

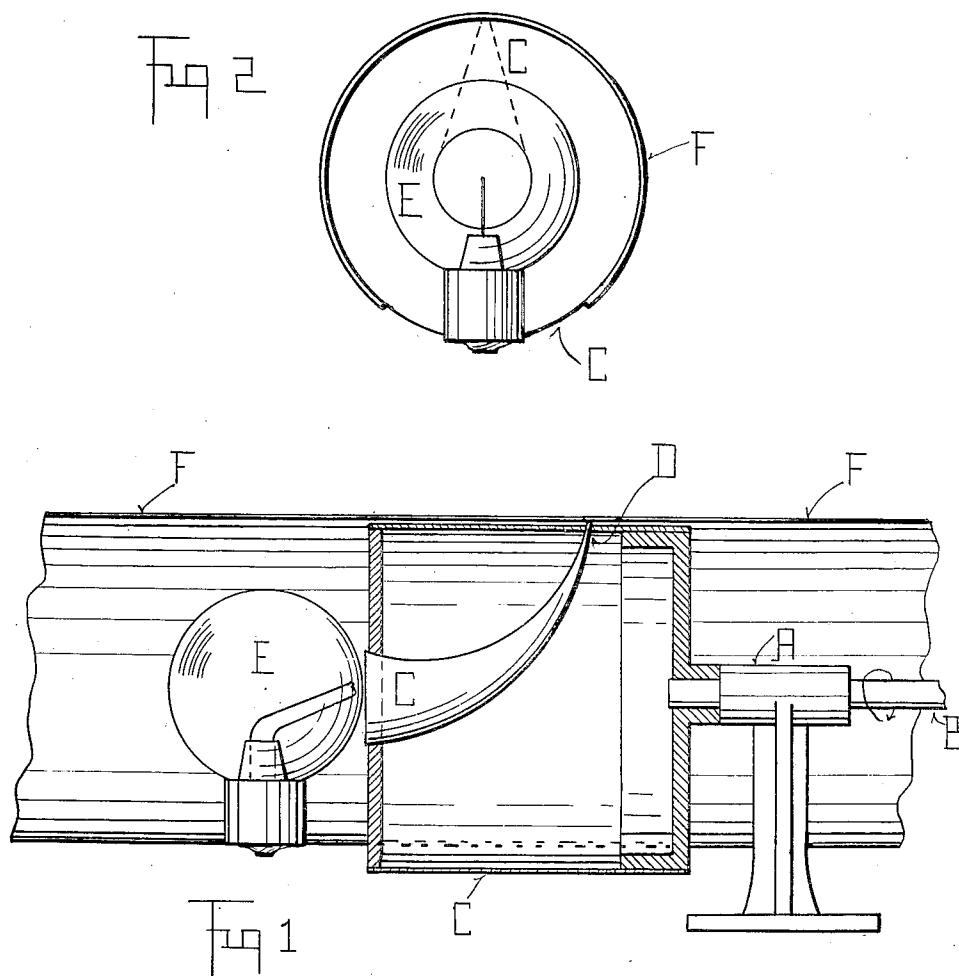
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LIGHT CONCENTRATING DEVICE

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UNITED STATES PATENT OFFICE.

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LIGHT-CONCENTRATING DEVICE.

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This invention relates to light sources, and means for applying same in a uniform, concentrated form in restricted locations, and has for its principal object the application of a large light source of high intensity in a relatively concentrated form to a given surface covering the whole surface by repeated journeys thereacross, and with as little time loss as possible.

10 Heretofore the concentration of light from a high intensity source has been attempted by applicant and others by means of lenses or mirrors, but difficulties are encountered. For example, there is the image of the source, often a coil filament, and that the surface is unevenly lighted. Again, there is often insufficient space in which to locate the lens to accommodate the two foci.

20 The device of this invention overcomes these objections, as hereinafter described, illustrated in the drawings, and particularly pointed out in the claims.

25 In the schematic drawings herewith Fig. 1 is a sectional elevation, and Fig. 2 an end view of one application of this invention.

In the figures, A is a bearing, in which rotates a shaft B, supporting a cylinder C, having located therein a curved funnel-shaped rod or tube of glass, quartz or other suitable material, the small end of which lies just inside a minute aperture D in the shell of the cylinder. The large end of the funnel-shaped element lies adjacent to the de-centred filament of lamp E. On the outside of the cylinder is a light-sensitive film or ribbon F encircling the cylinder for perhaps four-fifths to five-sixths of its circumference.

If it is remembered that light passes from a dense medium, as glass, water, quartz, etc., into a less dense medium, as air, for example, with difficulty, especially so if the light strikes the separating surfaces at an acute angle, the operation of the device is almost self-explanatory, i. e.—

Light from the lamp enters the end of the funnel-shaped member C, and is prevented from scattering by the reflecting wall thereof, compelling it to pass out at the very small end, in the aperture D in the shell of the cylinder, light-chemically exposing the film F, so that in development a minute

black spot appears, a spot of uniform density and very small area.

Should the cylinder be rotated this exposure will develop as a black line laterally of the film. If at the same time the cylinder rotates carrying the point of light across the film, the film is moved longitudinally, by hand, for example, the exposed line would 55 develop as a diagonal on the film strip.

Again, in order that this tiny point of light may be applied to the film efficiently, that is, as nearly continuously as possible, the film is wrapped around the cylinder as 65 nearly completely as the supporting of the lamp will permit.

It should be particularly noted that degree of size of the point of the light channel is an essential to success, a difference which is 70 the difference between success and failure, and not just a matter of degree.

Applicant is well aware that a funnel-shaped channel is not the most efficient shape for directing light but believes the invention 75 is easiest understood by a light channel of this shape.

What I claim, is—

1. In apparatus of the class described, a circularly-formed surface, the marking 80 means the source of which is located approximately at the axis of the circular surface, and means for directing the marking means into pointed contact with said surface, in a plane longitudinally removed from the 85 plane of location of the source.

2. The combination of a light source, a light channel of a denser medium than air, said light source located to project its light into said channel, said channel having a 90 minute clear opening at the end where light exits, and a light-sensitive surface located in front of the small end of the channel.

3. A light source, an apertured rotating cylinder, a light channel of a denser medium 95 than air, said light source located to project its light into said channel, said channel supported inside said cylinder and having a minute clear opening at the end where the light exists, the small opening in alignment 100 with the aperture in said cylinder, and a light-sensitive film mounted on said cylinder.

4. A light source, an apertured rotating cylinder, a light channel of a denser medium

than air, said light source located to project its light into said channel, said channel supported inside said cylinder and having a minute clear opening at the end where the light exits, the clear opening in alignment with the aperture in said cylinder, and a light-sensitive film mounted on said cylinder.

5. The combination of a light source, an

apertured rotating cylinder, said light source being located to project its light through the ¹⁰ aperture in said cylinder, and a light sensitive film mounted on said cylinder.

In testimony whereof I have affixed my signature.

CHARLES FRANCIS JENKINS.