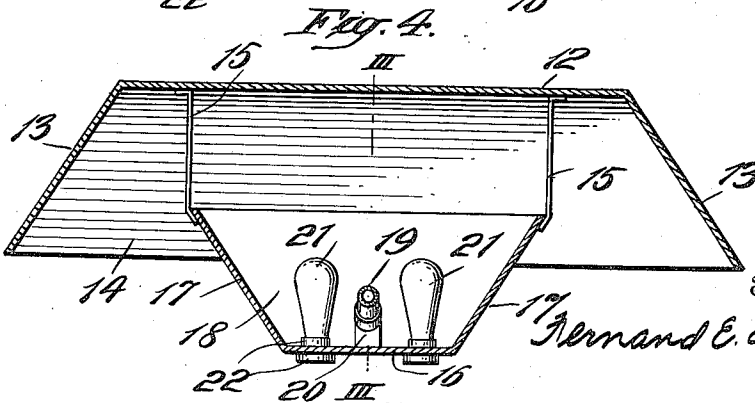
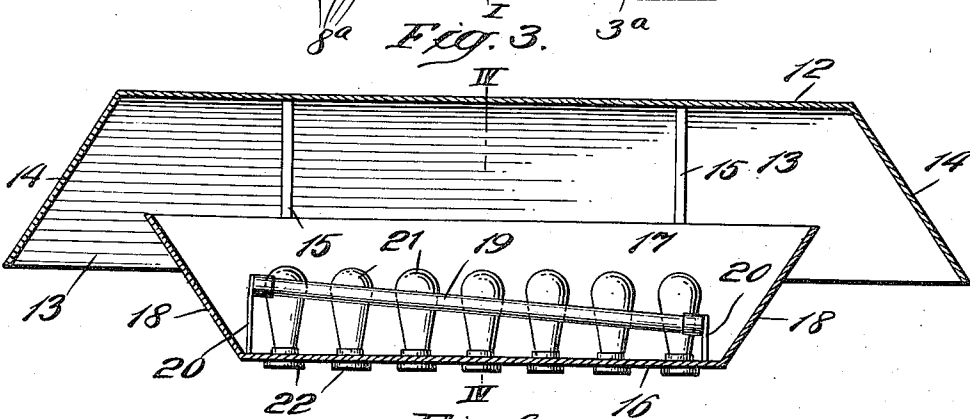
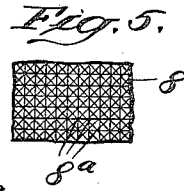
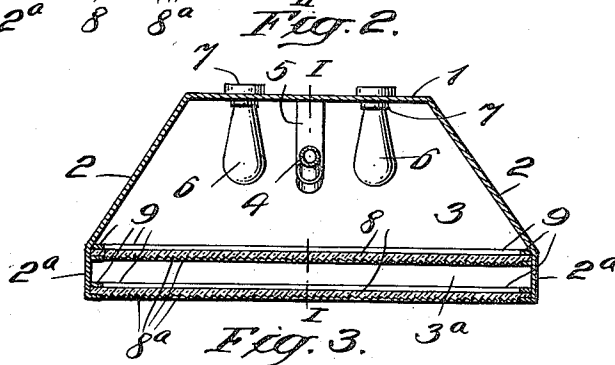
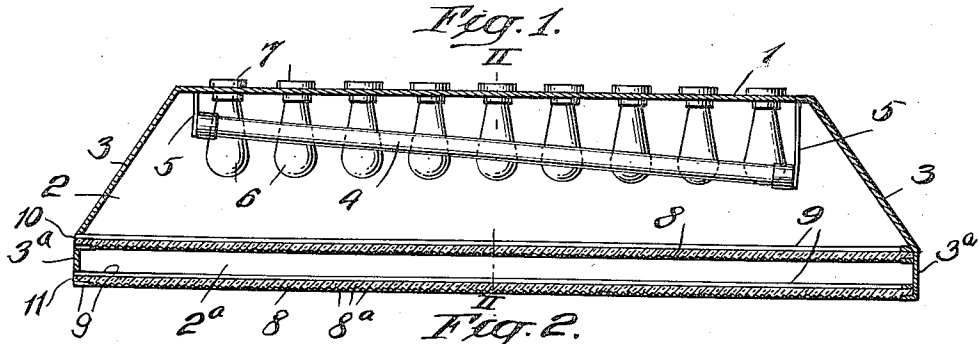


