

(No Model.)

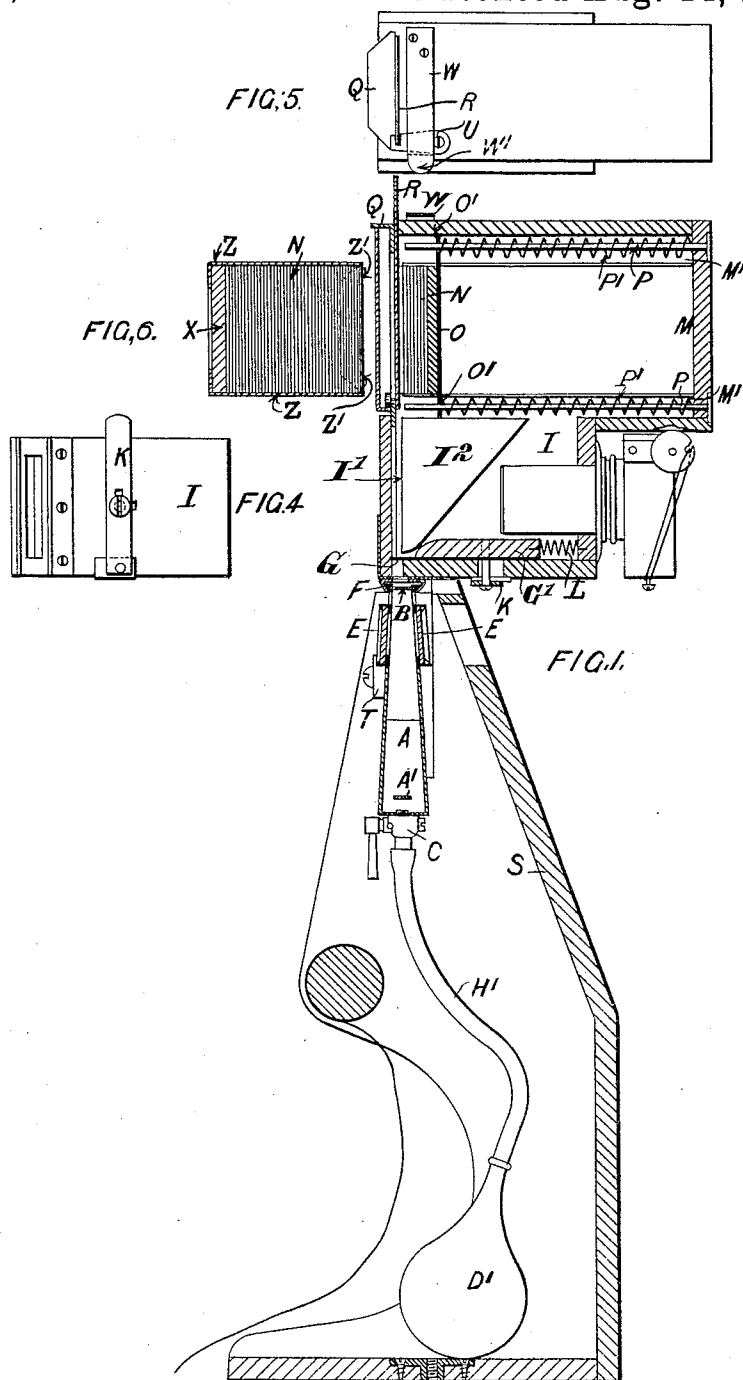
3 Sheets—Sheet 1.

L. NIEVSKY.

APPARATUS FOR EXPOSING, DEVELOPING, AND WASHING DRY PLATES.

No. 524,395.

Patented Aug. 14, 1894.



Witnesses:

H. J. Dietrich
B. H. Summers

Inventor:

Ladislav Nievsky
by *[Signature]* Atty

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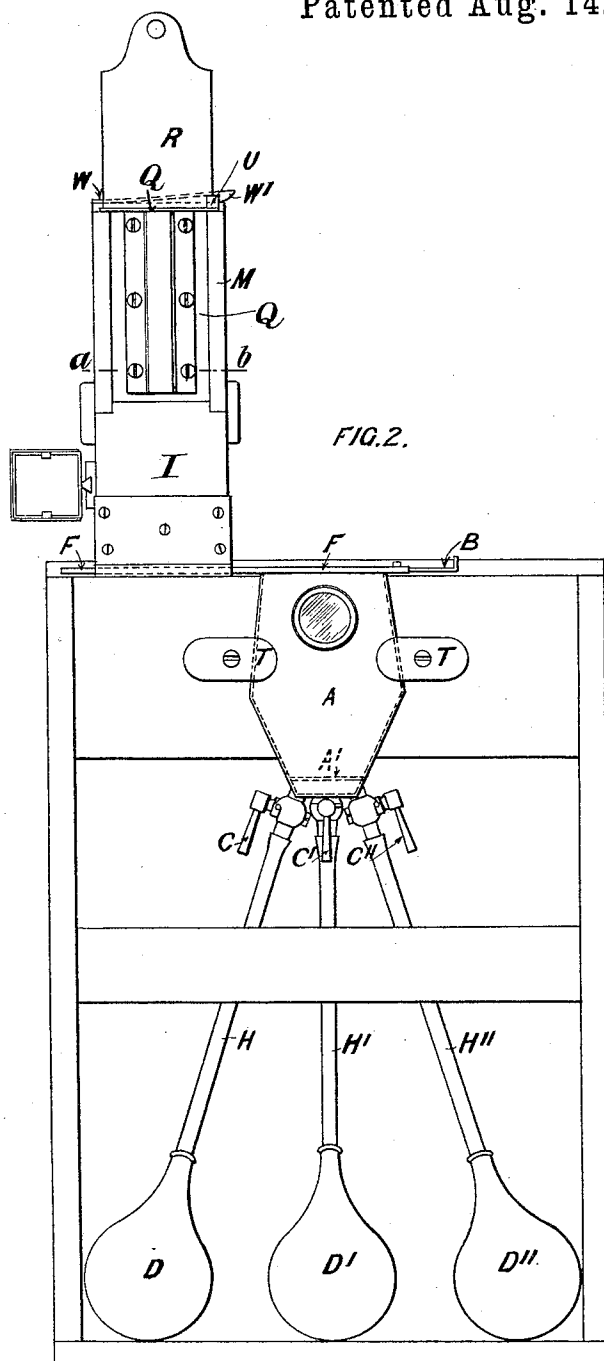
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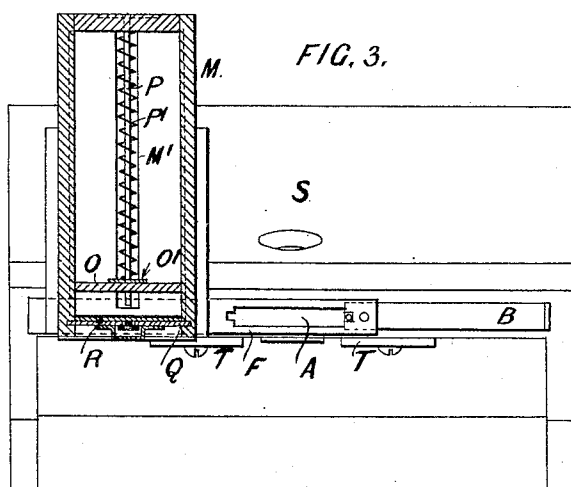
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Inventor:

Ladislav Nievsky,
by Henry Oth Attorney

UNITED STATES PATENT OFFICE.

LADISLAS NIEVSKY, OF LONDON, ENGLAND.

APPARATUS FOR EXPOSING, DEVELOPING, AND WASHING DRY-PLATES.

SPECIFICATION forming part of Letters Patent No. 524,395, dated August 14, 1894.

Application filed September 21, 1892. Serial No. 446,420. (No model.) Patented in England October 19, 1891, No. 17,860, and in France March 26, 1892, No. 220,420.

To all whom it may concern:

Be it known that I, LADISLAS NIEVSKY, photographer, a subject of the Czar of Russia, residing at 14 Gransden Road, Shepherd's Bush, London, England, have invented certain new and useful Improvements in Apparatus for Dry-Plate Photography and for Developing, Fixing, and Washing the Plates without the Use of a Dark-Room, (for which I have received Letters Patent in Great Britain, No. 17,860, bearing date October 19, 1891, and in France, No. 220,420, bearing date March 26, 1892;) and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has for its object the production of a cheap and convenient combined apparatus for dry plate photography and for developing, fixing and washing the said plates after exposure and that by broad day light in an expeditious manner and without the use of the ordinary dark room and it consists in structural features and combinations of co-operative elements as will hereinafter be fully described.

