(No Model.) 2 Sheets—Sheet 1.

W. CLARK.

PHOTOGRAPHIC CAMERA.

No. 361,673. Patented Apr. 26, 1887.

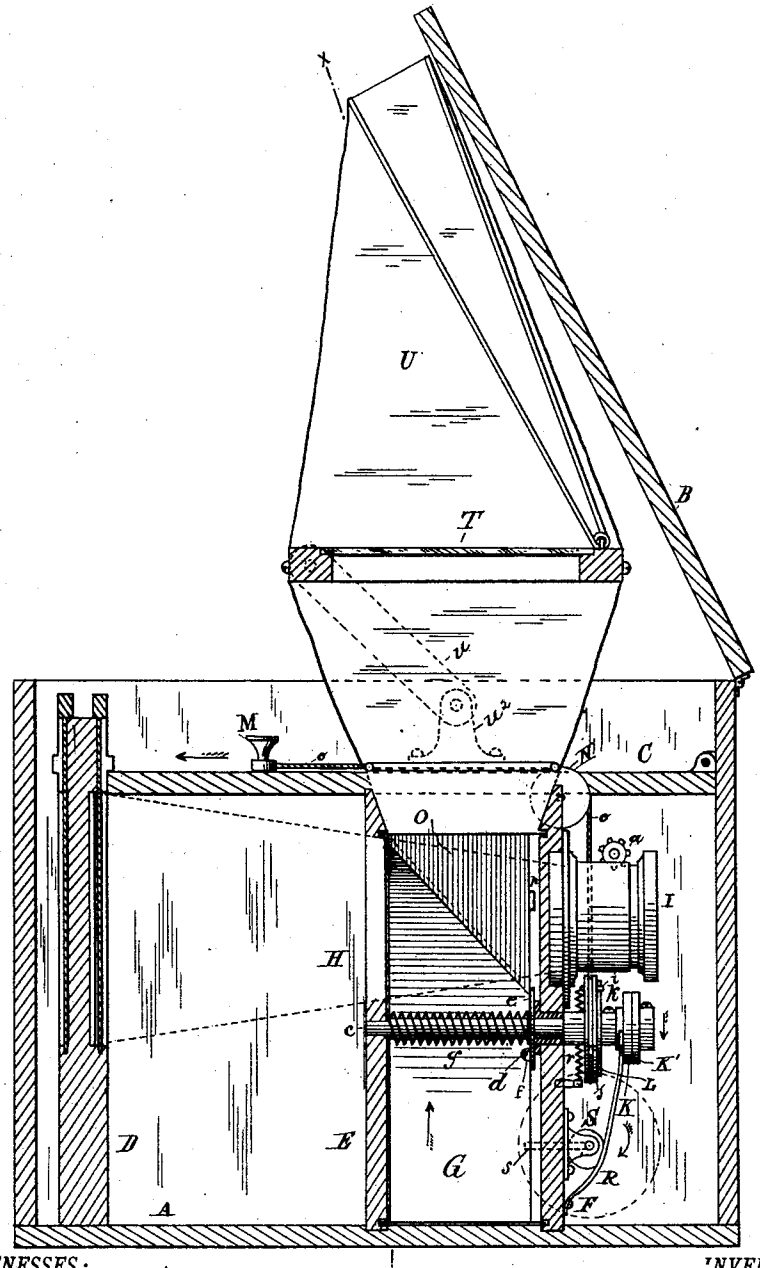


FIG. 1.

WITNESSES:

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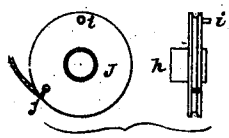


FIG. 3.

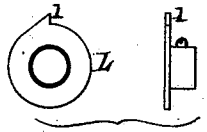


FIG. 4.

