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2,701,299

DIFFUSER HOLDING MEANS OF LIGHTING FIXTURES

Filed Sept. 18, 1952

2 Sheets-Sheet 1

FIG. 1.

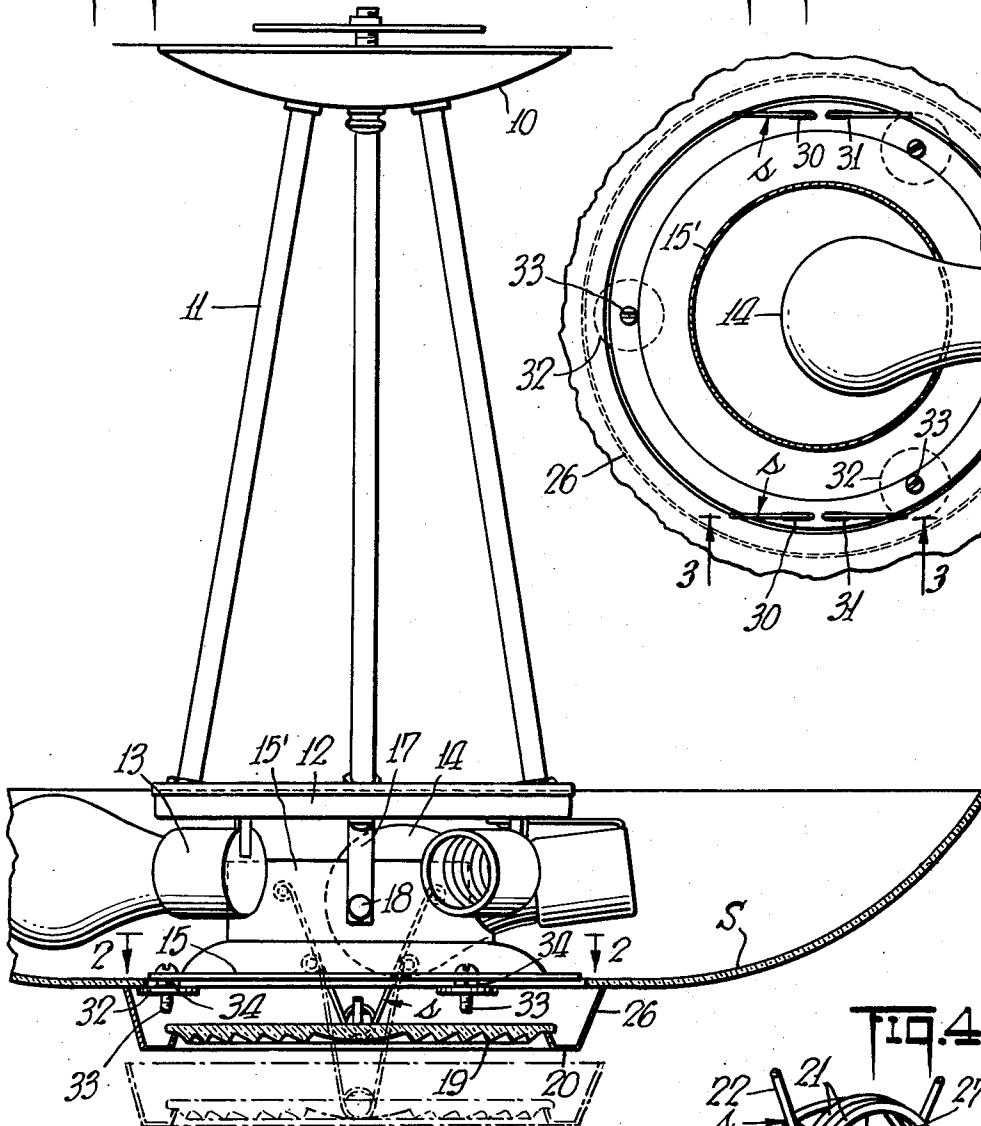


FIG. 2.

