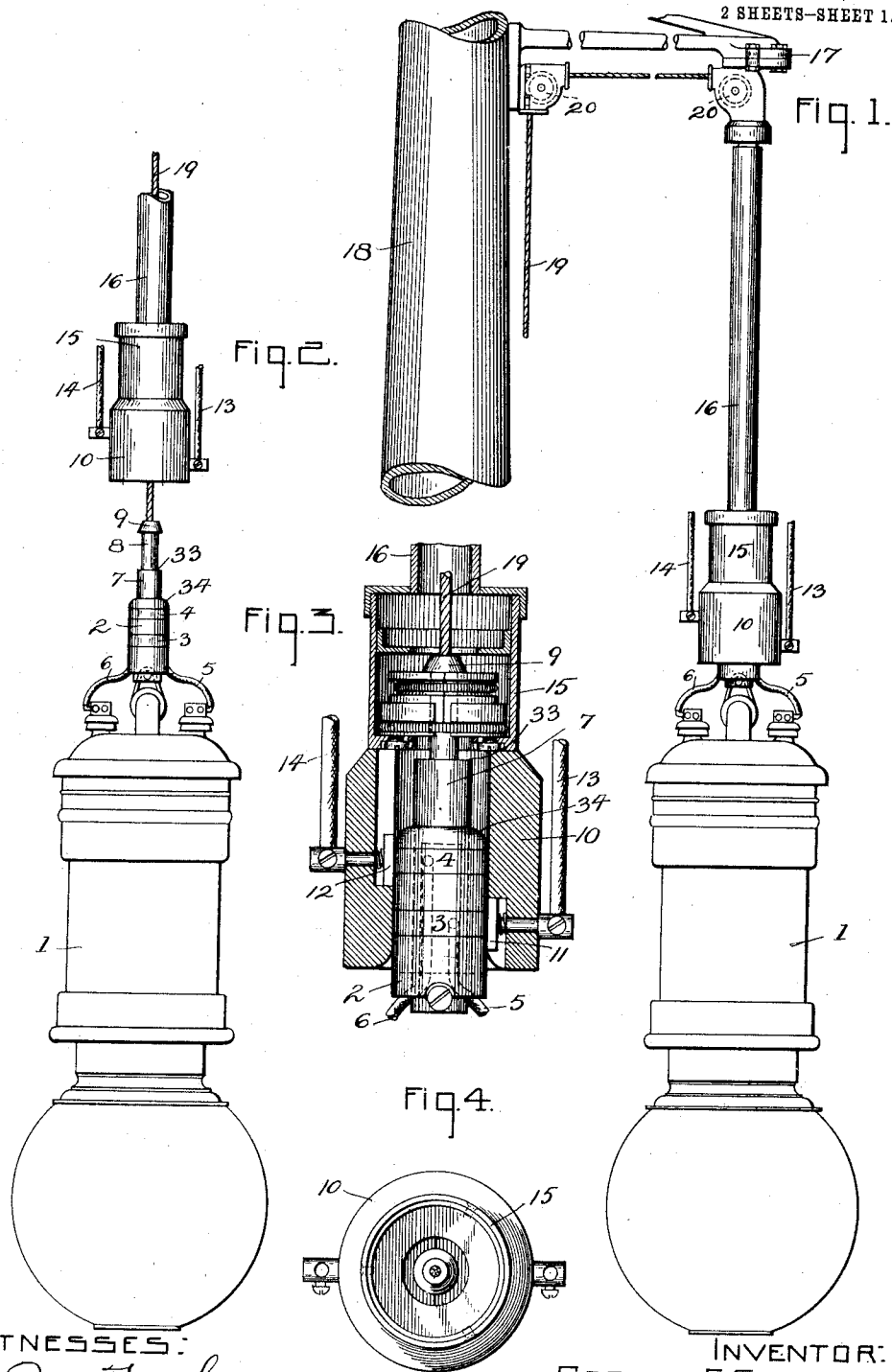


1,022,514.

G. E. STEVENS.
ARC LAMP HANGER.
APPLICATION FILED FEB. 23, 1909.

Patented Apr. 9, 1912.
2 SHEETS-SHEET 1.



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Fig. 5.

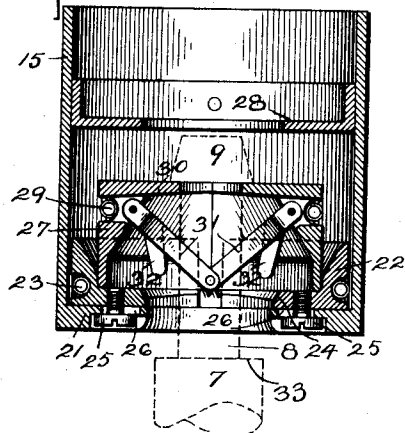


Fig. 6.

