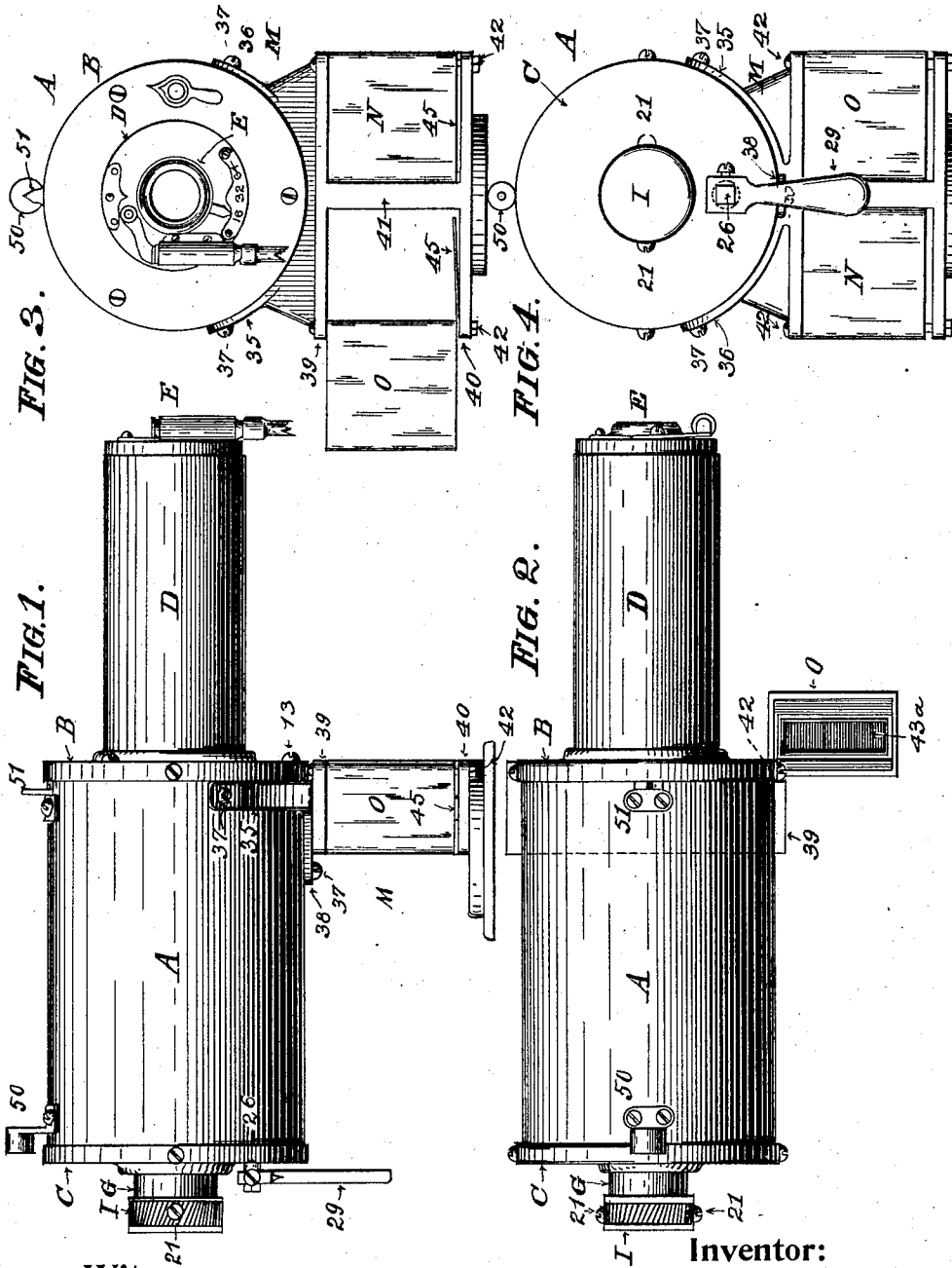


C. F. SPERY.
MAGAZINE DEVELOPING CAMERA.
APPLICATION FILED FEB. 3, 1911.

1,003,533.