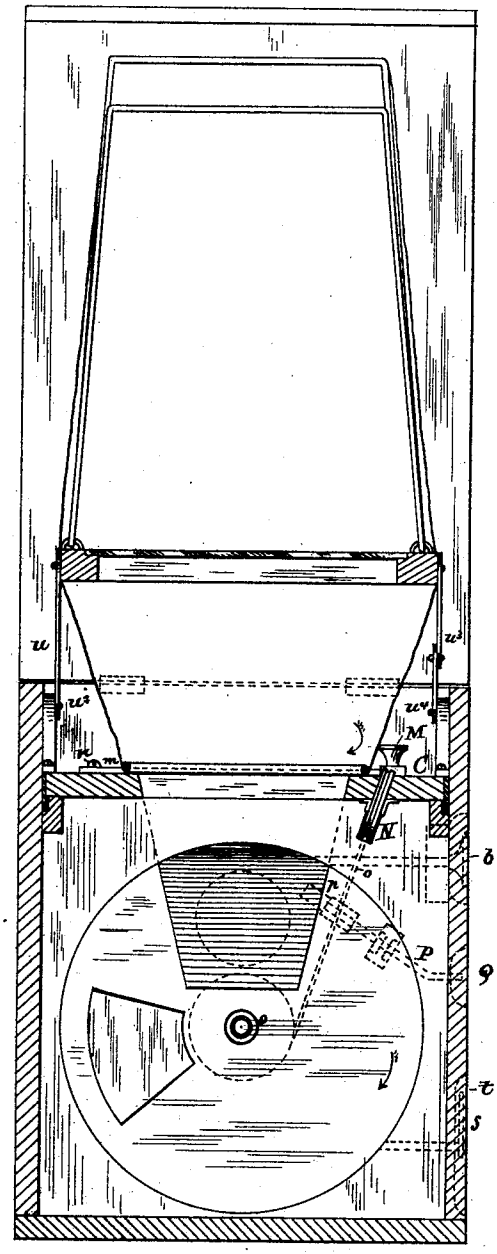


FIG. 2.

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UNITED STATES PATENT OFFICE.

WALTER CLARK, OF NEW YORK, N. Y.

PHOTOGRAPHIC CAMERA.

SPECIFICATION forming part of Letters Patent No. 361,673, dated April 26, 1887.

Application filed November 18, 1886. Serial No. 219,222. (No model.)

To all whom it may concern:

Be it known that I, WALTER CLARK, a citizen of the United States, residing at New York, New York county, State of New York, have invented a new and useful Improvement in Photographic Cameras, of which the following is a specification.

The object of my invention is to provide a photographic camera of exceedingly simple construction and adapted to be more readily and conveniently focused and operated than any heretofore in use.

This result I accomplish by having the focusing-mirror carried in a vertical drum revolving on a horizontal shaft, as hereinafter explained. In this way I produce a compact, simple, and roomy camera-box, which, when closed, presents smooth surfaces on all sides without any projections or angular spaces for catching the hands or clothing of the operator.

One form of my improved camera is shown in the accompanying drawings, in which Figure 1 is a vertical section. Fig. 2 is a cross-section, looking from the rear toward the lens; Fig. 3, details of the revolving pulley; Fig. 4, details of the cam-wheel operated by said pulley.

The same letters indicate similar parts in the different drawings.

A is the camera-box, provided with an upper lid, B, and the inner lid, C, and also the partition D, in which the plate-holders are inserted, if plates are used; or if the film-paper is used, instead of plates, this partition D is adapted to hold them, as well as the plates. This box has two other partitions, E and F, of which E is the partition just back of the vertical drum G, and holds one end of the shaft of said drum, while partition F is just forward of the drum and carries a lens and a bearing for the drum-shaft, and other devices hereinafter specified. The partition E is provided with an aperture, H, by which light is admitted from the lens to the sensitive plate, and this aperture may be square or circular, as desired. A rectangular shape proportioned to the size of the sensitive plate is for some reasons the best which can be given to this aperture.

The lens and lens-tube I are of ordinary construction, mounted upon the partition F, and moved forward and back, to adjust the focus, by the pinion *a*, which is operated by the thumb-wheel *b*, Fig. 2. A depression in the side of the box is shown by dotted lines in Fig. 2, and allows the thumb-wheel to be readily turned, and yet, as before stated, not to project beyond the edge of the box.

The drum G is mounted upon the horizontal shaft *c*, with its bearings in the partitions E and F, as before stated, the bearing in the partition F being preferably a bushing, *d*. This drum is carefully made, so that it excludes all danger of the passage of light down through the aperture in the inner lid, C, into the drum, and hence round about and through the partition E into the dark chamber, thus injuring or destroying the sensitive plate.

The construction of the drum is preferably as follows: The forward drum-head is an opaque disk, as shown in Fig. 2, with two openings through it only, the one to admit light upon the mirror O, and from this opening no light can be admitted into the drum itself, from the fact that the focusing-mirror is walled about on all sides, except that exposed to the opening and that toward the focusing-plate T. The other opening through the disk is placed at such a distance to the left of the focusing-mirror that it comes into a position in front of the lens only when the mirror has passed in the direction of the arrow so far to the right as to be out of the way of the lens, and therefore incapable of receiving any light therefrom.