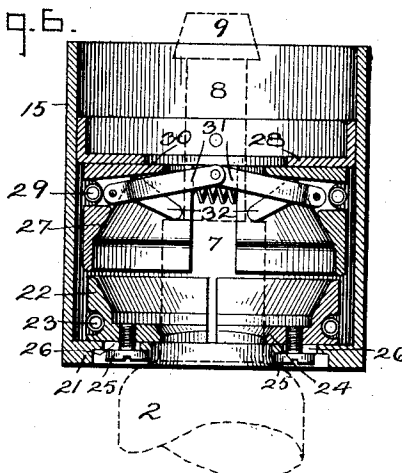


Fig. 7.

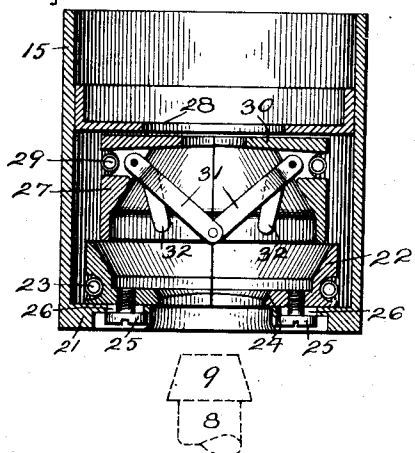


Fig. 8.

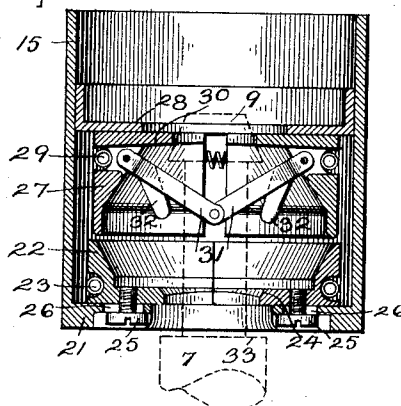


Fig. 9.

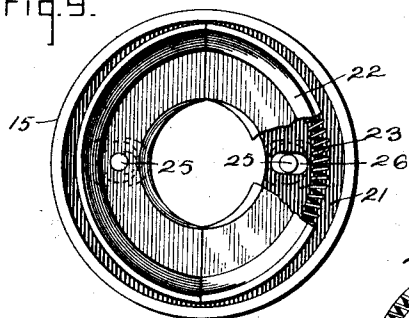


Fig. 10.

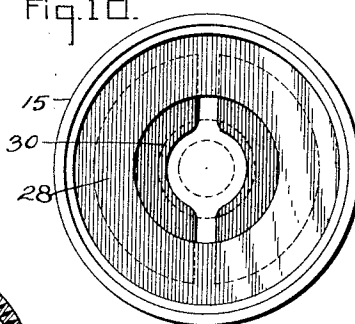
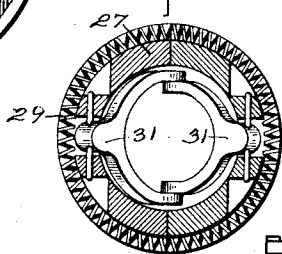


Fig. 11.



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UNITED STATES PATENT OFFICE.

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ARC-LAMP HANGER.

1,022,514.

Specification of Letters Patent.

Patented Apr. 9, 1912.

Application filed February 23, 1909. Serial No. 479,468.

To all whom it may concern:

Be it known that I, GEORGE E. STEVENS, a citizen of the United States, residing at Lynn, in the county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Arc-Lamp Hangers, of which the following is a specification.

This invention relates to electric lighting and its object is to provide an improved hanger and cut-out for arc lamps, whereby the lamp can be locked to its stationary support and unlocked therefrom alternately, by successive pulls on the rope by which the lamp is raised and lowered for trimming. In devices of this kind, there are two parts, one suspended from a bracket or other stationary support and the other part attached to the lamp. When they are brought together by pulling up the lamp, the circuit is closed automatically, and at the same time the two parts of the hanger are locked together. Whenever it becomes necessary to lower the lamp again, a pull on the lifting rope effects the unlocking of the parts so that upon slacking off the rope the two parts will separate and the lamp will be dropped.

The novelty of the present invention resides mainly in the devices for locking and unlocking the two parts of the hanger, as hereinafter set forth and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a lamp and hanger embodying my invention. Fig. 2 is a side elevation of the same, showing the lamp in a lowered position. Fig. 3 is a longitudinal section of the hanger. Fig. 4 is a top plan view of the same with the top open. Fig. 5 is a longitudinal section of the locking and releasing mechanism showing the plug in locked position and the plug arresting device in open position. Fig. 6 is a similar view showing the plug raised to release the lock. Fig. 7 is a similar view showing the plug disconnected and the parts of the lock in contracted position. Fig. 8 is a similar view showing the plug head entering the locking ring and the plug shoulder about to engage the stop ring. Fig. 9 is a plan view of the lower ring. Fig. 10 is a plan view of Fig. 8, and Fig. 11 is a cross section of the upper ring.