Patented Sept. 19, 1911.

2 SHEETS-SHEET 1.



Witnesses:

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A. G. Peterson

Inventor:

CHARLES F. SPERY,

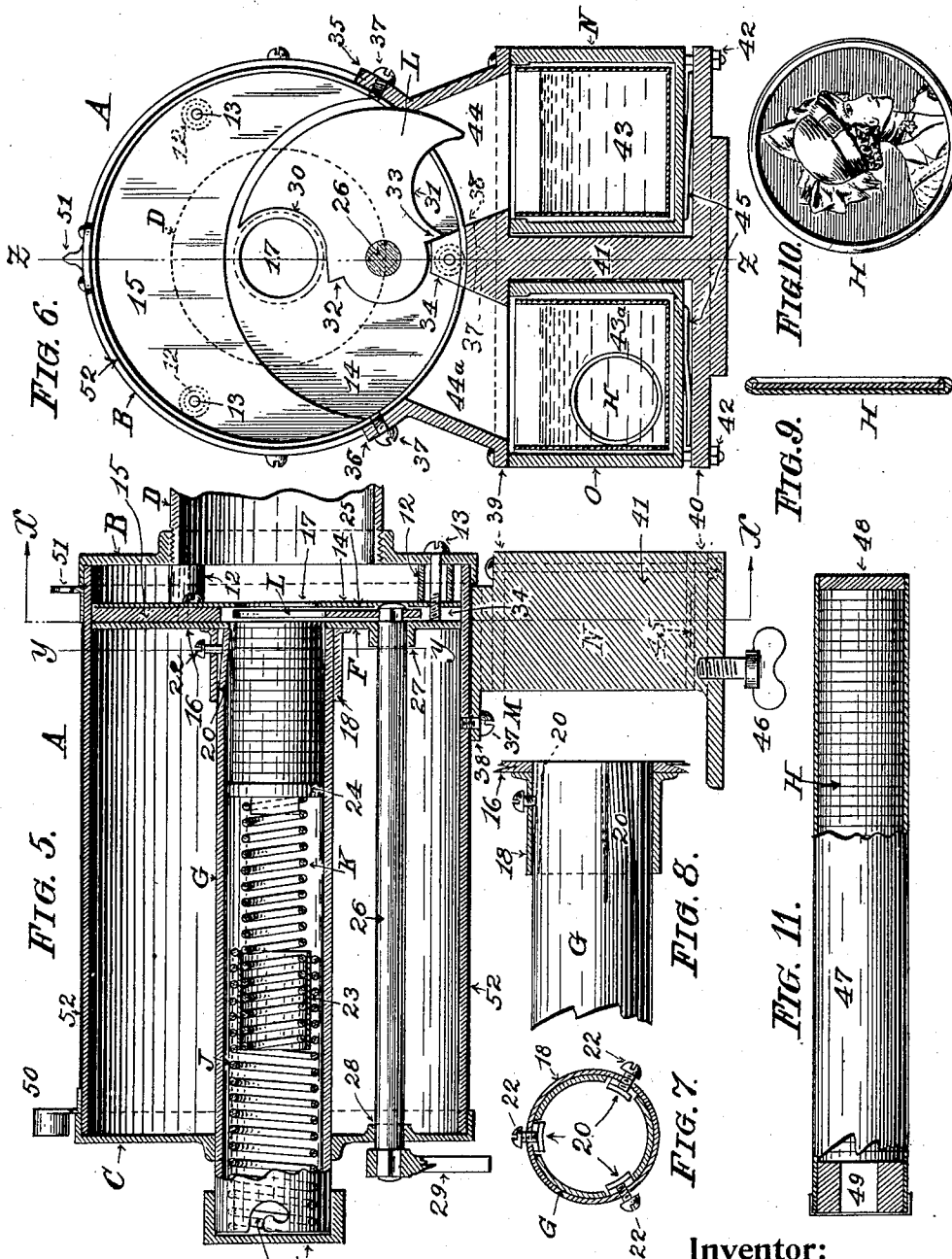
By *Michael J. Stark & Sons.*
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Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES F. SPERY, OF CHICAGO, ILLINOIS.

