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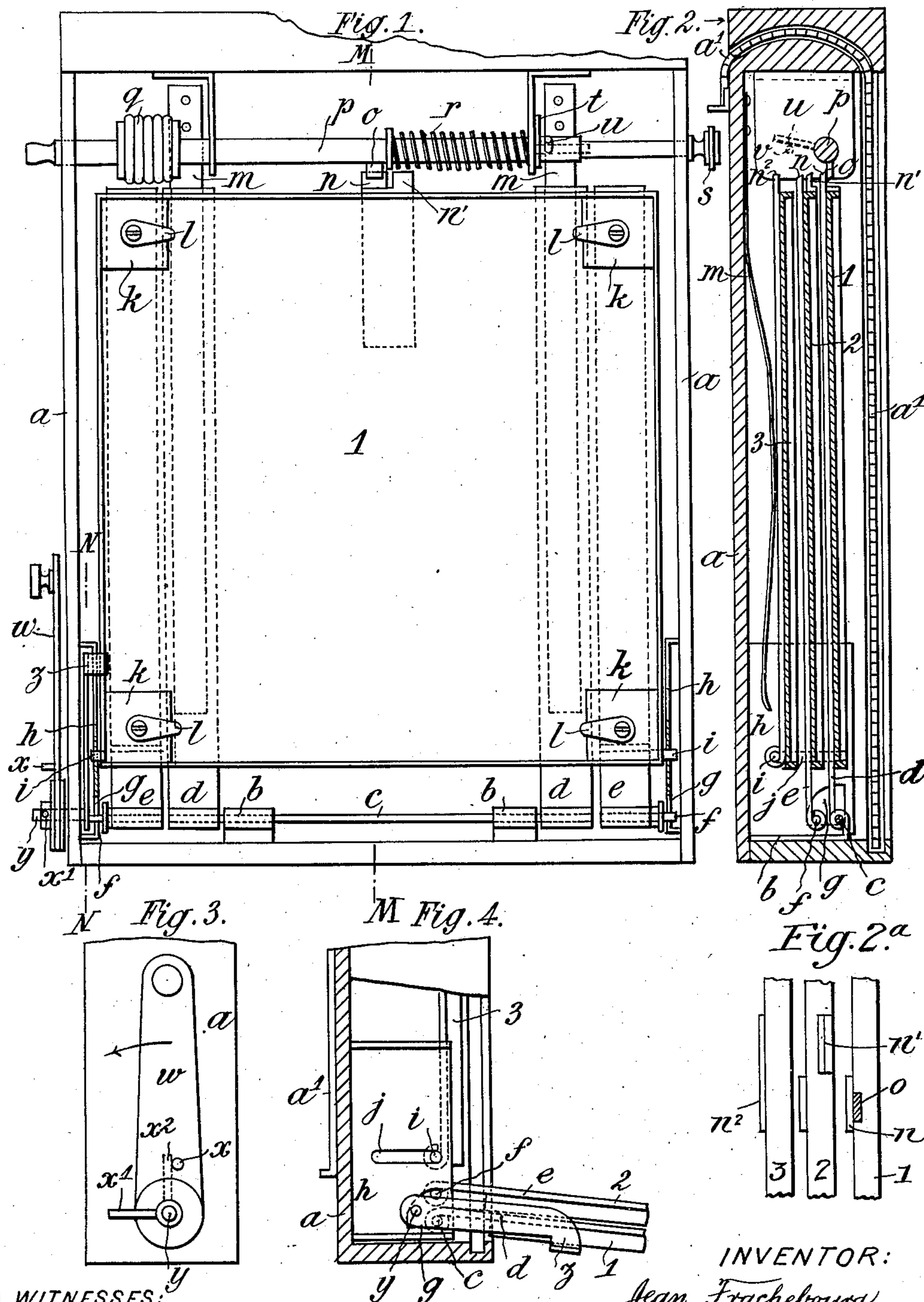
PATENTED OCT. 23, 1906.

J. FRACHEBOURG.

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APPLICATION FILED FEB. 23, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

Fred White
Rene Duine

INVENTOR:

Jean Frachebourg,

By his Attorneys

Arthur C. Fraser & Co.

