No. 672,109. Patented Apr. 16, 1901.

E. G. STEPHENS.

REFRACTOR.

(Application filed Aug. 9, 1900.)

(No Model.)

Fig. 1.

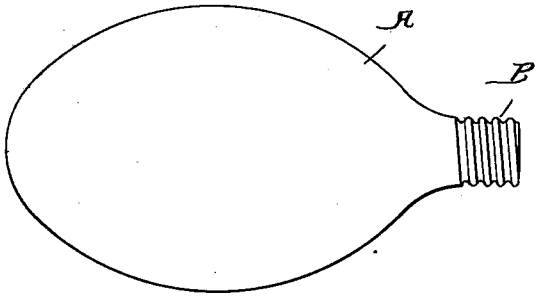


Fig. 2.

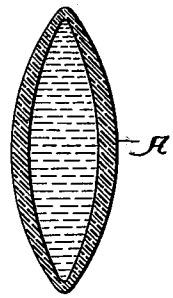


Fig. 3.

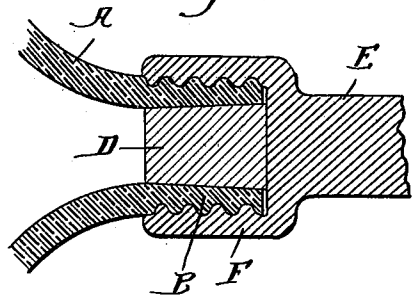
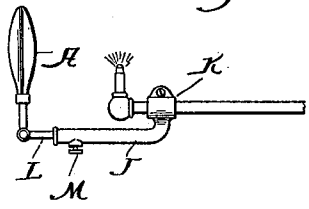


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWARD GEORGE STEPHENS, OF PHILADELPHIA, PENNSYLVANIA.

REFRACTOR.

SPECIFICATION forming part of Letters Patent No. 672,109, dated April 16, 1901.

Application filed August 9, 1900. Serial No. 26,353. (No model.)

To all whom it may concern:

Be it known that I, EDWARD GEORGE STEPHENS, a subject of the Queen of Great Britain, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a certain new and useful Improvement in Refractors, of which the following is a specification.

My invention relates to a new and useful improvement in refractors for various kinds of globes and other purposes, and has for its object to accomplish this purpose in an exceedingly simple manner by utilizing liquid contained within hollow glass of various forms.

With this end in view the invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claim.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan view of a magnifying-glass or refractor made in accordance with my improvement; Fig. 2, a cross-section thereof, showing the two sides to be convexed; Fig. 3, an enlarged section of the handle-socket in which the shank of the refractor is threaded, also showing a stopper for closing the interior of the glass and maintaining the liquid therein; Fig. 4, a view illustrating the application of my improved refractor to a gas-burner, the bracket being so arranged as to vary the distance between the flame and the refractor.

In carrying out my invention as here embodied I form the magnifying-refractor by providing a hollow glass casing of suitable shape, which is then filled with suitable liquid, preferably water, either in its clear state or colored, as the case may be, so that light striking this refractor may pass therethrough with a moving effect, while at the same time a portion thereof is reflected from the surface against which the rays strike.

In Figs. 1 to 4, inclusive, a refractor A is of the double-convex type and has a shank with screw-threads B formed thereon, and when this refractor is filled with liquid the opening in the shank is securely closed by the stopper D. The object of the threads B are to secure the refractor to a handle or a rod E, and this is accomplished by the internally-threaded socket F before formed thereon, which is adapted to receive the shank, as clearly shown in Fig. 3. For the purpose of supporting the refractor the arm E may have a right-angle extension G fitted in the hollow upright of the stand H, so that by means of a set-screw I the refractor may be raised or lowered or swung to the desired position and secured by this set-screw.

In Fig. 4 I have illustrated the adaptation of my improved refractor to a gas-burner in which the bracket J is provided with a clamp K for securement upon the gas-pipe, and the refractor A is mounted upon the right-angle rod L and made adjustable by the set-screw M. This permits the refractor to be varied in distance relative to the flame, and thereby vary the action thereof.

It is to be noted that a refractor made in accordance with my improvement secures no part of the light, but rather increases the illumination by diffusing the dark rays and shedding them in a more general manner, and when used as a direct refractor, as shown in Fig. 4, reflects a certain portion of the rays in one direction, while permitting a portion thereof to pass through the glass, thus casting no dark shadows, as in the case of metallic or other refractors.

My improvement is especially adapted for ornamental and decorating purposes, producing results which are not obtainable by ordinary refractors or globes, and, further, certain forms of my invention are admirably adapted for use as magnifying-glasses and can be manufactured at comparatively small cost.

I desire it to be distinctly understood that the particular shape of the various forms of my refractor is not an essential feature of my invention, as it may be made in various shapes—as, for instance, parabolic or other convenient shapes for any particular purpose.

In practice it will be found that my improved refractor first concentrates the rays

of light and then gives them out again in a diffused form, thereby increasing the general illumination.

Having thus fully described my invention, what I claim as new and useful is—

In combination, a refractor having convex walls, separated and filled with liquid and having a threaded socket, a bracket suitably supported, a rod slidable in the bracket, said rod having a socket in its end to receive the threaded end of the refractor.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

EDWARD GEORGE STEPHENS.

Witnesses:

MARY E. HAMER,

L. W. MORRISON.