W. PECKHAM.

CHAIN-PUMP BUCKETS.

No. 180,057. Patented July 18, 1876.

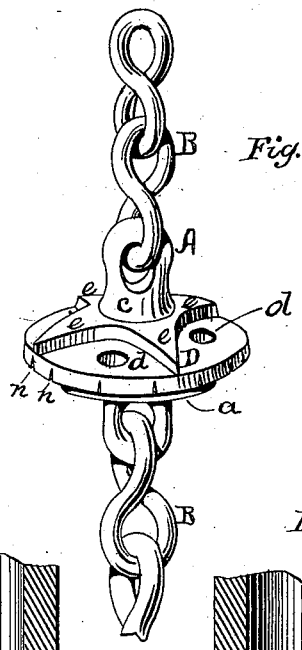


Fig. 1.

Fig. 2.

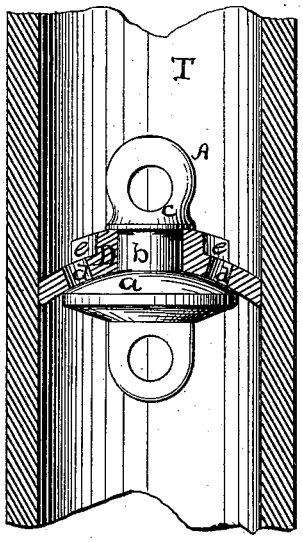
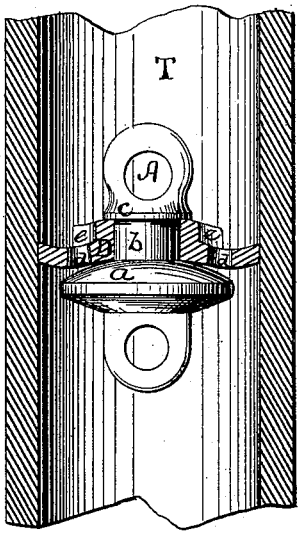


Fig. 3.



Attest:
C. Clarence Poole
W. E. Chaffee

Inventor:
Wm Peckham
By his atty R. D. Smith

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM PECKHAM, OF POPLAR RIDGE, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO JONATHAN P. PROUD, OF SAME PLACE.

IMPROVEMENT IN CHAIN-PUMP BUCKETS.

Specification forming part of Letters Patent No. **180,057**, dated July 18, 1876; application filed May 27, 1876.

To all whom it may concern:

Be it known that I, WILLIAM PECKHAM, of Poplar Ridge, in the county of Cayuga, in the State of New York, have invented a new and useful Improvement in Buckets for Chain-Pumps; and that the following is a full and exact description of the same, reference being had to the accompanying drawings, wherein—

Figure 1 is a perspective view of my buckets. Figs. 2 and 3 are vertical central sections of the same, showing the operation.

My invention relates to that class of chain-pump buckets which are constructed with solid metallic centers and elastic disks or washers, whereby the tube of the pump is entirely closed by said bucket, and no escape of water permitted, except through a waste-hole through the bucket. This waste-hole is constantly open and wasting water while the pump is in action, and the expenditure of power in excess is proportionate to the quantity of water escaping through said waste.

The principal object of my invention is to obviate this waste, and still provide an escape at each bucket, under control of the operator; and to that end it consists, first, in an elastic disk provided with one or more orifices, which are closed by the metallic shackle-plate when the bucket is in operation—that is to say, moving upward—and its edges bent downward by contact with the surface of the pump-tube, whereby said metallic shackle-plate operates as a valve to close said orifices while the pump-bucket is moving upward, and open the same when said bucket moves downward; second, in a radially-ribbed elastic packing-disk, whereby a sufficient thickness for strength and stiffness is obtained without an undesirable thickness at the orifices above named; third, in peripheral notches in the elastic disk, whereby the flexibility of the edge of the same may be increased at will without making said edges so thin as to become frail.

That others may more fully understand my invention, I will particularly describe the structure of it which I prefer.

A is the metallic shackle attached to the chain B. This shackle is constructed with a convex plate, *a*, and a neck, *b*, surmounted with a head, *c*. The disk or plate *a* forms a seat for the elastic packing-disk D, which has a central hole, and is forced over the head *c* onto the neck *b*. The packing D conforms to the curvature of the plate *a* when the pump is in operation. It is provided with holes *d d*, which are closed by the surface of said plate when the bucket is moving upward, because at that time the edges of said disks are in frictional contact with the inner surface of the tube T, as shown in Fig. 2, but opened when the bucket is moved in an opposite direction, as shown in Fig. 3, so that while the buckets are moving upward no escape is afforded for the water being carried upward by them, nor will it escape if the buckets come to a state of rest without moving downward; but if they are permitted to move downward a very little, the edges of the disks D will be thereby turned upward, as in Fig. 3, and the holes *d* be thereby uncovered, and the contained water will escape freely.

This is the simplest form of valve controllable by the operator, and it is therefore preferred; but I do not desire to be limited thereto.

The radial ribs or projections *e* stiffen the disk D toward its periphery, and thus prevent its yielding too readily to a downward movement, so that the friction of the disks, produced or increased by the presence of said ribs, obviates the necessity for a back ratchet and pawl, as commonly used, to prevent a backward movement of the buckets. The lower edge of the periphery of the disk A has a greater or less number of notches, *n*, to decrease friction, and these notches may be as many as circumstances may require. They decrease friction by rendering the edge flexible; but while flexibility is increased, the edge is not made thin and weak and liable to be torn or broken, and they do not permit any escape of water from above them.

When water is being drawn, the chain B and its buckets, attached as shown, are drawn upward through the tube T, the lower end of which is submerged in the water at the bottom of the well, and as each succeeding bucket enters the lower end of said tube, it cuts off the escape of water then in said tube, and forces it to move upward in advance of the buck-

until it escapes at the upper end of the tube. ien the upward motion of the buckets ceases, tube will be full of water, which must be mitted to escape again, or it will be liable freeze in cold weather and burst the tube. Heretofore this escape has been effected by sely-fitting buckets, or by small permantly open escape-holes in the buckets. These rmit a constant escape while the water is ing elevated, as well as when the buckets at rest, and require a corresponding inease of power.

My bucket fits perfectly tight when it is oving upward, and permits no escape; but e operator can at any moment arrest the ward movement, and cause the escape-valve each bucket to open and discharge the wa- above it.

Having described my invention, what I claim new is—

1. A chain-pump bucket composed of a etallic shackle combined with an elastic ina-rubber disk, provided with escape-valves, hich are automatically opened by a downard movement of said bucket, substantially set forth.

2. A chain-pump bucket composed of a metallic shackle, A, having the convex disk *a* and neck *b*, combined with an elastic disk, D, provided with holes *d d*, substantially as set forth.

3. A chain-pump packing-disk, D, constructed with ribs *e*, and combined with a metallic shackle, A, substantially as set forth.

4. A chain-pump packing-disk, provided with peripheral notches *n*, penetrating the lower surface, so as not to permit the escape of water downward, substantially as set forth.

5. A chain-pump bucket composed of a metallic shackle, A, provided with a convex disk, *a*, and neck *b*, combined with a packing-disk, D, having radial ribs *e* and perforations *d*, said perforations acting, in connection with disk *a*, as escape-valves, in the manner set forth.

WILLIAM PECKHAM.

Witnesses:
DANIEL W. PECKHAM,
ANSON CULVER.