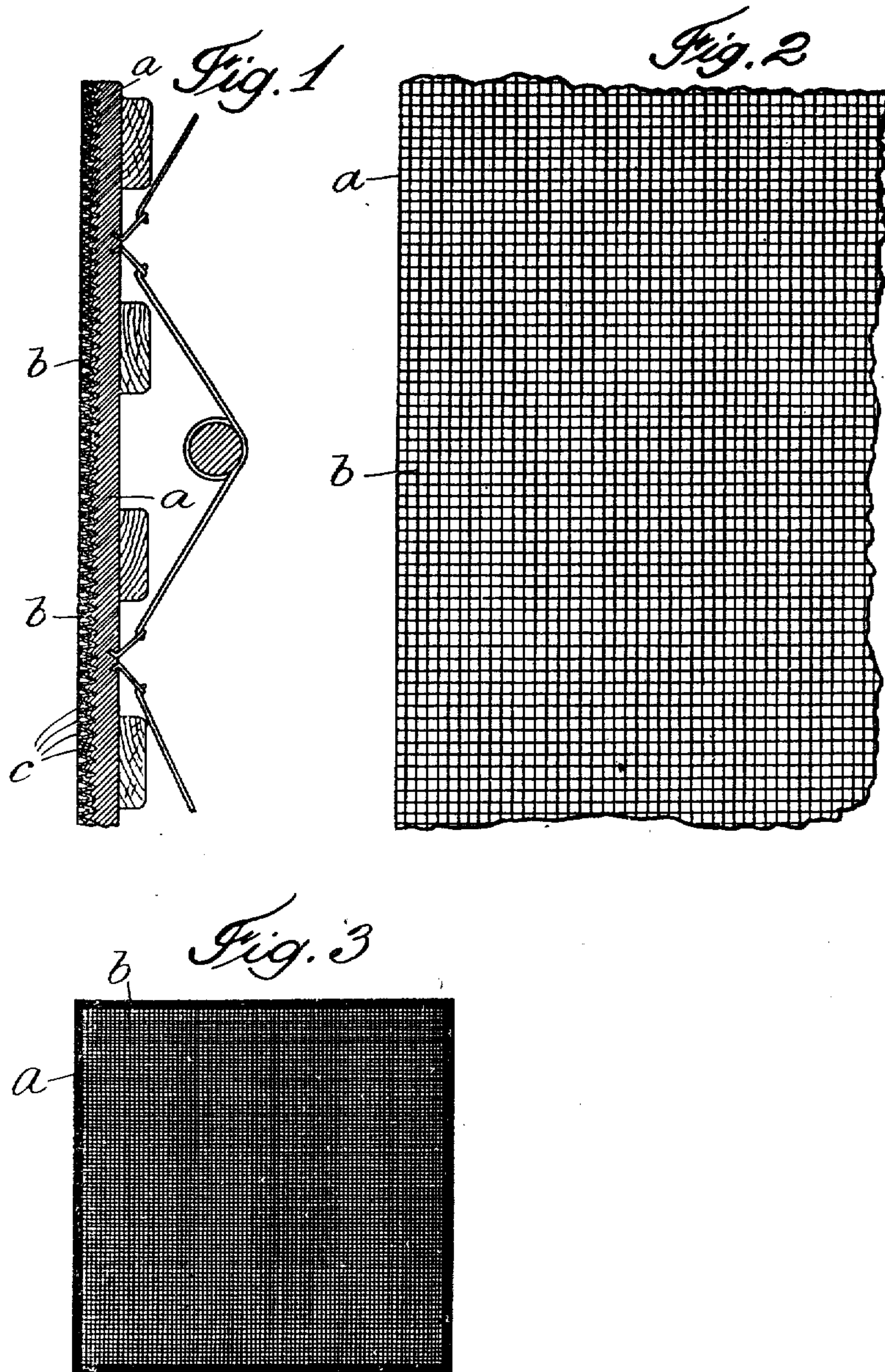


O. BUECHNER.
 PROJECTION SCREEN.
 APPLICATION FILED JULY 14, 1910.

997,899.

Patented July 11, 1911.



Witnesses
 C. Schallinger
 C. Rehm.

