A. T. MOSS.

J. M. MOSS, GUARDIAN.

DEVICE FOR DETERMINING THE TIME OF DEVELOPMENT OF PHOTOGRAPHIC FILMS OR PLATES.

APPLICATION FILED JUNE 16, 1915.

1,203,384.

Patented Oct. 31, 1916.

Fig. 1

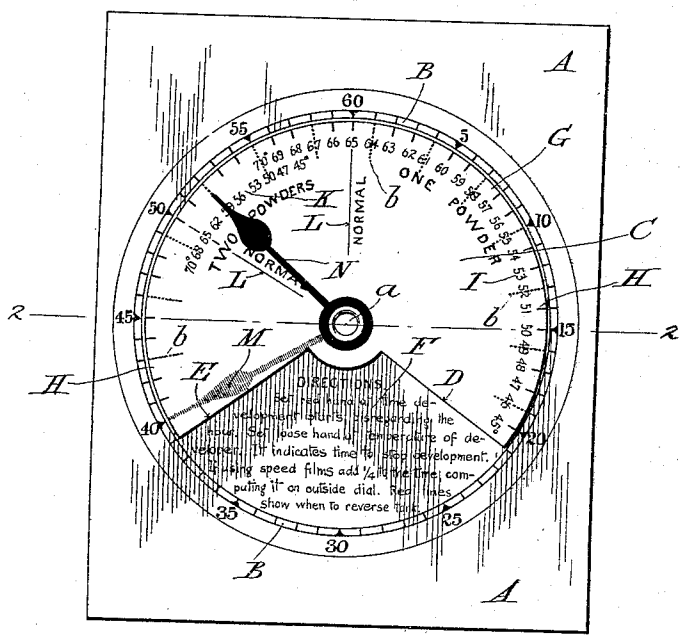


Fig. 2.

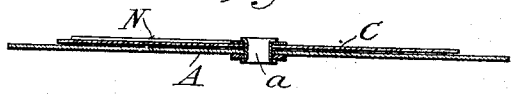


Fig. 3.

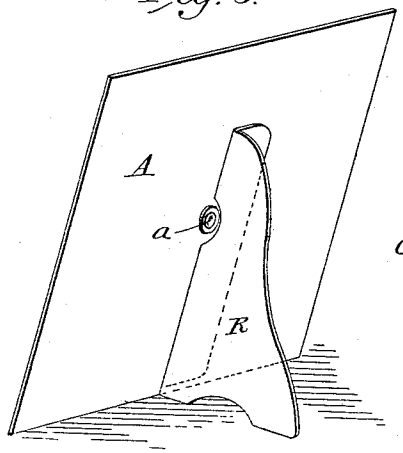
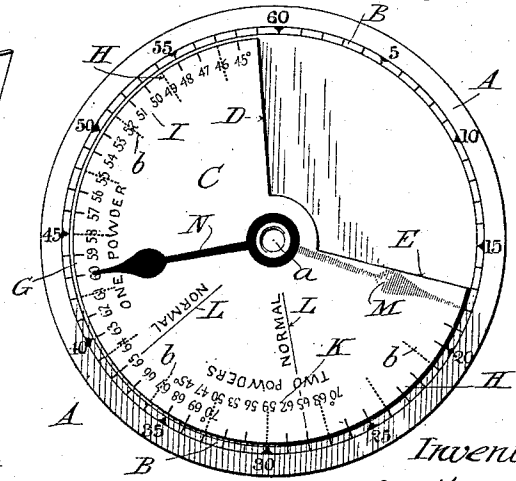


Fig. 4.



Inventor:
Alfred T. Moss,
by Gifford T. Howard,
Atty.

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ALFRED T. MOSS, OF HYAMPOM, CALIFORNIA, BY J. MORA MOSS, GUARDIAN, OF SAN FRANCISCO, CALIFORNIA.

DEVICE FOR DETERMINING THE TIME OF DEVELOPMENT OF PHOTOGRAPHIC FILMS OR PLATES.

1,203,384. Specification of Letters Patent. **Patented Oct. 31, 1916.**

Application filed June 15, 1915. Serial No. 34,164.

To all whom it may concern:

Be it known that ALFRED T. Moss, a citizen of the United States, residing at Hyampom, in the county of Trinity and State of California, has invented a new and useful Improvement in Devices for Determining the Time of Development of Photographic Films or Plates, of which the following is a specification.

This invention relates to a device to indicate the length of time necessary for photographic plates and films to remain in the developing solution, such time being based upon the kind of solution employed and its temperature. By means of this invention operators will have always at hand a convenient record of the length of time the plates or films should remain in the developing solution, the device indicating the exact time when development begins and the time it should stop, based, as stated, upon the nature and temperature of the solution used. The operator is thus freed from the necessity of burdening his mind as to the time when the plates or films were placed in the developer and when they must be removed. The device also indicates, during the course of development of films in a film tank, when the tank is to be reversed.

In the accompanying drawing, Figure 1 is a face view of the preferred form of this invention. Fig. 2 is a cross sectional view on the line 2—2. Fig. 3 is a perspective view from the rear, showing how the device may be supported in upright position. Fig. 4 is a face view of a modified form of the timer.

A indicates a plate or backing of cardboard, metal, celluloid or any other suitable material which may be rectangular or circular in form and of any convenient size, say from three and one-half to five inches in greatest measurement. On the face of the plate A are printed or otherwise marked divisions similar to those of a clock dial, there being a circle B of sixty equal divisions indicating minutes, and also the numerals 5, 10, 15, etc. to 60 placed consecutively around the circle of minutes at equal distances apart.

