(No Model.)

C. WHITNEY.

PHOTOGRAPHIC CAMERA.

No. 446,368. Patented Feb. 10, 1891.

Fig. 1.

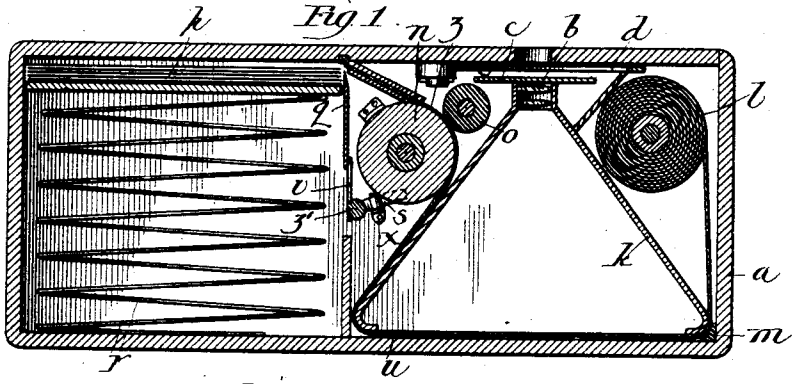


Fig. 2.

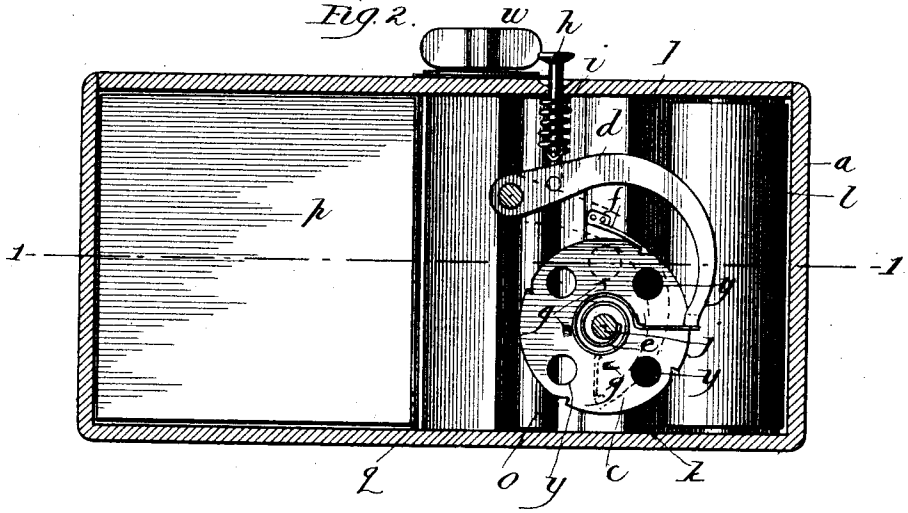


Fig. 3.

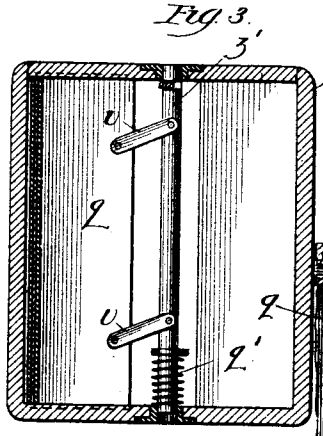


Fig. 4.

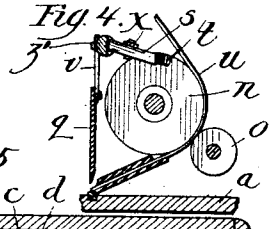
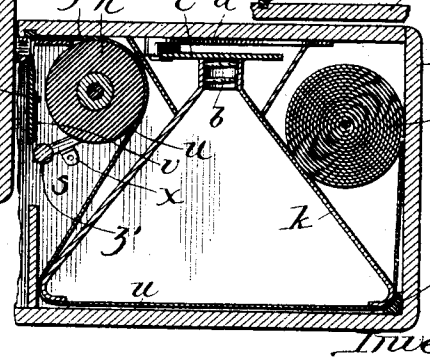


Fig. 5.



Witnesses:
Fred Gerlach
Frank L. Blanchard

Inventor:
Charles Whitney

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

UNITED STATES PATENT OFFICE.

CHARLES WHITNEY, OF CHICAGO, ILLINOIS.

