

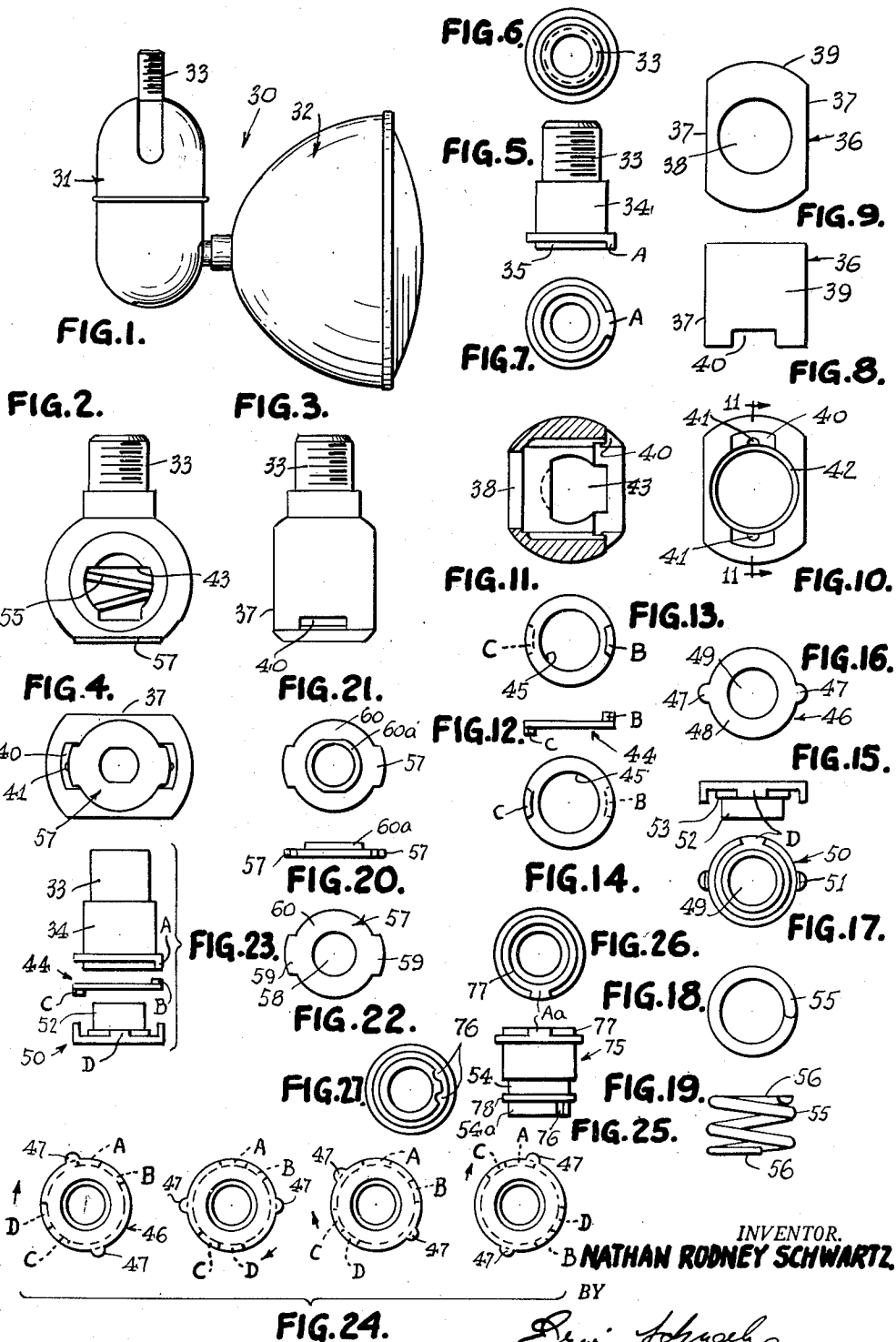
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SWIVEL UNIT

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SWIVEL UNIT

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This invention relates to swivel units as used particularly in association with electrical lighting fixtures, and more particularly to means for limiting the rotative movement of such swivel units.

Swivel units of this character are now on the market wherein the rotative movement of lighting fixture attached thereto may be limited to slightly less than one complete revolution; in fact the present applicant is the inventor named in several patents for such swivel units. Experience and experiments have shown that, where rotation is limited to slightly less than one complete revolution in either direction, such limitation being necessary to prevent twisting of electrical wires, a field of rotation of only about 350° is obtained, depending upon the thickness of the stopping arrangement. This creates a "dead" spot of as much as 30° into which light rays cannot be directed after the lighting fixture has been mounted in a fixed position.

