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FLUORESCENT LIGHTING FIXTURE

Filed July 1, 1941

2 Sheets-Sheet 1

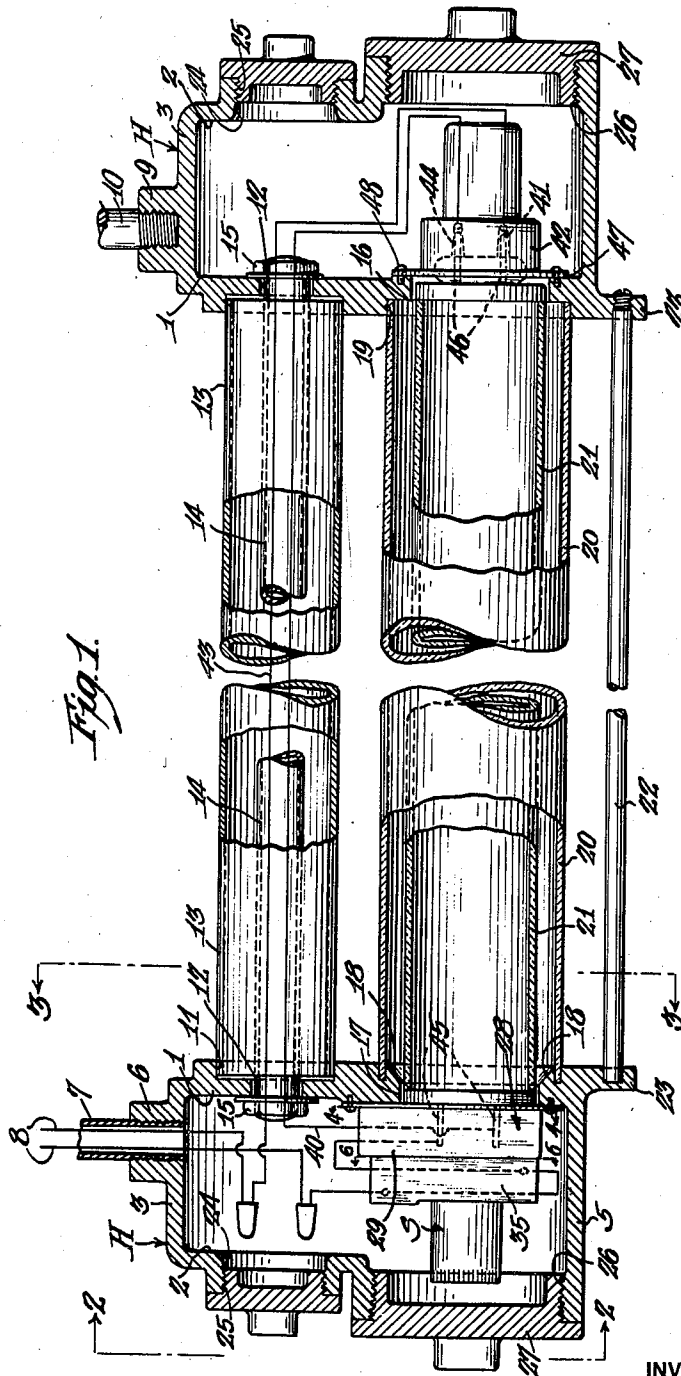


Fig. 1.

