

W. K. HILL.
PROJECTING SCREEN.
APPLICATION FILED NOV. 18, 1916.

1,293,433.

Patented Feb. 4, 1919.

Fig. 1.

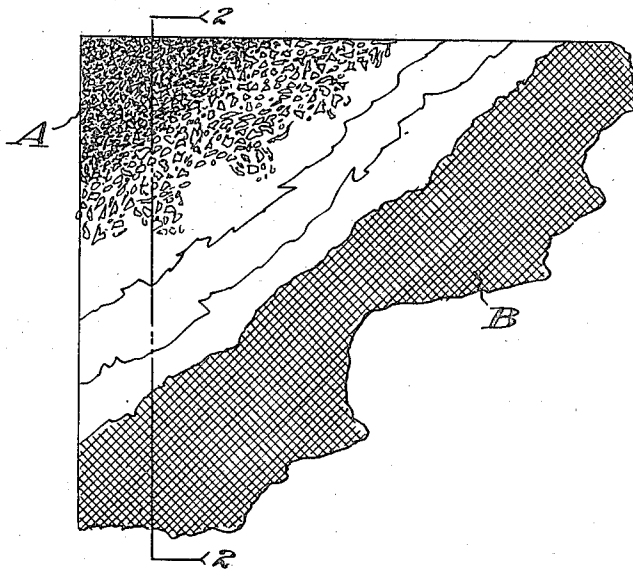
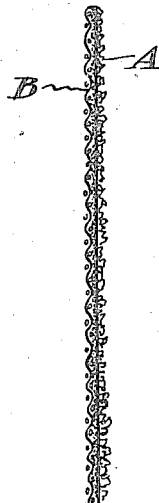


Fig. 2.



WITNESSES:

Lincoln Johnson
Thos. Carlberg

INVENTOR

William K. Hill

BY *Strong & Townsend*
ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM K. HILL, OF SAN FRANCISCO, CALIFORNIA.

PROJECTING-SCREEN.

1,293,433.

Specification of Letters Patent.

Patented Feb. 4, 1919.

Application filed November 18, 1916. Serial No. 132,034.

To all whom it may concern:

Be it known that I, WILLIAM K. HILL, a citizen of the United States, residing at the city and county of San Francisco and State of California, have invented new and useful Improvements in Projecting-Screens, of which the following is a specification.

This invention relates to a refraction or catoptric projecting screen for magic lanterns, cinematographs and like machines.

The object of the present invention is to provide a projecting screen, the surface of which is covered with a crystalline material; said material being so positioned and placed that myriads of small angularly positioned reflected surfaces are formed, each of which are adapted to disperse and reflect the light rays over a wide angle without distorting or in any way impairing the clearness or outline of the picture or the image projection. Further objects will hereinafter appear.

The invention consists of the parts, and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a front view of the screen partly broken away.

Fig. 2 is an enlarged section on line 2—2, Fig. 1.

Referring to the drawings in detail, A indicates in general the image-displaying surface of the screen. This is formed and constructed in the following manner: Referring to Figs. 1 and 2, B indicates the screen proper. This may be constructed of wood, metal or fabric and the crystalline material with which the image-displaying surface is coated, is applied in the following manner:

A sizing or filling coat, particularly where a fabric screen is used, is first applied. This coating consists of white glue, one part, a resinaceous soap, one part, and powdered alum, one part. These individual ingredients are first mixed with water and brought to a boiling point. The soap mixture is then added to the glue, after which the alum mixture is added to the already mixed soap and glue. The sizing as a whole is then strained and applied while hot, the fabric screen having previously been secured and stretched upon a frame. A coat of paint, known as coat No. 1, is then applied to the

sizing coat after this has become thoroughly dried. Paint coat No. 1 consists of white lead, linseed oil and turpentine, to which is added a small amount of ivory black. The amount of black employed being just sufficient to give the mixture a slight grayish color or tint. These ingredients are thoroughly mixed and applied to the sizing coat by a brush or any other suitable means, and permitted to thoroughly dry. A second coat of paint, consisting of the same mixture, with the exception that the black is reduced by fifty per cent., is then applied to the first coat of paint and permitted to dry. A third coat of paint is then applied, this coat consisting of the same ingredients as coat No. 1, with the exception that black is entirely omitted; the amount of turpentine employed being increased to such an extent that an egg shell gloss is obtained when the coat dries. The fourth and fifth coat of paint is next applied. These coats consist of the same ingredients as No. 3, with the exception that white zinc is added up to 25% of the white lead employed. The fabric screen has now received one sizing coat and five individual coats of paint, and is therefore in condition to receive a sizing or adhesive coat, known as fat oil, into which has been added sufficient white zinc to produce a china gloss or enamel finish. This coat is very slow drying and is so adhesive that practically any material applied will become thoroughly attached thereto when the coat finally dries. The crystalline covering material, forming the most important feature of the present invention, is therefore applied to this coat. This material may consist of glass crystals, crushed glass, quartz or any other crystalline material and may be applied by sprinkling, air blast or otherwise. A final finishing coat is then applied on top of the crystal covering to fill the intercesses. This coat is applied while the adhesive sizing is still in a sticky condition, and while white zinc or flake white is employed it is obvious that any other material may be used. The white zinc or flake white is preferably sprayed on in the form of a dry powder and any superfluous amount that may be applied can be dusted or burnished off the surface of the screen when the adhesive coat has become thoroughly dried.

The screen construction as shown and de-

scribed possesses several distinct advantages over other types of screens now in use. For instance, an image projected on an improved screen will appear more prominent and clear to the observer than if projected upon a cloth or painted screen such as commonly used. This has not only been demonstrated in actual practice, but can also be explained from the theoretical point of view, for the following reason. The myriad of small reflecting faces produced by the crystalline covering or coating has individual reflecting members whose faces all assume varying angles. Each ray of light striking the screen will therefore be directly reflected from the screen and not diffused and refracted as is otherwise the case. The numerous angles which the crystalline faces produce permits the light rays or image projected upon the screen to be viewed from a wide angle without distortion. This is also true from a close point, as eye strain is practically eliminated.

The present screen comprises all the good qualities of the ordinary white and metallic screen, but it eliminates the veil or fog effect peculiar to a metallic screen and at the same time supplies illumination that is absent in the white screen.

While specific ingredients have been specified in the sizing coat and in the several painting coats applied, it is obvious that these may be varied to suit different conditions, and while crushed glass is preferably employed, it is obvious that any similar material may be used. The materials and finish of the several parts of the screen may

otherwise be such as experience and judgment of the manufacturer may dictate.

Having thus described my invention what I claim and desire to secure by Letters Patent is—

1. A projecting screen comprising a fabric backing, a filling coating applied thereto, plural coatings of paint varying progressively in their degrees of whiteness with the last coating having the highest degree of whiteness, an adhesive coating applied to the last coating of paint, a covering of crystals applied to the adhesive coating, and a white powder-like filler also applied to the adhesive coating between the crystals.

2. A projecting screen comprising a backing, an adhesive coating, a crystalline reflective covering applied to the coating, and a white powder-like filler applied to the coating between the parts composing the crystalline covering.

3. A projecting screen having a crystalline covering, and a filler applied to said crystalline covering to fill the interstices therebetween and to impart a white finish to the screen.

4. A projecting screen having a crystalline covering, and a powder-like white filler applied thereto.

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

WILLIAM K. HILL.

Witnesses:

JOHN H. HERRING,
W. W. HEALEY.