

P. H. KLEIN, Jr. & E. LAVENS.
ELECTRIC ARC LAMP.

No. 585,317.

Patented June 29, 1897.

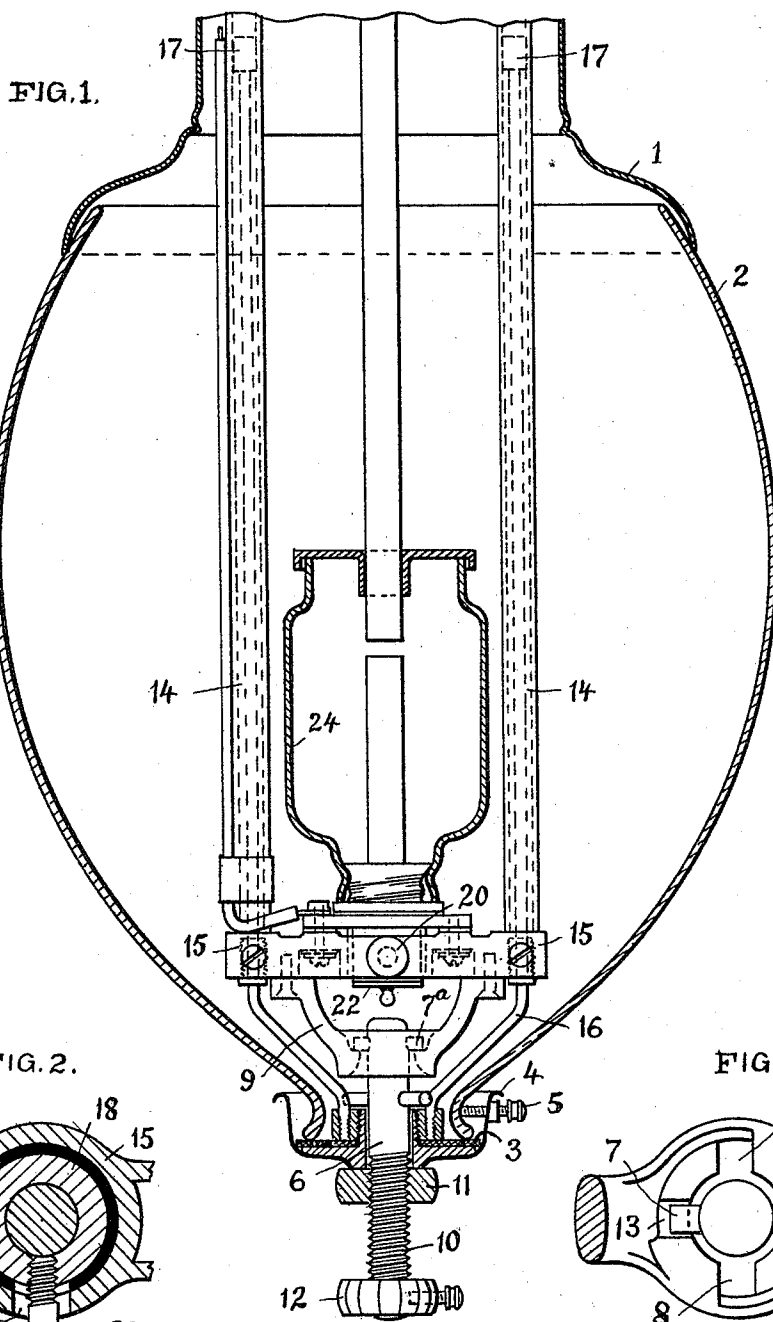
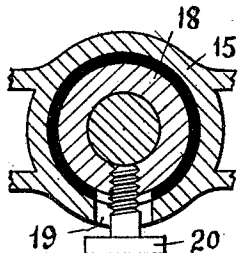


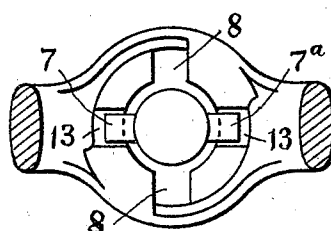
FIG. 2.



WITNESSES:

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FIG. 3.

