(No Model.) 2 Sheets—Sheet 1.

F. F. DUMKE.

PANORAMIC CAMERA.

No. 523,336. Patented July 24, 1894.

Fig. 1.

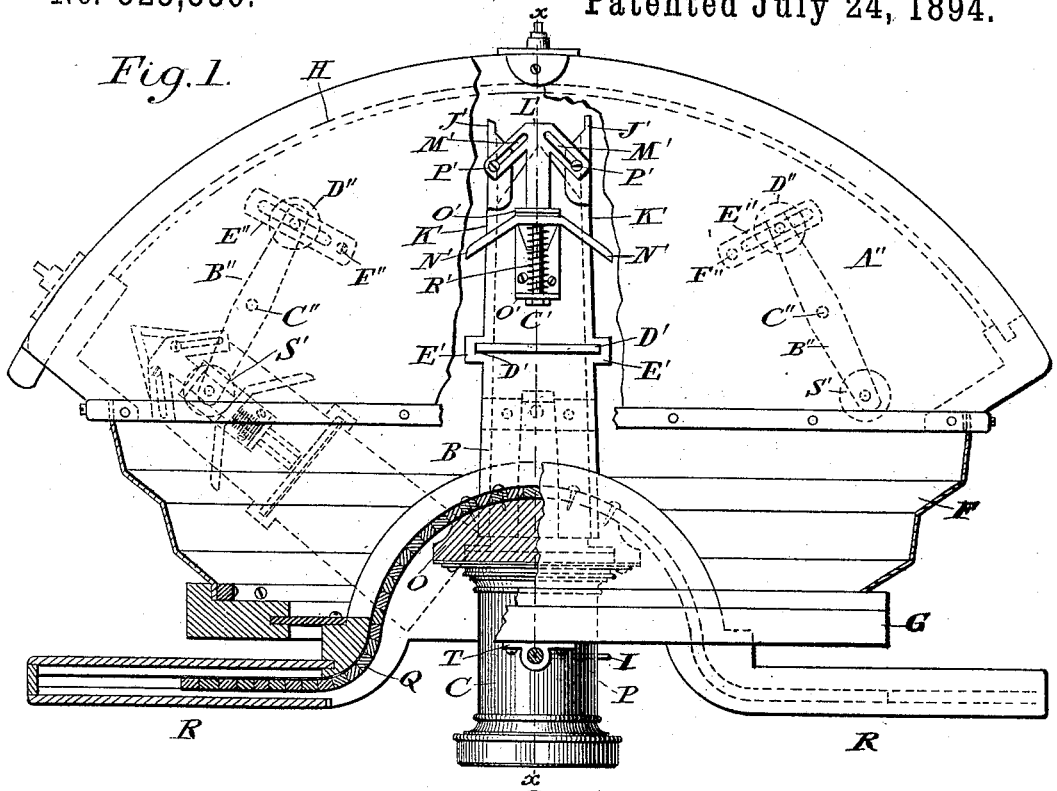
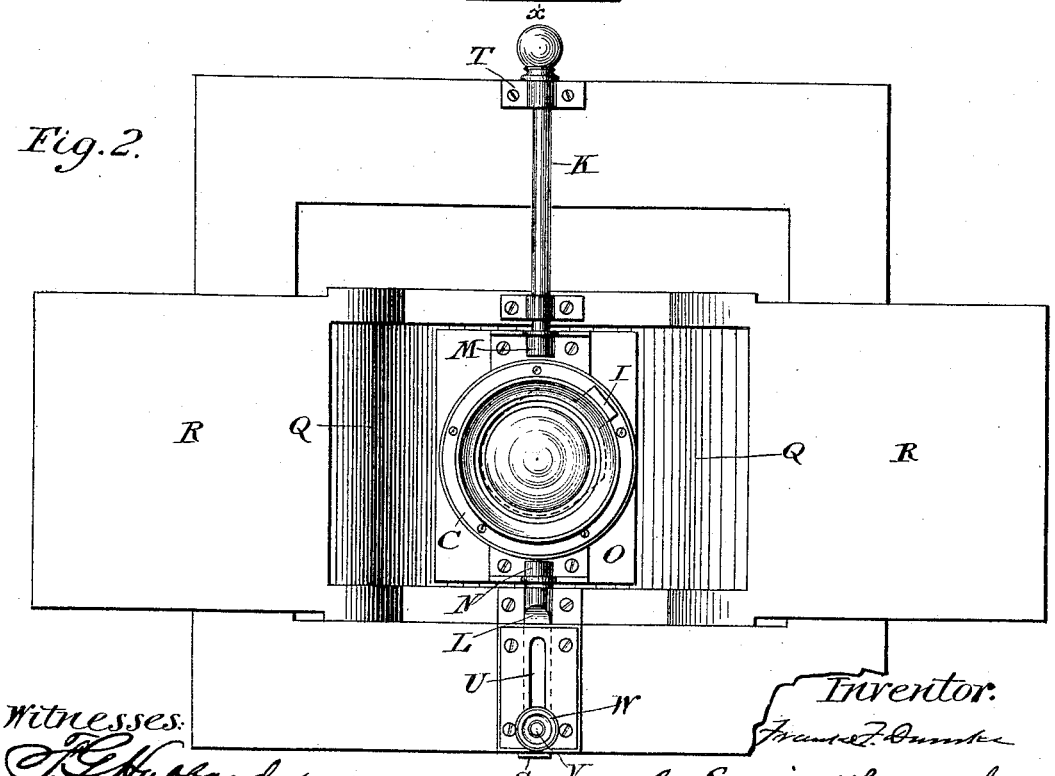


