F. A. PARKMIRE.

PHOTOGRAPHIC DEVELOPING AND FIXING APPARATUS.

APPLICATION FILED NOV. 5, 1908.

987,821. Patented Mar. 28, 1911.

2 SHEETS—SHEET 1.

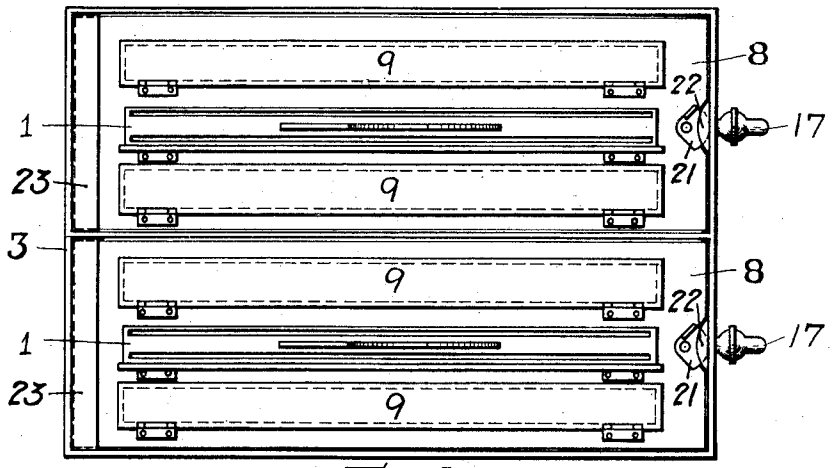

Fig. 1.

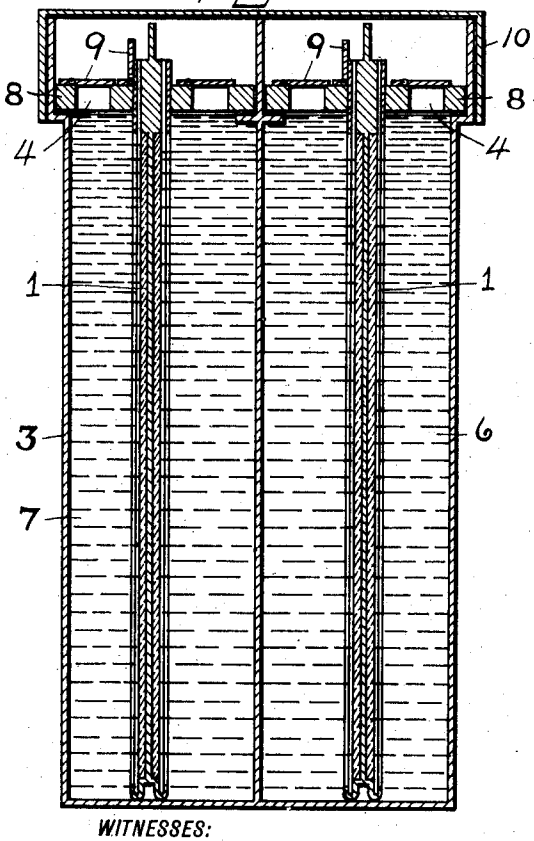

Fig. 2.

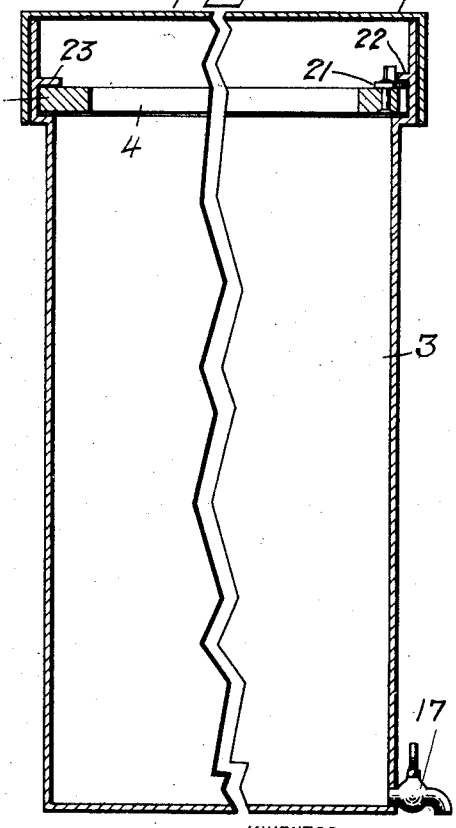

Fig. 3.