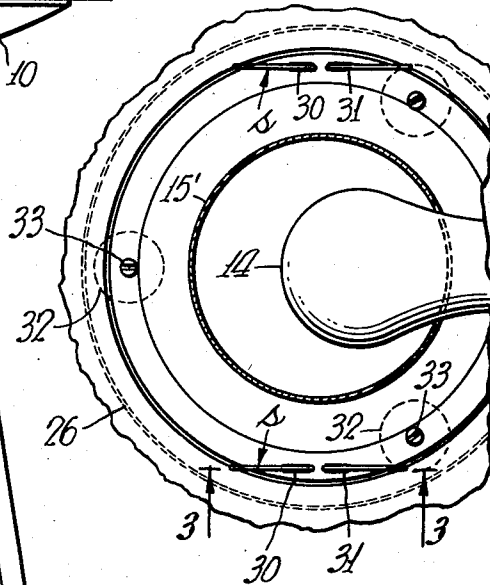


FIG. 3.

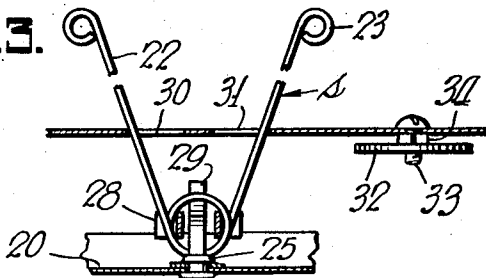
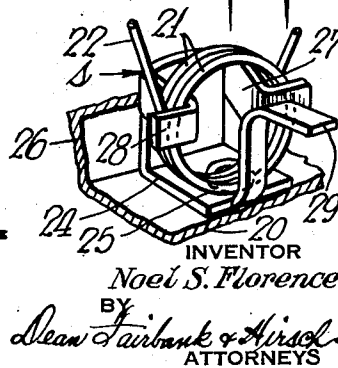


FIG. 4.



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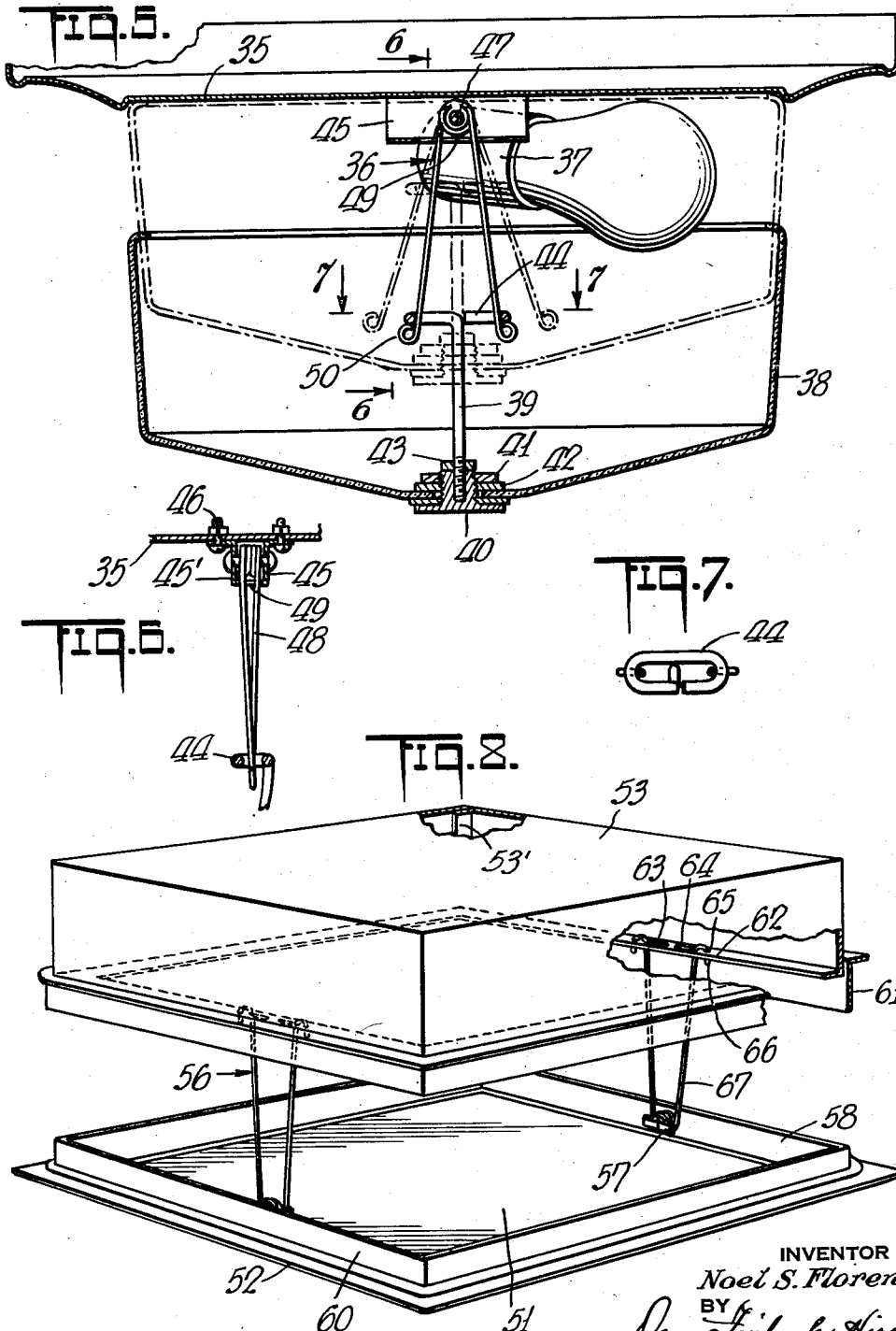
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2 Sheets-Sheet 2



