Nov. 14, 1961 A. GOLDSTEIN 3,008,742

EXPANDIBLE POLE LAMP

Filed Oct. 21, 1959

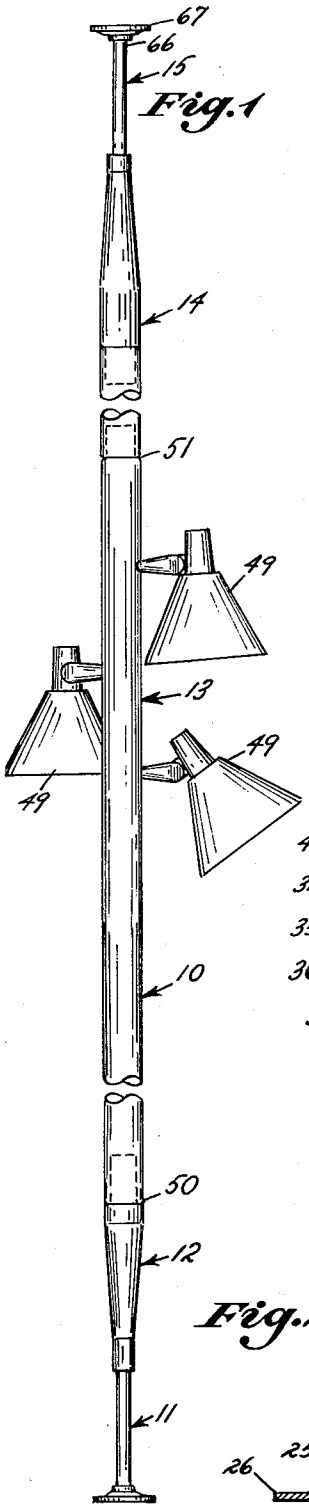


Fig. 1

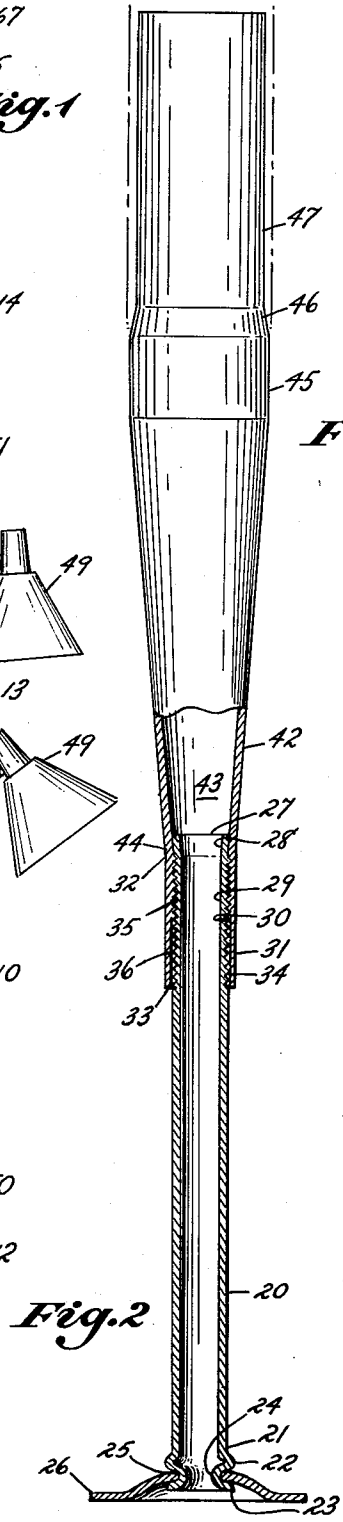


Fig. 2

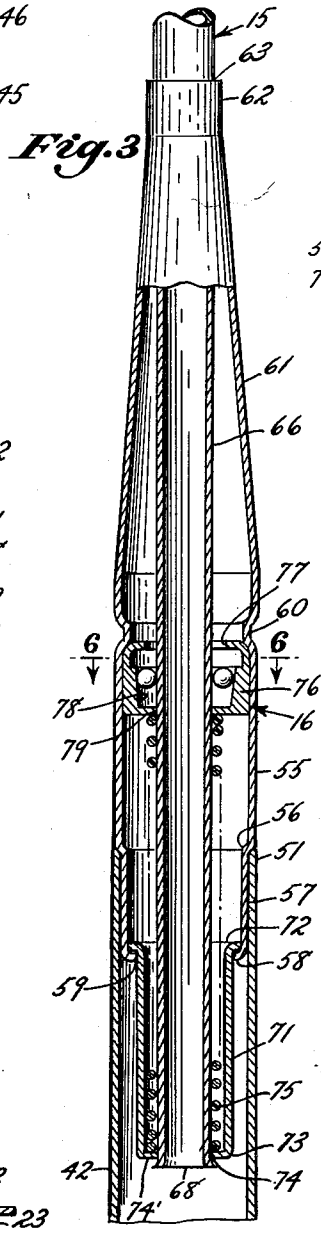


Fig. 3

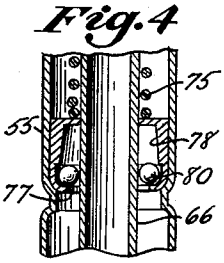


Fig. 4

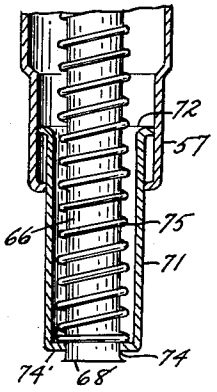


Fig. 5

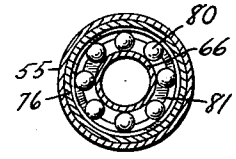


Fig. 6

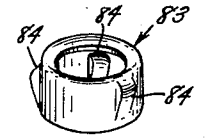


Fig. 7

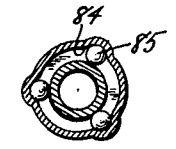


Fig. 8

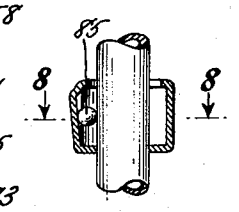


Fig. 9

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3,008,742

EXPANDIBLE POLE LAMP

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1 Claim. (Cl. 287—58)

This invention relates generally to the field of lighting fixtures, and more particularly to an improved pole lamp construction of a type which is frictionally maintained in position between the floor and ceiling of a room.

With the recent increased use of modern decor, lighting fixtures of this type have gained substantial popularity. One of the difficulties encountered in using lamps of this type has centered about the difficulty of installing the same to contact the floor and ceiling of the room in which the device is mounted. As ceiling heights vary, it is necessary to incorporate some means for adjusting the device to installations within a range of ceiling heights. Prior art constructions have employed a telescopic inner tube disposed within an outer tube, in conjunction with resilient feet. Unfortunately, such installations are readily jarred out of position, with the resultant damage to the lamp and surrounding objects, and moreover, are difficult to install owing to the fact that the lamp must be positioned while simultaneously compressing the resilient means which expands the inner tube with respect to the outer tube. A further disadvantage has been found in the variance of resilient force exerted over the range of adjustment, that is to say, where a proper adjustment calls for a greater extension of the inner tube with respect to the outer tube, the spring tends to lose its expansive force, so that such installations are even more readily jarred from position.

This difficulty is not solved by means for adjusting the position of the resilient spring, since the force exerted by the spring must still be maintained within reasonable limits, in order to permit manual compression thereof at the time of installation.

It is therefore among the principal objects of the present invention to provide an improved expandable pole lamp construction, in which the above mentioned difficulties have been substantially eliminated.

Another object of the invention lies in the provision of improved pole construction of the class described having means for limiting the outwardmost position of the inner tube with respect to the outer tube against the action of a resilient means, whereby the resilient means may be of much greater elastic modulus than has heretofore been the case, whereby the installation of the lamp between a floor and ceiling may be more resistant to becoming dislodged upon accidental contact.

Still another object of the invention lies in the provision of novel clutch means which may be readily manipulated without the use of any tools, and by those possessing only ordinary skill, whereby the position of the inner tube with respect to the outer tube may be conveniently fixed.

A further object of the invention lies in the provision of expandable pole lamp possessed of the above advantages in which the cost of fabrication may be of a reasonably low order, with consequent wide sale, distribution and use.

A feature of the invention lies in the fact that the device completely conceals all adjusting means in the installed condition, whereby the device may present an attractive appearance.

