

No. 725,566.

PATENTED APR. 14, 1903.

F. E. IVES.

TRICHROMATIC PROCESS TRANSPARENCY.

APPLICATION FILED SEPT. 3, 1902.

NO MODEL.

Fig. 1.

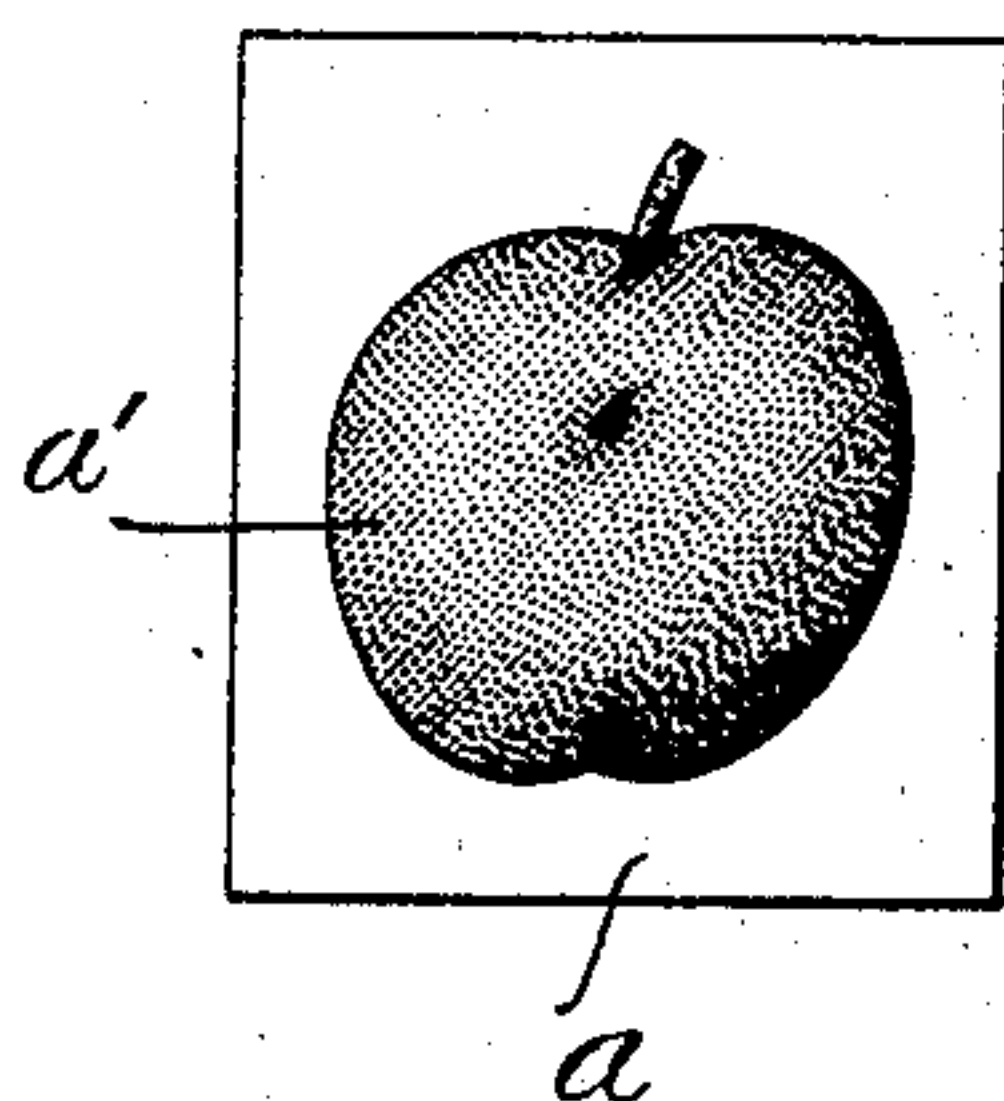


Fig. 2.

