Dec. 18, 1956 O. FRENSCH 2,774,947

SEALING MEANS ON FIXTURES FOR FLUORESCENT TUBES

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Fig.1

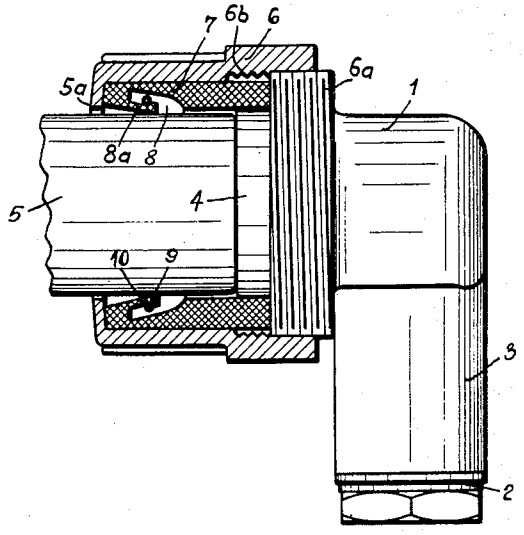
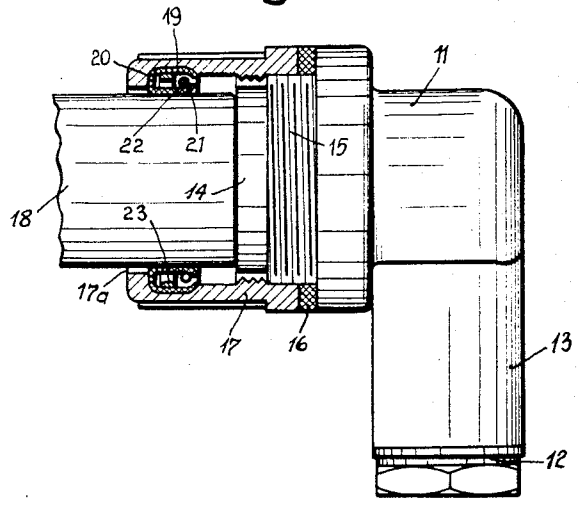


Fig.2



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Fig. 3

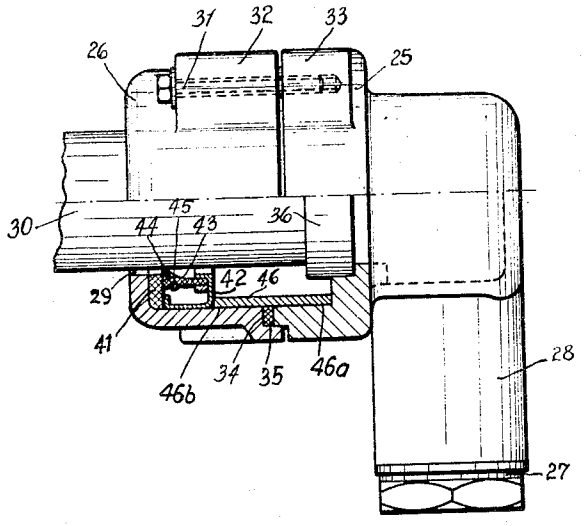
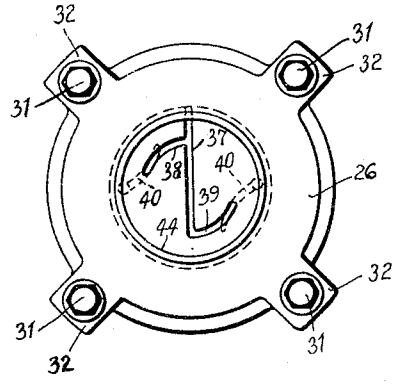


Fig. 4



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SEALING MEANS ON FIXTURES FOR FLUORESCENT TUBES

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Claims priority, application Switzerland January 25, 1951

1 Claim. (Cl. 339—60)

This invention relates to sealing means for fluorescent tube fixtures.

