

J. S. GREENE.
 PHOTOGRAPHIC DEVELOPING APPARATUS.
 APPLICATION FILED DEC. 4, 1915.

1,229,945.

Patented June 12, 1917.
 2 SHEETS—SHEET 1.

Fig. 1

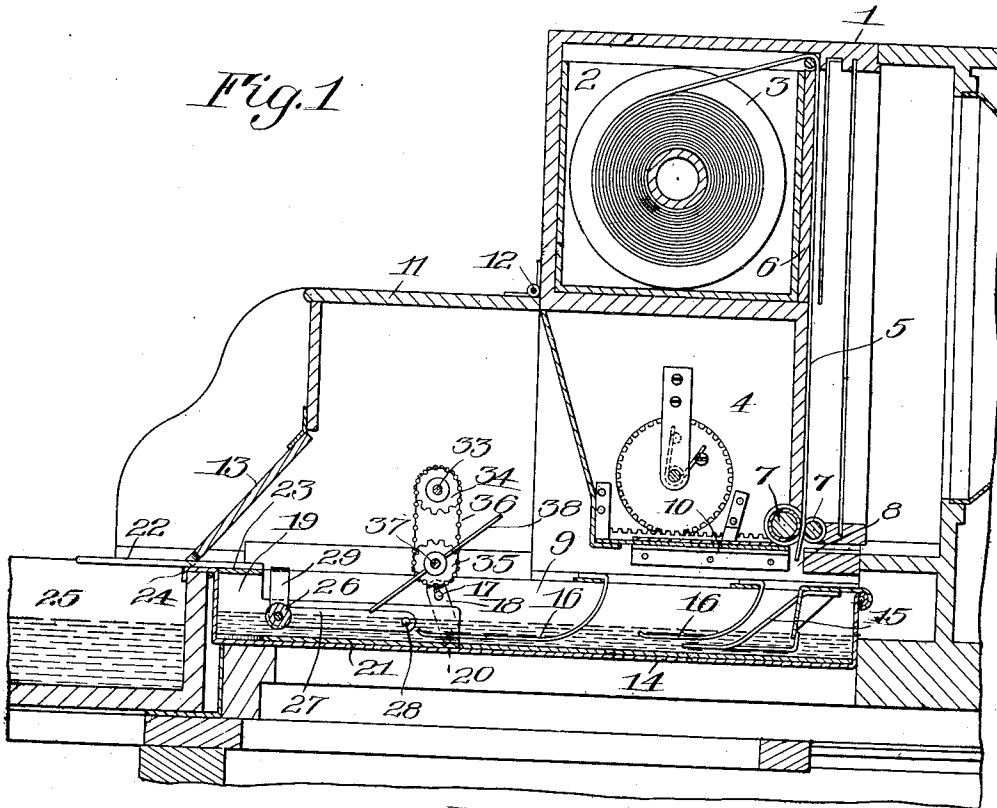
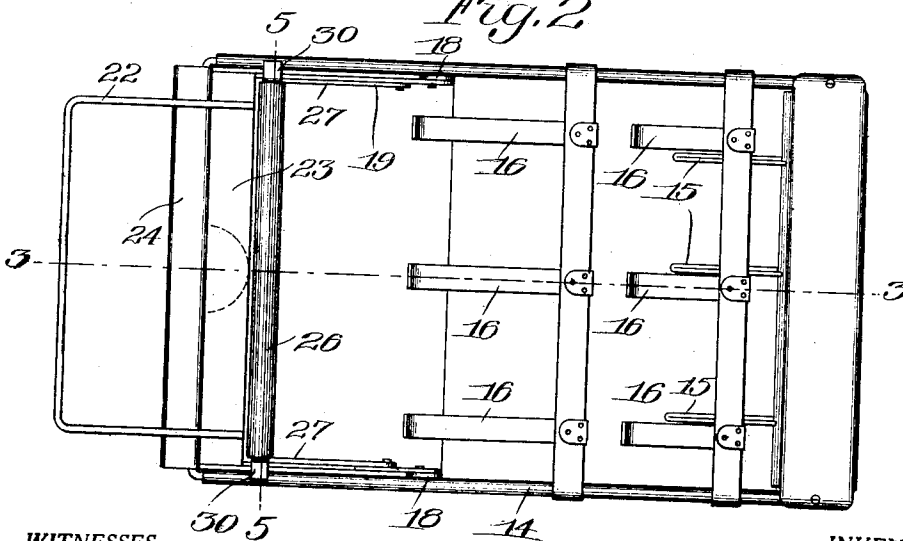


