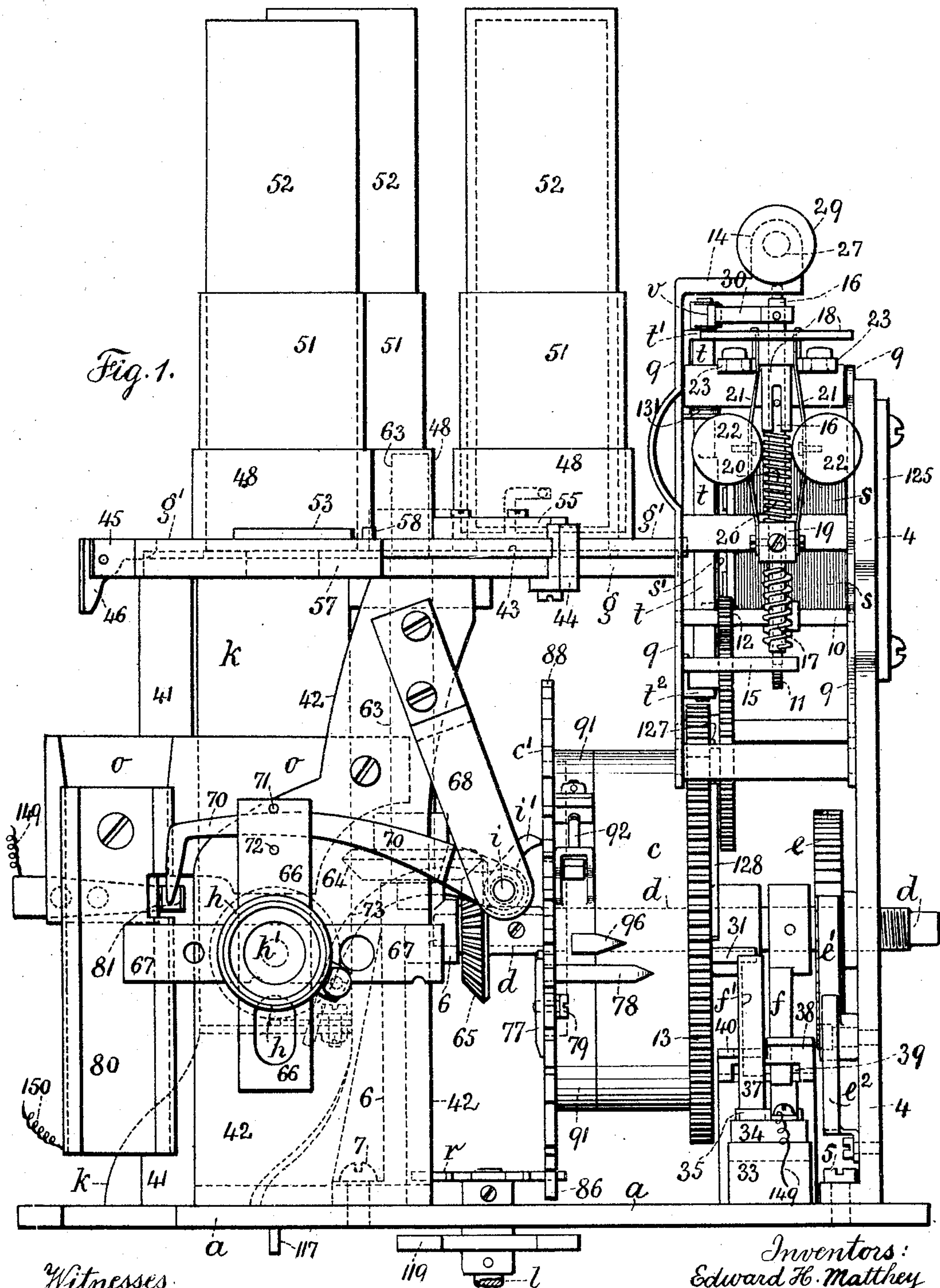


E. H. MATTHEY & E. C. REUTLINGER.  
AUTOMATIC PHOTOGRAPHIC APPARATUS.

APPLICATION FILED NOV. 25, 1903.

6 SHEETS—SHEET 1.



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6 SHEETS—SHEET 2.

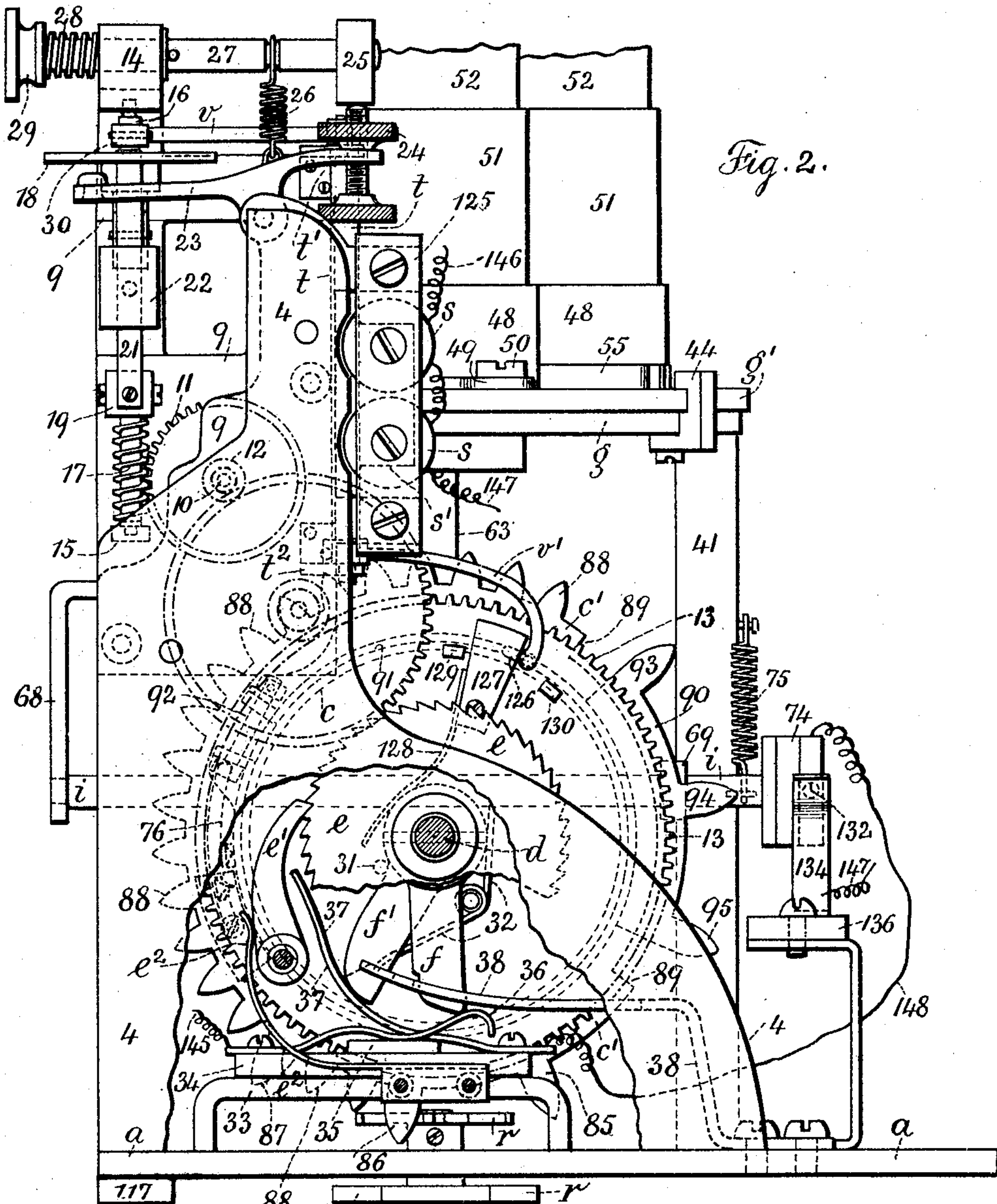


Fig. 2.

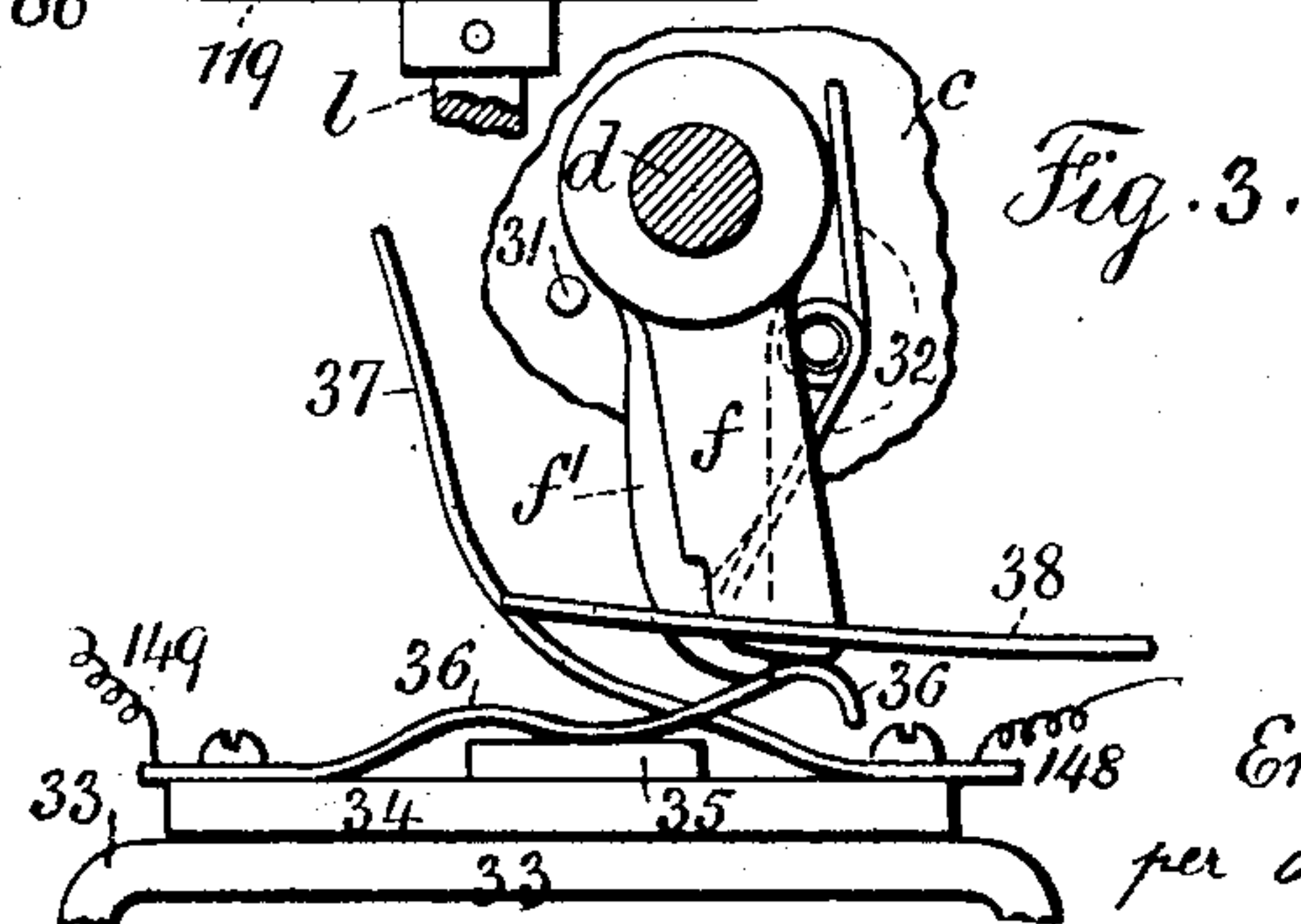


Fig. 3.

