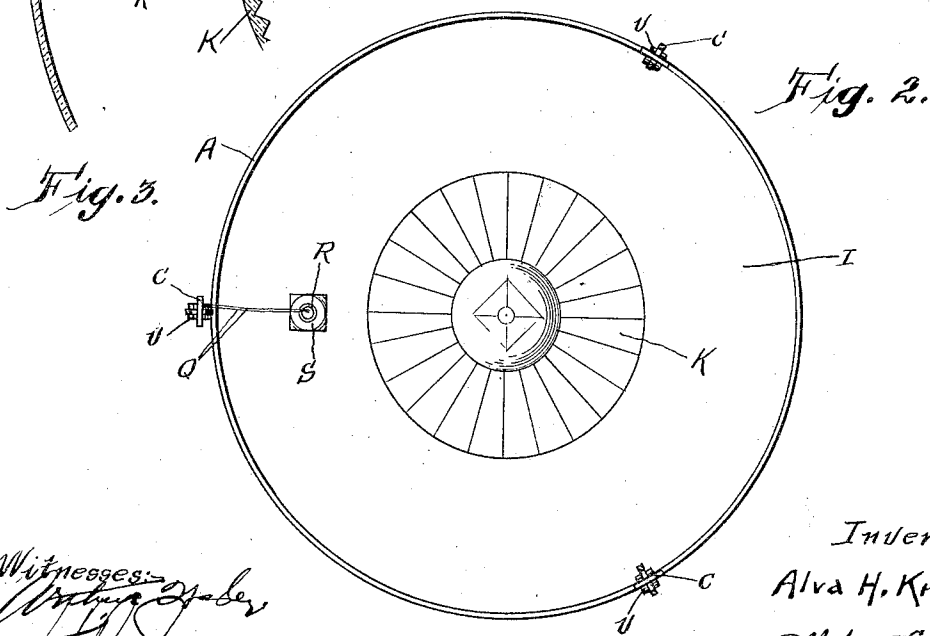
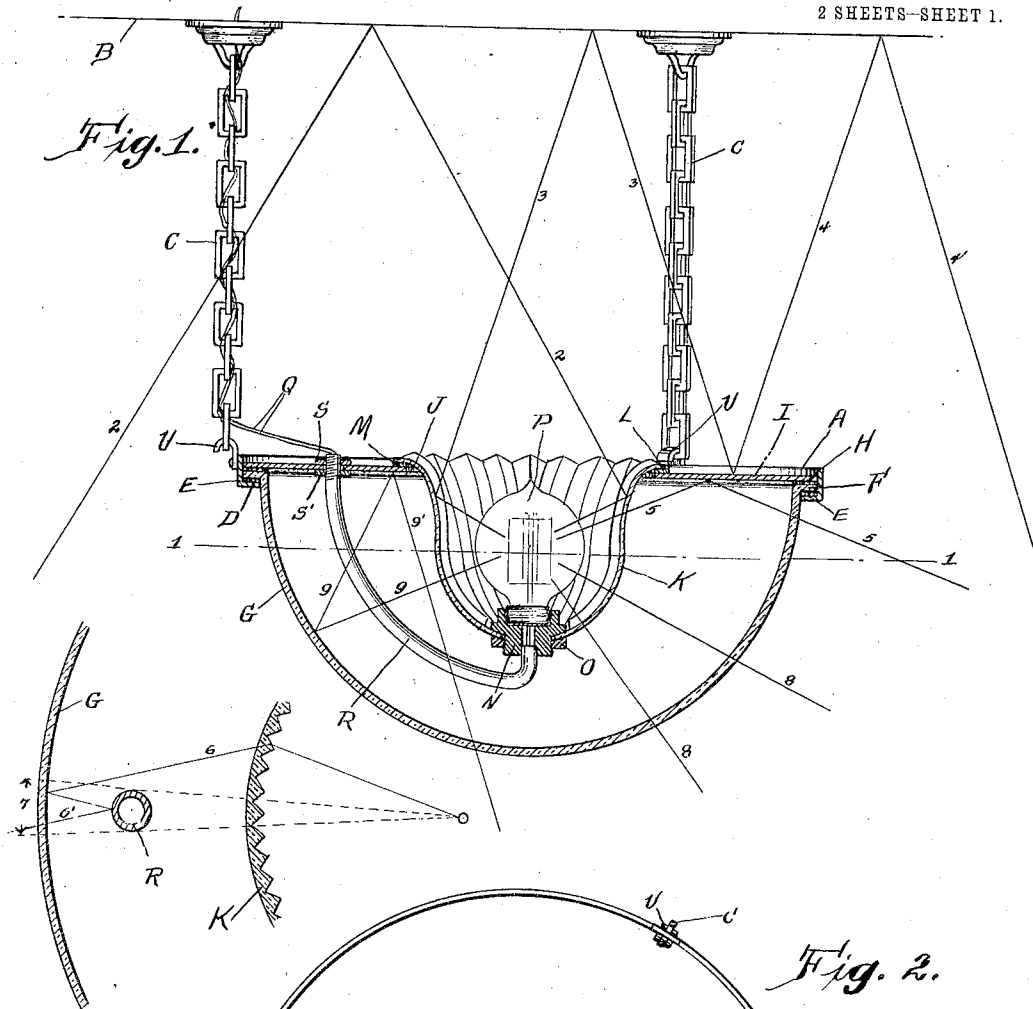