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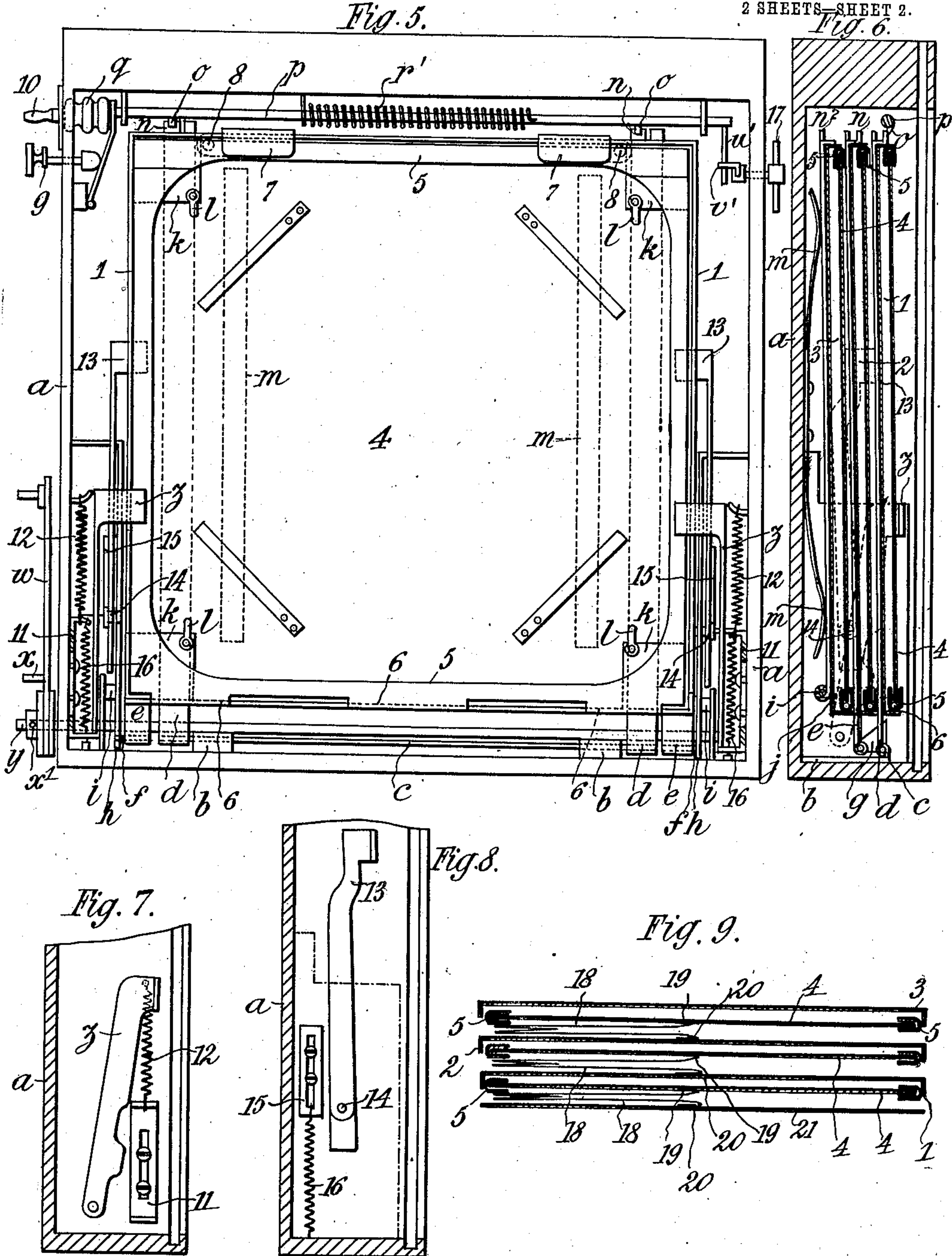
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UNITED STATES PATENT OFFICE.

JEAN FRACHEBOURG, OF PARIS, FRANCE, ASSIGNOR TO SOCIÉTÉ DU
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FRAME WITH TRIPLE PLATE-HOLDERS FOR COLOR PHOTOGRAPHY.

No. 833,782.

Specification of Letters Patent.

Patented Oct. 23, 1906.

Application filed February 23, 1905. Serial No. 247,062.

To all whom it may concern:

Be it known that I, JEAN FRACHEBOURG, a citizen of the Republic of France, residing in Paris, France, have invented certain new and useful Improvements in Frames with Triple Plate-Holders for Color Photography, of which the following is a specification.

