M. CURIE AND M. E. VARINOIS.

APPARATUS FOR THE PRODUCTION OF LUMINOUS IMAGES AND THE LIKE.

APPLICATION FILED MAY 19, 1920.

1,418,240. Patented May 30, 1922.

Fig.1.

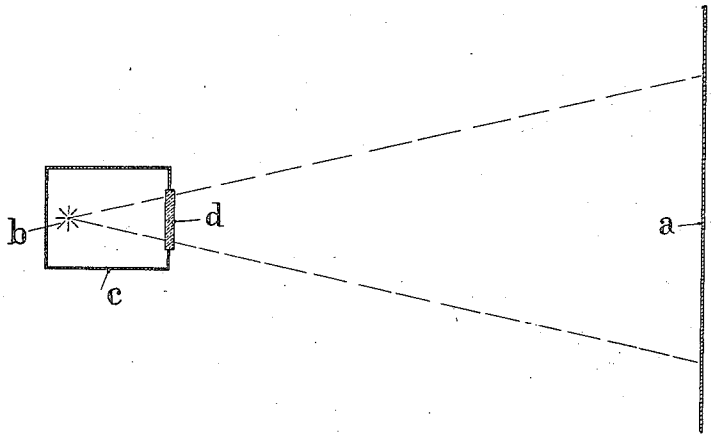
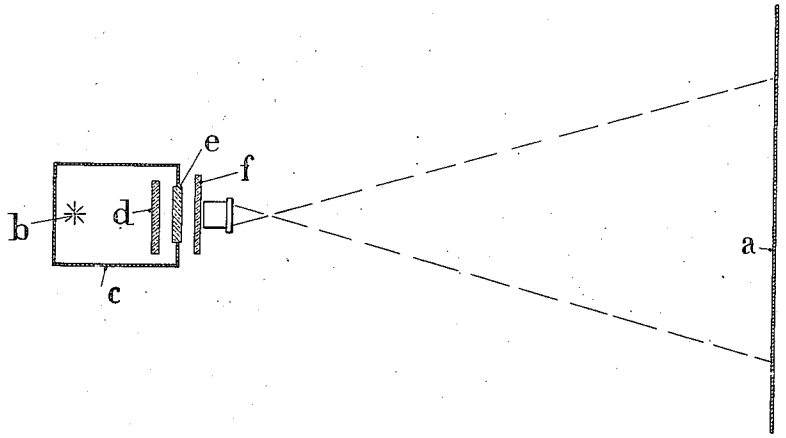


Fig.2.



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APPARATUS FOR THE PRODUCTION OF LUMINOUS IMAGES AND THE LIKE.

1,418,240. Specification of Letters Patent. Patented May 30, 1922.

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To all whom it may concern:

Be it known that we, MAURICE CURIE, of 10 Villa du Bel Air, Paris, France, and MARCEL ERNEST VARINOIS, of 8 Rue du Printemps, Paris, France, have invented an Apparatus for the Production of Luminous Images and the like (for which we have filed an application in France May 10, 1919), of which the following is a full, clear, and exact description.

This invention has for its object a process for the production of any luminous images or inscriptions and its application to advertising purposes and cinematography.

It consists essentially in projecting, on the said images or inscriptions drawn or traced by means of a paint or of a varnish the base of which is formed of phosphorescent bodies, obscure rays or rays sufficiently dark to be nearly invisible, for the purpose of producing the permanent excitation of the phosphorescent body and the luminous apparition, in a non lighted or feebly lighted place, of the invisible image or inscription traced on any board whatever by means of the phosphorescent paint.

The invention consists also in projecting, on a panel uniformly covered with sulphide of zinc or other phosphorescent material, bundles of obscure (violet) or invisible rays (Roëntgen rays) emitted by a projection apparatus in which they pass through covers constituted by photographic proofs (positive or negative) of the designs, inscriptions or other figures, producing, on the panel, phosphorescent images, inscriptions or other figures.

The invention also relates to an apparatus for carrying out this process and in which the luminous source emitting the obscure rays is provided with a screen for selecting the rays and with a device canalizing the filtered rays towards the board.

The said luminous source is preferably concealed from the view of the observer, so that the observer may see the luminous image or projection without being able to realize how it is produced; the attraction of the observation and the surprise of the observer may be further increased by the sudden disappearance of the luminous image which is caused, after an exposure of variable duration, by a projection of red rays emitted by the same source of light or by any other source of light.

Two forms of apparatus designed for the production of luminous images according to the process forming the subject-matter of the invention, are diagrammatically illustrated by way of example only, in the accompanying drawing, in which:

Figure 1 shows one form of the present apparatus and

Figure 2 illustrates a modified form.