MAGAZINE DEVELOPING-CAMERA.

1,003,533.

Specification of Letters Patent. Patented Sept. 19, 1911.

Application filed February 3, 1911. Serial No. 606,377.

To all whom it may concern:

Be it known that I, CHARLES F. SPERY, a citizen of the United States, and resident of Chicago, in Cook county, Illinois, have invented certain new and useful Improvements in Magazine Developing-Cameras; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying two sheets of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which said invention appertains to make and use the same.

This invention has general reference to magazine developing cameras; and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described, and then pointed out in the claims.

In the drawings already referred to, which serve to illustrate this invention more fully, Figure 1 is a side elevation of this improved camera. Fig. 2 is a plan of the same, one of the pivoted tank-containers being shown outwardly swung to afford access to the developing and fixing bath. Fig. 3 is an elevation of the camera looking toward the rear of the same. Fig. 4 is a similar view of the same looking toward the front end thereof. Fig. 5 is a longitudinal sectional elevation on line $z z$ of Fig. 6, a portion only of the lens-tube being shown. Fig. 6 is a sectional elevation on line $x x$ of Fig. 5, looking in the direction of the arrows shown. Fig. 7 is a sectional view of the magazine tube detached, the view being taken on line $y y$ of Fig. 5. Fig. 8 is a view of a portion of the magazine tube, illustrating the means for centering the photographic plates in said tube, the socket to which this tube is attached, being shown in section. Fig. 9 is a sectional view of one of the photographic plates, and Fig. 10 is a face view of the same. Fig. 11 is a view, partly in section, of one of the plate-cartridges.

Like parts are designated by the same characters and symbols of reference in all the figures.

The object of this invention is the production of an efficient, serviceable, and comparatively inexpensive magazine camera in which a comparatively large number of photographic plates are stored, which plates are

exposed and developed and fixed without the operator touching them with his hand.

A, in the drawings designates the casing of this camera. It is a, preferably, cylindrical shell closed at its forward end by a head B, and at its rear end by a head C. In this forward head there is a large central opening which is internally screw threaded to receive a lens tube D, carrying at its forward end a photographic lens E, of approved design, said lens tube D being of a length corresponding to the focal length of the lens E.

Within the casing A, and near the forward head B there is located a partition F, which partition is separated from the forward head by spacing-tubes 12, and secured, but removably fastened, to said forward head by screws 13. This partition comprises three separate plates 14, 15, 16, respectively, of which the plate 14 faces the lens tube, and in which plate 14 there is a central opening 17, whose axial line coincides with the axial line of the lens tube, and whose diameter is that of the "sight" of the photographic plates used in the camera. The plate 15 is crescent-shaped, as illustrated in Fig. 6, while the plate 16 is, again, a circular disk the same as the plate 14, and it has a central opening in alinement with the opening 17. At the rear face of this plate 16, and concentric with the central opening therein, there is affixed a socket 18, in which there is secured a tube G, which tube is of an internal diameter somewhat larger than the external diameter of the photographic plates H, and of a length to pass through a central opening in the rear head C and to project therefrom for some distance. At the outer end of this tube G, which tube constitutes the magazine for this camera, there are oppositely-located, L-shaped cut-outs or slots 19, wherewith engages the inner ends of screws or pins 21, located in the wall of a cup-shaped member or cap I, to form therewith what is usually termed a bayonet joint, whereby said cap I is removably secured to the projecting portion of said magazine tube G. In the forward end of this magazine tube there are, preferably three, inwardly forced lugs or guides 20, which lugs are produced by slitting the tube G at the proper places and forcing the portion of the tube between the adjacent slits inwardly, whereby said inwardly forced portions

are made resilient, set-screws 22, tapped in the socket 18, being provided to impinge upon the lugs 20 and thereby to afford means for adjustment of the same to accommodate
5 plates H of slightly varying external diameters.