PHOTOGRAPHIC CAMERA.

SPECIFICATION forming part of Letters Patent No. 446,368, dated February 10, 1891.

Application filed August 20, 1889. Serial No. 321,421. (No model.) Patented in Italy April 29, 1890, No. 27,256/333; in Canada July 2, 1890, No. 34,607, and in France July 17, 1890, No. 204,797.

To all whom it may concern:

Be it known that I, CHARLES WHITNEY, a citizen of the United States, residing in the city of Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Photographic Cameras, (patented to me in France, No. 204,797, dated July 17, 1890; in Italy, No. 27,256/333, dated April 29, 1890, and in Canada, No. 34,607, dated July 2, 1890,) of which the following is a specification.

This invention relates to photographic cameras, and is for the purpose of perfecting and simplifying the operations necessary in making negative-plate exposures and economizing in the size and dimensions of the construction of such instruments.

It further relates to the construction of a case or box, a shutter device, a feed-roller, a coil of negative material containing sensitized film, a knife for separating the negatives after each exposure, a V-shaped frame, and a compacting arrangement for the cut negatives.

The objects of my invention are to provide a camera containing a sheet of transparent material in ribbon form and coated on one side with a sensitized film for making negative-plates from which photographs may be printed after developing the same, in providing means for feeding the negative-ribbon to position for exposure and feeding them to position for cutting off and packing away, and in providing means for operating a shutter, a cutting device, and gaging the length of ribbon negative wanted for each exposure. In the arrangement and operation of these parts consists the novelty of my invention. These objects I accomplish in the manner and by the means hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a cross-section plan view. Fig. 2 is a front elevation showing shutter device, feed-rollers, and coil of negative-ribbon. Fig. 3 is the knife in position. Fig. 4 is a detail of feed-roller and knife and knife-lever. Fig. 5 is a section view of Fig. 1 modified.

In order to make my invention more comprehensive, I will describe it in detail alphabetically, in which—

a indicates the box or case, which may be made of any suitable material, as hard rubber, brass, or wood.

b indicates the lens, and may be of any of the well-known kinds, suitably focused.

c is the shutter.

d is the shutter-lever.

e is the shutter-spring.

f is a stop-spring.

g g g g are notched teeth engaging the shutter-spring alternately.

h is the thumb-rod.

i is the spring which brings lever *d* back to place after being pressed down by the thumb-rod.

j is the post holding the shutter and upon which it revolves.

k is the V-shaped frame or chamber around which the negative-ribbon is drawn, and through which the rays of light are admitted from the lens *b*, the walls of the V-frame extending from top to bottom of the box, making a light tight compartment, thus protecting the previously exposed and the unexposed ribbon from light.

l is a coil of properly-prepared negative-ribbon, which may be put in place by setting it in place without spool or post.

m is a flexible friction-stop, and may be of rubber or any suitable material to render a yielding pressure on the ribbon as it is being drawn to place for exposure.

n is a rubber feed-roller which draws or feeds the negative-ribbon from the coil *l* around the back end of the V-shaped frame into the negative receptacle (marked *p*) by pressing against the side of the box *a*, Fig. 5, or by pressing against the roller *o*, Fig. 1.

q is the knife which severs each negative from the ribbon-belt as it is fed into receptacle *p*.

r is a light press-spring holding the exposed plates in place after they are cut from the ribbon.

s is a lever pivoted on the box-cover and operating the knife *q*.

t is a cam on the end of feed-roller *n*, which operates lever *s*.

u is the negative-ribbon.

v v and *v'* are links and post for operating the knife *q*.

w is a thumb-lever for operating the feed-roller n.

x is the pivot-point of lever s.

It will be seen that by turning the thumb-lever w to the left, that roller being of soft rubber, the negative-ribbon u will be drawn by friction as it is pressed against the box-board a or the roller o and fed into the negative-receptacle, the feed-roller n being the exact size to draw enough for one negative two and one-half inches at one revolution. In this manner I dispense with all devices for measuring, such as gearing or marking, and that all roll-holders are dispensed with, and that my camera produces single or individual plates ready for developing. The drawings show a full-sized camera for making negatives two and one-half inches square or two and one-half inches in diameter. This friction feed-roller is equally valuable for feeding thin flexible cut plates, and would be made in size to correspond with the size of plate to be moved, so that a plate could be carried to proper position by an equal number of revolutions or one or more turns of the thumb-lever.

