My invention relates particularly to dissolve devices for motion picture cameras and has for its general object the provision of a novel and effective dissolve device which is convenient in use, and which is susceptible of compactness and which is preferably constructed for ready attachment and detachment from a photographic camera.

With this object in view, my invention consists in certain features of novelty in the construction, combination and arrangement of parts by which the said object and certain other objects hereinafter appearing, are effected, all as fully described in reference to the accompanying drawing, and more particularly pointed out in the appended claims.

In the said drawing—

Figure 1 is a front elevation of a photographic dissolve device embodying my invention and showing it attached to a motion picture camera;

Figure 2 is a section of the same substantially on the line 2—2 of Figure 1 and showing the additional shutter of my invention applied as hereinafter described;

Figure 3 is a front elevation with parts removed and with parts shown in section;

Figure 4 is a view similar to Figure 3, showing parts in different positions than those in which they are shown in Figure 3;

Figure 5 is a perspective view of the movable stop member of the device, hereinafter described; and

Figure 6 is a front elevation of the detachable “wipe” dissolve disk of the device, hereinafter described.

Referring to the drawing, a casing of flat circular form is composed of a main casing part 1 and a front cover 2 secured to the main casing part to complete the enclosure of the casing. An axially bored dissolve shutter disk designated at 3, is arranged within the casing in coaxial relation therewith and is secured on a shaft 4 by means of a bushing 5 screwed thereto. A stop 6 is mounted on the shaft 4 to engage with the stop 7 of the casing part 1 and the bushing 5 rotatably engaging in a bore 8 through the cover 2. The casing part 1 is provided with a light opening therethrough, consisting of aligned apertures 9 and 11, respectively, through the casing part 1 and the cover 2, and the disk 3 is arranged in eccentric relation with this light opening and sweeps thereacross in operative relation therewith. The rear wall of the casing part 1 is provided with a rearwardly projecting bored hub 12 concentric with the thereby described light opening, and a plurality of headed screws 13 are screw-threaded radially through this hub in angularly spaced relation for conveniently detachably securing the casing on the photographic lens 14 of a photographic camera 15 in angularly adjusted relation with the axis of the lens and with the light opening of the casing aligned with the lens and consequently with the disk 3 in operative relation with the lens. See Figures 2 and 3.

The casing part 1 is provided with a rearwardly projecting enclosure 16, the enclosure of which is completed by a rear cover 17 secured therewith, see Figure 2, and disposed in this enclosure is an usual governor controlled spring motor 18. The shaft 4 projects rearwardly through the enclosure 16 and is journaled in the cover 17, as designated at 19. The motor 18 includes a coiled spring 21, one end of which is connected with a coaxial rotatably mounted gear 22 which meshes with a gear pinion 23 on the shaft 4 for rotating the shaft 4 and disk 3 by the motor in one direction and for winding the motor by rotation of this shaft and disk in the opposite direction.

The shutter disk 3 comprises an opaque or minimum light passing portion 24, a diametrically opposite maximum light passing portion or opening 25, angularly spaced from the portion 24 on both sides, and translucent portions 26 extending between the portions 24 and 25 and of graduated translucency increasing in density toward the opaque portion 24 for the purpose of “shade” dissolve effects. See particularly Figures 3 and 4. As shown, the opaque portion 24 of the disk 3 comprises metal forming the frame portion of the disk, and the portions 26 comprise suitable photographic film stock exposed and developed to provide the graduated translucency thereof, the maximum light passing portion or opening 25 being provided by spaced opposing edges 27 of the portions 26.

As so constituted, the disk 3 effects both in and out dissolves with movement thereof in one direction, and more particularly with one revolution of the disk. Means is provided limiting movement of the disk to substantially one complete revolution and consists of a stop member 28 on the disk, and a second stop member 29 immediately pivoted on the casing part 1, as designated at 31, in parallelism with the axis of the shaft 4 of the disk and provided at one end with
member 28 in both directions of rotation of the disk and provided at its other end with spaced opposing stop formations 33 arranged on opposite sides of the shaft 4 and alternately engageable therewith to limit movement of the stop member 23. Accordingly, the stop formation 32 is movable to a limited extent in the direction of engagement of this stop formation with the stop member 23 so that the disk 3 is permitted a desirable complete revolution thereof, as shown slightly more than a complete revolution.

The disk 3 is provided with diametrically opposite peripheral stop formations 34, and a latch member 35 is pivotally mounted, as designated at 36, on the cover 2 and is provided with a ratchet stop formation 37 which is releasable engageable with the stop formations 34 for predeterminately stopping rotation of the disk 3 in the direction effected by the spring motor 13, the latch member 35 being actuated into stopping position by a spring 38 mounted on the cover 2 and being manually actuated into releasing position by means of an extension 39 extending outwardly of the casing through an opening 41 through the casing part 1.

The stop formations 34 are so related with the portions 24 and 25 of the disk 2 that engagement of one of these stop formations with the stop formation 37, as shown in Figure 3, predeterminately positions the disk 3 with the opaque portion 24 registering with the light opening of the casing, thus obstructing the passage of light to the photographic lens 14 of the camera, and that engagement of the other stop formation 34 with the stop formation 37 predeterminately positions the disk 3 with the light opening portion 25 registering with the light opening of the casing, thus permitting the passage of light to the photographic lens 14 of the camera.

