April 10, 1928.

1,665,410

C. M. FOX

PROJECTION APPARATUS

Filed Feb. 14, 1927

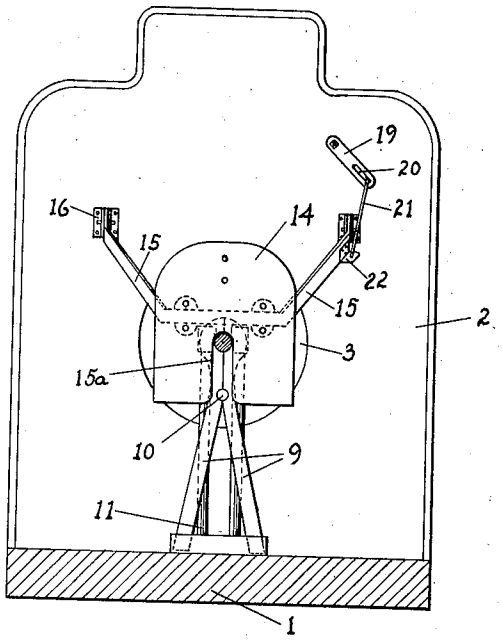


Fig-1

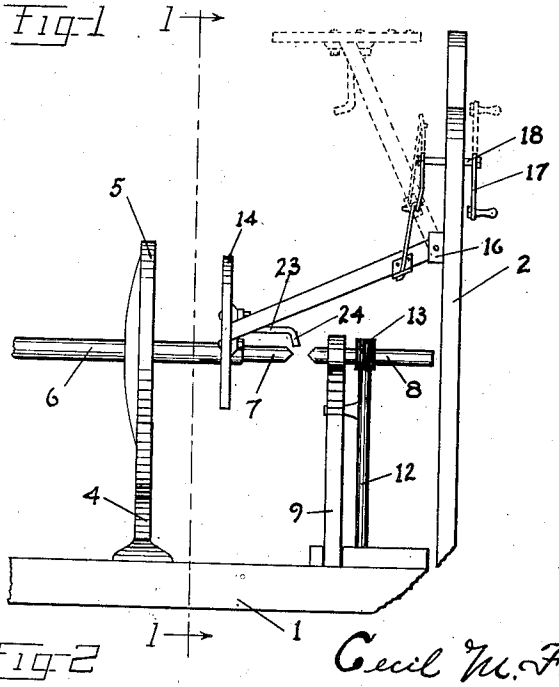


Fig-2

Inventor

Cecil M. Fox

By

Owen & Owen

Attorneys

Patented Apr. 10, 1928. 1,665,410

UNITED STATES PATENT OFFICE.

CECIL M. FOX, OF TOLEDO, OHIO, ASSIGNOR TO THE ROLLAWAY MOTOR COMPANY, A CORPORATION OF OHIO.

PROJECTION APPARATUS.

Application filed February 14, 1927. Serial No. 167,889.

This invention relates to projection apparatus of the type used for cinematographic films and commonly employing carbon electrodes disposed in front of a reflector.

When projection apparatus of the above type is positioned a great distance from the screen onto which the pictures are to be displayed, a lamp of high intensity is required. This is obvious in the case of a theater in which the projection apparatus is located on the seventh floor or tier and the screen is on the first floor. While a reflector is desirable for use in such apparatus, as it results in saving of current required, it has been found heretofore that a reflector was not practical, because when the carbons were initially brought together to strike an arc, the intensely hot particles of the carbons were thrown against the reflector, which soon became damaged and rendered useless. Much difficulty has also been experienced in accurately positioning the arc-producing ends of the electrodes or carbons with respect to the reflector.

Objects of this invention are to eliminate the above objectionable features; to provide means for preventing the particles from the electrodes from encountering the reflector when the arc is being struck, but which will not interfere with the normal operation of the apparatus; to provide means for readily and conveniently positioning the electrodes properly with respect to the reflector; and to provide an apparatus of this type having the new and improved features hereinafter described.

For purposes of illustration an embodiment of the invention is shown on the accompanying drawings, in which:

Fig. 1 is a vertical sectional elevation on the line 1—1 of Fig. 2; and Fig. 2 is a side elevation of the front portion of a projection apparatus.

The illustrated embodiment of the invention comprises a base 1 on the forward end of which rises an end plate 2 having a circular opening 3 through which the light is projected. Only so much of a projection apparatus is shown as will enable those skilled in the art to practice the invention, and it is deemed unnecessary to show other parts of the apparatus which may be of conventional design and form no part of the present invention.