*Witnesses:*  
*Alva H. Krom*  
*Albert Schmitt*

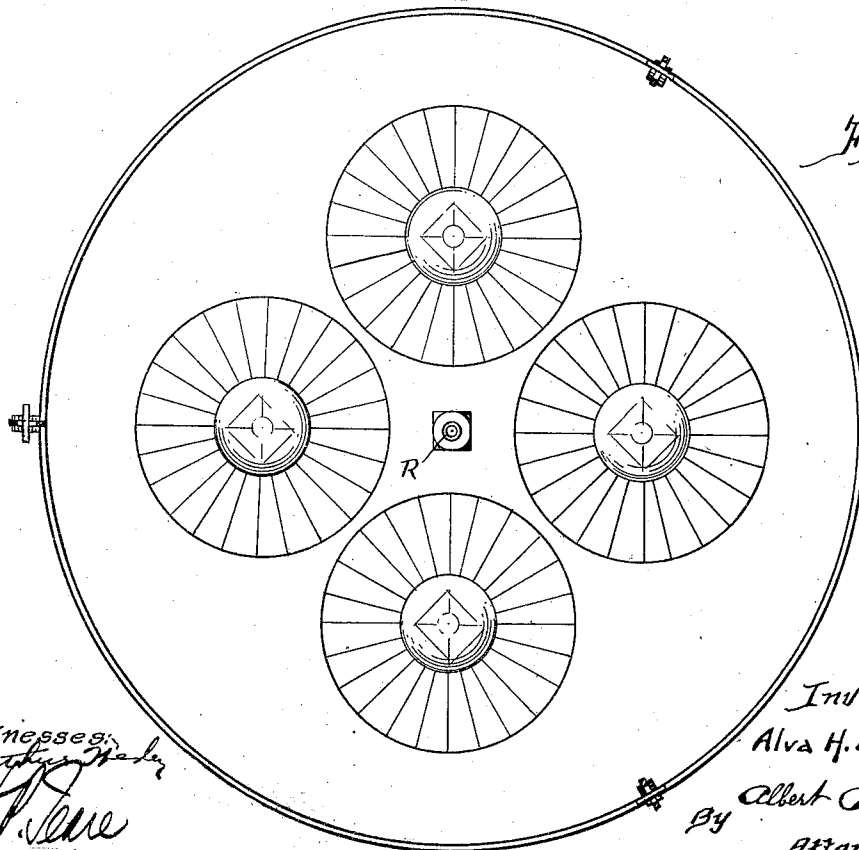
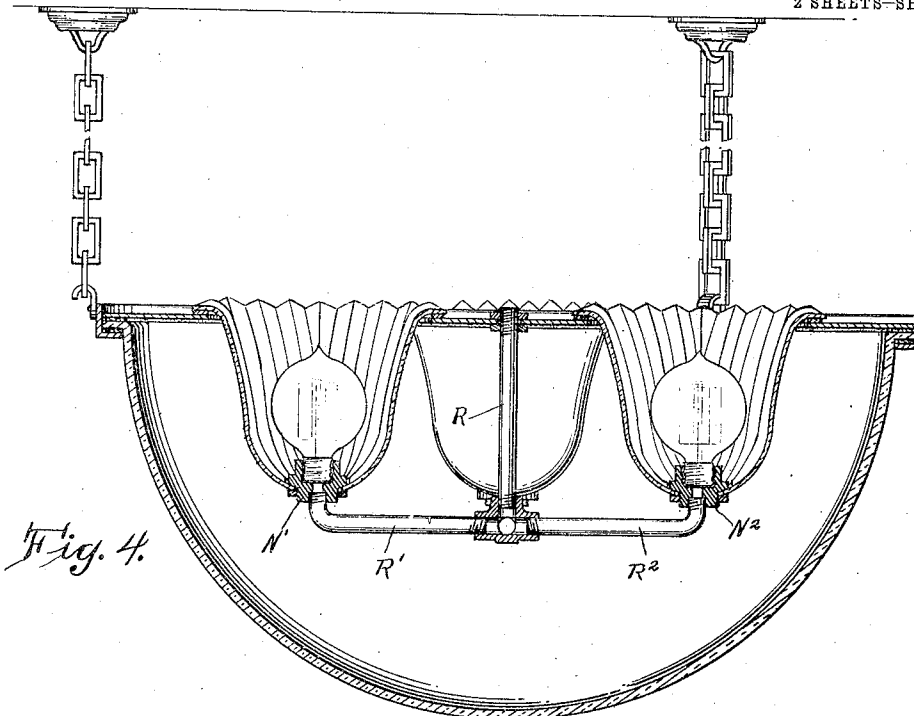
*Inventor:*  
*Alva H. Krom*  
*Albert Schmitt*  
*By* *Attorney.*