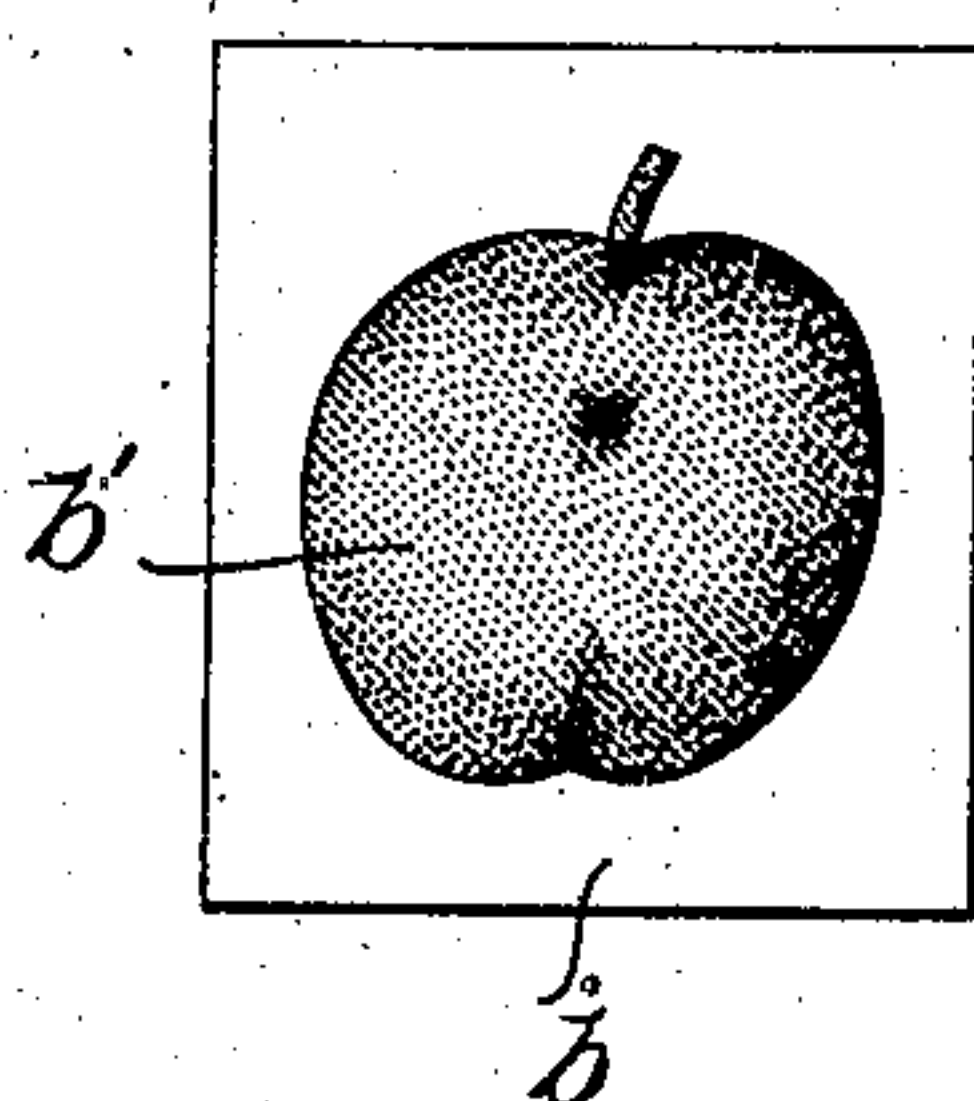
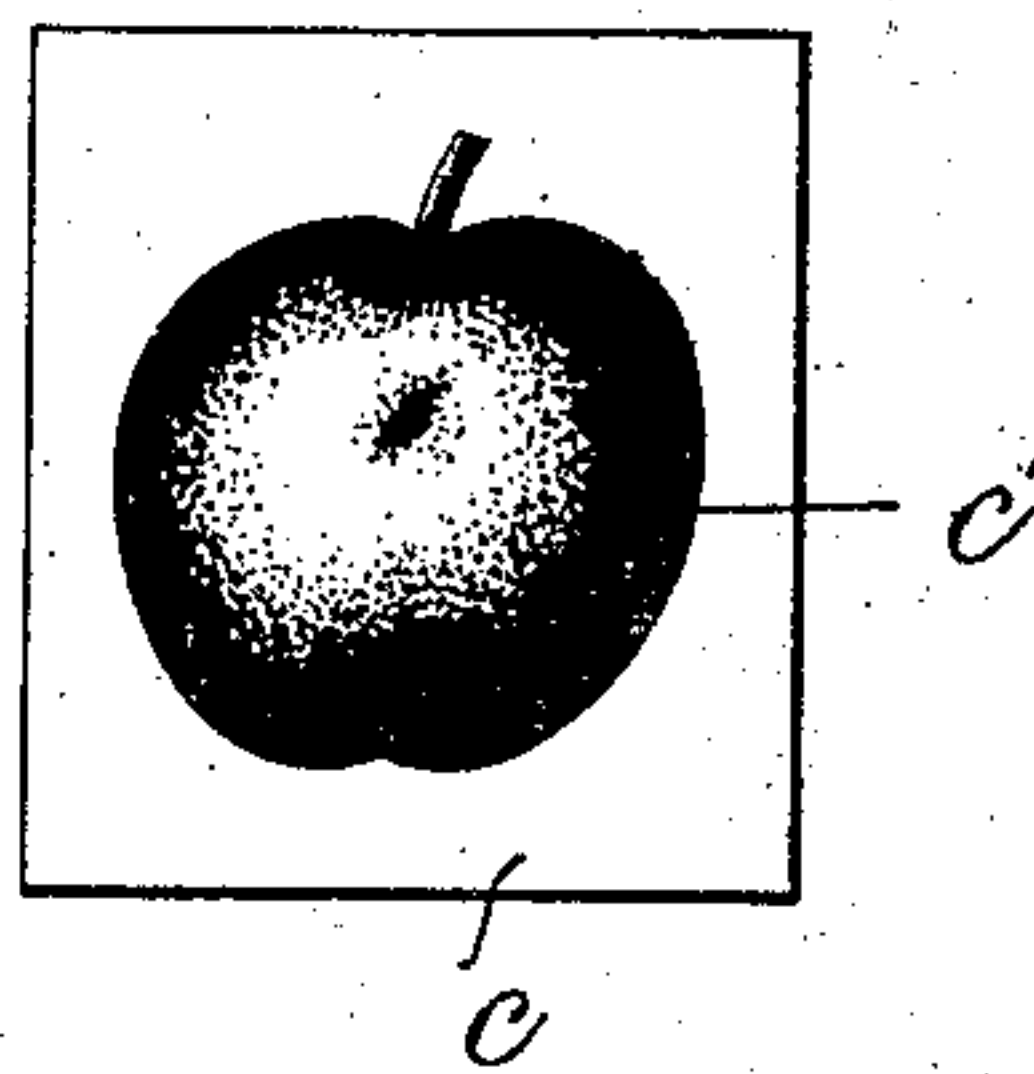