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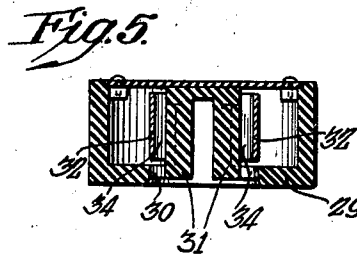
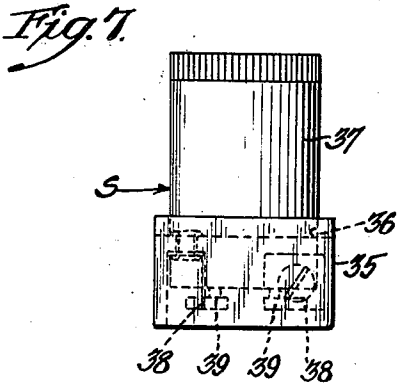
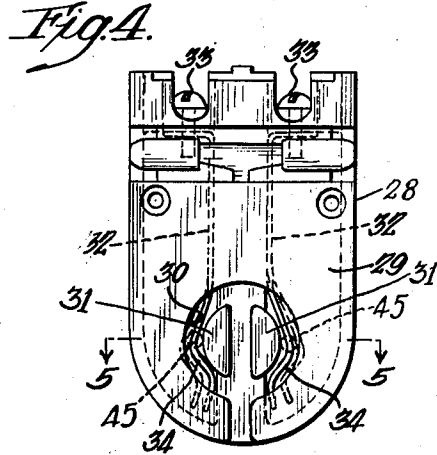
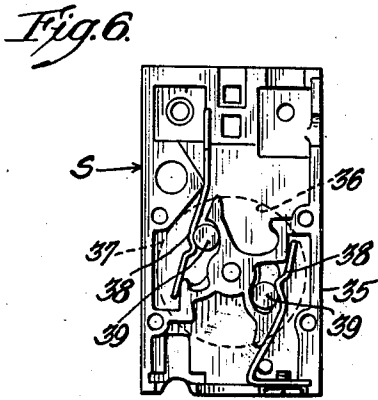
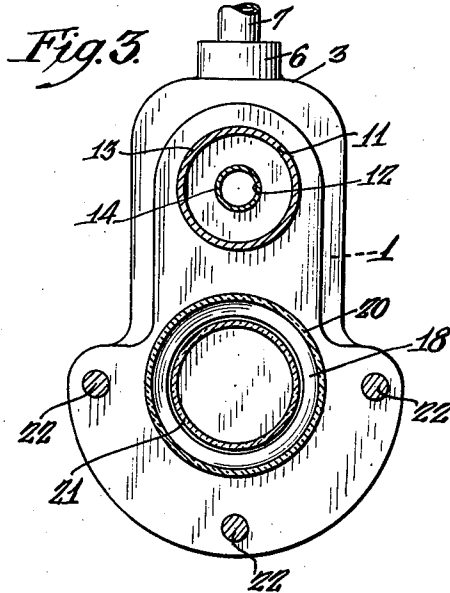
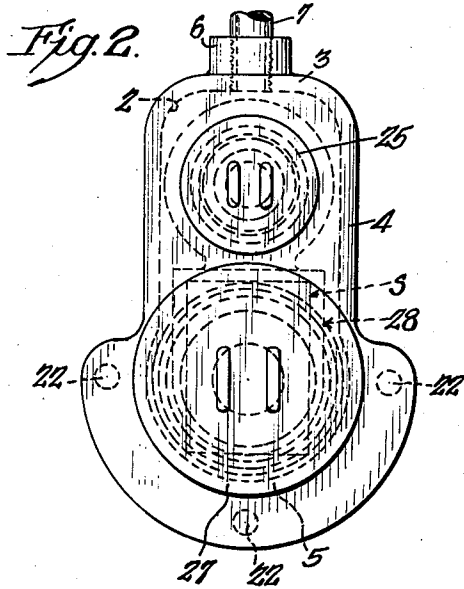
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FLUORESCENT LIGHTING FIXTURE

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2 Sheets-Sheet 2



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FLUORESCENT LIGHTING FIXTURE

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7 Claims. (Cl. 240—11.2)

This invention relates to improvements in electrical lighting fixtures and pertains particularly to an improved fluorescent lighting unit.

The principal object of the present invention is to provide a fluorescent lighting unit or fixture which is constructed in a novel manner so that the interior parts are dust-proof and vapor-proof and will prevent explosive fumes from entering the light tube, thus making it explosive-proof.

Another object of the invention is to provide the fluorescent lighting fixture in which the two ends of the light tube are coupled, with specially designed casings or housings which are secured together in a fixed relation whereby the light tube may be inserted through a protective light transmitting tube connected between the housings to extend between the housings and in electrical connection with suitable terminals.

Another object of the invention is to provide in a fluorescent lighting fixture of the character stated, means for tightly covering or enclosing the ends of the light tube and the electrical connections made therewith whereby such connections will be shielded but may be readily reached when desired and as may be necessary for the replacement of necessary parts or for the removal of the fluorescent tube without requiring the disassembling of the fixture.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings, it being understood, however, that the invention is not to be considered as limited by the specific illustration or description but that such illustration and description constitutes a preferred embodiment of the invention.