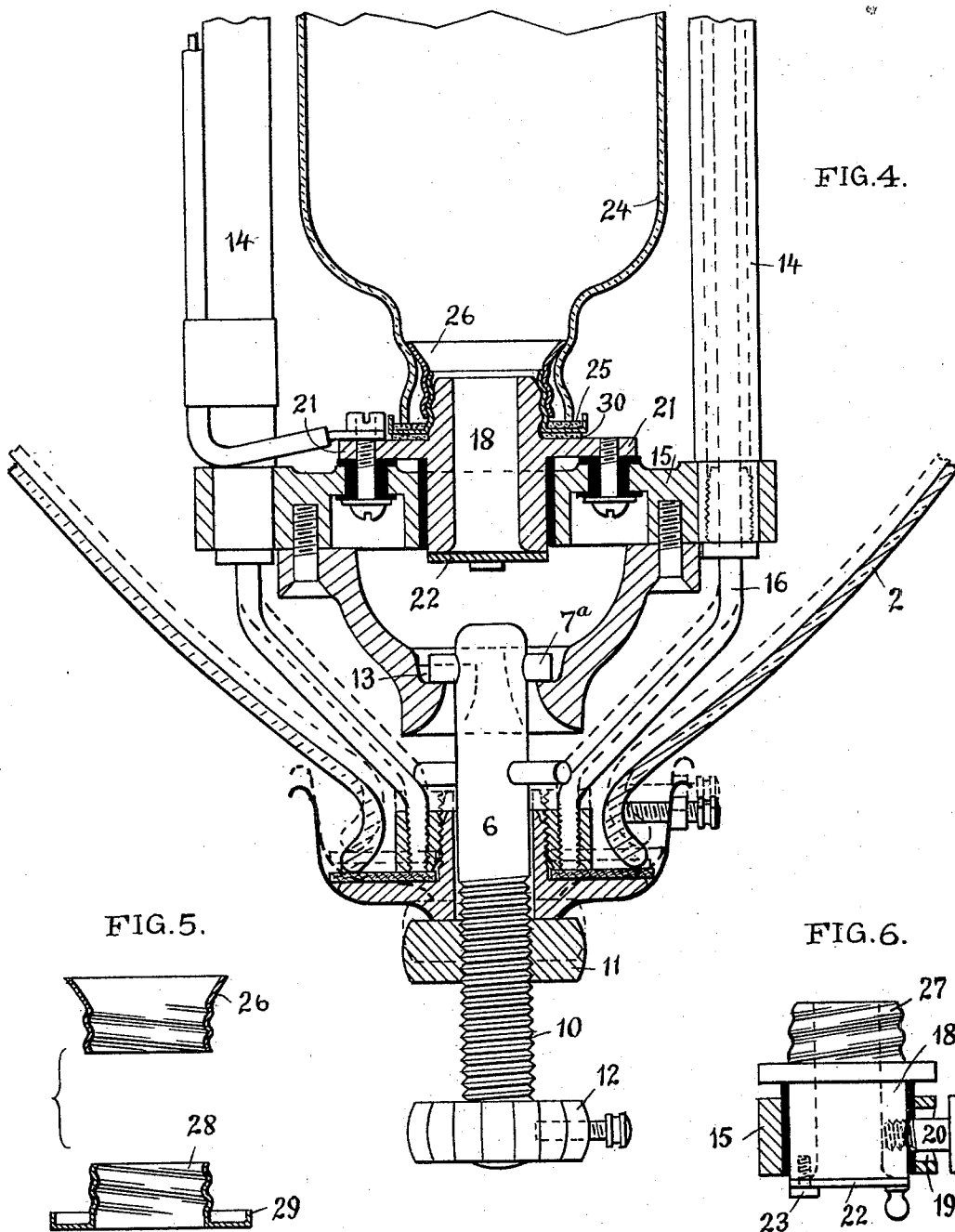


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UNITED STATES PATENT OFFICE.

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ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 585,317, dated June 29, 1897.

Application filed November 9, 1896. Serial No. 611,554. (No model.)

To all whom it may concern:

Be it known that we, PHILIP HENRY KLEIN, Jr., residing at New York, and ERWIN LAVENS, residing at Brooklyn, in the State of New York, citizens of the United States, have invented new and useful Improvements in Arc-Lamps, of which the following is a specification.

Our invention has relation to arc-lamps of that class wherein the arc is inclosed in a globe which serves to retain the vapor produced by said arc.

The object of our invention is the production of an improved arc-lamp of the above-specified class provided with improved means whereby the carbons may be handled, replaced, and supported, and whereby the outer globe may be lowered for cleaning, &c., or strongly, certainly, and safely held in a dust-proof condition.

Our invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a side view of our improved lamp, the outer globe and its supports being shown in vertical section. Fig. 2 shows the fastening for the lower carbon in horizontal section. Fig. 3 is a plan view of the sliding support afforded to the outer globe by the devices within the same. Fig. 4 is an enlarged vertical section of our invention, illustrating by plain and broken lines the action of the tightener for the outer globe. Fig. 5 shows the two parts of the fastener for the inner globe, the same being separated; and Fig. 6 shows the base for carrying the devices illustrated in Fig. 5.

