HARRISON & SCHNITZER.

Stop for Camera Lens.

No. 21,470. Patented Sept. 7, 1858.

Fig. 1

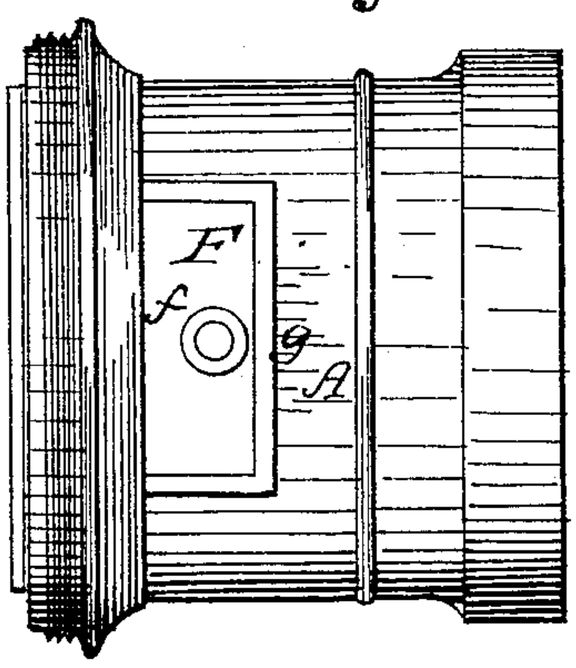
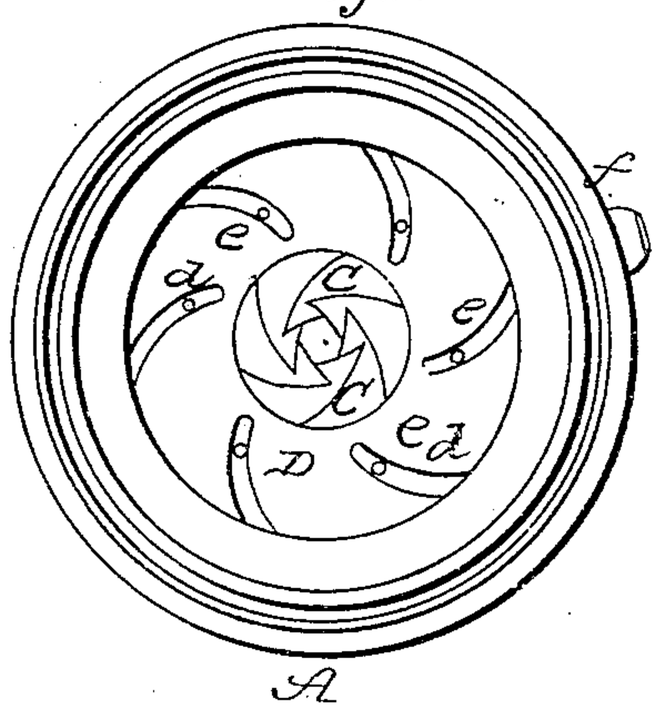


Fig. 2



A

Fig. 3

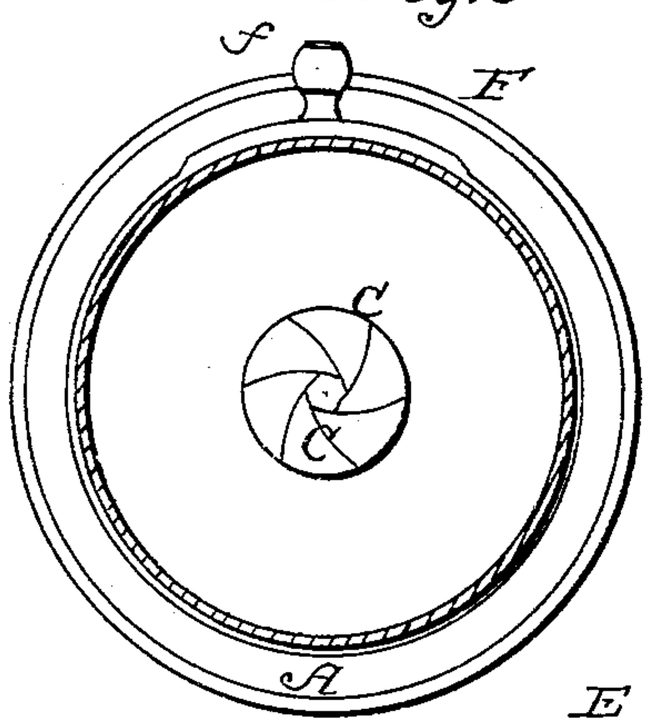
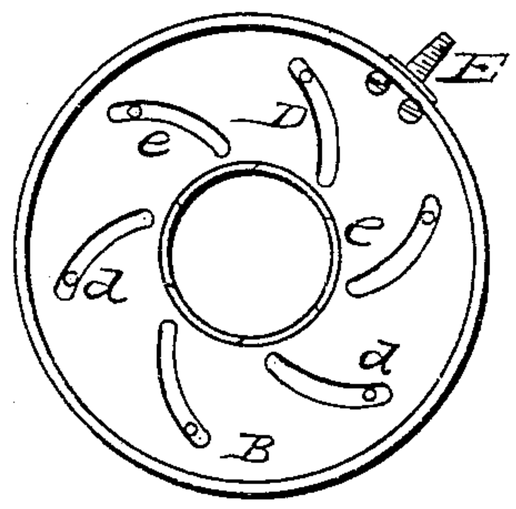


