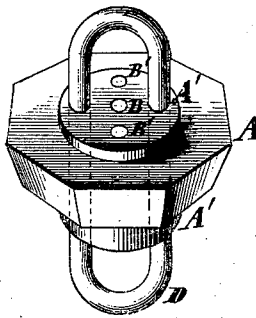


A. W. NEWHALL.  
Buckets for Chain-Pumps.

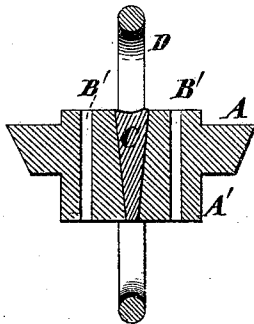
No. 155,965.

Patented Oct. 13, 1874.

*Fig. 1.*



*Fig. 2.*



*Witnesses:*  
*A. Ruppert.*  
*R. Mason*

*Abner W. Newhall*  
*Inventor.*  
*by*  
*D. P. Holloway & Co.*  
*his attys*

# UNITED STATES PATENT OFFICE.

ABNER W. NEWHALL, OF HORSEHEADS, NEW YORK.

## IMPROVEMENT IN BUCKETS FOR CHAIN-PUMPS.

Specification forming part of Letters Patent No. **155,965**, dated October 13, 1874; application filed May 1, 1874.

*To all whom it may concern:*

Be it known that I, ABNER W. NEWHALL, of Horseheads, in the county of Chemung and State of New York, have invented a new and useful Improvement in Expansion-Buckets for Chain-Pumps; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings making part of this specification, in which—

Figure 1 is a perspective view, and Fig. 2 a vertical section.

My invention relates to that class of solid elastic buckets or valves for chain-pumps in which the buckets are made of india-rubber and have a feather-edge around the base, which is compressed, in drawing it through a tube, so as to make a tight joint and lift the water above the bucket, at the same time forming a vacuum below it. My improvement consists in giving a polygonal form to the bucket, the sides of which are so proportioned that as the bucket is drawn through the tube its feather-edge shall not be compressed so as to form a circle, like the hemispherical buckets heretofore known, but retains enough of its polygonal form to leave narrow spaces between the edges of the bucket, midway between the angles and the surface of the tube.

By this construction it becomes unnecessary to introduce leak-holes through the valve for the escape of the water when the pump is stopped.

Another improvement included in this application is applicable to round as well as to the polygonal edged buckets, and has for its object the expansion of the bucket to make it fit the tube as it becomes worn from use. This is done by forming a hole through the center of the solid india-rubber bucket, into which a conical or tapering pin may be driven, to expand the bucket and set out its edges sufficiently to maintain the contact with the surface of the tube.

Instead of having the hole in the center, or in addition to the hole in the center, holes may be placed at a little distance on each side of the center, and about equidistant therefrom.

Two or more holes may be used for the same purpose, as when pins are driven into these they will expand the rubber on their respective sides to meet all the requirements in practical use.

In the annexed drawings, A is the rim of a valve made of india-rubber, being in form a frustum of an eight-sided pyramid, connected in one piece with a central cylindrical portion, A', projecting above and below. Through the center is a hole, B, and I have also shown on each side other holes, B' B', equidistant from the center.

When the edge of the rim A becomes worn, so as to fit too loosely in the pipe; a tapering pin, C, may be driven into the central hole B, thereby expanding the rim to an extent equal to the diameter of the pin. Other pins may be in like manner driven into the holes B' B'.

D is a link cast into the bucket, to which the chain is connected.

I am aware that holes have been made in the rim of india-rubber valves of this class for the purpose of allowing the water above the valve to run back into the well. I do not claim, therefore, such valves constructed with vent-holes; but my invention is distinguished from those before known in this, that the holes are placed at or around the center of the bucket, and tapering pins are used in combination therewith to expand the valves.

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

1. A valve for a chain-pump, made of an elastic material, the rim A of which is the frustum of a polygonal pyramid, substantially as set forth.

2. In combination with an elastic valve having holes centrally arranged, tapering pins C for uniformly expanding the diameter of the valve, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

A. W. NEWHALL.

Witnesses:

R. MASON,  
A. RUPPERT.