No. 730,844. PATENTED JUNE 9, 1903.

C. H. SHULTZ.

ARC LAMP HANGER.

APPLICATION FILED JUNE 9, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

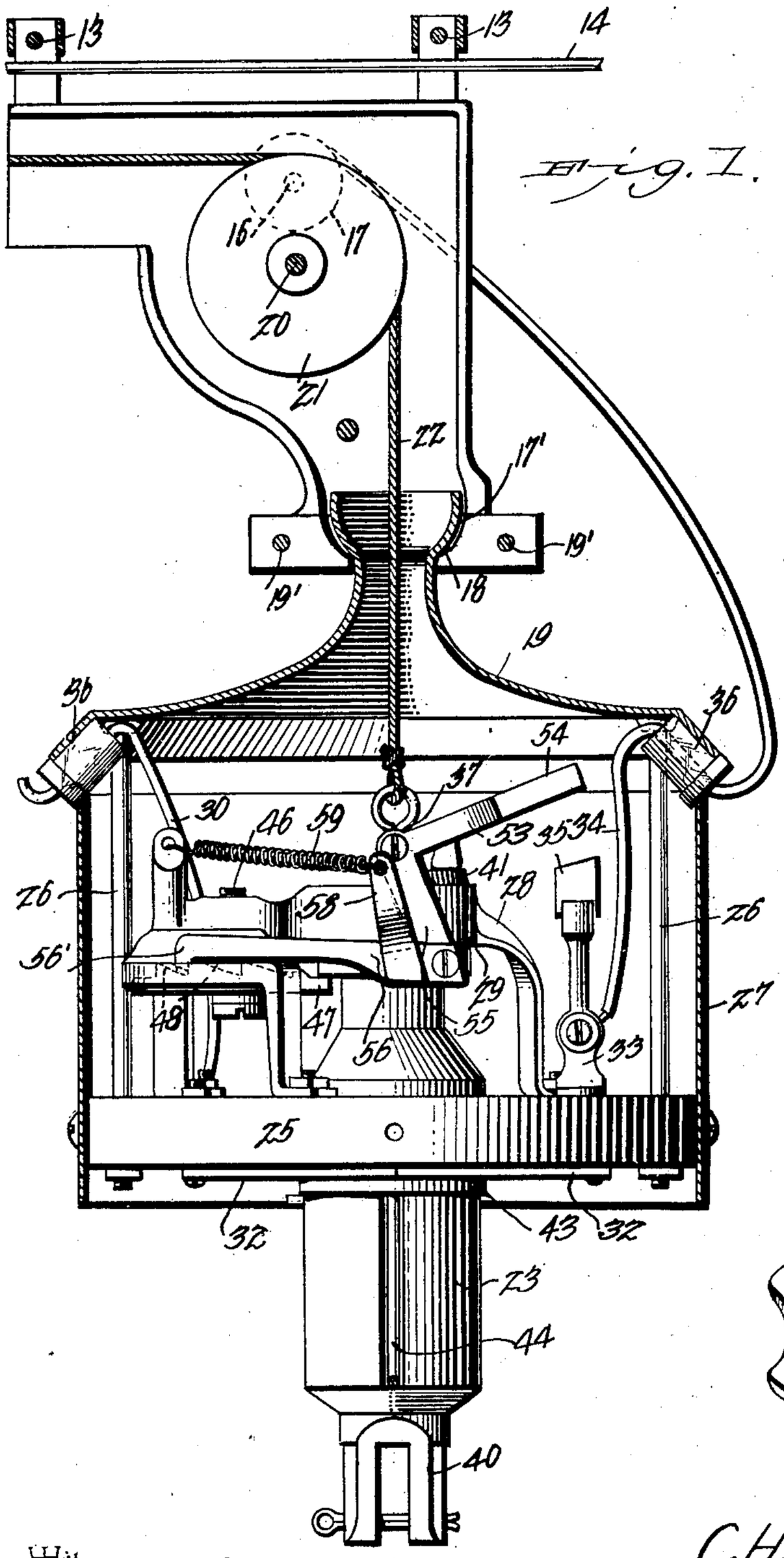


Fig. 4.