The rear drum-head is an opaque disk with only one opening, and this corresponds exactly with the second opening, before referred to, in the forward drum-head. It is thus evident that light can pass from the lens to the dark chamber through the aperture H only when the two openings are in line. The side of the drum is all shut in, except for the opening above the mirror. For greater security the edges of the drum above and below are provided with rims which project into grooves in both partitions. Cast integral with this shaft *c* is a circular disk, *e*, and to this disk, by the screw *f*, is secured one end of the coil-spring *g*, which is a simple coil of wire wound loosely around the shaft *c*, the other end being fastened to the partition E. Obviously the revo-

lution of the shaft *c* in one direction coils up the spring, which by uncoiling turns back the shaft in the other direction. Upon this shaft the drum G is mounted, and hence the revolution of the shaft secures the desired reciprocal revolution of the drum. In front of the partition F the revolving pulley J is mounted loosely upon the shaft *c*, said pulley, which is shown in detail in Fig. 3, being provided with a collar, *h*, the pin *i*, and the slit *j*. Also mounted upon the shaft *c* are the friction-disks K K′, the outer of which, K′, is rigidly secured to said shaft *c* by a screw-pin passing through its collar to said shaft, while the inner friction-disk, K, is loose and has a nut-shaped collar, *k*, the purpose of which will be explained presently.

The cam-wheel L (shown in Fig. 4 in detail) is rigidly secured to the shaft *c* by a pin passing through its collar, and is so close to the revolving pulley J that the pin *i* strikes against the spur *l* upon said cam-wheel at the proper time, causing the same to revolve.

The revolution of these various devices is brought about as follows: The handle M is at the extreme end of a long arm, *m*, stretching across the box and pivoted at its extreme end to the lid C by the pin *n*. This handle is moved to the right or left by the fingers of the photographer as occasion requires, and the arm is made long simply to get the sweep of this handle as near a right line as practicable. To this handle a string is attached, *o*, which passes over the pulley N, suspended from the lid C at a slant, so that the string may pass in a right line to the revolving pulley, to the further side of which it is secured by passing into the slot *j*.

It is obvious that swinging the handle away from the pulley draws the string over the pulley and causes the revolving pulley J to rotate loosely till the pin *i* comes in contact with the spur *l* and thus rotates the cam-wheel L, the shaft *c*, and the drum G; and the effect of this rotation is to coil up the spring *g* and to bring the focusing-mirror O out of the way, so that an exposure may be made as soon as desired. Meanwhile the drum has caught by the stop *p* coming against the lever P (shown in Fig. 2) and remains stationary, subject to the withdrawal of that lever, which is done by hand, the end of the lever projecting into a small depression, Q, in the side of the box. (Shown in dotted lines, Fig. 2.) The driving-pulley J being now relieved flies back into the position by means of the spring *r*, one end of which is pinned to said pulley and the other to the partition F. In this way the driving-pulley is secured from getting in the way of the cam L when the drum and shaft are turned back into their normal positions. The speed of this return motion, and consequently of the exposure, is determined and controlled by the two friction-disks K K′, before mentioned, in the following manner: A forked arm, R, made of spring metal, is secured at one end to the partition F, and the free end—that is, the forked end—clasps the square nut-collar of the inner friction-disk, K, and prevents the same from turning. A cam, S, is mounted upon a standard on the partition F and is rotated by means of the arm *s*, which is secured to the shaft of said cam, said arm being placed within easy reach of the fingers in a depression, *t*, Fig. 2, made in the side of the box. Of course the amount of pressure which the forked arm R exerts upon the friction-disk K, and consequently the amount of resistance offered to the revolution of the drum and drum-shaft, depend upon the position of the cam S and the arm *s*, and therefore the friction can at will be readily altered from nothing to such pressure as absolutely to stop the revolution of the drum, so that the exposure may readily be made of any desired length.

The focusing-mirror O, the ground-glass plate T, the hood U, and the links u, u^2, u^3, and u^4 are of substantially the same character and operated in the same way as in the case of a pending application of mine filed October 26, 1886, wherein a horizontal drum is used instead of the vertical one herein described. As I have claimed in that application this inner lid, and also the lid B, with the links for raising the ground-glass focusing-plate, I do not claim them in this present application, but will simply say that their construction is such that whenever the lid B is raised it necessarily carries with it the focusing-plate T, so that said plate is kept steady, by means of the links, at the same distance above the focusing-mirror that the focusing-mirror is from the sensitive plate, for the obvious purpose of making the image upon the ground-glass focusing-plate of the same size as that which is subsequently thrown upon the sensitive plate.

The operation of the camera is, I think, obvious to all who are acquainted with practical photography, and therefore further description seems unnecessary.

I claim—

1. A photographic camera provided with a vertical revolving drum, revolving at right angles to the plane of the lens, for carrying the focusing-mirror, as herein described, and for the purposes specified.

2. In photographic cameras, the friction-disks K K′, in connection with the forked arm R and its operating mechanism, substantially as described and shown.

WALTER CLARK.

Witnesses:
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GEO. H. SONNEBORN.