Aug. 5, 1958 E. M. ROTHEN 2,846,571

LAMP MOUNTING FIXTURE

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Fig. 1.

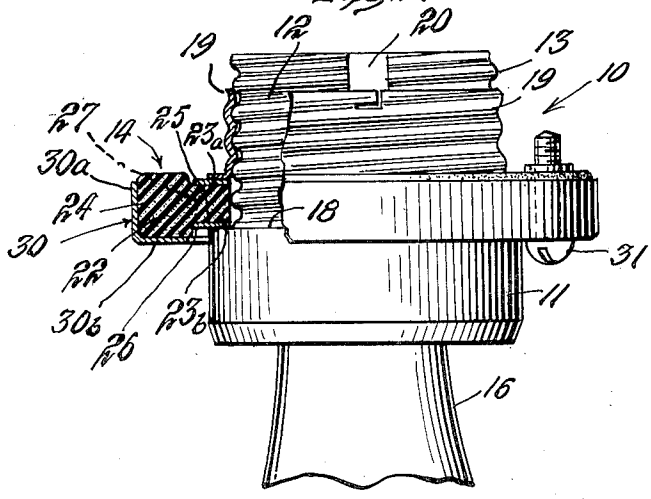
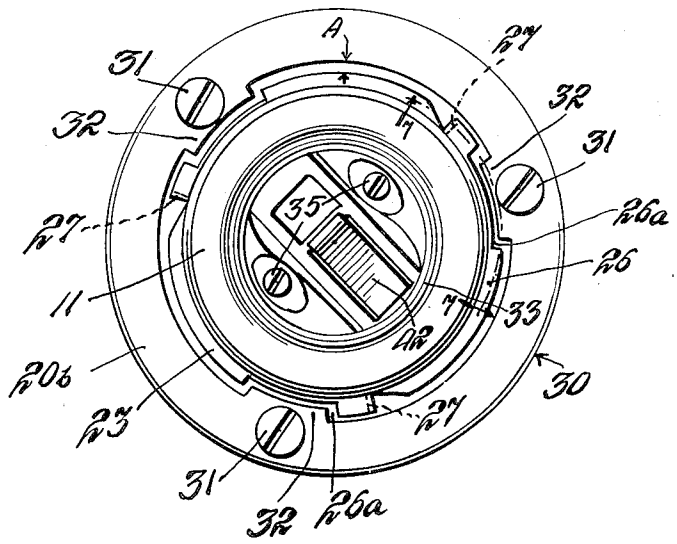


Fig. 2.



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Fig. 3.

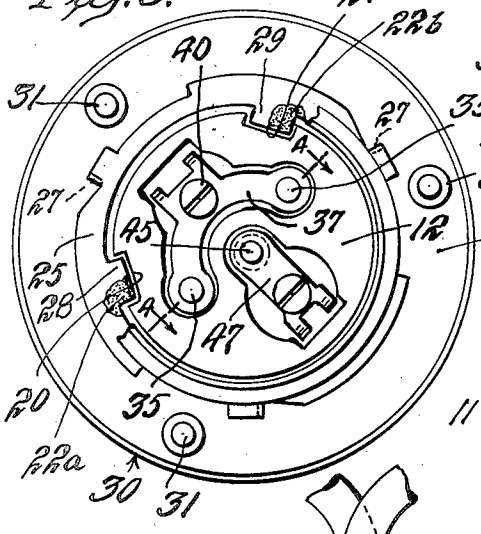


Fig. 4.