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 Oswald Buechner
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 Atty

UNITED STATES PATENT OFFICE

OSWALD BUECHNER, OF ZURICH, SWITZERLAND, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO PRANA GESELLSCHAFT FÜR TAGESLICHT-PROJEKTION MIT BESCHRÄNKTER HAFTUNG, OF HAMBURG, GERMANY.

PROJECTION-SCREEN.

997,899.

Specification of Letters Patent.

Patented July 11, 1911.

Application filed July 14, 1910. Serial No. 571,940.

To all whom it may concern:

Be it known that I, OSWALD BUECHNER, a citizen of the Republic of Switzerland, residing at 63 Forchstrasse, Zurich, Switzerland, have invented certain new and useful Improvements in Projection-Screens, of which the following is a specification.

The present invention consists in an arrangement for producing projection pictures during daytime, *i. e.*, in the bright light of day, whether it be in the direct rays of the sun, or in diffused light.

Under certain conditions it is desirable to effect the projection of cinematograph pictures in daylight or sunlight, and the present invention has for its object to produce an arrangement capable of effecting such projection not only in rooms fully lighted by brilliant artificial light or by bright sunlight admitted through the windows, but even in the open air during the daytime.

The invention is based on two characteristic features; on the one hand a pane of transparent material of suitable shape, constituting a projection screen; and on the other hand, the peculiar treatment to which the pane is subjected. The arrangement may consist of a pane (made in a single piece or built up of separate pieces), the surface of which is given local refractive dispersive properties by means of concave or convex lenticular (that is, lens-like) grainings.

As to the mode of treating the panes, they are covered with a thin, metallic, or other coating, the purpose of which is to reduce the amount of light reflected from the pane into the eyes of the spectators, so that the pane will have a dark appearance in daylight. For producing such a coating or precipitate, platinum may be employed. The purpose may also be effected by applying a coating of dark coloring matters mixed with suitable agglutinants. The criterion to be followed in choosing these substances, is that they shall give the pane a dark appearance in daylight. When a sheet or pane of transparent material is made as hereinbefore described, pencils of light transmitted through it from a projecting apparatus will be dispersed by the associated refracting units of curved configuration in such manner as to cause the projected picture to appear on the screen, where it may be observed by the spectators, and if the screen is then treated by the thin coating referred to, in such manner

as to suppress or reduce the reflection of incident light into the eyes of the spectators, so that the screen has a dark appearance in daylight, the predominance of the projected picture over the reflected light is emphasized.

Referring to the drawings,—Figure 1 is a section through a pane embodying my invention; Fig. 2 is a view of the surface of a coarsely grained pane, and Fig. 3 is a view of the surface of a finely grained pane.

In the drawing, *a* represents the screen of transparent material, such as glass, for example, made up in a single piece or built up of a number of pieces.

The lens-like pattern constituting the image-display surface (in this instance, made up of concave configurations) is indicated by *b*, and *c* indicates the thin coating.

The optical phenomena produced when this screen is used are: First: the dispersion of the rays forming the pencils of light which fall upon the lenticulæ or associated refracting units of curved configuration, *b*, the refraction incident to such configuration, so as to direct and distribute the several rays forming each of said pencils to all parts of the space to be occupied by the spectators, with the conservation of the projected light incident to such dispersion; second: the sensation of continuity of the image produced upon the retina of the eye of the spectator by the slightly separated beams of light issuing from points upon the several associated refracting units of the screen; third: the greater extent to which the curved surfaces disperse the reflected rays by diverging or scattering them than they disperse the refracted rays by bending them in the desired directions; and fourth: the capacity of the coating to reduce the amount of light reflected from the screen into the eyes of the spectators, while still permitting the passage of the greater part of the refracted rays which are directed to the same points.

What I claim is:

1. A projection screen of transparent material, having its image-display surface made up of associated refracting units of curved configuration.

2. A projection screen of transparent material, having its image-display surface made up of juxtaposed lenticulæ.

3. A projection screen of transparent ma-

terial, having its image-display surface made up of uniformly distributed associated refracting units of curved configuration.

4. A projection screen of transparent material, having the image-display surface made up of identical juxtaposed lenticulae.

5. A projection screen of transparent material, having its image-display surface made up of associated refracting units of curved configuration, said screen having a coating

adapted to reduce the amount of light reflected from the screen into the eyes of the spectators.

In testimony whereof, I affix my signature in the presence of two witnesses.

OSWALD BUECHNER.

Witnesses:

HANS BUOL,
CARL CUBUR.