In the drawings the feed mechanism is not shown, as it forms no part of our present invention.

In Fig. 1 the bottom of the casing generally used for inclosing the feed mechanism is shown at 1, the same being flared and so shaped as to fit tightly all around the rim of the top of the outer globe 2, when the latter is raised, as shown in the drawings. This arrangement, together with the method of closure for the bottom of the globe, described hereinafter, insures the exclusion of dust from the interior of the outer globe and from the feeding mechanism. It also confines the

heated air within said globe and prevents the cooling of the arc.

The bottom of the globe rests, as shown, preferably upon a washer or pad 3 within the ring 4, through which latter the screw or screws 5 project and impinge upon the neck of the globe, as shown. The ring 4 is provided with a central perforation through which extends the hanging rod 6. This hanging rod is provided at or near its upper end with lugs 7, (see Figs. 1 and 3,) which are adapted to pass through corresponding cuts 8 in the supporting-bracket 9 of the lamp-frame. The lower end of the hanging rod 6 is screw-threaded, as at 10, and adapted to carry a proper supporting-nut 11, which is preferably reinforced by any proper lock-nut 12. The outer globe is thus supported upon the ring 4, which bears upon the nut 11, carried by the hanging rod 6, which in turn finds its support by means of the lugs 7, which bear upon the supporting-bracket 9.

As clearly shown in Figs. 3 and 4, the lugs 7 normally rest in depressed seats 13, whereby the hanging rod 6 is prevented from turning within the supporting-bracket 9 until said rod is lifted out of said seats.

As is seen in Fig. 4 in dotted lines, where the shape of the seats in the supporting-bracket is indicated behind the bolt 6 one side of each seat 13 is carried up to the top level of the horizontal portion of the supporting-bracket 9. The opposite side of each seat 13 is considerably lower, and in each seat the higher side is that one against which the lugs 7 would naturally bear if the bolt 6 were turned in the same direction as the nut 11 is turned when raising the globe and supporting-ring. The consequence is that an upward movement of the bolt 6, which would be sufficient to raise the lugs 7 and turn the lugs over the lower sides of the seats 13, so as to bring them opposite the cuts 8, would not permit the bolt and lugs to be turned in the opposite direction because of the greater depth of the seat 13 on the other side.

The stop-pin 7^a (shown in Figs. 1 and 4) is so applied to the bolt 6 as to prevent the lugs 7 from being raised over the higher sides of

the seats 13. By this device the lugs 7 are prevented from being dislodged from their seats by the accidental upward pressure naturally exerted by the attendant while turning up the nuts 11 and 12. This affords a resistance to turning of the bolt and consequent convenience and rapidity of adjustment of the nuts 11 and 12.

The stop-pin 7^a has a further function as used in our preferred form of lamp. Upon raising of the globe by means of the nut 11 and ring 4, as hitherto described, it is desirable to have some positive limit to the upward motion in order that the pressure exerted by the screw 11 upon the globe while forcing it up against the cover 1 will not crack said globe. This positive limit is supplied by the stop-pin 7^a.

The portion of the lamp-frame within the outer globe supports the latter by means of the parts above described, and consists of two tubes 14, connected by a cross-piece 15, the latter serving as a direct support for the bracket 9 and for the inner globe.

In order to steady and guide the outer globe when lowered, as hereinafter described, two guide-rods 16 are fastened, preferably, to the ring 4 (see Figs. 1 and 4) and extend upward into the frame-tubes 14. As shown in Fig. 1, these rods are provided with shoulders 17 at the upper ends, which rest upon the cross-piece 15 when lowered, and thus afford a support for the outer globe while depressed, leaving the lineman's hands free to clean the lamp and insert new carbons. This permits a limited telescoping action of the guide-rods 16 with the frame-tubes 14, the extent of such telescoping action being limited by the shoulders 17. The depression of the outer globe for these purposes is accomplished as follows: The nut 11 is unscrewed sufficiently to permit the lowering of the globe and ring 4 from the dotted position in Fig. 4 to the position indicated by unbroken lines therein. This will leave enough play to permit the lifting together of the globe, ring 4, and hanging rod 6, so as to free the lugs 7 from the sides of the seats 13. The rod 6 can then be turned through ninety degrees in such a direction as to cause the lugs 7 to pass over the lower sides of the seats and the lugs 7 brought opposite to cuts 8, when the rod, ring, and globe can all be lowered until the shoulders 17 on the guide-rods 16 support the weight of the whole, and the inner globe, carbons, and lamp-frame are all brought into sight and within easy reach above the outer globe. The lineman can thus have both hands free in replacing carbons.