In the magazine tube G there is located a spiral spring J, secured at one end in the bore of the cap I, and at its other end to the
10 forward end, and upon the outside of, a sleeve 23; a further spiral spring K, of less diameter than the spring J being secured at one end to, and within the rear end of said sleeve 23, and carrying at its forward end a
15 disk 24, loosely fitting the bore of the tube G, and serving as a plunger, as will hereinafter more fully appear.

In the space 25 between the forward plate 14 and the rear plate 16 of the partition F, formed by the crescent shaped plate 15, there
20 is located a peculiarly-shaped rocking plate L, which plate is riveted or otherwise secured to the forward end of a shaft 26, located below the tube G, and having a bearing 28, in the rear head C, and a bearing 27, in the
25 plate 16, said rocking shaft 26 projecting from the rear head C sufficiently to receive an arm or handle 29, by which the rocking shaft 26, and with it the rocking plate L, are oscillated. The periphery of the rock-
30 ing plate L forms the arc of a circle which has its center in the center of the rocking shaft 26, and it has at both of its extremities approximately semicircular cut-outs or
35 notches 30, 31, located equi-distant from the center of the shaft 26, there being on said rocking plate L stops 32, 33, which engage an abutment 34, located in the space 25, so that when the plate L is moved in either di-
40 rection until one or the other of its stops 32, 33, reaches said abutment, a photographic plate in the proper notch will be correctly centered behind the exposure-opening in the partition F, to receive a light-
45 impression thereon when the lens shutter is opened to make an exposure.

Near the forward end of the casing A, and downwardly pending therefrom, and removably secured to said casing, there is a
50 peculiarly-shaped casting M, said casting comprising a flat tube having lugs 35, 36, through which screws 37, are passed and a further lug 38, also receiving a screw 37, to secure the casting M to the casing A. This
55 casting M is of approximately I-shape below its tubular part, that is to say, it has an upper horizontal plate 39, and a lower horizontal plate 40, said plates being medially connected by a web 41. In the spaces at the
60 sides of the median web 41 there are located, preferably rectangular, receptacles N, O, which receptacles are each pivoted upon a vertically disposed pivotal bolt 42, located at one corner of each receptacle, as indi-
65 cated in Figs. 2, and 3, so that they may be

rotated upon said pivotal bolts 42. In each of these receptacles there is removably placed a tank, 43, 43^a, adapted to receive a preferably developing and fixing solution.

From the space 25 in the partition F, and
70 through the tubular portion of the casting M, lead downwardly, two angularly-disposed passages 44, 44^a, through the top-plate 39, to the tanks 43, 43^a, as clearly shown in Fig. 6. The upper surfaces of the recep-
75 tacles N, O, as well as the lower surfaces of the top plate 39 of the casting M, are well machined so as to prevent rays of light entering at the joints of these members; and to insure perfect contact of the receptacles with
80 the top-plate, 39, there is located on each of the inner surfaces of the bottom plate 40, a spring 45, which spring forces the recep-
85 tacles N, O, upwardly in a manner readily comprehended.

In operating, this camera is mounted upon the usual camera stand or a tripod, not shown, to which it is secured by the tripod screw 46, shown in Fig. 5, and the
90 magazine tube G filled with unexposed light-sensitive plates H. These plates H are, preferably, packed in a shell 47, Fig. 11, of an external diameter slightly smaller than the internal diameter of the magazine tube G, and slightly larger than the external
95 diameter of the plates, there being a plug 48, in one end of said shell 47, and a further, punctured, plug 49, at the other end thereof. This charged shell or cartridge is pushed into the magazine tube G, plug-end 48 fore-
100 most, and then the plates H pushed into the magazine tube by withdrawing the shell 47, the cap I with the spiral springs J, K, and plunger 24, having been first removed, and then the magazine tube closed by replacing
105 the parts I, J, K, and 24. These spiral springs force the photographic plates into contact with each other and the foremost one thereof against the inner surface of the rocking plate L the handle 29 being in per-
110 pendicular position, and the exposure opening closed by said rocking plate L. If now the handle 29 be turned to one side or the other of its perpendicular position until
115 either the stop 32 or the stop 33 comes in contact with the abutment 34, one or the other of the cut-outs 31, 32, (as the case may be) will permit the plates H to move forward the distance of the thickness of one plate and force the foremost plate against
120 the inner surface of the front plate 14, concentric with the exposure opening 17 therein. The camera is now focused upon the object to be photographed by looking
125 through the rear sight 50, over the front sight 51, the relative heights of which are so that the focal point in front of the lens is the center of such object, and the exposure made in the usual manner. Now the rock-
130 ing plate L is rotated by turning the handle