With this in view, it is the principal object of the present invention to provide a swivel unit of this character, wherein rotation of a lighting fixture attached thereto may be limited at more than one complete revolution in either direction.

A further feature of the present invention resides in the provision of a swivel unit having a nipple, a key washer cooperating with the nipple to limit the rotation to less than one complete revolution, the key washer then cooperating with the lock washer for an additional rotative movement.

A still further advantage of the present invention resides in the provision of a swivel unit of this character wherein rotative movement is stopped slightly short of one complete revolution, whereupon further rotation amounting to substantially one-half revolution may be achieved by the engagement of a part of a key washer and the lock washer.

A still further purpose of the present invention resides in the provision of a swivel unit of this character, which can be disassembled with great ease and without the necessity of destroying any of its component parts.

And yet another aim of the present invention resides in the provision of a swivel unit of this character, wherein a small nipple may be used in combination with a larger housing by the insertion of a washer therein.

These and other meritorious aims and advantages, which will become more fully apparent as the description proceeds, will be attained by the novel construction, combination and arrange-

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ment of few and simple parts, hereinafter described, and illustrated in the accompanying drawing, forming a material component of this disclosure, and in which:

Figure 1 is a side elevational view of a swivel unit constructed in accordance with the present invention, the swivel unit having an electrical lighting fixture attached thereto.

Figure 2 is a front elevational view of a swivel member constructed in accordance with the present invention.

Figure 3 is a side elevational view of the swivel ball illustrated in Figure 2.

Figure 4 is a bottom view of the swivel ball illustrated in Figure 2.

Figure 5 is an elevational view of the stem or nipple comprising a part of the swivel socket.

Figure 6 is a top plan view of Figure 5.

Figure 7 is a bottom plan view of Figure 5.

Figure 8 is a side elevational view of the housing in which the swivel ball is retained.

Figure 9 is a top plan view of Figure 8.

Figure 10 is a bottom plan view of Figure 8.

Figure 11 is a sectional view, the section having been taken on line 11—11 of Figure 10.

Figure 12 is a plan view of a key washer which constitutes a part of the present invention.

Figure 13 is a top plan view of Figure 12.

Figure 14 is a bottom plan view of Figure 12.

Figure 15 is an elevational view of a key sleeve used in connection with the present invention.

Figure 16 is a top plan view of Figure 15.

Figure 17 is a bottom plan view of Figure 16.

Figure 18 is a top plan view of a compression spring constituting part of the present invention.

Figure 19 is a side elevational view of Figure 18.

Figure 20 is a plan view of a lock washer used in connection with the present invention.

Figure 21 is a top view of Figure 20.

Figure 22 is a bottom view of Figure 20.

Figure 23 is an exploded view of the swivel parts used in connection with the present invention.

Figure 24 is a diagrammatic view of the relative positions of the several swivel parts at various degrees of rotation.

Figure 25 is an elevational view of a modified form of nipple.

Figure 26 is a top view of Figure 25; and

Figure 27 is a bottom view of Figure 25.

Referring in greater detail to the drawing, the numeral 30 refers broadly to a lighting fixture comprising broadly a swivel unit 31, a projecting nipple 33 and an electrical lamp 32. Lamp 32 is not a part of the present invention and will

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consequently not be illustrated or described in greater detail.

More specifically, the invention comprises a hollow, cylindrical stem 34, one end of which has permanently retained therein in any conventional and suitable manner a nipple 33 which may be externally threaded as illustrated in Figure 1 of the drawing. Stem 34 is provided near its lower end with an offset flange 35 which is provided with a downwardly extending lug A, the purpose of which will hereinafter become apparent.

The invention further comprises a hollow, substantially spherical housing 36 having two opposed flat surfaces 37, the other two opposed surfaces being rounded as at 38 and its interior being hollow as at 39.

At its base, housing 36 is provided with a pair of oppositely arranged, substantially rectangular cut-outs 40, one at the lower edge of each of said rounded portions 38, a groove 41 extending from each of said cut-outs 40 to substantially the other end of the inner face of said housing 36. The upper edge of the central opening in housing 36 is provided with a circumferential recess 42, the hollow central vertical opening being referred to by the numeral 43.

The invention further comprises a key washer 44 of circular cross-section having a central opening 45, and being provided with a pair of diametrically opposed lugs B and C, lug B being positioned upon one surface and lug C on the other surface of key washer ring 44, the lugs being positioned at diametrically opposed parts of washer 44.

