Sept. 28, 1965 E. J. McLAUGHLIN 3,209,304

LAMPHOLDER

Filed April 19, 1963

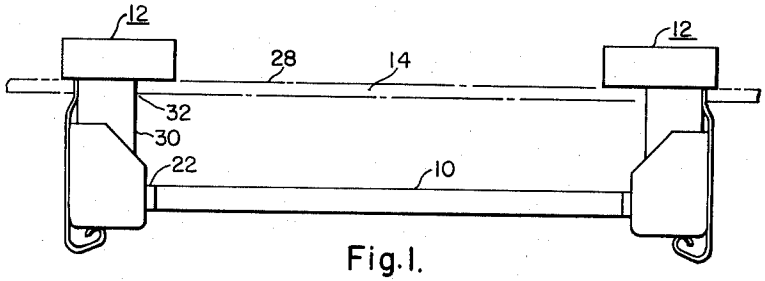


Fig. 1.

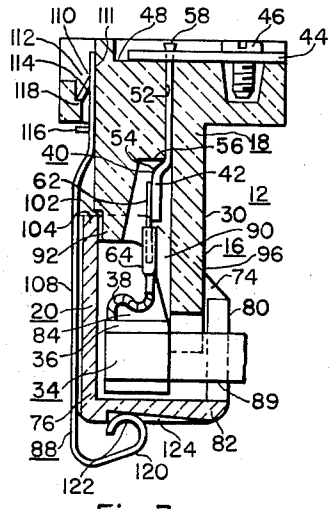


Fig. 3.

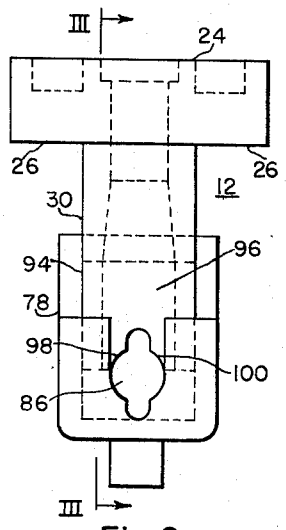


Fig. 2.

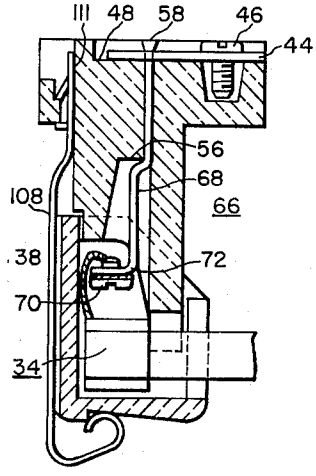


Fig. 7.

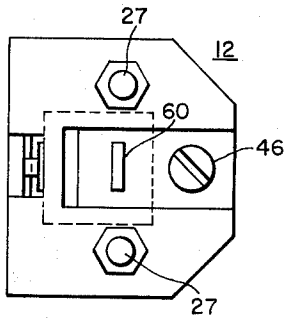


Fig. 4.

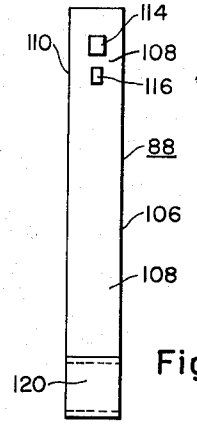


Fig. 6.

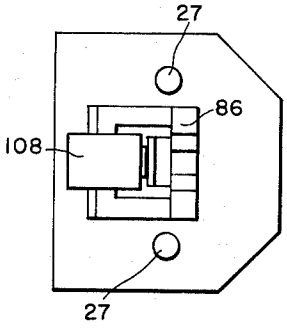


Fig. 5.

WITNESSES

Theodore F. Wrobel

Edward F. Possessky

INVENTOR

Emmett J. Mc Laughlin

BY F. P. Lyle

ATTORNEY

United States Patent Office 3,209,304 Patented Sept. 28, 1965

3,209,304

LAMPHOLDER

Emmett J. McLaughlin, Fairfield, Conn., assignor, by mesne assignments, to Westinghouse Electric Corporation, a corporation of Pennsylvania

Filed Apr. 19, 1963, Ser. No. 274,106
5 Claims. (Cl. 339—54)

The present invention relates to lampholders and more particularly to holders for supporting an elongated lamp having wire or pigtail connecting leads.