The opening in the V-shaped frame may be round or square where the negative is exposed.

In operation a coil of negative-ribbon properly coated with the well-known dry-plate film is placed (after removing the box-cover, which may be fastened in any well-known manner) in position, as shown at l, Fig. 5. The end is then carried around the V-shaped frame to and between the feed-roller n and the side of the box. In this position it is held straight by friction-pressure at m and between the box-wall. In this position, after placing the cover on securely, it is ready for making an exposure. The exposure is made by pressing upon the thumb-rod h, which brings lever d in contact with the spring j, carrying it to the notched tooth g, and as the lever d is pushed past the end of the spring the strain of the spring is transferred to the shutter-disk. This revolves the shutter-disk one-quarter revolution, permitting one of the holes y to pass the lens, the lens being covered by the space between the holes in the disk. The pressure on the thumb-rod h being released, permits the spring i to bring lever d back to place, ready for making another exposure. It will be seen, therefore, that the only operations necessary in operating the camera are to turn the thumb-lever w one revolution and press the rod h. To press the rod h both loads and trips the shutter. A negative having been fed into the receptacle p, it is now ready to be cut off. This is accomplished when the feed-roller n is started for a second revolution by a small abrupt cam t or tooth on one end of roller n coming in contact with the end of lever s. The movement of the knife being very slight, but little movement of roller n is required. To accommodate this movement the negative-ribbon is permitted to yield or wrinkle at z. The cam t raising the loose end of lever s, the other end of the lever is thrown down, forcing the rod z', and this presses the knife forward by means of the toggles v and v. The rod is brought back by the spring q'. The inner side of the sliding knife, or that side next the plate which has been cut off, is serrated and engages the negative, and as the knife is drawn back the negative is thus moved slightly back, making room for another to be forced in for cutting. The negative-ribbon being very thin, (about the one hundred and fiftieth part of an inch,) but little is required to cut it or move it.

I use and prefer transparent celluloid for the negative-ribbon. However, other materials may be used.

Deeming this description sufficiently clear, what I claim is—

1. In a camera, the combination of case a, compartment k, feed-roller n, knife q, and the negative-ribbon i, substantially as described.

2. In a camera, the combination of case a, compartment k, adapted to form the two compartments, one for the negative coil and the other for the feed-roller, and the knife q, substantially as described.

3. In a camera, the combination of the case a, compartment k, knife q, and compartment p, substantially as described.

4. In a camera, the combination of the negative-ribbon, the feed-roller, the knife or shear, and means for operating the same, substantially as described.

5. In a camera, the knife forced into position by a friction feed-roller for severing the negative-ribbon, in combination with the said feed-roller, substantially as described.

6. In a camera, the rotating shutter adapted both to be set and tripped by a single pressure on the actuating-rod, substantially as described.

7. In a camera, the combination of a roll of negative-ribbon, the V-shaped frame, a friction feed-roller, and a receptacle for exposed plates, substantially as described.

8. In a camera, the combination of the roll of negative-ribbon, the friction feed-roller with friction-pressure between them for holding the ribbon straight, and the knife or shear for cutting the ribbon, substantially as described.

9. In a camera, the combination of a roll of negative-ribbon, the V-shaped frame, the feed-roller, the knife, and means for operating the knife, substantially as described.

10. In a camera, the combination of a lens, a shutter, and negative-ribbon, knife, and a friction feed, substantially as described.

11. In a camera, case a and compartment k, adapted to form a triangular inside compartment open at its base, with a lens in its apex, thus in shape conforming to the angle of the rays of light through the lens, and the compartments each side of the apex of compartment k, adapted for storing and handling negative-plates, substantially as described.

12. In a camera, the combination, with the lens, of a roll of negative-ribbon on one side of the lens, a feed-roller on the other side of the lens, mean for revolving said feed-roller, and a rigid surface adjacent to said roller, whereby the ribbon is fed between the roller and the rigid surface adjacent thereto and caused to advance by friction, substantially as described.

13. In a camera, the case *a*, having the triangular compartments, the middle compartment providing the exposure-compartment, in combination with a roll of negative-ribbon and a feed-roller in opposite triangular compartments on either side of the apex of the exposure-compartment, substantially as described.

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

CHARLES WHITNEY.

Witnesses:
O. W. BOND,
M. L. PRICE.