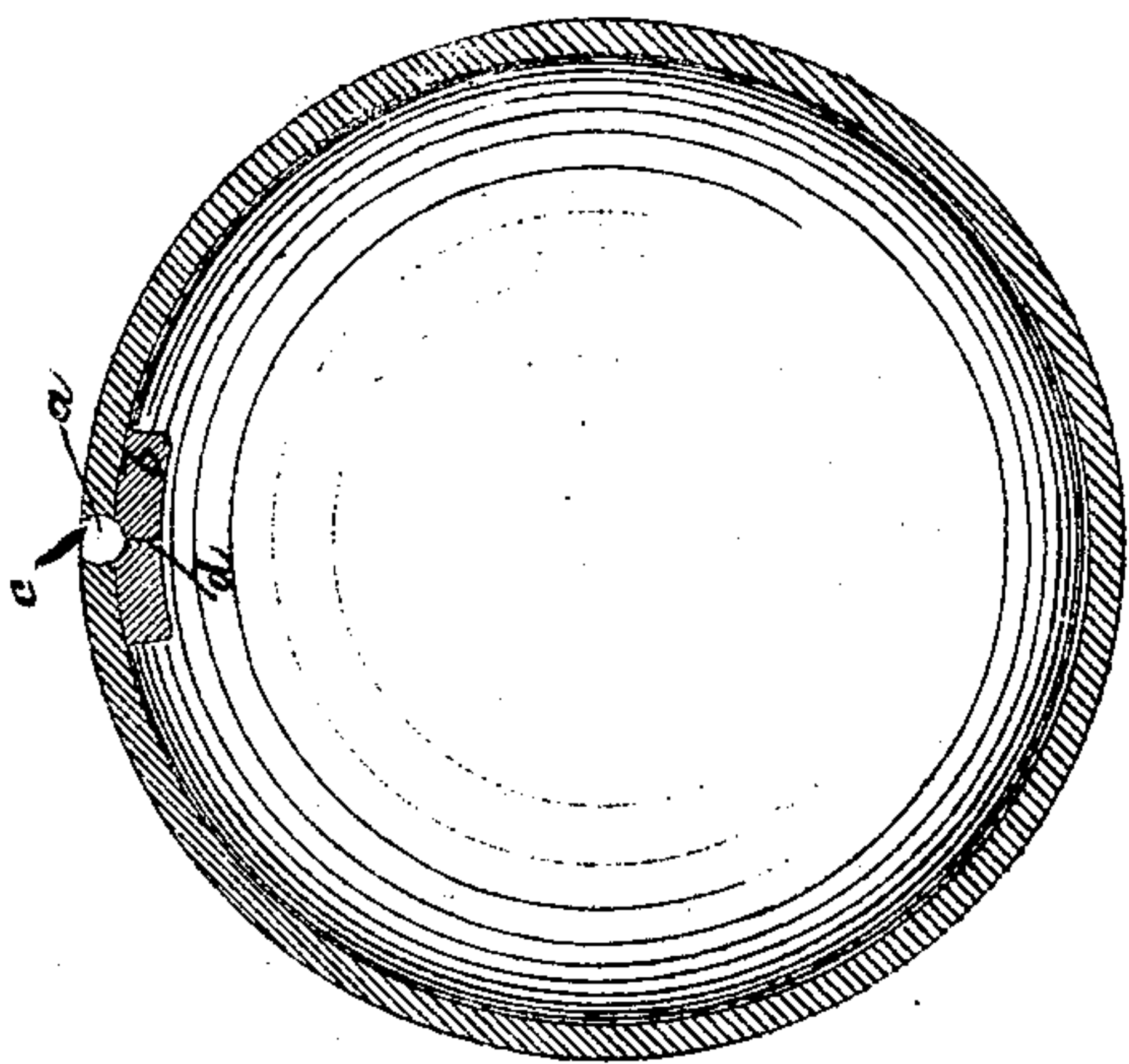


H. A. ALDEN.  
MANUFACTURE OF VULCANIZED INDIA RUBBER BALLS.  
No. 79,535. Patented July 7, 1868.

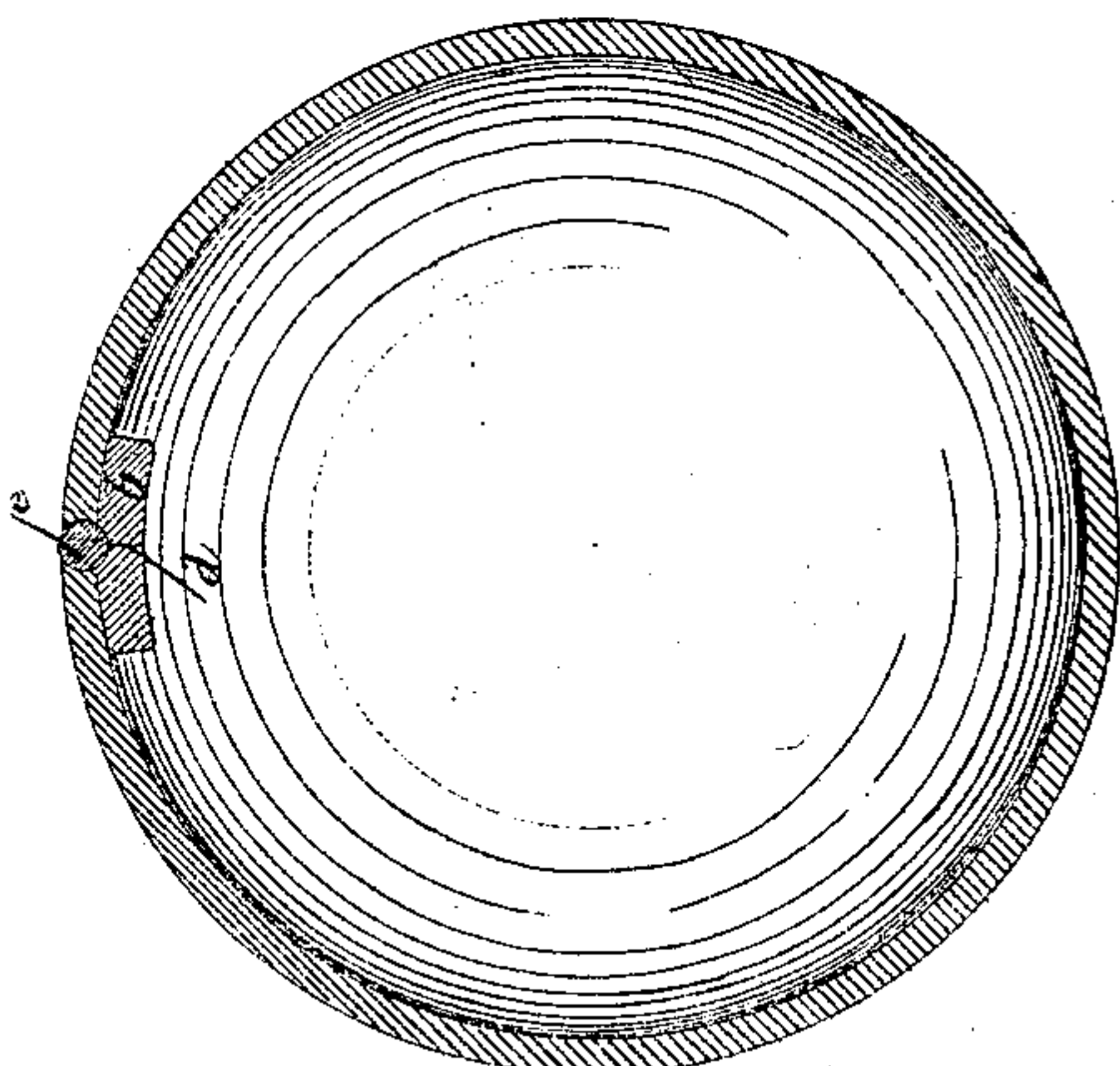
FIG. 1.



WITNESSES

*W. Bailey*  
*Charles Page*

FIG. 2.



*Henry A. Alden*  
*by his attorney*

*A. M. M. M.*

# United States Patent Office.

HENRY A. ALDEN, OF MATTEAWAN, NEW YORK, ASSIGNOR TO THE NEW YORK RUBBER COMPANY, OF NEW YORK CITY.