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6 SHEETS—SHEET 3.

Fig. 4.

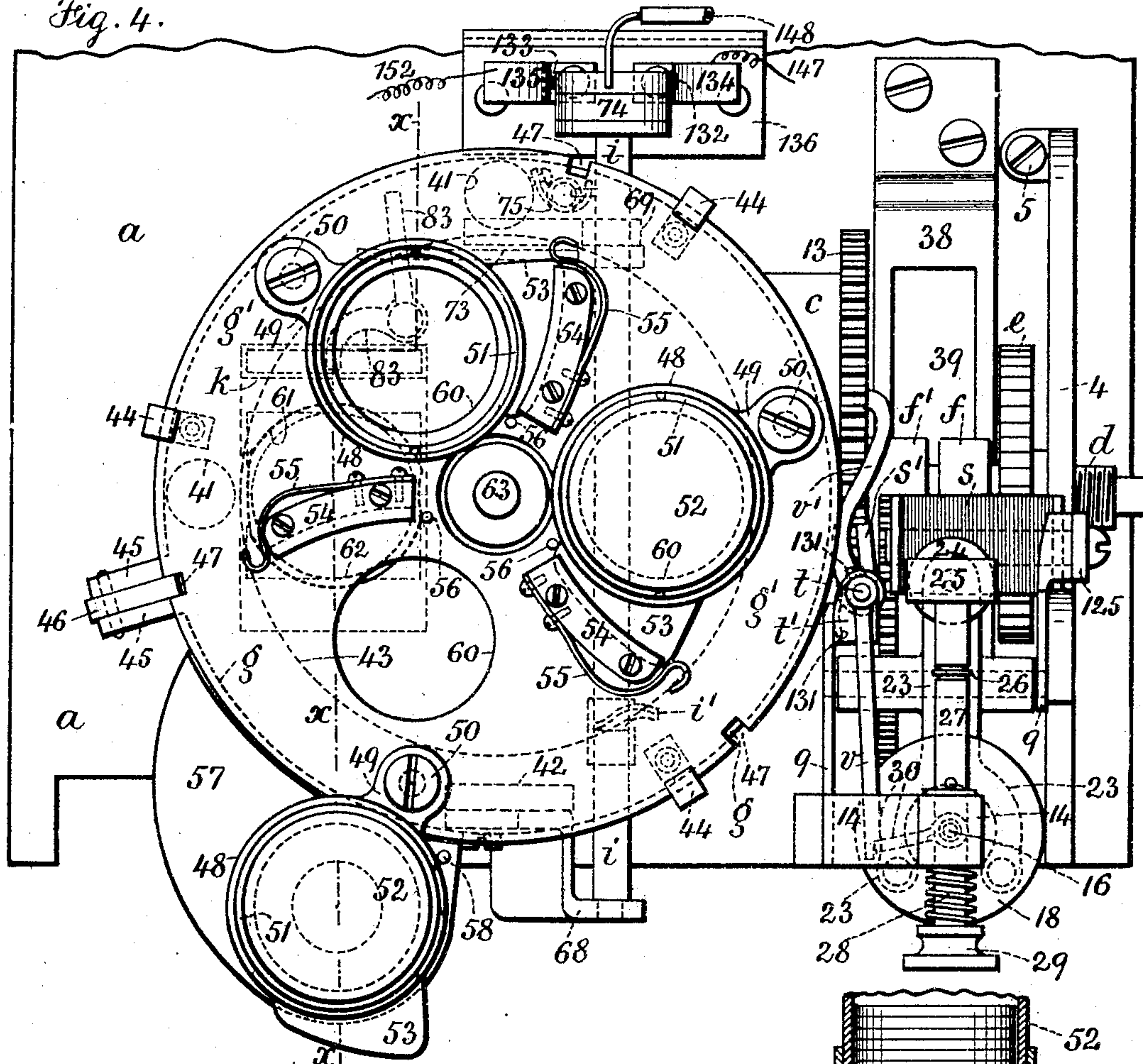
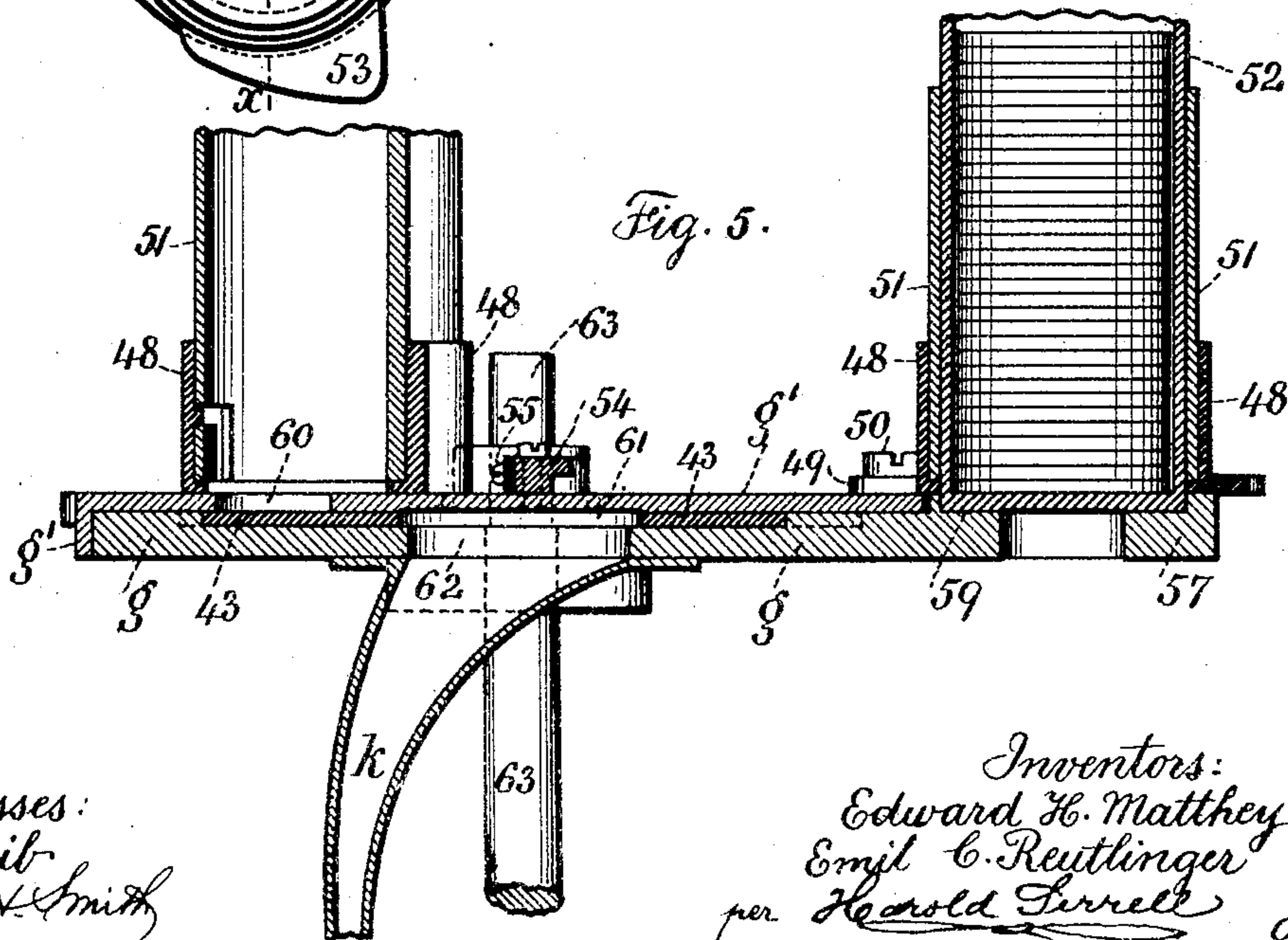


Fig. 5.



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AUTOMATIC PHOTOGRAPHIC APPARATUS.

APPLICATION FILED NOV. 25, 1903.

6-SHEETS-SHEET 4.

Fig. 6.