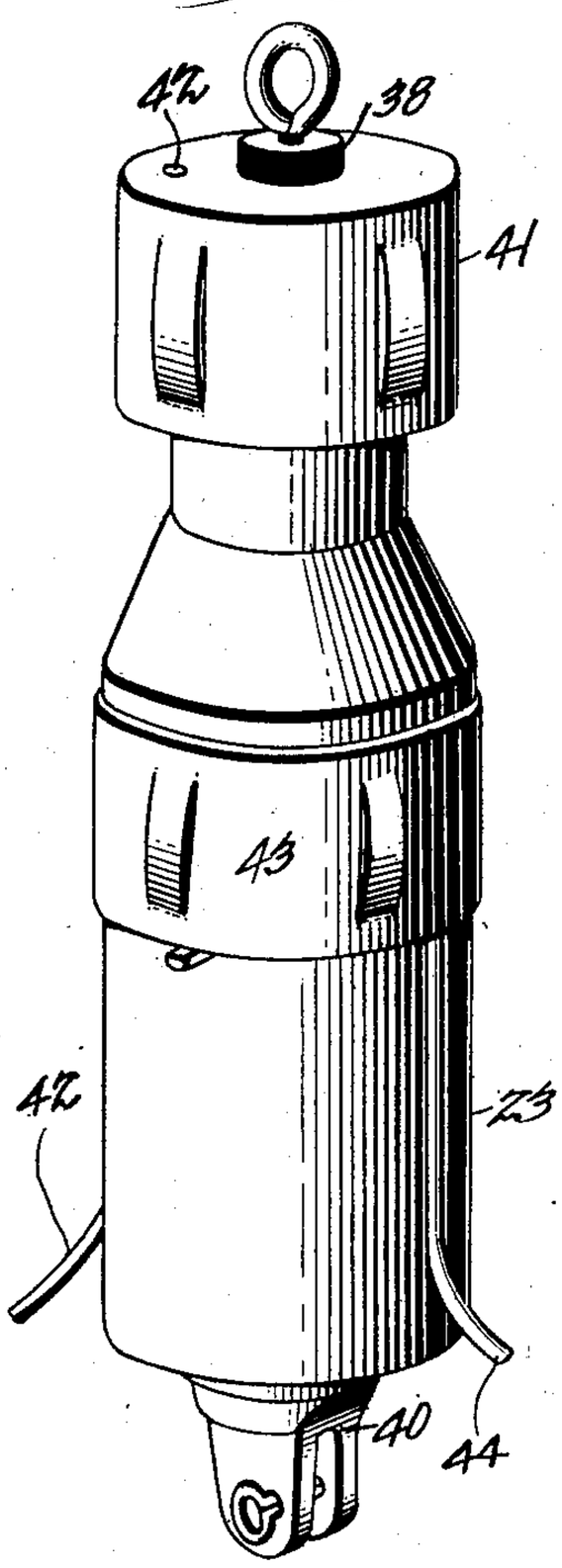
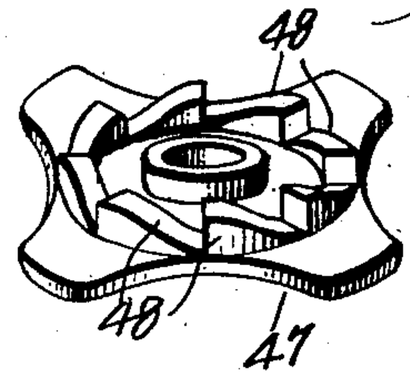


Fig. 5.



Witnesses

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 6.

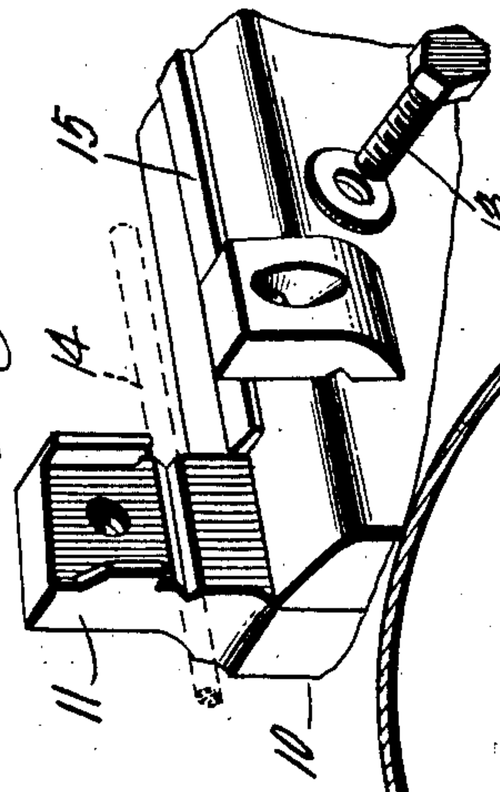


Fig. 3.

