

No. 751,025.

PATENTED FEB. 2, 1904.

G. E. STEVENS & W. C. FISH.

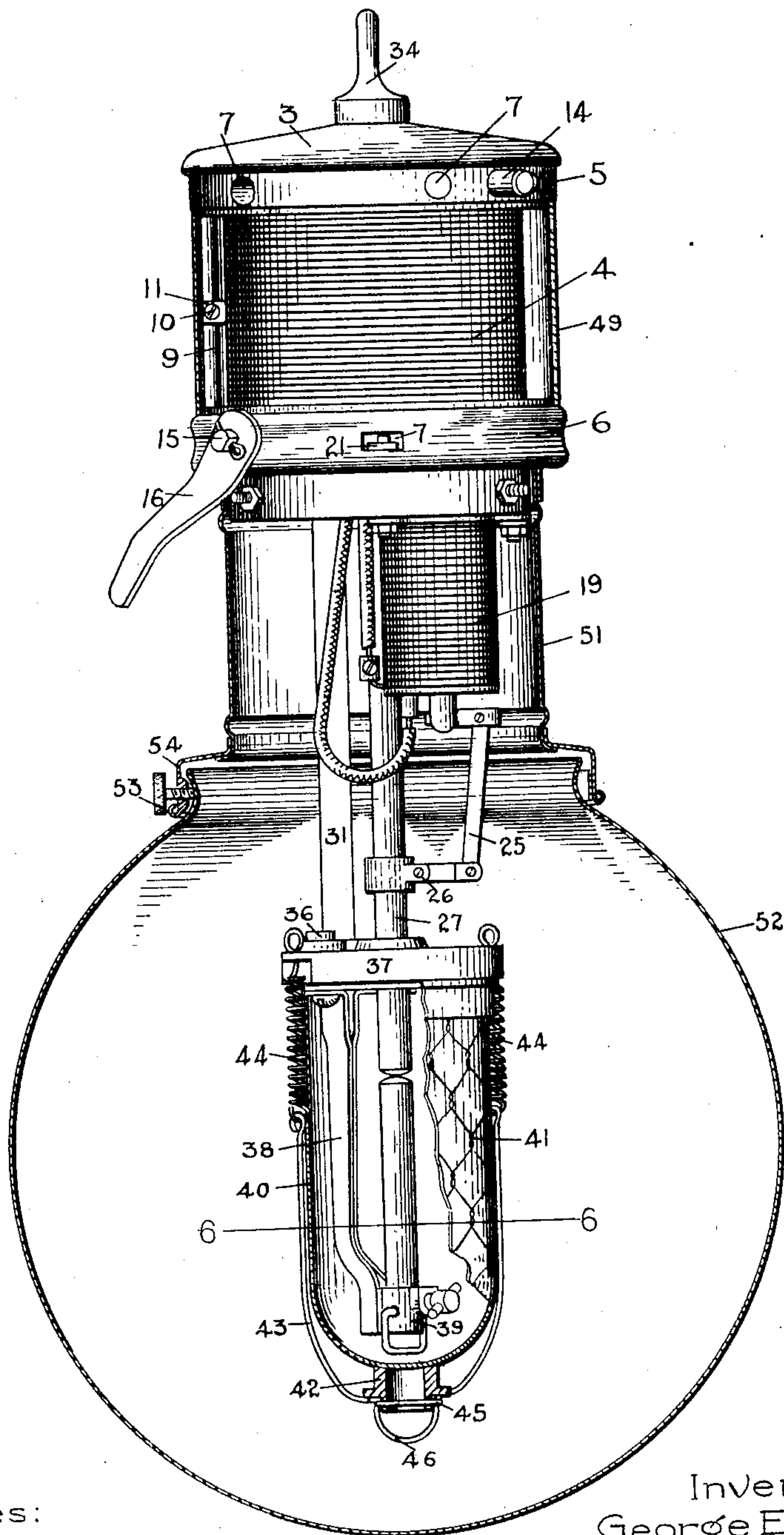
ELECTRIC ARC LAMP.

