350-312

Draftma

Dec. 10, 1929. S. BIELECKI 1,739,478

LENS

Filed Jan. 29, 1927

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X 2010

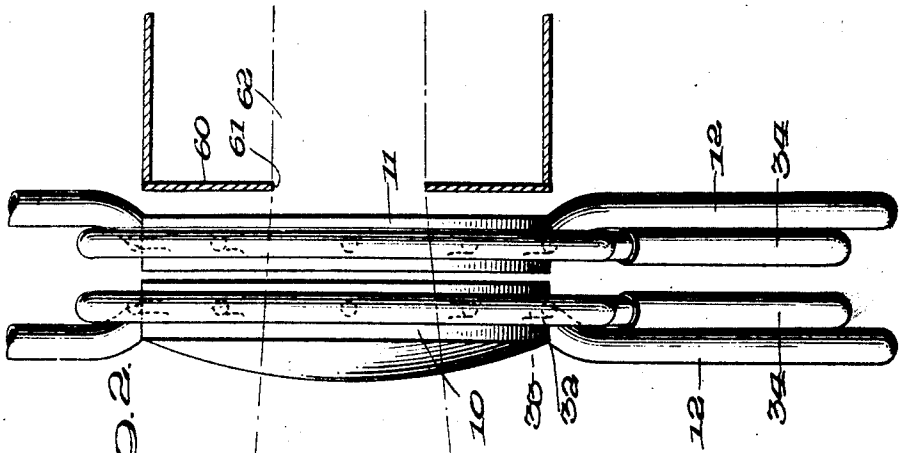


Fig. 2.

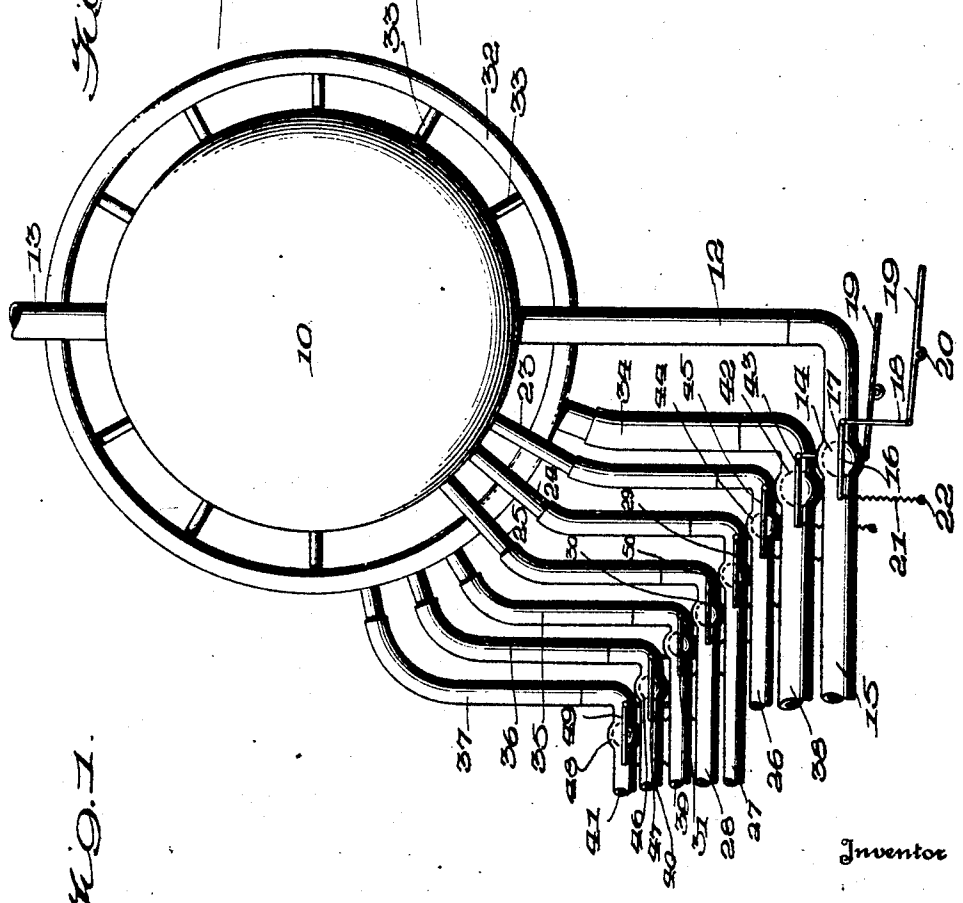


Fig. 1.

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Patented Dec. 10, 1929 1,739,478

UNITED STATES PATENT OFFICE

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LENS

Application filed January 29, 1927. Serial No. 164,519.

This invention relates to lenses and is more particularly directed to that type of lens adapted to be filled with a liquid to cause refraction of light rays.

An object of the invention is the provision of a device adapted to be applied across projected light rays and having a plurality of tubes connected therewith for supplying various colored liquids so that any color or any combination of colors may be obtained by conducting colored liquids either singly or in combination into a hollow transparent member shaped in the form of a lens.

A further object of the invention is the provision of a transparent hollow container which may be in the shape of a lens located across the path of projected light rays and to which container are connected a plurality of tubes conducting various colored liquids to the container for varying the color of the light rays, means being employed between the tubes and container for causing an even distribution of the fluids to said container.

A still further object of the invention is the provision of a transparent hollow container or a plurality of hollow containers disposed across the path of projected light rays with tubes connected to the containers for supplying the same with colored liquids, a key board being associated with the tubes for operating individual valves in said tubes so that the fluids which are under sufficient pressure to be forced into the transparent hollow containers may be admitted at will to the containers to produce any color or variation in a color as may suit the requirements, a flushing tube being associated with the containers for forcing any colored liquids from the containers.