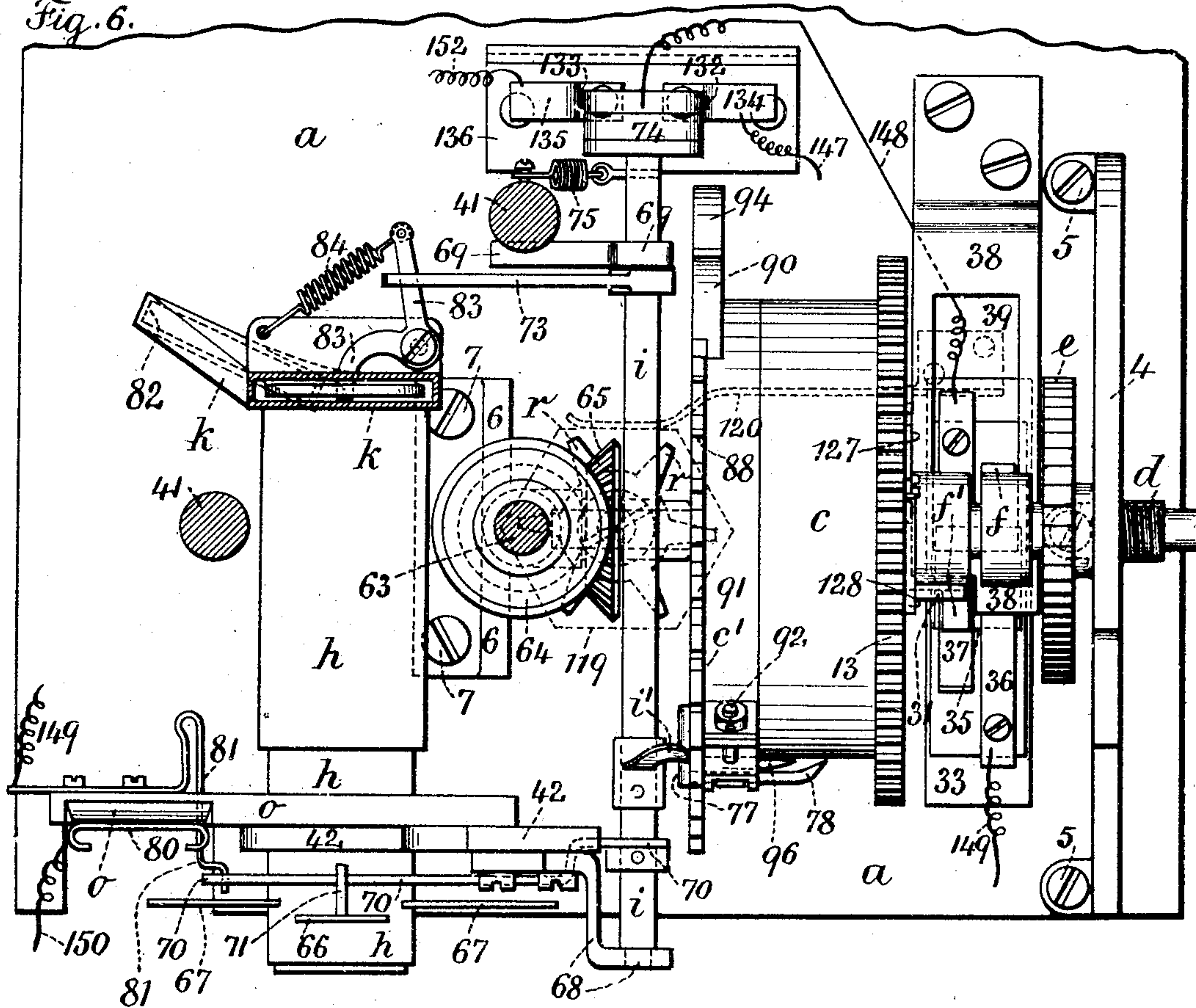
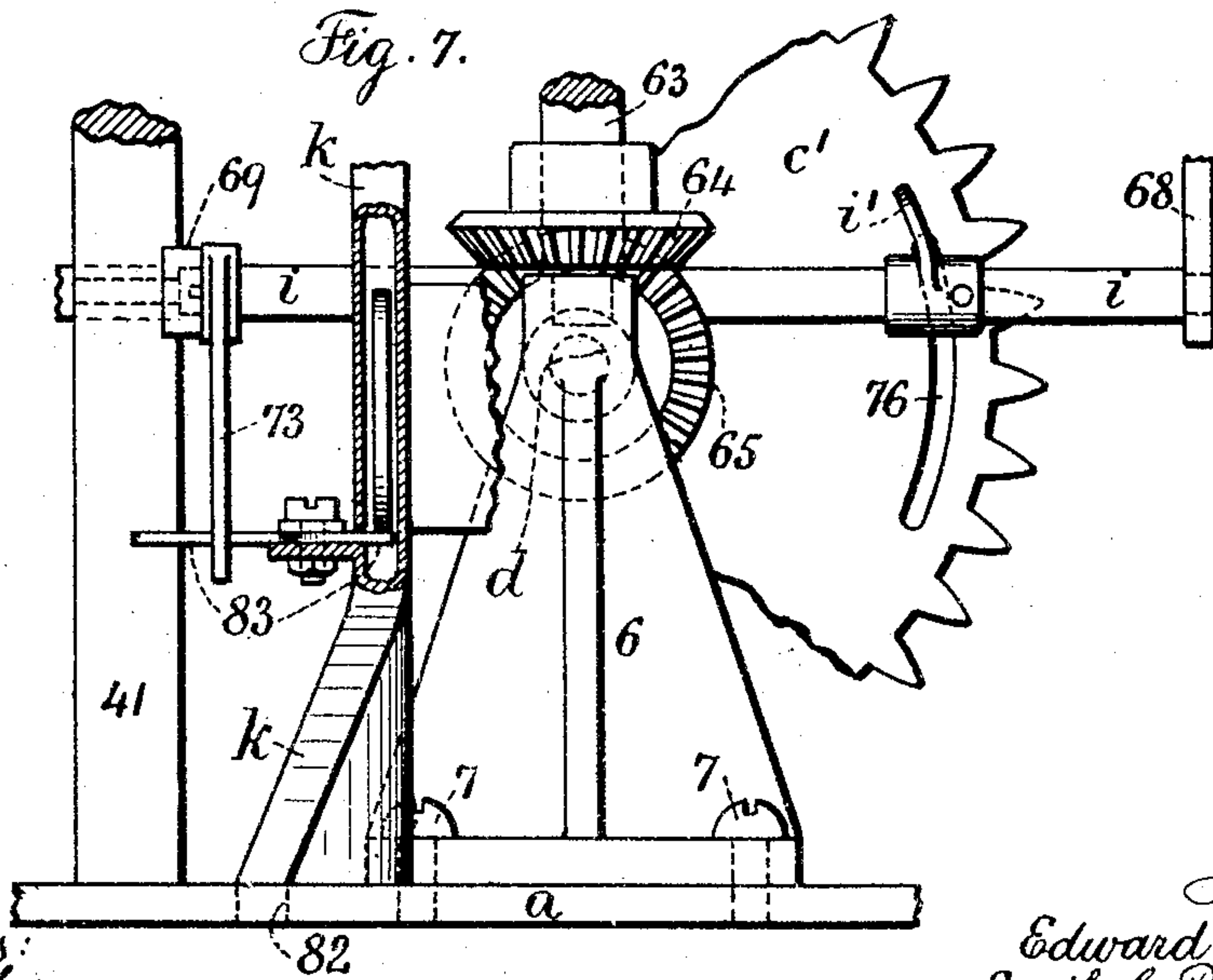


Fig. 7.



