Jan. 14, 1930. C. S. ASHCRAFT 1,743,182

REFLECTOR PROTECTION DEVICE FOR ARC LAMPS

Filed June 1, 1927

Fig. 1.

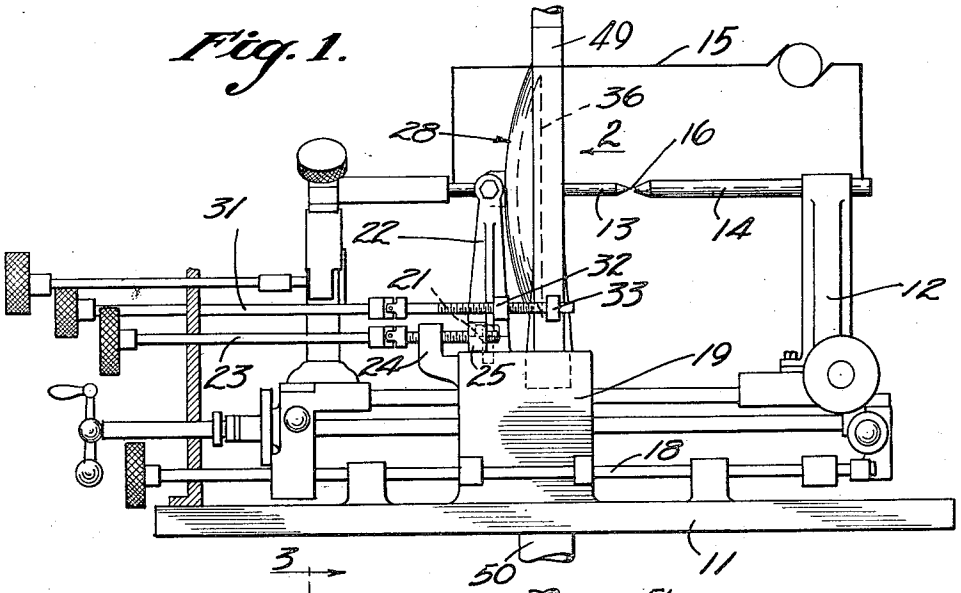


Fig. 2.

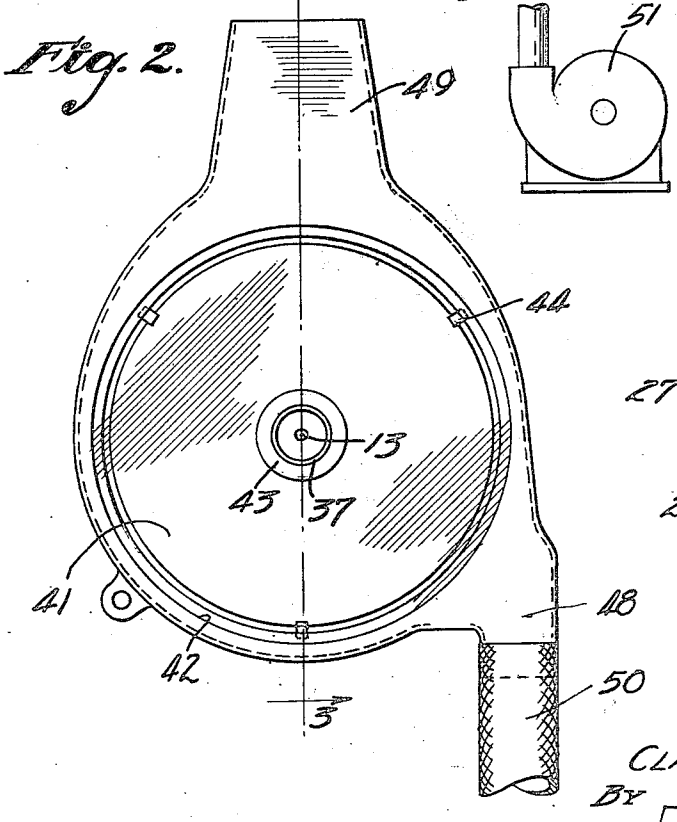
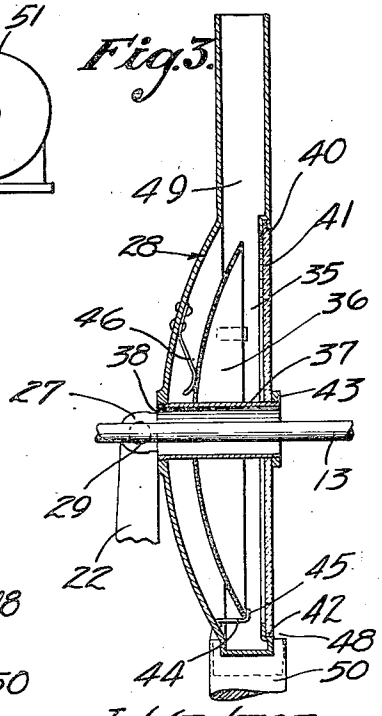


Fig. 3.



INVENTOR:
CLARENCE S. ASHCRAFT
BY
Ford W. Harris
ATTORNEY.