Normally an elongated lamp has electric connecting structure adjacent each end thereof and a spaced pair of ceiling or wall mounted lampholders support the two ends of the lamp and provide electric circuitry for energizing the lamp through the lamp end connecting structure. Often, as in the case of fluorescent lamps, the lamp connecting structure is provided in the form of "fixed" terminals such as recessed terminal elements or protruding terminal pins.

In other cases, as in many quartz iodide or quartz infrared lamps, the lamp and connecting structure is provided in the form of outwardly extending wire or pigtail leads. Although such wire leads generally increase installation and maintenance time, they often do have operational merit, for example when used on quartz lamps problems of high lamp heat generation affecting circuit continuity through resiliency dependent lamp and lampholder terminal interengagements can be avoided. This is not to propose that such circuit continuity problems are generally irresolvable or solvable only to an unsatisfactory degree when a high heat generating lamp of quartz or other types is provided with "fixed" end terminals. It is only to point out that the use of wire leads is another, or perhaps in some instances, a better approach to the matter. In this connection, reference can be made to a copending application Ser. No. 200,252, now U.S. Patent 3,144,289 issued Aug. 11, 1964, entitled "Lampholder," filed by S. A. Mason on June 5, 1962, and assigned to the present assignee where there is disclosed a lampholder arranged for thermally efficient use with a high heat generating lamp having "fixed" end terminals.

In any event, there is considerable commercial usage of wire lead lamps (such as the use of pigtail quartz lamps in food processing equipment, solar simulation units, and others) and a lampholder arranged for use with such lamps should have certain functional characteristics in the interest of operational and other efficiency. Thus, as a beginning example, the lampholder should provide for efficient or quick "front wiring" of the pigtail lamp so as to avoid the necessity of making connections and disconnections behind the lampholder mounting surface where access often requires special service skills and generally is difficult and time consuming. Further, mechanical support for the lamp should be provided directly by the lampholder and not by suspending action of the wire lamp leads since such action can result in excessive lead stress and lamp failure. Such support should further be provided in a manner which facilitates lamp placement and removal and, particularly in applications where "contaminants" are encountered, as in food processing equipment, etc., such support should be provided in a manner which substantially protectively houses the wire lamp leads and the lampholder circuitry associated therewith from the surrounding environment.

Thus, in accordance with the broad principles of the present invention, a lampholder comprises an insulative base member supportable on a back mounting surface of a wall or plate or the like and having a portion extendible through the wall to a front side thereof where

front wiring access is provided for the adjacent wire lead of an elongated lamp. Means are provided for quick or screw attachment of the wire lead to a lampholder terminal portion disposed with frontal access in the extending lampholder portion. An insulative cover or cap is detachably secured, preferably by resilient means, to the lampholder extending portion so as to form an opening therewith suitable for receiving and preferably housing the adjacent lamp end and further so as directly to support the lamp end and thereby free the wire lamp lead from lamp supporting forces. A pair of such lampholders can be used to support opposite ends of the lamp and more particularly a high heat generating or quartz lamp in a "contaminant" environment.

Therefore, it is an object of the invention to provide a novel and efficient lampholder for supporting a lamp having pigtail or wire leads.

It is another object of the invention to provide a novel and efficient lampholder for supporting a lamp having pigtail or wire leads wherein there is provided direct support for the lamp by a separate cap member of the lampholder and wherein such cap portion can cooperatively house the adjacent lamp end and its wire lead against the immediate lamp environment.

A further object of the invention is to provide a novel and efficient lampholder for supporting a lamp having pigtail or wire leads wherein there is provided "front wiring" of the lamp leads to a frontally accessible terminal portion of the lampholder.

An additional object of the invention is to provide a novel and efficient lampholder wherein there is provided ready and efficient detachable and preferably resilient securance of a cap member to the other part or parts of the lampholder after "front wiring" of pigtail or wire leads of the lamp is accomplished.

It is a further object of the invention to provide a novel and efficient lampholder wherein there is provided both "front wiring" and quick wire attachment of pigtail or wire leads of the lampholder.