Fig. 4



E

Fig. 5

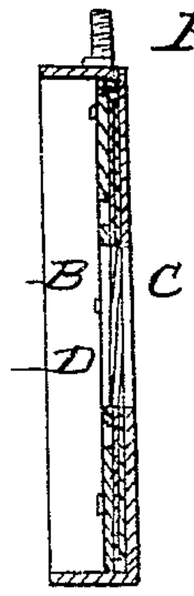
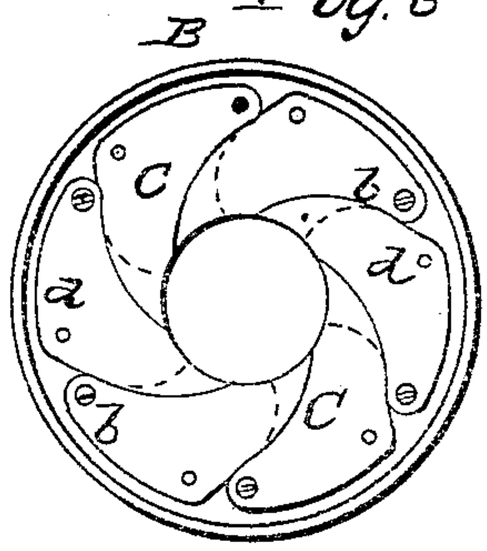


Fig. 6



UNITED STATES PATENT OFFICE.

CHAS. C. HARRISON AND JOS. SCHNITZER, OF NEW YORK, N. Y.; SAID SCHNITZER ASSIGNOR TO SAID HARRISON.

DIAPHRAGM FOR PHOTOGRAPHIC CAMERAS.

Specification of Letters Patent No. 21,470, dated September 7, 1858.

To all whom it may concern:

Be it known that we, C. C. HARRISON and JOSEPH SCHNITZER, of New York, in the county of New York and State of New York, have invented an Improved Diaphragm or Stop for Photographic Cameras, the construction and operation of which we have described in the following specification, and illustrated in the accompanying drawings with sufficient clearness to enable competent and skilful workmen in the arts to which it pertains, or is most nearly allied, to make and use our invention.

Our said invention consists in an adjustable diaphragm made of thin curved plates of hard india rubber or other suitable substance, said plates being hung at or near their ends upon pins attached to a fixed part of the instrument and operated to open or partially close the aperture for the admission of light into the camera from the object by means of pins attached to them working in slots in a ring or annular disk, and causing by such action the conveyance or divergence of the plates as hereinafter more fully set forth.

In the accompanying drawings Figure 1, is a plan of a part of the tube which contains the lens. Fig. 2, is an end view of the tube, detached from the main portion of the instrument, the view being taken from the end which is attached to the other parts of the instrument. Fig. 3, is a view of the other end. Fig. 4, shows the slotted ring or disk separate from the tube, with most of our improvements attached. Fig. 5, is a sectional elevation of the same parts. Fig. 6, shows the plates attached to the disk upon which they are hung.

Various devices have been used to obtain a sharp action of the light by diminishing the aperture through which it shall pass in the tube of the instrument. In many instances a removable diaphragm with an aperture in its center has been resorted to, but this involves the necessity of changing the diaphragm for another for every change of the size of the aperture to secure the one required for the particular circumstances of the case.

Another plan has been to use a piece of flexible rubber with a hole in it the proper size for the smallest aperture and to enlarge this opening by pressing a cone against the rubber in such a manner as to draw the part immediately contiguous to the opening outward. In this arrangement anything but perfect action is attained. In our arrangement a perfect concentricity of the aperture is secured, and at the same time it is made capable of being operated instantaneously from the outside of the instrument.

A is the tube which contains the lens. It is made in most respects very much in the usual manner in which such tubes are made. B is a flanged ring or annular disk secured in said tube between the lenses. This forms a part of the diaphragm and has an aperture as large as the diaphragm is at any time expected to make. To reduce this aperture thin india rubber plates C are attached to the disk B by pins or pivots *b b* upon which said plates turn near their ends. These plates have their edges adjacent to the aperture so curved as to form a circular boundary to the aperture when thrown fully open, as shown in Figs. 4 and 6, and consequently they will give a nearly circular form to it when so closed as to make the smallest opening, as shown in Figs. 2 and 3. The form of these plates is fully shown in Fig. 6, the boundary of the shorter side where it passes under the contiguous plate being shown in dotted lines. These plates are operated to open and close the diaphragm, by means of pins *d* working in curved slots *e* in the ring or annular disk D, which is so fitted into the annular flange disk or ring B as to be capable of being partly revolved in it by turning the arm E which is attached to the ring D and terminates in a knob *f* on the outside of the tube of the instrument, the aperture made in the tube to allow it to pass, being closed against the admission of light by a plate F which is fitted to the side of the tube. The mark *g* upon this plate serves as an index to show the position of the diaphragm and consequent size of the aperture by comparing it with the graduation on the outside of the tube as seen in Fig. 1. The plates by which the aperture is thus partly closed are very thin and always overlap so as to slide smoothly and freely upon each other. The plates might be made of other substance than india rubber, but this is preferred as it always keeps its form and is throughout of the proper color for the purpose.

The particular improvement which con-

stitutes our said invention and which we claim as having been originally and first invented by us, is—

The adjustable diaphragm or stop described composed of overlapping plates operated concentrically by the ring D or its equivalent, said ring being operated from the outside of the tube by means of the lever or arm E or other appropriate device substantially as described for the purposes set forth.

CHAS. C. HARRISON.
JOS. SCHNITZER.

Witnesses:
JAS. CHAS. GATES,
JAS H. GRIDLEY.