

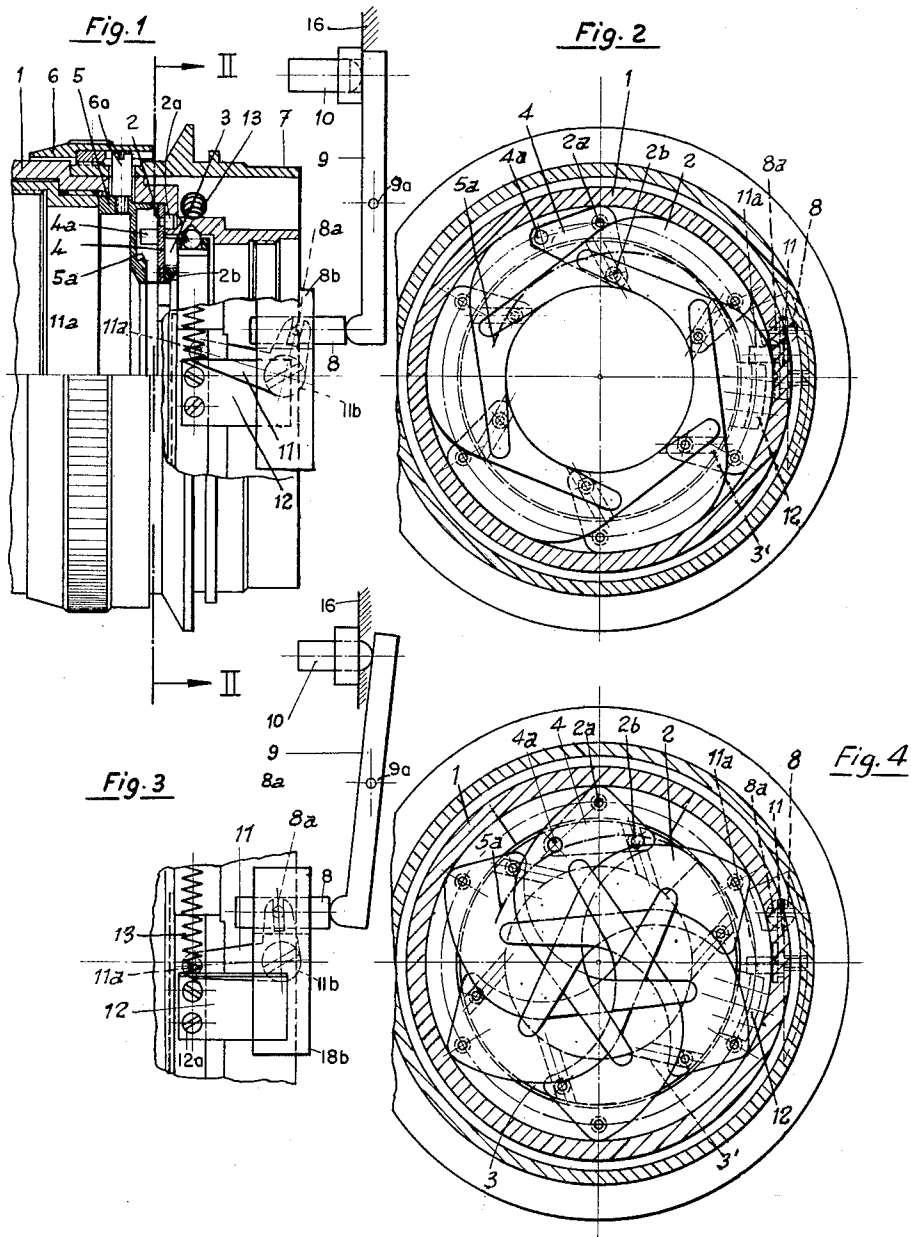
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DIAPHRAGM PRESELECTOR FOR PHOTOGRAPHIC OBJECTIVES

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AGENT.

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DIAPHRAGM PRESELECTOR FOR PHOTOGRAPHIC OBJECTIVES

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2 Claims. (Cl. 95—64)

My present invention relates to a photographic objective provided with an adjustable iris diaphragm.

Diaphragms of this type having one of their iris leaves extended to form an operating lever are already known, e.g., from U.S. Patent No. 2,803,182 issued August 20, 1957, to Franz Werner.

The principal object of my present invention is to provide a system of this general character which is of more compact construction than those previously devised. A more particular object of this invention is to provide a system of this type, having means for preselecting a desired diaphragm opening with the aid of a special iris leaf, in which such leaf serves only as an adjustment-limiting means and not as a link in the transmission of force from an actuating member to the usual diaphragm-setting ring, this arrangement thus enabling the iris leaves to be of more delicate construction than would be the case if one of them were to act as a torque-transmitting lever.

A feature of my invention resides in the provision of a contoured disk or cam co-operating with a projection on one of the iris leaves, in combination with mechanism for imparting limited rotation under the control of an actuating member to the diaphragm-setting ring which has the usual oblique grooves wherein the extremities of the iris leaves are slidably guided. In a preferred embodiment the actuating member is controlled, in a manner known per se, by the shutter-release button of the camera and acts upon the diaphragm-setting ring through the intermediary of a bell-crank lever or equivalent means for translating its own motion into rotation of the ring.