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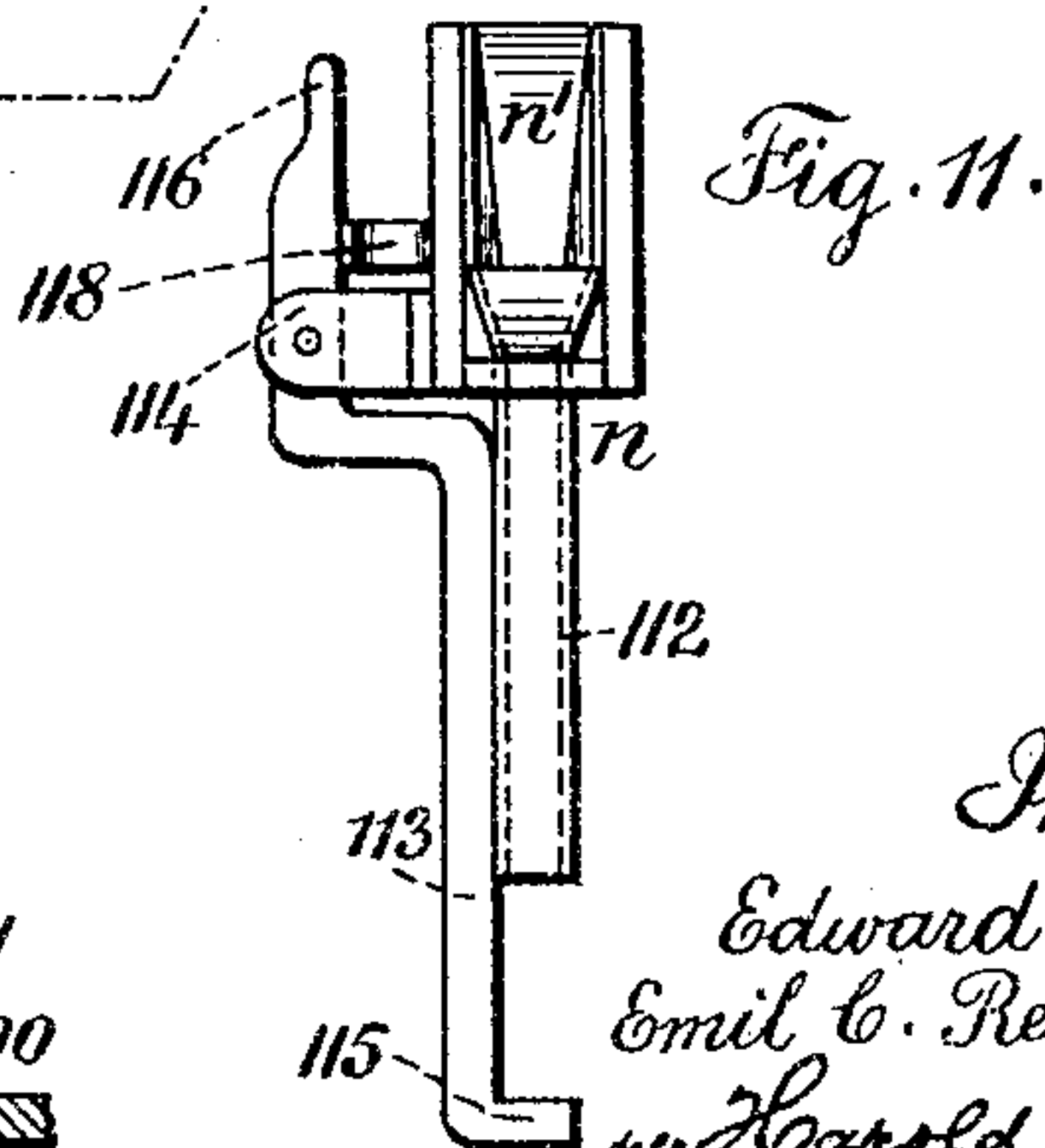
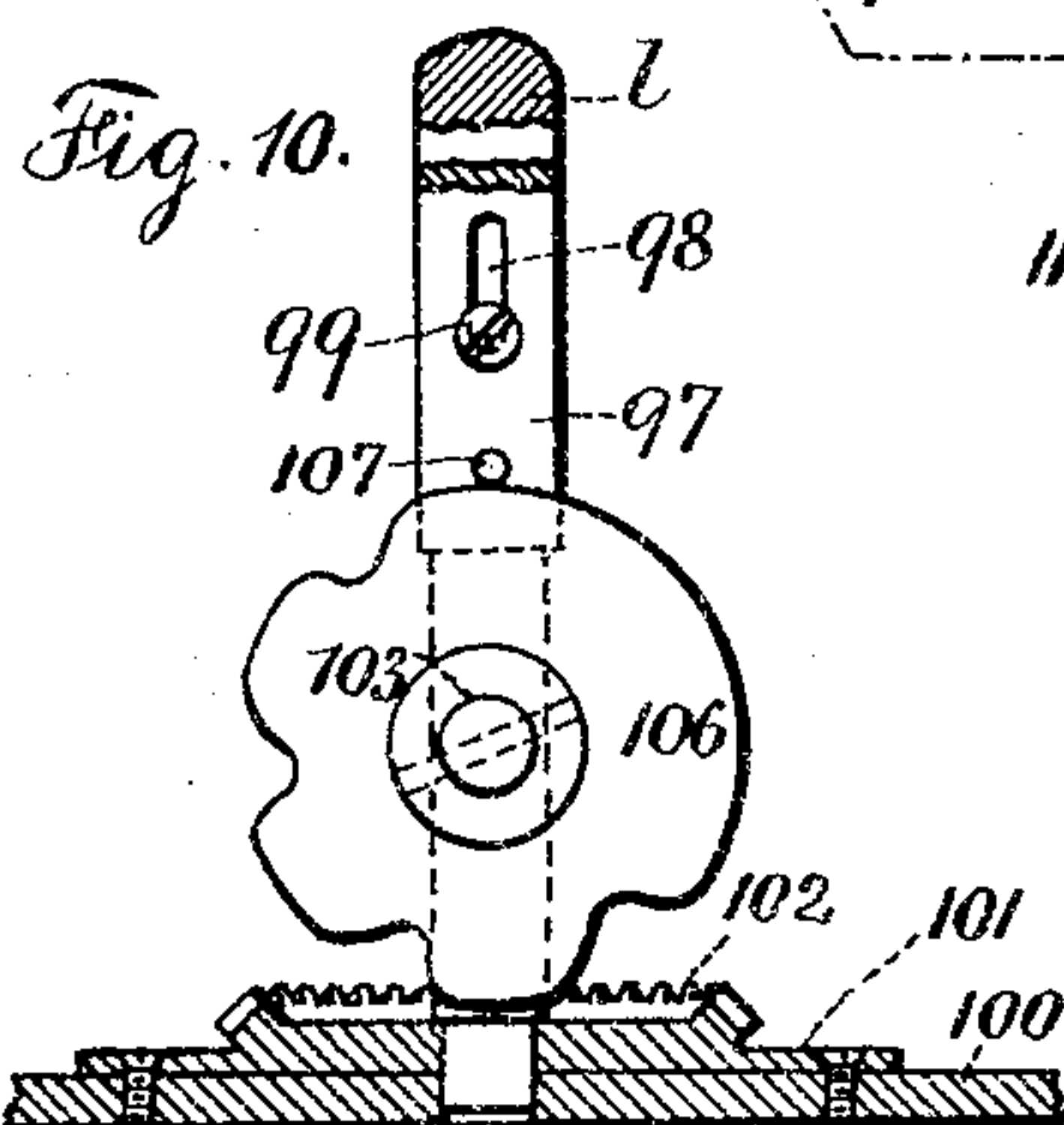
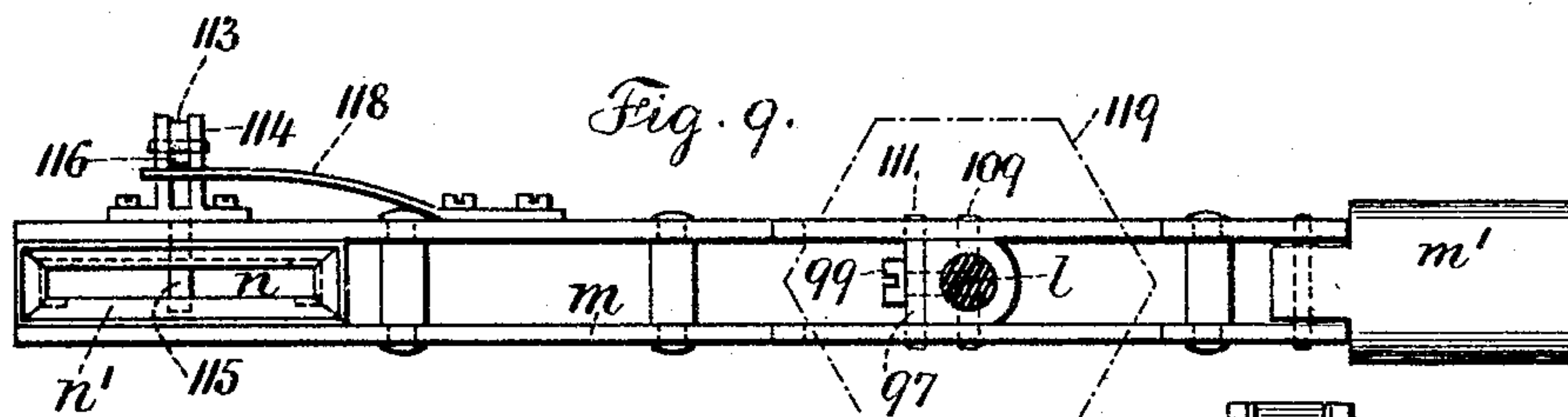
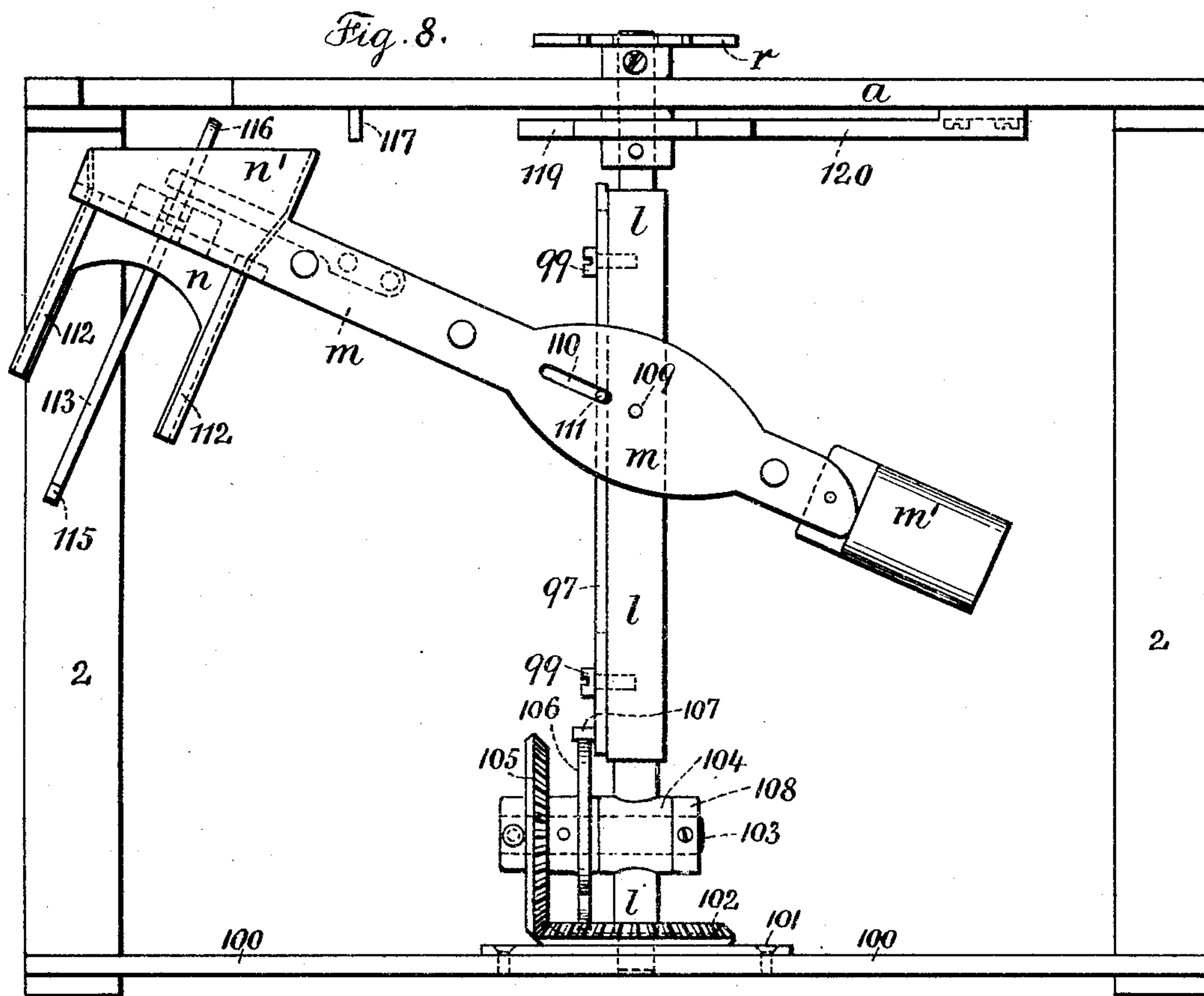
No. 785,113.

PATENTED MAR. 21, 1905.

E. H. MATTHEY & E. C. REUTLINGER.  
AUTOMATIC PHOTOGRAPHIC APPARATUS.

APPLICATION FILED NOV. 25, 1903.