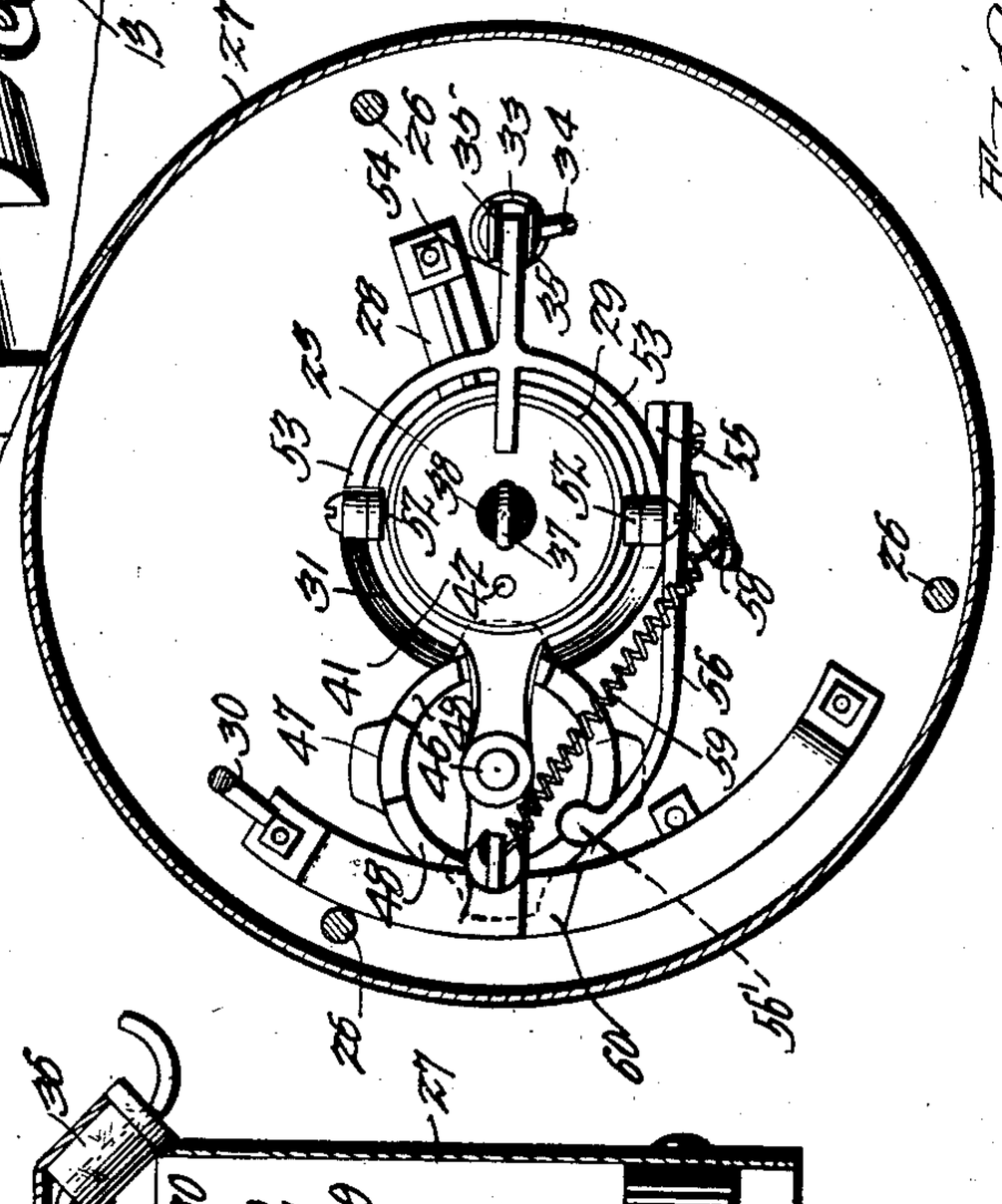
