

UNITED STATES PATENT OFFICE.

WILLIAM FRASER CLAUGHTON KELLY, OF LONDON, ENGLAND.

PHOTOGRAPHIC DEVELOPER.

935,156.

Specification of Letters Patent. Patented Sept. 28, 1909.

No Drawing.

Application filed February 9, 1906. Serial No. 300,277.

To all whom it may concern:

Be it known that I, WILLIAM FRASER CLAUGHTON KELLY, a subject of the King of Great Britain, residing at 22 Winchendon road, Fulham, in the county of London, England, barrister-at-law, have invented certain new and useful Improvements Relating to Photographic Developers, of which the following is a specification.

10 This invention relates to the development of photographic plates, films and the like and has for its object the combining in tablet form, of the developing agents proper such as metol or hydroquinone, with the "accelerating" chemicals such as alkaline salts, as
15 for example, borax, so as to contain the two agents in one and the same tablet.

For developing say, a quarter plate, one tablet composed of the following ingredients
20 in or about the proportions stated, may be taken as the standard, though the said proportions may be slightly varied according to circumstances such as for compensating for errors of exposure, depending upon the
25 general knowledge of the photographer as to the peculiarities and requirements of the particular plates or films he is using. Metol 2 grains, hydroquinone 4 grains, potassium metabisulfite (powdered) $\frac{1}{2}$ to 1 grain, borax 10 to 20 grains, colloid, such as gum
30 tragacanth, or like adhesive *q. s.*, glycerin, or other hygroscopic medium *e. g.* glucose syrup *q. s.* (optional for assisting solubilities). Mix the dry ingredients, add the colloid and glycerin (about two drops of a saturated solution of gum arabic, and 1 drop of glycerin suffice), then add alcohol continuously, and stir to avoid precipitating the colloid, in sufficient quantity to make the mixture into a paste. Then press the mixture
40 into contact with glass or other molding surface for shaping the paste into tablets if desired, said mixture being allowed to dry therein and when dry, being ready for use.
45 The tablet is dissolved in water for use as a developer.

I wish it to be clearly understood that I do not confine myself strictly to the exact ingredients and proportions set forth above,
50 as it is well known that plates and films vary considerably in their particular requirements

according to the different lengths of exposure and other peculiarities, and I wish to employ the developer as set forth as a standard, reserving for myself the right to add
55 ingredients or vary the proportions according to requirements. For instance the amount of metol set forth in the foregoing, is found to be insufficient for a half plate, more than double the quantity being required
60 though not three times as much. These variations are well known in photography and can readily be coped with by slightly altering the composition of the developer.

I am aware that various dry or compacted
65 developers only requiring the addition of water have been proposed prepared or used, but these dry compacted developers have not contained borax as a constituent as far as I am aware. The result has been that such
70 developers have been incapable of being preserved as is necessary. The developer prepared according to the herein described method and containing borax as a constituent is however capable of being preserved practically indefinitely.
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I make no universal or general claims to the use of borax in the developer, borax being well known as an addition to liquid developers containing another alkaline salt (see the
80 article "Borax" in the *Dictionary of Photography* 8th edition, Hazell & Co.) My invention consists in using borax as the accelerating alkali in a solid dry compacted composition, kept or stored ready for solution in
85 water. The borax being a bi-borate and an acid, acts as a preservative of the dry developing constituents in the solid developer tablet. Upon the immersion of the tablet in
90 water, the borax and water inter-act or react on each other and the borax hydrolizes into soda and boracic acid and so becomes an accelerator.

The developer, according to the chemical formula above set forth, is the one which I
95 prefer to use in practice. It is a favorite and is the most commercially economical and desirable and for these and other reasons is found to be the best. The borax, in addition to acting with metol-hydroquinone,
100 also acts with a number of other developers, and equal success may be obtained with these

developers, but they are considerably more expensive.

What I claim and desire to secure by Letters Patent of the United States is:—

- 5 A photographic developer consisting of a solid dry compacted composition in tablet form and containing borax as a preservative.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses this fifteenth day of January, 1906.

WILLIAM FRASER CLAUGHTON KELLY.

Witnesses:

F. J. RAPSON,

A. H. STEVENS.