In areas or rooms in which easily inflammable or explosive gases or vapors may occur or prevail or in which electric contact pieces of electric devices may be chemically attacked by acid vapors, fluorescent lighting tubes require completely gas-tight and liquid-tight fixtures. The accomplishment of a completely gas- and fluid-tight closure or seal for sockets or fixtures for fluorescent lighting tubes offers certain difficulties since the diameters of such fluorescent tubes may vary considerably within comparatively large practical tolerances.

It is an object of the present invention to provide means overcoming these and other disadvantages.

It is another object of the present invention to provide means affording gas- and liquid-tight sealing means in respect to the socket or fixture for the fluorescent lighting tube.

It is a further object of the invention to provide means ensuring said sealing means to automatically conform and adjust itself to various diameters of fluorescent tubes.

Still another object of the invention is to provide means facilitating the arrangement of sealing means in the form of an elastic sleeve preferably made from rubber which is resistant to chemical influences and is capable of exerting sufficient sealing pressure against the wall of the fluorescent tube to which said sleeve is applied.

Yet a further object of the invention contemplates an elastic hollow element suitably accommodated and so dimensioned and shaped that it takes into consideration any over or under dimensions of the diameter of fluorescent tubes to be tightly sealed and maintained in position in a fixture or socket.

With the above and other objects in view, the invention will be hereinafter more fully described and the combination and arrangement of parts will be shown in the accompanying drawing and pointed out in the claim which forms part of the specification.

In the drawing,

Figs. 1 to 3 show each a side elevational view, partly in section, of a different embodiment of the invention with a portion of a fluorescent tube in applied position, and

Fig. 4 shows a top plan view of the embodiment shown in Fig. 3, the fluorescent tube being omitted.

According to the embodiment shown in Fig. 1, the casing 1 of the fixture is provided with a fitting 3 including a packing bushing 2 therefor to provide a gas-and liquid-tight seal or closure for a tubular protection piece into which the conductors for the current supply line (not shown) extend. In this casing 1 there is disposed a cylindrical contact carrier 4 provided at one end wall thereof with contact terminals (not shown).

At the opposite end wall or front end of the contact carrier 4 there is arranged a slot (more clearly explained in connection with Fig. 4) into which contact pins of the fluorescent lighting tube 5 are insertable. Upon subsequent rotation of tube 5 about its axis the tube comes to lie against said contact terminals of contact carrier 4 (not shown) as is known in the art. The casing 1 is

provided with outer threads 6*a* with which a lid in the form of a screw cap 6 is threadedly connected which has inner threads 6*b*. Consequently, through threads 6*a* and 6*b* and through carrier 4 the cap 6 is maintained in predetermined position relative to the tube 5. Screw cap 6 has at its front end a circular opening or bore 5*a* to permit passage of the tube 5 therethrough. This opening 5*a* has a diameter somewhat larger than the largest diameter of the fluorescent tube structure 5.

Within the screw cap 6, there is arranged a gland or sleeve element 7 made from rubber material which is resistant to chemical influences and attacks and which surrounds and is in contact at its rearward end with said contact carrier 4.

At its forward part the sleeve element 7 is provided with an open pocket 8 which is annular-shaped and extends in forward direction toward the tube 5. On the inner wall 8*a* of this pocket 8 there is arranged a bead 9 forming a lip- or tongue-shaped reinforcement, on or in which is accommodated a springy, spiral-shaped ring member 10 adapted to press the outer wall surface of the lip of pocket 8 in radial direction against the outer surface of the fluorescent tube. Thus, automatic adjustment of the sealing sleeve 7 to the respective diameter of the tube 5 is achieved, to which is afforded a complete gas- and fluid-tight closure or seal.

In accordance with the embodiment shown in Fig. 2, the casing 11 of the fixture is also provided with a fitting 13 containing a stuffing gland 12 to thereby connect with a protective tube which contains the conductors or leads for the electric current supply (not shown). On this casing 11 there is arranged a contact carrier 14 (similar to contact carrier 4 of Fig. 1). The socket casing 11 is further provided with a threaded extension 15 with which a screw cap 17 is engaged. This screw cap 17 accommodates in its interior a sealing ring member 16 made from rubber or plastic material which is resistant to chemical influences and against which said screw cap 17 comes to lie. This cap 17 is provided with an opening 17*a* at its front end through which fluorescent tube 18 passes. The diameter of this opening 17*a* is somewhat larger than the largest diameter of the fluorescent tube 18.