Letters Patent No. 79,585, dated July 7, 1868.

## IMPROVEMENT IN THE MANUFACTURE OF VULCANIZED INDIA-RUBBER BALLS.

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

### TO WHOM IT MAY CONCERN:

Be it known that I, HENRY A. ALDEN, of Matteawan, in the county of Dutchess, and State of New York, have invented certain new and useful Improvements in the Manufacture of Vulcanized India-Rubber Balls; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings.

My invention relates to the manufacture of hollow vulcanized India-rubber balls, and other articles requiring to be distended by inflation, and it has reference more particularly to the construction and method of forming the valve through which air is introduced into or discharged from such articles.

The process of manufacturing the ball itself is too well known to those skilled in the art to which this invention pertains to need description, and I shall, therefore, confine attention to the method of forming the valve, and uniting or combining it with the ball.

Before putting together the parts or sections of the ball or other hollow article, a shot is embedded in one of the quarters or sections, it being pressed into the material from the inside, and so as not to penetrate to or break through the outer surface. A small piece of rubber, prepared for vulcanizing, is then applied to the inside surface of this quarter of the ball, and so as to cover the shot, as shown in Figure 1, which is a sectional view of a vulcanized and finished ball made in accordance with my invention. The recess or chamber *a* in the ball is formed by the embedded shot, and the part *b* represents the piece of rubber which is placed upon the interior surface of the ball, over the shot, and forms the valve.

After the shot has been embedded, and the piece *b* applied, in the manner above stated, the ball or other hollow article is made up and vulcanized in the usual way, the valve-piece *b* being vulcanized with the rest of the ball. After the vulcanizing is completed, the shot is removed by cutting on the outside of the ball, and just above the shot, a hole or aperture, *c*, of sufficient size to allow the shot to be forced out from the chamber *a* with the fingers. This hole can be cut with a small punch, or by any other suitable means. When the shot has been removed, a small knife, with the edge on its end or point, is passed through the chamber *a*, and is forced down through the valve-piece *b*, cutting therein a slit, *d*, which constitutes the valve or opening through which communication is had with the interior of the ball. When a slit of proper size has been cut, the knife is then withdrawn, and the ball is completed and ready for use, the valve being formed and shaped as illustrated in fig. 1.

Owing to the elasticity of the material of which the valve-piece *b* is formed, the lips of the slit *d* are pressed tightly together, so as to render the ball practically air-tight. When, therefore, it is desired either to inflate the ball, or to discharge the air from it, a small tube of any kind, such as a quill, pipe-stem, or metal tube of suitable size, should be thrust down through the chamber *a* until its end passes between and opens the lips of the valve *d*. Air can now be readily blown into or forced out from the ball, and, upon removing the tube, the valve will at once close, and shut off all further communication with the interior of the ball.

It may happen that, when the ball is in use, the chamber *a*, if left open, as seen in fig. 1, will become filled with dirt. In order to remedy this difficulty, and, at the same time, to prevent possibility of the leaking of the valve, a shot, *e*, somewhat larger than the chamber, *a*, formed by the first shot, may be inserted in the chamber, as represented in Figure 2, thus effectually closing the valve, and preventing the entrance of dirt. Instead of the shot, other suitable means may be employed, if desired.

Having now described my invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is as follows:

1. The method of forming the valve for the admission and discharge of air into and from rubber balls, or other hollow articles requiring to be distended by inflation, substantially in the manner herein shown and described.
2. A vulcanized India-rubber ball, or other like hollow article, the aperture or opening in which, for the



passage of air, is closed by an elastic valve-piece, provided with a slit or valve-opening, *d*, and applied to the interior surface of the ball, substantially as herein set forth.

3. The employment, in connection with the chamber or opening formed in the ball, and the elastic valve-piece, for closing said chamber, of a shot, or its equivalent, inserted in said chamber, so as to close the valve tightly, and prevent the entrance of dirt, as set forth.

In testimony whereof, I have signed my name to this specification before two subscribing witnesses.

HENRY A. ALDEN.

Witnesses:

R. A. PIPER,  
M. HILLYER.