R. B. HUTTON.

COMBINED DARK SLIDE AND DEVELOPING DISH FOR COLOR PHOTOGRAPHY.

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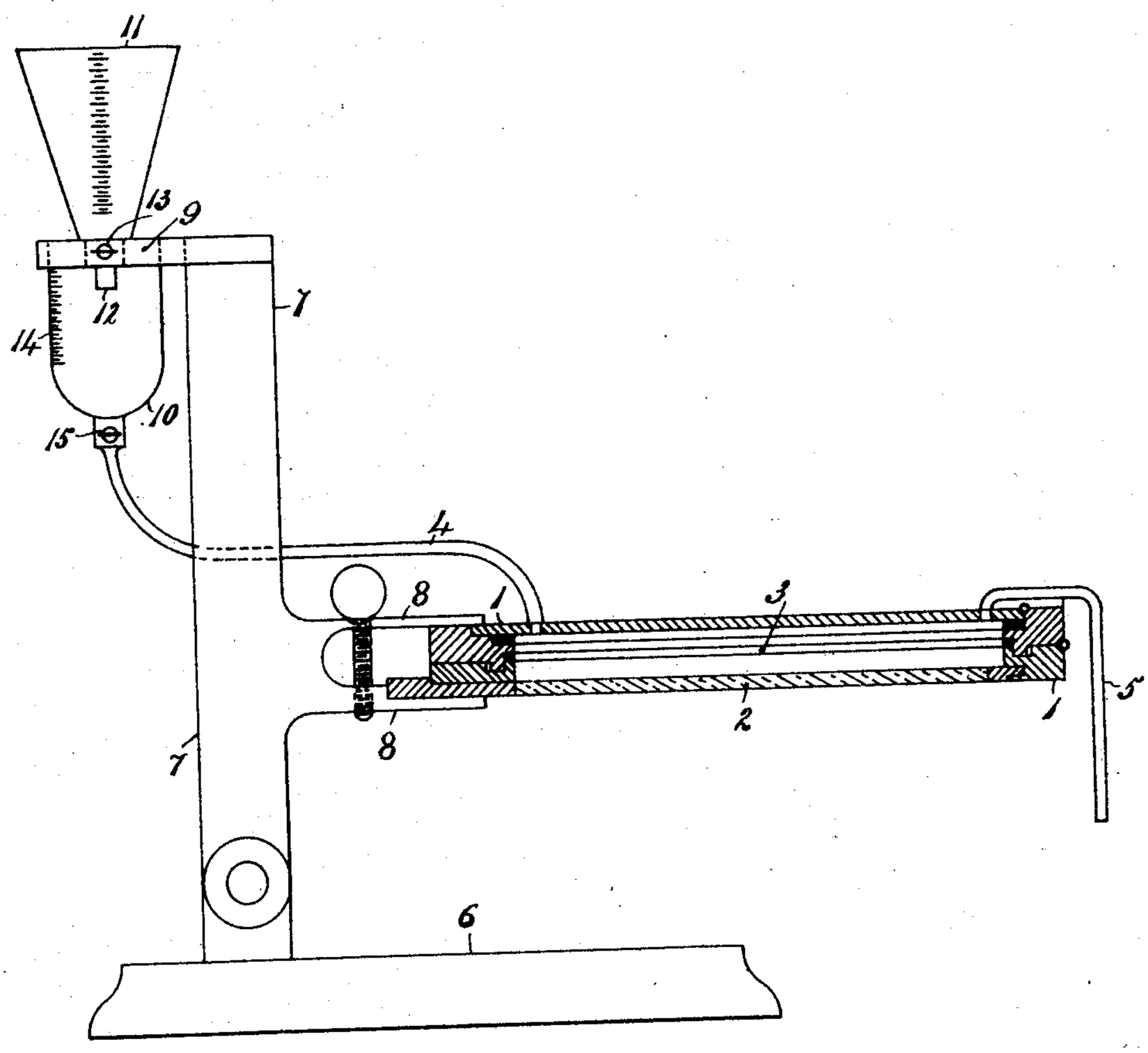
978,590. Patented Dec. 13, 1910.



Witnesses.

L. P. Hines.

Thomas V. Sullivan

Inventor.

R. B. Hutton,

By Connolly Bros

attorneys.

UNITED STATES PATENT OFFICE.

ROGER BARWICK HUTTON, OF PITSEA, ENGLAND.

COMBINED DARK SLIDE AND DEVELOPING-DISH FOR COLOR PHOTOGRAPHY.

978,590. Specification of Letters Patent. Patented Dec. 13, 1910.

Application filed October 15, 1908. Serial No. 457,959.

To all whom it may concern:

Be it known that I, ROGER BARWICK HUTTON, a subject of the King of Great Britain, of "Heslerton Cottage," Pitsea, in the county of Essex, England, gentleman, have invented a new and useful Combined Dark Slide and Developing-Dish for Color Photography, of which the following is a specification.

This invention relates to a combined dark slide and developing dish for color photography and it has for its object to provide a simple, cheap, and effective device for the purpose specified.

The accompanying drawing is a diagrammatic illustration of one practical embodiment of my invention.