These objects and features, as well as other incidental end and advantages, will more fully appear in the progress of the following disclosure, and be pointed out in the appended claim.

In the drawings, to which reference will be made in the specification, similar reference characters have

been employed to designate corresponding parts throughout the several views.

FIGURE 1 is a fragmentary view in elevation of an embodiment of the invention.

FIGURE 2 is a fragmentary view in elevation, partly in section, corresponding to the lower portion of FIGURE 1.

FIGURE 3 is a fragmentary sectional view, partly in elevation, corresponding to the upper portion of FIGURE 1.

FIGURE 4 is a fragmentary sectional view corresponding to the center portion of FIGURE 3, but showing certain of the component parts in altered relative position.

FIGURE 5 is a fragmentary sectional view corresponding to the lower portion of FIGURE 3, but showing certain of the component parts in altered relative position.

FIGURE 6 is a transverse sectional view as seen from the plane 6—6 in FIGURE 3.

FIGURE 7 is a view in perspective showing an altered form of construction.

FIGURE 8 is a transverse sectional view as seen from the plane 8—8 in FIGURE 9.

FIGURE 9 is a fragmentary longitudinal sectional view, partly in elevation, corresponding to that seen in the central portion of FIGURE 3, but showing the alternate form of construction.

In accordance with the principal form of the invention, the device, generally indicated by reference character 10, comprises broadly: a first or lower tube element 11, a second tube element 12, a third tube element 13, a fourth tube element 14, a fifth tube element 15, and clutch means 16.

The first tube element 11 is of relatively narrow diameter, and includes an elongated tube member 20 having an outer end 21. The outer end 21 is provided with a first bead 22 and a flared portion 23 between which a portion of reduced diameter 25 engages the opening 25 in a floor engaging bracket 26. The inner end 27 of the tube 20 is provided with a tapered portion 28, and a threaded portion 29 adjacent thereto. The threaded portion 29 is surrounded by an integral threaded collar 31 having an inner end 32 and an outer end 33 between which a bore 34 extends. From a consideration of FIGURE 2, it will be observed that the lower end 30 of the threaded portion 29 is disposed considerably above the outer end 33 of the collar 31. The bore 34 is only partially threaded, as indicated by reference character 35, there being a counter bore portion 36, the diameter of which is sufficient to enable the same to clear the smooth outer surface 38 of the tube member 20.

The second tube element 12 includes a lower tapered member 42, the lowermost diameter of which is smaller than the largest diameter of the tapered portion 28 which engages the inner surface 43 in the area adjacent the lowermost end 44 thereof. The cylindrical portion 45 is provided with a shoulder 46 and a portion 47 of a reduced diameter to enable the same to be tightly fitted within the third tube element 13, as is generally known in the art.

The third tubular element 13 is of somewhat greater length than the second tubular element 12, and mounts a plurality of lamps, generally indicated by reference character 49 which may be of well known type. It is bounded by a lower end 50, an upper end 51 and has a continuous smooth bore 142 of diameter sufficient to enable the same to slip over the reduced diameter portion 47 of the element 12.

The fourth tube element 14 includes the clutch means 16, to be subsequently described. It includes a lower cylindrical portion 55, a shoulder portion 56, a reduced diameter cylindrical portion 57, and a headed over portion 58 defining a substantially circular opening 59. A

crimped portion 60 serves as a stop means for the clutch means 16 which is slidably disposed therewithin. The upper tapered portion 61 resembles generally the tapered portion 28, but is provided with an upper cylindrical portion 62 having an opening 63, the internal diameter of which corresponds to the outer diameter of the fifth tube element 15.

The fifth tube element 15 corresponds in diameter to that of the first tube element 11, and is provided at the upper end 66 thereof with a bracket 67 similar to the bracket 26. The lower end 68 is slightly flared, as seen in FIGURE 3.

The clutch means 16 includes a spring-retaining member 71, the upper end 72 of which is flared to engage the headed over portion 58 and the inner surface of the portion 57. The lower end 73 thereof is headed over to define an opening 74 and shoulders 74' for engaging the lower end of a spring 75. The upper end of the spring engages the lower surface of a housing 76 which is slidably disposed within the fourth tube element 14 between the shoulder portion 56 and the crimped portion 60.