Spaced rearwardly from the front end plate 2 and mounted on a bracket 4 is a reflector 5 having a central opening through which a tube 6 extends. This tube 6 carries an electrode 7, and cooperating with the electrode 7 and aligned horizontally therewith, is an electrode 8 which is guided in a support consisting of a pair of arms 9 pivoted on a stud 10 projecting laterally from an upright post 11. The arms are held together in any suitable manner, as will be understood.

Both carbons 7 and 8 may be fed toward each other, but in this instance the carbon 8 alone is fed toward the carbon 7. For this purpose an upright post 12 is spaced laterally from the post 11, and mounted on the upper ends of shafts projecting through the posts 11 and 12 are rubber rollers 13, which grip the sides of the electrode 8. Suitable mechanism (not shown) is provided for driving the rollers 13 in one direction or the other so that the electrode 8 may be fed toward or away from the electrode 7.

For preventing particles of the carbon 7 and 8 from being thrown against the reflector 5 and thereby damaging it, a shield 14 is formed with a vertical slot 15ª to fit over the tube 6 in front of the reflector 5. When the shield 14 is in place it will be seen that the reflector 5 is adequately protected from sparks and intensely hot particles of the carbon. The shield 14 is carried by arms 15 formed from a single strip of strap metal, which may be riveted or otherwise secured to the shield. The outer ends of the arms 15 are pivoted to brackets 16 on the end plate 2.

The shield 14 is swung to and from its useful position by means of a crank 17 fixed to a shaft 18 rotatable in the end plate 2. An arm 19 is fixed to the opposite end of the shaft 18, and has an elongate slot 20 to receive a link, the oppoiste end of which is connected to a bracket 22 fixed to one of the arms 15. It will be seen that by turning the crank 17 in one direction the shield 14 is swung out of operative position, and when turned in the opposite direction the shield is moved to useful position.

For securing the proper effect, it is found that the arc-producing ends of the carbons 7 and 8 must be spaced a predetermined distance from the reflector 5. In order to gauge this distance an indicator 23 is fixed to the shield 14 and projects forwardly therefrom.

The outer end of the indicator 23 is formed with a downwardly turned portion 24, which determines the proper distance for the arc with relation to the reflector 5. This has been found most advantageous in machines of this character where it is desired that changes and adjustments be made as quickly as possible. It requires but an instant for the operator to position the arc properly relative to the reflector by glancing at the downturned end 24 of the indicator, and this operation may be almost simultaneous with the striking of the arc.

It will be understood that the above description is given by way of illustration and not of limitation, and that numerous changes in details of construction, arrangement and operation may be effected without departing from the spirit of the invention, especially as defined in the appended claims. It is further to be understood that the word "carbon" herein used is not to be restricted to that material, but is used broadly to indicate any arc-producing material suitable for the purpose.

What I claim as new and desire to secure by Letters Patent is:

1. In a projection apparatus, a reflector, a pair of electrodes having their arc-producing ends in front of said reflector, a shield interposed between said reflector and the arc-producing ends of the electrodes for preventing particles of the electrodes from injuring the reflector while the arc is being struck, an arm fixed to and extending outwardly from said shield, a pivotal support for the end of said arm, crank means for swinging said shield into and out of position of use, and means carried by said shield for accurately positioning said electrodes relative to the reflector.

2. The method of striking an arc in a projection apparatus having a pair of electrodes and a reflector which consists in positioning a shield between the arc-producing ends of the electrodes and the reflector to prevent hot particles of the electrodes from impinging on the reflector, striking the arc, and thereafter moving the shield away from the electrodes.

3. In a projection apparatus, a reflector, a pair of electrodes having their arc-producing ends in front of said reflector, a movable member adapted to be disposed between said reflector and said arc-producing ends during striking of the arc for preventing particles from said electrodes from being thrown on said reflector, and means for moving said member into operative position during striking of the arc and away from said electrodes after striking of the arc.

4. In a projection apparatus, a reflector, a pair of electrodes having their arc-producing ends in front of said reflector, a shield adapted to be disposed between said reflector and said arc-producing ends during striking of the arc for preventing particles from said electrodes from being thrown on said reflector, and means to mount said shield for swinging movements so as to dispose same in operative position during striking of the arc and away from said electrodes after striking of the arc.

5. In a projection apparatus, a reflector, a pair of electrodes having their arc-producing ends in front of said reflector, a shield adapted to be disposed between said reflector and said arc-producing ends during striking of the arc for preventing particles from said electrodes from being thrown on said reflector, an arm fixed to and extending outwardly from the shield, a pivotal support for the arm, and crank means for swinging said arm and therewith the shield into operative position during striking of the arc and away from said electrodes after striking of the arc.

In testimony whereof I have hereunto signed my name to this specification.

CECIL M. FOX.