The invention will be described in greater detail with reference to the accompanying drawing in which:

Fig. 1 is a side-elevational view, partly in section, of an objective housing carrying a diaphragm preselector according to the invention;

Fig. 2 is a cross-sectional view taken on the line II—II of Fig. 1;

Fig. 3 is a fragmentary view similar to Fig. 1, showing certain parts in a different position; and

Fig. 4 is a view similar to Fig. 2, showing certain parts in a position corresponding to that of Fig. 3.

The objective shown in the drawing comprises a cylindrical diaphragm housing 1 in which the iris leaves 2 are pivotally mounted by means of pins 2a. Each leaf is also provided with a pin 2b which is slidably guided in a groove 3' of a setting ring 3 as is well known per se. Rotation of the setting ring from the position of Fig. 2 into that of Fig. 4 moves the iris leaves 2 from wide-open to nearly closed diaphragm position.

In accordance with this invention I provide an extremity 4 of one of the iris leaves with a stud 4a projecting toward an annular cam disk 5, the latter having an inner flange with a contoured periphery 5a forming an abutment for the stud 4a; this periphery has also been indi-

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cated in dot-dash lines in Figs. 2 and 4. Disk 5 is rigidly coupled, through a pin 6a, with a diaphragm-control ring 6 which surrounds the housing 1 and bears the usual aperture scale (not shown).

5 A cylindrical rearward extension 7 of housing 1 is provided with suitable means, such as a bayonet coupling, for attaching the objective to the body of a camera schematically indicated at 16. Cylinder 7 surrounds the rear portion of housing 1 and mounts a bracket 8b within which a rod 8 is lodged for displacement parallel to the optical axis of the system. Rod 8 is controlled by a lever 9, pivoted at 9a, which can be swung clockwise (as seen in Fig. 3) by the tripping of the shutter-release button 10 of the camera 16. The rod 8 carries a pin 8a which is straddled by the bifurcate end of a bell-crank lever 11 having as its fulcrum a screw 11b projecting from bracket 8b; the other end of this bell-crank lever carries a stud 11a against which a lug 12, secured to setting ring 3 by screws 12a, is normally urged through a spring 13. 10 In operation, the control ring 6 is first adjusted to an angular position corresponding to a desired diaphragm opening. Ring 6 entrains the cam disk 5 without, however, affecting the setting of the iris leaves 2 since the stud 4a is held spaced from the contoured shoulder 5a by the spring 13 urging the setting ring 3 counterclockwise as viewed in Figs. 2 and 4. This causes the bell-crank lever 11 to occupy the position shown in Fig. 1 in which rod 8 projects rearwardly beyond coupling 7 to its maximum extent, the iris diaphragm 2 being then in its wide-open position shown in Fig. 2. When the trip button 10 is pressed, lever 9 oscillates about its fulcrum 9a to press the rod 8 forwardly, as shown in Fig. 3, thereby swinging the lever 11 counterclockwise and displacing lug 12 as well as setting ring 3 against the force of spring 13. This movement is arrested when the stud 4a on iris-leaf extremity 4 abuts the shoulder 5a of cam disk 5 so that the iris leaves, interconnected by the ring 3, come to rest in a position corresponding to the preselected diaphragm opening.

40 When the button 10 is released, the parts are restored to the position of Fig. 1 by the spring 13 and the diaphragm 2 returns to its wide-open position.

My invention is, of course, not limited to the specific arrangement described and illustrated but may be embodied in numerous modifications without departing from the spirit and scope of the appended claims.

I claim:

1. In a photographic objective, in combination, a housing, a control ring rotatably positioned on said housing, a rotatable cam disk in said housing coupled with said control ring for entrainment thereby, a setting ring coaxial with said cam disk and rotatably positioned in said housing, an iris diaphragm in said housing comprising a plurality of leaves pivotally connected with said housing and in positive engagement with said setting ring for movement between different positions corresponding to various diaphragm apertures, a projection on one of said leaves, said cam disk having a contoured periphery adjacent said projection, spring means connected with said setting ring and with said housing for rotating said setting ring in a sense urging said projection away from said periphery and tending to maintain said leaves in an extreme position corresponding to maximum diaphragm opening, and operating means on said housing for rotating said setting ring against the force of said spring means until said projection engages said periphery, thereby limiting the extent of diaphragm-closing movement of said leaves, said operating means comprising a bell-crank

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lever swingable in a plane substantially parallel to the axis of rotation of said setting ring and an actuating element displaceable in a direction substantially parallel to said axis, said lever having a shorter arm engaged by said actuating element and a longer arm engaging said setting ring whereby a relatively small axial displacement of said element causes a relatively large angular displacement of said setting ring.

2. The combination according to claim 1 wherein said cam disk is of annular configuration and provided along its inner edge with an axially projecting flange having said contoured periphery as its outer surface.

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