No. 616,760. Patented Dec. 27, 1898.

J. G. BAKER.

EXPOSURE METER.

(Application filed Apr. 30, 1898.)

(No Model.)

Fig. 1.

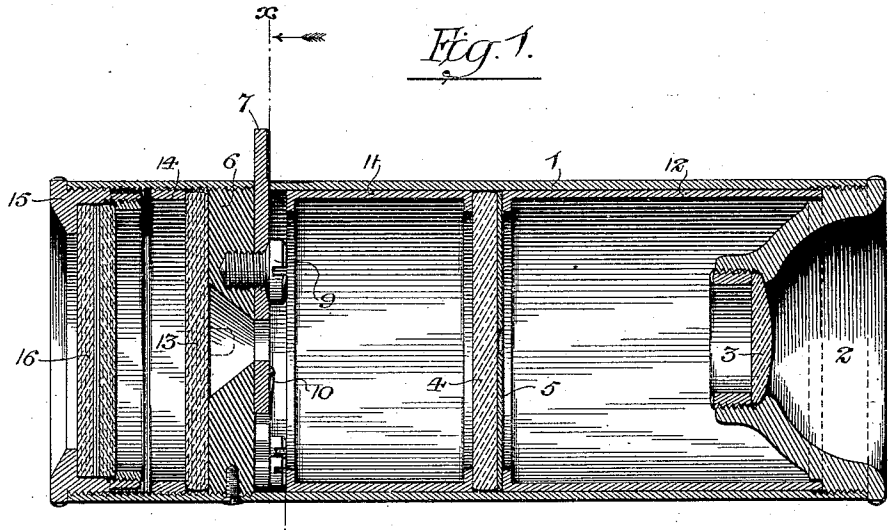
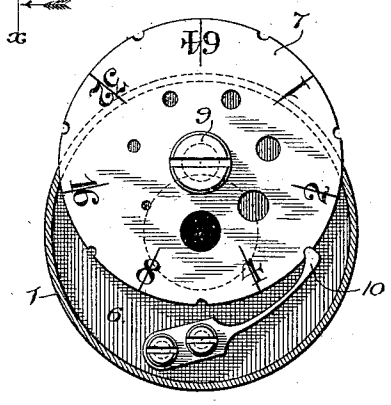


Fig. 2.



Witnesses:-

Louis M. Whitehead.

Charles De Cow.

Inventor:-

John G. Baker.

by his Attorneys:

Howson & Howson

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN G. BAKER, OF PHILADELPHIA, PENNSYLVANIA.

EXPOSURE-METER.

SPECIFICATION forming part of Letters Patent No. 616,760, dated December 27, 1898.

Application filed April 30, 1898. Serial No. 679,339. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. BAKER, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Exposure-Meters, of which the following is a specification.

My invention consists of a photometer especially intended for the use of photographers for the purpose of determining the proper time of exposure of a sensitive plate in a camera.

One object of my invention is to provide a simple, compact, and accurate instrument of this character, a further object being to render all of the parts readily removable for inspection and repair, and a still further object being to effect the illumination by actinic light only. These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section, on an enlarged scale, of a photometer constructed in accordance with my invention; and Fig. 2 is a transverse section of the same on the line *x x*, Fig. 1.

The instrument shown in the drawings comprises an outer tube or case 1, which has at one end an eyepiece 2, with magnifying-lens 3, and at the proper focal distance from said lens a ground-glass plate 4, in front of which is a perforated disk 5, the central opening of said disk serving to limit the field of view and sharply define the same.

Occupying a fixed longitudinal position in the tube 1 is a perforated partition 6, and hung to the same so as to be free to rotate thereon is a rotary diaphragm 7, having a series of apertures of different area, as shown in Fig. 2, this diaphragm being hung to the partition 6 by means of a central pivot-screw 9 and having a notched periphery for engagement with a spring-catch 10, whereby the movement of the diaphragm is arrested when any one of the apertures of the same is in line with the central opening of the partition 6, so that some effort is required in order to move the diaphragm from any one of these positions.

