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ROTATABLE LAMP MEANS IN MOVING OR STILL PICTURE PROJECTORS

Filed June 3, 1963

Fig. 1.

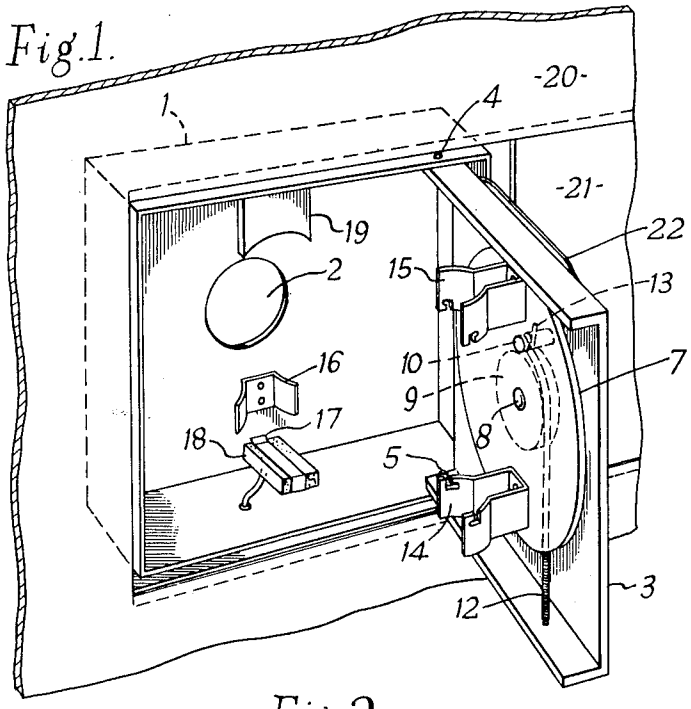
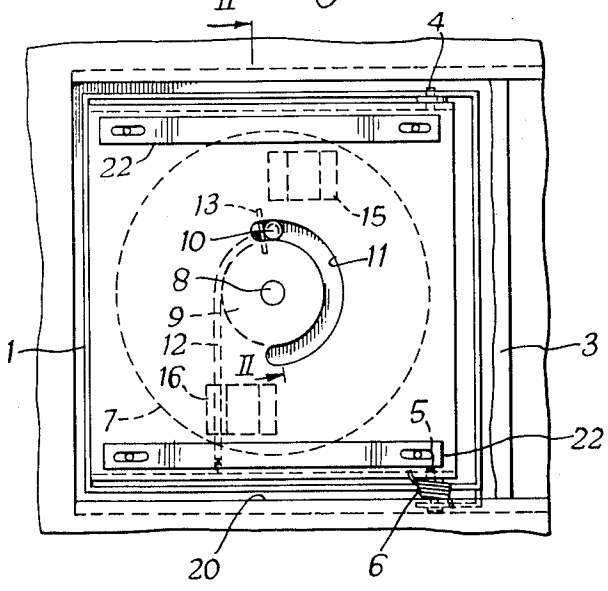


Fig. 2.



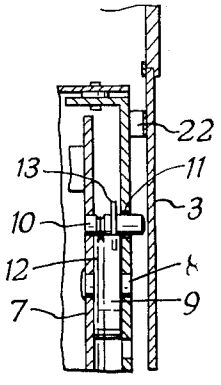


Fig. 3.

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ROTATABLE LAMP MEANS IN MOVING OR STILL PICTURE PROJECTORS

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This invention relates to moving or still picture projectors.

Known projectors generally suffer from the disadvantage that, in the event of the projector lamp failing, it is necessary to allow the lamp and its housing to cool sufficiently for both to be handled safely by the operator before the lamp can be replaced. Where a projector is intended for home use the resultant break in the continuity of projection is generally acceptable, but as projectors are coming into increasing use in commercial and industrial fields for the purpose of demonstrating, for example, the mode of operation of mechanical equipment, it is becoming increasingly important to ensure that the attention of the audience is distracted as little as possible should a projector lamp fail.

The object of the invention is to provide a movie projector, in which, should one projector lamp fail, a second may be brought into operation quickly.

According to the invention, a moving or still picture projector comprises a projector lamp housing having a door thereto and lamp support means mounted on the inner face of the door for movement relative to the door to present a first and a second lamp holder in turn in a working position when the door is closed, electric contact means mounted within the housing for connecting an energising circuit to a lamp in one of said lamp holders in the working position, and means for moving the lamp support means.

The means for moving the lamp support means is releasable for movement by opening the door and comprises a spring for urging movement of the second lamp holder into the working position in substitution for the first lamp holder, and setting means for causing reversal of the movement.

In order to economise in space the lamp support means is preferably so dimensioned that when two lamps are mounted thereon their glass envelopes touch.

One embodiment of the invention will now be described, by way of example, with reference to the accompanying drawing in which:

FIGURE 1 is a perspective view of part of a projector;

FIGURE 2 is an elevation of part of the arrangement shown in FIGURE 1, and

FIGURE 3 is a section along the line II—II of FIGURE 2.

In the figures, a moving picture projector comprises a housing **1** for two projector lamps (not shown). The housing **1** has an aperture **2** through which light from one of the lamps may pass to the optical system of the projector. Also a door **3** is hinged on two electrical insulating pivot members **4** and **5**. A helical spring **6** mounted on the pivot member **5** biases the door **3** open.