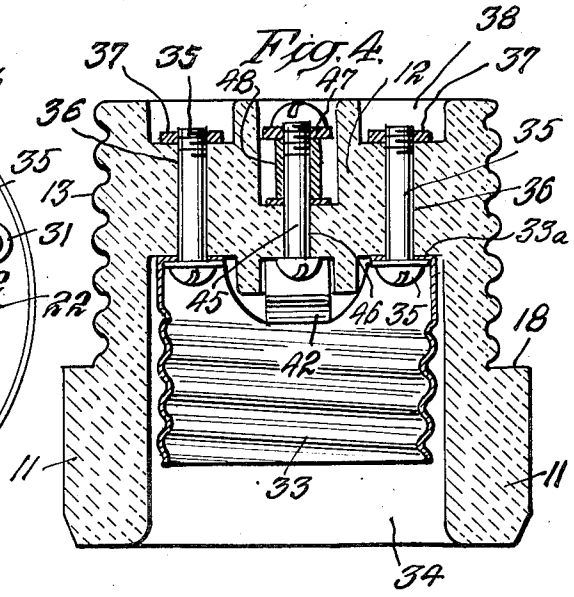
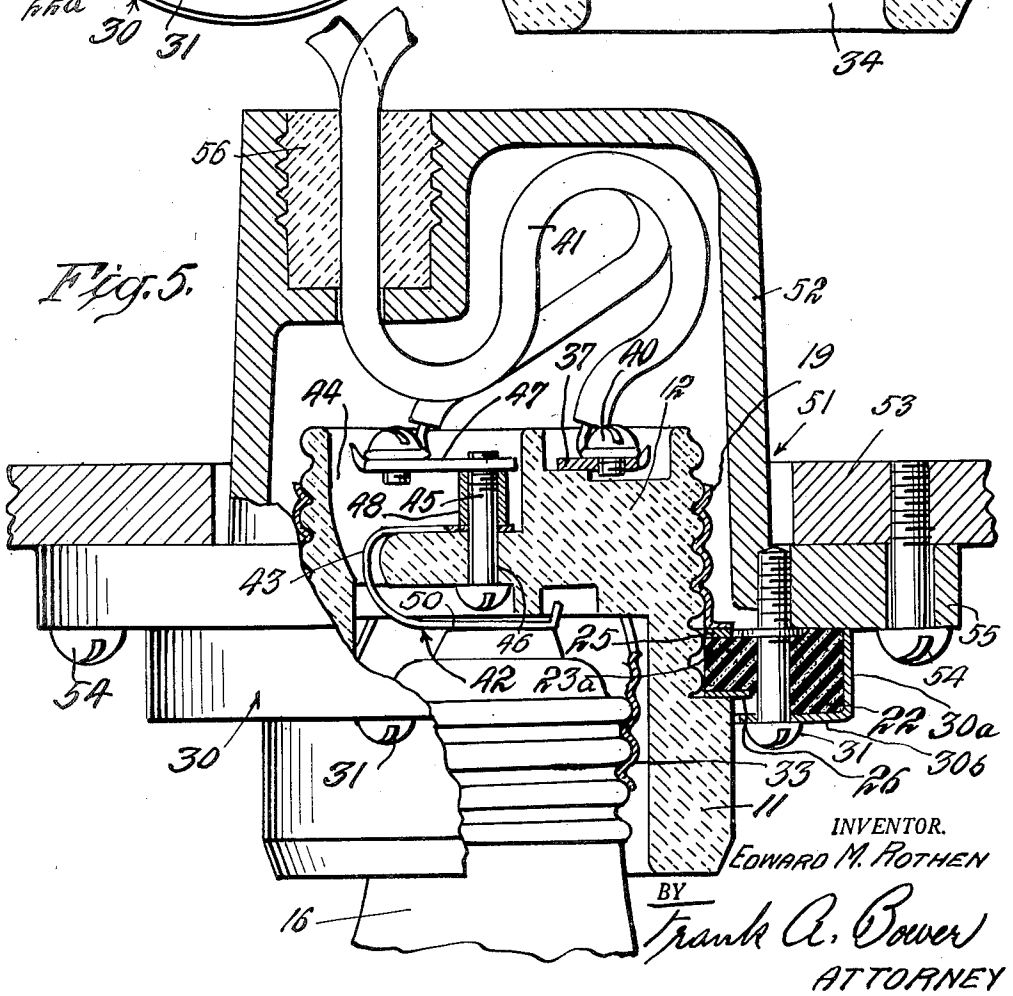


Fig. 5.



