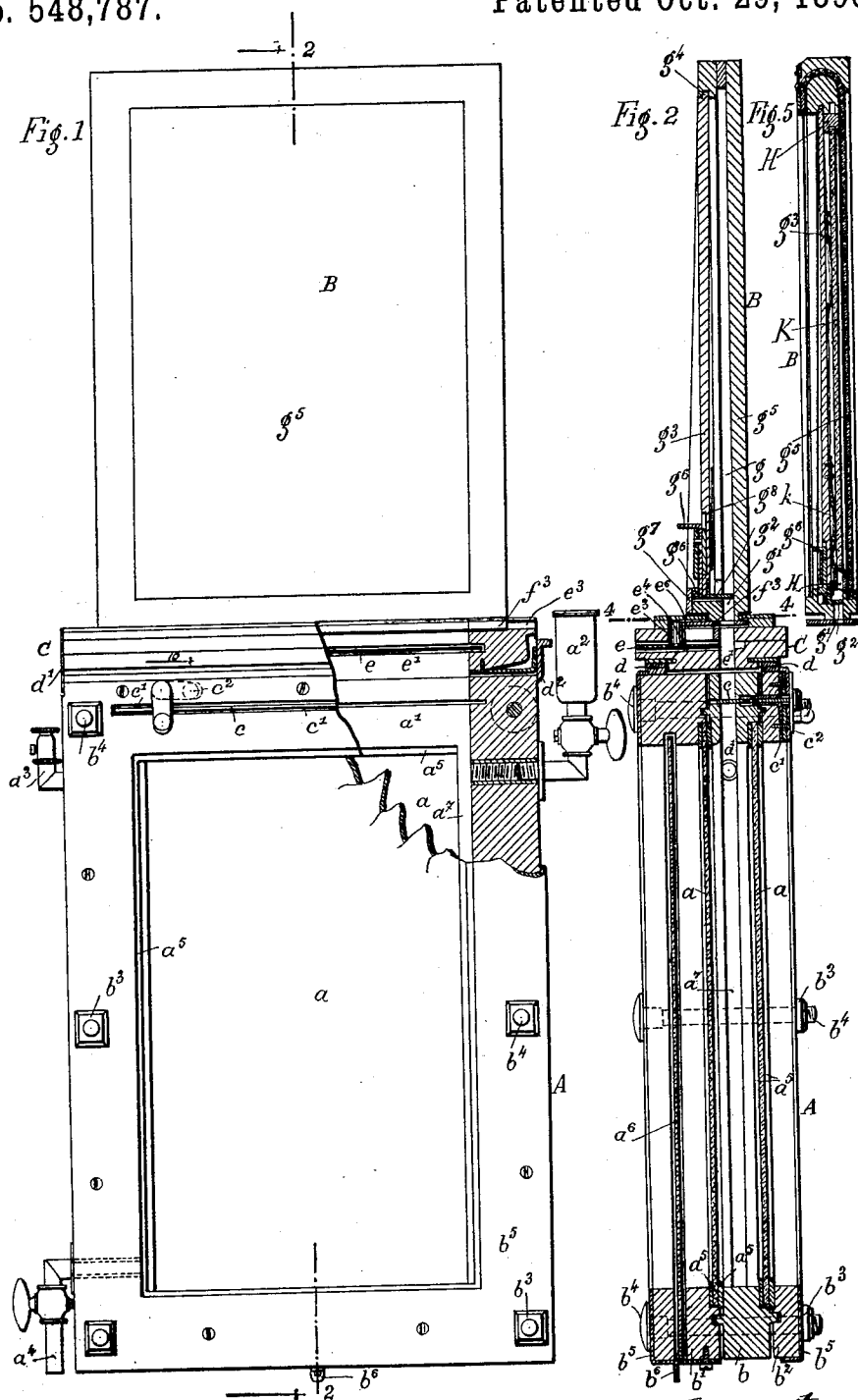


E. POULENC. PHOTOGRAPHIC DEVELOPING TANK.

No. 548,787.

Patented Oct. 29, 1895.



Witnesses:-

Fred Haynes
George Barry.

Inventor:-
Emile Pouenc
by attorneys
Brown & Seward

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Fig. 3.

