

No. 756,087.

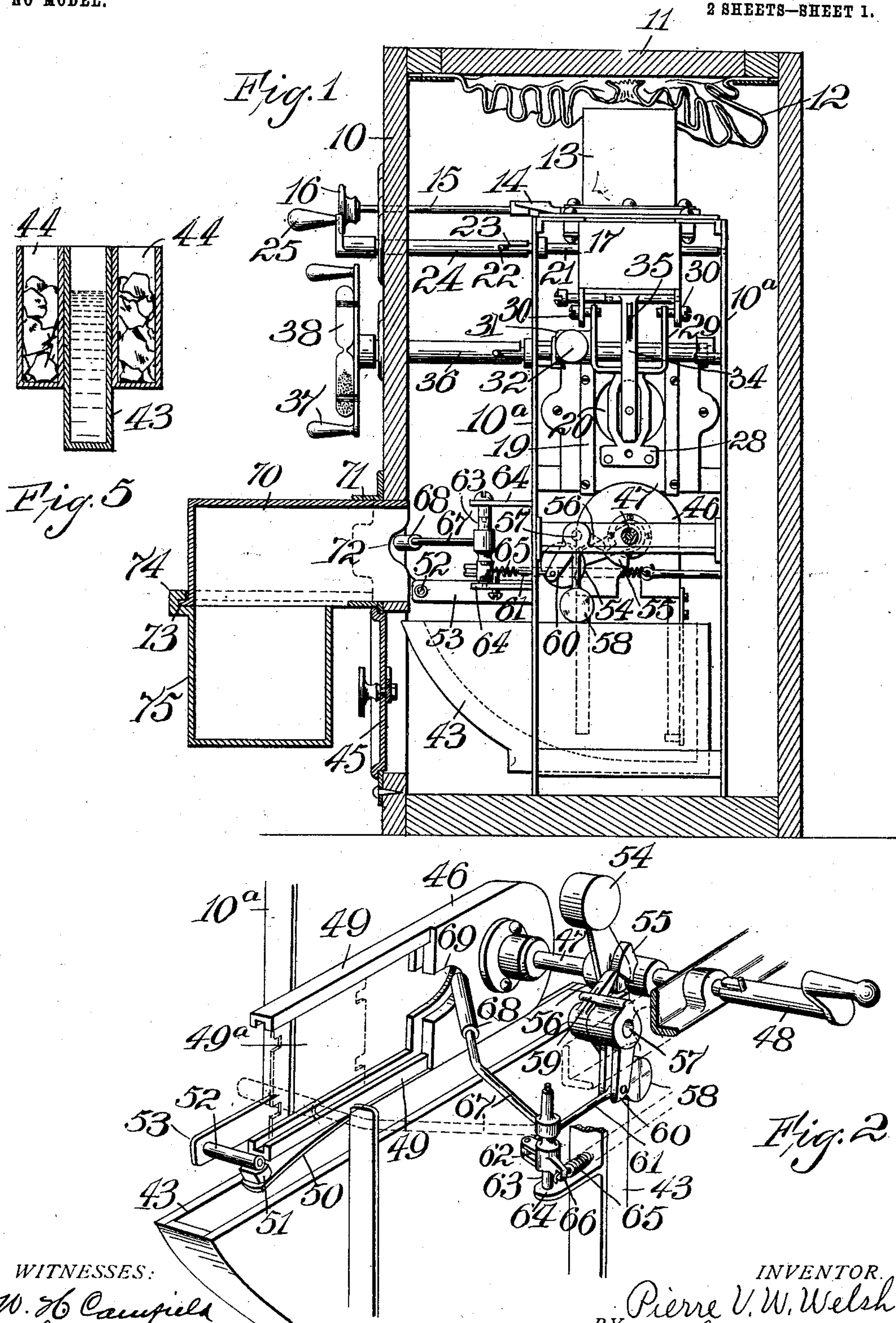
PATENTED MAR. 29, 1904.