APPLICATION FILED JUNE 14, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

Robt. Chapman
Alex. F. Macdonald

Inventors.

George E. Stevens,
By Walter C. Fish.
Alm. H. Sam Att'y.

No. 751,025.

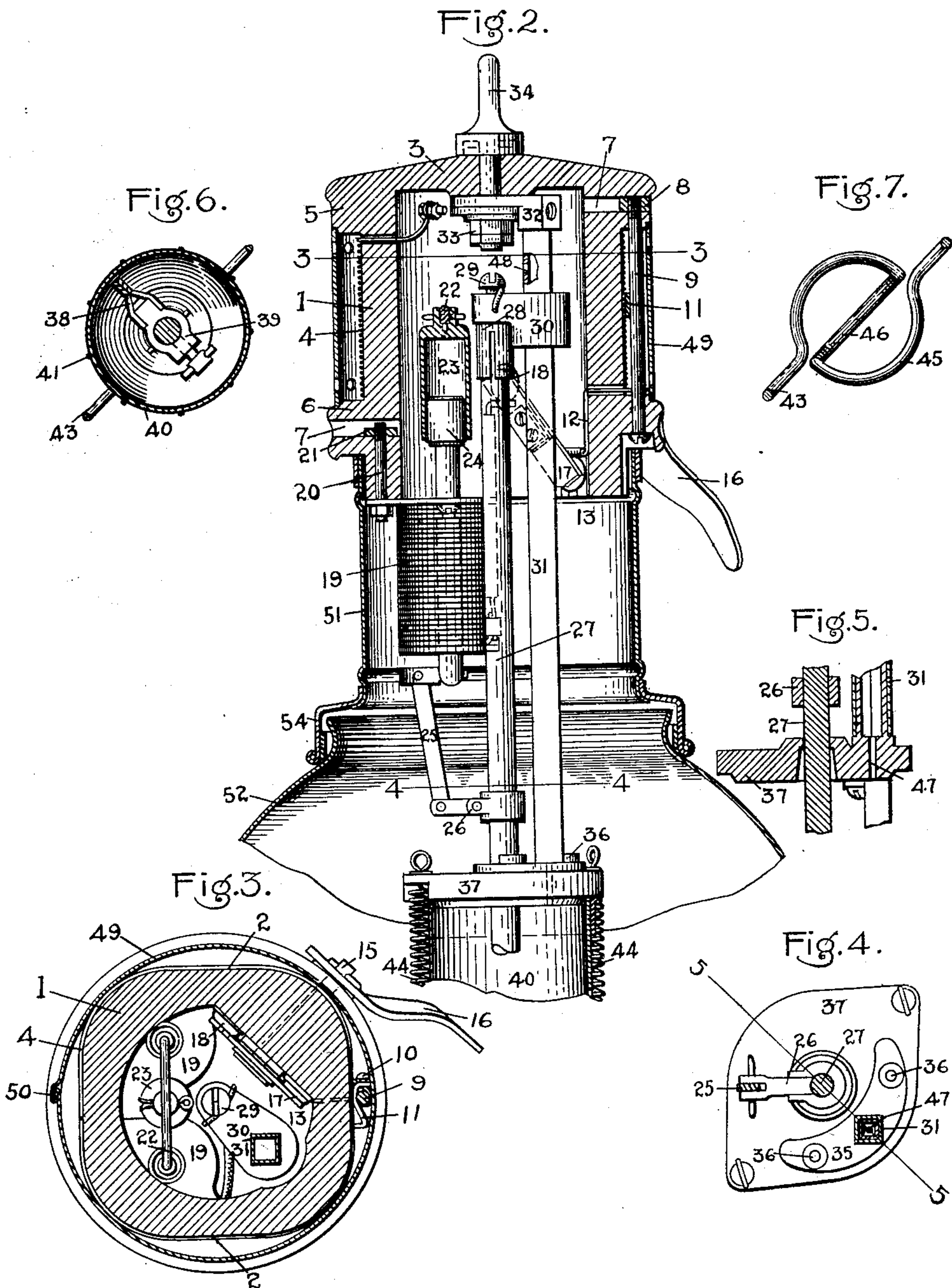
PATENTED FEB. 2, 1904.

