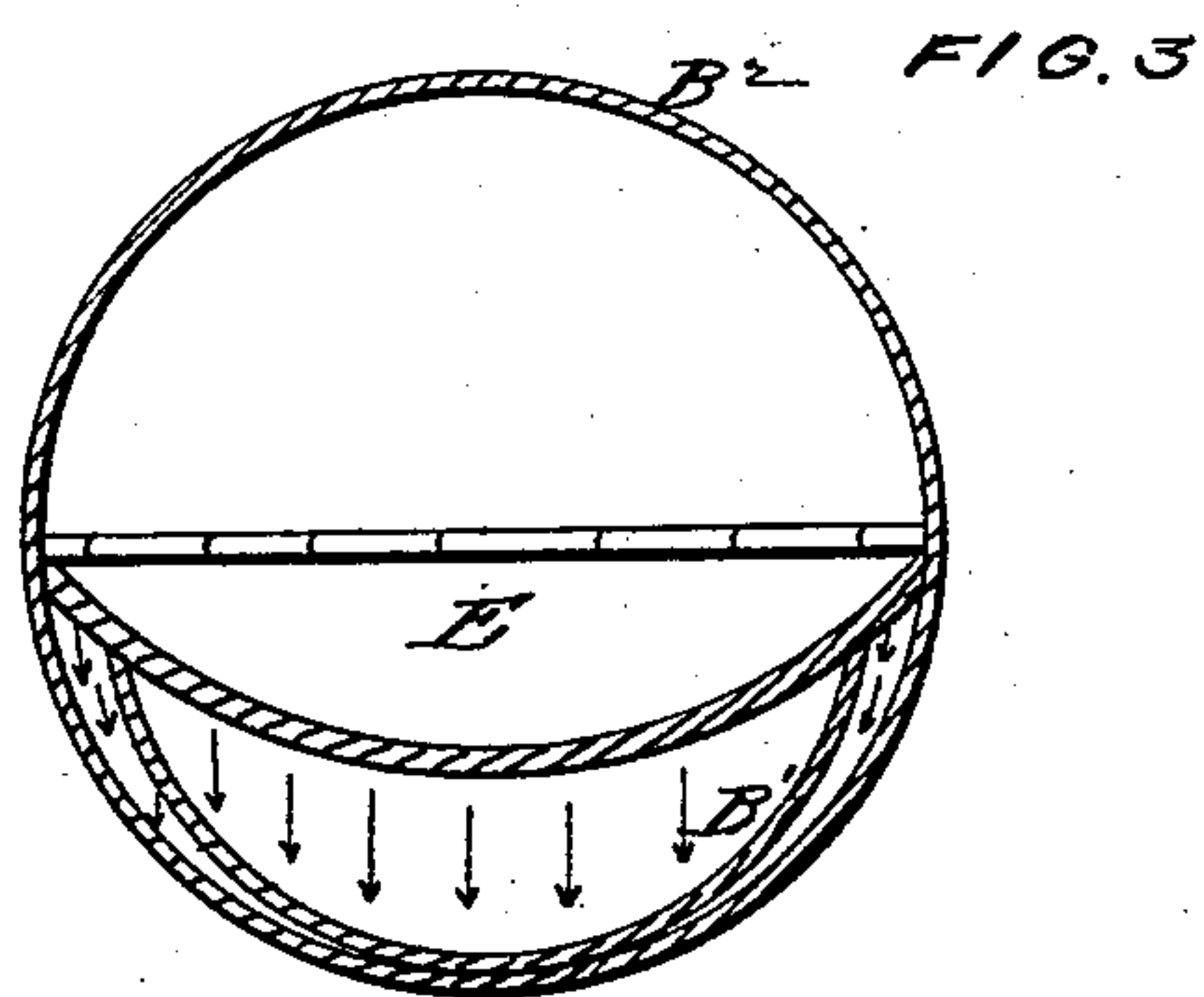
