

a rectangular metal framework comprising bottom member 70 and side members 72. Across the framework is placed a color medium 74 of gelatin or other material. Wires 76 help to hold the medium flat. To insert the screens in the screen housing, hinged cover 78 is raised and the screens are dropped between guides 72 to their inoperative position at the bottom of housing 24. Extending horizontally under each screen and substantially parallel to frame member 70 thereof, is a crank arm 80 (Fig. 5) having at its free end a grooved roller 82 contacting with member 70 near one end thereof. The other end of each arm 80 is clamped to the front end of one of a set of concentric shafts 84, 86, 88, 90 and 92 (Fig. 1). These shafts extend to the rear of the machine and are there supported by a bracket 94. Each shaft is provided at its rear end with an operating handle 96 by which the shaft may be rotated to move an arm 80 from its normal horizontal position to a vertical position as shown at the right in Fig. 5, and vice versa. When an arm 80 swings from horizontal to vertical it raises its corresponding screen to operative position in front of opening 98 in the rear of housing 24, and when the arm 80 moves back to horizontal the screen follows it by gravity to inoperative position at the bottom of housing 24. There is no operative connection between any screen and its operating arm except roller 82 which travels from end to end of frame member 70. When arm 80 is in its raised position it is slightly past the vertical center line of shafts 84—92, and therefore is automatically held in position by the weight of the screen and also by the weight of the coordinated handle 96 which is then preferably horizontal. It will be understood that the position of any handle 96 will indicate to the operator the position of the screen corresponding to that handle.

Mounted at the front of housing 20, between the lamp and the lens, are two shutters. One is an iris shutter 100 of well known type, operable from the rear of the machine by handle 102 through the instrumentality of shaft 104 (Figs. 2 and 3), crank arm 106, and link 108. The other is a curtain shutter comprising upper and lower curtains 110 and 112. The lower curtain 112 is manually operable from the rear by handle 114 through shaft 116, crank arm 118, and link 120. Shutter 112 has an upwardly extending arm 122, to the upper end of which is attached a link 124, connected at its upper end to one end of a substantially horizontal lever 126 fulcrumed on the machine at 128 and connected at its other end by link 130 to upper shutter 110. Shutters 110 and 112 are guided for vertical motion by guides 132. From the above it will be apparent that when handle 114 is rotated to raise or lower shutter 112, the interconnecting linkage above described will cause upper shutter 110 to move the same distance as

the lower shutter but in the opposite direction, thereby providing a shutter having very rapid action.

The arc light used in the present embodiment of the invention comprises an upper carbon 140 and a lower carbon 150 together with suitable devices under control of the operator for adjusting the carbons relatively to each other and for locating them relatively to the optical axis.

The entire light is supported by a bracket 152 (Figs. 1 and 7) the lower end of which is arranged to slide vertically on parallel rods 154 held in a flange 156 fast on base plate 158 of housing 20. A vertical screw 160 passes upwardly through 158 between rods 154 and is threaded into bracket 152. Hand wheel 162 is pinned on the lower end of screw 160, by which the operator may turn the screw and move the entire light structure vertically. Underneath plate 158 is a collar 164 clamped to screw stem 160 to hold flange 156 in close but rotative contact with plate 158. Clamp 164 has a rearwardly extending finger piece 166 by which the operator may slightly rotate screw 160, and therefore flange 156 and bracket 152, about the vertical axis of screw 160. This means that the carbons may be swung sidewise about that same axis. A locking screw 168 passing through a slot in plate 158 and tapped into flange 156 serves to hold the parts in the position to which they are adjusted.

The upper part of bracket 152 is bifurcated as indicated in Fig. 9, and to the arms of the bracket is clamped by screws 174 a member 170, which is formed with two ears 172. This provides means for adjusting and holding member 170 in any desired angular position about the axis of screws 174. Inasmuch as the carbons are supported by member 170, as will appear, they also may be moved bodily about the axis of screws 174 to properly locate the arc relatively to the optical axis.

Held by screws 176 in member 170 parallel to the lamp carbons (Fig. 6) are two guide rods 178. Slidably mounted on rods 178 are the upper and lower carbon holders 180 and 182, respectively. Mounted on shaft 184 for rotation in member 170 is a pinion 186. Extending downwardly from holder 180 and upwardly from holder 182 are racks 188 and 190 respectively, one rack on each side of pinion 186 so that when the pinion is rotated the racks will move in opposite directions and carbon holders 180 and 182 will be moved toward or away from each other. Shaft 184 is connected by a universal coupling 192 to a shaft 194 on which is pinned a hand wheel 196 by which the operator may rotate pinion 186 and thereby move the carbons axially to thereby adjust the distance between their tips.

Both upper and lower carbon holders are fitted with carbon clamping devices as shown