No. 622,959. Patented Apr. 11, 1899.

A. LECHI.

PHOTOGRAPHIC MAGAZINE CAMERA.

(Application filed May 24, 1898.)

(No Model.)

FIG. 1.

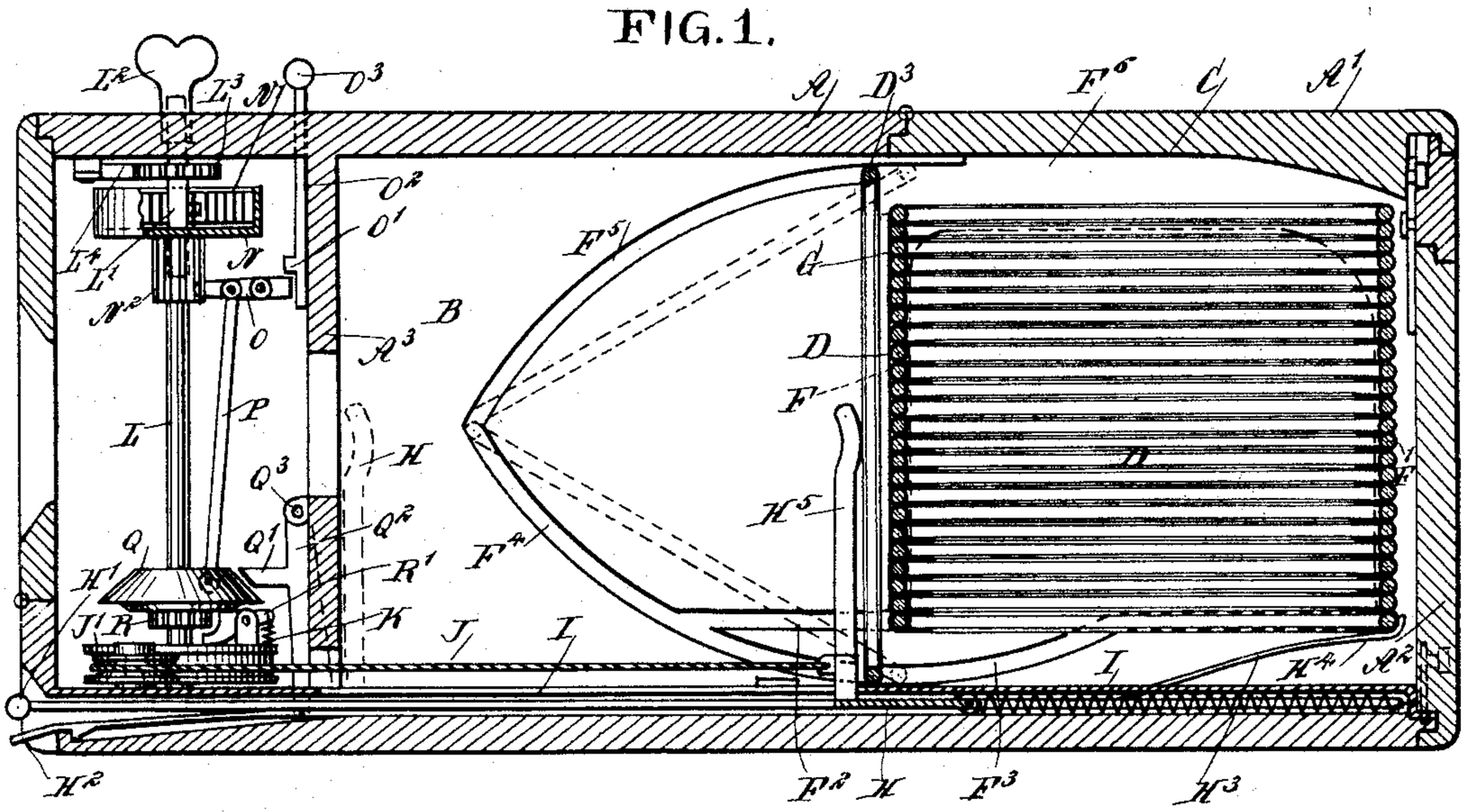


FIG. 2.