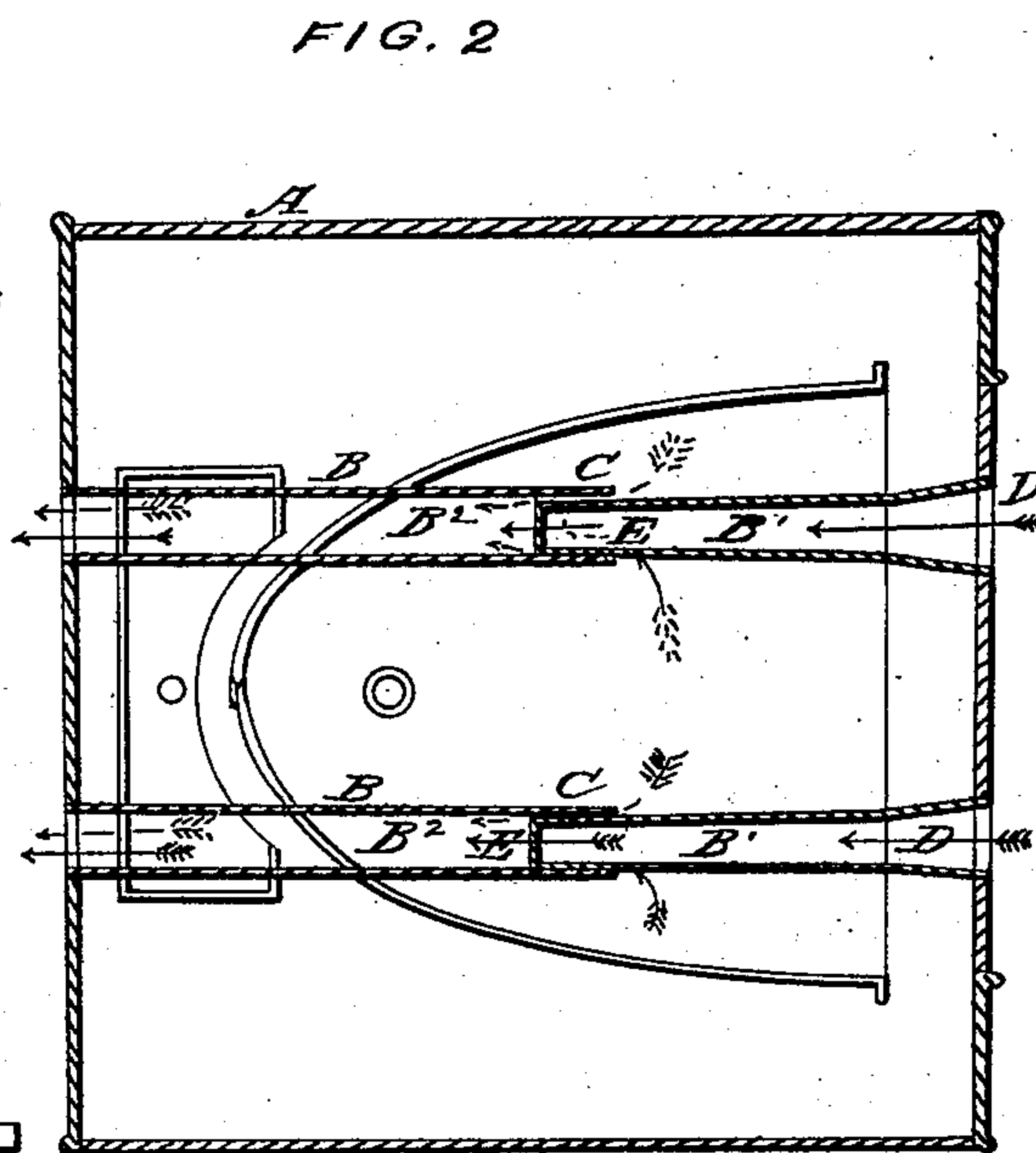