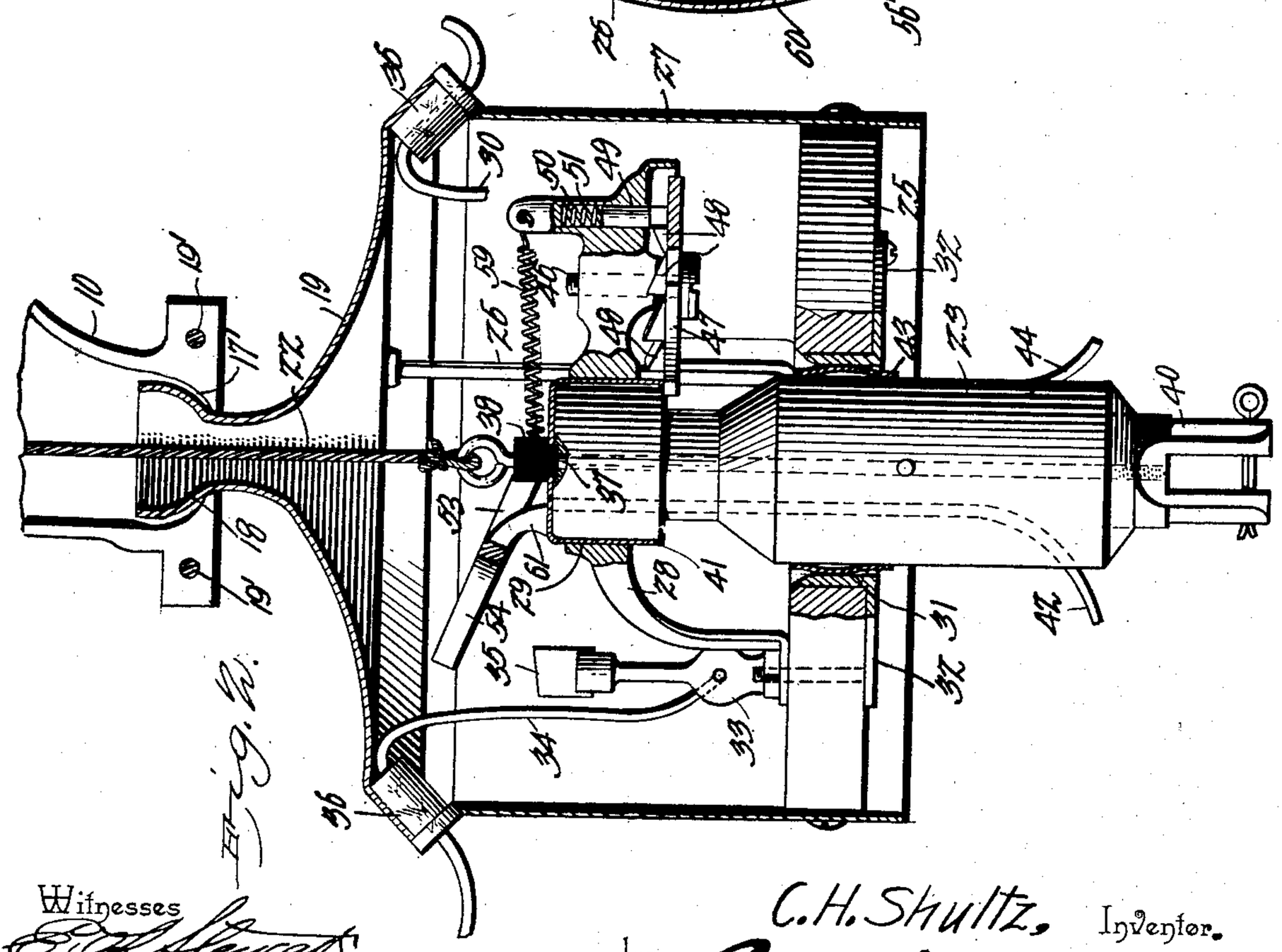