Fig. 2



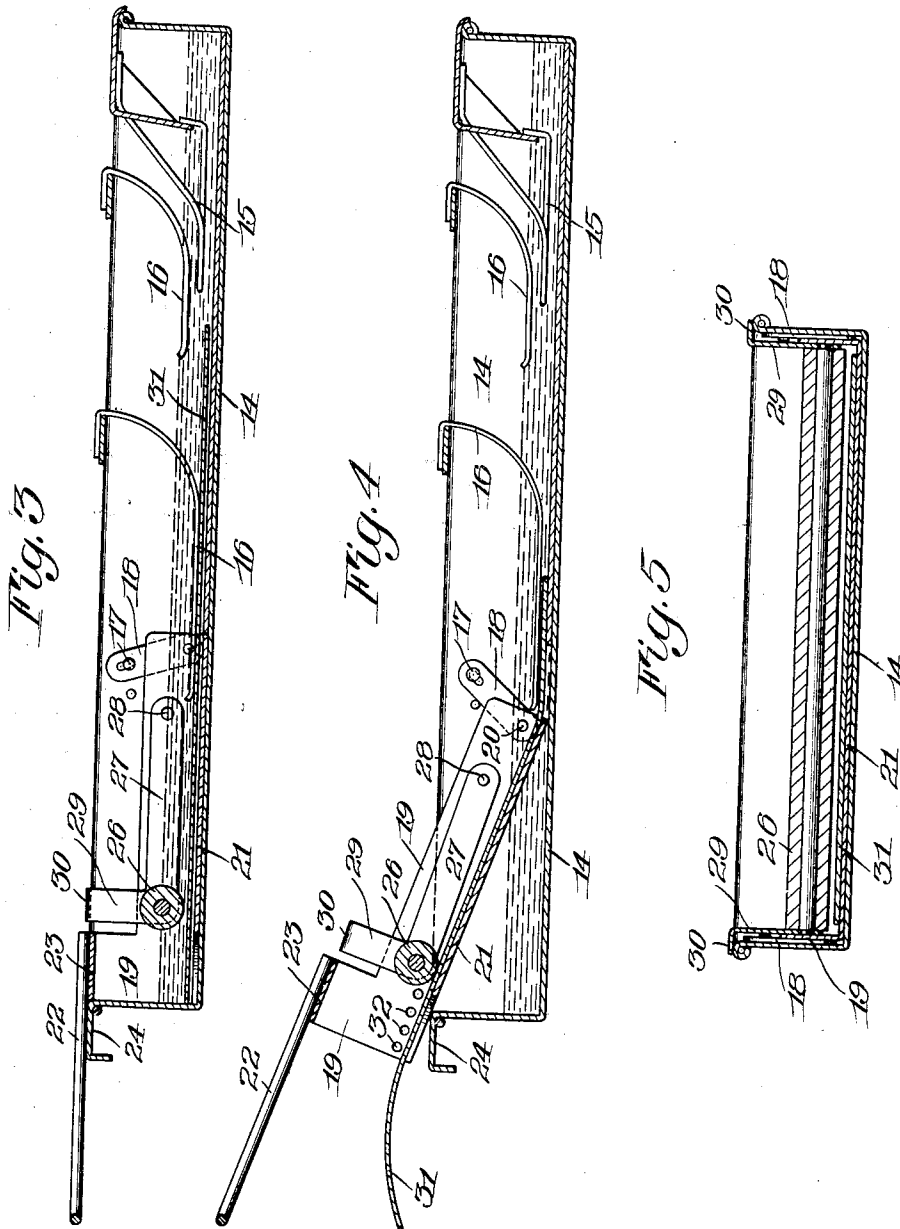
WITNESSES:
 Nelson H. Copp
 [Signature]

INVENTOR.
 John S. Greene
 BY [Signature]
 his ATTORNEYS.

J. S. GREENE.
 PHOTOGRAPHIC DEVELOPING APPARATUS.
 APPLICATION FILED DEC. 4, 1915.

1,229,945.

Patented June 12, 1917.
 2 SHEETS—SHEET 2.



WITNESSES:
Nelson H. Copp
Russell Bluff

INVENTOR.
John S. Greene
 BY *Charles Rich*
 HIS ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN S. GREENE, OF ROCHESTER, NEW YORK, ASSIGNOR TO COMMERCIAL CAMERA COMPANY, OF PROVIDENCE, RHODE ISLAND, A CORPORATION OF RHODE ISLAND.