My improved frame is constructed so as to contain three plates which serve successively for color photography, each plate being arranged in its plate-holder with its special color-filter and the plate-holders being arranged so that they can turn and be successively lowered into the chamber of the photographic apparatus when the plates which they carry have been successively exposed.

The following description, with reference to the accompanying drawings, will clearly explain how each sensitized plate covered with its special colored glass comes exactly into position at the required time after the plate-holder which preceded it has been lowered.

Figure 1 is an elevation of the interior of the frame, the closing shutter or curtain being removed. Fig. 2 is a vertical section on the line M M, Fig. 1, the plate-holders being removed. Fig. 2^a is a plan of the escapement. Fig. 3 is a side elevation of a portion of the same. Fig. 4 is a vertical section on the line N N, Fig. 1, the first two plate-holders being turned down. Figs. 5 to 9 illustrate a frame of the same construction with some improvements which render the working more certain and easy. Fig. 5 is an interior view of the frame. Fig. 6 is a transverse section. Figs. 7 and 8 show arrangements of hooks for deadening the fall of the plate-holders. Fig. 9 illustrates an arrangement of separator allowing the taking of stereoscopic views.

At the lower part of the frame *a* are fixed two supports *b b*, in which is placed a fixed spindle *c*, serving as a pivot for two strips *d d*, supporting the first plate-holder 1, which can thus rock upon the said fixed spindle *c*.

The second plate-holder 2, placed immediately behind the first, is fixed to two plates *ee*, fixed to trunnions *ff*, moving in slots *g g*, of quadrant shape, made in plates *h h*, fixed to the lateral walls of the frame *a*. The shape of these slots allows the plate-holder 2 to horizontally advance its trunnions *f f* along the bottom of the slots *g g* in order to

be brought into the vertical line previously occupied by the plate-holder 1 when the latter has been turned down. This arrangement, moreover, allows the trunnions of the said plate-holder to pivot upon the vertical parts of the slots *g g* in order that the plate-holder 2 may come into position above the first when it in its turn is lowered. The curved part of the slots *g g* serves as a pivoting-point for the trunnions *ff* when the plate-holders 1 and 2 are raised, as will be hereinafter described.

The plate-holder 3, which does not require to be turned down, is carried by the two trunnions *ii*, engaged in horizontal slots *jj*, made in the plates *h h*. These slots allow the plate-holder 3 to slide horizontally, so as to come at the proper time into the vertical position successively occupied by the plate-holders 1 and 2 before they are turned down.

The sensitized plates are placed in the plate-holders between abutments *k*, having turn-buttons *l*, which hold them in place. These abutments *k*, arranged in the angles of the plate-holders, allow of placing sensitized plates of the required height or width in the plate-holders.

The colored glasses forming filters are placed directly in front of the sensitized plate contained in each plate-holder and they can be connected to the plate-holder by means of hinges or otherwise—as, for example, in the manner shown in Figs. 5 and 6.

The three plate-holders are kept pressed toward the front of the frame by means of flat springs *m m*.

The plate-holders 1 and 2 are provided at their upper part with a double releasing or escapement projection, Figs. 1, 2, and 2^a, one part *n* of which bears against a finger *o*, fixed to a spring-rod *p*, serving to disengage the two first plate-holders one after the other to allow them to turn down. The plate-holder 3 is not provided with a releasing projection, but with a simple strip *n*², designed to bear against the finger *o*. The rod *p* can be moved backward and forward, so as to allow of releasing the plate-holder 1 from the finger *o* while holding back the plate-holder 2, which is behind it. The backward and forward movement of the rod *p* can be effected either by a pneumatic ball inflating a small bellows *q*, which compresses the spring *r*, or by means of an outer knob *s*, which can be pulled by

hand. The return of this rod to its position of rest is in any case effected by means of the spiral spring *r*. A torsion-spring *t*, fixed at at one end to the rod *p* and at the other to a fixed bracket, allows of giving the required position to the rod *p* in order that the finger *o* shall be properly placed in front of the double release or escapement projections of the plate-holders. To this end the rod *p* is provided with a pin *u*, which abuts against a fixed stop *v*.

The arrangement for lifting the plate-holders 1 and 2 when they have been turned down consists of a cranked lever, formed by a handle *w*, carrying a stud *x* and mounted loose upon a spindle *y*, fixed to a hook-lever *z*. On the outer end of the spindle *y* is fixed a pin *x'*, the function of which will be hereinafter explained.