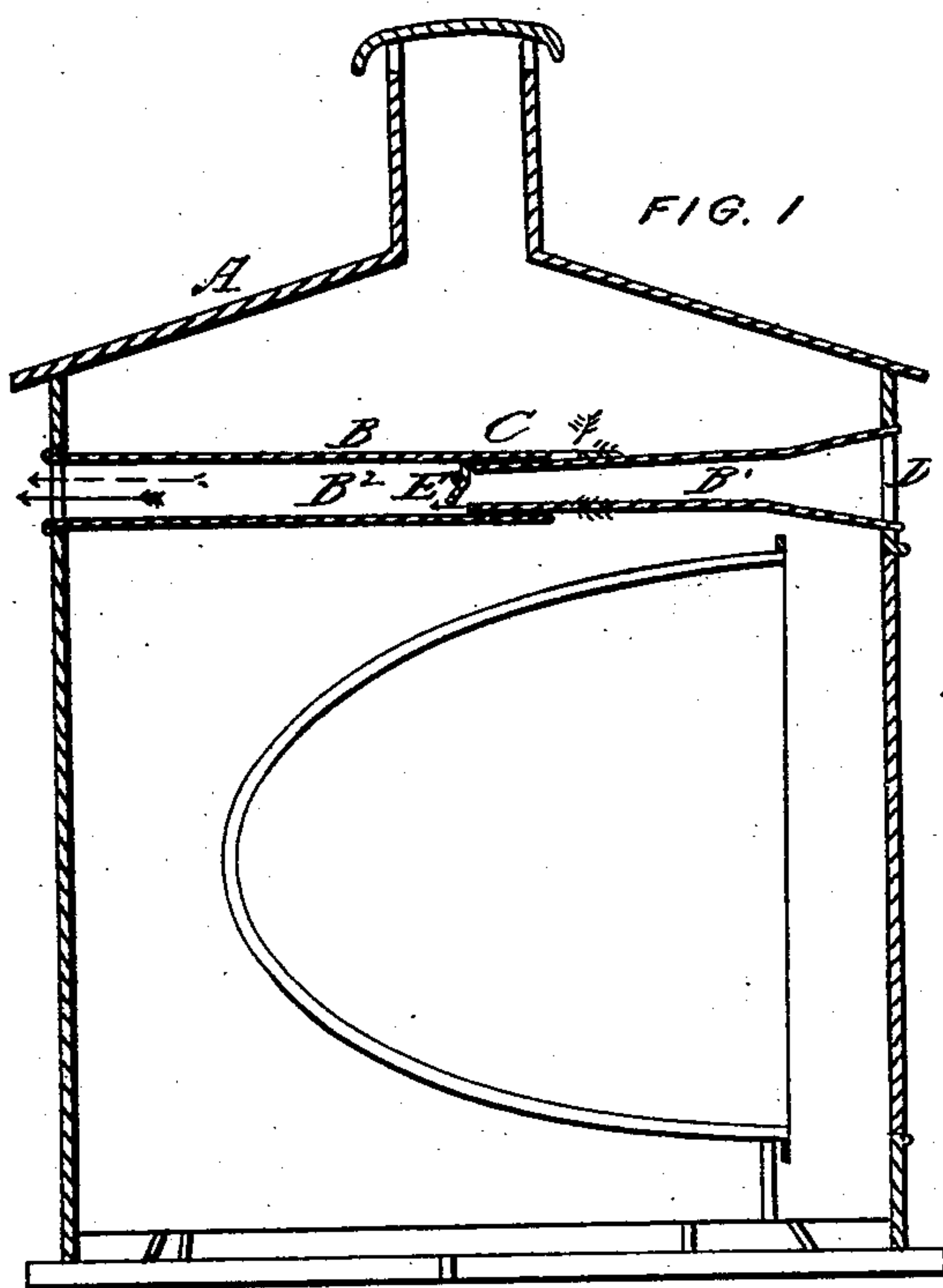