6 SHEETS—SHEET 5.



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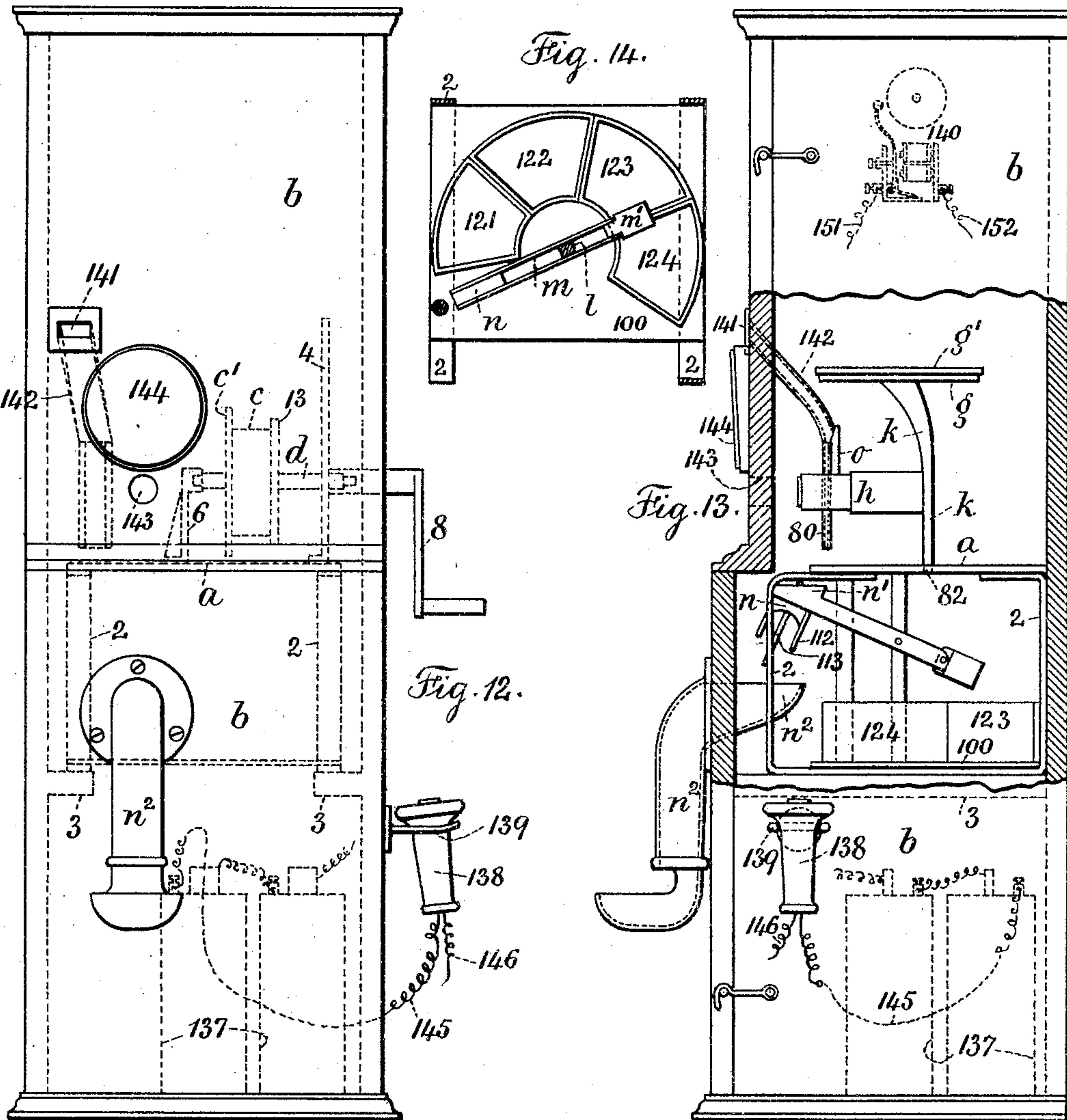
No. 785,113.

PATENTED MAR. 21, 1905.

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AUTOMATIC PHOTOGRAPHIC APPARATUS.

APPLICATION FILED NOV. 26, 1903.

6 SHEETS—SHEET 6.



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# UNITED STATES PATENT OFFICE.

EDWARD H. MATTHEY AND EMIL C. REUTLINGER, OF NEW YORK, N. Y.

## AUTOMATIC PHOTOGRAPHIC APPARATUS.

SPECIFICATION forming part of Letters Patent No. 785,113, dated March 21, 1905.

Application filed November 25, 1903. Serial No. 182,583.

*To all whom it may concern:*

Be it known that we, EDWARD H. MATTHEY and EMIL C. REUTLINGER, citizens of the Republic of Switzerland, residing in the borough of Brooklyn, county of Kings, city and State of New York, have invented an Improvement in Automatic Photographic Apparatus, of which the following is a specification.

Our invention relates to coin-controlled, electrically-operated, spring-motor-actuated, automatic photographic apparatus for producing more or less finished pictures from sensitized plates, and comprises a light-tight box in which are contained a spring-motor, a shaft for the same extending through one of the sides of said box and provided with means for manually winding the motor, means making it necessary to turn said shaft to complete a revolution before the apparatus can be operated, means for preventing more than one complete revolution at a time of said shaft, receptacles for magazines containing the sensitized plates, means for cutting off one closed end of each of the said magazines, a lens-tube, a lens therein, a shutter for the same, a plate-chute leading from the base of the main portion of the mechanism to a point beneath the said magazines, an obstruction in said chute forming a seat for the sensitized plate, so that the same will be in the proper position at the end of the lens-tube, means actuated by the winding of the spring-motor for delivering one sensitized plate at a time from the magazine through said chute to the said seat on the obstruction every time the motor-shaft is turned a complete revolution, a coin-chute, a coin-contact, means for starting the spring-motor when the coin is against its contact and after the motor-shaft has been turned a complete revolution, means actuated by the motor mechanism for operating the shutter and for releasing the coin from its contact, an electric bell, means for closing an electric circuit to said bell while the shutter is in its open position, means for adjusting the length of the exposure, a revoluble rocker-arm, means for releasing the sensitized plate from its seat against the obstruction in said lens-tube after the lens has been closed, a carrier

on the end of said rocker-arm and adapted to receive the sensitized plate after the same has been released, developing, washing, and fixing baths, means for actuating said rocker-arm to drop said carrier first into one bath and then into the next, means for agitating said carrier while the same is immersed in the baths, means for releasing said plate from said carrier after the developing and fixing processes have been completed and for dropping the plate into a chute by which it is conveyed to a receptacle on the exterior of the box, means for stopping the motor mechanism after the finished picture has been delivered, and electric batteries or other source of electrical energy and the necessary electrical connections therefrom to the various parts for operating the apparatus, all of which will be hereinafter more particularly described.

In the drawings, Figure 1 is a front elevation of the upper part of the mechanism comprising our invention. Fig. 2 is a side elevation of the same, showing a portion of the support-plate broken away to illustrate more clearly the parts immediately behind it, which are in the position taken after the motor has been wound. Fig. 3 is a partial elevation showing the arms and spring contacts in their normal positions. Fig. 4 is a plan of the parts shown in Figs. 1 and 2. Fig. 5 is a section at line *x x*, Fig. 4. Fig. 6 is a sectional plan taken immediately below the circular plate carrying the magazines for the sensitized plates. Fig. 7 is an elevation and partial section showing the sensitized plate on its seat against the obstruction in the plate-chute. Fig. 8 is a front elevation of the revoluble rocker-arm and the parts connected therewith. Fig. 9 is a plan of the revoluble rocker-arm in a horizontal position. Fig. 10 is an elevation and partial section of the cam and gear employed to operate the revoluble rocker-arm. Fig. 11 is an end elevation of the revoluble rocker-arm in a horizontal position. Fig. 12 is a front elevation of the box containing our improved apparatus, and Fig. 13 is a side view and partial section of the same. Fig. 14 is a plan of the rocker-arm and baths, Figs. 12, 13, and 14 being on a reduced scale; and Fig.



15 is a diagrammatic view of the electrical connections employed in the apparatus comprising our present invention.

*a* represents a base, of metal or other suitable material, mounted on supports 2, carried by brackets 3 on the inside of a light-tight box or casing *b*.

4 is a vertical support-plate secured to the base *a* at one side thereof by screws 5, and 6 is a journal-bracket placed parallel to the support-plate 4 and secured to the base *a* by screws 7 or otherwise.

*c* represents a spring-barrel, and *d* a shaft for the same, one end of which is journaled in the bracket 6 and the other end extending through an opening in one side of the casing *b* and adapted to receive the crank 8 or other means for turning the shaft *d*.

9 represents a frame which is suitably secured to the vertical support-plate 4, and 10 an arbor mounted in said frame and carrying a gear 11 and pinion 12.

One side of the spring-barrel *c* is provided with a gear 13, which by a suitable train of gears is connected with the arbor 10.

14 15 represent brackets secured to the frame 9, and 16 is a shaft mounted vertically in the brackets 14 and 15, the lower end of which is provided with a worm 17, with which the gear 11 meshes. A sleeve and integral brake-wheel 18 are employed on the upper end of the shaft 16, and a block 19 is secured to said shaft in approximately a central position, and a helical spring 20 extends around said shaft between the block 19 and the sleeve 18. Springs 21, carrying governor-weights 22, are secured at their respective ends to the said brake-wheel and block.

23 is a brake-arm pivoted in the frame 9 and adapted at one end to contact with the said brake-wheel and at the other end is provided with an adjusting-screw 24, which is held normally against a cam 25 by means of the spring 26, the cam 25 being carried at the end of a rod 27, passing through an extension of the bracket 14 and held normally in position against a suitable stop by means of a spring 28, acting against a thumb-screw 29, provided at the outer end thereof and by means of which the rod may be turned.

Immediately below the bracket 14 the vertical shaft 16 is provided with a finger 30, the function of which will be hereinafter described.

*e* is a ratchet-wheel secured on the shaft *d*, and *e'* is a pawl pivoted in the vertical support-plate 4 and maintained in position against the ratchet-wheel *e* by a spring *e''*. Between the ratchet-wheel *e* and the spring-barrel *c* the shaft *d* is provided with a fixed arm *f* and also with a loose arm *f'*. The latter arm is normally maintained against a stop 31, fixed in the side of the spring-barrel, by means of a spring 32, the free end of which engages a recess in the edge of the loose arm *f'*.

33 is a base-plate or bracket secured to the base *a*, and upon which is placed a block of insulating material 34.

35 is a contact-plate fixed on the upper surface of the block 34.

36 and 37 represent spring contact-arms secured at opposite ends of the block 34, which when depressed are adapted to contact with the plate 35.

We provide a spring stop-plate 38, secured to the base *a*, extending partially over the block 34 and contact-plate 35 and provided with a longitudinal recess 39 and having a portion of its free end cut away, as shown at 40. The longitudinal recess 39 in the stop-plate 38 is sufficiently wide to permit both the fixed arm *f* and the loose arm *f'* to enter the same, and the extremity of the free end of the stop-plate 38 is appreciably wider than the width of the fixed arm *f*, the end of which is adapted to pass over and depress the same. The functions and operations of the parts just described will be fully set forth hereinafter.

*g* represents a circular plate mounted on supports 41 41 and a front plate 42, all of which parts are fixed in the base *a*.

