Aug. 29, 1939. G. F. NIEMANN 2,170,871

DUSTPROOF FIXTURE

Original Filed April 27, 1935 3 Sheets-Sheet 1

Fig. 1.

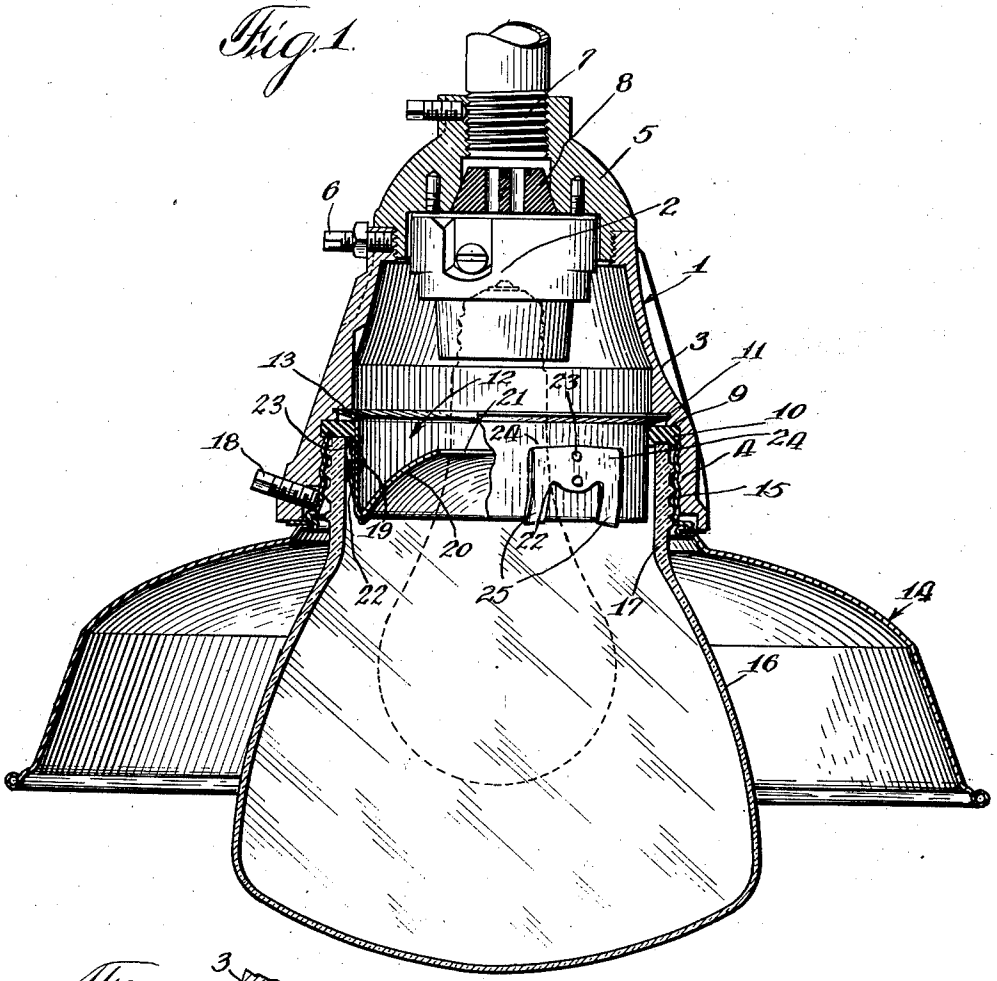
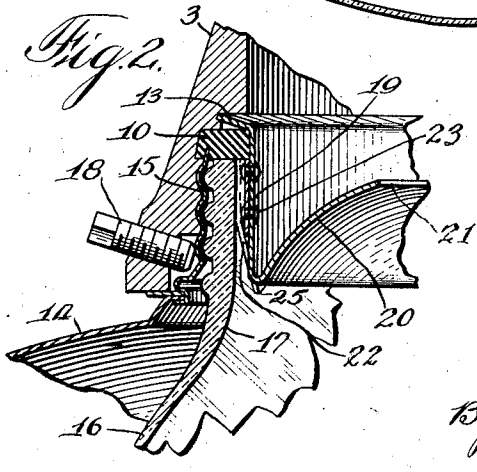


Fig. 2.



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Original Filed April 27, 1935 3 Sheets-Sheet 2

Fig. 3.