1,047,087.

A. H. KROM.  
LIGHTING FIXTURE.  
APPLICATION FILED DEC. 18, 1911.

Patented Dec. 10, 1912.

2 SHEETS-SHEET 2.



Witnesses:  
*Albert Schiller*  
*A. H. Krom*

Inventor:  
Alva H. Krom  
By *Albert Schiller*  
Attorney.

# UNITED STATES PATENT OFFICE.

ALVA H. KROM, OF CHICAGO, ILLINOIS.

## LIGHTING-FIXTURE.

1,047,087.

Specification of Letters Patent.

Patented Dec. 10, 1912.

Application filed December 18, 1911. Serial No. 666,629.

*To all whom it may concern:*

Be it known that I, ALVA H. KROM, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Lighting-Fixture, of which the following is a clear, concise, and full specification.

My invention relates to the class of indoor lighting fixtures in which the light is directed against a ceiling for diffusion through the room.

It consists of a novel arrangement of parts enabling the lighting to be done partly by the redirected rays and partly by direct rays from the lamp, whereby shadows are minimized, thereby producing a more pleasing and more economical effect than when all of the lighting is done entirely by diffusion.

In its preferred form, my invention is particularly applicable to ceiling fixtures for use with incandescent electric lamps and is shown in this application in the accompanying drawings, which form a part of this application.

In the drawings, Figure 1 is a vertical section through a single light fixture embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is an enlargement of a partial horizontal section through Fig. 1 on the line 1—1. Fig. 4 is a vertical section of a four light fixture embodying my invention. Fig. 5 is a plan view of the same.