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Fig. 6.

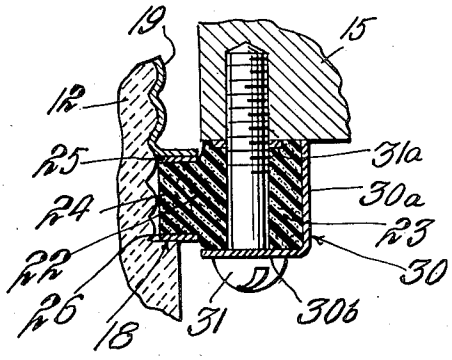
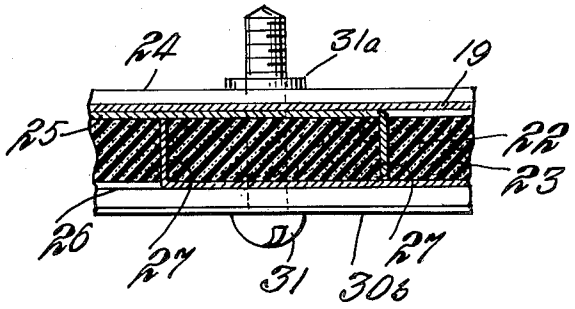


Fig. 7.



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LAMP MOUNTING FIXTURE

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Application March 22, 1955, Serial No. 495,963

3 Claims. (Cl. 240—90)

This invention relates to lamp holders and is directed particularly to lamp holders that are shock and vibration resistant.

In the installation of electric lights it is often necessary to provide illumination where the supporting structure is subjected to continuous or intermittent vibrations and possible shocks. These vibrations and shocks reduce the life of electric light bulbs of the incandescent filament type and thereby increase the cost of providing illumination. By isolating the electric light bulb from these vibrations and shocks, the length of life of the electric light may be substantially increased.

An object of the invention is to provide a lamp holder that is interchangeable with conventional lamp holders and will absorb severe shocks and continuous vibration.

Another object of the invention is to provide a shock-proof and vibration-proof lamp holder that is inexpensive to manufacture and increases the life of the electric light mounted thereon.

Further objects and advantages will be apparent from the following description taken in connection with the drawings, in which:

Fig. 1 is a partial sectional side view of the lamp holder with shock resistant assembly and lamp;

Fig. 2 is an end view of the shock resistant lamp holder assembly with the electric light bulb removed;

Fig. 3 is a view of the terminal end of the shock resistant lamp holder assembly;

Fig. 4 is a sectional view of the lamp holder body taken along line 4—4 of Fig. 3;

Fig. 5 is a fragmentary sectional view of an explosion-proof fixture base adapter with shock resistant lamp holder assembly and lamp;

Fig. 6 is a fragmentary sectional view of the shock resistant lamp holder assembly mounted on a base plate; and

Fig. 7 is a sectional view along line 7—7 of Fig. 2.

Referring to Fig. 1 of the drawings, the lamp holder body **10** comprises a socket portion **11** and a base **12** secured to a resilient mount **14** for fastening to a lamp fixture or base plate. The body **10** is preferably made of a ceramic or heat resistant material such as porcelain, with the socket portion **11** having glazed surfaces and the base portion **12** having an exterior threaded portion **13**. The threaded portion has a smaller outer diameter than the socket portion **11** and thereby forms a shoulder **18**, against which the resilient mount **14** is held by means of the screw ring **19** threaded on the base **12** and tightened against the resilient mount **14**. The screw ring **19** is preferably made of a copper plated steel sheet ring formed with threads complementary to the threads of the base **12**. The base **12** has grooves **20** and **21** (Figs. 1 and 3) into which the screw ring **19** is pressed to lock the screw ring in position and to securely maintain the fastening of the body to the resilient mount under continuous vibration and severe shock conditions.