PHOTOGRAPHIC DEVELOPING APPARATUS.

1,229,945.

Specification of Letters Patent. Patented June 12, 1917.

Application filed December 4, 1915. Serial No. 65,120.

To all whom it may concern:

Be it known that I, JOHN S. GREENE, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Photographic Developing Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

My present invention relates to photography and more particularly to photographic developing apparatus of the kind associated with copying cameras for developing prints in practically the same mechanism in which they are exposed and immediately after being fed from the focal plane of the camera, and the invention has for its object to provide a simple and convenient developing apparatus that will provide for removing the greater portion of the developing liquid that clings to the print as the latter is drawn from the developer container, to the ends that the supply of liquid may be conserved and contamination of the fixing solution into which the print is next introduced, prevented. To these and other ends the invention resides in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Figure 1 is a central, vertical, longitudinal section through a copying and developing camera, showing a developing apparatus constructed in accordance with and illustrating one embodiment of my invention;

Fig. 2 is a top plan view of the developing container and the parts carried thereby;

Fig. 3 is a section taken substantially on the line 3—3 of Fig. 2, showing the print handling devices in the normal positions of Figs. 1 and 2;

Fig. 4 is a view similar to Fig. 3 showing the parts in their print delivering positions;

Fig. 5 is a transverse section through the container taken substantially on the line 5—5 of Fig. 2.

Similar reference numerals throughout the several figures indicate the same parts.

Referring first in a general way to the

camera or exposing mechanism, in association with which I have illustrated my apparatus in the present instance, 1 indicates the camera casing, 2 a compartment therein containing a spool 3 on which the supply of film or sensitive paper is rolled and 4 a compartment below the film chamber that houses certain of the camera mechanisms such as the film feeding and severing devices. The film 5 is fed across a supporting wall 6 in the focal plane of the camera where it is exposed by means of feed rollers 7 located at the bottom of said wall and after passing the rollers, it enters through a passageway 8 into a developing chamber 9. The film is preferably in a continuous web and when the full exposed length has been drawn from the plane of exposure into the developing chamber, it is severed by a reciprocating knife 10. The rearward part of the chamber 9 is normally closed by a cover or hood 11 hinged to the camera casing 1 at 12 and itself provided with a flap door 13 through which ordinary access to the chamber during the course of developing, is had without admitting any great amount of light.

Within the chamber 9 is a pan 14 constituting a container for the developing solution. This is provided at its rear end with inclined deflecting guides 15 which take the contact of the advancing edge of the exposed sheet or print and direct it forwardly beneath suitable submerging fingers 16. Near the forward end of the container is pivoted at 17 a link 18 that forms a swinging support for the rear end of a print handling tray 19 to a side flange of which the link is pivoted at 20. The normal position of the tray is that shown in Figs. 1, 2, 3 and 5 in which its bottom 21 lies flat against the bottom of the container 14. In this position, a handle 22 mounted on a bridge piece 23 at the front of the tray projects over the front edge of the container 14 and beneath the flap door 13 (Fig. 1). When the print is fully extended within the container, its forward portion rests within the tray 19, as shown in Fig. 3, and by raising the tray to the tilted position of Fig. 4 and bringing its front edge over to rest upon the lip 24 at the front edge of the container 14, the print becomes accessible to the fingers of the operator to be withdrawn in the manner indi-

cated in Fig. 4 and transferred into a second container 25 arranged in rear of the first and containing the fixing solution or hypo. Raising the tray in this way automatically opens the flap door 13.

When the tray is in the normal position a roll 26 supported on arms 27 pivoted to the side of the tray at 28 is held in spaced relationship with the tray bottom 21, as clearly shown in Fig. 3, by means of hangers 29 provided with flanges 30 that engage over the edges of the container 14 and rest thereon. In this position of the roll, the print indicated at 31 is free to pass beneath it and between it and the bottom 21 of the tray. As the latter is thereafter carried up to the position of Fig. 4, the print is carried with it as is also the roll 26 which, when the flanged arms 29 thereof leave the rim of the container 14, falls down against the print and squeezes it against the bottom of the tray or carrier 21. The pressure need not be great, a gravity roll or one held down by its own weight and the weight of the arms 27, being sufficient in the present embodiment. The roll offers no appreciable resistance to the withdrawal of the print in the usual manner by pulling on its forward edge but as the print passes beneath it, the surplus liquid developer is expressed from it and as the print is drawn down into the fixing tank 25, it carries with it no great amount of developer. Drain openings 32 may be provided in the sides of the tray 19 in front of the roll 26 to prevent a body of solution from being trapped at this point when the tray is raised.