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DIFFUSER HOLDING MEANS OF LIGHTING FIXTURES

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16 Claims. (Cl. 240—78)

It is among the objects of the invention to provide in a lighting fixture, holder means of simple and inexpensive construction, which admits of ready and instant displacement of the light diffuser to afford access for re-lamping, cleaning or other service, without undesired removal or dropping of the diffuser from the fixture, and which admits of immediate and secure replacement of the diffuser to operative position and when occasion arises admits also of physical removal of the diffuser from and as ready replacement upon the fixture, all without resort to tools or awkward manipulations.

According to the invention, holder clip means is mounted on one of the two component elements of the fixture (lamp holder and light diffuser) and has at least one leg extending through the companion element, said leg being spring urged to extend laterally over the latter for retaining the parts assembled, an enlargement or stop on the end of the leg limiting the displacement of the diffuser when pulled away from the companion element.

In a preferred embodiment, the holder clip means consists of one or more springs, usually a single central torsion spring or two diametrically opposed lateral torsion springs, mounted on one of the two component elements of the fixture. Each spring has two legs that extend from its coiled portion that is mounted on one element and extends through corresponding slots in the companion element, said legs diverging over and being thus keyed to said companion element at said slots and admitting of displacement of the light diffuser, limited by enlargements, such as eyes at the ends of the legs, for the purpose of access.

In one embodiment, the holder clips may be mounted at diametrically opposed portions of the bezel of a lens and coact with slots in the support disk of the lamp holder, a lamp shade mounted upon the support disk concealing the springs.

In another embodiment the bowl shaped diffuser may itself have a central bracket member protruding axially inward therefrom, affording an opening for the holder clip which is mounted centrally of the fixture and extends downward therefrom, resiliently to be keyed to the bracket.

In another embodiment comprising a flush ceiling fixture, the holder clips may be mounted in the bezel of the light diffuser plate and coact with slots in an inner ledge on the light retaining box that is closed by said bezel and diffuser, the flange of said bezel resting against said ledge.