The shaft 4 extends forwardly from the cover 2 of the casing, and an arm on the exterior of the casing includes a bored arm part 42 secured on the forwardly extending portion of the shaft 4 by means of a knurled nut 43 screwed on this shaft and clamping this arm part against the bushing 6, the arm part being keyed on the shaft in a usual manner and in predetermined angular relation with the disk 3. The said arm also includes a second or extension arm part 44 slidably engaged on the arm part 42 and secured in longitudinally adjusted position thereon by means of a stud 45 secured on the arm part 42 and extending through a longitudinal slot 46 through the arm part 42 and a knurled nut 47 screwed on the stud 45 and clamping the arm part 42 in longitudinally adjusted position on the arm part 42. The aforesaid arm is utilized for rotating the shaft 4 and with it the disk 3 to wind the spring motor 15, the nut 47 serving as a crank handle.

It will be observed that the dissolve device is mountable on the camera 15 in angularly adjusted position on the axis of the photographic lens 14 thereof, and in the mounting of the device on the camera, the device is so angularly positioned that the arm, comprising the arm parts 42 and 44, aligns with a view finder 59 of the camera when the disk 3 is positioned at the beginning of its dissolve movement in which position the opaque portion 24 obstructs light passing to the photographic lens. See Figure 1. The extension arm part 44 is then adjusted on the arm part 42 to extend in front of the view finder to be observable therethrough for indicating through the view finder when the disk 3 is obstructing light passing through the lens.

In operation, the disk 3 is first rotated in the direction to wind the motor 15, the disk being positioned in either light obstructing or light passing position, depending upon whether a dissolve in or dissolve out is desired. Then the desired dissolve is effected by manual actuation of the latch member 35. As shown, if the disk is positioned at the beginning of its dissolve movement, a dissolve in is first effected, the latch member 35 stopping the disk at the end of the dissolve in with the light opening 25 aligned with the photographic lens, and a subsequent dissolve out is effected by further movement of the disk in the same direction. Normal photographing is effected with the light opening 25 aligned with the photographic lens. If a dissolve out is desired first, the disk is first positioned with the light opening 25 aligned with the lens and released, and then the disk is rotated back to the beginning of its dissolve movement and released for the subsequent dissolve in.

The disk 3, by reason of the translucent portions 25 thereof, effects a "fade" dissolve, and to provide a "wipe" dissolve, the following is provided:

A second dissolve shutter disk 48 of opaque material is provided with a maximum light passing portion or opening 49 corresponding in extent to the light opening 25 of the disk 3 and with an adjoining opaque or minimum light passing portion 51 of an extent corresponding with the extent of the opaque portion 24 and the translucent portions 25 of the disk 3. See Figure 6. The disk 48 is provided with an axial bore 52 and with a second bore 53 radially spaced from the bore 52 and arranged in diametrically opposite relation with the light opening 48.

The spacers of the bores 52 and 53 is the same as that of the shaft 4 and the stud 45, and the disk 48 is detachably secured, exteriorly of the dissolve device casing, with the disk 3 for rotation therewith and with the opaque portion 51 of the disk 48 overlying the opaque portion 24 and translucent portions 25 of the disk 3 and with the light opening 49 of the disk 48 registering with the light opening 25 of the disk 3, by removing the nuts 43 and 47, respectively, from the shaft 4 and stud 45, engaging the bores 52 and 53, respectively, on the shaft 4 and stud 45, as shown in Figures 1 and 2, and replacing the nuts 43 and 47 to detachably secure the disk 48 in place.

While I have thus described my invention, I do not wish to be limited to the precise details described, as changes may be readily made without departing from the spirit of my invention, but having thus described my invention, I claim as new and desire to secure by Letters Patent the following:

1. In a device of the character described, the combination with a rotatably mounted dissolve shutter provided with angularly spaced translucent portions oppositely graduated angularly spaced light passing and interrupting portions, power means operatively connected with said shutter to rotate the same in one direction, and releasable stop means for predeterminately stopping operation of said shutter in said direction and in the positions thereof in which said light passing and interrupting portions respectively function.

2. In a device of the character described, the
combination with a rotatable dissolve shutter disk provided with two angularly spaced translucent portions oppositely graduated angularly of said disk and terminating in diametrically opposite light passing and interrupting portions, a spring motor operatively connected with said disk to rotate the same in one direction and to be wound by rotation of the disk in the opposite direction, releasable stop means for predeterminately stopping operation of said disk in said one direction and in the diametrically opposite positions thereof in which said light passing and interrupting portions respectively function, and means for limiting rotation of said disk to substantially one revolution in both directions and operative to stop said disk in one of said diametrically opposite positions.

3. The combination with a photographic camera provided with a photographic lens and a view finder disposed in spaced coordinated relation with said lens, of a rotatably mounted dissolve shutter disk carried with said camera in eccentric operative relation with said lens, power means for rotating said disk, releasable stop means for predeterminately stopping rotation of said disk, and an arm fixed with said disk for rotation therewith and extending radially outward therefrom and observable through said view finder in a stopped position of said disk as effected by said stop means.

4. The combination with a photographic camera provided with a photographic lens and a view finder disposed in spaced coordinated relation with said lens, of a rotatably mounted dissolve shutter disk carried with said camera in eccentric operative relation with said lens and provided with oppositely graduated translucent portions terminating in diametrically opposite light passing and interrupting portions, a spring motor operatively connected with said disk to rotate the same in one direction and to be wound by rotation of the disk in the opposite direction, means limiting rotation of said disk to substantially one revolution in both directions and operative to stop said disk with the light interrupting portion thereof in registry with said lens, releasable stop means operative to predeterminately stop said disk in the diametrically opposite positions thereof in which said light passing and interrupting portions respectively register with said lens, and an arm fixed with said disk for rotation there-