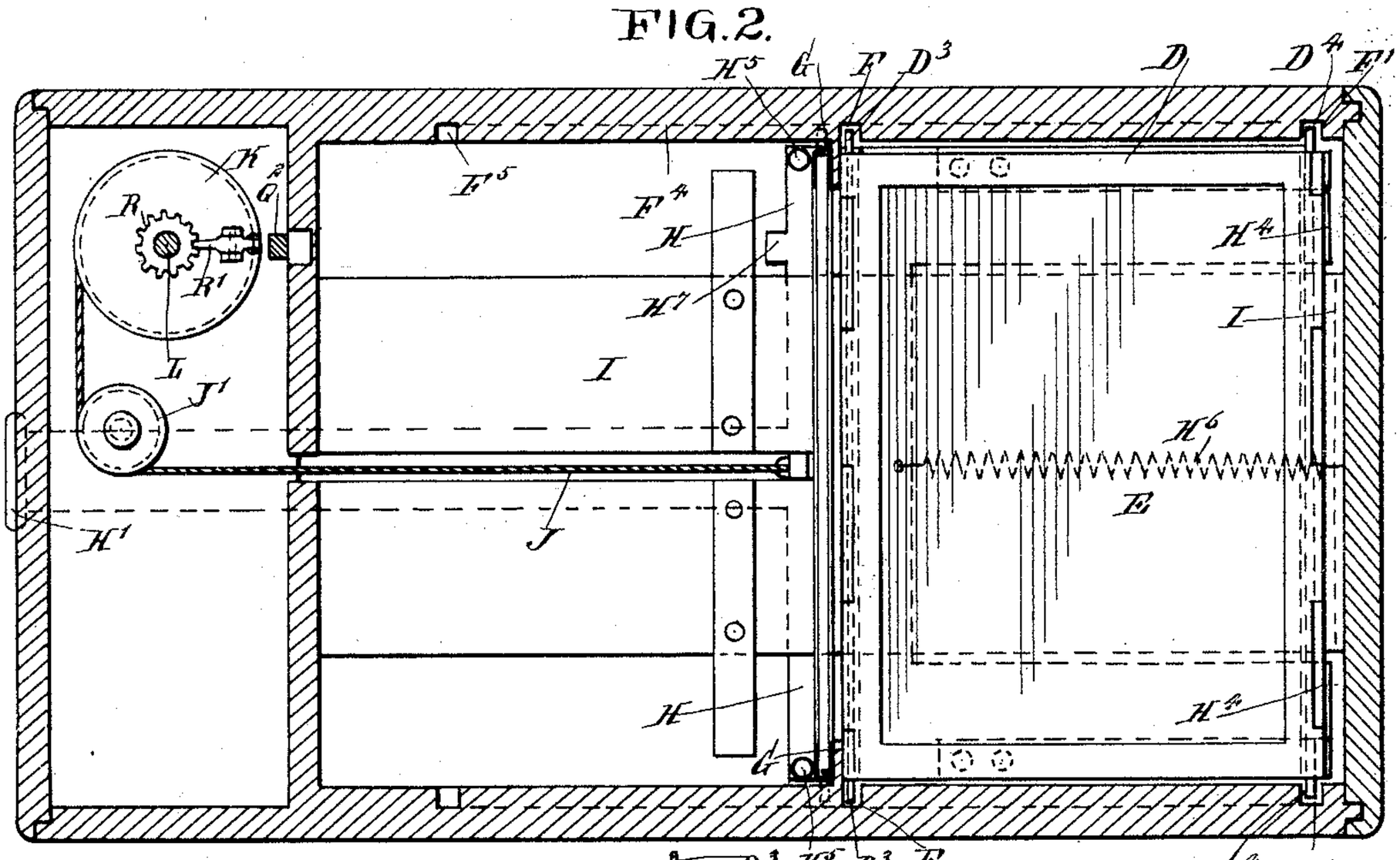
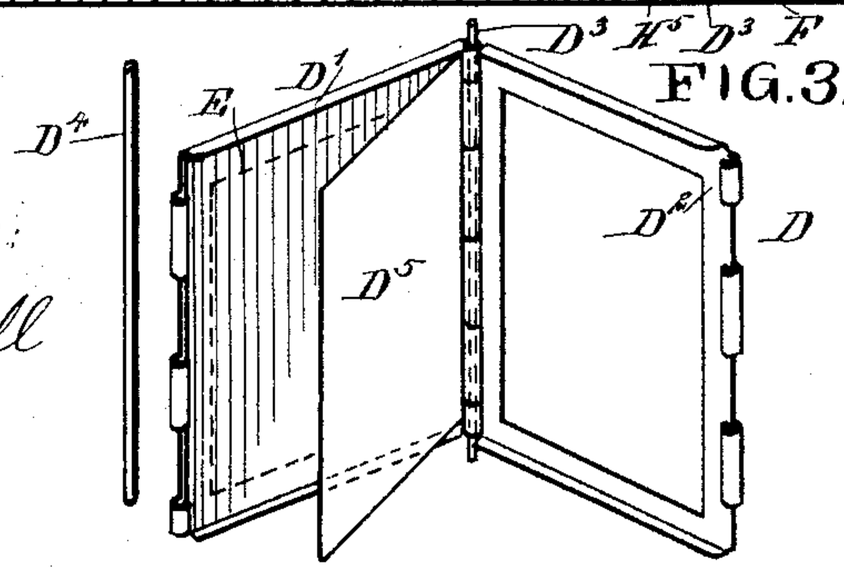


