F. A. LEAVENS.

CHAIN-PUMP.

No. 182,454. Patented Sept. 19, 1876.

Fig 1

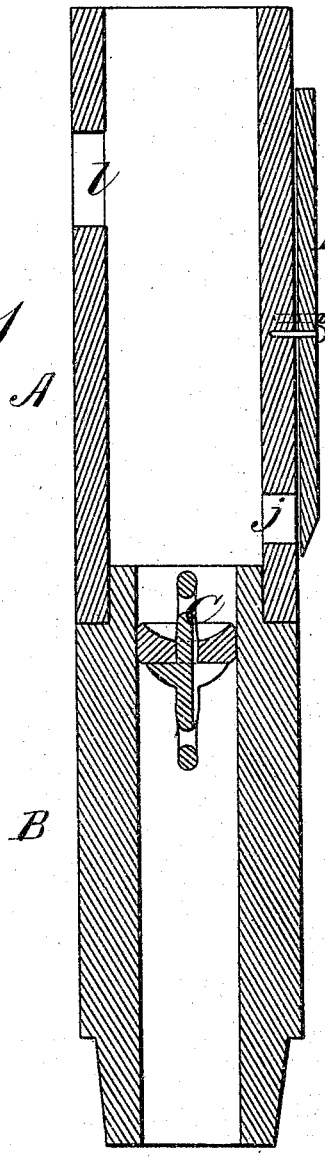


Fig 2

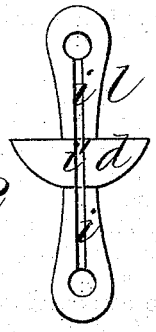


Fig 3

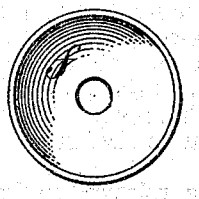


Fig 4

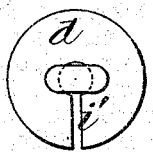
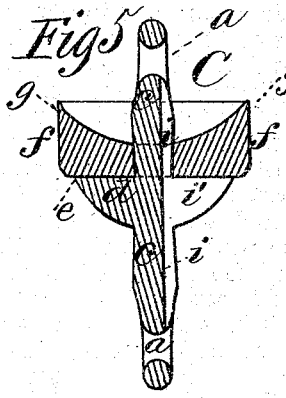


Fig 5



WITNESSES

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FENNER A. LEAVENS, OF BELLE PLAINE, IOWA.

IMPROVEMENT IN CHAIN-PUMPS.

Specification forming part of Letters Patent No. **182,454**, dated September 19, 1876; application filed March 23, 1876.

To all whom it may concern:

Be it known that I, FENNER A. LEAVENS, of Belle Plaine, in the county of Benton and State of Iowa, have invented a new and valuable Improvement in Chain-Pumps; 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, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal vertical section of my improved pump-stock. Figs. 2, 3, and 4 are detail views of the chain-pump bucket, and Fig. 5 is a longitudinal vertical section thereof.

This invention has relation to improvements in stock-tubes for chain-pumps, and in the linked buckets or chain of buckets employed for raising the water from the well; and it consists in a right cylindrical rubber disk, fitting snugly in the stock-tube, with its entire periphery in contact with the inner walls of the stock-tube, which disk is concaved upon its upper surface, thus forming thin edges, which will be forced against the walls of the said stock-tube when the disk is expanded by the weight of the column of water, whereby the downward escape of air will be prevented, and the full force of atmospheric pressure obtained, as will be hereinafter more fully set forth.

In the annexed drawings, the letter A designates the upper and B the lower section of my improved pump, which are jointed together in the customary manner. The lower section B is bored out to a size adapted to receive a bucket, C, while the bore of the upper section is of considerably larger diameter than the said bucket, thus affording room for the accumulation of ice upon its interior without arresting or interfering with the bucket.

Bucket C, above referred to, is composed of a link, *c*, having an eye, *a*, in each end, and intermediate thereto a supporting-flange, *d*, the upper surface *e* of which is at right angles to the length of the link. Link *c* is provided with a longitudinal groove, *i*, and support *d*, with a deep radial notch, *i'*, the object of which will hereinafter appear.

Support *d* is of less diameter than the bore of feed-pipe B, and it supports a rubber disk, *f*, having its periphery at right angles to the diameter, the said disk completely filling up the bore of pipe B, and the lower surface of which is plane, and its upper surface concave.

When the bucket is drawn up through pipe B, the pressure of the water upon the concave upper face of the said disk will cause it to expand, and its thin edges *g* to be forced outward against the walls of pipe B, forming an air-tight joint therewith, effectually preventing the escape of the water downward and creating a vacuum in the feed-pipe which will necessarily increase the upward flow and delivery of the water to the stock-tube.

The required quantity of water being drawn and the buckets at rest, the water in the stock-tube below educt *l* will escape into the well through a vent, *j*, closed during warm weather or during the operation of the pump by a vibrating valve, D, pivoted to the outside of the stock-tube, and prevented from undue vibration by a guide-staple, *m*. Water below vent *j* will escape through groove *i* in the link and notch *i'* in support *d*, into the lower part of the feed-pipe. By this means the stock-tube A is entirely freed of water, and the liability to being clogged by ice practically done away with.

I am aware that a rubber bucket for chain-pumps, recessed upon its upper surface and having its periphery tapered inwardly and upwardly away from the stock-tube walls at its upper edge, is not new, as shown in Letters Patent No. 172,395, dated January 18, 1876; hence I do not claim such device.

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

1. The chain-pump bucket, consisting of a link, *l*, provided with a longitudinal slot, *i*, a supporting-flange, *d*, having radial notch *i'*, and a rubber disk, *f*, having a concave upper and a plane lower face, substantially as specified.

2. As a new article of manufacture, a right cylindrical rubber disk, *f*, concave upon its upper and plane upon its lower face, and provided with the thin edges *g*, adapted to be forced outward against the walls of the stock-

tube by the pressure of the raised water, substantially as specified.

3. In a chain-pump, the expansible right cylindrical disk *f*, having its entire periphery in contact with the walls of the stock-tube, provided with a plane lower and a concaved upper surface, and with a thin angular edge, *g*, adapted to be forced outward against the walls of the said tube by the weight of the column of water, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

F. A. LEAVENS.

Witnesses:

J. C. GUINEY,

O. CONNELL.