

(No Model.)

G. EASTMAN.
ROLL HOLDER INDICATOR.

No. 407,396.

Patented July 23, 1889.

Fig. 1.

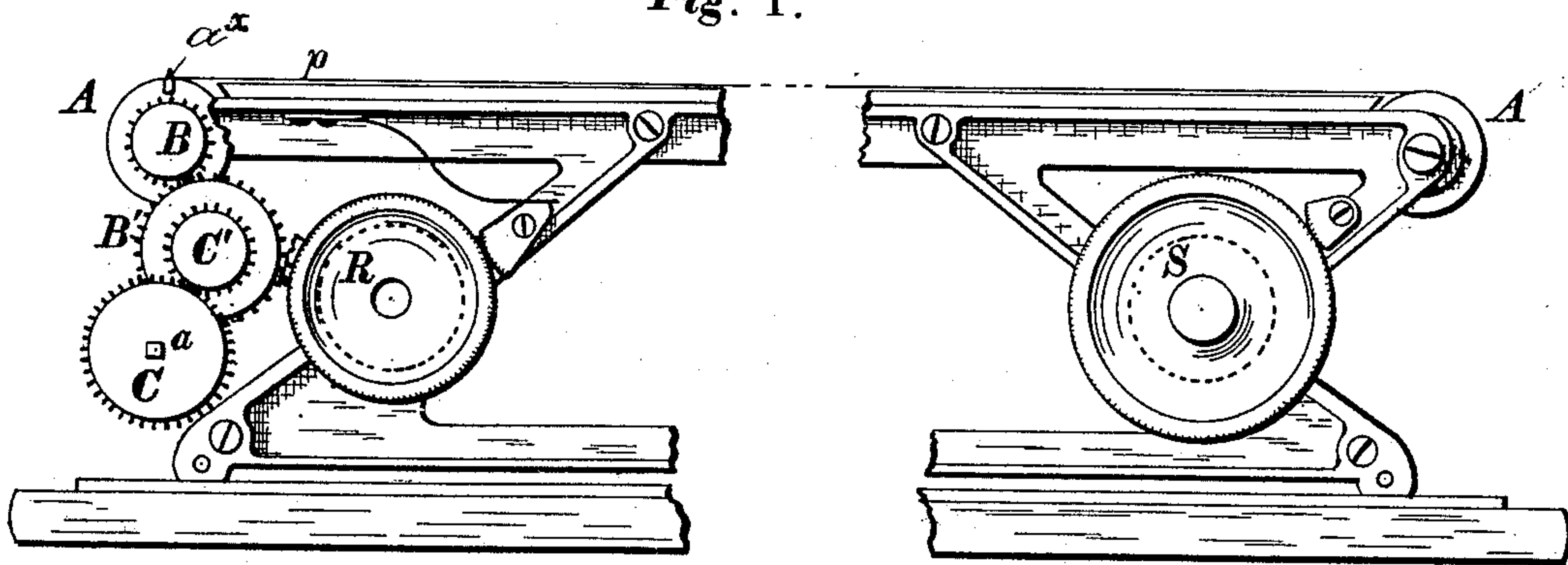


Fig. 2.

