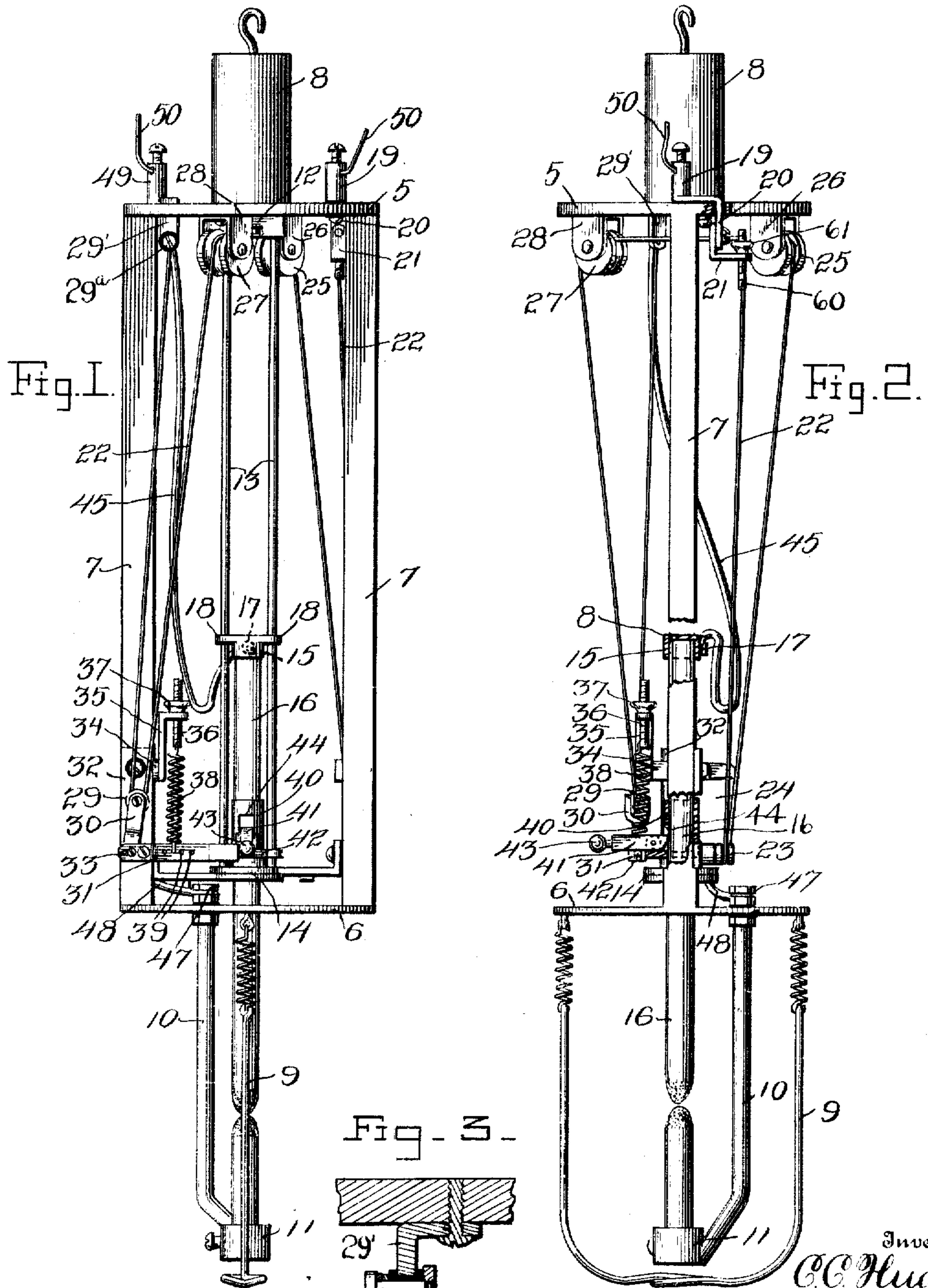


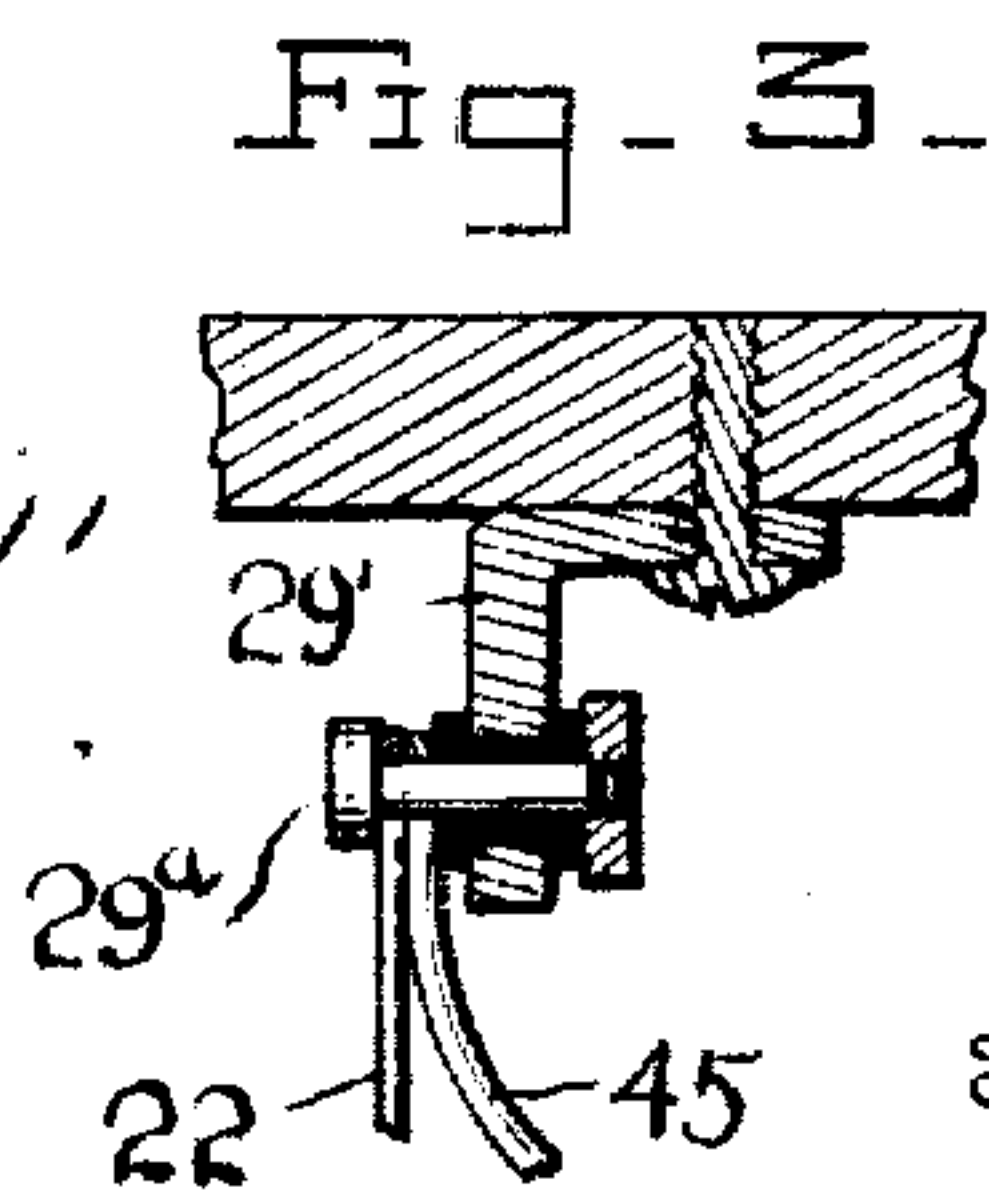
C. C. HUGHES.
 ARC LAMP.
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920,331.