G. E. STEVENS & W. C. FISH.
ELECTRIC ARC LAMP.

APPLICATION FILED JUNE 14, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:

Robt. L. Chapman
Alex. J. Macdonald

Inventors.

George E. Stevens,
Walter C. Fish.
By *Albert S. Davis*
Att'y.

UNITED STATES PATENT OFFICE.

GEORGE E. STEVENS AND WALTER C. FISH, OF LYNN, MASSACHUSETTS,
ASSIGNORS TO GENERAL ELECTRIC COMPANY, A CORPORATION OF
NEW YORK.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 751,025, dated February 2, 1904.

Application filed June 14, 1902. Serial No. 111,635. (No model.)

To all whom it may concern:

Be it known that we, GEORGE E. STEVENS and WALTER C. FISH, citizens of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Arc-Lamps, of which the following is a specification.

This invention relates to electric-arc lamps, its object being to cheapen the cost of manufacture and simplify the construction of the lamp. To this end the lamp is largely constructed of porcelain or other insulating material and sheet metal or punched metal fittings.

The features of novelty will be apparent from the following description.

In the accompanying drawings, Figure 1 is a side elevation of our improved lamp, the casing and globes being in section. Fig. 2 is a longitudinal sectional elevation of the upper part of the lamp and its mechanism. Fig. 3 is a cross-section of the same on the line 3 3, Fig. 2. Fig. 4 is a cross-section on the line 4 4, Fig. 2. Fig. 5 is a vertical section on the line 5 5, Fig. 4. Fig. 6 is a cross-section on the line 6 6, Fig. 1; and Fig. 7 is a plan of the finger-loop at the lower end of the support for the inner globe.

The upper part of the lamp is a tubular block 1 of insulating material, such as porcelain, preferably made with flattened sides 2 and having a closed top 3. Around the outside of this tubular body is wound the resistance-coil 4, confined between upper and lower flanges 5 6. At certain points in each flange are radial holes 7, one of which receives a nut 8 for a bolt 9, which passes lengthwise of the body 1 through the flange 6 and into the flange 5, where it engages with the nut 8. Secured to the shank of said bolt by a set-screw 10 is a slide 11, which bears upon the coil 4. The bolt 9 is connected by a lead 12 with a contact 13 inside said body. The other end of the resistance-coil is connected with a binding-post 14 on the outside of the body.

The cut-out switch is made as follows: In a radial hole in the body 1 is journaled a shaft 15, whose outer end carries a handle 16 and

whose inner end is provided with a contact-blade 17, adapted to connect or disconnect the contact 13, and another contact 18, forming one terminal of the lamp-solenoids 19. These solenoids are suspended below the body 1 by one or more bolts 20 passing up into the body and engaging with nuts 21 in the radial holes 7. The armatures of the solenoids are united at their upper ends by a yoke 22, from which is suspended a dash-pot 23, coöperating with a stationary plunger 24, rising from the top of the solenoid-frame. Their lower ends are connected by a link 25 with a pivoted dog-clutch 26. The upper carbon 27, on which said clutch operates, is suspended from a sheet-metal holder 28, attached by a screw 29 to an insulating-guide 30, preferably made of porcelain and arranged to slide on an upright tubular metal rod 31, whose upper end is provided with a bracket 32, clamped to the under side of the top 3 of the body by the nuts 33, which secure the hanger 34 to said top. The rod 31 is preferably polygonal, as shown, to prevent the guide 30 from twisting thereon. Its lower end has a foot 35, secured by screws 36 to the gas-cap 37, which is preferably made of insulating material, such as porcelain. Depending from its under side is a metal leg 38, which carries at its lower end the lower-carbon holder 39.