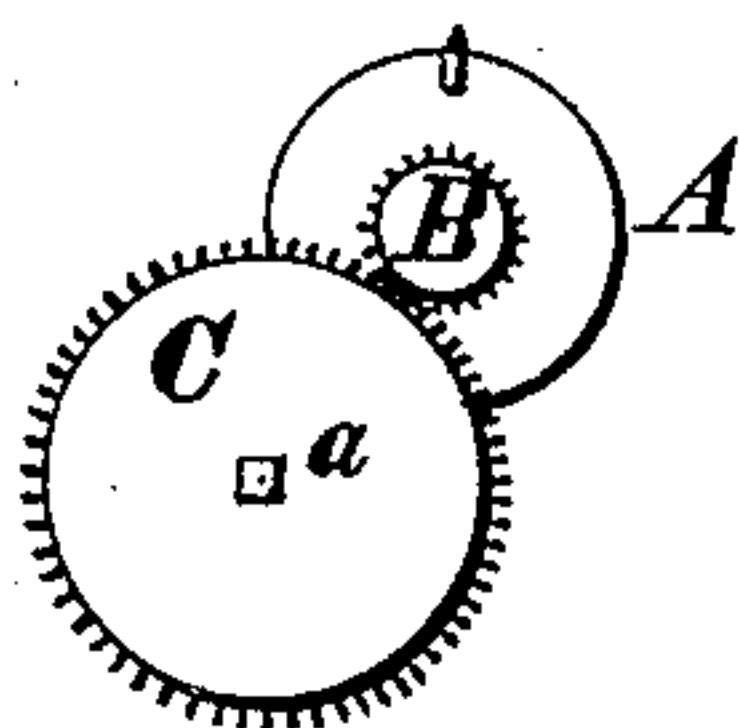


Fig. 3.

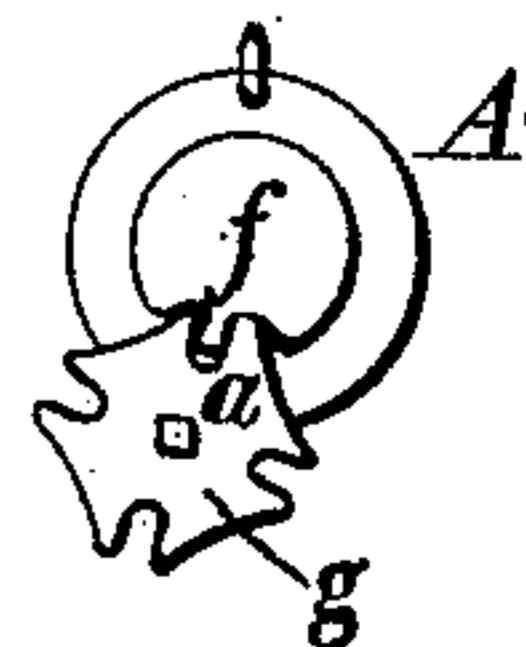


Fig. 5.

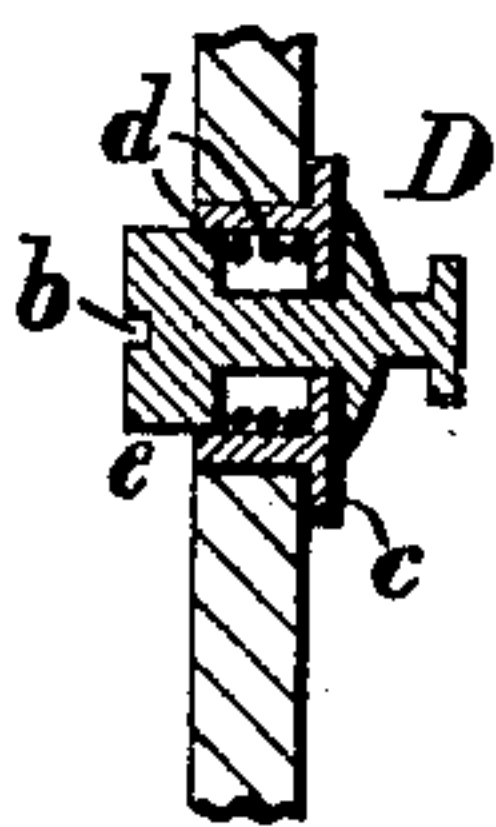


Fig. 4.