Referring to Fig. 1, it will be seen that the apparatus comprises a panel *a*, on which images, inscriptions or other figures are made by means of a paint or of a varnish the base of which is formed of phosphorescent bodies, such as sulphide of zinc for instance and of any other phosphorescent bodies, such as sulphide of calcium, strontium, so as to permit of obtaining images in several colours.

A suitable lighting apparatus shown, in the example illustrated, as facing the board *a*, contains a source of light *b* which can be constituted by a gas lamp or an incandescent or arc electric lamp, or a mercury vapour lamp with glass or quartz tube.

This lamp *b* is enclosed in a metal box *c* carrying, on one of its faces directed towards the board *a*, a screen *d* adapted to select the rays and to let outside the box *c* only the rays capable of exciting the phosphorescent product, without having any injurious action on the latter, these rays being sufficiently dark so as to be nearly invisible, such as green, blue, violet or ultra-violet rays or even invisible rays (Roëntgen rays).

The obscure rays thus filtered by the screen *d* are canalized and directed by any suitable means on the board *a*, so as to produce a permanent excitation of the sulphide of zinc or of any other phosphorescent product constituting the image, design or inscription borne by the board *a;* the said image remains phosphorescent as long as the obscure rays are directed on the same.

These rays are preferably directed on the board *a* by means of a shade which conceals at the same time to the public the presence of the source of light and prevents them from seeing how the luminous image is produced.

In the example illustrated in Fig. 2, the apparatus is constituted by a panel *a* uniformly covered with sulphide of zinc or any phosphorescent material, opposite which is arranged a projection apparatus *c* emitting bundles of obscure or invisible rays.

These bundles are determined by the pas-

sage of the entire mass of the obscure or invisible rays issuing from the condenser *e*, through photographic slides *f* (positive or negative) of the designs, inscriptions and the like.

The arrival of the bundles of obscure or invisible rays on the panel uniformly covered with phosphorescent material then produces on the latter the apparition of phosphorescent images, inscriptions or designs.

It will be seen that these very simple apparatuses allow to obtain, according to one or the other form of execution, in any desired place, in doors as well as outside, very attractive luminous images and that they can be advantageously used for advertising purposes, in attraction places, such as cinema halls, without hindering the projection, as well as in the street and, generally speaking, in all places feebly lighted at night.

In the particular case of application for advertising purposes, sensibly obscure ultra-violet rays may preferably be used, so as to produce a progressive appearance of the advertising matter; in this case the attention of the observers might also be further attracted by causing the luminous advertisement to suddenly disappear by projecting on the latter red rays which might be emitted by the same lighting apparatus or by a distinct source of light.

Finally, in the case of application to cinematographic projections, this apparatus might project, on the projection screen, on one side of the projected scene, explanatory texts, thus doing away with the necessity of stopping the projection, as this is actually the case.

The above described apparatuses are of course given only by way of example and it is obvious that the forms, materials and dimensions may be varied according to the various applications, without departing thereby from the scope of the invention.

For the purpose of increasing the intensity of the phosphorescence, phosphorescent bodies rendered radio active might also be used for the manufacture of the luminous paint or varnish.

Claims:

1. An apparatus for carrying out the process of production of luminous images comprising a board on which the invisible designs, images or inscriptions are traced by means of a paint or varnish the base of which is formed of phosphorescent bodies—any source of light preferably concealed from the view of the spectators,—a screen for selecting the rays, arranged between the source of light and the board covered with invisible images or inscriptions traced by means of the phosphorescent paint, th said screen giving only passage to obscure or invisible rays which, being projected on the said board, produce the permanent excitation of the phosphorescent paint with which are drawn the invisible images or inscriptions and the apparition of luminous imagss as long as the projection of obscure or invisible rays lasts.

2. An apparatus for the production of luminous images comprising,—a board on which the invisible designs, images or inscriptions are traced by means of a paint or varnish the base of which is formed of phosphorescent bodies,—any source of light preferably concealed from the view of the spectators,—a screen for selecting the rays, arranged between the source of light and the board on which invisible designs, inscriptions or images are drawn by means of a phosphorescent paint or varnish, the said screen giving only passage to sensibly obscure ultra-violet rays which, being projected on the board, produce the progressive excitation of the invisible images drawn on the board by means of the phosphorescent paint or varnish and the progressive apparition of luminous designs, inscriptions, images or advertisements.

Signed by us this 26th day of April, 1920.

MAURICE CURIE.
MARCEL ERNEST VARINOIS.