Patented Jan. 14, 1930 1,743,182

UNITED STATES PATENT OFFICE

CLARENCE S. ASHCRAFT, OF LOS ANGELES, CALIFORNIA

REFLECTOR-PROTECTION DEVICE FOR ARC LAMPS

Application filed June 1, 1927. Serial No. 195,622.

My invention relates to reflector arc lamps such as are used in the projection of motion pictures. These arc lamps include a pair of carbon electrodes which are included in an electric circuit. When electricity is supplied to the electrodes an electric arc is provided between the adjacent arcing-ends. Supported adjacent to the electric arc is a reflector which is adjustable so that proper focusing may be obtained. In the common type of reflector arc lamps, the high temperature of the arc and the particles of carbon which are given off injure the reflector so that in time its reflecting qualities are considerably detracted from.

It is an object of this invention to provide a reflector arc lamp in which the reflector is cooled and protected from hot particles of carbon given off by the arc.

Other objects and advantages of my invention will be brought out in the following description.

In the accompanying drawing,

Fig. 1 is an elevational view of the invention applied to a standard reflector arc lamp.

Fig. 2 is an enlarged view of the invention taken as indicated by the arrow 2 of Fig. 1.

Fig. 3 is a cross section taken on the line 3—3 of Fig. 2.

Referring to the drawing more specifically, the base of the reflector arc lamp is designated by the numeral 11. The base 11 has standards 12 which carry the carbon electrodes 13 and 14 which are connected in an electric circuit 15 and which are adapted to provide an arc at 16. The base 11 has rods 18 on which the carriage 19 of the reflector arc lamp is supported. Pivoted to the carriage by means of a bolt 21 is a yoke 22. This yoke 22 may be swung on the pivot 21 by operating a rod 23 which is supported by a bracket 24 of the carriage 19 and threads into a boss 25 of the yoke. The upper part of the yoke 22 is pivotally connected to ears 27 of the housing 28 of the invention by pivot-bolts 29. The housing 28 may be swung on the pivot 29 by means of a rod 31 which threads through a boss 32 of the yoke and is connected to the housing by a connection 33.

Referring particularly to Figs. 2 and 3, the housing 28 provides a chamber 35 in which the reflector 36 of the invention is located. The central part of the housing 28 has a tube 37 which screws into an opening 38 of the housing and is thus supported in place. Extending through this tube 37 is the electrode 13. The front part of the housing is provided with an opening 40, and closing the opening 40 is the transparent wall 41 of the invention. This transparent wall is preferably made of pyrex-glass which is capable of withstanding high temperature, and it rests in an annular countersink 42 of the housing 28. The transparent wall 41 is held in place by means of a nut 43 which is screwed onto the forward end of the tube 37. The reflector 36 surrounds the tube 37 and is supported by arms 44 which have inwardly turned ends 45. A spring 46 is provided for resiliently holding the reflector 36 against the inturned ends 45 of the arms 44. The housing 28 has a tangential inlet 48 and has an outlet 49, both of which connect to the chamber 35. Connected to the inlet 48 is a flexible hose 50 which extends, as diagrammatically shown in Fig. 1, to an air circulating means in the form of a blower 51.

When the electric circuit 15 is completed and an arc is produced at 16, the blower 51 is set into operation so that air or other cooling gas is circulated through the chamber 35. The air enters the chamber tangentially and will circulate to all parts of it, passing outward therefrom through the outlet 49. This part of the invention fully protects the reflector 36 from heat. As pointed out previously, the arc will give off particles of carbon which are liable, in the ordinary reflector arc lamp, to fly against the reflector. In this invention the reflector 36 is protected from these particles of carbon by the transparent wall 41. I have found that these particles have no detrimental effect on the transparent wall 41 which would interfere with the light rays reflected by the reflector 36.

By incorporating the invention in a reflector arc light it is possible to retain the reflector 36 in good condition even after a long period of use. The reflector will at all times

project a light-beam which is of the same quality as when the reflector was new.

I have shown the invention embodied on one type of reflector arc lamp, but it should be understood that the invention is only the combination of the reflector, the housing, the transparent wall, the air circulating means, and the electrodes; therefore, it should be obvious that the invention may be applied to various other constructions of reflector arc lamps without departing from the invention.

I claim as my invention:

1. An arc lamp comprising: a pair of electrodes disposed in a position to make an arc; a circuit for supplying electricity to said electrodes; a reflector placed adjacent to the arcing-ends of said electrodes; a housing enclosing said reflector; and means for circulating a cooling-medium through said housing, said housing having a transparent wall in front of said reflector and having a central tube through which one of said electrodes extends.

2. A reflector unit adapted to be positioned adjacent the arcing-ends of the electrodes of an arc lamp, said unit comprising: a reflector; a housing enclosing said reflector and having a transparent wall in front of said reflector and a central tube through which one of said electrodes may extend; and means for circulating a cooling medium through said housing.

In testimony whereof, I have hereunto set my hand at Chicago, Illinois, this 23 day of May, 1927.

CLARENCE S. ASHCRAFT.