Fig. 4.



Witnesses
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No. 730,844. Patented June 9, 1903.

UNITED STATES PATENT OFFICE.

CHARLES H. SHULTZ, OF ST. JOSEPH, MISSOURI, ASSIGNOR TO JOHN L. ZEIDLER, OF ST. JOSEPH, MISSOURI.

ARC-LAMP HANGER.

SPECIFICATION forming part of Letters Patent No. 730,844, dated June 9, 1903.

Application filed June 9, 1902. Serial No. 110,917. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. SHULTZ, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented a new and useful Arc-Lamp Hanger, of which the following is a specification.

The invention relates to arc-lamp hangers, and has for its object to provide an improved means for suspending a lamp from a wire or bracket-arm in such manner that the lamp may be raised and lowered by a single hoisting-line and automatically locked in an elevated position in order to relieve the hoisting-line from strain.

A further object of the invention is to so construct the lamp-hanger and the supporting device as to permit the hanger to assume a perpendicular position by gravity.

A further object of the invention is to provide an improved mechanism for automatically cutting out the lamp from the circuit while the lamp and hanger are being lowered for the purpose of trimming and for automatically connecting the lamp in the circuit when the latter is raised to its normal position.

A still further object of the invention is to improve and simplify the contacts through which the current is transmitted from the line-wires and hanger to the lamp-wires.

A still further object of the invention is to provide an improved mechanisn for automatically closing and opening the circuit through the lamp-wires and simultaneously effecting a movement of the locking devices.

With these and other objects in view the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a longitudinal sectional elevation of an arc-lamp hanger constructed in accordance with my invention. Fig. 2 is a similar view looking from the opposite side of the hanger and showing portions of the interior mechanism broken away in order to more clearly illustrate the construction. Fig. 3 is a plan view of the hanger, the outer casing being shown in section. Fig. 4 is a detail perspective view of the lamp and contact-carrying plunger detached from the hanger. Fig. 5 is a detail perspective view of the plunger-locking disk detached. Fig. 6 is a detail perspective view of a portion of the upper hanger-section.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The upper portion of the hanger comprises a two-part casting 10, provided at its upper end with a clamp formed by an upwardly-extending lug 11, carried by one of the sections of the casting, and an auxiliary clamping-block adapted to fit between side flanges on the lug and clamped to said lug by a bolt or screw 13. In the adjacent faces of the lug and block are horizontal notches for the reception of the suspending device 14, which may be in the nature of a cable, mast-arm, bracket, or the like. One of the sections has a projecting flange 15 overlapping the adjacent ends of the opposite sides in order to more securely adjust the parts to proper position, as well as to prevent the entrance of rain or snow. On the opposite sides of the two sections are laterally-projecting arms 16, carrying insulators 17, to which the line-wires are secured in the usual manner. In the lower portion of each section of this part of the hanger is a semicircular recess 17, adapted for the reception of the semiglobular head 18 of the hanger-hood 19, the connection being similar to a ball-and-socket fastening and permitting the lower portion of the hanger and lamp to assume a perpendicular position by gravity. The lower portions of the two sections are secured together by bolts 19, or one of the connected socket-pieces may be in the form of a separately-removable piece in order to permit the disengagement of the lower portion of the hanger without entirely separating the two castings. In the body portion of the upper hanger member is a stud 20, which serves to connect the two sections and also acts as a support for a sheave 21, over which runs a flexible cord or chain 22, connected at one end to the lamp-supporting plunger 23, the opposite end of the chain or

cord being arranged at any convenient point near the ground to permit the raising or lowering of the lamp when necessary.

25 designates the base-plate of the hanger, said plate being formed of wood or other non-conducting material and being hung from the hood 19 by a series of bolts 26, having threaded upper ends adapted to threaded lugs on the hood. The base-plate serves as a support for an inclosing casing 27, formed of any suitable material, the upper end of said casing extending within the outer flange of the hood and its lower end being secured to the base-plate in any suitable manner. On the base-plate is secured a frame 28, having a centrally-disposed socket 29, this frame and socket being electrically connected to the positive line-wire 30. The negative socket 31, which is of considerably larger diameter, is formed of a metallic ring seated in an opening in the base-plate and provided with laterally-extended arms 32, by which it may be secured to the under side of said plate. One of the arms 32 is connected to a metallic post 33 on the upper face of the base, said post being connected to the negative wire 34 and having at its upper end a pair of yielding contact-plates 35, forming one member of an automatic switch, through which the lamp-current is short-circuited when the lamp is lowered. At the opposite sides of the outer flange of the hood 19 are insulators 36, through which the line-wires extend from the insulators carried by the upper portion of the hanger.