The arc lamp 1 may be of any desired type or design. It is flexibly suspended from a plug 2 of insulating material carrying annular contact bands 3 4 respectively connected by leads 5 6 with the lamp terminals. The body of the plug is reduced in diameter above the contact bands, forming a cylindrical portion 7 from which rises a slender neck 8 carrying a frusto-conical head 9.

The stationary part of the hanger comprises a tubular socket 10 of insulating material adapted to receive the plug 2 and containing internal yielding contact plates 11 12 so placed as to cooperate respectively with the bands 3 4 when the plug is inserted in the socket. The leads 13 14 are respectively connected with said plates 11 12 and serve to connect them with the line. The socket is attached to the lower end of a cylindrical tubular housing 15 for the locking mechanism, and this housing is coupled to an upright pipe 16 which depends from a suitable support, such as the bracket 17 projecting from the post 18. A rope 19 is attached to the plug 2 and runs up through the housing 15 and pipe 16 and over pulleys 20 on the bracket to a suitable point for manipulation by the lamp trimmer.

As stated above, the locking mechanism is actuated by simply pulling on the rope, and without requiring skill on the part of the operator to determine the requisite extent of travel of the movable part, either to lock or unlock it; the two operations being effected alternately by successive pulls on the rope. The mechanism and its mode of operation are shown very clearly in the second sheet of drawings. At the lower end of the housing 15 there is an inwardly projecting flange 21, on which rests a ring 22. At two diametrically opposite points this ring has been cut, and a short section removed, so that the remaining segments are not quite complete halves. A garter spring 23 is seated in a circumferential groove around the outside of the ring, so that its two segments are held yieldingly together, as shown in Fig. 9. The inside of the ring is beveled or chamfered from the top down nearly to its lower end, where a stop flange 24 extends inwardly. At diametrically opposite points in said stop flange are located

two screw studs 25 projecting downwardly into radial slots 26 in the flange 21 of the housing, to prevent its being raised from its seat on flange 21, but yet permit its two segments to be spread apart or expanded.

The upper or locking ring 27 is located between the lower ring and an annular diaphragm 28 in the housing. The upper ring is a complete circle, but is cut in halves as shown, and is encircled by a garter spring 29 in a circumferential groove. At the upper end of this ring is an inwardly extending gripping flange 30. Each half of the locking ring has pivoted within it a toggle link 31, said links being forked, with the arms of the forks pivoted together. On the underside of each link is a depending lug 32.

The operation is as follows:—Assuming that the hanger is in its engaged position, as shown in Figs. 1, 3 and 5, the head 9 will rest on the gripping flange 30 of the upper ring, and said ring will be seated on the flange 24 of the expanded lower ring. In order to arrive at this position, the upper or locking ring 27 has been pulled down by the weight of the lamp into the lower ring 22, and by sliding down the beveled inner surface of said lower ring has expanded the same and moved the stop flange 24 into inoperative position, as shown in Fig. 5. Now if a lamp trimmer wishes to lower the lamp, he first pulls on the rope 19, lifting the plug until the shoulder 33 at the upper end of the cylindrical portion 7, passing freely between the segments of the stop flange 24, strikes the ends of the forked arms of the toggle and lifts them. The first effect of this is to raise the upper ring out of the lower one, which is prevented from fully contracting by the inner edges of its segments engaging the smooth surface of the cylindrical portion 7, and the next effect is to straighten the toggle and thereby force apart the halves of the upper ring 27. Just as the point of the toggle passes up beyond the dead center, thereby locking the ring 27 open, the breast 34 at the top of the main body of the plug 2 abuts against the flange 21 of the housing and stops the upward movement of the plug, as shown in Fig. 6. The opening in the upper ring 27 is now large enough to let the head 9 on the plug pass down through it. When said head strikes the lugs 32 and carries them down with it, the toggle is tripped and the spring 29 closes the halves of the ring 27 together again. The head 9 is now below the grip flange 30, and so the continued lowering of the lamp is not interfered with. The closed upper ring is left supported at the upper end of the closed lower ring as shown in Fig. 7. When the lamp is raised again by pulling on the rope, the conical head 9 of the plug passes freely be-

tween the segments of the stop flange 24 of the lower ring and enters the opening in the center of the grip flange 30 of the upper ring and wedges the halves of said ring apart, as shown in Fig. 8, until said head rises above said flange, when the spring 29 shuts the ring together again, further upward movement of the plug is positively arrested by the flange 24 of the lower ring 22 engaging the shoulder 33 at the end of the cylindrical portion 7, and when the rope is slackened off the head 9 will be caught and supported by the grip flange 30. As the weight of the lamp now comes upon the upper ring, said ring is pulled down into the lower one, which is thereby expanded to the retracted position shown in Fig. 5. It will be noticed that the lower ring when expanded fits against the wall of the housing, so that the upper ring is positively held against expansion while in this position, and therefore there is no danger of the head 9 escaping through and letting the lamp fall.