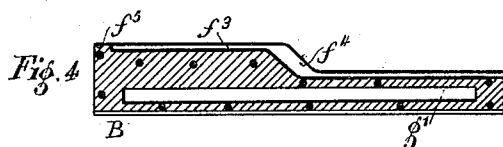
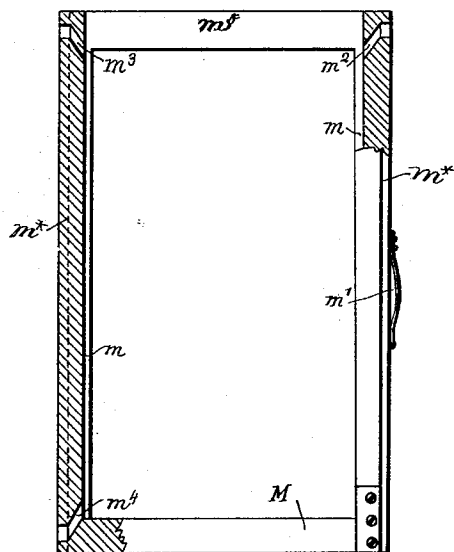


Fig. 6



Witnesses:-
Fred Hayes
George Barry.

Inventor:-
Emile Pouenc
by attorneys
Howard Howard

UNITED STATES PATENT OFFICE.

EMILE POULENC, OF PARIS, FRANCE.

PHOTOGRAPHIC DEVELOPING-TANK.

SPECIFICATION forming part of Letters Patent No. 548,787, dated October 29, 1895.

Application filed December 15, 1894. Serial No. 531,923. (No model.)

To all whom it may concern:

Be it known that I, EMILE POULENC, a citizen of the Republic of France, and a resident of Paris, in the said Republic of France, have
5 invented a new and useful Improvement in Portable Developing-Tanks for Photography, of which the following is a specification.

The object of my invention is to provide in a very small compass a portable developing-
10 tank in which the development of photographic impressions can be effected in any place in full daylight and, if necessary, immediately after the taking of the impression and out of doors far from any dark-room.

15 This developing-tank has the general form of a frame or plate-holder. It is constructed in such fashion that the plate on which the photographic impression is to be developed can be easily introduced into it without risk-
20 ing its exposure to the light. When once in the tank, the plate is perfectly visible from the exterior through walls of colored glass, with which the tank is provided, to permit the observation of the process of development with
25 the greatest facility, while maintaining the plate sheltered from the chemical rays. The said tank is easily taken apart for the cleaning of all parts of its interior, which is a condition essential to the success of its opera-
30 tions. At the same time precautions are taken to assure an absolute tightness, though the glass walls with which the tank is furnished are completely removable. This removability facilitates the cleaning and permits the rapid
35 replacement of any glasses which may have been broken. Convenient provision is afforded for filling the tank successively with different liquids necessary and for the discharge of said liquids therefrom in such man-
40 ner that, if necessary, not only the development and the washing of the plate, but also its fixation, may be performed without taking it out of the tank.

For the introduction into the tank of the
45 plate to be developed I provide a special holder, into which, after the impression is taken upon it, the plate is transferred from the photographic holder in which the impres-
50 sion has been taken. This transfer is performed under any dark veil whatever, with which the whole is surrounded, without its being necessary to enter into a dark-room.

This auxiliary frame or holder, which constitutes a sort of intermediary lock between the holder in which the impression is taken and
55 the developing-tank, is organized in such manner as to be adapted upon a removable frame, which surmounts the developing-tank and forms an automatic shutter, and which when
60 in this position permits by a very small movement the rapid falling of the plate into the tank. This special frame or holder may be so constructed as to serve as the holder in which the impression is taken, and thus render the above-mentioned manipulation un-
65 necessary.