At the inner face of the forward part of the screw cap or lid 17 there is provided an annular recess 19 in which an elastic and hollow rubber sleeve 20 is accommodated which is resistant to chemical influences. One end of the rubber sleeve 20 has a thickened or bead portion 22 which is pressed against the outer diameter of the fluorescent tube 18 by means of a spiral-shaped spring ring 21. A split ring or retainer ring 23 is placed within the hollow sleeve 20 and presses the latter also against the wall of the annular recess 19. In this manner, whether the fluorescent tube has a large or a small diameter, a complete closure or seal is achieved which is gas-tight and fluid-tight and extends a predetermined portion of length of the tube 18, as shown.

According to a third embodiment of the invention shown in Figs. 3 and 4, the casing is composed of two parts 25, 26 of which the right hand part 25 and the left hand part 26 are interconnected. Part 25 includes a stuffing box or gland 27 with fitting 28 into which may extend the conductors for the electric supply line (not shown). Part 26 has a front opening 29 for the passage of the fluorescent tube 30 therethrough whose diameter is somewhat smaller than the diameter of the aforesaid opening 29. Part 26 is connected to part 25 by means of four screw bolts 31 which pass through eyes or projections 32, 33, respectively, which bolts threadedly engage suitable bores of projection 33 provided on 25. Part 26 has further a recess 34 of annular formation in which a suitable sealing ring 35 is accommodated.

In part 25 there is inserted a contact carrier 36 on

whose rearward end there are arranged contact terminals (not shown). At the front end the contact carrier **36** is provided with a slot **37** into which the contact pins of the fluorescent tube **30** are inserted, and upon subsequent rotation thereof these pins will then enter circular-shaped slots **38** and **39** communicating with slot **37** to thereby contact the springy electric contact pieces **40**, as is well understood. Within the front end of part **26** there is arranged a sealing member **41** which consists of a rubber material resistant to chemical attack. Against this rubber ring **41** presses an annular-shaped rim or housing **42** made from metal in which a rubber sleeve **43** is accommodated and maintained in position. To this end, a spiral split ring member **45** presses through the bead or thickened end portion **44** of sleeve **43** against the outer surface of fluorescent tube **30** to bring about a tight seal or bounding area. A spacer bushing **46** is further provided to extend between parts **25**, **26** and presses against the rim **42** on the one hand and against an inner wall of part **25** on the other hand. Spacer piece or bushing **46**, rim element **42** holding sealing sleeve **43**, and ring member **41** are seated in suitable aligned recesses **46***a*, **46***b* of parts **25**, **26**, as shown in Fig. 3.

All sealing elements **35**, **41**, **43** may be made from synthetic or natural rubber which will not be affected by aging and is resistant to chemical attacks and influences.

It can thus be seen that there has been provided according to the invention a seal assembly for the socket or fixture of a tubular body, such as a fluorescent lighting tube comprising, in combination, a cap having a passageway for said tube, means engageable with said tube and adapted to maintain said cap in position around a portion of said tube, elastic sleeve means seated within said cap and including an annular sealing portion deformable into tight contact with the surface of said tube, and pressure exerting means enclosed within said sleeve means and engaging said sealing portion for deforming the latter into said tight contact.

While several embodiments of the invention have been shown and herein described, it will be understood that the same is capable of modifications without departure from the general scope and spirit of the invention as defined in the claim.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent, is:

A seal assembly for use in connection with the fixture of a fluorescent lighting tube comprising a cap having a passage-way for insertion of the tube, elastic sleeve means seated within a recess provided in said cap and including a sealing portion deformable in radial direction to said tube to thereby bring about tight contact of said sealing portion with the surface of said tube, spiral-shaped spring means enclosed within said sleeve means and engaging said sealing portion for deforming the latter into said tight contact, means located within said cap and engaging said elastic sleeve means to retain the latter in said recess of said cap, said retaining means and said spring means being arranged spaced apart from each other and being embraced by said elastic sleeve means within said cap, and engageable means on said cap to attach the latter to a support.

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