Fig. 3.



Witnesses:-

Frank L. A. Graham.

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UNITED STATES PATENT OFFICE.

FREDERIC E. IVES, OF PHILADELPHIA, PENNSYLVANIA.

TRICHROMATIC-PROCESS TRANSPARENCY.

SPECIFICATION forming part of Letters Patent No. 725,566, dated April 14, 1903.

Application filed September 3, 1902. Serial No. 121,973. (No model.)

To all whom it may concern:

Be it known that I, FREDERIC E. IVES, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Trichromatic-Process Transparencies, of which the following is a specification.

My invention relates to the production of colored transparencies, such as lantern-slides, by the so-called "trichromatic photographic process," and is designed to cheapen and render more reliable the commercial production of such pictures.

In the accompanying drawings, Figures 1, 2, and 3 illustrate three colored transparencies made in accordance with my invention.

The basis for such colored transparencies is a set of three negative images, which should be made in accordance with my patent of July 22, 1890, No. 432,530. Such negatives are most readily and reliably produced in one of the cameras described in my Patents No. 475,084, May 17, 1892; No. 546,889, September 24, 1895; No. 632,573, September 5, 1899; No. 655,712, August 14, 1900; No. 660,442, October 23, 1900; No. 668,989, February 26, 1901; No. 703,929, July 1, 1902; and No. 707,421, August 19, 1902.