In the drawings, A is a holder, preferably annular in shape, suspended from a diffusing plane or ceiling B, by chains C—C and provided with a flange D.

E is a cushion, preferably a ring of soft felt, resting on the flange D and supporting the flange F of an inclosure G. The inclosure G is preferably a hemisphere of opalescent glass having a smooth inner surface, which will reflect some of the light striking it from within and which will be translucent to some of the light. H is another cushion, preferably a ring of soft felt, resting upon the flange F and supporting a cover plate I, which cover is preferably of steel, coated on both sides with white enamel.

J is an opening in the cover I for admitting the body of a reflector K made of translucent material, such as prismatic glass, which reflector allows a portion of the light to pass through the same while redirecting another portion of the light.

L is a flange on the reflector K, and M is a cushion interposed between the flange L and the cover I when the reflector K is positioned in the opening J, the cushion M being preferably a ring of soft felt.

N is a socket fastened to the reflector K by a screw ring O.

P is a lamp seated in the socket N and is preferably a tungsten filament lamp.

Q—Q are flexible wires leading from the socket N to a source of current. These wires are preferably run through a pipe or duct R which is secured to the cover I by lock nuts S—S', threaded to the pipe R. After leaving this duct R the wires are preferably threaded through the links of one of the chains C which support the fixture proper from the diffusing medium A. The pipe R is preferably made of steel, coated with a white enamel.

U—U are hooks connecting the flange D with the chains of supporting members C—C.

In Fig. 1, lines 2—2 show a ray of light from the lamp reflected against the ceiling from the inner surface of the reflector K and again reflected in a downward and outward direction by the ceiling. Lines 3—3 show a ray of light from the lamp reflected downwardly by the ceiling and striking the upper surface of the cover I. As this surface has a white reflecting coating, it will again reflect the ray 3 up against the ceiling, as shown by the line 4 and the ceiling will reflect this ray in a downward and outward direction, as shown by the line 4'. Lines 5—5 show how a ray of light passing through the inner glass member K is reflected by the under surface of the cover I in a downward and outward direction, thereby utilizing the rays which strike the under surface of this cover. Lines 8—8 show rays of light passing through both the glass reflecting medium K and the inclosure G. Lines 9—9 show rays passing through the inner reflector K and reflected by the inner surface of the inclosure G against the under side of the cover I by which they are again reflected as shown by line 9'.

In Fig. 3, lines 6—6' show how a ray of light refracted by one of the prisms on the glass reflector K is reflected back against the tube R by the inner surface of the inclosure G. The tube R being coated with a white reflecting enamel, the ray 6' is again reflected in an outward direction, so as to

light the portion of the inclosure 7—7, which would otherwise show the strong shadow of the tube R. The cushions E, H and M not only protect the glass-ware against the possible breakage due to a difference of expansion between the glass and the metal members of the fixture, or to breakage from sudden jarring, but also exclude dust from the part of the fixture intervening between reflector K, inclosure G and the cover I, which dust would interfere both with the reflection of the light by the glass ware and with the free passage of the light through the same. Should any dust still enter in the course of time, the cover I, together with the reflector and lamp carried by it can readily be raised sufficiently to allow the inner surface of the inclosure G and the outer surface of the reflector K to be cleaned, the flexibility of the wires Q—Q readily permitting such a raising of the cover.

Where a number of lamps are to be grouped in a single fixture, I provide the cover I with a number of openings as shown in Figs. 4 and 5, each opening being fitted with a separate glass reflector and lamp. In such a multi-light fixture, I preferably run the wires Q—Q to a vertical central pipe R, through which the wires are connected to the sockets N<sup>1</sup> and N<sup>2</sup> through auxiliary pipes R<sup>1</sup> and R<sup>2</sup>. The outer surface of these pipes R<sup>1</sup> and R<sup>2</sup> are coated with a reflecting covering, preferably of baked enamel, which will reflect some of the rays of light striking these pipes, so as practically to eliminate the shadows otherwise cast by these pipes.