Centrally pivoted on the plate A by a rivet *a* is a sector C of a diameter less than that of the minute circle B. Between the radial edges D and E of the sector C, which are 90 degrees apart, more or less, is exposed a portion F of the face of the plate A upon which are printed the directions for using the device.

The circumferential edge G of the sector C is provided with a scale H, each division of which, as in the minute scale B, is one sixtieth of the circumference. Near the scale H on the face of the sector C are two or more concentrically arranged series of numerals indicating degrees of temperature. Two of such series, I and K, are shown in the drawings, each indicating temperature between 45 and 70 degrees, and are designed to be employed with developers of different kinds. The series of degree numerals I begin at the subdivision of the scale H nearest the radial edge D with the number 45, and each subdivision following is numbered consecutively up to 70. The series K also begins with the number 45 just within and coincident with the number 68 of series I. The next subdivision is numbered 47, the one following 50, and so on, each subdivision increasing by three degrees to 68, the final number 70 of the series following the number 68. The series of numerals I are entitled "One powder" and the series K "Two powders", indicating which of the series of degree numbers must be used for one powder or two powder developers. A radial line L extends inwardly from the number 65 of each series, each of such lines being marked "Normal", whereby to indicate normal temperature of the solution.

Printed on the sector C near the radial edge E is a pointer or hand M which extends radially to the outer circular edge of said sector. This pointer is preferably printed in red or some other distinguishing color, and is set—in order to indicate time by minutes on the dial B—by turning the sector C until the pointer is opposite the number of minutes past any hour in which development begins.

Rotatable about the pivot *a* is a hand or pointer N that projects toward the degree scale H on the sector C, and is designed to be moved around said scale to indicate the temperature of the developer, care being observed, when setting the hand, to select the temperature number on the number series I or K corresponding to the nature of the developer used.

As an introduction to the statement of the operation of the device, attention may

be called to the matter printed upon the face of the dial plate A reading as follows:— "Set red hand at time development starts, disregarding the hour. Set loose hand at temperature of developer. It indicates time to stop development. If using speed films add ¼ to the time, computing it on outside dial. Red lines show when to reverse tank."

The device, when adjusted for use, is intended to show the length of time plates or films are to remain in the developer, and is set by first turning the sector C until the fixed or red hand M thereon points to the time indicated on the clock dial B when development begins. The hour of starting is disregarded, it being necessary only that the number of minutes after the hour be considered. In Fig. 1 the hand M is seen to be set at forty minutes past any hour. The movable hand N must then be turned until it points to the number giving the temperature of the developer. If the developer is a two powder solution the hand will be pointed to the proper degree in the series of numerals K; but if the developer is a single powder solution the hand N will be moved a greater distance from the fixed hand or pointer M so as to rest at the correct degree number in the series of numbers I. As shown in Fig. 1, the movable hand N indicates a temperature of fifty-nine degrees and a two powder developer. The number of minute subdivisions embraced between the two hands M and N indicate the length of time development should continue, which, as in Fig. 1, is twelve minutes. Had the developer been a one powder solution and the temperature that stated, development would then have had to continue for twenty-six minutes, as is evident by counting the number of minutes between the red hand and the number 62 of the one powder series of numerals. If speed films are being developed, add one fourth the time computed on the dial B, which in the present instance would make the time fifteen minutes.

When a film tank is used for developing films, the times for reversing the tank are shown on the scale H by the lengthening of each third subdivision line *b*, and preferably printing them in red or other vivid color. These lines *b* will remind the operator that the tank is to be reversed every three minutes, and show the time to make this reversion.

In order to hold the device in upright or slightly inclined position, a foot rest or bracket R, see Fig. 3, is attached to the rear of the back plate A, and may be made to fold against the back for convenience in packing.

Instead of making the device herein described an independent instrument which may be readily carried around with the developing outfit, it may form part of a clock by mounting the sector C and the movable hand N over the dial of the clock in such manner that they can be rotated thereon independently of each other and of the clock hands.

I claim:—

1. A device for determining the time of development of photographic films or plates comprising a plate having a clock-face dial, a sector pivoted concentrically thereon with a circumferential scale of degrees of temperature and a fixed pointer on the face of said sector, and a movable hand to indicate degrees, said hand being rotatable about the axis of the plate and sector.

2. A device for determining the time of development of photographic films or plates, the same consisting of a plate bearing a circular scale of sixty equal subdivisions numbered to indicate time by minutes, a sector pivoted in said plate concentrically with said scale and provided on its circumferential margin with similar subdivisions, and also with concentric and independent series of numerals each denoting the temperature of a different developing solution, a fixed pointer on the sector for indicating time as the latter is rotated, and a movable pointer pivoted at the common axis to show the time for stopping development when set for the temperature of the solution used.

3. A device for determining the time of development of photographic films or plates, consisting of a plate bearing a circular scale of sixty equal subdivisions numbered to indicate time by minutes, a sector pivoted in said plate concentrically with said scale and provided at its circumferential margin with similar subdivisions and also with distinguishing marks to represent time intervals between periods of reversal of the developing tank and, furthermore, with two independent series of numerals each denoting the temperature of a different developing solution, a fixed pointer on the sector for indicating the time of starting development, and a movable pointer pivoted at the common axis to show the time for stopping development when set for the temperature of the solution used.

In testimony whereof I affix my signature in presence of two witnesses.

J. MORA MOSS,
Guardian, &c., of Alfred T. Moss.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."