E. L. HALL,
Locomotive Head-Light.

No. 67,192.

Patented July 30, 1867.



WITNESSES:

Henry Green
John G. Crocker

INVENTOR:

Edwin L. Hall

United States Patent Office.

EDWIN L. HALL, OF UTICA, NEW YORK.

Letters Patent No. 67,192, dated July 30, 1867.

IMPROVEMENT IN LOCOMOTIVE HEAD-LIGHT.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, EDWIN L. HALL, of Utica, Oneida county, New York, have invented a new and useful Improvement in Locomotive Head-Lights.

In locomotive head-lights there is a constant tendency to overheating in consequence of the necessity of keeping the case close to prevent irregular currents of air from entering therein, which might affect the light; and such overheating, especially where kerosene or the like oil is used, causes the vapor arising therefrom to ignite, and injure or destroy the lamp.

The nature of my invention consists in reducing the temperature of the inside of the case by passing currents of cold air through tubes made to pass through the case, and which tubes are so arranged with openings and valves as to allow the heated air in the case to pass out, and yet permit none of the outer air to enter into the case through such openings or valves. And I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a sectional view of the lamp-case, with a tube therein.

Figure 2 is a plan of the case, showing the tubes; and

Figure 3 is an enlarged transverse section of the tube, showing the valve therein.

A is the case; B is the air-tube; B¹ is the front part thereof; B² is the rear part; C is the joint of the two parts; D is the funnel-mouth of the tube, and E is the valve. The case A may be constructed in any of the well-known forms, or in any other suitable form. Extending from the front to the rear of the case, and opening at both ends into the outer air, is one or more air-tubes B, as seen in figs. 1 and 2. Each tube is formed of two parts, B¹ and B², which are united by extending the smaller end of the part B¹ into the contiguous end of B² sufficient to prevent the air passing through from entering through the joint into the case, say from two to four inches. The inserted end of B¹ is made sufficiently smaller than B² to allow free passage for the hot air in the case to pass into B², say one-eighth of an inch all around. The front end of B¹, D, is enlarged, funnel-form, to catch and force in the air, as seen in figs. 1 and 2. In B² is a valve, E, sufficiently large to close it, and which is placed against the end of B¹, so that, when closed, it will close the end of B¹ as well as the tube B². Instead of having a space all around the inserted end of B¹ and B², the inner tube may rest on, or be attached to, the under side of the outer tube B², as seen in fig. 3. If the air-tube is cylindrical, the upper half of the valve is made permanent, and the lower half is hinged to it at the centre, as seen in fig. 3.

The operation is as follows: The head-light being in place on the engine, with the funnel-end D of the tube forward, when the engine is started, the cold air rushes into the air-tube B through the funnel end D, and, forcing open the valve E, passes out at the rear end of the tube B. This constant current of cold air passing through the interior of the case tends to reduce its temperature. At the same time this current of air, in passing rapidly over the joint C, creates a partial vacuum in the space between B¹ and B², and the heated air of the case rising to fill it, is carried out of the case with the cold air. The course of the cold air is indicated by the black arrows, and that of the heated air by the red arrows, as seen in figs. 1, 2, and 3. The combined action of the currents of cold air passing through the case and the heated air being drawn from the case keeps the air in the case at a low temperature, and the danger of ignition from the vapor or dripping oil is greatly diminished, if not entirely obviated. Should the engine be reversed, or there be a counter-current of air, the valve E closes, and prevents the outer air from entering the case through the joint C. The form of the tubes is not material, but the larger and greater the cooling surface they present, and the greater their capacity for carrying off heated air without at the same time creating too great a current in the air in the case, the more perfectly they will keep the air in the case cool. Instead of passing the air through straight tubes, as described, the rear part may be bent upward, and the air passed out at the top of the case. And instead of making the tube in two parts, it may be in one part, having an opening in the under side at about the position of the joint C, which opening should have a cover extending from the front part thereof to some distance beyond the rear end, say from two to four inches, with a valve at the rear end, so as to close the passage made by such opening and cover into the case, to prevent the air from entering into the case when the engine is reversed or there is a counter-current of air. But the first-described form is considered preferable. Instead of running the tube or tubes straight through the case, they may be turned upwards, and made to pass out of the roof or top, or they may be turned into the ventilator, in which case no valve will be necessary.

What I claim as my invention, and desire to secure by Letters Patent, is—

The tube B, constructed and operating substantially as described and for the uses and purposes mentioned.

EDWIN L. HALL.

Witnesses:

HENRY GREEN,

JOHN G. CROCKER.