The inner globe 40 is incased in a wire-netting guard 41, which at its lower end connects with a metal or porcelain collar 42, in which the lower end of the globe rests, the collar being supported by a wire bail 43, connected by springs 44 with the gas-cap and having at its lower end an integral ring 45 for the collar and a loop 46 for a finger-hold to facilitate pulling it down to release the globe.

There is a small passage 47 through the gas-cap into the tubular rod 31, and at the upper end of the rod is a small hole 48. This makes the interior of the rod a passage for the escape of gas from the inner globe, and as the rod will hold a considerable volume of gas it acts as a reservoir for the hot gases and prevents the entrance of cold air into the globe.

It will be observed that the rod 31 performs

several functions, to wit: It is a frame or backbone for the lamp and by means of it nearly all the parts are suspended directly from the hanger 34. It guides the upper carbon and forms part of the negative lead, the negative binding-post of the lamp being connected with the bracket 32, and it carries the gas-cap and inner globe and forms a gas-chamber. If the porcelain body 1 should be broken, the rod 31 will support all the mechanism and prevent the parts from dropping to the ground.

The resistance-coil is incased in a ventilated jacket 49, composed of a sheet of metal having doubled edges 50, which hook together when they meet, as shown in Fig. 3. Attached to the lower end of the body is a sheet-metal jacket 51, inclosing the solenoids and affording a support for the outer globe 52, which is held by set-screws 53, passing through a flange 54 of said jacket.

This lamp is very simple in construction and can be cheaply and rapidly manufactured.

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

1. In an arc-lamp, a tubular body of insulating material, having a closed top, a hanger secured to said top, a resistance-coil wound on said body, openings in said body, leads from the resistance-coil extending through said openings, and means for varying the resistance in circuit.

2. In an arc-lamp, a tubular body of insulating material having a closed top and upper and lower flanges, a resistance-coil wound between said flanges, a bolt running lengthwise of said body outside of said coil, with its ends in said flanges, and a slide on said bolt.

3. In an arc-lamp, the combination, with a tubular body of insulating material, of a rod suspended from said body at a point laterally displaced from its axis, and upper and lower carbon holders supported by said rod in a position to hold the carbons in alinement with the axis of said body.

4. In an arc-lamp, the combination, with a tubular body of insulating material, of a rod suspended from said body, a guide sliding on said rod and extending laterally therefrom, an upper-carbon holder carried by said guide, and a lower-carbon holder suspended by said rod.

5. In an arc-lamp, the combination, with a tubular body of insulating material, of a polygonal rod suspended from said body, an insulating-guide sliding on said rod, a carbon-holder attached to said guide, a clutch for the carbon, and a solenoid for operating the clutch.

6. In an arc-lamp, the combination, with a tubular body of insulating material, of a rod suspended from said body at a point laterally displaced from its axis, and a gas-cap of insulating material attached to said rod with its center in the axis of the tubular body.

7. In an arc-lamp, the combination, with a tubular body of insulating material, of a tubular rod suspended from said body, and a gas-cap attached to said rod and having a passage communicating with the interior of said rod.

8. In an arc-lamp, the combination, with a tubular body of insulating material, of a tubular rod suspended from said body and having a hole near its upper end, and a gas-cap attached to said rod and having a narrow passage communicating with the interior of said rod.

9. In an arc-lamp, the combination, with a tubular body of insulating material, of a rod suspended from said body, a gas-cap of insulating material attached to said rod, and a lower-carbon holder depending from said gas-cap and in direct electrical connection with said rod through the gas-cap.

10. In an arc-lamp, the combination of a top, a rod suspended therefrom, a gas-cap of insulating material secured to said rod, a lower-carbon holder depending from said gas-cap, and a metallic connection through the gas-cap between the rod and carbon-holder.

11. In an arc-lamp, a top, a rod suspended therefrom, means for holding the upper carbon parallel to and laterally displaced from said rod, and a gas-cap and a lower-carbon holder supported by said rod.

In witness whereof we have hereunto set our hands this 12th day of June, 1902.

GEORGE E. STEVENS.
WALTER C. FISH.

Witnesses:

DUGALD McK. McKILLOP,
ALEX. F. MACDONALD.