Mounted on the inner face of the door **3** is a lamp support means in the form of a disc **7** which is rotatable about pivot **8** fixed to the door. Also fixed to the door **3** and located between the door and the disc **7** is a bushing **9**.

A knob **10** fixed to the disc **7** extends through an arcuate slot **11** in the door **3** and permits the disc **7** to be rotated manually. The disc **7** is biased by an extension spring **12** in an anti-clockwise direction, as shown in FIGURE 2, this spring being attached at one end to the knob **10** and at the other end to the lower edge of the door **3**. Rotation of the disc **7** by the spring **12** is limited by engagement of the knob **10** and a radial springy stop **13** fixed to the bushing **9**.

Mounted on the inner face of the disc **7** are two diametrically opposed lamp holders **14** and **15**. The lamp holder **14** is so positioned that when the knob **10** abuts on the stop **13** and the door **3** is closed a lamp supported in the lamp holder **14** has its filament in a working position, i.e., located for projection. Power is then supplied to this lamp by means of resilient contacts **16**, **17**, contact **16** being mounted directly on the inner surface of the housing **11** and contact **17** being mounted on a block of insulating material **18** which, in turn, is also mounted on the inner surface of the housing **1**.

When the door **3** is opened, a lamp mounted in the lamp holder **14** is withdrawn from the contacts **16**, **17** and the disc **7** may then be manually rotated against the action of the spring **12** until the knob **10** abuts on the lower end, as shown in FIGURE 2, of the arcuate slot **11**. The disc **7** then occupies a position such that a lamp supported in the lamp holder **15** is in a working position and energised by contacts **16**, **17** when the door **3** is re-closed.

A concave locating member **19** mounted on the inner wall of the housing **1** engages the envelope of a lamp in the working position to ensure that the filament of that lamp is accurately positioned relatively to the aperture **2**.

The housing **1** is mounted within a projector casing **20** provided with a sliding door **21**, which, when open, exposes the door **3** of the housing and permits it to be opened by the spring **6**. During closing movement of the door **21** its leading edge pushes the other door **3** to and then rides over the resilient strips **22** to close the door **3** fully. The door **21** thus acts to hold the door **3** closed.

In preparing the projector for operation, a projector lamp is mounted in each of the lamp holders **14** and **15** and the disc **7** is moved by the knob **10** against the action of the spring **12** until it reaches the lower end of the arcuate slot **11**. By closing the door **3** fully the lamp mounted in lamp holder **15** engages resilient contacts **16**, **17** and the envelope of that lamp engages the locating member **19**. The sliding door **21** holds the door **3** closed.

Should the lamp mounted in the lamp holder **15** fail, the operator opens the door **21** wide and immediately recloses it. The opening of the door **12** permits the door **3** to be opened by the spring **6**. The lamp mounted in the lamp holder **15** is thereby withdrawn from the contacts **16**, **17** and the locating member **19**. Thereupon the disc **7** is released and rotated by the spring **12** until the knob **10** abuts upon the stop **13**. The springy nature of the stop **13** minimises mechanical shock imparted to the lamps on release of the disc **7**. Re-closing of the door **21** causes the door **3** to be re-closed also and consequential engagement of a lamp mounted in the lamp holder **14** with the resilient contacts **16**, **17** and of the envelope of that lamp with the locating member **19**.

The simple action of opening and reclosing the door **21** thus effects the rapid substitution of lamps should failure of the one in the working position have occurred.

I claim:

1. A picture projector which comprises a projector casing having an opening, a lamp housing mounted to said projector casing and having a pivotable door swingable between open and closed positions through the opening in said projector casing, a first spring means biasing said pivotable door in an open position, a door slidably mounted on said projector casing for closing said opening and holding said swingable door in its closed position against the action of said first spring means, a disk member, means rotatably mounting said disk member on an inside face of said pivotable door between a first and second fixed position, a second spring means biasing said disk member to-

wards said first fixed position, said projector lamp housing having an aperture in a wall opposite said pivotable door, a first and second lamp holder, means mounting said first and second lamp holder on said disk member and adapted so that a first lamp mounted in said first lamp holder will be aligned with said aperture in said first fixed position of said disk member and so that a second lamp mounted in said second lamp holder will be aligned with said aperture in said second fixed position of said disk member, a first electrical contact mounted on said lamp housing which is engageable with said second lamp holder to rotatably arrest it when said disk member is at said second fixed position only when said pivotable door is closed and engageable with said first lamp holder only when said disk member is at said first fixed position and said pivotable door is closed, a second electrical contact, and means mounting said second electrical contact means to engage either a terminal of said first lamp other than a terminal in contact with said first lamp holder when said disk member is at said first fixed position or a terminal of said second lamp other than a terminal in contact with said second lamp holder where said disk member is at said second fixed position.

2. A picture projector according to claim 1 wherein said second electrical contact slidably engages either the other terminal of said first or second lamp when said pivotable door is closed.

3. A picture projector according to claim 2 including a resilient stop member for arresting said disk member at said first fixed position.

4. A lamp projector according to claim 3 including an arcuate slot in said slidable door and a stud member mounted on said disk member which projects through said arcuate slot, said resilient stop member being mounted on said disk member and projecting into said arcuate slot when said disk member is at said first fixed position.

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