The apparatus is composed of the following main parts, viz: an upper magazine containing a convenient number of dry plates, an intermediate camera into which one plate at a time is delivered from the magazine by suitable mechanism and a lower tank into which the plate after having been exposed is by suitable mechanism delivered and wherein the picture on the plate is successively developed, fixed and washed; the liquids for effecting these operations being delivered into the tank and emptied therefrom by pneumatic action and without the operator touching the liquids.

Figure 1 of the accompanying drawings is a vertical longitudinal section through the apparatus. Fig. 2 is a rear elevation; Fig. 3 a plan section on line *a b* of Fig. 2 showing the slide B drawn back to uncover the opening in the top of the stand leading to the tank A; Fig. 4 a plan of under side of body of camera; Fig. 5 a plan of the dry plate magazine and Fig. 6 is a plan section of a device for filling the magazine.

M is a magazine for holding a convenient number of dry plates N: it is provided with a follower O having lugs or extensions O' which are guided in upper and lower grooves or chambers M' on guides P provided with helical springs P'. The front of the magazine M is covered by a laterally guided lid Q which can be slid up for inserting a fresh number of dry plates N and in which works vertically a slide R. A catch U is pivoted to the upper face of the magazine in the position shown at Fig. 5 and keeps the lid Q from rising (when the slide R is raised) said catch projecting over one edge of said lid Q and W is a spring with projection W' that projects over, and holds the catch U securely in that position.

The magazine M is fixed on the body I of the camera and the latter again is mounted so as to be capable of sliding in dovetail guides F or otherwise on the top of a tank A and thus after exposure of the plate bringing the camera directly over the aperture of the tank for allowing the said plate to be dropped into the tank without being exposed to the light. When the camera I is in the position shown in Fig. 2 the aperture of the tank is covered by a sliding lid B.

The sensitized plate as it descends from the magazine is guided and held in proper position in vertical grooves I' formed by suitable cleats I², secured to the sides of the camera, its lower edge resting on a spring actuated slide G, the said grooves also serving to guide the plate into the tank A when the camera is properly positioned, as explained hereinafter.

Fig. 1 is a slide plate at the bottom of the camera I and K Figs. 1 and 4 is a lever for pulling the slide back against the pressure of one or two helical springs L that have bearing on a cleat or cleats G' secured to slide plate G.

The tank A serves to receive the plates one by one for developing, fixing and washing them. It is fitted back and front with non-actinic glass panes E for examining the interior.

DD' and D'' are hollow india rubber bulbs adapted to contain respectively developing liquid, fixing liquid, and water.

C C' and C'' are taps on the flexible pipes

H H' and H'' for closing and opening communication between the tank A and the bulbs D D' and D''.

In order to prevent undue splashing up of the liquids when admitted to the tank I prefer to provide the latter with a deflector plate A'. The tank is made of metal or other suitable opaque material not injuriously affected by the liquids used and made detachable from the framing S of the apparatus, the turn buttons T holding it in place; after the day's work has been done the tank and its appurtenances may thus be detached from the framing and thrown into a pail of water and rinsed.

The magazine M is filled with dry plates after removal of the lid Q by means of the box shaped device Z shown in Fig. 6, and which is made of a size to fit the interior of the magazine. The plates N in this box are transferred to the interior of the magazine without exposure to the light by first removing the lid Z' and then applying the box Z against the piston O and pushing the plates into the magazine M by pressing the finger against the plate X, the box Z having an aperture at the outer end for that purpose. It will thus be observed that by my invention the use of a dark room is obviated in the entire process, beginning with the filling of the magazine M and ending with the delivery of a finished photograph from the tank A.