In the drawings:

Fig. 1 is a view partly in longitudinal section and partly in side elevation of the fixture embodying the present invention.

Fig. 2 is an end elevation as viewed from line 2—2 of Fig. 1.

Fig. 3 is a transverse section on the line 3—3 of Fig. 1.

Fig. 4 is a sectional view on the line 4—4 of Fig. 1, showing one face of the holder to which an end of the tube is electrically connected.

Fig. 5 is a sectional view on the line 5—5 of Fig. 4.

Fig. 6 is a sectional view on the line 6—6 of Fig. 1, showing the inner side of the starter unit carrier.

Fig. 7 is a view in top plan of the starter unit and the carrier or support therefor.

Referring now more particularly to the drawings, it will be seen upon reference to Fig. 1, that the fixture embodying the present invention comprises a pair of spaced casings or housings H, each of which has an inner wall 1, an outer wall 2 and a top wall 3, which merges into side and bottom walls 4 and 5, respectively. The top wall of each housing is provided with a nipple or fitting which is interiorly threaded and one of these nipples opens into the housing, as indicated at 6, to receive an electric wire conduit 7 through which current conducting wires 8 are passed into the adjacent housing while the other nipple, which is indicated by the numeral 9, receives an end of a supporting pipe 10. This pipe with the conduit 7 maintains the fixture in position and the connection between the conduit 7 and the nipple 6 is made vapor-tight.

The inner wall 1 of each of the housings has formed therein the upper recess 11 and an opening 12 which is coaxial with the recess, and these recesses 11 receive the ends of a tube 13 through which extends a tubular tie rod 14, the ends of which rod pass through the openings 12 and receive within the housings, the nuts 15. By means of this tie rod, the housings are drawn tightly together against the ends of the tubular body 13 and the latter functions to maintain the housings in proper spaced relation. The housing having the suspension pipe 10 coupled therewith has formed through the inner wall 1, the fluorescent tube admitting opening 16 while the opposite housing has a corresponding opening 17 formed through the inner wall 1 and the outer edge of this opening is beveled, as indicated at 18. Each of the openings 16 and 17 is encircled by a recess 19 formed in the inner wall of the housing and these recesses 19 receive the ends of a tube 20 preferably formed of heat resisting glass such, for example, as the type known as "Pyrex" glass.

The numeral 21 designates a standard fluorescent light tube which is supported within the glass tube 20 by its ends which are engaged in the openings 16—17 of the two housings.

Further securing means between the housings is provided by tie rods 22 which have their ends fixed in the flanges 23 which extend around the lower part of each housing in the plane of the inner wall thereof, as is shown in Figs. 1 to 3 inclusive.

Each of the housings has its outer wall 2 provided with an upper opening 24 which is closed by a threaded plug 25 and a lower opening 26 which is closed by a threaded plug 27. The openings 25 are aligned with the spacer tube 13 while

the lower openings are alined with the fluorescent tube openings 16 and 17.

In one of the housings, here shown as the housing having the electric wire conduit 7 connected therewith, there is secured to the inner side of the wall 1, a tube holder 28 which comprises a flat body of insulation material 29, shown particularly in Figs. 4 and 5, which has formed in the side adjacent the wall 1, an opening 30 which is concentric with the adjacent opening 17. Extending forwardly from the back wall of the insulation body 29 are the two spaced pins 31, the outer sides of which are transversely arcuate and these pins have their forward ends located within the area defined by the opening 30 and their outer curved walls define portions of a circle of smaller diameter than the opening 30, as is most clearly shown in Fig. 4. Extending through the insulation body 29 from the top thereof are the two resilient current conductors 32, each of which is secured at its upper end and has threadably connected therewith a wire securing screw 33. The lower end of each resilient conductor 32 is bent outwardly away from the other conductor and passes around the curved outer side of the adjacent pin 31 and while it is in contact at its lower end with the adjacent pin, it is for the most part in spaced relation with the pin. These outwardly curved lower ends of the resilient conductors are indicated by the numeral 34.