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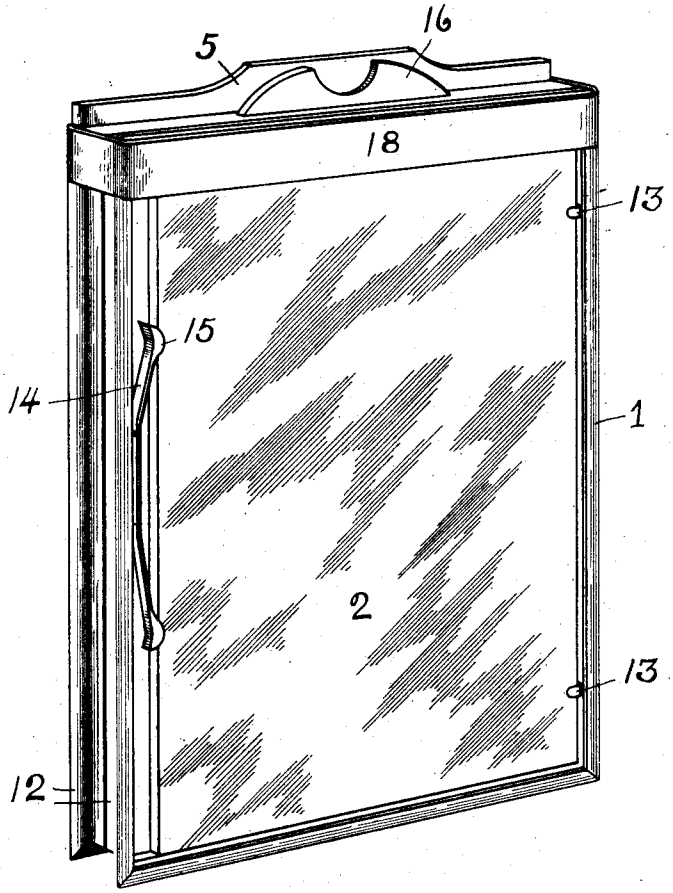

Fig. 4.

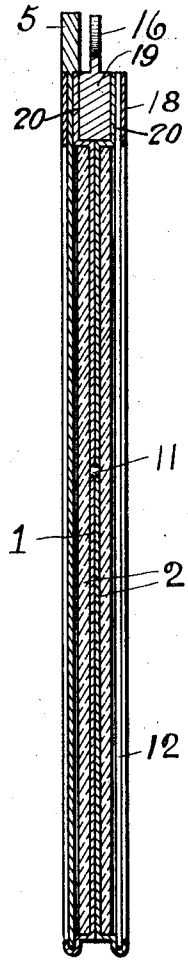

Fig. 5.

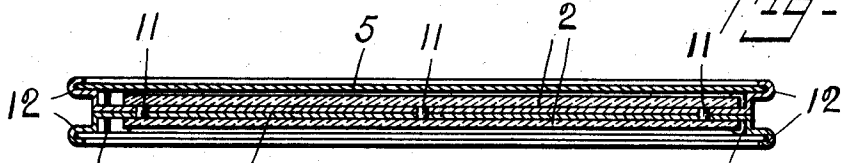

Fig. 6.

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PHOTOGRAPHIC DEVELOPING AND FIXING APPARATUS.

987,821. Specification of Letters Patent. Patented Mar. 28, 1911.

Application filed November 5, 1908. Serial No. 461,223.