Fig. 2.



Witnesses.
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Clara L. Roesch.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

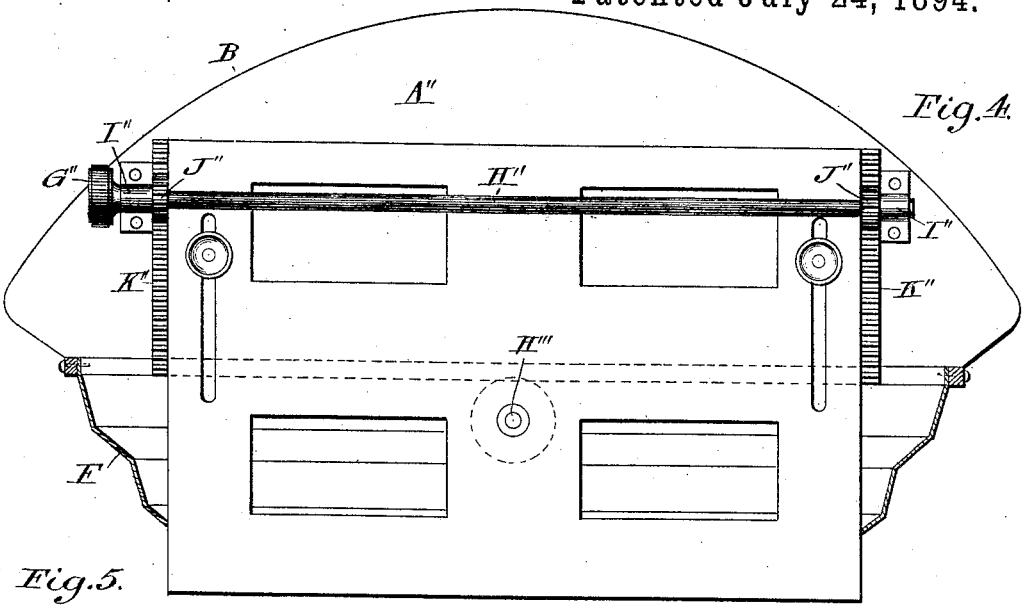


Fig. 5.