Figure 1 of the accompanying drawings represents a front view, partly in section, of my developing-tank furnished with its aux-
70 iliary holder. Fig. 2 represents a transverse vertical section in the line 2 2 of Fig. 1. Fig. 3 is a plan view of the intermediate frame, which is interposed between the auxiliary holder and the "developing-tank," properly so
75 called. In this figure there is represented in dotted lines the sole of the auxiliary holder partly engaged in the corresponding slideway of the intermediate removable frame. Fig. 4 represents a horizontal section of the aux-
80 iliary holder in the line 4 4 of Fig. 2. Fig. 5 represents a vertical section of an analogous holder, but constructed to serve as the holder in which the photographic impression is taken. Fig. 6 is a view partly in elevation and
85 partly in section of an intermediary reducing-frame which is placed in the developing-tank for the development of plates of smaller dimensions than the maximum for which the tank is constructed.

Similar letters of reference designate corre-
90 sponding parts in all the figures.

A in the drawings is the "developing-tank," properly so called; B, the auxiliary holder, and C the intermediate frame, which serves to adapt the holder B to the tank A. This
95 frame C contains an automatic safety-shutter to prevent daylight from reaching the plate which has fallen into the tank, if before the withdrawal of the holder B the closing of the shutter with which the developing-tank is
100 furnished should have been forgotten.

The developing-tank A is constituted by a rectangular wooden frame, in which are set two walls *a* of red glass. The space com-

prised between these two glasses constitute the developing-chamber into which the plate is introduced through the slot a' at the top and the chemical reagent liquids are introduced by the feeder a^2 , which is furnished with a stop-cock.

a^3 is a vent at the top of the tank for the exit of air during the filling, and a^4 is an opening furnished with a cock for discharging the liquids.

When the plate to be developed is in the tank, its lateral edges are engaged in grooves a^7 in the tank in such manner that they cannot come in contact with the glasses a , and that they will be always well bathed by the liquid.

As I have above mentioned, I have constructed the tank in such manner that it may be very easily taken apart for the purpose of facilitating the cleaning and also the replacement of broken glasses. For this purpose the wooden frame is composed of three parts b b' b^2 , which are tongued and grooved together and receive between them in rabbets the glasses a , as clearly shown in Fig. 2. The slot a' , provided for the entrance of the plate, is in the middle element b . In order to insure tightness, the glasses are furnished at their edges on both faces with packing-strips of india-rubber a^5 , against which the edges of the frame are pressed by nuts b^3 on assembling-screws b^4 , which pass through the three thicknesses b b' b^2 of the frame. It will be understood that by removing these nuts the developing-tank may be taken all to pieces.

To insure the solidity and rigidity of the whole structure the exterior faces of the outside elements b' b^2 of the frame are covered with sheet-iron b^5 , which receives the pressure of the nuts b^3 and the heads of the assembling-screws b^4 .

In the example represented the element b' of the frame has in its bottom a slot and in its sides a groove, into which may be introduced a supplementary red glass a^6 , held in place by a button b^6 . Now if it should be desired to take out this glass for the more easy observation of the progress of development it is sufficient to turn this button in such manner as to leave open the slot in the bottom of the frame through which the glass has been introduced. The element b^2 may also, like the element b' , be provided with a groove for the reception of a second additional red glass.

The developing-tank is furnished with a shutter, which permits the closing of the slot a' , through which the plate to be developed is introduced. This shutter consists of a small plate of ebonite c , normally located in the slot in the outside element b^2 and capable of entering and closing the slot a' in the middle element b . This shutter c is constantly drawn outward by small india-rubber springs c' , fastened at their ends to the element b^2 and passing through holes in the said shutter c . (See Fig. 2.) Buttons c^2 maintain this shut-