In the accompanying drawings in which are shown one or more of various possible embodiments of the several features of the invention,

Fig. 1 is a view in longitudinal cross section showing a pendant ceiling fixture embodying the invention,

Fig. 2 is a fragmentary transverse sectional view taken on line 2—2 of Fig. 1,

Fig. 3 is a sectional detail view taken on line 3—3 of Fig. 2,

Fig. 4 is a perspective view showing the torsion spring member and its mode of attachment,

Fig. 5 is a view in longitudinal cross section showing another embodiment of ceiling fixture incorporating the invention,

Fig. 6 is a sectional detail view taken on line 6—6 of Fig. 5,

Fig. 7 is a sectional detail taken on line 7—7 of Fig. 5, and

Fig. 8 is a perspective view of a flush ceiling fixture embodiment of the invention.

Referring now to the drawings, the embodiment of Figs. 1 to 4 shows a more or less conventional ceiling fixture as far as the gross construction is concerned, incorporating a ceiling plate 10, rods 11 and a base plate 12, mounting the various sockets 13, which extend generally tangentially thereof and accommodate the lamp bulbs, one of said sockets however being illustratively directed radially inward to dispose the light of the corresponding bulb 14 at the center of the plate. A support disk 15 with a unitary rising flange 15' is affixed to the base plate 12 by means of metal straps 17 riveted at 18, at their opposite ends respectively to the base plate and the flange. The fixture incorporates a more or less conventional lens 19 in a bezel 20 of diameter somewhat larger than that of the support disk 15 and mounts the holder clips *s* to be described.

Each of these clips is shown as a preferred form of torsion spring *s* that has a plurality, illustratively 3½ turns 21 and legs 22 extending outward therefrom and normally retained at a large angle, illustratively substantially a right angle to each other, when the spring is unstressed. Each of the legs has an enlargement, illustratively an outwardly extending stop such as an eye 23.

Preferably each torsion spring is mounted upon the bezel 20 by means of a corresponding sheet metal holder 24 riveted as at 25 to the face of the bezel 20, immediately within its flange 26, said sheet metal holder having intumed arms 27 to serve as a core or mount encompassed by the turns 21 of the torsion spring *s*, the ends of the arms being turned outward at 28 to limit axial displacement of the torsion spring, and the base of said sheet metal holder having desirably an upstanding and outstanding finger 29 that overlaps the lens and thereby retains it within its bezel.

The support disk 15 has desirably two pairs of nearly diametrically opposed elongated slots 30, 31 adjacent each other. The legs 22 of each torsion spring must be pressed together to introduce them into said adjacent slots. As the bezel is moved upward as far as it will go toward the support plate, the legs 22 of the respective torsion springs *s* will be urged apart by the coils of the torsion spring for keying engagement over the outer ends of the respective slots 30, 31, whereby the bezel 20 will become securely retained in operative position against looseness or rattling.

As shown, the slots 30, 31 extend peripherally rather than radially of the fixture so that the legs of the holder clip or torsion spring in the assembled fixture are all near the periphery of the fixture and so the lens or other light diffusing member may be pushed outward or inward without the slightest danger of interference between the legs and the lamp, sockets or other connections.

The upwardly extending legs 22 of the torsion springs *s* are concealed by the lamp shade *S*, usually a shade of vitreous material. In the embodiment illustratively shown, the support plate has a plurality of short ledges protruding outward therefrom for supporting such shade, illustratively a large annular one of glass, to rest thereon and encompass the lens 19 and its bezel 20. This mount is illustratively shown in the form of three small metal disks 32 affixed by screws 33 near the periphery of the support disk 15 and encompassed by the flange 26 of the bezel. The mounting screws 33 being threaded through these washers 32 and each being spaced from the support by an intervening nut 34, the position of the washers may be readily adjusted in accordance with the thickness of the glass shade.