P. V. W. WELSH.  
PHOTOGRAPH MACHINE.

APPLICATION FILED MAR. 11, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

W. H. Campfield  
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ATTORNEY.

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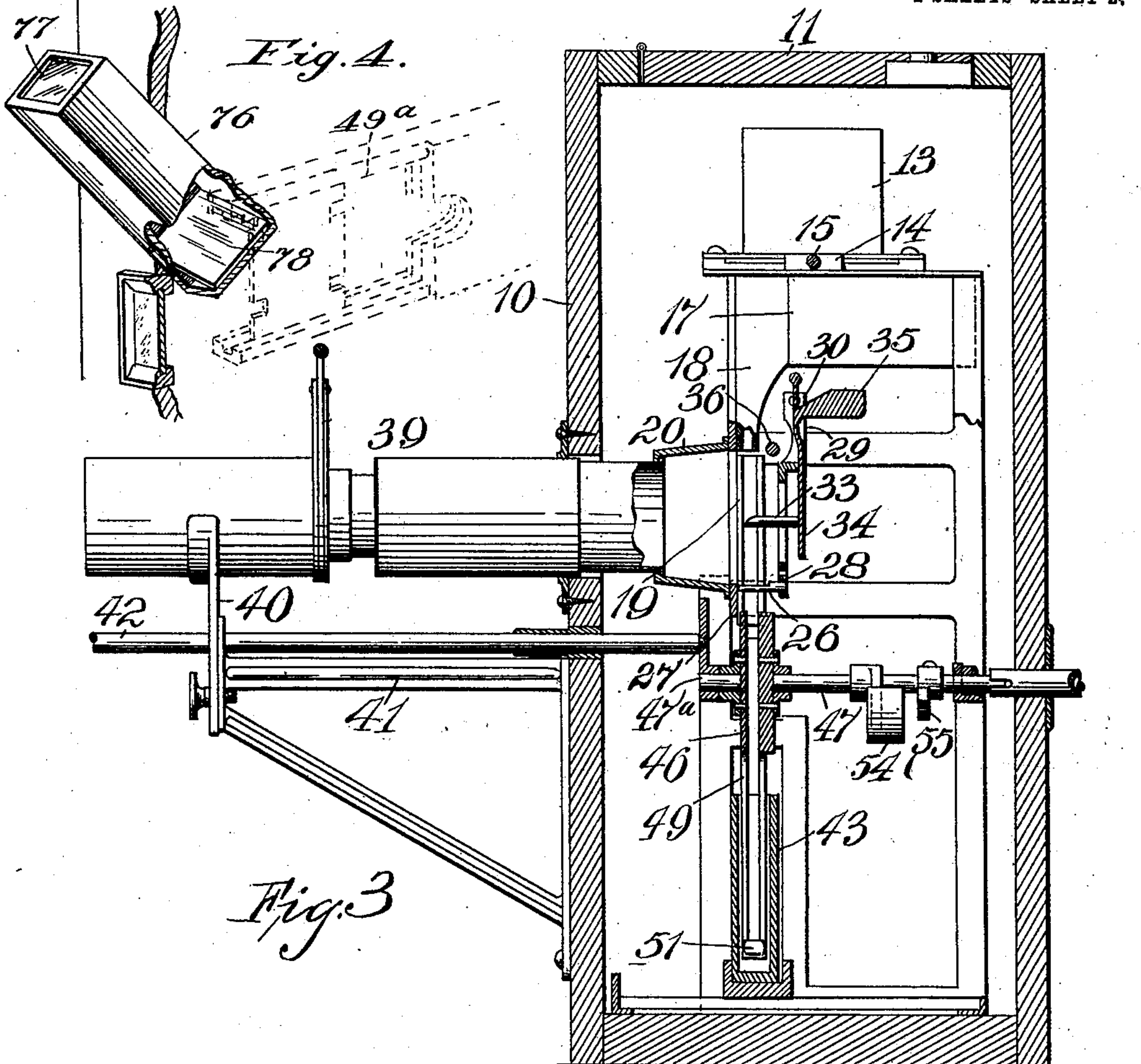
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# UNITED STATES PATENT OFFICE.

PIERRE V. W. WELSH, OF NEW YORK, N. Y.

## PHOTOGRAPH-MACHINE.

SPECIFICATION forming part of Letters Patent No. 756,087, dated March 29, 1904.

Application filed March 11, 1903. Serial No. 147,244. (No model.)

*To all whom it may concern:*

Be it known that I, PIERRE V. W. WELSH, of New York city, Kings county, New York, have invented certain new and useful Improvements in Photograph-Machines, of which the following is a full, clear, and exact description.

My invention relates to improvements in photograph-machines; and the object of my invention is to produce a simple and efficient machine which is adapted to take pictures from an original or to copy from a negative, which is intended to operate with greater nicety and perfection than any purely manual means, and which is also intended to operate rapidly, to the end that pictures may be quickly and cheaply taken or copied and finished.