The plunger 23 is in the form of a cylindrical body of wood or other non-conducting material, and extending centrally therethrough is a preferably metallic rod 37, provided at its upper end with an eye for the reception of the hoisting-line 22, said rod being provided with a collar 38, of insulating material, to prevent electrical contact with a metallic cap arranged at the upper end of the plunger. The lower end of rod 37 is threaded and is adapted for the reception of a threaded nut 40, having depending lugs for the support of an insulating-ring, from which the electric lamp is suspended in the usual manner. The upper end of the plunger is of a diameter less than the lower or body portion and is provided with a metallic cap 41, adapted to fit within and make electrical contact with the positive socket 29. This cap is connected to a wire 42, extending down through the body of the plunger and thence to the lamp. On the body portion of the plunger is secured a ring 43, adapted to fit within the negative socket 31, and from this ring extends a lamp-wire 44, fitting within a groove in the periphery of the plunger. In order to insure good contact between the plunger-contacts and the positive and negative sockets, both the ring and cap are provided with a series of pairs of slits, the material between each pair being stamped or bent outwardly to form slightly-bowed springs, which are pressed forcibly against the sockets and insure good electrical contact.

To the frame 28 is secured a depending stud 46, on which is mounted a rotatable locking-disk 47, having its periphery notched or recessed to form a series of alternate engaging dogs and recesses which may be moved into alinement with the plunger-head, the movement of one of the dogs under said head serving to lock the latter in the socket and support the weight of the lamp, all strain being thus removed from the hoisting-line. When one of the recesses is moved into alinement with the plunger-head, the latter may be lowered with the lamp for trimming. On the upper surface of the locking-disk are a number of ratchet-teeth 48, equal to the combined number of dogs and recesses, and with these teeth engages a spring-pressed pawl or plunger 49, guided in a socket 50, which also serves for the reception of the compression-spring 51.

At diametrically opposite points on the socket 29 are upwardly-extending lugs 52, to which are pivoted the bifurcated arms 53 of a switch-lever 54, which when depressed to a position between the yielding contacts 35 of the negative post 33 will short-circuit the current through the line-wires 31 and 34 and cut out the lamp. To one of the arms 53 is secured a depending arm 55, carrying at its lower end a pivoted pawl 56, said pawl having at its free end a depending tooth 56′, adapted to engage with the teeth 48 of the locking-disk. The pawl 56 is provided with an upwardly-extending arm 58, which is connected by a tension-spring 59 to the hollow post carrying the spring-pressed plunger 49, said spring serving to depress the free end of the pawl-arm and keep the teeth in engagement with one or other of the ratchet-teeth or in contact with an inclined surface 60, arranged on a portion of the supporting-frame and serving to guide said pawl into engagement with one of the teeth when the switch-lever 54 is moved from contact with the yielding contact-plates 35. To the central portion of the bifurcated arms of the switch-lever is secured an inwardly and downwardly projecting finger 61, adapted to engage with the upper face of the plunger 23 and normally held in contact therewith by the stress of the spring 59. When the plunger is in normal position, the current entering through the line-wire 30 is led to the socket 29, and from thence through the cap 41 and line-wire 42 to the lamp. The returning current is through the lamp-wire 44, the ring 43, the negative socket 31, the post 33 to line-wire 34. When the lamp is to be lowered, a pulling strain is exerted on the cord or chain 22, raising the plunger above its normal position, the upper end of the plunger acting on the finger 61 to further elevate the switch-lever and at the same time causing a rotative movement of

the locking-disk through the medium of the pawl 56 and arm 55 and moving one of the recesses of the disk into alinement with the plunger-head. The plunger and lamp may then be lowered, and as the plunger descends the spring 59 forces the pawl 56 outward in readiness for engaging with a subsequent tooth and pulls the switch-lever 54 down into contact with the contact-plates 35, thus short-circuiting the current and cutting out the lamp. The switch is closed in advance of the separation of the cap 41 and ring 43 from their respective sockets, so that when contact is broken between the plunger-contacts and the sockets there will be no spark nor will any other lamps in the circuit flash if one be disconnected in this manner while the current is on. After the lamp has been trimmed it is elevated to position by means of the cord or chain 22, the ring 43 and cap 41 entering their respective sockets in advance of the contact of the upper portion of the plunger with the finger 61. On further upward movement the switch-lever is raised to break connection with the contact 35 and the circuit is reëstablished through the lamp. This further upward movement also causes a rotation of the locking-disk to the extent of a single tooth and brings one of the locking-dogs into alinement with the head of the plunger, after which the plunger is lowered until the shoulder at the bottom of the head rests on said dog.