F. E. D'HUMY,
ILLUMINATING DEVICE.
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1,324,008.

Patented Dec. 2, 1919.



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ILLUMINATING DEVICE.

1,324,008.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FERNAND E. D'HUMY, a citizen of the United States, and resident of Englewood, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Illuminating Devices, of which the following is a specification.

This invention relates to electrical illuminating apparatus and has for its object the provision of means for producing artificial illumination resembling ordinary daylight.

The light emitted by ordinary incandescent electric lamps does not possess the colors of the spectrum in the same relative proportions or values as ordinary daylight but, as is well known, possesses an excess of red rays. It has heretofore been proposed to screen or filter out the excess of red rays by passing the light from such lamps through colored glass, but such methods are obviously wasteful of electrical energy as the rays arrested by the screen are transformed into heat and the illuminating power of the lamp is proportionately diminished. By the present invention an illuminating device is provided for producing artificial daylight in which this waste of energy is avoided and the degree of illumination is augmented by the means for neutralizing the excess rays emitted by the sources of light.

In the drawings, Figure 1 is a vertical longitudinal sectional view of one form of device embodying the invention, taken on the line I—I of Fig. 2;

Fig. 2 is a transverse section on the line II—II of Fig. 1;

Fig. 3 is a vertical longitudinal sectional view showing another form of device embodying the invention, taken on the line III—III of Fig. 4; and

Fig. 4 a transverse section on the line IV—IV of Fig. 3.

The form of illuminating device shown in Figs. 1 and 2 is adapted to be suspended from a ceiling or other support and is designed for direct illumination. This device comprises a metallic casing having an elongated rectangular top wall 1 and downwardly and outwardly flaring side and end walls, the bottom of the casing being open. The side walls 2 and the end walls 3 are formed at their lower edges with vertical portions or flanges 2^a and 3^a, respectively,

forming a rectangular frame at the bottom of the casing.

A mercury vapor arc lamp 4 of the well-known inclined tube type is supported centrally of the casing and extends substantially from end to end thereof. The mercury vapor electric lamp may be of any well-known or suitable construction and is held to the top wall of the casing by suitable supporting devices 5. At each side of the mercury vapor tube is a row of incandescent electric lamps 6 depending from suitable sockets 7 mounted in the top wall 1 of the casing. While I have shown the lamps 6 as suspended from the top wall of the casing in rows parallel with the mercury vapor tube, it will be obvious that the lamps may be arranged in staggered relation or otherwise, and supported in various ways within the casing.

In the rectangular frame formed by the vertical extensions 2^a and 3^a of the inclined side and end walls of the casing two superposed parallel glass plates or lenses 8 are mounted. These plates 8 are slidably supported in channels or ways 9 in spaced relation with each other and are removable through suitable openings 10 and 11 formed by cutting away parts of the flange 3^a at one end of the casing. The lower face of each glass plate 8 is molded or otherwise formed with a multiplicity of small prisms 8^a.