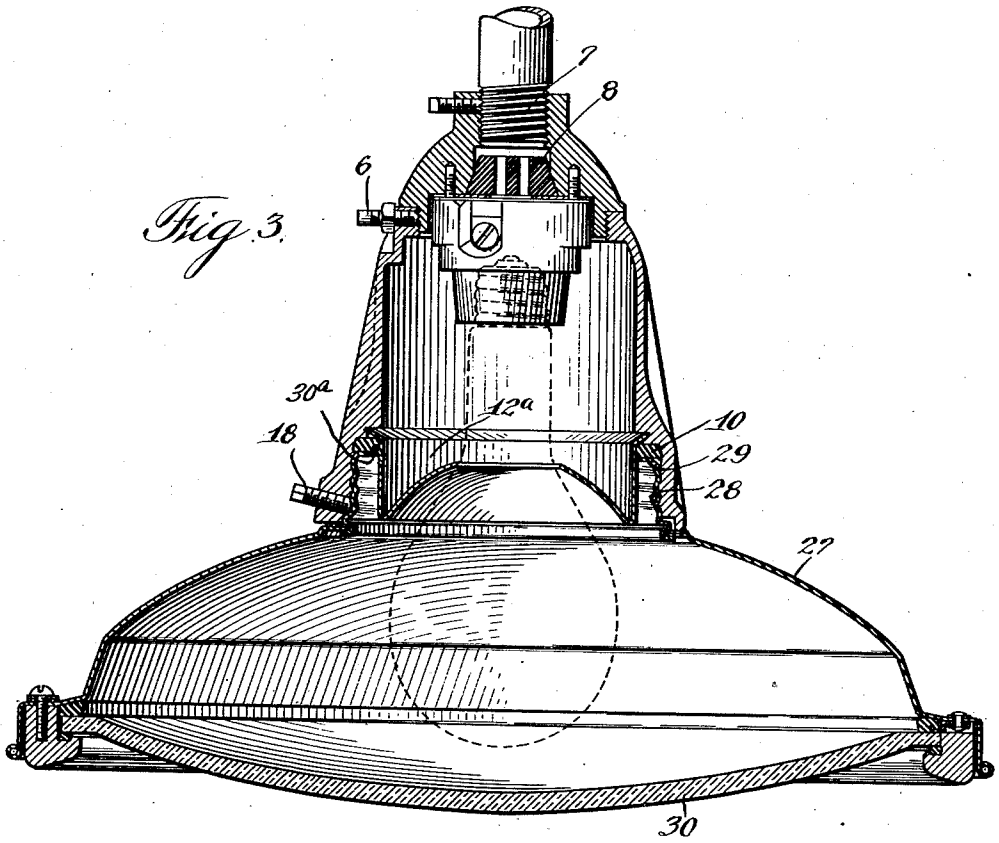


Fig. 6.

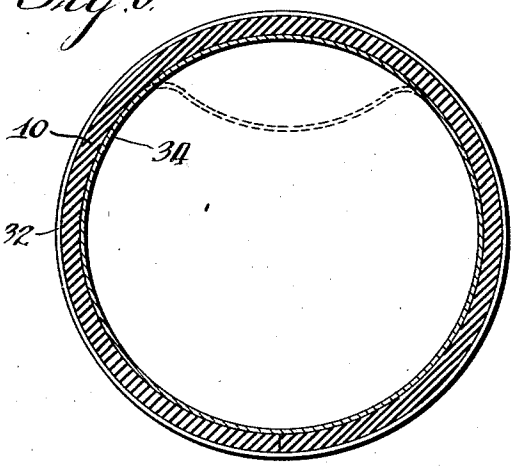
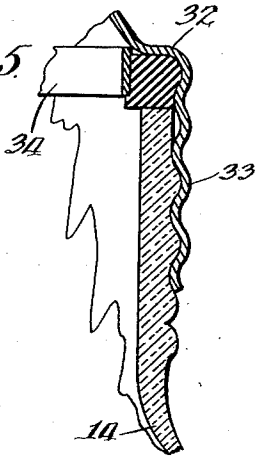


Fig. 5.