My invention relates especially to the "developing means," by which I mean the means for developing and fixing the plate and also the means for handling the plate during these processes and for discharging the plate from the developer into the fixer.

My invention also consists of certain details of construction which enable these operations to be nicely and easily performed.

With these ends in view my invention consists of certain features of construction and combinations of parts, which will be hereinafter described and claimed.

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

Figure 1 is a central vertical section of the machine embodying my invention. Fig. 2 is an enlarged detail perspective view of the means for discharging the plate from the developing-bath into the fixing-bath. Fig. 3 is a vertical section with parts in elevation, the section being at right angles to that shown in Fig. 1. Fig. 4 is a detail view showing the means for inspecting a plate while it is in the machine, and Fig. 5 is a cross-section of a developing-tank well adapted for use in connection with the machine.

The machine is provided with a suitable case 10, in which is arranged a framework 10<sup>a</sup>, to which the working parts are attached or on which they are supported, and the case

10 has preferably at the top a swinging door 11, within which is a hood 12 of the usual kind, which permits the plates to be inserted in the holder or magazine 13 without undue exposure. The magazine, the feed, and the means for holding the plate in front of the lens-tube are only shown in a general way, because they form no part of this invention, and my invention is not, on the other hand, limited to any particular devices for the purposes named. As illustrated, however, the magazine 13 has a slide-plate 14 operating in a well-known way to drop the plates one by one, and this is operated by a rod 15, extending out through the case and having a knob 16 attached. 17 represents merely the housing for the feed mechanism, which is not shown, and the plates are discharged one by one through a feed-chute 18 to the plate-holder 19, which is arranged opposite the base 20 of the lens-tube 39, to be hereinafter referred to. Any suitable holder may be used for this purpose.

The feed mechanism, which is not shown, is operated by a shaft 21, and my only purpose in showing the shaft is to illustrate the fact that all the shafts of the machine are preferably made separable, to the end that the handle portions may be pulled off for convenience in shipping. A description of one shaft will answer for all, therefore.

The shaft 21 has a cross-pin 22 entering the slot 23 in the socketed end of the shaft extension 24, which extends outward through the case 10, and has a suitable handle 25, so that the extension 24 can easily be pulled off the shaft 21, but when in engagement both parts turn together.

When a plate is dropped from the feed-chute 18, it enters vertically into the holder 19 and rests upon a pin 26, which abuts with the plate 27, forming a part of the frame 10<sup>a</sup>, and the pin 26 is carried by the swing-frame 28, the upper part of which merges into a yoke 29, which is pivoted, as shown at 30. The yoke has an offset 31, (see Fig. 1,) carrying the weight 32, which swings the pin 26 to position. A steadying-pin 33, attached to a swing-frame 34, engages the plate and holds it in position opposite the lens-tube, the steadying-pin being



normally swung forward by the weight 35. The mechanism for dropping the plate is worked from a shaft 36, but is not here shown, as such mechanism is not claimed, and any  
 5 suitable dropping mechanism can be used. The shaft 36 is preferably provided with a double handle 37, carrying a time-glass 38 of the usual kind, which is to indicate the proper  
 10 time for development. When a plate is dropped, the handle is turned over, and when the sand runs from one part of the glass to the other the developing mechanism is actuated so as to remove the plate from the developer.

15 In connection with the machine a suitable lens-tube 39 is used, which in order to make the machine adapted for several uses should be an extensible one, and I have shown it supported in a rest 40, attached to a bracket 41  
 20 on the case 10, and a rod 42, which extends below and parallel with the lens-tube, can be made to carry a suitable holder to support the picture to be copied.

25 All the foregoing mechanism is described merely to make the operation of the machine understood and is therefore shown only in a general way.

Beneath the plate-holder 19 is arranged a developing-tank having preferably a central  
 30 compartment 43, carrying the developer, and as the developer is liable to spoil quickly, especially in hot weather, I arrange compartments 44 on opposite sides of it in which ice may be placed to keep the developer cool. A  
 35 door 45 is arranged in the case 10 opposite the developing-tank, so that the latter may be easily removed from or inserted in the machine.