By varying the number of openings in the cover and the number of reflectors and lamps, I can adapt my invention to any desired number of lights. By changing the shape of the reflector K, I can adapt it to various distances between the fixture proper and the ceiling or diffusing medium A. While I have spoken of these fixtures as used in connection with a ceiling, it is evident that any substantially horizontal surface of a diffusing nature placed above the fixture proper will answer regardless of whether or not it also serves as the ceiling of the room.

Since the intensity of illumination decreases rapidly with the distance from the source of light, it is also evident that the lighting efficiency of the rays diffused by the ceiling will be less than that of the rays passing direct through the inclosure to the objects which are to be lighted. By thus dividing the light and using part of it in the form of direct rays (softened by the translucent inclosure) and part in the form of rays diffused by the ceiling, I am able to obtain a lighting effect free from objectionable glare without the objectionable loss in

efficiency met when all of the lighting is done by rays redirected from the ceiling. Moreover, by utilizing the cover surfaces as reflectors, I avoid the loss of light by absorption from such covers, which is an important item particularly where a number of lamps are used in a single fixture.

While I have shown and described my invention in its preferred embodiments, I do not wish to be limited to the exact arrangement or shaping of the various elements as shown and described, as numerous modifications could be made in the same without departing from the spirit of my invention.

What I claim as new and desire to cover by Letters Patent is:—

1. A lighting fixture, including a lamp; a translucent inclosure for the lamp, the said inclosure being open at the top; a cover for the inclosure; an opening in the cover through which the lamp may project; upper and lower reflecting surfaces on opposite sides of the cover; and a light diffusing medium above the cover and at some distance from it; the upper reflecting surface being so positioned as upwardly and outwardly to reflect rays of light reflected downwardly against the said upper reflecting surface by the light diffusing medium; the under reflecting surface being so positioned that rays of light striking it from below will be reflected by it downwardly through the inclosure.

2. A lighting fixture including an upwardly open translucent inclosure; a lamp mounted within the inclosure; a diffusing medium at some distance above the inclosure; a cover for the inclosure, the said cover having an opening opposite the lamp for allowing light from the lamp to pass through the cover to the diffusing medium; the said cover having reflecting surfaces on its upper and lower sides; and a translucent reflector intermediate between the lamp and the inclosure, the said translucent reflector serving to direct a portion of light upwardly against the diffusing member while allowing another portion of the light to pass through the translucent reflector.

3. A lighting fixture including a substantially horizontal diffusing medium; an upwardly open translucent inclosure at some distance below the same; a cover for the inclosure, the said cover having a plurality of perforations; a translucent reflector mounted on each of the said perforations; a lamp mounted within each translucent reflector; each of the said translucent reflectors serving upwardly to direct part of the light of the lamp mounted within said reflector; and reflecting surfaces on the upper and lower sides of the said cover.

4. A lighting fixture including a lamp; an inclosure for the same; a light refracting member intermediate of the lamp and the

inclosure; wires for supplying current to the lamp; and a wire duct mounted within the inclosure, through which duct the wires pass to the lamp; the exterior of the said duct having a coating of light reflecting material.

5 5. A lighting fixture including a lamp; an inclosure for the same; a translucent reflector intermediate of the lamp and the inclosure; a diffusing medium against which  
10 part of the light of the lamp is directed by the said translucent reflector; and dust excluding members for excluding dust from the interior of the said inclosure.

15 6. A lighting fixture including a lamp,

an upwardly open translucent inclosure for the same; a cover for the inclosure; a perforation in the cover; a translucent reflector mounted within said covered inclosure; a diffusing medium against which part of  
20 the light of the lamp is directed by the said translucent reflector through the perforation in the cover; and means for excluding dust from the chamber bounded by the inclosure, the cover and the translucent re-  
25 flector.

ALVA H. KROM.

Witnesses:

AMY SNAPP,  
A. J. KRELLE.