Patented May 4, 1909.



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES C. HUGHES, OF PHILADELPHIA, PENNSYLVANIA.

ARC-LAMP.

No. 920,331.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES C. HUGHES, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Arc-Lamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to arc lamps of the hot wire type and has for its object to provide a cheap and simple means for coöperation with the hot wire for raising and lowering the carbon and for engaging and releasing the carbon.

In the accompanying drawings: Figure 1 is a view in elevation of the lamp, and, Fig. 2 is a similar view, but taken in a vertical plane at right angles to the plane of Fig. 1. Fig. 3 is a detail sectional view showing the manner of electrically connecting the hot wire with the flexible conductor.

Referring more specifically to the drawings, the numerals 5 and 6 denote upper and lower plates, respectively, which are held in fixed spaced relation by means of standards 7, there being connected with the upper plate 5 the usual hanger 8 by means of which the lamp may be suspended, and with the lower plate 6, the usual globe supporting device 9.

Extending downwardly from the lower plate 6 is the usual arm 10 which carries at its lower end the usual collar 11 for the reception of the lower end of the lower carbon of the lamp.

Secured to the under side of the upper plate 5 is a plate 12 to which is secured the upper ends of depending guide-rods 13, the said rods being connected at their lower ends to brackets 14 which extend inwardly from the standards 7 and overlap at their meeting ends. A socket 15 is arranged for the reception of the upper end of the upper carbon 16 of the lamp, the said carbon being held in place by means of a set-screw 17 which serves also as a means for fastening the wire 45, as will be presently explained.

Extending from diametrically opposite points upon the collar 15 are tongues 18 which are provided with apertures through which extend the rods 13, it being understood that the said rods serve to guide the movement of the upper carbon and that the said carbon extends through an opening

formed in the brackets 14 to further guide the same.

Mounted upon the upper face of the upper plate 5 is a binding post 19 having a depending arm 20 to which is connected an angle bracket 21. The angle bracket 21 includes a horizontal portion in which is a perforation that loosely receives a threaded stem 60 with the upper end portion of which is engaged a thumb nut 61 which when turned in one direction draws the stem upwardly through the perforation and when turned in the opposite direction, permits the stem to pass downwardly through the perforation. Connected with the threaded stem is one end of a conductor wire 22 which extends downwardly as shown in Fig. 1 and around an insulated roller 23 journaled upon a plate 24 which is secured to the adjacent one of the standards 7 adjacent its lower end and forms a convenient means for securing the roller 23 to the standard. The wire 22 then extends upwardly and over a similar roller 25 which is journaled in a bearing bracket 26 secured to the under side of the top plate 5 and over a third roller 27 journaled in a bearing bracket 28 which is also secured to the under side of the said plate. After passing over the roller 27, the wire extends downwardly and around an insulated roller 29 and thence upwardly and is connected to an insulated pin 29^a carried by a bracket which is connected to the top plate 5. The roller 29 is journaled in a yoke 30 which is pivotally connected to one end of an arm 31 which is pivotally mounted upon a plate 32 which is secured to the adjacent one of the standards 7, the said connection between the yoke-bearing and the pivoted arm being made adjustable by providing the arm with a series of openings 33 through which may be interchangeably engaged the pivot pin which connects the members. The plate 32 is provided with a bracket arm 34 to which is secured the lower end of a plate 35, the upper end of which is bent laterally at right angles provided with an aperture through which is loosely engaged a threaded stem 36 upon which is engaged an adjusting nut 37 which latter bears against the said portion of the plate 35. A helical spring 38 is connected at one of its ends to the lower end of the stem 36 and is arranged for the engagement of its other end with one of a series of openings 39 formed through the said arm.