FIG. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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PHOTOGRAPHIC MAGAZINE-CAMERA.

SPECIFICATION forming part of Letters Patent No. 622,959, dated April 11, 1899.

Application filed May 24, 1898. Serial No. 681,555. (No model.)

To all whom it may concern:

Be it known that I, ALFRED LECHI, a subject of the King of Italy, at present residing in the city of New York, borough of Manhattan, in the county and State of New York have invented a new and Improved Photographic Magazine-Camera, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved photographic magazine-camera which is simple and durable in construction and arranged to enable the operator to successively bring a very large number of sensitive plates into position for exposure before requiring a removal of the exposed plates and refilling with another set of sensitive plates.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is a sectional plan view of the same, and Fig. 3 is a perspective view of the double plate-holder in an open position.

The improved camera is provided with a casing A, formed with an exposing-chamber B, terminating at its rear end in a magazine C, adapted to contain a pile of double plate-holders D, as indicated in the drawings. Each plate-holder D (see Fig. 3) is formed of two open or skeleton frames D' D^2, hinged together at one end by a pin D^3, having its ends projecting beyond the ends of the frames, and the free ends of the frames are adapted to be fastened together by a pin D^4, similar to the pin D^3 and likewise projecting at its ends beyond the ends of the frames. An opaque partition-sheet D^5 is interposed between the frames, each of which is adapted to receive a plate or film E with the partition D^5 between the two, so that when the plate-holder is closed each side shows an exposed film or sensitive plate.