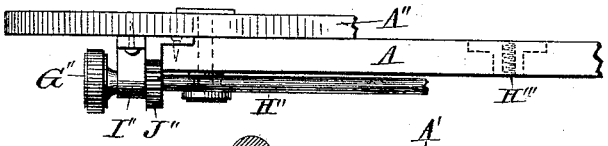
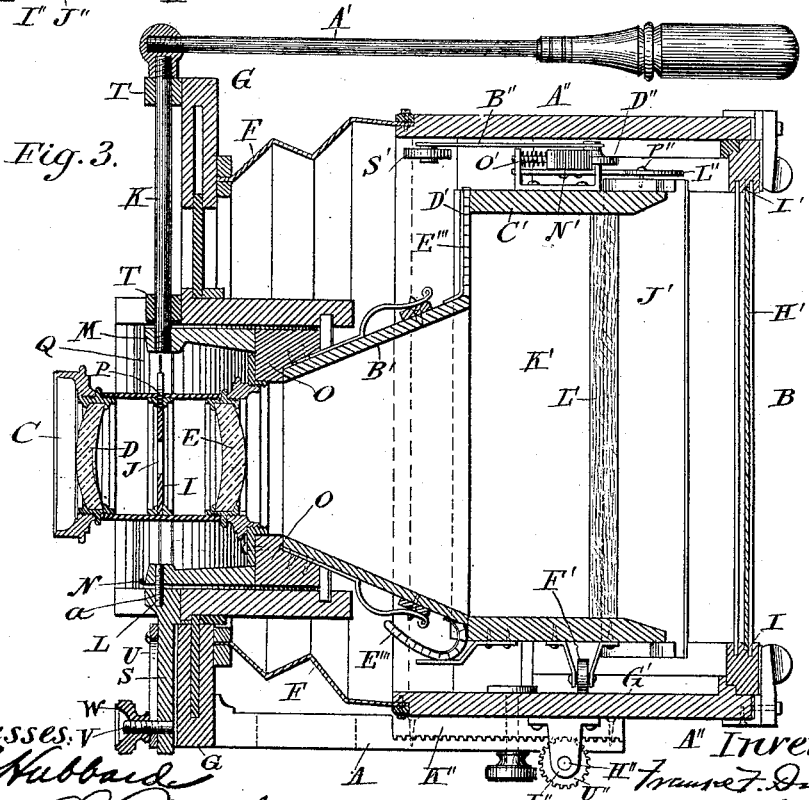


Fig. 3.



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UNITED STATES PATENT OFFICE.

FRANKE F. DUMKE, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO WILLIAM H. KIRK, OF SAME PLACE.

PANORAMIC CAMERA.

SPECIFICATION forming part of Letters Patent No. 523,336, dated July 24, 1894.

Application filed February 5, 1894. Serial No. 499,165. (No model.)

To all whom it may concern:

Be it known that I, FRANKE F. DUMKE, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Panoramic Cameras, of which the following is a specification.

My invention relates to new and useful improvements in panoramic cameras, and it consists in the matters hereinafter described and set forth in the claims.

In the accompanying drawings illustrating my invention, Figure 1. represents a top view of the camera with a part of the case broken away to show the interior. Fig. 2. is a front elevation. Fig. 3. is a longitudinal vertical section drawn on line *x x* of Fig. 1. Fig. 4. is a bottom view of the supporting frame and bellows, showing the device for adjusting the lens. Fig. 5. is a detail showing a rear view of one end of the adjusting mechanism shown in Fig. 4.

Like parts are represented by similar reference letters throughout the several views.

In the drawings the stationary frame A, the semi-circular case B, the lens tube C, the lenses D and E, and the so-called bellows or flexible folding case F, are all constructed in the ordinary manner.