For access, the bezel 20 of the lens may readily be pulled downward, initially moving hard by reason of the short lever arm exerted against the coils of the torsion spring *s*, but as its downward movement proceeds, the lever arm will become longer and the movement will become progressively easier. In this downward movement, as will readily be seen, the eyes 23 at the ends of the torsion spring legs 22 limit the downward movement, so that the bezel and its lens remain on and do not become physically separated from the fixture and yet are so far displaced from the fixture as to permit ready re-lamping or

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other servicing. Thereafter, the bezel 20 with its lens 19, are simply pushed back into position in which position the torsion springs *s* again are stressed with their legs keyed over the ends of slots 30, 31 to assure the secure and dependable mount above described.

It is evident that the legs 22 of one of the springs *s* could be pressed together and withdrawn from slots 30, 31, so that the bezel could hinge downward from the companion spring.

Should it be desired actually to remove the bezel with its lens from the fixture, this can easily be accomplished by manually pressing the legs of both torsion springs together and bodily passing the eyes through the slots 30, 31. The bezel with its lens may as readily be restored to position, whether one or both springs are withdrawn from their slots, all without resort to tools or complicated or awkward manipulations.

In the embodiment of Fig. 5, there is shown a ceiling fixture, incorporating a sheet metal disk or tray 35 with its rim against the ceiling and carrying in dependent relation substantially at its center, one holder clip, preferably a torsion spring 36 of the character previously described. The lamp sockets 37 are mounted under said tray and are arranged about said torsion spring. The light diffuser, in this instance shown in the form of a bowl 38, has a bracket 39 centrally mounted thereon as by a headed screw 40 exposed at the exterior and rising therefrom, which is clamped in position by a washer 41, an interposed gasket 42 and a nut 43 and has a torsion spring leg retainer 44 at its upper or free end. Illustratively the bracket 39 is a metal rod conformed at its upper end as a horizontal elongated loop 44.

The torsion spring 36 is illustratively affixed in a sheet metal holder 45 of U-shape, bolted as at 46 to the tray 35 and having a screw 47 transversely through its flanks 45', encompassed by the coils of the torsion spring 36, the legs 48 of which protrude through a corresponding slot 49 in the outer face of the holder 45.

It will readily be understood that the bowl is simply pulled down for service, as far as it will go, being limited in that operation by engagement of the eyes 50 of the torsion spring 36 with the ends of the elongated loop 44 of bracket 39 on the light diffuser bowl 38. This affords ease of access for re-lamping or the like. As in the other embodiment, the keying engagement of the torsion spring legs is effective and in pulling down, the increased lever arm on the legs of the torsion spring, progressively lightens the effort and progressively enhances the security of the bowl as it is returned to operative position. As in the embodiment of Fig. 1, the legs of the torsion spring 36 may be pushed together and passed through loop 44 of bracket 39, for physical removal of the bowl should occasion arise.

The embodiment of Fig. 8 comprises a fixture embedded within the ceiling and having merely a diffusion face plate 51 within an appropriate bezel 52 exposed to view flush with the ceiling.

In this embodiment, the embedded fixture comprises a sheet metal box 53 which carries at its exterior the appropriate cables (not shown) for delivering current by conventional connectors (not shown) to the lamp sockets (not shown) within the box.

In the embodiment shown, two of the torsion springs 56 heretofore described are mounted at opposite parts, shown at the middle of the illustratively square shaped bezel 52, each upon a sheet metal holder 57, soldered or welded to a rectangular flange 58 extending inward from the frame.

The lateral walls of the box are desirably of sheet metal elements having flanges 53' welded together to form the corners, and the outer edges of said box are turned inward to afford the ledge 62 peripherally of the box, said ledge desirably supporting the edge of the flange 60 on the bezel when in closed position, and a peripheral flange 61 welded or soldered about the open periphery of box 53 extends downward therefrom to encompass the flange 60 of the bezel.