The frame, which has just been described, can be closed by a sliding shutter or curtain *a'*, a rigid shutter, or the like. It can be made of wood, aluminium, or other metal. This frame is caused to operate in the following manner when it is placed on a photographic apparatus: The curtain *a'* is opened and the shutter of the apparatus is opened to expose the first sensitized plate contained in the plate-holder 1. When this plate has been exposed, the pneumatic ball is squeezed, so as to inflate the bellows *q*, which pushes back the rod *p*. The finger of this rod disengages the releasing projection of the first plate-holder, which being no longer held at the top, turns down upon the fixed spindle *c*, carrying with it the hook-lever *z*, which limits the fall of the plate-holders. Through the rotation of the lever *z* the pin *x'* has assumed the position shown at *x²* in Fig. 3. The plate-holder 1 having been turned down, the plate-holder 2, under the action of the springs *m*, is pushed forward, its trunnions *f* sliding upon the horizontal portion of the slots *g*. It thus takes the exact position previously occupied by the plate-holder 1. The second plate is then exposed and the plate-holder 2 is disengaged by means of the pneumatic ball or by hand, the trunnions *f* of which plate-holder then slide against the vertical position of the slots *g* in order to take the position shown in Fig. 4. The second plate-holder having been turned down, the plate-holder 3 is pushed horizontally by the springs *m*, its trunnions *i* sliding in the slots *j* in order to take the position previously occupied by the two other plate-holders and to be ready at the required moment. When the three plate-holders have been exposed, the raising of the two plate-holders which are turned down is effected by turning the handle *w* in the direction of the arrow, Fig. 3. In this movement the stud *x* meets the pin *x'*, which then occupied the position *x²*, and consequently causes the spindle *y* to turn, the hook-lever *z* of which raises the plate-holders into the frame. In this move-

ment the plate-holder 1 turns around the fixed spindle *c*, the plate-holder 2 is lifted, its trunnions *f* then pivoting and following the curved portion of the slots *g*. The plate-holder 3 simply moves back, its trunnions *i* sliding in the slots *j*. In this lifting movement the releasing or escapement projections of the plate-holders 1 and 2 have caused the rod *p* to turn by pressing on the finger *o*, which afterward returns to keep the plate-holders in position under the action of the spring *t*. It then only remains to close the frame by means of its shutter or curtain *a'*.

Referring to the construction of Figs. 5 to 9, plate-holders 1, 2, and 3, mounted as herebefore explained when referring to Figs. 1 to 4, are provided with colored glasses 4, forming filters placed directly in front of the sensitized plate contained in each plate-holder. Each colored glass 4 is placed in a metal frame 5, in which it is held in a kind of gutter, forming the outer edge of the frame. This frame is, moreover, hinged at 6 to the plate-holder, so as to allow it to be easily opened in order to place a sensitized plate therein. It is held in place upon the plate-holder by means of clips 7, curved to a U-shape and pivoting at 8 upon the plate-holder and clipping the latter at the same as the frame holding the filter. In order to securely hold the plate-holders 1, 2, and 3 in position, the latter are provided with two pairs of releasing or escapement projections *n*, each of these projections bearing against a finger *o*, fixed to the spring-rod *p*. This rod may be operated by means of an india-rubber air-ball connected to the nipple 10, the air in which acts upon an india-rubber bellows *q*, or by means of a push-knob 9. The spring *r'* is connected at opposite ends to the rod *p* and frame, respectively, and serves to give said rod the longitudinal and torsional pressures obtained by the two springs *r* and *t* of Fig. 1. The parts *u'* and *v'* correspond in function to *u* and *v* of Fig. 1 and 2. As shown in Fig. 6, the plate-holders are slightly inclined backward and are consequently not in the vertical position which is necessary to enable them to be ready at the required moment. The object of this arrangement is to effect the change of plates by two movements. The first movement, which is effected by pressing the knob 9 and which is held pressed during the necessary exposure of the photographic plate, has for effect to disengage the first escapement of the projections *n* from the fingers *o*, on which the left-hand escapements of these projections bear, the plate-holder then pivoting at its lower part and coming into the truly vertical position with regard to the objective. When the knob 9 is released, the right-hand escapements are disengaged in their turn, and the plate-holder turns down on its pivot. The india-rubber air-ball, which should act upon the bellows *q* at the