The lens tube is connected with its supporting bearings K and L, which form its center of rotation, through the swinging arms M and N and the lens supporting plate O.

P represents a slot which is formed through one side of the lens tube for the reception of the perforated diaphragm I. To enable me to thus support the lens tube in the rear of its axis of rotation and at the same time to exclude the light, a flexible curtain Q is provided. The curtain Q is centrally affixed to the lens supporting plate O, and its respective ends extend toward the right and left out in front of the camera frame, at which point they enter the curtain receptacles R R. Thus it is obvious, that as the lens tube is swung on its vertical axis, one end of the curtain Q is drawn outward and rear-ward from its receptacle, while the other end of the curtain is forced forward and into the other receptacle. The curtain Q is preferably formed of a series of narrow strips of wood secured to a flexible fabric.

The lower supporting axis or bearing L of the lens tube, rests in the socket "*a*" provided therefor in the upper end of the movable slide S. The upper bearing or axis K extends above the housings through the stationary boxes T T. Thus it is obvious that the lens tube may be moved bodily upward or downward with the supporting bearings and attachments, by raising or lowering the slide S. The slide S moves in the guide ways U, and it is provided with the lifting arm V and the lock-nut W, which lock-nut is adapted to be screwed down and upon the lifting arm V against the front surface of the guide ways U, and thereby locks the slide S at any desired point of adjustment.

The upper end of the axis or bearing K is provided with an operating handle A′ by which the lens tube is turned on its support. To the inner side of the lens plate O is attached a narrow outwardly diverging hood B′, to the free end of which is adjustably attached another hood C′. The hood B′ is adjustably connected with the hood C′ by the retaining ribs or ways D′, which engage in the inclosing flanges or guide ways E′ and permit the hood B′ to be raised or lowered with the lens tube as may be required, while the hood C′ remains at rest. It is obvious that as the hood B′ is raised or lowered, a space is formed between it and the upper and lower walls of the hood C′. These spaces are closed by the flexible aprons E‴ which are attached at one end of the walls of the hood B′, while their free ends pass out through the guide ways or flanges E′. The hood C′ is provided with a supporting roller F′ which rests upon the floor G′ of the semi-circular case B.

H′ represents the flexible gelatin plate upon which the view is photographed. The plate H′ is held in place by the semi-circular grooves I′ I′. To produce the best results when taking a picture it is necessary to exclude the light from the gelatin plate, until after the beginning of the movement of the lens across the field or view which is being photographed. To accomplish this object the hood C′ is provided with two swinging doors

J' J' which are respectively hinged to the respective vertical sides K' K' of said hood.

As a substitute for the ordinary metallic hinges for supporting the doors J' J', I preferably use a strip of cloth or other flexible fabric L' which may be glued to the contiguous surfaces.

The doors J' J' are provided with a spring actuated mechanism by which they are automatically thrown open the instant they are moved away from either side of the case and are closed as they approach either side.

The mechanism for opening and closing the doors J' J' is shown in Fig. 1, and it consists of a T shaped plate L', provided with angular slots or guide ways M' M', and actuating arms N' N'. The plate L' is supported from the upper end piece of the hood C' in guide ways O' O' in which it is free to move upward and downward. The upper end of the T shaped plate L' is connected with the respective doors J' J' by screws P' P', which are loosely fitted at their outer ends in the slots M' M', while the inner ends of the screws are affixed to the ends of said doors J' J'. Thus it is obvious that as said T shaped plate is moved upward, said doors J' J' will be opened, and as said plate is moved downward the doors will be closed by the action of said slotted ways or bearings upon said screws.

