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(Under International Convention.)

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being date of first Foreign Application (in } 17th Sept., 1903
Germany),

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COMPLETE SPECIFICATION.

“Improvements in and relating to Photographic Plates and Films”

I, JOHN HENRY SMITH, 417 Seestrasse, Zurich Switzerland, Manufacturer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:

5 It has been heretofore proposed by laying two plates face to face in a camera to obtain in one exposure two negatives suitable for the preparation of two-color photographs; further, it has already been proposed by me to form a compound plate comprising two photographic plates placed face to face with a thin transparent sensitive film inserted between for the purpose of obtaining
10 in one exposure three negatives suitable for the production of three-color photographs.

Both of these inventions are of practical application, although not free from certain disadvantages. If two glass plates are employed, which is the simplest construction, it is necessary, in order to have sharp negatives to use expensive
15 plate glass; as otherwise, and particularly with large sizes, there would be no certainty that the surfaces would be in contact throughout. Should blemishes such as small air bells or impurities occur at the back of the front plate, these will be transmitted to the first negative, because the light in passing to the sensitive surface must first traverse the glass. A further disadvantage is that
20 the glass of the front plate absorbs some light, rendering necessary an increased exposure.

All these disadvantages are overcome in the case of the present invention, where two or more sensitive layers are coated upon a single support such as glass, celluloid, paper *etc.*, and between each two adjacent sensitive films a
25 thin transparent neutral film such as collodion or celluloid is coated in order to allow of the subsequent separation of the sensitive films.

Plates with several superposed sensitive surfaces coated upon them are not in themselves new, such plates having been employed for the prevention of halation during exposure. The sensitive surfaces were, however, in that case
30 directly superposed without the introduction of a separating medium as a subsequent separation of the sensitive films was never intended.

The accompanying drawing shows two examples of the subject of this invention as applied to three-colour photography, and employing gelatine dry plates. In Fig. 1 *a* is the glass support, *b*¹ the first, *b*² the second, and *b*³ the third

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sensitive surface, obtained by coating three gelatine-argentic emulsions of suitable color-sensitivity and light sensitivity. Between b^1 and b^2 , as well as between b^2 and b^3 a neutral transparent collodion film c^1 and c^2 is coated. If necessary, the separating neutral films may be coloured in order to act as light filters to the underlying sensitive films. 5

In the modification shown in Fig. II the glass plate a is the support for the two sensitive films b^1 and b^2 brought into intimate combination by the transparent neutral film c^1 , while the third sensitive film b^3 supported upon a glass plate d as an ordinary dry plate, is placed upon the middle film, and kept loosely in contact with the compound plate by external means *e.g.* a binding strip of paper e . 10

After the exposure has been made the upper sensitive films are separated and transferred to an adhesive surface *e.g.* a glass plate with a gelatine surface, upon which they are developed and further manipulated as the colour process in question requires. 15

In order to obtain a more certain separation of the sensitive surfaces with their underlying neutral films an adhesive solution or substratum may be applied to the collodion film underlying the sensitive film as is usual in the ordinary manufacture of dry plates.

In practice it is preferable and much simpler to separate the sensitive films from their underlying collodion or celluloid films, in which case the substratum should be omitted. In order to separate the upper sensitive films, when the support is a glass plate, it is advisable to employ a flexible non-expanding cloth or paper, or the like, coated with a suitable adhesive material. After the compound film has been cut through along the edges, the adhesive cloth is squeegeed on to the surface of the plate, a corner of the upper sensitive film lifted with a penknife and the film carefully stripped off the plate. The film is then squeegeed on to its permanent support *e.g.* a glass plate with a moist gelatine surface and allowed to dry with the adhesive cloth still in contact. After drying, the adhesive cloth is easily stripped off, the sensitive film forming with the gelatine surface of the plate an intimate combination, enabling the plate to pass through all the ordinary photographic baths without the slightest expansion or frilling. The remaining sensitive films, with the exception of the last one, together with their underlying collodion or celluloid films are stripped off by means of the adhesive cloth and squeegeed direct on to the gelatine surface of the glass plate. After drying and removal of the adhesive cloth, the overlying collodion film is removed by dissolving in a suitable solution *e.g.* methyl alcohol, in order to allow of the subsequent development of the plate. 20 25 30 35