*g'* is a flanged plate fitting over the circular plate *g*, and the circular plate *g* is adapted to receive a disk 43 in a recess therein and between the same and the flanged plate *g'*, the plates *g* and *g'* being held together, so that the latter may turn on the former by means of clamps 44 or otherwise. On the periphery of the plate *g* there is a lug 45, in which is pivoted a finger 46, adapted to engage recesses 47 in the periphery of the flanged plate *g'*, so that the latter may be held in predetermined positions. The upper side of the flanged plate *g'* is provided with tubular members 48, having lugs 49, by which they are pivotally connected by suitable screws 50 to the said flanged plate *g'*. Tubular receptacles 51 are adapted to be secured within the tubular members 48 by means of the bayonet-joints, as shown in Fig. 5, or otherwise, and these tubular receptacles are of such a diameter as to receive the tubular magazines 52, in which the sensitized plates are contained. Opposite the pivotal points the tubular members 48 are provided with lugs 53, and on the surface of the flange-plate *g'* undercut stop-plates 54 are secured.

55 represents springs attached to the stop-plates 54 and adapted to engage the side of the lugs 53 to hold the tubular members and the parts therein normally in position against the stop-pins 56, with the lugs 53 within and against the undercut portions of the stop-plates 54.

The circular plate *g* is also provided with a shelf or projection 57, the surface of which is level with the surface of the flanged plate *g'* and over which the tubular members 48, with the parts contained therein, are adapted to be swung into the position as shown in Fig. 4.



against a pin 58, in which position the tubular magazine containing the sensitized plates will be directly over a recess 59 provided in the shelf 57 and into which the tubular magazine is forced by hand. This recess 59 is of a depth corresponding with the thickness of the material comprising the closed end of the tubular magazine, so that after the end of the magazine has been seated in the recess 59 the tubular member 48 may be forced back into position against its stop 54, thereby cutting off the closed end of the sensitized-plate magazine without exposing the plates to the light.

The plate *g'* is provided with openings 60, corresponding approximately in diameter with the sensitized plates employed and placed in such positions as to be concentric with the magazines 52 when the tubular members 48 are in position against their stops 54. The disk 43 is also provided with an opening 61 and the plate *g* with an opening 62, both of a diameter corresponding approximately with that of the sensitized plates and at the same distance from the center of the plate as are the openings 60.

63 represents a vertical shaft, the lower end of which is journaled in the upper part of the bracket 6 and is provided with a bevel-gear 64, meshing with a similar gear 65 on the end of the shaft *d*, and the disk 43 is secured to the upper end of the shaft 63, or the shaft 63 may be geared to the shaft *d* in such a manner that the disk 43 will be turned a partial revolution only with each revolution of the shaft *d*, in which case the said disk is provided with a plurality of openings corresponding in number with the number of movements necessary to turn the disk a complete revolution. By the construction shown it will be understood that with each complete turn of the shaft *d* a complete revolution is imparted to the disk 43, and consequently with each complete turn of the shaft a sensitized plate is carried from its magazine and delivered at the opening 62 by means of the disk 43.

*h* represents a lens-tube fitted with a lens *h'* or a combination thereof, the outer end of the lens-tube being secured in the front plate 42. The lens-tube is provided with a shutter 66 and a diaphragm 67.

*i* represents a rocker-shaft journaled at one end in an arm 68, secured to the front plate 42 and approximately at the other end in the suitable bearing 69. The end of the rocker-shaft *i* adjacent to the arm 68 is provided with a lever 70, and the lens-shutter 66 is provided with pins 71 72, between which the lever 70 extends and by which the shutter is raised and lowered through the movement of the lever 70 to open and close the lens. Adjacent to the bearing 69 the rocker-shaft *i* is provided with a lever 73, the function of which will be hereinafter set forth, and at its extremity opposite to the bearing in the arm 68 the rocker-shaft *i* is provided with a bar-

rel-contact 74. *i'* represents a finger, also secured on the rocker-shaft *i* and adapted to contact with the face of a flange *c'* on the spring-barrel *c* opposite to the gear 13 and against which it is maintained forcibly in position by the spring 75. The finger *i'* by means of the spring 75 is caused to enter a slot 76 in the face of the said flange on the spring-barrel, whereby the shaft *i* is given a partial revolution, and thereby actuates the lever 70 lever 73 and imparts a partial rotation to the barrel-contact 74.

77 is a plate carrying an indicator-finger 78 and adjustably mounted in the slot 76 by means of a set-screw 79. In the revolution of the spring-barrel *c* and as the finger *i'* emerges from the slot 76 it is caused to ride over the plate 77, thereby imparting a motion to the rocker-shaft which carries the same and the parts connected therewith in the opposite direction slightly beyond their normal position, in which the end of the finger *i'* is against the surface of the flange and to which position the parts return after the end of the finger *i'* has passed over the plate 77.

*o* represents a support-plate connected to the front plate 42 and having connected to it a contact-plate 80, preferably made of copper or other metal of good conductivity and having its opposite sides overturned to provide a guideway for a coin of a predetermined denomination.

81 is a spring-finger-contact insulated from the contact-plate 80 and preferably passing at right angles thereto through a recess in one edge of the contact-plate 80 in such a position as to arrest the coin in its descent through the contact-plate 80, thereby closing an electric circuit at one point through the coin. The contact-finger 81 is adapted to be engaged by the hooked end of the lever 70 when the rocker-shaft is turned backward past its normal position.

*k* represents a plate-chute leading from a slot 82 in the base *a* to the opening 62 in the circular plate *g* and to which the rear end of the lens-tube *h* is attached, and 83 is a bell-crank lever pivoted in a suitable bracket on the plate-chute *k* and one arm of which is curved and adapted to enter a slot in the plate-chute *k* in a central position, so as to form an obstruction and provide a seat in the proper position for the sensitized plate in its descent through the chute after the same has been delivered from the opening in the disk 43. The bell-crank lever 83 is normally held in position, with the end of its curved arm within the slot in the plate-chute, by means of a spring 84. The straight arm of the bell-crank lever 83 is adapted to be engaged by the lever 73, carried by the rocker-shaft *i*, when the latter is moved backward beyond its normal position by having the finger *i'* pass over the plate 77 and by means of which the end of the curved arm of the bell-crank lever is removed from



the slot in the plate-chute *h*, thereby permitting the sensitized plate to continue its travel through the chute.

The flange *c'* on the side of the spring-barrel opposite the gear 13 is provided with dogs 85 86 87 and also with dogs 88, which are placed intermediate of the dogs 85 86 87 and are of less radius. A portion of the flange *c'* is cut away at 89, and in this cut-away portion we employ an adjustable flange-segment 90, fitting within the said cut-away portion of the flange *c'* and provided with dogs 93, 94, and 95, which are of the same radius as the dogs 85, 86, and 87. This segmental flange is carried by a band 91, passing around the spring-barrel *c* and to which the band and its segmental gear are held in the desired position by means of a bolt 92. The band 91 is provided with an indicating-finger 96, by means of which the segmental disk is set in the proper position in relation to the indicating-finger 78, by means of which latter finger the position is determined for different lengths of exposure by clamping the plate 77 in different positions in the slot 76.

*l* represents a vertical shaft. One side of this shaft is flattened and provided with a slidable bar 97, secured in slots 98 to said shaft *l* by means of screws 99.

100 is a horizontal support carried by the lower ends of the supports 2 and provided with a base 101, and 102 is a bevel gear-wheel integral with the base 101.

The lower end of the shaft *l* is journaled in the base 101 concentrically with the gear-wheel 102. The upper end of the shaft *l* passes through the base *a* and has a bearing therein. The lower part of the shaft *l* is provided with a cross-shaft 103, having a bearing 104, secured to or integral with the shaft *l*, and the cross-shaft 103 carries a bevel-gear 105, meshing with the gear 102, and a cam-wheel 106 is placed between the bevel-gear 105 and the bearing 104, and these parts and the cross-shaft 103 are secured in position by means of a collar 108.

The lower end of the bar 97 is provided with a pin 107, which rests upon the periphery of the cam-wheel 106.

A rocker-arm *m* is pivoted at 109 in the shaft *l*, and, as shown in Fig. 8, this rocker-arm is preferably composed of two bars connected by suitable tie-bolts. There are slots 110 in the rocker-arm *m*, and the bar 97 is provided with a pin 111, which passes into the slots 110. One end of the rocker-arm *m* is provided with a weight *m'*, and the opposite end is provided with a plate-carrier *n*, comprising a hopper *n'*, and grooved arms 112 and an arm 113, pivoted in a bracket 114. The lower end of the arm 113 is outturned, providing a finger 115 for holding the sensitized plate to and within the grooved arms 112, and the upper reduced end 116 of the arm 113 is in the revoluble movement of the rocker-

arm *m* adapted to engage a suitable pin 117, secured to the under side of the base *a* in order to swing the arm 113 sufficiently far to release the sensitized plate, and the arm 113 is normally held in its proper position, as shown in Figs. 9 and 11, by means of a spring 118.

The end of the vertical shaft *l* above the base *a* is provided with a star-wheel *r*, whose teeth are adapted to be engaged by the dogs of longer radius on the flange *c'* of the spring-barrel *c*, and immediately below the base *a* the vertical shaft *l* carries a plate 119, which in this case is hexagonal, but by necessity will have to be as many-sided as there are dogs of the longer radius on the flange *c'*.

120 is a spring secured at one end to the under side of the base *a* and at the other adapted to engage one side at a time of the hexagonal plate 119.

121 is a tray for containing the developing-bath, 122 is a tray for containing the washing-bath, and 123 a tray for the fixing-bath, and 124 a tray for the washing-bath, all of which trays are supported by and arranged on the cross-support 100.

*s* represents an electromagnet secured to a plate 125, which is suitably connected to the vertical support-plate 4.

*t* is a vertical shaft mounted in bearings *t'* *t''* in suitable brackets secured to the frame 9, and connected to the shaft *t* is an armature *s'* of the electromagnet *s*. At the upper end an arm *v* is secured to the shaft *t*, and the outer end of the arm *v* is adapted to engage the finger 30, carried by the shaft 16, and at the lower end the shaft *t* is provided with an arm *v'*, the end of which is adapted to enter an aperture or opening 126 in the side of the spring-barrel *c* to stop and hold the motor mechanism in a stationary position.

127 is a cover-plate pivoted to the side of the spring-barrel *c* and adapted to cover the aperture 126 when the end of the lever *v'* is removed therefrom.

128 is a spring on the cover-plate 127, and 129 and 130 are stops fixed on the side of the spring-barrel *c* to limit the movement of the cover-plate 127.

The shaft *t* is held normally in position with the arm *v* engaging the finger 30 and the end of the arm *v'* in the opening 126 in the side of the spring-barrel by means of the spring 131.

The barrel-contact 74 is provided with insulating-blocks 132 and 133, preferably in diametrically opposite positions, and brushes 134 and 135 are suitably mounted on a block 136, fixed to a bracket secured on the base *a*, and the brushes 134 and 135 are adapted to bear alternately against the barrel-contact 74.