To all whom it may concern:

Be it known that I, FRANK A. PARKMIRE, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Photographic Developing and Fixing Apparatus, of which the following is a specification.

This invention relates to photographic developing and fixing and the objects of my improvement are, to develop and fix plates and films in daylight without a dark-room, and without removing from the holder, and to provide a tank and a plate-holder suitable for this purpose; facility of operation; lightness and compactness of the apparatus; and durability. These objects I attain by means of the apparatus illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the developing tank and plate-holders therein; Fig. 2, a vertical sectional view of the same; Fig. 3, a broken side elevation of the same; Fig. 4 is a perspective view of the plate-holder; Fig. 5, a vertical sectional view of the plate-holder; and, Fig. 6 is a horizontal sectional view of the plate-holder.

Similar reference numerals refer to similar parts throughout the several views of the drawings.

With my method I am able to develop and fix in day-light, without the use of a dark-room or changing-bag. To accomplish this, I take the plate-holder, 1, containing the exposed plate, 2, as taken from the camera and insert it in a tank, 3, through an opening, 4, provided in the top of the tank for the purpose and so formed that the plate-holder fits snugly, so that all light is excluded from the inside of the tank. The tank 3 is partly filled with developer before inserting the plate-holder, just enough developer being poured in to fill the tank after the plate-holder has been inserted. I then withdraw the slide, 5, from the plate-holder, thus exposing the plate 2 fully to the action of the developer. When it is judged that the plate is properly developed, the slide is inserted and the plate-holder, still containing the plate, now developed, is withdrawn from the tank. It is then immediately inserted in a second tank, or as shown in the drawings, taken from one compartment, 6, of tank 3 and inserted in another compartment, 7, containing fixing solution. This fixing tank or compartment is also provided with an opening adapted to receive the plate-holder snugly and exclude the light. The slide is now removed, exposing the plate to the action of the fixing solution. When the plate is thoroughly fixed, the plate-holder and plate are withdrawn from the tank. The plate may now be removed from the plate-holder and washed, or it may be left in the plate-holder and washed and dried, without removing. It will be understood that, if the plate is not removed from the plate-holder it will not be so liable to injury from handling. In order to carry out this process, the special apparatus shown in the drawings, or substantially similar apparatus is required.

The tank, 3, is preferably made with two compartments, 6 and 7, the one for containing developer and the other for containing fixing solution. The top of each compartment of the tank is closed by a cover, 8, which is provided with openings, 4, adapted to receive the plate-holder snugly, so that the tank is light-tight when the plate-holder is inserted. To hold the cover 8 in place I provide a projection 23, on the inner side of the tank, under which one end of the cover 8 is placed, the other end of the cover 8 is provided with a cam 21, that engages with a lug 22. I prefer to provide a number of openings 4, so that a number of plates, in several plate-holders, may be developed simultaneously.

The openings 4 are provided with light-tight valves, 9, so that, if only some of the openings are occupied by plate-holders, the light may not be admitted through the remaining openings. The valves 9 may be raised for the purpose of inserting the plate-holders. It will be understood that if a number of plate-holders are to be placed in the tank, none of the slides are removed until all the plate-holders are in place in their openings, and that all of the slides must be replaced in their plate-holders before any of the plate-holders are removed from the tank. Unless this is done, light may be admitted through an opening 4 and the plates be light-struck. The same method of procedure must be followed also when the plates

are placed in the fixing solution, except that the slides need not be inserted before the plate-holders are removed from the fixing tank or compartment. A removable cover, 10, is provided for the tank 3, which may be applied while the plates are developing and when the tank is not in use.