These and other objects of the invention will become more apparent upon consideration of the following detailed description in conjunction with the attached drawing, in which:

FIGURE 1 is an elevational view of an elongated pigtail or wire lead lamp supported by a pair of lampholders constructed in accordance with the principles of the invention;

FIG. 2 shows the lamp facing side of one of the lampholders of FIG. 1;

FIG. 3 shows a vertical section taken along the reference line III—III of FIG. 2;

FIG. 4 is a top plan view of the lampholder of FIG. 2;

FIG. 5 is a bottom plan view of the lampholder of FIG. 2 with a cover or cap member thereof removed;

FIG. 6 is a vertical view of resilient securing means employed in the lampholder of FIG. 2; and

FIG. 7 is a vertical section of another lampholder constructed in accordance with the principles of the invention.

More specifically, there is shown in FIG. 1, an elongated heat generating or quartz lamp **10** supported and energized by a pair of lampholders **12** constructed in accordance with the principles of the invention. The lampholders **12** in turn are mounted in spaced relation on a plate or wall member **14** such as the roof of a food processing appliance.

In FIGS. 2–6, the lampholder **12** and various parts thereof are shown in greater detail. Thus, the lampholder **12** includes an insulative housing **16** formed preferably from a heat resistant material such as feldspar, and the housing **16** is provided with a base part or member **18** and a cap part or member **20** for supporting an

end portion 22 of the lamp 10 relative to the lampholder housing 16.

In order to support the lampholder 12 relative to the mounting wall 14, the housing base member 18 is provided with a base portion 24 having a flange 26 disposed for supporting engagement with back surface 28 of the mounting wall 14. Screws (not shown) extended through the wall 14 and base portion openings 27 (FIG. 4) can be used to fix the lampholder 12 in place. Further, the base member 18 includes a projecting portion 30 extending longitudinally outwardly from the base portion 24 for insertion through wall opening 32 from the wall back surface 28.

In connection with lamp energization, the lamp end portion 22 is provided with connecting structure 34 (FIG. 3) and such structure includes a conductive cap 36 and a wire lead or pigtail 38 which is conductively attached to the end cap 36 by suitable means such as welding. Current conduction to the lamp 10 through the lampholder 12 is provided by terminal means supported in the housing 16, and such terminal means include an elongated conductive terminal member 40 extending along the housing projecting portion 30 so as to have an end portion 42 thereof disposed for engagement with the wire lamp lead 38. In this case, the terminal means also include a separate terminal plate 44 having power or line wire engagement means, such as a screw 46, and the plate 44 is disposed on base portion surface 48 in base recess 50.

The terminal member 40 is disposed in housing slot 52 into which it is inserted from the outer or lower open end of the projecting portion 30 and is limited in such insertional movement for example by bent portion 54 thereon which is engageable with base member stop shoulder 56. Inserted end portion 58 of the terminal member 40 fits through terminal plate slot 60 (FIG. 4) and, when it is secured to the terminal plate 44 by suitable means (such as turnover deflection thereof), securely holds the plate 44 against the base member surface 48 and captures the terminal member 40 in the housing slot 52.

Preferably, quick wire attachment means, such as female and male bayonet type conductors 62 and 64, are disposed on the terminal end portion 42 and the lamp wire 38 respectively. In this event, the male connector 62 on the terminal end portion 42 extends in the longitudinal direction of the housing projecting portion 30 so as to facilitate the act of making and breaking lamp wire connections.

However, as shown in another embodiment of the invention, lampholder 66 (FIG. 7) can include terminal member 68 having screw attachement means 70 for engaging the wire lamp lead 38. In this case, terminal end portion 72 preferably extends laterally of the longitudinal direction of the housing projecting portion 30 so that the screw 70 can be faced longitudinally outwardly. If desired, however, the terminal end portion 72 can be formed so as to face the screw 70 laterally toward any side of the housing projecting portion 30 or in other directions if such placement leads to facilitated operation of the screw 70.

In both of the illustrated embodiments of the invention, lamp wiring is quickly accomplished since such wiring is undertaken in front of the lampholder mounting wall 14 where there is ready access. Wiring of the incoming power or line wire (not shown) is of course accomplished behind the wall 14 where the line wire screw 46 is located, but such wiring is accomplished during original installation and does not enter into the consideration of providing quick lamp wiring which is needed for facilitated lamp replacement or servicing.