same time that it acts upon the shutter, is connected to the ajutage 10 by a tube, the cross-section of which is larger than that of the tube connecting the pneumatic ball to the shutter. The tube actuating the bellows *q* is very short, and thus placed nearer the pneumatic ball than that leading to the shutter. The effect of this arrangement is that the plate-holder comes into a vertical position before the shutter is completely opened. The plate-holder 1 when it is turned down falls onto the two hooks *z*, the levers of which turn upon the pivot *y*. The fall of this plate-holder is deadened, as the levers of the hooks *z* press upon sliding pieces 11, attached to spring 12, fixed to the frame *a*, Figs. 5 to 7. A similar arrangement deadens the fall of the plate-holder 2. To this end hooks 13 are pivoted at 14, and the tails of their levers lift slides 15, to which are connected springs 16, the opposite ends of which are attached to the base of the frame *a*, Figs. 5 to 8. In order to facilitate the placing of the photographic plates in position in the plate-holder 3, this plate-holder can be disengaged from the finger *o* by causing the rod *p* to turn by acting upon the outer handle 17, turning the rod until the finger *o* passes over the stop *n*². In this operation the finger *o* presses backward against the stop *n*² until the plate-holder and spring *m* yield sufficiently to permit the finger to click over the stop. The lifting of the plate-holders is always effected by the cranked lever-handle *w*, carrying the stud *x*, as in the arrangement illustrated in Figs. 1 to 4. This frame with triple plate-holder can be arranged to take colored stereoscopic photographs. For this purpose it is necessary to provide the plate-holders with separators or partitions, dividing each plate into two parts, the said separators being flexible in order to allow the lifting of the plate-holders into the frame. These separators are made of a sheet of paper, fabric, leather, or other material 18, Fig. 9, one edge 19 of the separator being fixed by cement or otherwise to the colored glass of the plate-holder 3 and the other edge 20 being fixed to the back of the plate-holder 2. The arrangement is the same for the plate-holder 2. The edge 19 of the separator is fixed to the colored glass of this plate-holder, and the other edge is attached to the back of the plate-holder 1. With regard to the separator of the latter plate-holder it is necessary to fix the edge 19 to the colored glass which it holds, the edge 20 being attached to a plate or shutter 21, hinged to the frame *a*, the said shutter being first turned on its hinge in order to uncover the first plate-holder 1.

I claim as my invention—

1. In a frame for use in color photography,

in combination, a plurality of plate-holders, means for pressing said plate-holders forward, and an escapement device comprising projections upon said holders, and a shaft carrying a finger engaging said projections to hold the plate-holders in position, said shaft being longitudinally reciprocable from the outside and being held in normal position by a spring, and said finger adapted to engage said projections and hold the holders in position in the normal position of said shaft and to release the holders one at a time as the shaft makes one complete reciprocation.

2. In a frame for use in color photography, in combination, a plurality of plate-holders, the first being pivoted to swing about a fixed axis, and trunnions for the second plate-holder working in slots of segmental shape, whereby said second holder may advance horizontally when the first has been swung down out of position, and said trunnions may rise to permit said second holder to swing down upon the first.

3. In a frame for use in color photography, in combination, a plurality of plate-holders pivotally mounted, and means for swinging them downward in succession after exposure, means for lifting the plate-holders which have been swung downward, and deadening-springs adapted to receive the weight of the plate-holders as they swing down, to hold them up yieldingly in their fallen position.

4. In a frame for use in color photography, in combination, a plurality of plate-holders pivotally mounted, means for swinging them downward in succession after exposure, hooks *z* engaging one of said plate-holders and turned down therewith, and a spring-supported slide 11 for receiving a part of said hook as the plate-holder and hook swing down, so as to deaden the fall.

5. In a frame for use in color photography, in combination, a plurality of plate-holders pivotally mounted, means for swinging them downward in succession after exposure, hooks *z* and 13 adapted to be engaged by said plate-holders and swung down therewith, and spring-supported slides 11 and 15 adapted to be engaged by said hooks when their respective plate-holders swing down, so as to deaden the fall.

6. A plate-holder for use in color photography, including, in combination, a colored glass 4, and a hinged frame 5 for said colored glass.

In witness whereof I have hereunto signed my name, this 28th day of January, 1905, in the presence of two subscribing witnesses.

JEAN FRACHEBOURG.

Witnesses:

MARCEL ARMENGAUD, Jeune.,
HANSON C. COXE.