I do not desire to restrict myself to the particular form or arrangement of parts herein shown and described, since it is apparent that they may be changed and modified without departing from my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is—

1. An arc lamp hanger comprising a plug, a locking device adapted to engage and disengage said plug according to the extent of inward movement of said plug, and means controlled by said locking device to limit alternate inward movements of said plug.

2. An arc lamp hanger comprising a plug having a head and a shoulder, a locking device adapted to engage and disengage said head according to the extent of inward movement of said plug, and a stop controlled by said locking device to engage said shoulder on alternate inward movements of said plug.

3. An arc lamp hanger comprising a plug, means to limit the first inward movement of the plug, a locking device adapted to engage said plug when brought into a predetermined position, and a releasing device carried by said locking device and operated by a second inward movement of said plug.

4. An arc lamp hanger comprising a headed plug, a segmental locking device to receive and support the head of said plug, means for yieldingly pressing the segments of said locking device together, a toggle actuated by the plug for opening said locking device, and means for limiting alternate inward movements of the plug.

5. An arc lamp hanger, comprising a headed plug, a stationary housing to receive said plug, a segmental locking ring in said housing to receive and support said head, a spring for automatically closing said ring after said head has passed up through it,

forked toggle links pivoted together and to the segments of said ring, a shoulder on said plug for setting said toggle, and lugs on said links for tripping the toggle when said head 5 passes down through it.

6. An arc lamp hanger comprising a plug having a head and a shoulder, a segmental locking device to receive and support the head of said plug, means for yieldingly 10 pressing the segments of said locking device together, a segmental stop device supported beneath said locking device to engage the shoulder of said plug and arrest further inward movement thereof, means for yield- 15 ingly pressing the segments of said stop device together, and means for opening the stop device by movement of the lock device under the weight of the plug and parts supported thereby.

20 7. An arc lamp hanger comprising a headed plug, an upper segmental locking ring to receive and support said head, and a lower segmental internally beveled ring for receiving and holding said upper ring closed 25 when it is pulled down into the lower one by the weight of the plug and parts carried thereby.

8. An arc lamp hanger comprising a headed plug, an upper segmental locking ring 30 to receive and support said head, a lower segmental internally beveled stop ring for receiving and holding said upper ring closed, and a spring urging the segments of said lower ring together when the upper ring is 35 lifted out of it.

9. An arc lamp hanger comprising two segmental rings, an upper and a lower, springs urging the segments of said rings together, means confining the lower ring to 40 motion in a radial direction only, means limiting the vertical play of the upper ring, means for positively forcing the upper ring open and holding it locked in that position, a beveled surface on the inside of the lower 45 ring for holding said upper ring closed, and a headed plug adapted to enter said rings, to be supported by said upper ring, and to

lift and open said upper rings to disengage said plug.

10. An arc lamp hanger comprising a plug 50 provided with a head and a shoulder, means for gripping and supporting said plug actuated by the longitudinal movement thereof, a movable stop for engaging the plug shoulder to arrest the first upward movement 55 of the plug, and means to displace said stop so as to escape said shoulder upon the succeeding upward movement of the plug.

11. An arc lamp hanger comprising a stationary member and a movable member, one 60 of said members being provided with means for locking the other member in operative relation therewith, means controlled by the extent of the approach movements of said members for actuating and releasing said 65 locking means, and means to control the extent of the said approach movements.

12. An arc lamp hanger comprising a stationary member and a movable member, one of said members being provided with means 70 for locking the other member therewith when moved upward into operative position, means for releasing said locking means actuated by a further upward movement thereof, and means to limit the extent of alternate 75 upward movements of said member.

13. An arc lamp hanger comprising a stationary member and a movable member, one of said members being provided with means 80 for locking the other member therewith when moved upward into operative position, means for releasing said locking means actuated by a second upward movement thereof, and stop means arranged to arrest the 85 first upward movement of the movable member and to be rendered inoperative during the second upward movement thereof.

In witness whereof, I have hereunto set my hand this eighteenth day of February, 1909.

GEORGE E. STEVENS.

Witnesses:

ALEX. F. MACDONALD,
JOHN A. McMANUS, Jr.