ter in its inner position shown in Fig. 2, in which it closes the slot a' ; but if these buttons are turned aside to the position shown in dotted outline in Fig. 1 the said shutter c , obeying the action of the india-rubber springs, slides outward and leaves the slot a' open. Finally, the developing-tank has in its upper part a slideway d for the reception of the intermediate frame C. The latter is put in place by sliding it in the direction of the arrow 10 in Fig. 1. A stop d' , with which it is furnished at one end, stops it when in place. Aspring-catch d^2 , arranged at its opposite end, hooks over the body of the tank to prevent the withdrawal of this frame C until the said spring-catch is raised by hand. The said frame C has in it a vertical slot e' , which forms a prolongation of the slot a' in the box to permit the plate to descend into the tank. This slot e' is kept closed by the safety-shutter, which I have hereinbefore mentioned. This shutter is constituted by a small sliding plate e , Figs. 1 and 2, which slides within the frame C across the slot e' , and which is ordinarily held across the said slot e' by springs e^2 , Fig. 3. The shutter e uncovers this slot automatically when the auxiliary holder B is placed upon the intermediate frame C. For this purpose the said holder is furnished with a metallic sole f^3 , which is engaged by a movement in the direction of the arrow 11, Fig. 3, in a corresponding slideway e^3 in the frame C. During this movement the inclined edge f^4 of the sole f^3 encounters a pin e^4 , affixed to the shutter e , and by its action on this pin pushes the shutter laterally by overcoming the action of the springs e^2 in such manner that the slot e' is opened automatically, as shown in Fig. 2. When the holder B in sliding in the direction of the arrow 11, Fig. 3, has arrived in the position which it should occupy upon the frame C, it is stopped by the meeting of its projection f^5 (see Fig. 4) with a shoulder e^5 (see Fig. 3) on the covering-plate e^6 of the slide e^3 .

The holder B contains a space g for the reception of the plate, which is introduced into it through the slot g' , which prolongs the said space to the exterior and which comes directly above the slots e' and a' when the said holder is in place upon the frame C.

The plate is retained in the holder B by a shutter-plate g^2 , which closes the slot g' . This plate is carried by the wall g^3 of the holder, which is so articulated at its upper part, as shown at g^4 , Fig. 2, that its lower part may be moved to or from the opposite wall g^5 . When it has been moved toward the said wall g^5 , as shown in Fig. 2, the shutter g^2 prevents the plate from coming out, the wall g^3 being retained in this position by the engagement of a small bolt g^6 behind the plate g^2 ; but if this bolt be raised above this plate the springs g^8 push the wall g^3 and the shutter g^2 outward, which permits the introduction or exit of the plate.

The details of construction having been

described, I will explain the mode in which the apparatus is used.

The first operation to be performed is to place the plate in the auxiliary holder B. For this purpose, this holder being separated from the rest of the apparatus, the bolt g^6 is raised in such manner as to permit the opening of the shutter g^2 . Then the plate is taken out of the holder in which it was obtained and introduced through the slot g' into the space g . The wall g^3 of the holder is then pushed inward and the bolt g^6 , which is subject to the action of the spring, engages with the plate g^7 in such manner that the space g containing the plate is closed. It must be understood that the operation of charging the holder B should be done while the plate is sheltered from the light, and for that purpose it suffices to perform this operation in a sort of sleeve or bag of black cloth, into which the operator introduces his arms through suitable openings. This operation is performed easily by feeling, without the help of sight.

If it be desired to avoid the transportation of the impressed plate into an auxiliary holder, the holder B itself may be used as the holder in which to take the impression. In order that this may be possible, the fixed wall g^5 of the holder is replaced by a movable curtain, as shown in Fig. 5. When the holder B is charged and closed, it is taken out of the dark-sleeve and slid into place upon the intermediate frame C, which movement produces the opening of the shutter e . The shutter e is then opened after turning the buttons e^2 into the position shown in dotted outline in Fig. 1. The operator then raises the bolt g^6 to open the slot g' and the plate falls into the developing-tank. He then closes the shutter e by pushing it inward and by returning the buttons e^2 to the position shown in full outline.

It may easily be understood what remains to be done is to develop the plate, to wash it, and then to fix it, if desired. The glass walls of non-actinic color permit the observation of the progress of these operations without danger.

When it is desired to clean the apparatus, the intermediate frame C is removed and the nuts b^3 are unscrewed. The apparatus can then be taken to pieces and the several parts separately washed.

The apparatus may be constructed for plates of large size and yet be made to serve at need for those of smaller size. For this purpose I introduce into the developing-tank and into the holder B intermediaries, as is done in analogous cases in ordinary plate-holders.