The inner surfaces of the top, side and end walls of the casing are polished to form a plurality of angularly disposed light-reflecting surfaces. These reflecting surfaces serve to project the light rays from the mercury vapor lamp and the incandescent lamps downwardly through the glass plates 8, and owing to the angular arrangement of the flaring side and end walls and the top wall it will be obvious that the rays from the various lamps will be projected at different angles toward the glass plates, thus partly mixing the rays from the mercury lamp and the rays from the incandescent lamps. As the light rays pass successively through the two glass plates 8 they will be bent or deflected in all directions owing to the refracting properties of the numerous small prisms formed on the under surfaces of the plates. It will be obvious that a flux of highly diffused rays will thus be formed and that the flux will comprise rays from sources of light of different spectrum values thoroughly

mixed or intermingled to avoid zones of light of varying spectrums in the flux. As light from the mercury vapor lamp is deficient in red rays and the light from the incandescent lamps has an excess of red rays, it will be seen that by arranging the two types of lamp in juxtaposition and providing means for thoroughly mixing the rays emitted thereby, an illuminating device is provided adapted to produce a light having a uniform spectrum value throughout its field and that an illumination is obtained resembling ordinary daylight, since the deficiency of red rays in the light from the mercury lamp will be balanced by the excess of such rays in the light from the incandescent lamps.

In Figs. 3 and 4 the invention is shown embodied in a device adapted for producing an indirect light. In this construction the casing is formed in two sections. The upper part of the casing is adapted to be suspended from a ceiling or other support and has an elongated rectangular top wall 12 and downwardly and outwardly flaring side and end walls 13 and 14, the bottom of this upper casing section being open. The lower casing section is smaller than the upper section and is suspended within the open lower end of the upper section by suitable brackets 15. This lower section has an elongated rectangular bottom 16 and upwardly and outwardly flaring side and end walls 17 and 18, the upper side thereof being open.

A mercury vapor lamp 19 is supported within the lower casing section by suitable devices 20, and at each side of the mercury vapor lamp a row of incandescent lamps 21 are supported in suitable sockets 22. The inner surfaces of the two casing sections are finished to provide light reflecting surfaces. The light rays from the lamp 19 and lamps 21 will be directed upwardly at different angles by the reflecting surfaces of the bottom, side and end walls of the lower casing section, and will be re-directed downwardly at various angles by the angularly disposed reflecting surfaces formed by the top, side and end walls of the upper section. The rays from the two types of lamp will thus be mixed or intermingled and the flux of indirect light will have a uniform spectrum value throughout its field, this spectrum value being substantially that of ordi-

nary daylight owing to the neutralization of the excess of red rays, emitted by the incandescent lamps, by the light from the mercury vapor lamp which is deficient in red rays.

What I claim is:

1. An electric lighting apparatus comprising sources of light having different spectrum values arranged in juxtaposition, a plurality of parallel glass refracting plates arranged in spaced relation and provided with surfaces formed with a multiplicity of small prisms, and a reflector for projecting the light from all of said sources through said refracting plates.

2. An electric lighting apparatus comprising a tubular mercury vapor lamp, a plurality of incandescent electric lamps arranged closely adjacent opposite sides of the tubular vapor lamp at intervals substantially throughout the length of the tubular vapor lamp, a reflector having outwardly flaring walls extending about said lamps, and a ray-mixing lens held to the outer end of said reflector having a surface formed with a multiplicity of small prismatic projections.

3. An electric lighting apparatus comprising an elongated reflector having outwardly flaring side and end walls, an inclined tubular mercury vapor lamp supported in said reflector and extending longitudinally of the reflector centrally thereof, two parallel rows of incandescent electric lamps supported in the reflector closely adjacent opposite sides of the tubular mercury vapor lamp, and a ray-mixing lens held to the outer end of the reflector having its outer face formed with a plurality of projections.

4. An electric lighting apparatus comprising a tubular mercury vapor lamp, a plurality of incandescent lamps arranged at intervals in parallel rows adjacent opposite sides of the tubular mercury vapor lamp throughout the length of said vapor lamp, and means for projecting and mixing the light rays emitted by the lamps embodying a plurality of angularly disposed pairs of oppositely inclined flat ray-deflecting surfaces.

In testimony whereof I hereunto affix my signature.

FERNAND E. D'HUMY.