The mount **14** comprises a resilient mounting member **22** that will absorb continuous vibrations and severe shocks

under long periods of use without rupture or fatigue and is preferably made of molded silicone that is soft and compressible in texture. The mounting member **22** is ring-shaped with an outer cylindrical surface and an inner cylindrical surface fitting over the base **12**. The mounting member is rectangular in cross-section with flat upper and lower surfaces. There are keys **22***a* and **22***b* extending inwardly from the inner cylindrical surface and circumferentially spaced to fit into the grooves **20** and **21** for positioning the ring. The retaining plates **25** and **26**, preferably made from thin, stiff sheet metal, also fit over the base **12** and are positioned on opposite sides of the mounting member **22** to receive and distribute the holding pressure applied between the screw ring **19** and the shoulder **18** of the body. The mounting member **22** may be considered to have an inner portion **23** and an outer concentric portion **24** (Figs. 1 and 6). The retaining plates **25** and **26** engage and compress the inner portion to tighten the grip on the resilient mounting member.

The retaining plates have pointed anchors **27** normal to the retaining plates and projecting into the resilient mounting ring to circumferentially position the retaining plates and prevent relative rotation of the retaining plates and the resilient mounting member **22**.

As best illustrated in Fig. 3, the upper retaining plate **25** has keys **28** and **29** extending radially inward from the inner edge of the retaining plate to lock in the grooves **20** and **21** of the base **12**. The key **28** has a flat finger at the inner end thereof and bent normal thereto to fit longitudinally in slot **20** along the inner cylindrical surface of the mounting member **22**. The retaining plate **26** has keys (not shown) similar to keys **28**, **29** of the retaining plate **25** extending into grooves **20**, **21** respectively with the key fitting into groove **21** having a finger similar to finger of key **28**. The anchors **27** are formed from the retaining plates **25** and **26** by punching or stamping or other suitable means and leave a triangular shaped notch as illustrated in Figs. 3 and 7. Retaining plates **25** and **26** are identical in construction and interchangeable. The retaining plate **25** is engaged by the screw ring **19** and distributes the pressure along the flat radially extending surface **23***a*, Fig. 1. The retaining plate **26** engages the shoulder **18** to distribute the pressure along surface **23***b* of the inner portion **23**. Thus the fastening force applied between screw ring member **19** and shoulder **18** is transmitted to the resilient mounting means **22**. Thus the retaining plates **25** and **26** extend radially over a portion of the width of the mounting member **22** on each side of inner portion **23**.

The outer portion **24** is set in a metallic outer retaining member **30**. The retaining member has an annular wall **30***a* extending circumferentially around the outer cylindrical surface of mounting member **22** and a radial rim **30***b* upon which the outer portion **24** sets. The rim **30***b* extends radially over a portion of the outer width on the side with the retaining plate **26**. Along the inner edge of the rim as shown in Fig. 2 are flanges **32**, projecting inwardly in the plane of the rim to provide additional width for the screws **31**. The retaining plate **26** has notches **26***a* so that the retaining plate can fit close to the rim **30***b* to provide firm interconnection of the two fastening means. The rim **30***b* and the retaining plate **26** are radially spaced from one another a distance A. As shown in Fig. 6 the base plate **15** similarly fits around the retaining plate **25** so that the outer portion **24** is gripped by the rim **30***b* and base plate **15**. As indicated in Fig. 1, the plates **25** and **26** compress the inner portion to obtain a firm grip upon the member **22**. The member **22** is slightly thicker than the width of the wall **30***a* so that the compression of the outer portion **24** is controlled.

The member 22 is held between the rim 30*b* and the base plate by the screws 31 passing through the molded openings. A firm resilient interconnection between the lamp and the base plate is obtained. The member 22 provides a soft, resilient, vibration-absorbing medium between the lamp holder and the base plate and provides for limited lateral and longitudinal movement between the retaining member 30 and the body 10.