When the holders D are arranged in a pile in the magazine C, as illustrated in Figs. 1 and 2, then the projecting ends of the pins D^3 D^4 extend into the vertical grooves F F′, respectively, of a guideway formed in the sides of the casing A. The lower ends of the grooves F F′ terminate in a horizontally-disposed groove F^2, into which pass the projecting ends of the pins D^3 D^4 of the lowermost plate-holder of the pile of plate-holders D, and the middle portion of this horizontal groove F^2 opens into a downwardly, forwardly, and upwardly curved groove F^3, in which terminates the forward end of the groove F^2, and the said curved groove F^3 terminates in a further upwardly-curved portion F^4, from which leads the upwardly and rearwardly curved groove F^5, opening at its upper rear end into a recess F^6, in which terminate the vertical grooves F F′. The several grooves referred to form a continuous guideway for the projecting ends of the pins D^3 and D^4, so as to permit of moving the lowermost plate-holder from under the pile and then into a vertical position in front of the pile at the inner end of the exposing-chamber B to bring the forward film into the field of exposure. After the exposure is made and the next lowermost plate-holder is moved from under the pile of plate-holders then this plate-holder imparts such motion to the vertical plate-holder with the exposed film that said latter plate-holder is moved rearwardly back into the top of the pile of plate-holders and in a reversed position—that is, with the non-exposed film lowermost—so that when this plate-holder is again brought into a vertical position for a second exposure then the other film is in the field of exposure. Thus the plate-holders travel through the continuous guideway and expose both films, so that with the use of twenty-five plate-holders in a magazine fifty pictures can be taken before refilling of the magazine is necessary.

When the plate-holder is in position for exposure, it rests at its sides on flanges G, projecting from the sides of the casing A, as is plainly indicated in Figs. 1 and 2, the said flanges terminating on top below the groove F^5 and at the bottom above the groove F^2.

In order to move the lowermost plate-holder D in the pile of double plate-holders, I pro-

vide a slide H, fitted to slide longitudinally in suitable guideways in the bottom of the casing A, a cover I extending over part of the said slide, as indicated in the drawings. The forward end of the slide I extends to the front of the casing and is provided at its end with a knob H′, adapted to be taken hold of by the operator for pulling the slide outward or inward whenever it is desired to move another plate into a vertical position for exposure and to remove the previously-exposed plate back to the top of the pile of double plate-holders, as above mentioned. A spring-catch H^2 is arranged on the forward end of the slide H to lock the latter in a rearmost position, as will be readily understood by reference to Fig. 1.

The rear end of the slide H is formed with one, two, or more spring-arms H^3, extending upwardly and rearwardly and formed at their ends with upwardly-curved hooks H^4, adapted to engage the rear edge of the lowermost double plate-holder D in the pile of plate-holders. (See Fig. 1.) On the slide H are secured the posts H^5, adapted to engage the sides of the vertical plate-holder in the field of exposure, so as to hold the said plate-holder against the flanges G previously mentioned during the time an exposure is made.

Now when the several parts are in the position illustrated in Figs. 1 and 2 and the operator unlocks the slide H by pressing the catch H^2 upward and pulling on the knob H′ to move the slide outward then the hooks H^4 draw on the lowermost plate-holder in the pile and move said plate-holder forward from under the pile, the pins D^3 D^4 of this plate-holder traveling in the groove F^2. As the slide H moves forward the forward end of the lowermost plate-holder, moving with the slide, engages the vertical plate-holder, so as to impart a swinging motion to the same, the pins D^3 of this plate-holder acting as a fulcrum and the pins D^4 traveling in the groove F^3, and finally into the end thereof in the groove F^4. The posts H^5 as they move with the slide allow such swinging of the vertical plate-holder. As the lowermost plate-holder moves forward its pins D^4 finally reach and drop into the rear end of the grooves F^3 and travel along the same, while the forward pins D^3 travel up the groove F^4, the pins D^3 finally reaching the beginning of the grooves F^5. At the time the slide H is in its outermost position the two moved plate-holders are in the position indicated in dotted lines in Fig. 1. Now the slide H is moved inward and in doing so the posts H^5 engage the plate-holder removed from under the pile and swings the same upward, its pins D^3 traveling in the groove F^5, the pins D^4 remaining in the groove F^3. At the same time the upper end of this removed plate-holder pushes the holder having the exposed plate rearward and finally causes said plate-holder to drop back into the top of the pile at the time the other plate-holder assumes a vertical position—that is, when the slide H has returned to its innermost position and is locked in position therein by the catch H^2. After the exposure is made on the forward film in the double plate-holder extending in a vertical position the above-described operation is repeated—that is, the slide H is moved outward to move another plate-holder from under the pile and push the vertical plate-holder back onto the top of the pile in a reversed position and to move the lowermost plate-holder into a vertical position, as mentioned.