While the construction herein described, and illustrated in the accompanying drawings, is the preferred form of the device, it is obvious that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described the invention, what I claim is—

1. The combination in an arc-lamp hanger, of an upper sectional member, support-engaging clamps carried thereby, a sheave carried by said upper member, a lower member having a swiveled connection with the upper and free to assume a perpendicular position by gravity, a lamp-carrying plunger guided in the lower member, a flexible hoisting device connected to the upper end of the plunger and extending over the sheave, contact devices carried by the plunger and connected to the lamp-wires, and metallic sockets carried by said lower member and electrically connected to the line-wires, said sockets being adapted to receive the plunger-contacts and complete the lamp-energizing circuit.

2. The combination in an arc-lamp hanger, of the base, upper and lower socket members arranged in vertical alinement and forming the terminals of the main line, a post or standard connected to the lower socket and extending above the base, a contact-plate disposed at the upper end of said post, a pivoted switch-lever mounted on the upper socket, a spring tending to force said lever into contact with the plate to short-circuit the main line, a plunger adapted to support the lamp and provided with contacts connected to the lamp-wires, said contacts serving to close the lamp-circuit by engagement with the sockets, a finger depending from the switch-lever and adapted to be engaged by the plunger on the upward movement of the latter to thereby move said switch-lever to inoperative position, a plunger locking and releasing device, and means operable by the switch for moving the locking device to locking and releasing positions.

3. The combination in an arc-lamp hanger, of the base, a frame carried thereby, a metallic socket supported by the frame and electrically connected to one of the line-wires, a metallic ring of larger diameter than said socket connected to the second line-wire, a vertically-movable plunger having contacts electrically connected to the lamp-wires, a vertically-disposed post or standard arranged below the base and electrically connected to the metallic ring, a contact-plate arranged at the upper end of said post or standard, a combined switch and locking-lever pivoted to the socket member, a spring tending to force said lever into engagement with the contact-plate to thereby short-circuit the main line, a revoluble disk carried by the frame and having on its periphery a series of alternate recesses and plunger-engaging dogs, ratchet-teeth arranged on said disk, and a pawl pivotally connected to the combined switch and locking-lever and adapted to engage said ratchet-teeth, substantially as specified.

4. The combination in an arc-lamp hanger, of the base, a frame carried thereby, a metallic socket forming part of the frame and electrically connected to one of the line-wires, a lower ring carried by the base and electrically connected to the second line-wire, a post or standard electrically connected to the ring and extending above the base, a contact-plate carried by said post or standard, a bifurcated switch-lever pivotally connected to the metallic socket member and adapted to make contact with said plate to thereby short-circuit the main line, said switch-lever having a forwardly and downwardly projecting dog extending within the socket, a plunger having the contacts electrically connected to the lamp-wires and adapted to engage said socket and ring to complete the circuit to the lamp, means for raising and lowering the plunger, a revoluble locking-disk having peripheral plunger-engaging dogs, ratchet-teeth on said disk, a spring-pressed pawl for holding the disk in adjusted position, a disk-operated pawl pivotally connected to and movable with the switch-lever, and a spring tending to force the switch-lever to circuit-closing position, substantially as specified.

5. The combination in an arc-lamp hanger, of the upper and lower sockets connected to the main line-wires, a base-plate supporting

said socket, a vertically-movable plunger having contacts electrically connected to the line-wires and adapted to engage the socket to complete the lamp-circuit, a post or standard electrically connected to the lower socket member and extending above the base, a pivoted lever carried by the upper socket member and adapted by engagement with the standard to short-circuit the main line, a plunger-locking disk, ratchet-teeth arranged on said disk, a pawl pivoted to the switch-lever and adapted to engage the ratchet-teeth, a spring tending to move the switch-lever to circuit-closing position, and an inclosing casing secured to the base and plate and serving to protect all of the movable members and contacts.

6. The combination in an arc-lamp hanger, of the upper and lower sockets electrically connected to the main line-wires, a lamp-carrying plunger having an upper cap and an intermediate ring electrically connected to the lamp-wires and adapted to engage said sockets to complete the circuit through the lamp, said cap and ring being provided with pairs of parallel slits and the metal between the slits being bent outwardly to form elastic tongues for engaging the sockets, means for raising and lowering the plunger, and means for locking and releasing said plunger.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES H. SHULTZ.

Witnesses:
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C. M. RANDALL.