29 in the proper direction to push the exposed plate into the proper passage 44, from which it drops into the developing and fixing solution in the respective tank 43.

5 It will now be observed that a plate may be exposed and discharged into the developer by moving the handle 29 from its normal, vertical, position either to the right or to the left thereof, that is to say, when
10 the handle 29 is moved so as to cause the cut-out 30 to receive a photographic plate for exposure, and the handle is then returned to its vertical position, the cut-out 30 will operate to push the exposed plate
15 into the passage 44^a, from which it will drop into the tank 43^a. Now the handle may be again moved in the direction mentioned to bring the cut-out 30 in plate-receiving position, or it may be moved in
20 the opposite direction to cause the cut-out 31 to be moved in plate-receiving position when, after the exposure has been made and the handle 29 returned to its normal vertical position, the plate in the cut-out 31
25 will pass through the passage 44 to the tank 43. In this manner the photographic plates may all be received by either the cut-out 30, or the cut-out 31, or alternately by one and then the other of the cut-outs, the latter being
30 the case when exposures are made in comparatively rapid succession and a plate is occupying one of the developing tanks while being developed and fixed.

35 When the handle 29 is in vertical position, the rocking plate L closes the exposure opening, or rather acts as a shutter for the same, so that should the lens be accidentally opened, no exposure of a photographic plate can take place until the
40 handle is moved from its normal position either to the right or to the left, as hereinbefore set forth. This feature of my invention is an important one since it prevents double exposures and the exposure of
45 a plate when not desired, while at the same time a second exposure may be made while the first plate is in the developing and fixing solution, thus making the operation of the camera a practically continuous one.

50 I now desire to call attention to the fact that the interior or bore of the magazine tube G is larger in diameter than the exterior diameter of the plates H by at least the thickness of the cartridge shell 47 plus
55 the slight play which the shell has in the tube G, and the plates have in the shell 47, so that the plates when in the magazine tube will not be in exactly the center line of the exposure opening 17. To compensate for
60 this variation or eccentricity, I may locate the magazine tube G slightly above the central position to bring the plates into the proper position, but I prefer the centering device shown in Figs. 7 and 8, for the
65 reason that by this device the plates are

positively centered behind the exposure opening even though there be a variation in the diameter of the plates which will be taken care of by the resilient lugs 20, while
70 a greater variation in the diameter of the plates will be compensated for by making proper adjustment with the screws 22. I also desire to call special attention to the arrangement of the springs in the magazine tube, whereby the spring K telescopes in
75 the sleeve 23, while the spring F gathers upon the outer periphery of said sleeve when entirely compressed. This construction affords me the necessary length of the spring without unnecessarily lengthening
80 the apparatus or the magazine tube, and at the same time materially reduces the cost of the apparatus.

In order that this camera may have the prevailing appearance of a photographic camera, I cover the casing A with black morocco leather, as indicated by the heavy
85 lines 52 in Figs. 5 and 6. This leather covering of the casing also serves as a packing between the metallic shell of the casing and the lugs 35, 36, and 38 on the casting
90 M, to prevent light from entering the passages 44, 44^a, and the space 25 between the plates 14 and 16 of the partition F.

Most of the parts entering into the construction of this camera, I shall produce
95 from sheet and cast aluminum so that the apparatus will be comparatively light in weight and easily carried about by a person.

100 It is obvious that when the photographic plates have been pushed into the magazine tube, the plug 48 is foremost therein and has to be removed before the photographic plates can be exposed. This is done in precisely the same manner as described with
105 reference to exposing and discharging a photographic plate, that is to say by moving the handle 29 first to one side of its normal position and then moving it back to its
110 normal position.