Between the diaphragm 7 and the ground-glass focus-plate 4 is introduced a spacing-tube 11, and between the disk 5 and the eyepiece 2 is another spacing-tube 12, so that while the parts are firmly held in their proper relation to one another they can be readily removed at any time for inspection or repairs.

The forward portion of the tube 1 is internally threaded for the insertion of the partition 6, and in advance of said partition is a plate or disk 13, of transparent or translucent material of a color which will absorb or prevent the transmission of non-actinic light-rays, the preferable material for the purpose being violet glass ground on one face. The disk 13 is held in place by a screw-ring 14, and the forward end of the tube 1 receives a cap-ring 15, which carries a disk 16, the latter, like the disk 13, being such as to absorb non-actinic rays, but being more opaque than the disk 13, said disk 16 being, by preference, composed of two sheets of violet glass with one or more layers of tissue-paper or other semiopaque translucent material between them.

On the rear face of the diaphragm 7 is a series of graduations, and one of these graduations is exposed at a point above the center of the tube 1 whenever its respective aperture of the diaphragm is in line with the central opening of the partition 6.

In using the instrument a photographer views through the same the object to be photographed and turns the diaphragm 7 until the illumination of the focus-plate 4 is sufficient to render it visible through the opening of the disk 5, the number on the diaphragm then exposed at the top of the tube representing in seconds the proper time of exposure.

The relative opacity of the disks 13 and 16 is such that if the cap-ring 15, carrying the outer disk 16, is removed the amount of light transmitted to the focus-plate 4 will be so much increased that the indications on the diaphragm 7 will represent the time of exposure in minutes instead of in seconds. Hence I am enabled in this way to substantially double the capacity of the diaphragm, and can therefore use a diaphragm of small diameter and can render the whole instrument so compact that it can be readily carried in the pocket. Moreover, there is no necessity for providing the diaphragm either with very minute apertures or very large apertures, as would be necessary if an attempt was made to cover the desired range of exposures wholly by variations in the size of the aperture in the diaphragm.

Instead of using a rotating diaphragm separate sliding diaphragms of different aperture may be used, and by the term "diaphragms of different aperture" as used in the claims I intend to cover either such separate diaphragms or the multiple rotating diaphragm as shown in the drawings.

The focus-plate 4 may be dispensed with, if desired, and the disk 5 for restricting and defining the field of view may also be abandoned in some cases, although its use is always to be preferred, as it tends to increased accuracy of result. The disks 13 and 16 for absorbing the non-actinic rays may, if desired, be located in the rear of the diaphragm instead of in advance of the same, as shown, the latter location being preferred because of greater convenience of access, and the single disk 13 only need be used when the purpose for which the disk 16 is employed is not important.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. A photometer in which are combined a casing provided with an eyepiece and having diaphragms of different aperture, and a focus-plate located between the diaphragms and the eyepiece and illuminated by the light passing through the adjusted aperture, substantially as specified.

2. A photometer consisting of a casing having diaphragms of different aperture, a focus-plate 5 illuminated by light passing through the adjusted aperture, and a perforated plate for restricting and sharply defining the visible field of the said focus-plate, substantially as specified.

3. A photometer consisting of a casing having diaphragms of different aperture, and two transparent or translucent mediums of different degrees of opacity and serving to absorb or arrest the transmission of non-actinic rays, substantially as specified.

4. A photometer consisting of an outer casing, a perforated partition occupying a fixed position in said casing, and a diaphragm having apertures of different area and rotatably mounted upon said partition so that a portion of said diaphragm projects through and beyond the casing, substantially as specified.

5. A photometer consisting of a casing having a perforated internal partition, diaphragms of different aperture, and a pair of transparent or translucent mediums for absorbing or arresting the transmission of non-actinic rays, one of said mediums occupying a fixed position in the casing and a removable cap-ring carrying the other of said mediums, substantially as specified.

6. A photometer consisting of an outer casing, a perforated partition occupying a fixed position in said casing, a diaphragm having apertures of different area and rotatably mounted on said partition so that a portion of said diaphragm projects through and beyond the casing, and a suitable stop for holding said diaphragm in different adjusting positions, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN G. BAKER.

Witnesses:
WILL. A. BARR,
JOS. H. KLEIN.