The housing 76 may be formed as a die casting, and includes an upper opening 77, a tapered bore 78 and a lower opening 79. Disposed within the tapered bore 78 are a plurality of locking spheres which are preferably maintained in symmetrical arrangement by a raceway 81 (see FIGURE 6). The diameter of the spheres 80 is such as to permit wedging against the outer surface of the fifth tube element as seen in FIGURE 3 the configuration of the bore 78 being such that the wedging action is lost when the spheres are disposed in the wider end thereof, as seen in FIGURE 4.

In the alternate form of construction shown in FIGURES 7, 8 and 9, the housing, generally indicated by reference character 83 is formed as a pressing or stamping operation, and is provided with grooves 84 which retain the spheres 85 in proper spatial relation, thus eliminating the necessity of the raceway 81 as in the principal embodiment.

Operation of the device 10 is as follows. After assembly of the tube elements 11 to 15, inclusive, the approximate overall length is determined by inverting the device as indicated in FIGURE 4. Grasping the tube element 14, the tube element 15 is moved inwardly against the action of a spring 75, whereby the spheres 80 may move under the force of gravity to the wider portion of the tapered bore 78. In this condition, the position of the fifth tube element 15 may be adjusted with respect to the fourth tube element 14 by merely sliding the former with respect to the latter. When an approximate adjustment has been determined, the device 10 is then inverted to its normal position as shown in FIGURE 2, and the spheres 80 are permitted to fall under the force of gravity to a wedged condition, wherein the same press firmly against the outer surface of the tube element 15 to lock the same. The spring 75 will urge the entire housing 76 outwardly until the same engages the crimped portion 60, which action prevents the resilient elongation of the device past that point. With proper adjustment, this relatively unstressed position will be just sufficient to enable the device to be positioned prior to final tightening. Next,

the collar 31 is engaged with the threaded portion 29 of the first tube element 11 and slowly tightened in such manner as to elongate the device 10 until the opposite end thereof is resiliently urged against the ceiling (not shown). Further tightening of the collar will result only in increasing the resilient force holding the device in position, and this is readily accomplished using the mechanical advantage offered by the threads. It will be observed that since the collar is substantially longer than the length of the threads, all of the threaded portion of the first tube element 11 is concealed from view whereby the device may offer an attractive appearance from all aspects.

It may thus be seen that I have invented novel and highly useful improvements in pole lamp construction, in which a resilient clutch means permits the elimination of all tools employed in the adjustment of the effective length of the device, and threaded secondary means permits convenient installation against the action of a resilient spring with high mechanical advantages, whereby the installation is materially simplified by those possessing less than ordinary strength. Where cost is a factor, the clutch means may be formed by pressing or stamping operations, with no loss in efficiency.

I wish it to be understood that I do not consider the invention limited to the precise details of structure shown and set forth in this specification, for obvious modifications will occur to those skilled in the art to which the invention pertains.

I claim:

Pole lamp construction comprising: a first tube, a second tube slidably and coaxially arranged with respect to said first tube, and clutch means selectively fixing the relative position of said second tube with respect to said first tube, said clutch means including a circular housing having an outer diameter to fit within said first tube, and a continuous opening through which said second tube may pass, there being a tapered chamber intermediate the ends of said openings and a plurality of spheres disposed within said chamber and surrounding said second tube; stop means for limiting the path of travel of said housing within said first tube, and resilient means for urging said housing outwardly against said stop; and threaded means for varying the effective length of said first tube, said tapered chamber at its widest end portion being of a diameter sufficient to free said spheres whereby when the pole lamp construction is inverted with the widest end portion lowermost, the spheres may fall into the said widest end portion of the tapered chamber affording relatively free movement of the tube members with respect to each other, and when the pole lamp construction is in the normal position thereof said spheres fall into the narrow portion of said tapered chamber to afford unidirectional locking.

References Cited in the file of this patent

UNITED STATES PATENTS

Re. 22,845	Worthington	Feb. 18, 1947
1,031,637	Fischer	July 2, 1912
2,364,191	Campbell	Dec. 5, 1944
2,529,861	Angell et al.	Nov. 14, 1950
2,838,266	Rees	June 10, 1958