Once the lamp 10 is end wired to both lampholders 12 (FIG. 1), the insulative housing cap 20 can be disposed against the outer end of the housing projecting portion 30 of each lampholder 12. The cap portion 20 includes respective side walls 74, 76, 78 and 80 and end wall 82 which cooperate with the housing projecting portion 30 in forming an enclosed space 84 in which the lamp end connecting structure 34 is disposed. The cap portion side wall 80 forms, preferably cooperatively with the housing projecting portion 30, an opening 86 (FIG. 2) through which the lamp end portion 22 extends. If the lamp opening 86 is cross-sectioned in general conformity with the cross section of the lamp end portion 22, as it is in this case through the use of a cross section of general I-form, good protection against "contaminants" is provided.

Detachable securance or support of the cap member 20 relative to the housing projecting portion 30 is in this instance provided by resilient means 88 which urge the cap member 20 against the housing projecting portion 30. The cap side walls 74–80 fit over (in other embodiments the fit can be within) respective side walls 90, 92, 94 and 96 of the housing projecting portion 30 so as generally to maintain the cap member 20 in longitudinal alignment with the housing projecting portion 30. The resilient means 88 provide inward or upward forces on the cap member 20 so as to hold the latter longitudinally inward or upward against the housing projecting portion 30 and supportingly (as indicated, by reference character 89) against the lamp end portion 22. If as preferred the lampholder opening 86 closely conforms to the lamp end portion cross-section, then the lamp end portion 22 is further held or lifted against edge surfaces 98 and 100 of the housing projecting portion wall 96 which are disposed about the lamp opening 86.

Such holding forces are in this case applied pivotally about projecting portion recess 102 (FIG. 3) in which end pivot portion 104 of the cap side wall 76 is captured by action of the resilient means 88. For this purpose, the resilient means 88 are in the form of an elongated resilient spring member 106 formed from a material such as spring steel and having an arm portion 108 extending longitudinally along the cap wall 76 so as to be resiliently deflectable pivotally around end support portion 110 thereof.

The end spring support portion 110 is extended into a closely fitting opening 112 in the base portion 24 of the base member 18 and is held in its inserted position by opposing projections 114 and 116 in engagement with opposite sides (spaced longitudinally of the spring member 106) of base portion shoulder 118 adjacent the opening 112. The projection 114 also urges the spring support portion laterally against base surface 111 and thus the spring member 106 is substantially held against unitary longitudinal and unitary lateral movement.

An end finger portion 120 of the resilient arm 108 is bent over so that a latching portion 122 thereof is disposed in engagement with the cap end wall 82. Preferably such engagement is provided in recess 124 of the cap end wall 82 so that a latching relation is provided. In operation, the resilient finger portion 120 urges the cap 20 longitudinally against the base member projecting portion 30 so as to capture the cap pivot portion 104 in its pivotally supporting base recess 102. Direct force from the resilient arm 108 can also aid in retaining the cap pivot portion 104 against displacement. Further, the arm 108 and the finger portion 120 urge the cap 20 pivotally about the pivot cap portion 104 toward the lamp end portion 122 so as to support the latter as previously noted.

In order to place the cap 20 in assembled relation with the base member 18 after the lamp 10 has been wired as previously described, the spring arm 108 is deflected outwardly from the base projecting portion 30 so as to allow the cap 20 to be fit over the portion 30. The spring arm 108 is then released so that the latching portion 122 is engaged with the cap end wall 82 in the recess 124. For cap member removal, the spring latch portion 122 is sim-

ply lifted outwardly from the cap recess **124** while the spring arm **108** is deflected outwardly.

In the completely assembled lampholder system of FIG. 1, each end of the lamp **10** is relatively firmly fixed in place. Further, the end connecting structure **34** and the wire leads **38** are effectively housed from the immediate environment of the lamp **10**. Replacement of the lamp **10** is straightforward since the lampholder caps **20** can be removed readily for disconnection of the wire lamp leads **38** and connection of the wire leads of a new lamp followed by reattachment of the housing caps **20**. Moreover, such maintenance can even be accomplished if a plurality of lamps are installed in physical series relation with adjacent lampholders of longitudinally adjacent lamps disposed in proximate "back-to-back" relation.