We employ a battery 137 or other source of electrical energy, preferably situated within the box *b*, and also a suitable circuit-closing device 138, which, as shown in Figs. 12 and 13, may be a frame containing a push-button



and arranged to be carried by a suitable bracket 139 on the exterior of the casing *b*.

140 is an electric bell secured to one of the inner sides of the casing, and 141 is a coin-opening in the casing, from which a suitable coin-chute 142 leads to a coin-contact 80. The casing is also provided with a lens-opening 143 and a mirror 144, by means of which the person who is to have his picture taken may determine upon the correct position in which to stand. The front of the box or casing *b* may be divided, as indicated in Fig. 13, and may be hinged to the side of the box or casing and provided with suitable hooks or latches to keep the front in place, or other suitable means may be provided for obtaining access to the interior of the casing.

One terminal of the battery 137 is connected to the push-button device by a wire 145, and the other terminal of the push-button device is connected by a wire 146 to one terminal of the electromagnet *s*, and the other terminal of the electromagnet is connected to the spring-contact 134 by a wire 147. The wire 148 connects the barrel-contact 74 with the spring-contact 37, and a wire 149 connects the spring-contact 36 with the spring-arm 81, and the contact-plate 80 is connected to the other battery-terminal by a wire 150. The bell-circuit comprises a wire 151, leading from one terminal of the battery to one terminal of the bell, and the wire 152 from the other terminal of the bell to the spring-contact 135, the bell-circuit being completed when the rocker-arm is in the proper position through the barrel-contact 74, wire 148, contact 37, plate 35, contact 36, wire 149, spring-arm 81, the coin, contact-plate 80, and the wire 150. In this arrangement of circuits it will be seen that in no place is the circuit completed through any part of the motor mechanism, which is a feature of material importance.

In the operation of the apparatus the shaft *d* is given a complete revolution by turning the crank 8, and in so doing the fixed arm *f* is forced over the extremity of the stop-plate 38, depressing the same and permitting the loose arm *f'* to pass over the end of the stop-plate 38, the loose arm *f'* being actuated by the spring 32 and moved until the side of the arm *f'* comes in contact with the stop 31. After the fixed arm *f* has passed over the extremity of the stop-plate 38 the latter by virtue of its elasticity will be raised above its normal position, and when the shaft has been given a complete turn the end of the fixed arm *f* will come in contact with the outer end of the slot 39 in the stop-plate 38, and at the same time the end of the fixed arm *f* depresses the spring-contact 36 sufficiently to cause the same to bear against the plate 35. After the loose arm *f'* has passed over the end of the stop-plate 38 the end thereof engages the spring-contact 37, and by the revolution of the spring-barrel the contact-spring 37 is de-

pressed by the loose arm *f'*, so that it also bears upon the plate 35, thus closing at one place the electric circuit by which the motor mechanism is released.

As the spring-barrel approaches the end of the complete revolution the loose arm *f'* enters the slot 39 in the stop-plate 38, and before the end of the revolution the side of the loose arm contacts with that portion of the stop-plate 38 at the end of the recess 39, the spring-barrel continuing its revolution until by virtue of the spring 32 the loose arm *f'* exerts sufficient pressure on the stop-plate 38 to depress the same to its normal position, permitting a rewinding of the apparatus. From this construction it will be apparent that it is necessary to turn the shaft *d* a complete revolution before the apparatus can be operated, and also that it is impossible to give more than one complete turn at one time to the shaft *d* in winding the spring-motor. With each complete revolution of the shaft *d* a sensitized plate from one of the magazines 52 is by the disk 43 delivered to the plate-chute *k* through the opening 62 in the plate *g*, the sensitized plate falling through the chute until it comes in contact with the end of the curved arm of the bell-crank lever 83. A coin of predetermined denomination is now inserted at the coin-slot 141 and descends in the coin-chute 142 until it meets the spring-arm 81, at which point it is arrested in the contact-plate 80. By means of a push-button the circuit through the electromagnet *s* will now be closed, attracting the armature *s'*, and simultaneously moving the arms *v v'*, releasing the escapement mechanism and the spring-barrel, respectively, whereby the motor mechanism is started. The circuit is closed sufficiently long to permit the spring 128 to force the cover-plate 127 over the hole 126, so that the end of the arm *v'* cannot reënter the hole 126 until the spring-barrel has turned a complete revolution. When the spring-barrel is turned sufficiently far, the finger *z'* will enter the slot 76, thereby, through the spring 75, giving a partial revolution to the rocker-shaft *i* and, through the lever 70 acting against the pin 71, raises the shutter 66 and opens the lens. Referring to Fig. 15, it will be seen that simultaneously with the opening of the lens the bell-circuit is closed by the barrel-contact being turned sufficiently far to cause the spring 135 to bear on the surface thereof.

As hereinbefore stated, the length of the exposure may be adjusted by securing the plate 77 in different positions in the slot 76. When the spring-barrel has turned far enough to allow the finger *z'* to contact with the plate 77, the continued revolution of the spring-barrel will cause the finger *z'* to be forced back and passed over the surface of the plate 77. In so doing the rocker-shaft *i* is given a turn in the opposite direction sufficiently far to cause the hook end of the lever 70 to en-



gage with the spring-arm 81, thereby releasing the coin in the contact 80 and permitting the same to drop to a suitable receptacle provided therefor, and at the same time the lever 73 is caused to come in contact with the straight arm of the bell-crank lever 83, moving the same against the spring 84 and removing the curved arm of the bell-crank lever from the slot in the plate-chute *k*, thereby permitting the plate to drop. In the meantime the dog 85 has engaged one of the teeth of the star-wheel, and thereby turned the shaft *l* and the rocker-arm *m* to such a position that the hopper *n'* of the plate-carrier *n* will be directly beneath the opening 82 in the base *a* at the lower end of the plate-chute *k*, so that the plate after being released from its position behind the lens-tube will drop into the carrier *n*. After this has taken place the dog 95 engages the next tooth of the star-wheel, whereby the shaft *l* is turned sufficiently far to allow the pin 107 to descend into the first notch of the cam-wheel 106, by means of which the carrier *n* on the end of the rocker-arm is dropped into the developing-bath 121 and the sensitized plate immersed therein. When the dog 94 engages the next tooth of the star-wheel, the shaft *l* is given another partial turn, by means of which the carrier *n* is lifted out of the developing-bath, carried over, and dropped into the first washing-bath 122 by means of the pin being raised from the first recess in the cam 106 and carried over to the next recess by the movement of the shaft *l*. The dog 93 engaging the next succeeding tooth on the star-wheel causes a similar movement to the rocker-arm *m*, whereby the carrier and the sensitized plate are removed from the washing-bath and carried to and dropped into the fixing-bath. While in this bath, and, in fact, in the other baths, if found desirable, the dogs 88 of shorter radius come in contact with the next succeeding tooth on the star-wheel; but these dogs are not of sufficient radius to turn the shaft into the next position, so that after the star-wheel has been acted on by one of the shorter dogs 88 the shaft *l* is returned to its initial position in relation to the fixing-bath, or that bath in which it happens to be, by means of the spring 120 acting on the hexagonal plate 119, and by so doing the carrier *n* is given a vertical movement and the plate and carrier are agitated while in the bath. The dog 87 engaging with the next tooth in the star-wheel causes the shaft *l* to turn to the next position, and by so doing the carrier and plate are removed from the fixing-bath and carried to and dropped into the washing-bath 124, in which bath the plate is also desirably agitated. The dog 86 contacting with the last tooth on the star-wheel turns the shaft *l* and through the action of the cam 106, pin 107, and bar 97 raises the carrier from the washing-bath 124 and carries the arm around to its starting-point, before

reaching which the reduced end 116 of the arm 113 comes in contact with the pin or projection 117, whereby the arm 113 is swung back, the sensitized plate permitted to drop from the carrier into a chute *n''*, by which it is conveyed to a suitable receptacle on the exterior of the casing.

As the spring-barrel completes its revolution the end of the arm *v'* engages the side of the cover-plate 127, moving the same back against the action of the spring 128 until the revolution is complete, at which time the cover-plate 127 will have been moved sufficiently far to permit the end of the arm *v'* to drop into the opening 126 on the side of the spring-barrel, by which and the arm *v* coming in the path of the finger 30 the motor mechanism is stopped.

We claim as our invention—

1. In an automatic photographic apparatus, the combination with a casing, a motor and means for actuating and controlling the same, of baths for developing and fixing the sensitized plate, means for receiving and holding the sensitized plate on edge, means for imparting a revoluble movement to the aforesaid means and for simultaneously lowering and raising the same into and from said baths and means for releasing said sensitized plate.

2. In an automatic photographic apparatus, the combination with a casing, a motor and means for actuating and controlling the same, of baths for developing and fixing the sensitized plate, means for receiving and holding the sensitized plate on edge, means for imparting a revoluble movement to the aforesaid means and for simultaneously lowering and raising the same into and from said baths, means for agitating said plate-holding means while the sensitized plate is immersed in a bath, and means for releasing said sensitized plate.

3. In an automatic photographic apparatus, the combination with a casing, a motor and means for actuating and controlling the same, of baths for developing and fixing the sensitized plate, means for receiving and holding the sensitized plate on edge, means for imparting a revoluble movement to the aforesaid means and for simultaneously lowering and raising same into and from said baths, means for agitating said plate-holding means while the sensitized plate is immersed in each bath, and means for releasing said sensitized plate.

4. In an automatic photographic apparatus, the combination with a casing, a motor and means for actuating and controlling the same, of stationary baths for developing and fixing a sensitized plate, a shaft, a rocker-arm, means for receiving and holding the sensitized plate, means actuated by said motor for turning said shaft, means actuated by the turning of said shaft to operate said rocker-arm to lower and raise said sensitized plate into and from the



successive baths, and means for releasing the sensitized plate.

5. In an automatic photographic apparatus, the combination with a casing, a motor and means for actuating and controlling the same, of stationary baths for developing and fixing the sensitized plate, a shaft, a rocker-arm, means for receiving and holding the sensitized plate, means actuated by said motor for turning said shaft, means actuated by the turning of said shaft to operate said rocker-arm to lower and raise said sensitized plate into and from the successive baths, means for vibrating the said rocker-arm to agitate the sensitized plate while the same is immersed in a bath, and means for releasing the sensitized plate.