Instead of moving the slide H by hand I may employ a mechanism for automatically moving said slide forward or backward, as presently to be described.

On the slide H presses a spring H^6 for normally holding said slide in an innermost position, as indicated in the drawings. The slide H is connected with one end of a rope J, extending forwardly and passing over a horizontally-disposed idler J′, then winding on a drum K, mounted to rotate loosely on the lower end of a vertically-disposed shaft L, journaled in suitable bearings in the casing, at one side thereof. On the upper end of the shaft L is secured a barrel N, to which is fastened the outer end of a helical spring N′, secured at its inner end to a winding-spindle L′, journaled in the top of the casing A. On the upper outer end of said winding-spindle is secured a key or knob L^2 for turning the said spindle and winding up the spring N′ in the barrel N. A ratchet-wheel L^3 is secured on the winding-spindle and is engaged by a pawl L^4, fulcrumed on the casing for holding the said winding-spindle in a locked position after the spring is wound up. The hub of the barrel N is formed or provided with a toothed wheel N^2, adapted to be engaged by a pivoted locking-arm O, fulcrumed on the casing A and adapted to be swung out of engagement with the said toothed wheel N^2 by means of a projection O′, formed on a bar O^2, fitted to slide in the casing and projecting to the top thereof to carry at its outer end a knob O^3, adapted to be pressed downward by the operator whenever it is desired to draw the slide H outward for the purpose previously mentioned. The locking-arm O is pivotally connected by a link P with a beveled disk Q, held to slide loosely on the shaft L and adapted to be pressed downward by the beveled end of a lug Q′, projecting from an arm Q^2, fulcrumed at its upper end at Q^3 on the partition A^3 of the casing. The free end of the arm Q^2 is adapted to be engaged by a lug H^7 on the slide H at the time the latter moves into an outermost position.

On the shaft L, directly below the disk Q, is secured a toothed wheel R, adapted to be engaged by a spring-pressed pawl R′, fulcrumed on and turning with the drum K. Normally the pawl R′ is held out of engagement with the wheel R by the under side of the beveled disk Q.

Now when the several parts are in the posi-

tion shown in Figs. 1 and 2 and the spring N′ has been wound up by the operator turning the knob L^2 of the winding-spindle L′ and it is desired to bring the bottom plate-holder of the pile of plate-holders into a vertical position for exposure then the operator simply presses the knob O^3 so as to disengage the arm O from the toothed wheel N^2. In doing so the arm O by the link P lifts the disk Q, and as the latter moves in contact with the lug Q′ it swings the arm Q^2 into a rearward position and at the same time allows the spring-pressed pawl R′ to move in engagement with the toothed wheel R. The wound-up spring N′ now rotates the barrel N and the shaft L, and the motion of the latter is transmitted by the toothed wheel R and pawl R′ to the drum K, so that the latter winds up the rope J and pulls the slide H outward. When the slide moves into an outermost position, the lug H^7 moves in engagement with the free end of the arm Q^2, so that the latter is swung forward, and in doing so the lug Q′ presses the disk Q downward to swing the arm O in mesh with the wheel N to lock the shaft L against further rotation, and at the same time swing the pawl R′ out of mesh with the toothed wheel R, so that the drum K is unlocked and is free to revolve on the shaft L. The spring H^6 on the slide H now draws the slide inward back to its normal position to complete the change of positions of the plate-holders, as previously described. When the arm O swings downward in mesh with the wheel N^2, the bar O^2 is lifted, so as to bring the knob O^3 back to its former place. One complete winding up of the spring N′ serves for repeated drawing out of the slide H before it is necessary to rewind the spring N′ for turning the knob L^2.

The casing A is provided at its magazine C with a top cover A′ and a back door A^2, and the forward end of the exposing-chamber B is closed by the usual partition A^3, as shown, the partition having a central aperture for the usual lens-tube. (Not shown.) The camera is also provided with the usual shutters, finders, &c. (Not illustrated.)

