes may be made in the details of construction, arrangement and operation without departing from the spirit of the invention, especially as defined in the following claims.

I claim:

1. In a lighting assembly, a lamp holder including a lamp receiving portion extending forwardly from a wiring base of larger dimension than the lamp receiving portion and having a cross slot extending downwardly through a central portion thereof, a housing having a wall containing a slot in the base thereof dimensioned to permit insertion of the lamp holder portion therethrough to effect the assembled relation but insufficient to permit passage of the wiring base, a snap fastener for securing the holder in position of use relative to the housing comprising a rearward vertically disposed finger and a forward vertically disposed wall connected one to the other at their upper edges and spaced apart by an amount for insertion of the finger into the cross slot while the wall lies adjacent the front wall of the wiring base and terminates at the upper edge of the lamp holder, and a bottom wall extending forwardly from the lower edge of the front wall and a top wall joined at a sharp acute angle to the forward edge of the lower wall and extending rearwardly in spaced relation therewith to provide a spring finger which when inserted with the lamp holder through the slot into position of use is flexed downwardly responsive to camming engagement with the wall portion defining the upper edge of the slot and then confronts the front face of the housing wall upon passage therethrough when in the assembled relation to prevent inadvertent retrograde movement.

2. A lighting assembly as claimed in claim 1 in which the top wall diverges from the forward edge of the bottom wall to provide for an increasing spaced relation.

3. A lighting assembly as claimed in claim 1 in which the top wall is dimensioned to correspond to the length of the bottom wall less at least the amount corresponding to the thickness of the housing wall.

4. A lighting assembly as claimed in claim 1 in which the top wall is dimensioned to correspond substantially to the length of the bottom wall and has a raised rib extending crosswise of the top wall spaced from the rearward edge by an amount corresponding to the thickness of the housing wall to provide a resilient groove in which

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the housing wall is received when in the assembled relation.

5. A lighting assembly as claimed in claim 1 in which an opening is provided in the housing wall spaced a short distance above the slotted portion and in which a portion is struck forwardly from the front wall of the snap fastener in position to enter the opening above the slot in the housing wall upon insertion of the holder into position of use to maintain proper alignment.

6. In a lighting assembly, an L-shaped lamp holder including a lamp receiving portion extending forwardly from a wiring base dimensioned to be larger than the lamp receiving portion and having a cross slot extending downwardly through a central portion thereof, a housing having a wall formed with a slot in the base thereof dimensioned to permit insertion of the lamp receiving portion but insufficient to permit passage of the wiring base, a snap fastener for securing the holder in position of use within the housing having a rearward finger and a substantially flat front wall joined at their upper edges and extending in parallel spaced relation corresponding to the distance between the slot and the front wall of the wiring base to permit the spring finger to be inserted within the slot while the front wall lies adjacent the front wall of the wiring base and terminates at the top of the lamp holder portion with portions extending downwardly adjacent the side walls thereof, generally flat fingers extending forwardly generally at right angles from the downwardly extending portions from the edge adjacent the side walls and having outwardly extending ribs spaced from the downwardly extending portion by an amount corresponding to the thickness of the housing wall where-

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by the fingers are flexed responsive to engagement with the housing wall as the holder and fastener assembled therein are advanced through the opening toward the assembled relation and wherein the housing wall snaps into a groove formed between the rib and the front wall of the holder when inserted into its assembled position.

7. A snap fastener for securing a lamp holder in a slot formed in a housing wall, comprising a vertically disposed flat front wall, a spring finger spaced rearwardly therefrom in parallel relation, a top wall joining the spring finger and front wall at their upper edges, extensions continuing downwardly from the lateral portions of the front wall to form a slot therebetween dimensioned to receive the lamp holder, substantially flat spring fingers extending forwardly substantially at right angles from the inner edges of said extensions, and outwardly extending ribs in said spring fingers closely spaced from said front wall to form receiving grooves in which the housing wall is adapted resiliently to be engaged when in the assembled relation.

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