Secured to the back of the holder 28 is a starter unit of standard construction, which is shown in plan in Fig. 7 and indicated generally by the character S. This starter includes a body of insulation 35 in which is formed the usual recess or socket 36 for the reception of an end of a cylindrical casing 37 in which are housed the necessary electrical elements, not shown, of the starter. The body 35 carries two resilient terminals 38 with which terminal pins 39, carried by the body 37, are electrically connected when the bodies 35 and 37 are coupled together. One of these terminals 38 is electrically connected with one side of the current supply line indicated by the numeral 8 while the other one of these terminals 38 is electrically connected with one of the screws 33 of the holder 28. The other screw 33 has connected therewith the current conductor 40 which passes through the tubular tie rod 14 into the opposite housing where it is connected with a terminal 44 carried by a connector cap 42.

The other side of the current supply line is connected with the conductor 43 which also passes through the tubular tie rod 14 and is connected with a terminal 41 carried by the connector cap 42.

The connector cap 42 is adapted to be detachably coupled with the inner wall 1 of the housing remote from the housing in which the starter and holder are located and in position over the opening 16, after the fluorescent tube 21 has been inserted into position.

When the fixture is set up with the housings joined together by the tie rods 14 and 22 and with the tubular body 13 and the glass tube 20 interposed between the housings, the fluorescent tube may be placed in position through the opening 26 in the housing at the right-hand side of the unit or the housing with which the pipe 10 is connected. The tube is extended through the housing and through the opening 16, through the glass tube 20 to the opposite opening 17 where the inclined or beveled edge 18 will guide the end of the tube into the opening 17 and will also

guide the terminal prongs 45 of the tube into the opening 30 of the holder for engagement between the resilient conductor elements 32 and the adjacent pins 31. At the opposite end of the fluorescent tube are two terminal prongs 46 and after the tube has been located in position, these prongs have secured thereover the cap 42 so that each of the prongs engages with one of the terminals 41 and 44 carried by the caps. After prongs 45 have been engaged in the opening 30 of the holder and the cap 42 has been attached, the tube may be given a quarter turn to force the prongs 45 between the terminals 32 and the pins 31 where the prongs will be firmly secured. The cap 42 has a flange 47 integral therewith and this flange has screw openings, not shown, to be registered with corresponding openings in the adjacent wall 1. After the tube has been turned as described the flange openings will be aligned with the screw openings in the wall and securing screws 48 are then inserted to secure the cap and the tube in position.

From the foregoing, it will be readily seen that there has here been disclosed a fluorescent lighting fixture of improved character in which replacement of the fluorescent tube may be made conveniently when necessary without having to dismount or dismantle the fixture and also replacement of the starter unit S may be accomplished when necessary without affecting any of the other parts of the fixture. It will be readily seen that the starter can be removed and replaced by the removal of the plug 27 adjacent thereto while the fluorescent tube can be removed through the opposite opening 26 after the plug 27 has been taken out and after the coupling cap 42 has been removed from the end of the tube.

It will, of course, be understood that in the use of a light of this kind, a suitable transformer is employed which may be connected in the current conducting line 8 outside of the fixture and in a suitable housing or casing. Such transformer is not here shown as the use of the same will be readily understood by those familiar with the art.

What is claimed is:

1. A fluorescent lighting fixture, comprising two identical hollow housings disposed in spaced relation with parallel opposing walls, a tie rod connected at its ends with the opposing walls of the housings for maintaining the housings in a fixed relation, means connected with each housing facilitating securing the fixture in set-up position, means for conducting electric current into one housing, a light transmitting tube connected at its ends with the said opposed walls of the housings, said opposed walls of the housings having openings coaxial with said tube, a fluorescent light tube extending through the first tube and having its ends mounted in said openings and projecting into the housings, a starter unit mounted within the said one housing and adapted for electrical connection with one side of a current conducting circuit, a holder disposed within the said one housing and including a pair of electrical terminals one of which is in electrical connection with said starter, said terminals being electrically connected with one end of said light tube, means electrically connecting the other one of said terminals with the opposite end of the light tube, and means in the other housing for electrically connecting the other side of the current supply with the said other end of the light tube.

