No. 676,377. Patented June 11, 1901.

F. WILKIE.

ELASTIC SUPPORT FOR ARC LAMPS.

(Application filed Sept. 5, 1900.)

(No Model.)

Fig. 1

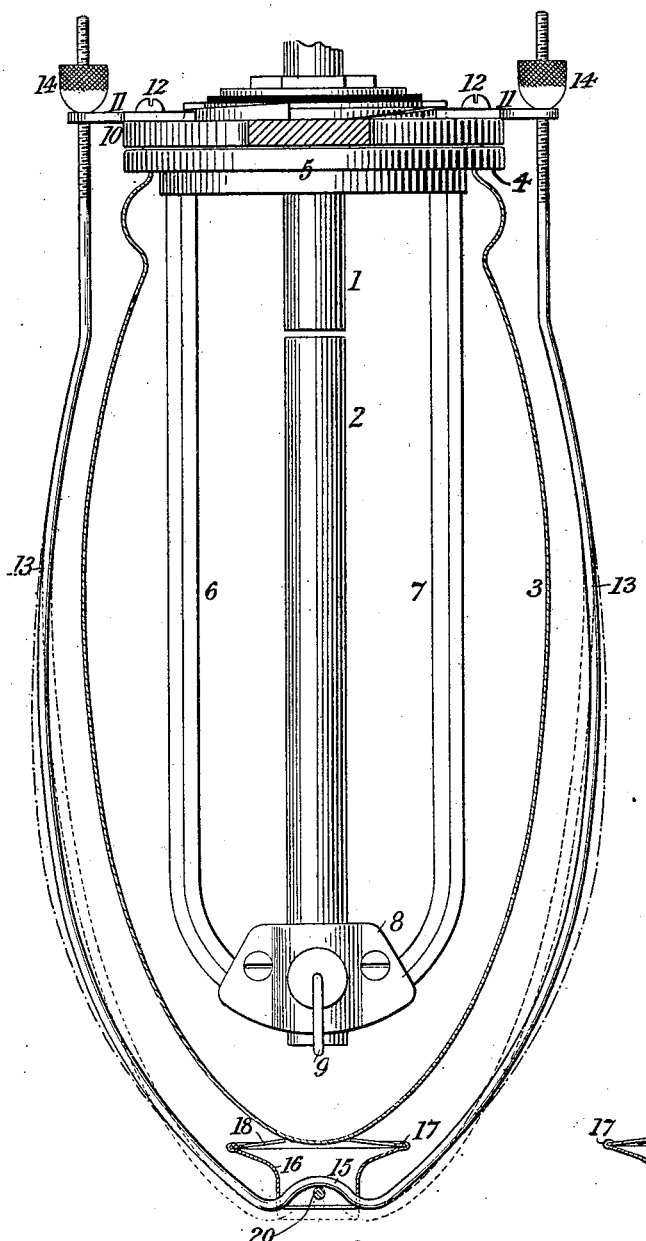


Fig. 3

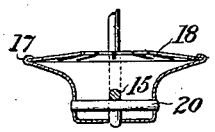
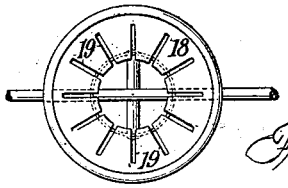


Fig. 2



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UNITED STATES PATENT OFFICE.

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ELASTIC SUPPORT FOR ARC-LAMPS.

SPECIFICATION forming part of Letters Patent No. 676,377, dated June 11, 1901.

Application filed September 5, 1900. Serial No. 29,050. (No model.)

To all whom it may concern:

Be it known that I, FREDRICK WILKIE, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Elastic Supports for Arc-Lamp Bulbs, of which the following is a specification.

My invention relates to elastic supports for the inner globes or bulbs of inclosed-arc lamps; and it has reference, primarily, to providing means for supporting such globes or bulbs from the bottom, whereby a uniform pressure is applied in an upward direction in such a manner as to support the globe or bulb by elastic means without causing undue pressure or strain upon the supported part at any particular point or points. It has been customary to support the bulbs of lamps of this class by means of adjustable screws under a rim at the top of the bulb. In some instances ring-supports under the top rim have been used, and other devices for accomplishing the support of the bulb are known and in practical use. In all such devices considerable strain is put upon the rim, and it is found practically impossible to avoid an uneven action upon the rim, the result being that when heat is developed inside the bulb the rim is likely to crack and the bulb itself to be practically destroyed.

In my invention I provide means for supporting the lower end of the bulb uniformly upon a spring which touches the lower end all around the bulb, whereby not only an even pressure is secured at the points where the spring touches the bulb, but also an even and uniform pressure is caused at the upper end of the bulb, where it is pressed against a shoulder, so as to touch it at all points and form a seal for the upper end of the bulb.

The details of my invention are illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of an inclosed arc-lamp embodying my invention, the bulb or globe being shown in section. Fig. 2 is a plan of the spring-support at the bottom of the lamp, and Fig. 3 is a vertical section through the same.

In the drawings, 1 and 2 are the upper and lower carbons, respectively, of an inclosed arc-lamp, and 3 is the inclosing glass globe or bulb. In the present instance the upper end of the bulb 3 is represented as pressing against a shoulder 4 on the gas-check 5 of the lamp. To this gas-check are secured arms 6 and 7, which support the lower carbon 2 by any suitable means. Such means may consist of a bracket 8, clamped to the lower ends of the rods 6 and 7 and carrying an adjustable stirrup 9, which is adapted to be turned so as to rest under the lower carbon 2 and hold it in position. Above the gas-check 5 is a plate 10, constituting the lower portion of the upper lamp structure, which is not shown in the present drawings. To the plate 10 are secured brackets 11 11 by means of screws 12 12. The side rods 13 13, which stand outside the bulb 3, pass through the brackets 11 11, their upper ends being screw-threaded and adapted to receive nuts 14 14, by means of which the side rods may readily be adjusted.

