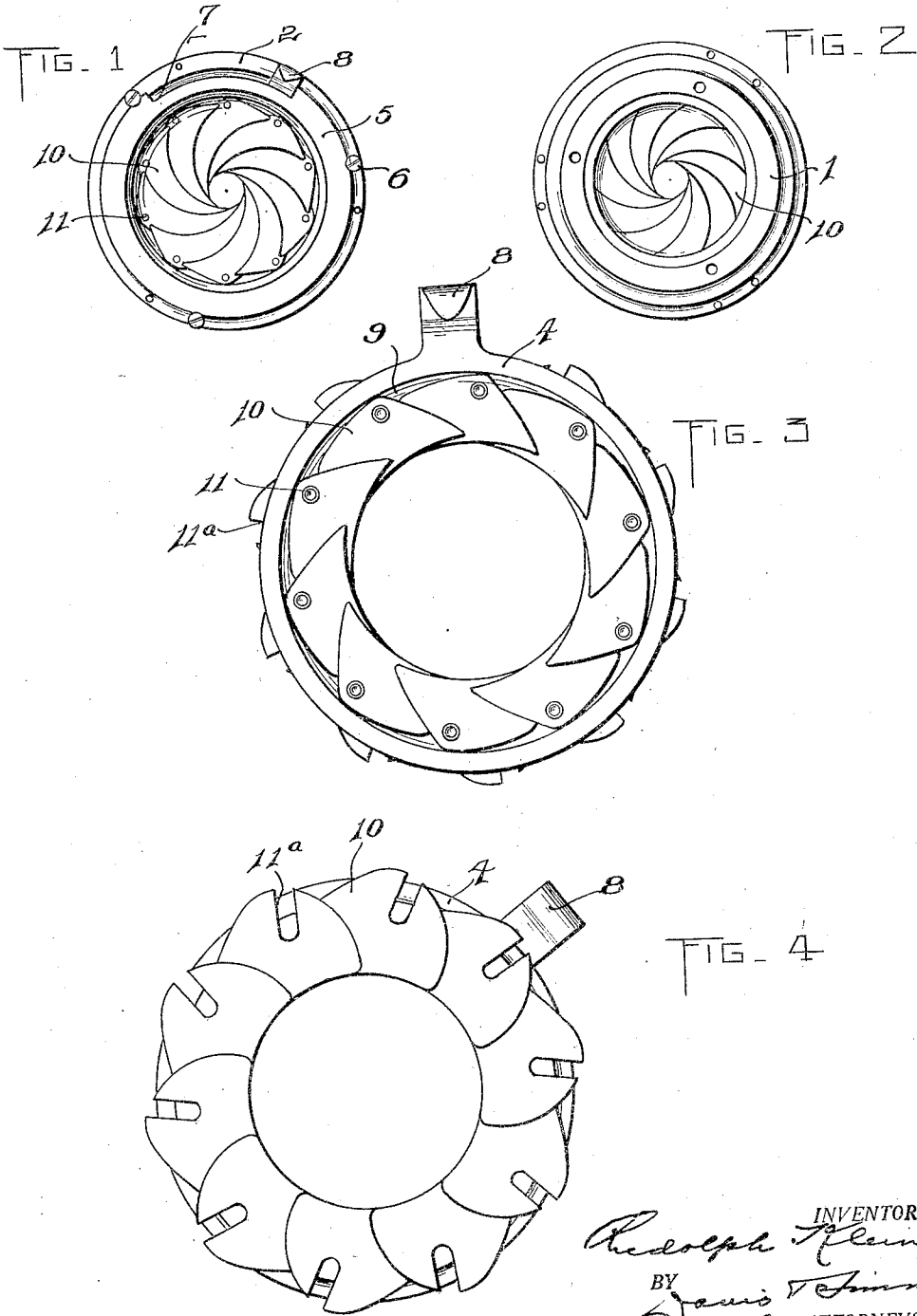


R. KLEIN;
IRIS DIAPHRAGM.
APPLICATION FILED JUNE 30, 1920.

1,423,224.