It is obvious that the ordinary wood plate-holder is not suitable for this process, because it cannot safely be immersed in the solutions. I have, therefore, provided a new plate-holder, 1, made entirely of metal, preferably of aluminum, for lightness, or of hard rubber, or other material that is impervious to the solutions. The septum and the slides are also made of impervious material. I have shown the plate-holder 1, in the drawings, as made of sheet metal pressed into form by means of dies. I have made a double plate-holder by riveting two single plate-holders together by means of rivets, 11, placing them back to back, and placing a bar 19 in the space formed between the rims 20, and placing a band, 18, around the top, the bottoms or back walls of the single plate-holders forming the septum of the completed double plate-holder. The metal is bent at 12, to form a groove to receive the slide 5. An advantage attained by this construction of sheet material is, that the plate-holder can be made much smaller in every dimension than the conventional wood plate-holder, and very light, as well as impervious to the solutions.

The band 18, being of thin material, springs in against the slides, and when the slides are removed the band springs in against the rims 20 about one hundredth part of an inch, thus closing the opening and rendering the use of light-excluding valves unnecessary. The size of the plate-holder around the band 18 is such as to make a close fit in the opening 4 of the cover 8.

Buttons, 13, are provided at one side of the plate-holder, under which the edge of the plate is inserted, and the opposite edge of the plate is held by a spring, 14, which is provided at each of its ends with a lip, 15, to extend slightly over the front of the plate. By this construction the plate is held firmly in place, and, being on the sides, provision is made for the easy removal of the plate from the holder without injury to the emulsion, because the hand can more easily reach across a plate than extend over it lengthwise.

To remove the plate from the plate-holder, the plate-holder is held in a vertical position so that the spring 14 will be on the lower side, a slight downward movement now given will impart sufficient momentum to the plate to overcome the resistance of the spring 14 and allow the plate to descend a distance sufficient for the upper edge of the plate to clear the button 13 and tilt forward in a position for the edge to be caught by the thumb, by reversing the position of the hands the plate may be withdrawn from beneath the lips 15 of spring 14 and grasped by the fingers without touching or marring the sensitized surface.

A handle, 16, is provided at the top of the plate-holder, along the median line of bar 19, by means of which the plate-holder may be handled and withdrawn from the tank finally when the slides are removed.

A cock, 17, is provided at the bottom of each compartment of tank 3, for removing the solutions, or otherwise draining the compartments.

Having thus described my invention, so that any one may make the apparatus and carry out the process, I claim—

1. In a photographic developing and fixing apparatus, a plate-holder comprising a plate-recess, a rigid plate-retaining device near one side, and resilient plate-retaining devices on the other side of said plate-recess, a slide, grooves for said slide extending along the side and bottom walls of said holder, a rim extending from the top wall of said holder, a band disposed around the holder over said rim, in combination with a tank adapted to hold developing fluid and having a cover provided with openings for the admission of said holder.

2. In a photographic developing and fixing apparatus, a plate-holder adapted to resist the action of the developing fluid, in combination with a tank comprising a body portion having an overhanging flange around the top thereof, a cover adapted to fit in said flanged portion, said cover provided with openings for the admission of said plate-holder.

3. In photographic developing and fixing apparatus, a plate-holder comprising integral sheet-metal back and side walls, a slide-groove formed in the bottom and side walls, a sheet-metal slide, and a sheet-metal band around the top of the plate-holder over said slide and adapted to spring in and close the slide-opening light-tight when said slide is removed.

4. In a photographic developing and fixing apparatus, a sheet-metal plate-holder comprising a back, side-walls, slide-groove, and top-rim formed integrally, in combination with a tank comprising a body portion having an over-hanging flange around the top thereof, a cover adapted to fit in said flanged portion, said cover provided with an opening for the admission of said plate-holder and a valve to close said opening.

5. In a photographic developing and fixing apparatus, a plate-holder comprising units, each consisting of a back, side-walls, slide-grooves on three sides and a rim on the remaining side of said walls, formed in-

tegrally, secured back to back with a bar 19, between the rims 20, in combination with a tank comprising a body portion having an over-hanging flange around the top thereof, a cover to fit in said flanged portion, said cover provided with an opening for the admission of said plate-holder, a valve to close said openings, means for securing said cover in place, and a cover adapted to fit over said flanged portion.

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