The last sensitive film need not be removed from its support as long as the latter consists of a transparent material, but the overlying collodion film should be removed in the manner described, before developing. 40

Should the common support consist of paper or other opaque substance the last sensitive film may be transferred to a permanent transparent support in the same manner as described, if the paper receives a coating of gelatine, followed by a coating of collodion before the sensitive films are superposed to assist the transference. 45

If desired the upper sensitive film after being lifted from the plate may be squeegeed to a second adhesive cloth before transferring to its permanent support in order to reverse the negative. 50

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

(1) As a new article of manufacture a compound photographic plate or film consisting of a single rigid or flexible support upon which are coated two or more layers of sensitive photographic material, each two adjoining layers being 55

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separated by a coating of neutral transparent material for the purpose of subsequently separating the sensitive layers.

5 (2) As a new article of manufacture a compound photographic plate or film consisting of a single rigid or flexible support upon which are coated two or more layers of sensitive photographic material, each two adjoining layers being separated by a coating of neutral transparent material for the purpose of subsequently separating the sensitive layers, in combination with an ordinary single film photographic plate or film placed face to face and loosely bound together, substantially as described.

10 (3) As a new article of manufacture a compound photographic plate or film consisting of a single rigid or flexible support upon which are coated two or more layers of sensitive photographic material, each two adjoining layers being separated by a coating of neutral transparent material for the purpose of subsequently separating the sensitive layers, one or more of the neutral
15 separating layers being coloured in order to act as colour filter to the underlying sensitive layer or layers, substantially as described.

(4) As a new article of manufacture a compound photographic plate consisting of a single glass support upon which are coated two or more layers of gelatino-argentic emulsion, each two adjoining layers being separated by a coating of
20 collodion or celluloid for the purpose of subsequently separating the emulsion layers, substantially as described.

(5) As a new article of manufacture a compound photographic film consisting of a single flexible celluloid or paper support upon which are coated two or more layers of gelatino-argentic emulsion, each two adjoining layers being
25 separated by a coating of collodion or celluloid for the purpose of subsequently separating the emulsion layers, substantially as described.

(6) As a new article of manufacture a compound photographic plate or film consisting of a single rigid or flexible support upon which are coated three layers of sensitive gelatino-argentic emulsion, each two adjoining layers being
30 separated by a coating of celluloid or collodion for the purpose of subsequently separating the sensitive layers, the sensitive layers being so adjusted in respect of general and colour sensitiveness and the adjustment assisted if necessary by the colouration of the collodion films so that upon correctly exposing the compound plate upon a suitable subject, separating the sensitive
35 layers as described, and developing them upon their new supports three negatives are obtained suitable for the production of three-coloured photographs, substantially as described.

Dated this 16th day of September, 1904.

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Fig. 1.

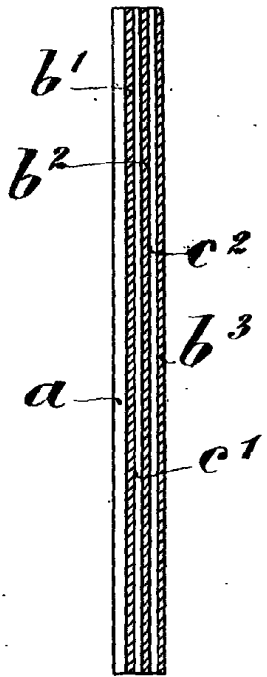
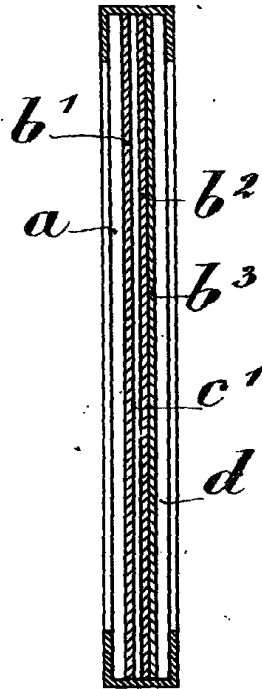


Fig. 2.



[This Drawing is a full-size reproduction of the Original.]