Patented July 18, 1922.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

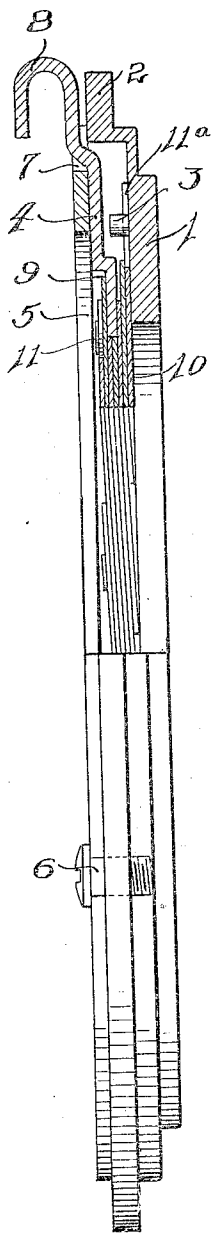


FIG. 7

FIG. 5

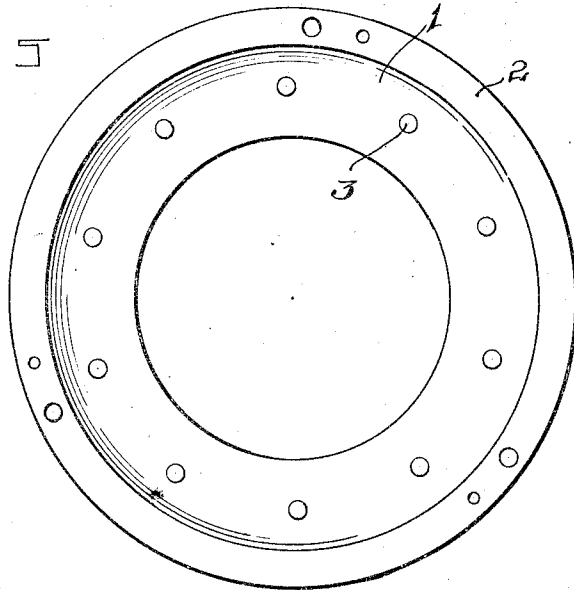
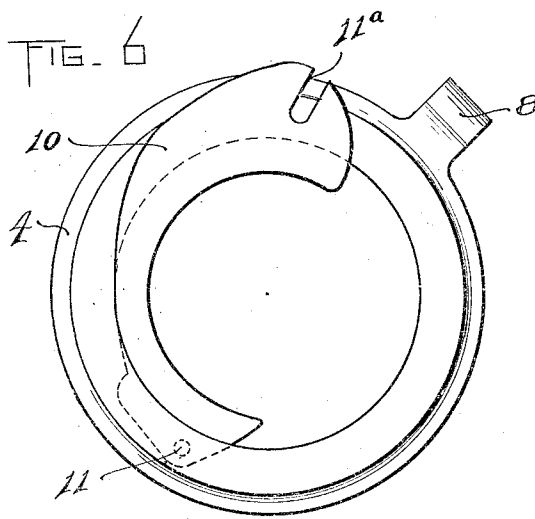


FIG. 6



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UNITED STATES PATENT OFFICE.

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IRIS DIAPHRAGM.

1,423,224.

Specification of Letters Patent.

Patented July 18, 1922.

Application filed June 30, 1920. Serial No. 393,068.

To all whom it may concern:

Be it known that I, RUDOLPH KLEIN, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Iris Diaphragms, of which the following is a specification.

The present invention relates to iris diaphragms for use in photographic shutters and other optical appliances, and an object thereof is to provide an iris diaphragm in which the work of assembling the parts is reduced to a minimum. Another object of the invention is to provide a construction which will permit the mounting of the blades upon the operating ring while the latter is separated from the supporting housing so that the blades may be more readily secured to the casing or support.

To these and other ends, the invention consists of certain parts and combinations of parts all of which will be hereinafter described, the novel features being pointed out in the appended claims.

In the drawings:

Fig. 1 is a front view of an iris diaphragm constructed in accordance with this invention;

Fig. 2 is a rear view of the iris diaphragm;

Figs. 3 and 4 are front and rear views of the operating ring detached from the supporting housing and having the blades mounted thereon, the blades being shown in extreme open positions;

Fig. 5 is an enlarged view of the supporting member or casing with the shutter blades and operating ring removed;

Fig. 6 is an enlarged detail view of the rear face of the operating ring with only one of the blades mounted thereon; and

Fig. 7 is an enlarged edge view partially in section through the diaphragm as a whole.