The invention has been described and shown in its broad aspects only, and it should be understood that it is capable of such modifications and alterations as will better adapt it to existing conditions, and to the convenience of the user and without deviating from the spirit of the invention.

In the drawings:—

Figure 1 is a front view in elevation of a device constructed according to the principles of my invention, and

Figure 2 is a side view of the same.

Referring more particularly to the drawings, 10 and 11 designate a pair of transparent containers which may be substantially cylindrical in shape having their opposite faces flat or they may be shown as at 10 in the form of a convex lens. It will be appreciated that the containers may be also made in the shape of double convex or concave lens. In other words, the transparent container may be simply a container to receive liquids of varying colors or they may assume the shape of any particular type of lens adapted to be employed across the projected light rays from a projection camera or located in front of a device having projected light rays and employed for advertising purposes. When the containers are in the shape of lenses they may replace a projection lens or objective.

At diametrically opposite points either of the containers have a tube 12 in communication with the interior of the same for conducting liquid to the chamber within the transparent container and a tube 13 providing for a discharge of liquid from said container. The tube 12 is adapted to normally convey water or some transparent fluid to the containers. A valve 14 located within a tube 15 connected with tube 12 is adapted to control the flow of liquid to the containers. The valve is connected with a shaft 16 operated by a lever 17, a link 18 and a pedal 19 pivotally mounted at 20.

A spring 21 connected to one end of the lever 17 and to a fixed point 22 is adapted to maintain said lever in a predetermined position such as the horizontal for maintaining the valve 14 in closed position. Actuation of the pedal 19 causes opening of the valve 14 to permit the flow of liquids through the tubes 15 and 12. The lever 17 may be placed in any convenient position for closing the valve.

Tubes 23, 24 and 25 are in communication with the container 10 and are respectively connected with tubes 26, 27 and 28. The tubes 26, 27 and 28 are each respectively connected with tanks or a source of fluid which is colored so that when the levers 29, 30 and

31 are actuated the various liquids will be conducted or forced into the container 10. Each of the levers are actuated by their respective pedals 19.

A hollow ring 32 is located in embracing relation with a container and are connected to the containers by means of conduits 33 so that liquid which is forced into the hollow ring 32 will be discharged into the container 10 or 11 as the case may be. This hollow ring provides for a more uniform and rapid distribution of the fluids to the transparent containers by reason of the fact that the ring is in communication with the container through a plurality of uniformly spaced connnections.

The liquids may be maintained under pressure by mechanical means or they may be conducted from a tank which is sufficiently elevated to permit the liquids to flow by gravity into the container All of the tubes are provided with valves and are operated by means of levers. Valve 42 in pipe 38 is operated by means of a lever 43. Valve 44 in pipe 39 is operated by means of a lever 45. A valve 46 in pipe 40 and a valve 48 in pipe 41 are actuated respectively by levers 47 and 49. Each of the tubes 26, 27 and 28 are provided with a valve 50 which are actuated by the respective levers 29 to 31 inclusive. The various levers are connected by links similar to the link 18 and these links are actuated by their respective pedals 19. These keys or pedals are disposed upon a key board and may be operated manually or mechanically for selectively admitting the type of colored liquid to a container as may be desired.

When the device is used for advertising purposes the keys may be actuated by some electrical mechanism so that the various liquids can be discharged periodically into the container and produce any combination of colors that may be desired.

As shown more particularly in Figure 2 the pair of transparent containers 10 and 11 are associated with a projection camera indicated at 60, through an opening 61 of which light rays 62 are projected.

The operation of my device is as follows: The tube 15 is designed to provide for a continuous stream of water or other colorless fluid filling the hollow container and carrying along the colored fluid admixtures to be blended. The liquids are discharged through the tubes 13. When it is desired to produce an orange colored light a valve is operated through a key 19 which is adapted to supply a red liquid to the container 10 or 11 and another valve is operated which will permit the flow of a yellow liquid through the tube and into the container 10. When the desired shade of color is obtained the valves are closed. Any other combination of colors are obtained in the same manner by pressing the keys which are labeled for a particular color so that the operation of one or more will produce a predetermined colored fluid in either or both containers. Again, the red liquid may be discharged into the container 10 while a yellow liquid may be filled into the container 11. It will be seen by this structure that any number of colored liquids may be employed and produce any design for coloring and such coloring may be produced periodically and in timed relation with the moving parts of the projection apparatus.

Liquids of different densities may be discharged into either of the containers and of various colors so that the lighter liquids will float upon the heavier liquids whereby one portion of the container will produce a predetermined color while the remaining portion will produce another color.

I claim:—

1. In projection apparatus, a cell having transparent walls and adapted to be arranged in the path of a projected light beam, said cell being normally filled with transparent liquid, and having an inlet for said transparent liquid and a separate outlet, means for establishing a flow of transparent liquid through said cell, and means independent of said transparent liquid for selectively introducing into the flowing liquid within said cell, other liquids of different colors.

2. In projection apparatus, a cell having transparent walls and adapted to be arranged in the path of a projected light beam, said cell being normally filled with transparent liquid, and having an inlet for said transparent liquid and a separate outlet, means for establishing a flow of transparent liquid through said cell, and means independent of said transparent liquid inlet for selectively introducing into the flowing liquid within said cell, other liquids of different colors, said means including a conduit surrounding said cell having branches communicating with said cell at separate points.

3. The method of producing color effects by means of a liquid-holding transparent cell placed in the path of a projected beam comprising, establishing a flow of transparent liquid through said cell, and introducing into said cell into the transparent liquid flowing therethrough, other liquids of different colors.

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