When the plate is dropped to the developer,  
 40 it enters the slotted receiver 46, which on one side is attached to the shaft 47 and at the other to a trunnion 47<sup>a</sup>, (see Fig. 3,) both turning in suitable bearings, and the shaft 47 has an extensible handled end 48, by which it may  
 45 be operated. The receiver 46 has depending parallel arms 49, which are spaced apart, so that they may receive a photograph-plate, and in order that they may carry it nicely the arms are longitudinally grooved on the inside.  
 50 To one arm is attached near its free end a spring 50, (see Fig. 2,) carrying a boss 51, which is adapted to project below one of the grooved arms 49 and prevent a picture-plate 49<sup>a</sup> (see Fig. 2) from being prematurely ejected  
 55 from the receiver. When, however, the receiver is turned up to a horizontal position, as in Fig. 2, the boss 51 strikes a pin 52, which projects from a support 53 on the frame 10<sup>a</sup>, and the boss 51 is pushed out of the path  
 60 of the plate 49<sup>a</sup>, so as to permit the free ejecting of the latter, as will appear below.

The receiver 46 is held normally in position to receive a photograph-plate by the weighted arm 54, which is secured to the shaft 47. At  
 65 one side of the weighted arm is a cam 55,

which is fast on the shaft 47 and is adapted to engage a pawl 56, which is journaled on the stud 57 and is provided with a depending weighted arm 58, so as to extend the pawl  
 70 into the path of the cam. The cam when its face engages the pawl will tip up the latter, and when the cam passes by the pawl the latter is quickly swung clear by the weighted arm 58. The drawing Fig. 2 shows the pawl 56 and cam 55 just about to become disengaged. When the pawl 56 is tipped up as  
 75 described, it engages the projecting arm 59 of the pivoted crank 60, so as to tip back the crank and cause it to pull on the connecting-rod 61, which is connected also to a crank 62  
 80 on the vertical shaft 63, which shaft turns in suitable supports 64, and the pull of the connecting-rod causes the crank-arm 62 and shaft 63 to turn against the tension of the spring 65, which is attached to a rigid part of the  
 85 supporting-frame and to the boss 66, forming a back extension of the crank 62. The shaft 63 also carries a striking-arm 67, which has preferably a padded contact part 68 arranged to swing through the recess 69 of the receiver  
 90 46 and strike the inner or upper edge of the photograph-plate 49<sup>a</sup>, so as to throw the plate from the receiver. It will be seen then that when the movement of the cam 55 tilts the pawl 56 and pulls back the crank 62 it will  
 95 move back the striking-arm 67 against the tension of the spring 65; but when the pawl 56 and cam 55 disengage the spring 65 throws the striking-arm 67 quickly forward, so as to eject the plate 49<sup>a</sup> from the receiver, and the  
 100 weighted arm 58 returns the pawl 56 to position in the path of the cam 55. The way is made clear for the removal of the plate by the pressing back of the boss 51, as already described. When the plate 49<sup>a</sup> is thrown  
 105 from the receiver, it passes through a chute 70, which opens through the side of the case 10 and fits, preferably, in a thimble 71 on the case, and the inner end of the chute is recessed, as shown at 72, to provide for the  
 110 swing of the striking-arm 67. The chute 70 opens on the under side, and around the opening of the chute is a flange 73, over which fits the grooved flange 74 of the fixing-tank 75, in which the fixer is held, and this arrangement prevents the plate from being exposed to light while it is passing from the developer to the fixer, and it enables the fixing-tank to be easily removed when the plates are to be taken out of it.

To provide for inspecting the plates after they are developed and before they are ejected into the fixer, I arrange a sight-tube 76, with  
 115 suitable glasses 77 and mirror 78 at the ends, which can be colored, so as to permit inspection of the plate without injury to the latter, so that when the carrier 49<sup>a</sup> and the photograph-plate which it carries are swung up horizontally one can easily look inward to inspect the plate.  
 120  
 125  
 130



The operation of the machine will be clearly understood from the foregoing description, and it will be seen that I have provided an apparatus which performs the various functions in mechanical and positive manner and that there is no chance for injury to the photograph-plate from the time that it is inserted in the machine until the picture is removed from the fixing-tank. With suitable compounded chemicals washing is unnecessary between the developer and fixer.

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

15 1. In a photograph-machine, the combination with the photograph-plate holder, of a developing-tank arranged beneath the plate-holder, a receiver arranged beneath the plate-holder and held in the developing-tank, said receiver being constructed to swing upward out of the said tank, a fixing-tank at one side of the developing-tank and an ejector arranged to push a plate from the receiver into the fixing-tank when the said receiver is swung upward from the developing-tank.