2. A fluorescent lighting fixture, comprising

two identical hollow housings disposed in spaced relation and having opposed parallel walls, means for securing said housings in said spaced relation including a tubular tie rod interposed between said walls and opening at its ends into the housings, means connected with the housings for securing the fixture to a support, means for leading a pair of current conductors into one of said housings, the said opposed walls of the housings having alined openings, a fluorescent light tube disposed between the housing walls and having each of its ends in one of said openings, said tube including a pair of terminals upon each end extending into the adjacent housing, means in the said one housing for receiving the adjacent pair of terminals, means for establishing electrical connection between one of the last-mentioned pair of terminals and one of said current conductors, a current conductor leading from the other one of the last-mentioned pair of terminals through said tubular tie rod into the other housing and having electrical connection with one of the other pair of terminals, and a current conductor connected with the other one of said pair of conductors and extending through said tubular tie rod into the said other housing and having electrical connection with the other one of the said other pair of terminals.

3. A fluorescent lighting fixture, comprising a light transmitting tube, a pair of identical hollow bodies having opposing walls between which said tube is secured, said walls having openings leading from each end of said tube into the adjacent body, a tubular tie rod connected between the said walls of the hollow bodies and opening into the bodies, said tubular tie rod and said tube having a gas-tight connection with the hollow body walls, a pair of current conductors leading into one of said hollow bodies, means forming a pair of fixed terminals in the said one hollow body, one of said fixed terminals being electrically connected with one of the current conductors, a fluorescent light tube extending through the first tube and having its ends mounted in the openings of said hollow body walls, said light tube having a pair of terminal prongs extending from each end, one pair of prongs being electrically connected with said fixed terminals, a current conductor leading from the other one of the fixed terminals through the tubular tie rod into the other hollow body and having electrical connection with one of the other pair of prongs, and a current conductor leading from the other one of said first pair of conductors through the tubular tie rod and having electrical connection with the other one of the other pair of prongs.

4. A lighting fixture as set forth in claim 3 including, a cap having a pair of terminals to each of which one of the current conductors leading into the said other hollow body is electrically connected, said cap being constructed and arranged to have the terminals carried thereby detachably coupled with the said other pair of prongs.

5. A fluorescent lighting fixture, comprising a pair of hollow bodies, a tubular spacer member disposed between and connected at its ends with said bodies, a tubular tie rod extending through the spacer member and through adjacent sides of the hollow bodies and opening into the same,

a light transmitting tube disposed between said bodies and having gas-tight connection at its ends with the bodies, said bodies each having an opening leading thereinto from the adjacent end of said light transmitting tube, a light tube holder secured in one of said bodies and carrying a pair of fixed terminals disposed in front of the opening leading into the last-mentioned tube, one of said terminals being adapted for connection with one side of an electric circuit, a current conductor leading from the other one of the terminals through the tie rod into the other hollow body, a second current conductor leading through said tie rod from the first hollow body into the second hollow body and designed for connection with the other side of the electric circuit, said terminals being designed for electrical connection with a pair of corresponding terminals upon a fluorescent light tube extending through the light transmitting tube and having an end supported in the adjacent opening, and a connector cap having a pair of terminals and disposed in the other hollow body and having the correct conductors leading into the said other body electrically connected therewith, the terminals of said cap being designed for connection with a pair of terminals upon the other end of the said light tube.

6. A fluorescent lighting fixture, comprising a pair of hollow housings each having a greater length than width, the housings being vertically disposed in spaced relation, a hanger secured to the top of each housing, one of said hangers being tubular and leading into the adjacent housing, the opposed walls of the housings each having an upper opening and an encircling annular recess therein and a lower opening, said annular recesses and upper openings being concentrically arranged, a tubular spacer body having its ends in said annular recesses and maintaining the housings in spaced relation, a tie rod extending through said spacer and through the upper openings and secured to the housings, the said walls of the housings having opposing recesses therein concentric with the lower openings, a light transmitting tube disposed between the housings and having its ends in the last mentioned annular recesses, the lower opening of one housing having the outer edge beveled, a fluorescent light tube extending through the light transmitting tube and having its ends extended into said lower openings, that housing remote from the lower opening having the beveled edge being provided with an outer wall opening aligned with the adjacent lower opening for the insertion of the light tube into the light transmitting tube and the said beveled edge facilitating the guiding of the advancing end of the light tube through the adjacent lower opening, and current conducting means leading through the tubular hanger and passing through said tubular spacer for electrical connection in the housings with the ends of the light tube.

7. A lighting fixture as set forth in claim 6, in which each housing has a flange lying in the plane of the inner wall and extending across the lower part of the housing and vertically along a portion of each side, and tie rods secured at their ends in said flanges to couple the housings together at the lower ends thereof.

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