The ledge 62 of the box has apertures therein, preferably two pairs of apertures 63 and 64 to accommodate the respective legs of the torsion springs. Illustratively small circular holes 65 are provided, somewhat beyond the outer ends of the pairs of slots 63, 64 to accommodate the free or outturned hook ends 66 of the torsion spring legs 67 (illustratively shown in this embodiment), when the bezel is pulled downward as far as it will go.

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The operation of the present embodiment is similar to that of the previously described embodiments. For service, the bezel need merely be pulled down as far as it will go, in which position the hook ends of the torsion spring legs 67 will straddle across the respective slots 63 or 64 and the corresponding holes 65 in the ledge 62. This admits of ready servicing and admits of as ready pushing of the bezel back into place. When in place again, the legs of the torsion springs become resiliently keyed over the slot ends in the ledge of the box, securely to retain the bezel in position.

In this embodiment, as in that of Fig. 1, if desired, one of the two torsion springs may be withdrawn from its slots to permit the bezel with its contained diffuser to hinge downward from the other spring during servicing, though ordinarily such unhooking need not be resorted to. Here also when occasion arises, both springs could be unhooked, physically to remove the light diffuser, which may as readily be replaced, all without resort to tools.

Thus it will be seen that a fixture has been provided which may be incorporated in any of countless models, only three typical ones of which are illustratively shown, and which dispenses with the difficulties of servicing, by rendering possible the displacement of the lens bezel, shade or diffuser as the case may be by a mere manual pull, with assurance that the lens or shade will not be injured or dropped upon the floor and with just as great facility returned securely to retain it in correctly mounted position.

It is also seen that these advantageous results are attained with expense less than the more complicated and cumbersome expedients commonly resorted to for the purpose.

While the torsion spring embodiments are generally preferred, it will be clear that the invention may be embodied according to its broader aspects, in a U-shaped leaf spring presenting stops at its ends and stressed in keying position against the holding slots for retaining the light diffuser in operative position, or by a clip generally with at least one leg spring-urged laterally.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope of the claims, it is intended that all matter contained in the above description, or shown in the accompanying drawings, shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a lighting fixture, a lamp carrying member, a light-diffusing member depending therefrom, means to limit the extent of displacement and removal of said light-diffusing member for ready servicing, said means comprising at least one holder clip mounted on one of said members and having at least one leg coacting with the companion member, concealed in operative position, and resiliently urged laterally of said companion member to retain said members in juxtaposed relation, said leg having a stop near its outer end to limit displacement of said light-diffusing member away from the lamp carrying member for access in servicing.

2. In a lighting fixture, a lamp carrying member, a light-diffusing member depending therefrom, means to limit the extent of displacement and removal of said light diffusing member for ready servicing, said means comprising at least one holder clip having a pair of legs, resilient means urging said legs apart and mounted on one of said members, the coacting member having openings therein for the legs of said clip securely to retain the diffusing member in place with the legs spaced apart to permit of displacing the diffusing member by a simple pull, said legs having enlargements near the outer ends thereof to limit such displacement.

3. The combination recited in claim 2, in which a pair of the holder clips is arranged in opposed relation with the arms of each clip in a plane generally peripherally of the fixture, the companion member having slots generally peripherally thereof to accommodate said legs in position clear of the lamps and connections thereof.

4. In a lighting fixture, a lamp carrying member, a diffusing member depending therefrom, means to limit the extent of displacement and removal of said light diffusing member for ready servicing, said means comprising at

least one spring mounted on one of said members and having legs concealed in operative position of the diffusing member and coacting with the other member for retaining the light diffusing member in operative position, said legs having stop portions limiting the displacement of said light diffusing member, whereby said member may be displaced to the extent permitted by the length of the legs of said spring for access to the lamps and may as readily be restored to operative position.