In the manufacture of iris diaphragms prior to this invention, it has been customary to provide two parts usually of annular form, one acting as a casing or support and the other as the operating member or ring. The blades normally lie between these two parts and are usually assembled, first by connecting them at one end with the supporting casing, and thereafter connecting the operating ring to their other ends. This assembling operation has been tedious and has required a great deal of skill, as the blades

must be fitted one at a time to the operating ring, and during the fitting of one blade a blade which has already been fitted is liable to become disconnected from the operating ring.

According to this invention, the blades are connected one at a time to one of the annular or ring members and are extended through the opening of said member to the opposite side thereof so that their other ends will overlap and be held in frictional contact in open positions whereby the openings therein may be simultaneously connected to bearings on the other ring or annular member of the diaphragm.

Referring to the embodiment of the invention herein illustrated, 1 indicates one of the ring or annular members of the diaphragm, being in this instance the casing or supporting member with a surrounding wall 2 and a plurality of pivots or bearings 3 projecting from the member 1 within the wall 2. The other ring or annular member 4 is in this instance the operating ring, and it is held to the supporting ring 1 by a holding ring 5, the latter being secured to the surrounding wall 2 by removable screws 6 and having a recess portion 7 through which the operating portion 8 of the operating ring 4 may extend. Preferably the operating ring 4 has one face thereof provided with an annular depressed portion or pocket 9 and the blades 10 are pivoted at 11 to the face of the ring within the pocket so that free movement of the blades is permitted. The blades 10 are extended through the opening of the ring 4 to the opposite face thereof, and their opposite ends are provided with openings or slots 11^a which are adapted to be fitted over the bearings or pivots 3 on the supporting or casing member 1.

In assembling the diaphragm, the blades 10 are preferably permanently and individually secured to the operating ring 4 while the latter is detached from the supporting or casing member 1 and, after being secured to the operating ring, their ends are projected through the central opening of the ring. The blades are then moved to their outermost positions as shown in Figs. 3 and 4. In these positions the blades will cooperate at their outer edges with the inner periphery of the operating ring and will thereby be so positioned that the slots or openings 11^a will be equidistantly arranged

and adapted to be simultaneously fitted over the pivots or bearings 3 on the casing or supporting member 1 when the operating ring and casing ring are assembled. The overlapping relation of the blades holds them frictionally in the outer positions so that there is no tendency for the blades to swing away from such positions.

From the foregoing it will be seen that there has been provided an iris diaphragm of novel construction which permits the more ready assembling of the parts. The blades are secured in the first instance to one of the ring members of the diaphragm and are projected through the opening of such ring member so that their opposite ends lie on opposite sides of the ring member and the inner periphery of the ring member serves to position the other pivot openings, thus permitting the free ends of the blades to be simultaneously applied to the bearings on the other ring member of the diaphragm.

What I claim as my invention and desire to secure by Letters Patent is:—

1. An iris diaphragm comprising two ring members, one of which is mounted to turn on the other, and blades pivotally connected to one of said ring members extending through the opening of the other ring member and pivotally connected to such other ring member.

2. An iris diaphragm comprising a supporting member having bearings thereon, an operating ring, and blades pivotally mounted

on one side of said operating ring extending through the opening of said ring and having slots at their opposite ends detachably engaging with the bearings on the supporting member.

3. An iris diaphragm comprising a supporting member having pivots projecting from one face thereof, an operating ring mounted to turn on said supporting member, and blades pivotally connected to one face of the operating ring extending through the opening of said ring and adapted when in their outermost positions to cooperate with the inner periphery of the ring in order to define the outer positions of said blades, the ends of the blades being provided with slots adapted to fit over the pivot pins on the supporting member while the blades are in their outer positions limited by the inner periphery of the operating ring.

4. An iris diaphragm comprising two ring members, one of which is mounted to turn on the other, one of said ring members having a plurality of pivots projecting therefrom, blades pivotally connected to the other of said ring members and cooperating with portions of said ring member to limit the outward movement of said blades thereon, said blades having openings therein which, when the blades cooperate with the portions of the ring member at their outer positions, will be so positioned as to fit over the projecting pivots on the other ring member.

RUDOLPH KLEIN.