According to my invention the dark slide 1 is so constructed that when a plate, such as the screen plate 2 used in the autochrome process, is inserted there is provided at the back thereof a water-tight space 3, that is to say on the side remote from the lens of the camera. Two tubes 4 and 5 communicate with this space 3 and they are attached at opposite corners of the screen-plate 2.

The exposure having been made in the ordinary way, the dark slide 1 is removed and attached to a special form of stand 6 having an arm 7 projecting upward and pivotally attached to the stand 6 at 7′. To this pivoted arm 7 is attached or formed therewith, at a short distance above the pivotal point, a strong clip 8 for holding the dark slide 1; and, at the upper end of said arm 7 is provided a suspension bracket or support 9 for the measuring funnel 10 hereinafter described.

The liquids used for developing are poured into a funnel 11 which empties into the measuring funnel 10 temporarily connected to the tube 4 leading to the hollow space 3 behind the plate 2 which now becomes the developing dish, the bottom whereof is constituted by the film side of the plate to be developed.

The measuring funnel or apparatus is provided for insuring the using of a definite quantity of each of the ingredients of the developer according to the process employed. This apparatus consists of two vessels 10, 11 suitably arranged one above the other and they are carried by the suspension bracket 9 aforesaid, communication therebetween being provided, said communication conveniently consisting of a tube 12 fitted with an adjustable cock or valve 13 such as a glass tap. A scale 14 is fitted in connection with this measuring apparatus, to measure the quantity of already mixed developer which is to be fed to the space 3.

An air vent is arranged in the lower vessel 10 to insure smooth working of the apparatus and the upper vessel 11 is suitably graduated.

The lower vessel 10 is provided with a fairly large discharge opening which is connected by flexible tubing 4 to the dark slide and it is under the control of an adjustable tap or cock 15. The opening of this tap or cock is so regulated as to the time required to exhaust the contents of the vessel 10 that the requisite quantity of developer used may just have left the vessel 10 at the end of the time required for it to act upon and fix the image upon the negative.

The stand 6 for holding the dark slide 1 and measuring and timing apparatus above described is so constructed that while the liquid is flowing through the hollow space and out of the variable outlet said dark slide 1 is in a horizontal position so that the branch tube 5 is out of action. As soon as the measuring vessel is empty the dark slide 1 will by suitable means, be caused to take up an oblique position and the liquid contained at the back of said slide be caused to flow away through the tube 5.

I may arrange for the developer space to be in front of the plate, that is to say between the plate and the shutter, for use in cases where it is desired to employ the plate the usual way around. Furthermore it is not absolutely necessary that the space 3 at the back of the dark slide 1 be absolutely water-tight, so long as the sliding shutter is properly protected with varnish or otherwise from any leakage of chemicals, or a space for developer may be provided at both sides of the dark slide so that it may be used either way around.

By fitting a small glass vessel not shown on to the outlet tube 5 a "well" can be formed for viewing the photograph without pouring away the developer solution, said vessel being furnished with an air vent.

The operation of my improved dark slides and developing dish is as follows:—The dark slide 1 containing the exposed negative being placed so that the film of the plate is

uppermost is held by one corner in the clip 8, the inlet tube 4, for the developer is then connected to the lower vessel 10, of the measuring apparatus. The solution to be used is poured into the upper vessel 11, and the cock or tap 15 below same turned on to fill the lower vessel 10 to the requisite level. The adjustable tap 15 below this lower vessel 10 is now turned to the desired opening when the negative will be gradually flooded until the time for development is expired, whereupon the lower vessel 10 becoming lighter and the dark slide heavier, the latter will overbalance the former and tilt downwardly the arm 7 turning on pivot 7′ and the solution flow out through the discharge outlet 5.

The exact period at which the weight of the dark slide will overbalance the weight of the other parts connected to arm 7, will be governed by the adjustment of the taps 13, 15 and the amount of fluid which is contained in vessel 11. For instance, if the taps are fully opened the developer will flow rapidly from vessels 11 and 10 into the dark slide and the latter will tilt over and discharge its contents in a comparatively short time, but if the tap is partly closed the flow of the developer will be slower and a longer period will elapse before the tilting movement of the parts takes place. With a given opening of the taps, the period at which the tilting operation will take place, will, of course, depend on the amount of developer originally placed in vessel 11.

The adjustment of the balanced parts and the calibration of the variable taps or cocks will be modified to suit different requirements.

What I claim as my invention and desire to secure by Letters Patent is:

1. A dark slide for color photography having an internal water tight space and inlet and outlet tubes communicating with said space, in combination with a vessel to contain developer and a balanced pivotal support for the slide and vessel, said support being adapted to automatically tilt when the liquor is transferred from the vessel to the slide.

2. The combination with a dark slide having a space to receive developer, of a supporting stand having a vertically disposed arm, pivotally attached to the stand at its lower end, a clamp carried by said arm above the pivot and holding said slide, a vessel to contain developer carried by said pivoted arm and a conduit leading from said vessel to said dark slide and a second conduit leading from said slide.

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

ROGER BARWICK HUTTON.

Witnesses:

FREDERICK SADLER,

FREDK. L. RAND.