6. In an automatic photographic apparatus, the combination with a casing, a motor and means for actuating and controlling the same, of stationary baths for developing and fixing the sensitized plates, a shaft, a rocker-arm, means for receiving and holding the sensitized plate, means actuated by said motor for turning said shaft, means actuated by the turning of said shaft to operate said rocker-arm to lower and raise said sensitized plate into and from the successive baths, means for vibrating the said rocker-arm to agitate the sensitized plate while the same is in each bath and means for releasing the sensitized plate.

7. In an automatic photographic apparatus, the combination with a casing, a motor and means for actuating and controlling the same, of stationary baths for developing, washing and fixing the sensitized plate, a shaft, a rocker-arm, means actuated by the said motor for turning the said shaft, a hopper and grooved plate-carrying arms secured to the end of said rocker-arm for receiving the sensitized plate, means for holding said sensitized plate in said carrying-arms, means actuated by the rotation of said shaft to lower and raise the said plate-carrying arms into and from said baths successively, means for vibrating said rocker-arm to agitate the sensitized plate while the same is immersed in each bath and means for releasing the said sensitized plate.

8. In an automatic photographic apparatus, the combination with a casing, a motor and means for actuating and controlling the same, of stationary baths for developing, washing and fixing the sensitized plate, a shaft, a rocker-arm, means actuated by the said motor for turning the said shaft, a hopper and grooved plate-carrying arms secured to the end of said rocker-arm for receiving the sensitized plate, a pivoted arm secured in position centrally of said plate-carrying arms and provided with a finger at its lower end to hold the sensitized plate in position in said carrying-arms and means for tripping the said pivoted arm to release the sensitized plate, means actuated by the rotation of said shaft to lower and raise the said plate-carrying arms into and from

said baths successively, means for vibrating said rocker-arm to agitate the sensitized plate while the same is immersed in each bath, and means for releasing the said sensitized plate.

9. In an automatic photographic apparatus, 70 the combination with a light-tight box, of a spring-barrel, an escapement, a shaft, means for winding said spring-barrel through said shaft, a stop-plate for preventing more than one complete revolution at a time being given 75 to said shaft in winding the spring-barrel, means for depressing said stop-plate after the spring-barrel has made a complete revolution so that said barrel may be wound again, means 80 for producing and delivering a picture, and means for stopping the said spring-barrel after the same has made a complete revolution.

10. In an automatic photographic apparatus, the combination with a light-tight box, of 85 a spring-barrel, an escapement, a shaft, means for winding said spring-barrel through said shaft, means operated by the winding of said shaft for closing an electric circuit at one point, a stop-plate for preventing more than 90 one complete revolution at a time being given to said shaft in winding the spring-barrel, means for depressing said stop-plate after the spring-barrel has made a complete revolution, 95 so that said barrel may be wound again, means for producing and delivering a picture, and means for stopping the said spring-barrel after the same has made a complete revolution.

11. In an automatic photographic apparatus, the combination with a light-tight box, of 100 a spring-barrel, an escapement, a shaft, means for manually winding said spring-barrel one turn at a time through said shaft, a stop-plate for preventing more than one turn at a time being given to said shaft, an arm fixed on said 105 shaft, an arm loose on said shaft, a contact-plate, a spring-contact adapted to be engaged by said fixed arm, a spring-contact adapted to be engaged by the said loose arm whereby 110 in turning the shaft a complete revolution and in the operation of the mechanism both said spring-contacts are depressed to bear upon the said contact-plate, means for releasing the said escapement and spring-barrel, means ac- 115 tuated by the spring-barrel for producing and delivering a picture, and means for stopping the said spring-barrel after the picture has been delivered.

12. In an automatic photographic apparatus, the combination with a light-tight casing, 120 of a spring-barrel, an escapement, a shaft, means for manually winding said spring-barrel one turn at a time through said shaft, a stop-plate for preventing more than one turn at a time being given to said shaft, an arm 125 fixed on said shaft, an arm loose on said shaft, a contact-plate, a spring-contact adapted to be engaged by said fixed arm, a spring-contact adapted to be engaged by the said loose arm whereby in turning the shaft a complete 130



revolution and in the operation of the mechanism both said spring-contacts are depressed to bear upon the said contact-plate, means for releasing the said escapement and spring-barrel, means actuated by the spring-barrel for producing and delivering a picture, means for depressing the stop-plate approximately at the end of a complete revolution of the spring-barrel so that the said shaft may be turned again to wind the spring-barrel, and means for stopping the said spring-barrel after the picture has been delivered.

13. In an automatic photographic apparatus, the combination with a light-tight casing, a motor mechanism, means for winding the same, and means for releasing and stopping the same, of a lens-tube, a lens therein, means for holding magazines containing sensitized plates, means actuated by the winding of said motor mechanism for delivering one sensitized plate at a time to said lens-tube, means for opening said lens, means for simultaneously closing the lens and releasing a sensitized plate from its position in the lens-tube.

14. In an automatic photographic apparatus, the combination with a light-tight casing, a motor mechanism, means for winding the same, and means for releasing and stopping the same, of a lens-tube, a lens therein, means for holding magazines containing sensitized plates, means actuated by the winding of said motor mechanism for delivering one sensitized plate at a time to said lens-tube, means for opening said lens, means for simultaneously closing the lens and releasing a sensitized plate from its position in the lens-tube, and means for adjusting the length of the exposure.

15. In an automatic photographic apparatus, the combination with a light-tight casing, a motor mechanism, means for winding the same and means for releasing and stopping the motor mechanism, of a lens-tube and a lens therein, means for holding magazines containing sensitized plates, means actuated by the winding of said motor mechanism for delivering one sensitized plate at a time to said lens-tube, an electric bell, an electric circuit, means for simultaneously opening the lens and closing the electric circuit to said bell, means for simultaneously closing the lens, releasing a sensitized plate from its position in the lens-tube and opening the bell-circuit, and means for finishing and delivering a picture.

16. In an automatic photographic apparatus, the combination with a light-tight box, a spring-motor, means for manually winding the same and means for electrically releasing the spring-motor, of a vertical shaft, a rocker-arm pivoted to the same, means carried by said rocker-arm for receiving and holding a sensitized plate, means actuated by said spring-motor for turning said vertical shaft a partial revolution at a time, baths for developing, washing and fixing the sensitized plate, and

means actuated by the partial revolutions of said vertical shaft for lowering and raising the sensitized plate into and from said baths.

17. In an automatic photographic apparatus, the combination with a light-tight box, a spring-motor, means for manually winding the same and means for electrically releasing the spring-motor, of a vertical shaft, a rocker-arm pivoted to the same, means carried by said rocker-arm for receiving and holding a sensitized plate, means actuated by said spring-motor for turning said vertical shaft a partial revolution at a time, baths for developing, washing and fixing the sensitized plate, means actuated by the partial revolutions of said vertical shaft for lowering and raising the sensitized plate into and from said baths, and means for delivering the picture.

18. In an automatic photographic apparatus, the combination with a light-tight box, of a spring-barrel means for winding the same, means for releasing the same, a flange on said spring-barrel, dogs on said flange, a vertical shaft, a star-wheel secured to said vertical shaft and adapted to be engaged by said dogs to impart a partial revolution at a time to said vertical shaft, a rocker-arm pivoted to said vertical shaft, means on said arm for receiving and holding a sensitized plate, baths for developing, washing and fixing the sensitized plate, means actuated by the partial revolutions of said vertical shaft for lowering and raising the sensitized plate into and from said baths, and means for delivering the picture.

19. In an automatic photographic apparatus, the combination with a light-tight box, of a spring-barrel, means for winding the same, means for releasing the same, a flange on said spring-barrel, dogs on said flange, a vertical shaft, a star-wheel secured to said vertical shaft and adapted to be engaged by said dogs to impart a partial revolution at a time to said vertical shaft, a rocker-arm pivoted to said vertical shaft, means on said arm for receiving and holding a sensitized plate, baths for developing, washing and fixing the sensitized plate, means actuated by the partial revolution of said vertical shaft for lowering and raising the sensitized plate into and from said baths, means for agitating the sensitized plate while immersed in the baths, and means for delivering the picture.

20. In an automatic photographic apparatus, the combination with a light-tight box, of a spring-barrel, means for winding the same, means for releasing the same, a flange integral with said barrel, dogs on said flange, dogs of shorter radius also on said flange and placed between the aforesaid dogs, a vertical shaft, a star-wheel secured to said shaft and adapted to be engaged by said dogs, a rocker-arm pivoted to said vertical shaft, means connected with said rocker-arm for receiving and holding a sensitized plate, baths for developing, washing and fixing the sensitized plate, means



actuated by the partial revolutions of said vertical shaft for lowering and raising the sensitized plate into and from said baths, a hexagonal plate secured to said vertical shaft, a spring contacting with the edges of the same by means of which, together with the dogs of shorter radius, and the means for raising and lowering the sensitized plates into the baths, an agitation of the sensitized plate is produced while immersed in the baths, and means for delivering the picture.

21. In an automatic photographic apparatus, the combination with a light-tight casing, of a spring-motor, a shaft for the same, means for manually winding the said motor through said shaft, means for preventing more than one complete revolution at one time of said shaft, receptacles for magazines containing sensitized plates, means for breaking off one of the closed ends of each of said magazines, a lens-tube, a lens therein, a shutter for the same, a plate-chute leading from a point beneath the said magazines to and below the lens-tube, means for holding the sensitized plate at the end of the lens-tube after the plate has been delivered from its magazine, means actuated by the winding of said motor for delivering one sensitized plate at a time through said chute to its position in the rear of the lens-tube, means for closing an electric circuit at one point by the winding of said spring-motor, contacts by which said electric circuit may be closed at another point, means for

starting said motor, means actuated by said motor for operating the shutter and opening 35 the said electric circuit at said contacts, an electric bell, means for closing an electric circuit to said bell simultaneously with the opening of the lens, means for simultaneously closing the lens, releasing the sensitized plate from 40 its position in the rear of the lens-tube and for opening the electric circuit to said bell, means for adjusting the length of exposure, a rocker-arm, a carrier on one end of said rocker-arm adapted to receive the sensitized 45 plate after the same has been released from its position in the rear of the lens-tube, developing, washing and fixing baths, means for actuating said rocker-arm to drop said carrier first into one bath and then into the next, 50 means for agitating said carrier while the same is immersed in the baths, means for releasing said plate from the carrier after the developing and fixing processes have been completed and for dropping the said plate into a chute 55 by which it is conveyed to the exterior of the casing, and means for stopping the motor mechanism after the picture has been delivered.

Signed by us this 7th day of November, 6c  
1903.

E. H. MATTHEY.

EMIL C. REUTLINGER.

Witnesses:

GEO. T. PINCKNEY,  
S. T. HAVILAND.