In order to insure the passage of the severed print from the rear of the container 14 forwardly into the tray 19 and beneath the roll 26, a propelling device may be employed which, in the present instance, comprises a drive shaft 33 connected by sprockets 34 and 35 and a chain 36 with the paddle shaft 37 on which are arranged rubber or other yielding blades 38. As the shafts are turned these blades frictionally contact with the upper surface of the print and urge it along to its forward position besides stirring up the developing solution.

It will be observed that the operation of the wringing device is entirely automatic as it moves into and out of operative position and into and out of print receiving position as the tray or carrier 19 is raised and lowered. The supply of developer within the container 14 is conserved through the practice of the invention while similarly the body of fixing solution in the tank 25 remains relatively pure and lasts a much longer time than were the print permitted to carry over the full charge of developer that ordinarily clings to it. The two containers 14 and 25 must be as close together as possible for obvious reasons and there is no op-

portunity for draining the print after it leaves one and before it is submerged in the other.

I claim a my invention:

1. In a photographic developing apparatus, the combination with a dark chamber, a developing container and a fixing container therein arranged in juxtaposition to the developing container but exteriorly of the dark chamber, of a wringing device arranged between the containers but accessible from the exterior of the dark chamber adapted to permit a print to be drawn there-through as it is passed from one to the other of said containers.

2. In a photographic developing apparatus, the combination with a dark chamber, a developing container and a fixing container therein arranged in juxtaposition to the developing container but exteriorly of the dark chamber, of a roll arranged between the containers but accessible from the exterior of the dark chamber and adapted to wring excess liquid from a print drawn beneath it as the latter is transferred from one to the other of said containers.

3. In a photographic developing apparatus, the combination with a liquid container, of a carrier having a normal position within the container and adapted to be shifted to an elevated position and a print wringer on said carrier.

4. In a photographic developing apparatus, the combination with a liquid container, of a carrier movable between a print receiving position within the container and an elevated print delivering position, of a print wringer on the carrier adapted to assume an inoperative position to receive the print when the carrier is in the first mentioned position and an operative position when the carrier is in its last mentioned delivering position.

5. In a photographic developing apparatus, the combination with a liquid container, of a carrier movable between a print receiving position within the container and an elevated print delivering position, of a print wringer on the carrier adapted to assume an inoperative position to receive the print when the carrier is in the first mentioned position and an operative position when the carrier is in its last mentioned delivering position and means for feeding a print into the carrier and wringer.

6. In a photographic developing apparatus, the combination with a liquid container, of a carrier consisting of a tray adapted to normally lie in a submerged print receiving position within the container and movable to an elevated print delivering position, of a wringing roll carried by the tray, and means for holding it spaced from the bottom of the latter when the tray is in its first mentioned position but permitting

it to move into operative wringing position with reference thereto when the tray is raised to delivering position.

7. In a photographic developing apparatus, the combination with a liquid container, of a carrier consisting of a tray adapted to normally lie in a submerged print receiving position within the container and movable to an elevated print delivering position, of a wringing roll carried by the tray, means for holding it spaced from the bottom of the latter when the tray is in its first mentioned position but permitting it to move into operative wringing position with reference thereto when the tray is raised to delivering position, and means for feeding a print into the tray beneath the roll while the latter is in inoperative position.

8. In a photographic developing apparatus, the combination with a liquid container, of a carrier consisting of a tray adapted to normally lie in a submerged print receiving position within the container and movable to an elevated print delivering position, of a wringing roll carried by the tray and a stop device cooperating with the container for holding the roll spaced from the bottom of the tray when the latter is in its first mentioned position but permitting it to move into operative wringing position

with reference thereto when the tray is raised to delivering position.

9. In a photographic developing apparatus, the combination with a liquid container, of print receiving means within the container adapted to be elevated to a delivering position and means carried thereby for wringing the print as the latter is drawn therefrom.

10. In a photographic developing apparatus, the combination with a liquid container, of a print wringing device having an inoperative print receiving position within the container and movable to an operative print delivering position above the container.

11. In a photographic developing apparatus, the combination with a liquid container, of a print wringing device having an inoperative print receiving position within the container and movable to an operative print delivering position above the container and means for feeding a print into the wringing device while the latter is in its first mentioned position.

JOHN S. GREENE.

Witnesses:

RUSSELL B. GRIFFITH,
AGNES NESBITT BISSELL.