The intermediary which I introduce into the developing-tank is represented in Fig. 6 and consists of a reducing-frame, which is designated as a whole by the letter M. This frame has longitudinal grooves m in the interiors of its right and left hand sides, which

communicate with a slot m^5 in its upper end, and the said frame has on the exterior of each of its sides a longitudinal tongue m^* , said tongue on the right side being shown in Fig. 6. To permit the introduction of this frame M into the developing-tank, the element b^2 of the said tank is removed and the tongue m^* on the right-hand side of the said frame M is inserted laterally into the vertical groove a^7 of the element b , thereby flattening the spring m' , which is attached to the exterior of the said tongue m^* . The corresponding tongue m^* on the opposite side is then brought opposite the corresponding groove a^7 of the element b . On the spring m' being allowed to assume its normal condition it presses the frame to the left, and so engages the tongue m^* on the left with its corresponding groove a^7 . The reducing-frame M is thus solidly secured in the two grooves a^7 of the element b by the pressure of the spring m' . The element b^2 is then replaced and secured by the screws b^4 and nuts b^3 . The plate to be developed is introduced through the slot a' in the top of the element b and through the slot m^5 in the reducing-frame into the grooves m of the said frame.

Holes m^2 m^3 m^4 are provided in the reducing-frame M in proper relation to the conduits a^2 a^3 a^4 of the developing-tank to permit the access of liquid to the plate, the escape of air from the tank, and the discharge of the liquid therefrom.

In Fig. 5 H represents another intermediary frame or holder, which has been placed in the holder B in the same manner as the intermediary or reducing frame M is placed in the developing-tank. The lower side of this intermediary frame H has in it a slot to allow the passage of the plate K, which is retained in a suitable position for receiving the photographic impression by resting upon a spring k , affixed to the movable wall g^3 . When the latter is spread outward by reason of the withdrawal of the bolt g^6 , the extremity of the spring k passes from under the plate K at the same time that the shutter g^2 opens the slot g' and permits the plate K to fall into the intermediary M of the developing-tank.

By the term "plate" in this specification I mean to include a plate or sheet of any material upon which a photograph is taken, whether it be a positive or negative.

Although the accompanying drawings represent the construction of the apparatus which I preferably employ, I do not limit myself, strictly, to the details represented and described. For instance, the developing-tank may be constructed of any other suitable material than wood. Moreover, the intermediate frame C may be dispensed with and the holder B be attached directly to the developing-tank, which would in that case be furnished with a shutter like e or like c , or with shutters like both of these, and any other suitable mode of securing the elements b b' b^2 together and of securing the glasses may be employed.

What I claim as my invention is—

1. A portable developing tank for photography constituted of three separable parts b b' b^2 for the reception of the holder B containing a plate to be developed, substantially as herein described.

2. The combination with the developing tank A consisting of the three separable parts b b' b^2 in the middle one of which is a slot for the entrance of a plate, of a sliding shutter normally located in one of the outer parts, springs consisting of strips of india rubber attached to said shutter and to the tank for drawing said shutter across said slot and closing the entrance to the tank, and buttons on the tank for retaining the shutter in the closed position, substantially as herein described.

3. The combination with the developing tank A and the plate holder B, of the intermediate frame C containing a passage e' for the transit of the plate from said holder to said tank, a shutter e in said frame C for closing said passage and springs for automatically closing said shutter, substantially as herein described.

4. The combination with the developing tank A, the intermediate frame C, and the plate holder B adapted to slide into place on the said frame, of the sliding shutter e fitted

to the said frame and furnished with a pin e^4 , and the metallic sole f^3 having an inclined edge f^4 to act upon said pin for automatically opening said shutter by the act of placing the said holder on the said frame, substantially as herein described.

5. The combination with the plate holder B having an opening in the bottom and having an inwardly and outwardly movable wall g^3 , of a shutter plate g^2 attached to said movable wall for closing said opening when the said wall is moved inward, a bolt g^6 applied to said movable wall for keeping said shutter closed and a spring g^8 applied to said movable wall for opening said shutter, substantially as herein set forth.

6. The combination with the developing tank having conduits a^2 and a^4 for feeding and discharging the liquids and a vent conduit a^3 , of a reducing frame M having openings m^2 m^3 m^4 corresponding with said conduits, substantially as and for the purpose herein described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EMILE POULENC.

Witnesses:

ALCISTE FABE,
HENRY THIELSE.