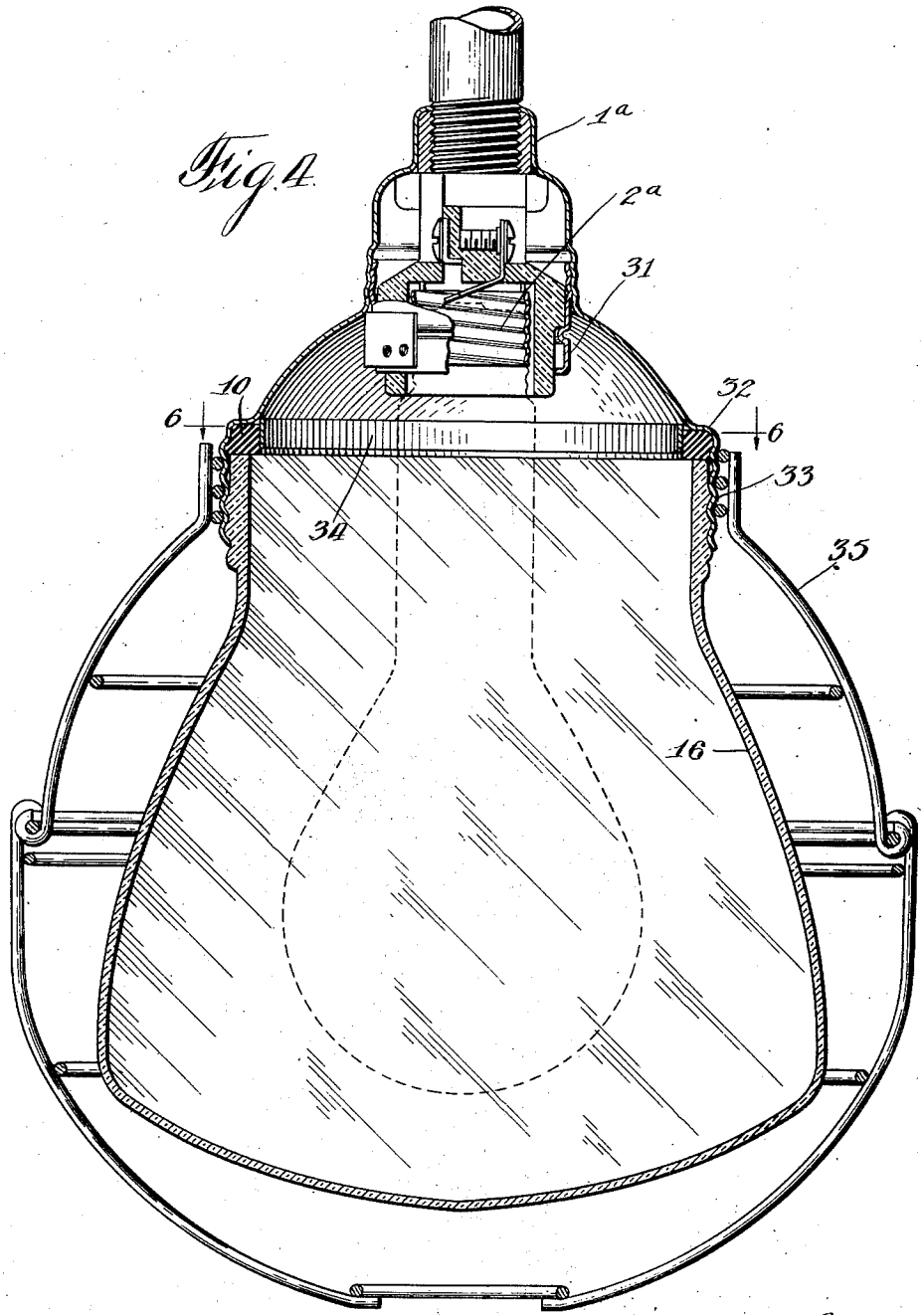
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DUSTPROOF FIXTURE

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Fig. 4.



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UNITED STATES PATENT OFFICE

2,170,871

DUSTPROOF FIXTURE

George F. Niemann, Chicago, Ill., assignor to Benjamin Electric Mfg. Company, Des Plaines, Ill., a corporation of Illinois

Application April 27, 1935, Serial No. 18,665
Renewed October 9, 1937

4 Claims. (Cl. 240—11.3)

This invention relates to lighting fixtures, and more particularly to dust-proof fixtures and sealing means therefor whereby the fixtures may be safely used in hazardous locations where combustible organic dusts are in suspension in the atmosphere, or where ignitable fibers or materials producing combustible flames are manufactured, handled, or stored.

This invention is particularly desirable in a fixture having a hood for supporting a socket and a downwardly extending threaded skirt adapted to receive the threaded end of a glass globe or other suitable enclosure, and in which a suitable gasket is provided between the enclosure and the housing and provided with a gasket retainer whereby the hood and enclosure are sealed to provide a dust-proof housing.

It is an object of the invention to provide an effective sealing means whereby various types of enclosures may be used with a hood and the housing will be effectively sealed; also, in which a shield may be provided to shield the hood against the effect of direct heat rays.