The action or mode of using the apparatus is as follows: The magazine M having been filled with sensitized dry plates N in the manner described and the lid Q having been put on and fixed the slide R is raised so that the follower O by means of the spring P pushes the dry plates forward whereby the rearmost dry plate takes the position directly under the raised slide R. By again depressing the latter the said dry plate is pushed down into grooves I' in the camera body I and held in proper position for exposure. When it has been duly exposed, and the picture formed thereon is to be developed and fixed, the camera I is slid along so as to cover the opening into the tank A, the slide G drawn back by the lever or handle K and the dry plate in the camera I thus allowed to drop into the tank. The tap C is then opened and developing liquid forced into the tank, by squeezing the ball D until the required level of liquid is obtained in the tank, as can be observed through the panes E, whereupon the tap C is closed, the ball D retaining a compressed condition by the pressure of the atmosphere. When the picture on the dry plate has been sufficiently developed the tap C is opened the liquid allowed to run back into the ball D and the tap C closed. In the same manner the fixing liquid is thereupon forced into the tank A and in due course returned to the ball D' and subsequently the washing water forced into the tank A and returned into the ball D''. The picture having

been thus developed, fixed and washed the camera I is pushed back from over the tank opening and the plate is removed from the tank by means of a suitable pair of pinchers. While one photograph is being developed and fixed in the tank another can be taken in the camera the sliding cover B protecting from the light the plate while being developed and fixed in the tank A.

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

1. In a dry plate photographic apparatus, a tank constructed to contain a dry plate in an upright position, said tank provided with suitable sight glasses, with a plurality of valved pipes in the bottom thereof, and with a deflector plate A' arranged above the outlet of said pipes, in combination with a corresponding plurality of compressible holders for the reception of different liquids, said holders adapted to be connected to the pipes, whereby developing, fixing, and washing liquids can be successively introduced into and withdrawn from said tank and each liquid caused to rise gradually over the surface of the plate, for the purpose set forth.

2. In a dry plate photographic apparatus, a tank of slightly greater cross sectional area than the dry plate, said tank having ends diverging from the bottom upwardly and provided with suitable sight glasses in its opposite side walls, and with a plurality of valved pipes in its contracted bottom, in combination with a corresponding plurality of compressible holders for the reception of different liquids adapted to be connected with said pipes, whereby developing, fixing, and washing liquids can be successively introduced into and withdrawn from the tank, for the purpose set forth.

3. In a dry plate photographic apparatus, a tank constructed to contain an exposed plate in an upright position, said tank open at top and having ends diverging in opposite directions, a slide for closing the upper open end of the tank, and a plate rest above the bottom thereof, said tank provided in its side walls above the plate rest with suitable sight glasses, and with a plurality of valved pipes in its bottom, in combination with a corresponding plurality of compressible holders for the reception of different liquids, adapted to be connected with said pipes, substantially as and for the purpose set forth.

4. In a dry plate photographic apparatus, the combination of the support S and the tank A detachably connected therewith and provided with a feed slot in its upper face, and with a guide track on opposite sides of the slot and extending along said support, and a slide for closing the slot, with a camera fitted on said tracks and adapted to slide onto and off the tank, said camera provided with a delivery slot adapted to register with the feed slot of the tank, and a movable plate

rest normally closing the said delivery slot, substantially as and for the purpose set forth.

5 In a dry plate photographic apparatus, the combination with a tank, provided with
 10 a narrow feed opening and means for supplying developing, fixing and washing liquids successively to and withdrawing the same from said tank, of a camera provided with a
 15 delivery slot adapted to register with the feed opening of the tank, and with retaining and guide grooves at opposite ends of the delivery slot, and a movable plate rest normally closing
 20 the last named slot, whereby an exposed plate is automatically transferred from the camera to the tank by manipulating the plate rest, and then developed, fixed and washed
 25 without handling, substantially as set forth.

6. In a dry plate photographic apparatus, the combination with a developing, fixing and
 20 washing tank provided with a narrow feed opening, a slide for closing the same, and a guide track on each side of said opening; of a camera fitted to slide on said tracks, said
 25 camera provided with a delivery slot adapted to register with the feed slot of the tank, and with a retaining and guide groove for the dry plate at each end of the slot, and a movable

plate rest normally closing the said slot, substantially as and for the purpose set forth.

7. In a dry plate photographic apparatus, 30 the combination with the tank A having a feed opening in its upper face and a slide for closing said opening, said tank provided in its sides with a suitable sight glass and with
 35 a plurality of valved pipes in its bottom, the compressible holders D, D', D'', connected with said pipes, and a deflector plate A', serving as a plate rest above the outlet of the
 40 aforesaid pipes, of a camera connected with and adapted to slide onto and off the tank, and provided with a delivery slot adapted to register with the feed slot of the tank, and
 45 with retaining and guide grooves for the dry plate at opposite ends of said delivery slot, and a movable plate rest normally covering the last named slot, substantially as and for the purpose set forth.

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