The foregoing description has been set forth only to point out the principles of the invention. Accordingly, it is desired that the invention be not limited by the embodiments described, but, rather that it be accorded an interpretation consistent with the scope and spirit of its broad principles.

What is claimed is:

1. A lampholder for supporting and energizing an elongated lamp having a wire pigtail lead conductively attached to each of respective end portions thereof, said lampholder comprising an insulative housing having base and cap members, said base member having a flanged base portion supportable on a reference back side of a wall member and further having an elongated open-end projecting portion extending from said base portion and being extendible through an opening in said wall member so as to extend forwardly of the front side of said wall member, terminal means having a first portion thereof disposed on said base portion for attachment to a line wire and further having another portion thereof extending from said first terminal means portion into said base member projecting portion where frontal wiring access is provided thereto, wire engagement means for attaching the wire lamp lead of an adjacent lamp end portion to said other terminal means portion, said housing cap member having an end wall and wall means extending from said cap end wall toward said base member projecting portion, said cap wall means having an opening for extension of said lamp end portion into said cap member, said cap wall means including a side wall disposed outwardly of said lamp end portion in the lamp longitudinal direction, a base member projecting wall and an end portion of said cap side wall having pivotally interengaging shoulder and recess means, and resilient spring means supported by said base member and having a portion thereof for retaining said shoulder and recess means in pivotal interengagement, another portion of said resilient spring means detachably and resiliently engaged with said cap end wall to urge said cap member pivotally into supporting engagement with said lamp end portion, and means for limiting the lamp supporting pivotal movement of said cap member toward said base member projecting portion.

2. A lampholder for supporting and energizing an elongated lamp having a wire pigtail lead conductively attached to each of respective end portions thereof, said lampholder comprising an insulative housing having base and cap members, said base member having a flanged base portion supportable on a reference back side of a wall member and further having an elongated open-end

projecting portion extending from said base portion and being extendible through an opening in said wall member so as to extend forwardly of the front side of said wall member, terminal means having a first portion thereof disposed on said base portion for attachment to a line wire and further having another portion thereof extending from said first portion into said base member projecting portion where frontal wiring access is provided thereto, wire engagement means for attaching the wire lamp lead of an adjacent lamp end portion to said other terminal means portion, said housing cap member disposed over and against the open end of said base member projecting portion and providing an opening for extension of said lamp end portion thereinto, one side wall of said cap member disposed outwardly of said lamp end portion in the lamp longitudinal direction and having an inner edge portion thereof pivotally disposed in an adjacent side wall recess of said base member projecting portion, and an elongated resilient spring member having a first portion thereof secured to said base member, said spring member further having a pivotally deflectable arm portion extending from said first portion thereof along said cap member one side wall and a finger portion extending from said arm portion into engagement with an end wall of said cap member so that said cap member is resiliently captured against said base member projecting portion and further so that said cap member is resiliently and pivotally urged into engagement with said lamp end portion.

3. A lampholder as set forth in claim **2**, wherein said finger portion is disposed in a recess in said cap member end wall so as to produce a latching engagement therebetween.

4. A lampholder as set forth in claim **2**, wherein support means for said spring member first portion include spaced tabs thereon disposed in engagement with opposite longitudinally spaced sides of a base member shoulder so as to prevent unitary longitudinal movement of said spring member and further so as to urge said spring member first portion against an adjacent base member surface and thereby prevent unitary lateral movement of said spring member.

5. A lampholder as set forth in claim **2**, wherein said base member projecting portion and said cap member cooperate to form said lamp opening with a cross section substantially conforming to the cross section of said lamp end portion so as substantially to enclose the lamp energizing circuitry from the lamp environment.

References Cited by the Examiner

UNITED STATES PATENTS

1,857,916	5/32	Koch	339—52 X
2,134,170	10/38	Brown	339—52
2,247,117	6/41	De Reamer	339—53
2,441,456	5/48	Thayer	339—52
2,642,521	6/53	Easter	339—50

FOREIGN PATENTS

524,336	5/31	Germany.
267,442	3/27	Great Britain.

JOSEPH D. SEERS, *Primary Examiner.*

PATRICK A. CLIFFORD, *Examiner.*