It is understood that so far as the operation of the slide is concerned it is immaterial whether the same is pulled out or pushed back by hand or is actuated automatically by the mechanism above described.

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

1. A magazine-camera, comprising a casing provided with guideways for the plate-holders, a slide movable in the casing and arranged to engage the plate-holders and shift them from the magazine into position for exposure and back into the magazine after exposure, a motor for operating said slide, means for normally keeping the motor stationary, and mechanism, under the control of the operator, for releasing the motor.

2. A magazine-camera, comprising a casing provided with guideways for the plate-holders, a spring-pressed slide mounted to reciprocate in the casing and arranged to shift the plate-holders, a motor, means for normally locking the same, a releasing device under the control of the operator, a separable operative connection from the motor to the slide, means for establishing said operative connection upon the actuation of the releasing device, to move the slide against the tension of the spring, and mechanism carried by the slide to disconnect it from the motor and allow it to be retracted by the spring.

3. A magazine-camera, comprising a casing provided with guideways for the plate-holders, a spring-pressed slide mounted to reciprocate in the casing and arranged to shift the plate-holders, a motor-shaft, means for normally locking the same, a releasing device under the control of the operator, a drum operatively connected with the slide, a clutch connection between the drum and motor-shaft, means for throwing the clutch into action upon actuating the releasing device, to move the slide against the tension of the spring, and mechanism carried by the slide, to throw the clutch out of action and allow the slide to be retracted by the spring.

4. A magazine-camera, comprising a casing provided with guideways for the plate-holders, a spring-pressed slide mounted to reciprocate in the casing and arranged to shift the plate-holders, a motor-shaft, means for normally locking the same, a releasing device under the control of the operator, a drum operatively connected with the slide, a clutch connection between the drum and motor-shaft, an operative connection between the locking device of the motor-shaft and the clutch, to throw the clutch into action upon actuating the releasing device, and mechanism carried by the slide, for throwing the clutch out of action and allowing the slide to be retracted by the spring.

5. A magazine-camera, comprising a casing provided with guideways for the plate-holders, a spring-pressed slide mounted to reciprocate in the casing and arranged to shift the plate-holders, a motor-shaft, means for normally locking the same, a releasing device under the control of the operator, a drum operatively connected with the slide, a clutch connection between the drum and motor-shaft, a disk held to slide longitudinally upon the motor-shaft and operatively connected with the locking device of the motor-shaft, said disk controlling the said clutch, an arm fulcrumed upon the casing and arranged to move said disk so as to throw the clutch out of action, and mechanism carried by the slide for actuating said arm.

6. A magazine-camera for containing a pile of double plate-holders, comprising a camera-casing formed in the sides with grooves for a continuous guideway for the plate-holders to travel in, and a slide movable in said casing, and having spring-hooks for engaging the

lowermost plate-holder of the pile, to move the holder from under the pile on the forward movement of the slide, the latter being also provided with bars extending vertically and arranged to engage the front surface of the holder for pushing the said removed plate-holder into position for exposure, on the return motion of the slide, substantially as shown and described.

7. A magazine-camera for containing a pile of double plate-holders, comprising a camera-casing formed in the sides with grooves for a continuous guideway for the plate-holders to travel in, a slide movable in said casing, and having spring-hooks for engaging the lowermost plate-holder of the pile to move the holder from under the pile, on the forward movement of the slide, the latter being also provided with bars for pushing the said removed plate-holder into position for exposure, on the return motion of the slide, means for actuating and controlling the movement of the said slide from the outside of the casing, said means comprising a spring-shaft adapted to be turned for winding up the spring, a connection between the slide and shaft for drawing the slide outward by the force of the spring, and a releasing device for the said connection and under the control of the operator, for allowing a spring on the slide to return the latter to its former normal position, substantially as shown and described.

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Witnesses:
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