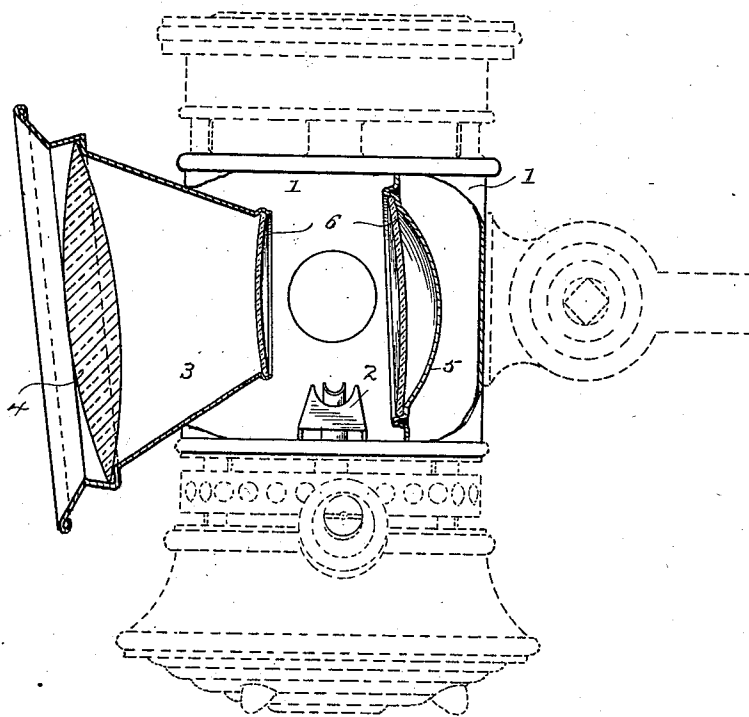


(No Model.)

F. RHIND.
BICYCLE LAMP.

No. 560,429.

Patented May 19, 1896.



WITNESSES

H. F. Lamb
S. V. Richardson.

INVENTOR

Frank Rhind
By *A. M. Wooster*
Atty.

UNITED STATES PATENT OFFICE.

FRANK RHIND, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE BRIDGE-
PORT BRASS COMPANY, OF SAME PLACE.

BICYCLE-LAMP.

SPECIFICATION forming part of Letters Patent No. 560,429, dated May 19, 1896.

Application filed March 19, 1896. Serial No. 583,948. (No model.)

To all whom it may concern:

Be it known that I, FRANK RHIND, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Bicycle-Lamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the class of bicycle-lamps in which the burner itself has no chimney, but the body of the lamp constitutes the chimney; and the object of my invention is to provide practical, durable, and inexpensive means for protecting both the back and cone reflectors and the glass at the front of the latter, so that said reflectors will not be injured or tarnished to the slightest extent in use, all dirt and soot being prevented from coming in contact with the reflectors and currents and eddies of air being prevented from entering the cone-reflector from the body of the lamp, so that the flame is caused to burn better, and smoking under ordinary circumstances is prevented. Moreover, should the wick be turned up too high or the body of the lamp be filled with smoke from any cause no smoke could come in contact with the reflecting-surface of either the front or cone reflectors to cause them the slightest injury, nor could the reflectors be injured by heat. In order to overcome these difficulties, I have devised the novel construction which I will now describe, and then specifically point out in the claims.

The figure is a sectional view illustrating the application of my invention to the well-known "Search-Light" lamp, portions of which are shown only in dotted lines.

1 denotes the body; 2, the burner; 3, the cone-reflector, which is provided with a glass 4 at its outer end, and 5 the back reflector.

6 denotes transparent concavo-convex shields having parallel faces, one of which I place in front of the back reflector and one at the inner end of the cone reflector. These concavo-convex shields are made of glass and may be held in place, respectively, in front of the back reflector and at the inner end of

the cone reflector in any ordinary or preferred manner, the special means of holding the shields in place not being of the essence of my invention, it being of course required that they should be readily removable.

It is of course well understood that when heat-rays of any appreciable intensity come in contact with a glass surface the glass will expand. It is impossible, however, to insure that expansion of all parts of the glass shall be uniform. Uneven expansion of the glass is, as a matter of fact, unavoidable, the expansion being necessarily greatest where the heat is most intense. If the surface with which the heat-rays come in contact is a flat surface, it is obvious that one of two things must happen—the glass must either bulge in some direction or break.

If, as in the present instance, the heat-rays are most intense at approximately the center of the glass, it is obvious that the sides of the glass will expand to a lesser extent than the center. As the molecules of the glass will be under uneven tension, one of two things must happen—the glass must either bulge or break. If the glass is flat, it is extremely unlikely that it will bulge and extremely likely that it will break, there being no impulse to start a curvature in either direction. I have found after long-continued experiments that it is practically impossible to make flat glasses serve the purpose of shields for the reflectors in bicycle-lamps, it being obvious that the shields must be in close proximity to the flame and that uneven expansion will take place every time the lamp is lighted. I have found, moreover, that by using curved—i. e., concavo-convex—shields the danger of breakage of the shields is practically done away with. The reason for this is that there is no resistance to the expansion of the glass, the glass expanding under heat in the direction of the curvature, and it making no difference, so far as I have been able to discover, at what portion of the shield the heat is most intense.

Having thus described my invention, I claim—

1. In a bicycle-lamp, the combination with a no-chimney burner, a body, and a cone reflector, of a back reflector having secured

thereto a transparent shield with parallel faces to protect the back reflector from smoke and heat.

2. In a bicycle-lamp, the combination with
5 a no-chimney burner, a body and a cone reflector, of a back reflector having secured thereto a protecting concavo-convex glass shield with parallel faces.

3. In a bicycle-lamp, the combination with
10 a no-chimney burner, a body, and a cone reflector, having a transparent shield with parallel faces on its inner end, of a back reflector having secured thereto a transparent shield also having parallel faces to protect
15 said reflector from heat and smoke.

4. In a bicycle-lamp, the combination with
a no-chimney burner, a body and a cone reflector having a protecting concavo-convex glass shield secured to its inner end, of a
20 back reflector, having secured thereto a transparent shield to protect it from heat and smoke.

5. In a bicycle-lamp, the combination with

a no-chimney burner, a body and a cone, of
a transparent shield with parallel faces secured to the inner end of the cone to protect
25 it from smoke and heat.

6. In a bicycle-lamp, the combination with
a no-chimney burner, a body and a cone reflector having secured to its inner end a protecting
30 concavo-convex glass shield, of a back reflector having secured thereto a protecting concavo-convex glass shield, substantially as described.

7. In a bicycle-lamp, the combination with
35 a no-chimney burner, a body and a cone, of a transparent concavo-convex shield with parallel faces secured to the inner end of the cone to protect it from smoke and heat.

In testimony whereof I affix my signature
40 in presence of two witnesses.

FRANK RHIND.

Witnesses:

A. M. WOOSTER,

S. V. RICHARDSON.