It is a further object to provide a sealing means having a simple and efficient gasket retainer in connection therewith, whereby the gasket will remain seated when the globe or other enclosure is removed from the hood.

It is a further object to provide a dust-proof fixture of the character described having a suitable gasket retainer and means associated therewith to prevent the vibration or jars, incident to the use of the fixture under certain conditions, from loosening the globe after it has been screwed snugly against the gaskets.

Further objects will be apparent from the specification and the appended claims.

In the drawings:

Figure 1 is a vertical axial sectional view of a complete lighting fixture and illustrates one embodiment of the invention;

Fig. 2 is an enlarged fragmentary section through the sealing means illustrated in Fig. 1;

Fig. 3 is a vertical axial section through a fixture similar to that illustrated in Fig. 1 but having a somewhat different form of enclosure;

Fig. 4 is a vertical axial section through still another embodiment of the invention;

Fig. 5 is an enlarged fragmentary sectional detail of the sealing and retaining means illustrated in Fig. 4; and

Fig. 6 is a transverse sectional view taken on a line substantially corresponding to line 6—6 of Fig. 4 and illustrates the method of inserting the gasket retainer.

Referring to the drawings in detail, the embodiment illustrated, particularly in Fig. 1, comprises a cast hood 1 having a socket 2 supported therein. The hood in the particular embodiment illustrated may be made in two sections, the lower section 3 being provided with a downwardly extending internally threaded skirt portion 4, and the upper section 5 being threaded into the lower section and secured by means of a locked set screw 6. The upper section 5 is arranged to support the socket 2 and is provided with a threaded opening 7 to receive the usual conduit. The opening 7 is preferably sealed by means of a rubber gland 8 which is pressed into the lower part of the opening 7 and is retained by the socket and is provided with passages therethrough which snugly engage the usual conductors.

The hood 1 is provided with an annular shoulder 9 adjacent the internal threads of skirt portion 4, and a gasket 10 is seated against this shoulder. The hood is also provided with an annular groove 11, preferably adjacent the gasket 10, and in which is supported a combined gasket retainer and auxiliary reflector and heat shield 12 which is preferably of sheet metal. The member 12 may be secured in the hood by pressing or rolling the outwardly extending flange portion 13 into the annular groove 11.

A reflector 14, preferably of sheet metal, is provided with an upwardly extending neck portion 15 which is internally and externally threaded as shown and which is screwed into the threaded skirt portion 4 of the hood in a manner to press snugly against the gasket 10. A dust-tight enclosure 16, which may be the usual glass globe, is provided with an upwardly extending neck portion 17 which is externally threaded and is screwed into the internal threads of the reflector 14 and snugly pressed against the gasket 10.

It will be apparent that the globe 16 may be omitted if desired and the lower end of the reflector closed by a suitably sealed lens or glass cover, as illustrated in Fig. 3, in which case the upper end of the threaded portion 15 may provide an efficient sealing means in cooperation with the gasket 10. After the reflector 14 is completely screwed into the hood, it may be locked in place by means of a set screw 18.

The retainer 12 comprises a downwardly extending cylindrical portion 19 and an inturned concave reflector and shield portion 20 having an axial opening 21 therein to receive the neck of the usual electric light bulb. The reflective surface of shield 20 may be highly polished and arranged to reflect a large portion of the upwardly directed heat and light rays through the open end of the fixture, thereby protecting the hood from the direct heat rays. This is particularly desirable when the fixture is used in hazardous locations where combustible organic dusts are in suspension in the atmosphere and are likely to collect on fixtures and cause overheating or explosions.

The gasket 10 is preferably a so-called "string

gasket" rectangular in cross section and ordinarily made of woven asbestos and cotton impregnated with graphite. After the retaining member 12 has been secured in the hood, the string gasket is pressed into the space between the retainer and the hood and against the shoulder 9 where it will be snugly retained by the cylindrical portion of the retainer even when the globe 16 and the reflector 14 are removed.

Globe retaining members may be provided on the cylindrical portion 19 of the retainer and these members serve the double purpose of assisting in retaining the gasket and in providing a friction means cooperating with the inner surface of the neck 17 of the enclosure to prevent vibration or jars from loosening the enclosure after it has been screwed snugly in place. The globe retaining means comprises a plurality of resilient sheet metal members 22 which may be secured to the outside of the gasket retainer 12 by suitable rivets 23. The members 22 are provided with outwardly and laterally extending wing portions 24 which are arranged to frictionally engage the inner surface of the neck of the enclosure and prevent its loosening under vibration. The outer ends of the wing portions 24 are provided with tongues 25 which extend downwardly and inwardly and bear against the lower edge of the cylindrical portion 19 of the retainer 12. By this arrangement, the members 22 do not materially interfere with the insertion of the gasket 10 and the globe.