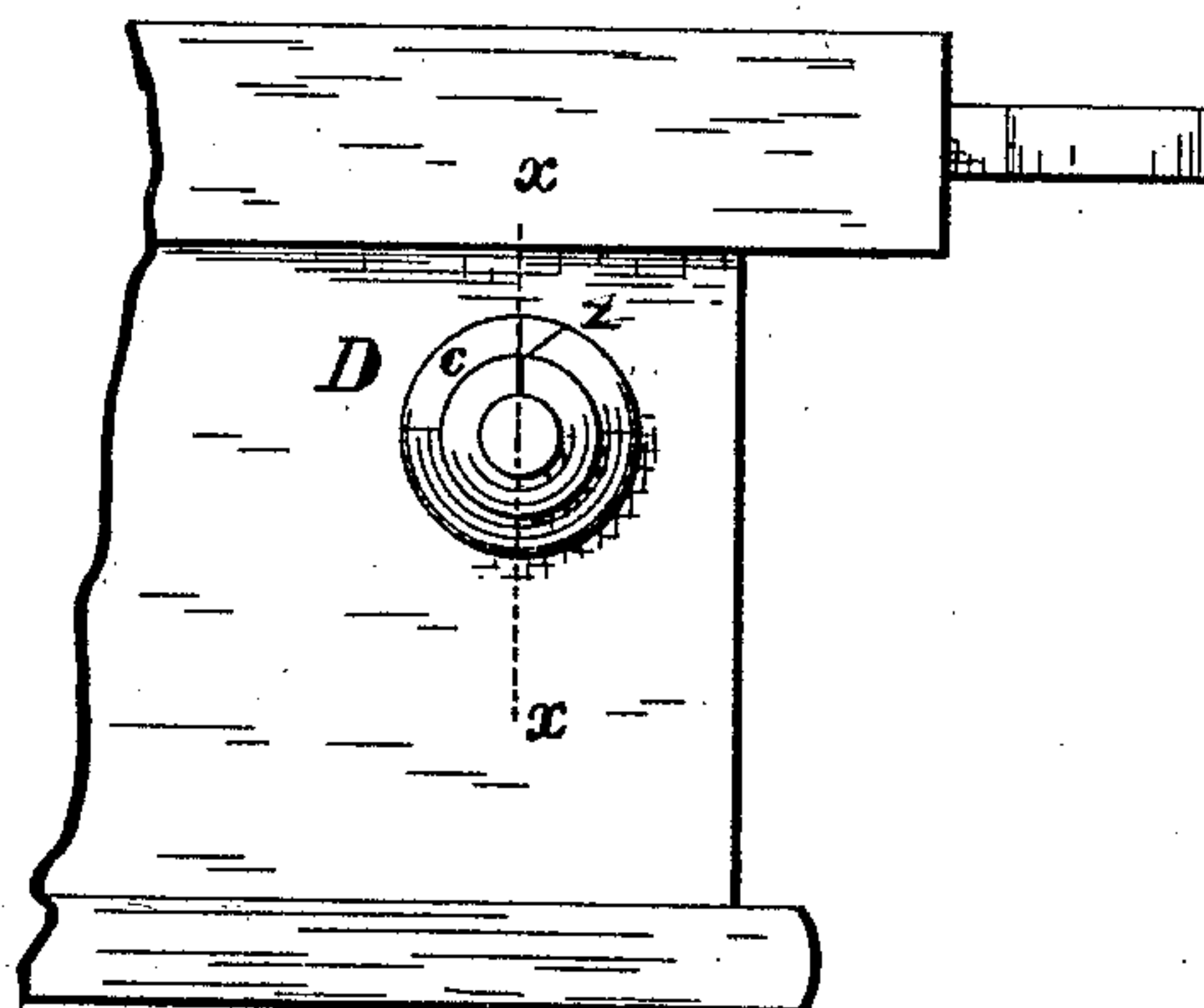
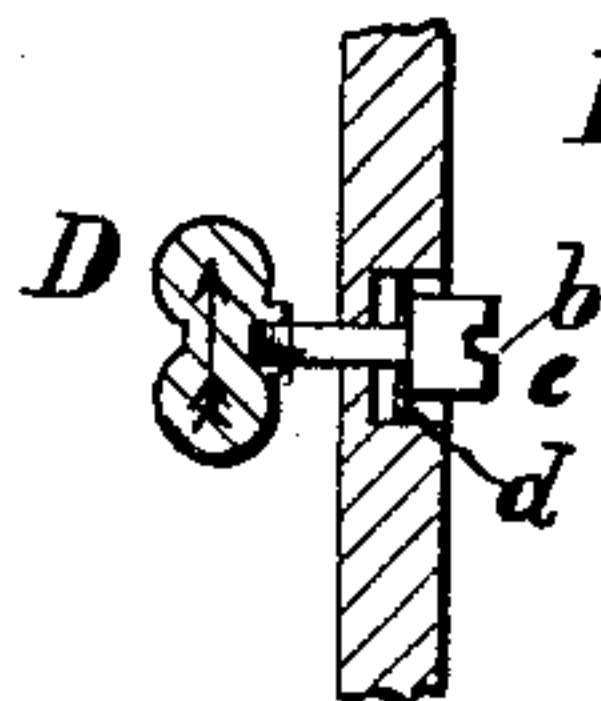


Fig. 7.