Referring to Figs. 4 and 5, the internal structure of the lamp holder is shown and comprises a conventional shell 33 positioned in the recess 34 of the socket portion of the body 10 and secured to the base 12 by screws 35 engaging the flanges 33*a* in the bottom of the shell and extending through passage 36 and threaded to the terminal member 37 (Fig. 3). Screw 35 securely seats the shell 33 in the bottom of the recess 34 and the terminal 37 in the bottom of the groove 38. The terminal 37 is generally V-shaped with a terminal screw 40 threaded into the terminal 37 at the base thereof. Thus the shell 33 is connected to the cable 41.

A contact 42 made of resilient copper is formed in a general U-shape with a fastening leg 43 positioned in the recess 44 and secured to the base 12 by means of a screw 45 extending through passage 46 and threaded in the terminal 47 with a spacer 48 positioned to terminal 47 at the end of base 12. The contact leg 50 is normally raised above the bottom of the recess to be engaged by the center contact of the lamp 16. The cable 41 is connected to terminal 47 and thereby completes the circuit through the lamp.

The electric light bulb is threaded into the shell 33 and tightened against the leg 50 of the contact 42 to securely hold the lamp in the body 10. The shell 33 and the contact 42 may absorb a small amount of the vibrations and shock. The resilient mounting ring absorbs the vibrations and shock and prevents failure of the electric light.

In Fig. 5 the lamp holder is shown secured to an adapter 51 with a generally cylindrical cover 52. The adapter 51 is preferably made of a metal casting and is firmly secured to the base plate 53 by means of screws 54 passing through flange 55. The lamp holder is secured to the adapter by means of screws 31 passing through the lamp holder and threaded into the adapter which press and seal the portion 24 against the continuous flange 55 of the adapter. The retaining member 30 is held tightly against adapter flange 55 with the edge of the wall 30*a* engaging the surface of the flange. The resilient member 22 is lightly compressed between the surface of the flange and the rim 30*b*. The shaft of the screw 31 threaded in the flange 55 passes through the mounting member 22. The screws are circumferentially spaced around the lamp holder to provide means around the holder for holding the retaining member at spaced points. The resilient member is thus held lightly and firmly by the retaining member. The resilient mounting member 22 and the retaining plates 25 and 26 seal the inner terminals. The base of the electric lamp when threaded into the shell 33 seals the opening through which the contact 42 passes. The cable 41 passes through an exterior chamber 56 with scored or grooved surfaces to retain a sealing compound filling the chamber and sealing the cable passage through the adapter.

The resilient mounting means 22 shown in Fig. 5 has in the uncompressed state a different shape from the uncompressed state of the preferred mounting member. The outer portion 24 is thicker and the inner portion is offset so that the surfaces 23*a* and 23*b* in the uncompressed state are in the same plane. Thus a step is formed between the retaining plate 26 and rim 30*b*.

In the preferred embodiment shown in Figs. 1, 2, 3, 6 and 7, the annular wall 30*a* has a diameter of approximately two and three quarter inches with the resilient means fitting freely therein in the uncompressed condition. The resilient means has an inner diameter of approximately one and one half inches and the rim 30*b* has an inner diameter of approximately two and one eighth inches which exposes an inner portion having a radial width of approximately nine thirty-seconds of an inch on the rim side of the retaining member. The retaining plates 25 and 26 have a width of approximately three-sixteenths. The flanges 32 extend inwardly approximately one-sixteenth and fit in recesses in the edge of plate 26. The retaining plates grip the resilient means on this inner free portion. The radial space between the retaining plate and the rim 30*b* is approximately one thirty-second of an inch. Three openings are evenly spaced through the rim 30*b* and resilient means 22 to receive the screws 31 passing through the rim 30*b* and the resilient means. The screws 31 fasten the lamp holder to a mounting plate 15 and have catch washers 31*a* to hold the resilient means 22 and the retaining member 30. The anchors 27 are approximately seven thirty-seconds of an inch long and penetrate the resilient means to engage the opposing retaining plate as shown in Fig. 7. The length of the anchors limits the compression of the resilient means by the screw ring 19.