The inner rods or bars 6 and 7 are preferably made of angular steel having considerable rigidity. On the other hand, the side rods 13 13 are made of lighter stock and adapted to yield under pressure or under the action of a force tending to straighten them.

The side rods 13 13 may be made in one piece and bent upward at the bottom, as shown at 15, the bend 15 being adapted to enter an opening in the bottom of a button 16, which is stamped up from a thin piece of metal. The rim 17 of the button 16 is then crimped over the outer edge of an iris-spring 18, the said spring slanting somewhat from its edge toward the center, where it is cut away, as shown clearly in Fig. 2. By means of a series of splits 19 19 the described structure is made very elastic, and the central opening being circular in form the bearing of the spring upon any object resting upon its center is uniform, provided the object which it surrounds is itself spherical in outline, or approximately so.

In order to hold the button 16 to the side rods 13 13, a pin 20 is passed through the button below the bend 15 in the side rods 13 13.

The bulb 3 is rounded at the bottom and preferably made with a somewhat sharp point, which enters the opening at the center of the

iris-spring and is pressed upon evenly by the said spring. The latter then holds the bulb in position by pressing it against the shoulder 4 at the top, while at the same time this pressure is uniform and yielding to such an extent that there is little or no danger of the breaking of the bulb by reason of the character of the spring employed for its support.

In practice the openings in the brackets 11 11, through which the side rods 13 13 pass, are made large enough so that the side rods may be swung aside to permit the introduction of the globe 3 and to allow of the said globe or bulb being held by hand against the shoulder 4. The length of the side rods 13 below the brackets 11 11 is so adjusted by means of the nuts 14 14 that in order to swing the side rods back into their normal position and bring the spring 18 under the lower end of the bulb 3 it is necessary to stretch the side rods somewhat, whereby the side rods themselves are made to play a part in furnishing an elastic support for the bulb.

The full lines in Fig. 1 illustrate the position of the side rods when the globe 3 is in place, while the outside dotted lines indicate the shape of the side-rod structure when there is no force at work acting to stretch or extend the side rods in a downward direction. Should the side rods stretch in use, this can be compensated for by adjusting the nuts 14 14 so as to take up the slack.

With the support described it is found that explosions inside the bulb do not break the glass, but that the support is yielding enough to permit the escape of the gases at the top of the bulb when an explosion takes place. In other words, the spring 18 and the side rods 13 13 yield readily enough to permit the escape of the gases at the point indicated without injury to the bulb.

It is designed that the side rods when the bulb is in place shall conform in general to the outline of the outer surface of the bulb. Before the bulb is inserted in position the side rods will be somewhat bowed for reasons set forth above.

The iris-spring described in the foregoing specification will generally be formed from a disk of phosphor-bronze or some other elastic metal which retains its elasticity when heated.

While the use of yielding side rods is in itself a matter of practical advantage in lamps of this sort, yet it is important that these rods should not be made too small, as in that case they are liable to be unduly affected by the heat radiated from the bulb. One of the advantages of having side rods which yield to longitudinal pull or pressure resides in the fact that the lamp-bulb can be inserted in place more readily and with less danger of injury. By combining with the yielding side rods an elastic local support at the bottom of the bulb this advantage is increased and it becomes possible to insert the bulb in place with ease and without danger of injury, even though the side rods be of considerable size. In other words, the combination of the elements described contributes to an improved lamp construction wherein the advantages of elasticity in the side rods are secured not only during the act of putting the lamp-bulb in place, but also during the operation of the lamp, the yielding quality of the side rods during the latter operation being reinforced by the local elasticity in the immediate support for the bulb.

The invention claimed is—

1. An elastic support for the glass globe or bulb of an electric-arc lamp, consisting of an iris-spring into which the lower end of the said globe or bulb is set under pressure.

2. An elastic support for the glass bulb of an inclosed arc-lamp composed in part of yielding side rods for the lamp and in part of a spring applied directly to the bottom of the bulb and carried by the yielding side rods.

3. An elastic support for the glass bulb of an inclosed arc-lamp composed in part of adjustable yielding side rods for the lamp and in part of a spring applied directly to the lower end of the bulb and carried by the yielding side rods.

4. In an inclosed arc-lamp an iris-spring secured to adjustable yielding side rods outside the lamp-bulb and applied directly to the bottom of the said bulb.

5. In an inclosed arc-lamp, a continuous yielding rod constituting the side rods of the lamp and carrying an elastic support for the lamp-bulb.

6. In an inclosed arc-lamp, a continuous yielding rod constituting the side rods of the lamp, a bend at the lower end of the said rod, extending into a button and connected therewith by a pin, and a spring secured to the said button and adapted to engage the lower end of the glass bulb of a lamp.

7. The combination with the glass bulb of an inclosed arc-lamp, the said bulb being closed at the bottom, of an elastic support for the bulb composed in part of adjustable yielding side rods for the lamp and in part of a spring applied directly to the lower end of the bulb and carried by the yielding side rods.

Signed at New York, in the county of New York and State of New York, this 31st day of August, A. D. 1900.

FREDRICK WILKIE.

Witnesses:
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