Having thus fully described this invention, I claim as new, and desire to secure to me by Letters Patent of the United States—

1. In a photographic magazine camera, 115 the combination, of a casing, a magazine tube in said casing constructed to receive photographic plates, a plate in said casing having an exposure opening, means in said
120 magazine tube for moving said plates toward the latter plate concentric with the exposure opening therein, said means including telescoping springs, and means constructed to discharge said photographic
125 plates from said casing.

2. In a photographic magazine camera, the combination, of a casing, a magazine tube in said casing, a division plate in said casing having an exposure opening, means
130 in said magazine tube constructed to move

the said photographic plates toward said division plate, and means for centering said photographic plates behind said exposure opening, said means for moving said plates including telescoping springs, said centering means for said photographic plates including resilient lugs in said magazine tube.

3. In a photographic magazine camera, the combination, of a casing, a magazine tube in said casing constructed to receive photographic plates, a partition in said casing having an exposure opening, means in said magazine tube constructed to move the photographic plates toward the exposure opening in said partition, including telescoping springs, and means constructed to move said plates out of said casing, the latter means including a rocking plate, there being one or more approximately semicircular cut-outs in said rocking plate, and means located at the outside of said casing constructed to rock said rocking plate.

4. In a photographic magazine camera, the combination, of a casing, a magazine tube in said casing constructed to receive photographic plates, a hollow partition in said casing having an exposure opening means in said partition, whereby said magazine tube is secured to one face of said partition, means in said magazine tube constructed to move said photographic plates toward the exposure opening in said hollow partition, said means including telescoping springs, means constructed to move said photographic plates out of said casing, the latter means including a rocking plate said rocking plate being located in the hollow partition and provided with approximately semicircular cut-outs, a tank below said casing, and means whereby said hollow partition is connected with said tank.

5. In a photographic magazine camera, the combination, of a casing, a magazine tube in said casing constructed to receive photographic plates, a hollow partition in said casing, there being an exposure opening in said partition, said magazine tube being secured to the inner face of said partition, means in said magazine tube constructed to move said photographic plates toward the exposure opening in said hollow partition, said means including telescoping springs, a shaft below said magazine tube and projecting from the end of said casing, a rocking plate at the inner end of said shaft, said rocking plate being located in said hollow partition, and a handle at the

outer end of said shaft, whereby said shaft and the rocking plate may be oscillated to discharge said photographic plates from said casing.

6. In a magazine camera, the combination, of a casing, a magazine tube in said casing adapted to receive photographic plates, a partition in said casing, there being an exposure opening in said partition, means in said magazine tube for moving said photographic plates toward the exposure opening in said partition, a rocking plate in said partition, said rocking plate having two approximately semicircular cut-outs adapted to engage said photographic plates, means for oscillating said rocking plate, a casting at the forward end of said casing said casting having two angularly-disposed passages communicating with the interior space in said partition provided for said rocking plate, a top plate, a bottom plate, and a web connecting said top plate to said bottom plate, and a pivoted cup at each side of said web, said cups being underneath said angularly-disposed passages when in normal position and adapted to swing outwardly from underneath said top plate.

7. In a magazine developing camera, the combination, of a casing, a magazine tube in said casing adapted to receive photographic plates, a partition in said casing having an exposure opening, means in said magazine tube constructed to move said photographic plates toward said exposure opening, said means including a tubular sleeve, a spiral spring over said tubular sleeve and having one of its ends fastened to that end of said sleeve nearest to said exposure opening, a further spiral spring of less diameter than the first mentioned spring, said smaller spring being passed with one of its ends into said sleeve and secured therein at that end of said sleeve which is opposite the one at which said first-mentioned spring is fastened, whereby when said springs are compressed, the larger spring will be gathered upon said sleeve and the smaller spring gathered within said sleeve.

In testimony that I claim the foregoing as my invention, I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES F. SPERY.

Witnesses:

FRIEDA T. LEBERSTEIN,
MICHAEL J. STARK.