The resilient member is approximately three eighths of an inch thick when uncompressed. Thus the retaining plates 25, 26 compress the inner portion by approximately five thirty-seconds of an inch.

The screws 31 are positioned inwardly from the wall 30*a* with the centers approximately seven thirty-seconds of an inch from the wall 30*a*. The anchors 27 of plates 25 and 26 are positioned on each side of the screws 31 on a diameter at an angle of approximately ten degrees.

Thus the retaining plates grip the resilient member to resiliently interconnect the body and the retaining means. As previously described, the securing of the screw 31 to the base plate lightly compresses the resilient member so that the edge of the rim engages the mounting means. The vibrations occur in the frame of the building and are transmitted to the plate 15. The vibrations are transmitted to the resilient means. The retaining plates grip the resilient means and flex in relation to the outer portion. The vibrations received by the outer portion are not received by the inner portion. Before the vibration can flex the inner member it has reversed.

It is thus seen from the above description that the resilient mounting ring 22 firmly holds the lamp in position and firmly supports the electric lamp in any desired position without sagging or twisting of the lamp and the electric light. The ring absorbs the continuous vibrations by permitting the movement of the member 30 in response thereto. The member 30 flexes without materially moving the body 10. The mass of the body 10 and the electric bulb 16 resists the small vibrations transmitted to the retaining plates 25 and 26 and thereby holds the electric lamp substantially still so that the fine filaments in the lamp are not subjected to the vibrations of the base plate. The silicone material of the mounting ring resists corrosion and deterioration so that the holder will be substantially useful over long periods. However other types of resilient material may be used such as sponge rubber and the like.

The lamp holder may be changed and modified in various ways without departing from the scope of the invention set forth in the appended claims.

I claim:

1. A lamp fixture mounting for supporting a lamp fixture on a fixed base subject to high frequency vibrations and comprising a resilient member of soft homogeneous material absorbing high frequency vibrations, first fastening means gripping a portion of said resilient member on opposite sides of a plane through said member for securing said resilient member to said base, second fastening means on said fixture gripping said resilient member on opposite sides of said plane immediately adjacent said first fastening means and spaced therefrom a small fraction of the thickness of said second gripped portion so that said resilient member forms the sole connecting means

between said first fastening means and said second fastening means to support the fixture isolated from said high frequency vibrations.

2. A lamp fixture mounting for supporting a lamp fixture on a fixed base subject to high frequency vibrations and comprising a resilient member of soft homogeneous material absorbing high frequency vibration, outer fastening means on the outer portion of said resilient member for securing said resilient member to a base and inner clamping means on said fixture for clamping said resilient member immediately adjacent said outer clamping means and spaced therefrom a small fraction of the thickness of said inner portion, said resilient member forming the sole connecting means between said fastening means and said clamping means to support the fixture isolated from said high frequency vibrations.

3. A lamp holding means for mounting a lamp on a supporting member subject to vibration and shock comprising a base having a threaded portion and a shoulder, a sleeve threaded on said base, an annular soft resilient member fitted over said threaded portion and projecting

radially therefrom, retaining plates on each side of said resilient member engaging said shoulder and said sleeve respectively and tightly gripping the resilient member along an inner portion to securely fasten the lamp holder body to the resilient member, a mounting member spaced from said retaining plates and having a rim and screws passing therethrough for fastening said mounting member to said supporting member to compress said resilient means therebetween and to hold said resilient means firmly in place whereby the resilient means is the sole supporting means between said retaining plates and mounting member and absorbs the vibrations of said supporting member.

References Cited in the file of this patent

UNITED STATES PATENTS

2,123,483	Langille	July 12, 1938
2,219,770	Falge	Oct. 29, 1940
2,332,362	Bartow	Oct. 19, 1943
2,702,849	Bissell	Feb. 22, 1955