25 2. A machine of the kind described, comprising a plate-feed, a holder to receive a plate, means for guiding the plate from the feed to the holder, a developing-tank beneath the holder, a receiver hanging normally in the developing-tank and arranged to swing upward out of the tank, a fixing-tank at one side of the developing-tank, and means for ejecting a plate from the receiver when the latter is swung upward from the developing-tank and discharging the said plate into the fixing-tank.

35 3. In a photograph-machine, the combination with the swinging receiver constructed to permit the passage of a photograph-plate through it, of a spring on the receiver, a boss carried by the spring and extending into the path of a plate as it goes through the receiver, and a stop-pin extending into the path of the boss so that when the receiver is swung upward the pin will engage the boss and remove it from its normal position.

40 4. In a photograph-machine, the combination with a swinging receiver constructed to permit the passage of a photograph-plate through it, of a striking-arm swinging to engage a plate in the receiver, and means by which the movement of the receiver causes the arm to act.

55 5. In a photograph-machine, the combination with a receiver arranged to permit the passage of a photograph-plate through it, of a striking-arm swinging adjacent to the receiver so as to engage a plate and eject it from the receiver.

60 6. In a photograph-machine, the combination with a bath, of a swinging receiver adapted to carry a photograph-plate into and out of the bath, and a swinging striking-arm arranged to engage the plate when it is removed from the bath and eject it from the receiver.

7. In a photograph-machine, the combination with a bath, of a receiver to carry the plate into and out of the bath, and a swinging striking-arm arranged to engage the plate when it is lifted from the bath and remove it from the receiver. 70

8. In a photograph-machine, the combination with a bath, of a receiver arranged to carry a photograph-plate into and out of the bath, a striking-arm to engage the plate when it is lifted from the bath and remove it from the receiver, and means for actuating the striking-arm, said means being controlled by the mechanism which operates the receiver so that the striking-arm will act at the right moment in the movement of the receiver. 80

9. In a photograph-machine, the combination with a bath, of the receiver arranged to carry a photograph-plate into and out of the bath, a swinging spring-actuated striking-arm arranged to engage and eject a plate carried by the receiver, means for actuating the receiver, and an operative connection between the receiver-actuating means and the striking-arm whereby the movement of the former releases the latter. 85 90

10. In a photograph-machine, the combination with the vertically-swinging receiver arranged to carry a photograph-plate into and out of a bath, of a rotating shaft carrying the receiver, a spring-pressed striking-arm arranged to engage a plate in the receiver and eject said plate, and a cam and lever mechanism for moving the said striking-arm against the tension of its spring and for releasing the arm. 95 100

11. In a photograph-machine, the combination with the swinging receiver arranged to carry a photograph-plate into and out of a bath, a rotating shaft carrying the said receiver, a spring-pressed striking-arm to engage a plate in the receiver, and means as the weighted pawl, the crank mechanism actuated thereby and the cam on the rotating shaft, to engage the pawl, for moving the striking-arm against its spring and for releasing the said arm. 105 110

12. In a photograph-machine, the combination with a developing-bath and a fixing-bath, of a swinging receiver adapted to carry a photograph-plate into and out of the developing-bath, and a swinging ejector arranged to throw a plate from the receiver as the latter leaves the developing-bath and carry the said plate into the fixing-bath. 115 120

13. In a photograph-machine, the combination with the developing-bath inside the machine and the fixing-bath outside the machine, of a receiver to carry a photograph-plate into and out of the developing-bath, an ejector to throw the plate from the receiver, and guiding means to carry the ejected plate into the fixing-bath. 125

14. In a photograph-machine, the combination with the internal developing-tank, of the 130



external fixing bath or tank arranged on one side of the machine, a guide-chute leading from within the machine through the wall thereof and into the fixing-tank, and ejecting  
5 means for discharging photograph-plates from the developing-tank through the chute into the fixing-tank.

15. In a photograph-machine, the combination with the internal developing-tank, and  
10 means for discharging a plate from the tank, of a fixing-tank detachably secured to one side of the machine, and a chute connecting the fixing-tank with the interior of the machine, the said chute being arranged to re-  
15 ceive the plates discharged from the developing-tank and guide them into the fixing-tank.

16. In a photograph-machine, the combination with the internal developing-tank, and means for discharging a photograph-plate  
20 therefrom, of a guide-chute extending through the wall of the machine and projecting laterally therefrom, the said chute being arranged to receive the plates discharged from the developing-tank, and a fixing-tank detachably  
25 secured to the guide-chute and arranged to receive the plates from the chute.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PIERRE V. W. WELSH.

Witnesses:

J. G. DUNBAR,

W. B. HUTCHINSON.