5. In a lighting fixture, a lamp carrying member, a light diffusing member depending therefrom, means to limit the extent of displacement and removal of said light diffusing member for ready servicing, said means comprising at least one torsion spring mounted on one of said members and having legs resiliently coacting with the other member for retaining the light diffusing member in operative position with the legs concealed from view, said legs having outwardly extending outer extremities limiting the displacement of said light diffusing member, whereby said member may be displaced to the extent permitted by the length of the legs of said torsion spring for access to the lamps and may as readily be restored to operative position.

6. A lighting fixture comprising a fixed member having one or more lamp sockets and a light diffusing member displaceably carried thereby, one of said members having a torsion spring affixed thereto, said torsion spring having legs with enlargements at the outer ends thereof, the companion member having one or more slots therethrough for accommodating the legs in concealed position when the fixture is assembled and maintaining the torsion spring under tension, whereby displacement of the light diffusing member may be had against the resistance of the torsion spring, limited by the enlargements of the latter, to afford access to the fixture for service, without physical removal of the light diffusing member, and said member may be readily restored to be resiliently retained in place by the tension of the torsion spring.

7. The combination recited in claim 6 in which the torsion spring means is upon and its legs extend outward from the rim portion of the light diffusing member and in which the fixed member has slots near the periphery thereof extending generally at right angles to the length of said legs and for accommodating the same.

8. A pendant ceiling fixture comprising a fixed member having sockets for one or more lamps, a support disk under said sockets, a lens of substantially the diameter of said disk, said lens having a bezel, diametrically opposed torsion springs mounted on said bezel with their axes substantially radially of the lens, each of said springs having a pair of legs protruding upward therefrom, said support disk having opposed slots near the periphery thereof for accommodating said legs and against the outer ends of which slots said legs are resiliently pressed when the lens is in operative position.

9. The combination recited in claim 8, in which the outer extremities of the legs have extensions to limit the displacement of the bezel from the support disk.

10. The combination recited in claim 8, in which sheet metal holders are riveted to the face of the bezel on the

inside thereof, each holder having arms forming a core for mounting one of the torsion springs, each of said holders having tongues for retaining the torsion spring from coming off its holder and a tongue protruding radially inward from the holder for retaining the lens in position.

11. The combination recited in claim 8, in which the support disk has a plurality of metal washers affixed near and protruding beyond the periphery thereof and in which a vitreous shade encompassing the support disk rests upon said washers and has a central opening encompassing said bezel and lens.

12. A lighting fixture of the ceiling mounted type, comprising a sheet metal tray, sockets for one or more lamps thereon, a mounting member near the center of said tray, a torsion spring on said mounting member and having legs protruding downward therefrom with end enlargements, and a light diffuser bowl having a central bracket rising therefrom, presenting a holder end for the torsion spring legs, whereby the bowl may be pulled downward to the extent permitted by the torsion spring legs for servicing, and upon return to closed position, the bowl may be resiliently and securely retained in place by said spring against said tray.

13. The combination recited in claim 12, in which the holder is a U-shaped metal bracket having a screw through its sides encompassed by the torsion spring, said bracket having a cross piece with an opening therein through which the legs of the spring protrude.

14. The combination recited in claim 12, in which the bracket of the light diffuser bowl is a unitary metal upstanding rod affixed centrally of the bowl, said rod having a horizontal elongated loop at the extremity thereof for accommodating the legs of the torsion spring.

15. An embedded ceiling fixture comprising a sheet metal box, for accommodating lamps and the electrical connections thereto, said box having a ledge near its mouth, a light diffusion member having a bezel, a torsion spring mounted on said bezel and having legs protruding therefrom with outward extensions at the free ends thereof, and slots in said ledge through which said legs extend, whereby said light diffusing member may be pulled downward as far as the legs of said torsion spring permit, in order to afford access for servicing and may then be pushed back and resiliently and securely retained in place by said spring.

16. The combination recited in claim 15, in which the box and bezel are square, and the torsion springs and associated slots are in pairs at opposite mid portions of the ledge and the slots extend lengthwise of the ledges.

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