Upon restoring the outer globe to place the reverse of the above-named operations is carried out. The final tightening of the nut 11 and the consequent raising of the whole outer globe causes a slow, gradual, and firm pressure of said globe up and into the somewhat resilient flare of the casing 1. This movement is limited by the stop-pin 7^a. This

means for effecting safely and surely a dust-proof seal at the top of the outer globe is one of the novel features of our invention.

The lower carbon in our improved lamp extends upward through a hollow standard 18, insulated from the rest of the lamp, as shown in Figs. 2, 4, and 6. As illustrated in Fig. 2, a vertical channel or cut 19 is provided through the substance of the cross-piece 15, through which projects the binding-screw 20 in such a manner as not to make contact with the cross-piece. The insulation of the lower carbon is thus not endangered by its fastenings. The standard 18 is preferably supported by means of wings 21, screwed to the cross-piece 15. Fig. 4 shows one method of making electrical connection with said standard 18. The lower end of the standard 18 is preferably provided with a door 22 of circular form, pivoted as at 23, and capable of swinging open to admit the lower carbon, as shown in Fig. 6. This forms no part of our joint invention claimed in this patent.

The inner globe 24, which may be of any well-known construction, preferably rests upon a pad of asbestos or equivalent material, as shown at 25. In fastening the globe 24 in place we prefer to use a thimble 26, which screws onto a proper thread provided, as shown in Fig. 6, on the standard 18 at 27. In practice we prefer to use an intermediate threaded covering for the standard, which we call the "sheath," and is shown at 28 in Fig. 5. This sheath is best made provided with a saucer 29, under which we preferably place a second pad 30, similar to the pad 25. The pad 25 should fit the upturned edge of the saucer 29. The thimble 26 is flared into a wide cone at the top, adapted to impinge upon the inner surface of the inner globe and, when screwed down upon the standard and sheath, to press said inner globe firmly to its seat, thus forming an air-tight seal at this point. This also forms no part of our joint invention claimed in this patent. It will thus be seen that when the outer globe is lowered, as above described, the inner globe may be easily removed and the carbons as easily replaced. The process of placing the lower carbon is extremely simple. The door 22 being swung open, the carbon is introduced through the hollow of the insulated standard 18 and fastened securely in place by means of the set-screw 20. The door 22 is then closed and the operation is complete.

What we claim is—

1. The support for the globe, the hanging rod bearing such support and lugs at the upper end of such hanging rod, in combination with a supporting-bracket having cuts and seats to receive said lugs on the hanging rod, said seats being higher on one side than on the other, and a stop-pin on said hanging rod so placed as to prevent said lugs being lifted over the higher sides of said seats, substantially as described.

2. The combination of the outer globe, the

main frame and casing against which the upper end of the globe is pressed, the support for said globe, a screw-threaded hanging rod passing through said support, the nut on said screw-thread for lifting said support, and a stop-pin on the hanging rod for limiting the upward movement of said support on said hanging rod, substantially as described.

3. The combination of the globe, the supporting-ring for the globe, a hanging rod having lugs at its upper end, a supporting-bracket adapted to cooperate with said lugs in supporting said hanging rod, and a nut screwing onto the lower end of said rod, upon the upper surface of which nut said supporting-ring is adapted to rest, substantially as described.

4. The combination of the globe, the supporting-ring for the globe, a hanging rod passing through said supporting-ring, and having lugs at its upper end, the supporting-bracket on the main frame of the lamp having cuts and seats to receive said lugs on the hanging rod, the nut threaded on the lower end of the hanging rod and pressing up under the globe-supporting ring, and the stop-pin which both limits the upward movement

of the hanging rod in the supporting-bracket, and the upward movement of the globe-supporting ring on said hanging rod, substantially as described.

5. In an electric-arc lamp, the combination of the main frame composed in part of vertical tubes, the guide-rods guided by said tubes, and capable of a limited telescoping action therewith, the globe-supporting ring carried by said guide-rods, the threaded hanging rod having lugs on its upper end, which hanging rod passes through said supporting-ring, the nut threaded on said hanging rod and bearing against the under side of said supporting-ring, and a supporting-bracket on the bottom of the main frame, which bracket has cuts and seats to receive the lugs on the upper end of the hanging rod, substantially as described.

In testimony whereof we affix our signatures in the presence of two witnesses.

PHILIP HENRY KLEIN, JR.
ERWIN LAVENS.

Witnesses:

F. D. NEWTON,
WM. FRANKSEN.