Slidably disposed upon the upper carbon 16 of the lamp is a sleeve 40 which is provided adjacent its lower end and upon opposite sides with pairs of spaced fingers between which are received the respective guide rods 13 to prevent turning of the sleeve upon the carbon 16. The sleeve is also provided with a pair of spaced apertured ears between which is pivoted one end of an arm 41, the point of pivotal connection of the said arm with the sleeve being adjacent what may be termed the lower longitudinal edge of the arm for a purpose to be hereinafter described. The arm 41 rests against the end of the pivoted arm 31, the said end of the arm 31 being preferably reduced to form a stem 42 and the end of the arm 41 is preferably weighted as at 43 to normally hold it against the stem 42. The sleeve 40 is provided at a point in alignment with the upper end of the arm 41 with a slot 44 through which the said upper end of the arm may project to contact with the upper carbon 16, it being understood that the end of the arm contacts frictionally with the said carbon when the arm is raised by reason of the location of the pivot point of the arm adjacent the lower longitudinal edge thereof, and it will also be understood that when the arm is lowered, its upper end will be moved out of engagement with the upper carbon 16 thereby permitting downward movement of the said carbon.

Connected to the binding post 17 is one end of a conductor wire 45 which wire is connected at its opposite end to the binding post 29'. The arm 10 has its upper end reduced and screw threaded and engaged through the lower plate 6 and engaged upon the said screw-threaded end of the arm is a nut 47 which, together therewith forms a binding post for the attachment of one end of a conductor wire 48 which is connected at its opposite end to a binding post 49 carried by the upper plate 5. Leading from the binding posts 19 and 49 are the usual wires 50 by means of which the current is conveyed to the lamp.

It will be readily seen from the foregoing that the current of electricity passes through the wire 22 to the wire 45 and through the same to the upper carbon 16 and that the current is conveyed from the upper carbon to the lower carbon, thence through the arm 10 and the wire 48.

When not in use, the upper and lower carbons are in contact with each other but as soon as the electric current passes into the lamp, the wire 22 becomes heated and expansion takes place which results in a

lengthening of the wire allowing the spring 38 to move the end of the arm 31 to which it is connected upwardly and cause the upper end of the arm 41 to engage the upper carbon 16 as heretofore stated and lift the said carbon out of contact with the lower carbon of the lamp. As the upper carbon burns away and a greater length of arc is obtained, the wire 22 becomes cooled and hence contracts, resulting in a downward movement of the end of the pivoted arm 31 to which the spring 38 is connected, thereby releasing the end of the arms 41 from engagement with the upper carbon of the lamp and allowing the said carbon to move downwardly.

It will be noted that the clutch sleeve is freely movable away from the base of the lamp frame and longitudinally of the carbon and independently of the actuating lever 31. This facilitates the trimming of the lamp as it is only necessary to grasp the sleeve and raise it to carry the clutch lever away from the actuating lever when the carbon will slide downwardly through the sleeve and into engagement with the fixed carbon. The sleeve is then released and falls by its own weight down the movable carbon until the clutch lever strikes the actuating lever and is swung into engagement with the movable carbon. No adjustment is necessary.

What is claimed is:

In an arc lamp, a supporting frame comprising upper and lower plates, and standards connecting said plates, a binding post on said frame, a lateral plate secured to one of said standards adjacent its lower end, an insulated roller journaled upon the last mentioned plate, a pair of spaced rollers supported on said upper plate in substantially diametrically opposite position, a second lateral plate secured to the second standard, an arm pivotally mounted thereon, a yoke bearing pivotally connected to one end of said arm, a second insulated roller journaled in said yoke bearing, a second binding post connected to the top plate, and a conductor wire extending from the first mentioned binding post to and around the first mentioned insulated roller, thence around the pair of spaced rollers, thence around the second insulated roller, and thence to the second binding post.

In testimony whereof, I affix my signature, in presence of two witnesses.

CHARLES C. HUGHES.

Witnesses:

HANS WENIGER,
ALEX. WALTER.