Fig. 6.



WITNESSES

H. G. Phillips.
H. K. Caldwell

INVENTOR

Geo. Eastman

UNITED STATES PATENT OFFICE.

GEORGE EASTMAN, OF ROCHESTER, NEW YORK.

ROLL-HOLDER INDICATOR.

SPECIFICATION forming part of Letters Patent No. 407,396, dated July 23, 1889.

Application filed July 13, 1885. Serial No. 171,560. (No model.) Patented in England October 28, 1885 No. 12,972.

To all whom it may concern:

Be it known that I, GEORGE EASTMAN, of Rochester, New York, have invented certain Improvements in Roll-Holder Indicators, (for which I have obtained a patent in Great Britain, No. 12,972, bearing date October 28, 1885,) of which the following is a specification, reference being had to the annexed drawings.

My present invention relates to an improvement in roll-holders for photographic purposes, such as described in United States Letters Patent Nos. 317,049 and 317,050; and it consists in an improved device for indicating when the proper length of sensitive material has been drawn into position for exposure in holders where the circumference of the measuring-roll is less than the length of the required exposure.

Referring to the drawings, Figure 1 is a side view of a roll-holder, showing my improved device. Figs. 2 and 3 show modified forms of my device. Fig. 4 is a view of part of the case of a roll-holder, showing the indicator. Fig. 5 is a section on the line $x x$, Fig. 4. Fig. 6 represents a modification of the detachable indicator. Fig. 7 shows the spring used to keep the indicator engaged when the form of indicator shown in Fig. 6 is employed.

As stated, my invention is designed to be applied to roller-holders constructed in accordance with the above-mentioned patents, and particularly No. 317,050, and accordingly in—

Fig. 1 is shown the frame carrying the operating parts removed from the casing, R representing the roller containing the unexposed film and S the roller at the opposite end, upon which the film is to be wound after exposure. The film p passes from the roller R over the measuring-roller A, across the top of the table, and over the guide-roller A' to the roller S. The measuring-roller A is constructed as ordinarily and provided with the pin a^x for forming a perforation or indentation in the edge of the film, its circumference being equal to about one-fourth of the amount of film necessary for one exposure, so that four revolutions of the roller have to be made every time a new surface of film is moved into position. Ordinarily the manner of indicating the number of revolutions of this roll, and consequently the amount of film reeled over,

is by means of an alarm mechanism attached to the measuring-roller and sounded each time the roller makes a revolution, so that the only thing to guide the operator in reeling forward the film is this sound. It has been found that the operator is apt to lose count and to reel over either more or less film than is required for one exposure, and thereby spoil two exposures of film by having the pictures lap each other. I have provided a means for remedying this difficulty in the shape of an indicator geared to the measuring-roller and adapted to make a single complete revolution each time the measuring-roller makes four, or other number required for an exposure of film.

On one end of the measuring-roller A is provided a small pinion B, gearing into another pinion B' on a small stud axle or shaft secured to the frame; and C represents a small pinion secured to the outer side of the pinion B', which in turn engages with a pinion carrying a small preferably square pin or stud a at its center, as shown. These gears are relatively so arranged as to size and manner of connection with each other that the pinion C shall make a single complete revolution each time a quantity of film is wound over the roller A sufficient to form one exposure.