Plate L' is held upward and the doors thereby held open by the recoil of the spring R'. The lower end of the spring R' rests upon the upper surface of the lower guide flange O', while its upper end bears centrally against the lower surface of the actuating arms N' N', whereby said doors are held open as stated, while the hood is being moved from one side of the inclosure to the other. When, however, the hood is swung to either side of the inclosure, one of the actuating arms N' is brought in contact with one of the roller stops S', whereby said plate L' is thrown downward and against its supporting spring, when said plate, acting through the angular bearings or slots M' and the screw bearings P' P', cause said doors J' J' to be simultaneously closed. When said hood is moved outward and the actuating arms M' released from contact with said roller stops S', said doors J' J' will be simultaneously thrown open by the recoil of said spring.

The roller stops S' are adjustably attached to the lower side of the wall A'' by the lever B'' and centrally supporting pivot C'', whereby they may be adjusted in line with the circular line of movement of the door actuating arms N', as the line of movement is changed when adjusting the lens to the picture. The levers B'' are held at the desired point of adjustment with ordinary hand screws D'' and the slotted plate E''. The slotted plate E'' is attached to the wall A'' upon the pivot F''. The hand screws D'' operate in screw-threaded apertures formed in the levers B'' in the ordinary manner, and they are adapted, as they are screwed inward in their bearings, to impinge upon the surfaces of the slotted plates E'', and thereby hold said levers B'' at any desired point of adjustment.

The gelatin plate H' with its supporting case is adjusted nearer to or farther from the lens, as may be required, by turning the hand knob G'' toward the right or left. The hand knob G'' is affixed to one end of the shaft H'', which shaft turns in the journal bearings I'' I'', and is provided near its respective ends with pinions J'' J''. The journal bearings I'' I'' are rigidly affixed to the floor A'' of the movable case B and moves with it while the teeth of the pinions J'' J'' mesh into the tooth bars K'' K'', which bars are rigidly affixed to the stationary frame A, whereby as said knob G'' is turned toward the right or left, said case B is moved nearer to or farther from the lens.

When taking a picture the camera is centrally supported upon a tripod in the ordinary manner by a binding screw operating in the screw fitted aperture H'''.

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

1. In a panoramic camera the combination of lens tube C, tube supporting plate O, plate supporting arms N and M, pivotal supporting bearings K and L, sliding curtain Q centrally affixed to said lens supporting plate O and adapted to slide toward the right and left as said lens tube C is swung up on its supporting pivots, substantially as and for the purpose specified.

2. In a panoramic camera the combination of the swinging lens tube C, tube supporting plate O, sliding curtain Q centrally affixed to said lens plate O, and curtain receptacles R R formed for the reception of the respective ends of said curtain, substantially as set forth.

3. In a panoramic camera, the combination of the swinging lens tube C tube supporting plate O, vertically adjustable hood B', hood C' adjustably connected to said hood B', hood supporting roller F', and flexible curtains E''', said curtains being adapted, as said hood B' is raised and lowered to close the spaces between it and the upper and lower walls of said hood C', substantially as and for the purpose specified.

4. In a panoramic camera, the combination of the swinging lens tube C, adjustable hood B', hood C' adjustably attached to said hood B', and adapted to be moved by the swinging movement of said lens tube and the two swinging doors J' J', respectively connected with the respective side walls of said hood C' and provided with an actuating mechanism for automatically opening and closing said doors, substantially as set forth.

5. In a panoramic camera, the combination of the swinging hood C', doors J' J', T shaped plate L' provided with angular guide slots M' M' and with actuating arms N' N', plate sup-

porting brackets O′ O′ rigidly affixed to said hood C′, actuating spring R′, and screws or bearings P′ P′ affixed to the ends of said doors J′ J′ and adapted to operate in said angular guide slots M′ M′, said actuating arms N′ N′ being adapted as said hood is swung toward the right or left, to be brought in contact with a stationary stop whereby said doors are automatically closed, and whereby, by a reverse movement of said hood, said arms are released from contact with said stop and said doors automatically opened by the recoil of said spring R′, substantially as set forth.

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

FRANKE F. DUMKE.

Witnesses:
JAS. B. ERWIN,
CLARE L. ROESCH.