The most perfect method which has so far been devised for making the colored transparencies consists, first, in printing from the three negatives three positives in bichromated gelatin attached to a clear celluloid film, (exposing through the celluloid,) then washing away from the other side by means of warm water the parts not fixed by light; second, in immersing the separate gelatin prints in aqueous solutions of suitable dyes until they attain a suitable depth of color, and, third, in drying these colored prints and then superposing them between glasses to form the single composite-color picture. This process is capable of producing very perfect results; but it is not sufficiently simple or sufficiently reliable in the hands of average skilled workmen to afford a means of making such pictures at prices to compete with hand-colored photographic transparencies, except in special cases.

Perhaps the cheapest method that could be

employed for producing trichromatic-process transparencies in quantity would be by making half-tone-process blocks from the three negative images and printing from them in the suitable colored inks upon clear sheet-celluloid coated with gelatin containing a very little glycerin in combination. A serious objection to this method is the line or stipple structure of the half-tone process, which becomes offensive when magnified upon a screen, as in lantern projection. This pattern is, however, usually much more evident visually in the greenish-blue print, which is the one obtained from the negative representing the red sensation, than in the crimson-pink and yellow prints, which are obtained, respectively, from the negatives representing the green and blue sensations, because the latter are less critical as to definition and gradation of light and shade in the finished result, and I therefore propose as a means for eliminating the tediousness and uncertainty pertaining to the first-described process without introducing too much lining or granularity to combine a "structureless" blue-print with half-tone red and yellow prints, all of which can be produced with comparative ease and certainty by well-known methods. I prefer to make the blue-print by converting an ordinary photographic transparency from the respective negative image by treatment with ferricyanid of potassium and perchlorid of iron, a well-known process. From the other two negative images half-tone typographic, lithographic, or intaglio printing-surfaces may be made by any of the well-known processes, and prints upon clear celluloid sheets made in suitable colored inks from these printing-surfaces may be superposed upon the structureless blue-print, thereby producing a composite-color print having the requisite qualities for commercial exploitation.

In the drawings, *a*, *b*, and *c* represent the three transparent sheets, *a'* and *b'* the line or stipple images, and *c'* the structureless or body-shaded image. The latter, however, is not a true representation of the body-shades of a photographically-printed image, as the limitations imposed upon the draftsman by

the rules governing the preparation of drawings will not permit of a correct representation of body-shading.

Some of the advantages of converting the
5 crimson-red and yellow images into half-tone
line or stipple may be realized without going
so far as to produce process-blocks and print
them in the printing-press. For example,
prints upon the surface of bichromated gela-
10 tin when made in definite line and stipple
may be converted into color-prints by several
procedures, which are all more simple and re-
liable than the production and staining up of
the graduated relief-prints first described.
15 They may be dampened and then inked up
with a printer's ink-roller, the ink adhering
only on the lines and dots impressed by light
through the negative, and the line or stipple
ink picture thus obtained may either be used
20 as it is or employed to impress an image upon
another surface. If the bichromated gelatin
is very thin, it may be developed by means
of warm water applied to its face, and the
lines and dots in gelatin which remain can
25 be colored up evenly with far greater facility
and less risk of failure than the graduated

relief-images, which are necessarily made
much thicker in order to preserve the grada-
tions.

What is meant by a "structureless" image 30
is one having body-shades as distinguished
from the interrupted shadings produced by
line or stipple.

Having thus described my invention, I
claim and desire to secure by Letters Pat- 35
ent—

1. A trichromatic - process transparency
combining one image containing body-shades
and two images in which the body-shades are
translated into definite line or stipple, sub- 40
stantially as specified.

2. A trichromatic - process transparency
combining one photographically-printed im-
age and two mechanically-printed images,
substantially as specified. 45

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

FREDERIC E. IVES.

Witnesses:

F. E. BECHTOLD,
JOS. H. KLEIN.