The embodiment illustrated in Fig. 3 is similar to that shown in Fig. 1 except that the resilient members 22 and the globe 16 are dispensed with. The enclosure comprises a reflector 27 which is preferably of sheet metal having a threaded neck portion 28 and an inturned flange 29 for sealing engagement with the gasket 10. The open end of the reflector 27 is closed by means of the usual lens 30. The enclosure may be locked in position by means of the set screw 18. When the enclosure is removed, the gasket is held in place by means of tongues 30^a sheared from the retainer 12^a and engaging the gasket 10.

In the embodiment illustrated in Fig. 4, the hood 1^a is preferably formed of sheet metal and the socket 2^a may be supported therein by a threaded shell 31. The sheet metal hood 1^a is formed to provide an annular shoulder 32 and a downwardly extended threaded skirt portion 33 having internal and external threads as illustrated. In this embodiment, the gasket 10 is retained in position by means of a resilient collapsible ring 34 which is slightly larger in outside diameter than the normal internal diameter of the gasket 10. In inserting, the retainer 34 is collapsed as indicated by dotted lines in Fig. 6 and then inserted, preferably with the lower edge slightly above the bottom line of the gasket. The collapsed portion is then pressed outwardly to compress the gasket as illustrated and the inherent resilience of the gasket will retain the ring and gasket both snugly in position. The usual enclosure 16 may be screwed in the hood and snugly against the gasket, and, if desired, a guard 35 may be screwed onto the external threads of the hood. It will be obvious that a reflector may be substituted for the guard 35 if desired and screwed onto the hood in the same manner.

Modifications in detail may be made by those skilled in the art and it is desired therefore that the invention should be limited only by the prior art and the scope of the appended claims.

Having thus described this invention what is claimed and desired to be secured by Letters Patent is:

1. A dust-tight lighting fixture comprising a hood having an internally threaded skirt portion, a lamp socket supported in said hood, a dust-tight enclosure forming with said hood a dust-tight housing for a lamp bulb, said hood having an annular shoulder above said threaded portion, a gasket seated on said shoulder, said enclosure having a portion screwed into said internally threaded portion and having a shoulder bearing on said gasket, an annular reflector mounted on said hood and surrounding the neck of the lamp bulb, and spring means mounted on said annular reflector for bearing on a portion of said enclosure to prevent it from becoming unscrewed.

2. A dust-proof lighting fixture comprising a hood having an internal thread adjacent its open end terminating in an annular inwardly extending shoulder above said thread, a lamp socket supported in said hood, a gasket seated on said shoulder, a dust-tight enclosure forming with said hood a dust-tight housing for a lamp in said socket, said enclosure having a portion screwed into said internally threaded hood and having a shoulder snugly engaging said gasket, and a retainer for said gasket comprising a depending cylindrical portion snugly engaged in said gasket and having an outwardly extending flange above said gasket and engaged in a lateral groove in said hood, and a concave reflector portion extending upwardly and inwardly and having an opening therethrough to receive the neck of a lamp bulb.

3. In a dust-tight fixture, a hood for supporting a socket and having internal threads adjacent its open end, a shoulder adjacent the inner end of said threads, a reflector member supported in said hood, said member comprising a cylindrical portion smaller in diameter than said threaded portion and extending from said shoulder to adjacent the open end of said hood, an inverted concave reflector integral with said cylindrical portion and having an axial opening to receive a lamp bulb neck, a gasket seated against said shoulder and snugly compressed laterally by said member, an enclosure having a threaded neck terminating in a shoulder screwed snugly against said gasket, and spring fingers on said member and pressing against said neck to prevent accidental unscrewing of said enclosure, said fingers also serving to prevent accidental dropping of said gasket when said enclosure is removed.

4. A dust-tight lighting fixture comprising a hood for a lamp socket, said hood having an internally threaded skirt portion, an annular shoulder adjacent said threaded portion, a gasket seated on said shoulder, a gasket retainer engaging said hood and extending through said gasket, an internally and externally threaded member screwed into said hood adjacent said gasket, a dust-tight enclosure forming with said hood, a dust-tight housing, said enclosure having a threaded portion screwed into the internal threads of said member and pressed snugly against said gasket, and means on said retainer and engaging said enclosure to prevent it from becoming unscrewed.

GEORGE F. NIEMANN.