In order that the revolutions of the measuring-roller shall be visible when the frame containing the film and operating mechanism is placed within the casing, I provide an indicator D, constructed as follows, to be applied to the casing and adapted to engage with the measuring-roller: This indicator in the preferable form is shown in Fig. 5, and is composed of a thimble c , secured to the casing in any suitable manner—as, for instance, by being screwed into it, having an internal recess and a perforation in its outer side, as shown. Through this perforation a spindle extends having on its outer side a disk or collar to prevent the ingress of light, and on its inner end a head e , between which and the end of the thimble is placed a spring d , encircling the spindle and operating to press the latter inwardly. If desired, the form of flat spring shown in Fig. 7 may be employed, suitable slots being provided in the thimble, or, if desired, the thimble may be dispensed with and

the spring used alone, as shown in Fig. 6. The head *e* on the spindle is provided with a recess *b*, adapted to engage with the correspondingly-shaped projection *a* on the gear *c*, being kept in engagement therewith by the spring *d*. On the collar, on the outer end of the spindle, a mark or notch *z* may be made, a corresponding mark being made on the thimble or casing with which it co-operates, to indicate when a section of film sufficient for an exposure has been reeled forward; or, instead, any other form of indicating device may be employed. When the film-holding apparatus is to be removed from the casing, the spindle is withdrawn from engagement with the gear against the tension of the spring and the frame removed in the ordinary manner.

Any manner of gearing from the measuring-roll to the pinion with which the indicator engages may be employed—such, for instance, as shown in Fig. 2, in which the gear *B* on the end of the measuring-roller engages directly with gear *C*; or, as shown in Fig. 3, the stud *a* may be secured upon the wheel *g*, having four or other number of recesses equal to the number of rotations to be made by the measuring-roller, with which a projection *f* on the measuring roller engages, the gear *g* being locked from further rotation by its concave coming into contact with the convex surface of the gear *f*.

It is obvious that any other form of indicating device may be employed instead of the one shown, and that the connection between the measuring-roller and the indicator may be made in any suitable manner. The advantages are also obvious. The operator can tell at a glance when all or what portion of an exposure of film has been reeled over, and this without having to count the clicks made by the alarm mechanism, or to watch an indicator rotate several times.

I do not claim herein the combination, broadly, of an indicator capable of longitudinal movement in its bearings and provided with a recess in its end with a spring and a marking-wheel.

I claim—

1. In a roll-holder for photographic films, the combination, with the outer casing, of the supporting-frame carrying the winding, unwinding, and measuring rolls independent of and movable with reference to the casing, a gear on the measuring-roll, an indicator mounted upon the main casing and in gear with the measuring-roll, so as to make a single revolution as the measuring-roll is rotated the requisite number of times to reel forward an amount of film for one exposure,

said indicator adapted to be connected to and disconnected from engagement with the indicating-roller when desired, substantially as described.

2. In a roller-holder for photographic films, the combination, with the outer casing, of the supporting-frame carrying the winding, unwinding, and measuring rollers independent of and movable with reference to the casing, a wheel or gear on the frame in gear with the measuring-roller, so as to make a single revolution as the latter is rotated the requisite number of times to reel forward an amount of film for one exposure, and an indicator mounted on the casing and adapted to be connected to and disconnected from the gear on the frame, substantially as described.

3. In a roller-holder for photographic films, the combination, with the outer casing, of the supporting-frame upon which the winding, unwinding, and measuring rollers are mounted independent of and movable with reference to the casing, the gears *B* and *C*, receiving motion from the measuring-roller, and the indicating device mounted upon the casing and adapted to be connected to and disconnected from the gear *C*, substantially as described.

4. The combination, in a photographic roll-holder, of an indicating device, a measuring-roll, and a gear or pinion for the purpose of connecting the same, substantially as described.

5. In a roller-holder such as described, the combination, with the measuring devices and the casing, of the indicating devices comprising a thimble inserted through the casing and provided with a plate or flange on the outer end, a longitudinally-movable spindle having its bearing in said thimble, and an indicator on its outer end co-operating with the thimble, and a spring contained within the thimble and engaging the indicator-spindle to project the latter toward and hold it in engagement with the measuring devices, substantially as described.

6. The combination, in a photographic roll-holder, of a film-marking device, an indicating device, a measuring-roll, and gearing intermediate the measuring-roll and indicator adapted to effect a single indicated movement of the indicator for two or more rotations of the measuring-roll, substantially as described.

GEORGE EASTMAN.

Witnesses:

H. G. PHILLIPS,
GEO. B. SELDEN.