Another member of the present invention is a key sleeve 46 having a central opening 49. A pair of ears 47 are provided extending outwardly from diagonally opposed sides of said sleeve. Sleeve 46 has a shoulder 53 provided with a lug D and terminates in a collar-like extension 52. At their outer edges, ears 47 are turned rectangularly as at 47' forming a pair of lugs the purpose of which will hereinafter become apparent.

Another part of the present invention is a circular coiled spring 55, its upper and lower ends being flat, as at 56. A ring lock washer 57 having a central opening 58 therein is another part of the present invention. Lock washer ring 57 has a pair of opposed ears 59, adapted to be entered into cut-outs 40 in housing 36. Disc portion 60 is provided circumferentially about its central opening 58 with a collar 66a.

The modified form of stem illustrated in Figures 25, 26 and 27 comprises a stem 54 having a central vertical bore 58 and provided with a shoulder 78 having a recess 54a whereby lug 76 is formed.

The device is assembled and used in the following manner:

Sleeve 34 is entered into housing 36 from the bottom, where cut-outs 40 are positioned, until the upper edge of the sleeve makes contact with the top of the housing, and, inasmuch as the diameter of the central bore 33 in housing 36 is only as large as the diameter of nipple 33, the nipple will protrude beyond the top of the housing, but the sleeve member will remain within the housing. Obviously, the flat sides of the sleeve member will be in alignment with the flat sides of the housing and the rounded sides of each will be in alignment. Thereupon key washer ring 44 will be entered into the housing, then the key sleeve 50, then spring 55 and finally lock washer ring 57. The provision of ears on the several wash-

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ers will permit them to clear the cut-outs, and they are then rotated slightly, so that they will remain in secure engagement in their adjusted positions. Pressure against spring 55 will permit the lock washer to enter the housing whereupon it is turned to prevent it from becoming disengaged. If for any reason it should be necessary to disassemble the device, inward pressure against the lock washer will permit it to be turned slightly so that its ears will clear the cut-outs provided for them, and thus the several elements may be withdrawn.

The device is used in the following manner:

After a lamp has been attached to stem 33 or the stem has been mounted upon a support, if it is desired to rotate the lamp upon its axis, it is manually turned until lugs A and B meet. This will be slightly less than one complete revolution. Thus sleeve 34 and key washer 44 will be firmly joined and further rotation of the washer with respect to the sleeve in that direction will be prevented. However, since washer 44 is rotatable and key sleeve 50 is not, the washer and sleeve, as a unit, will permit further rotation until lugs C and D meet, which will be substantially an additional one-half of one complete revolution. The purpose of lugs 47' is to aid in the formation of a track in which key washer 44 may rotate.

Thus there has been shown and described a swivel unit for an electrical lighting fixture, wherein continuous rotation in any direction is prevented, but which permits rotation beyond one complete revolution, thus preventing any "dead" spot in lighting. Further combinations are, of course, possible, as for instance by the provision of another key washer ring 44 to permit further modification in rotative movement. The drawing and specification herein presented are to be regarded merely as descriptive and illustrative of the best known forms of the invention and not as restrictive or limitative to the exact details shown, applicant reserving the right to make such changes in the construction of the swivel unit as may come within the scope of the appended claims, without thereby departing either from the spirit or the scope of the appended claims.

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

1. A swivel unit comprising a housing, a hollow swivel member therein a stem in said hollow swivel member extending partly therebeyond, means cooperating between said stem and said swivel member limiting the outward movement of said stem, a key washer, said swivel member seated thereon, a key sleeve, said key sleeve extending partly into said stem, means on said key sleeve engageable with means on said key washer limiting the rotative movement of said stem with respect to said key washer, means on said key sleeve engageable with means on said key washer permitting further rotative movement of said key washer and stem as a unit with respect to said key sleeve, spring means in said hollow swivel member normally urging said key sleeve inwardly and means enterable into said hollow swivel member removably retaining the several elements in said hollow swivel member.

2. A swivel unit comprising a hollow housing, a hollow swivel member therein a stem in said hollow swivel member, said stem having an offset flange, a depending leg on said flange, a key washer, said key washer having two projections there-

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on, said projections positioned on opposite faces of said key washer and extending in opposite directions, one of said projections adapted to engage said leg to limit the rotative movement of said key washer, spring means in said swivel member urging said key washer against said stem, a key sleeve, a projection thereon, said projection adapted to engage the other of said first named projections to limit the rotative movement of said key washer, and means enterable into said

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swivel member adapted to removably retain the several elements in said swivel member.

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