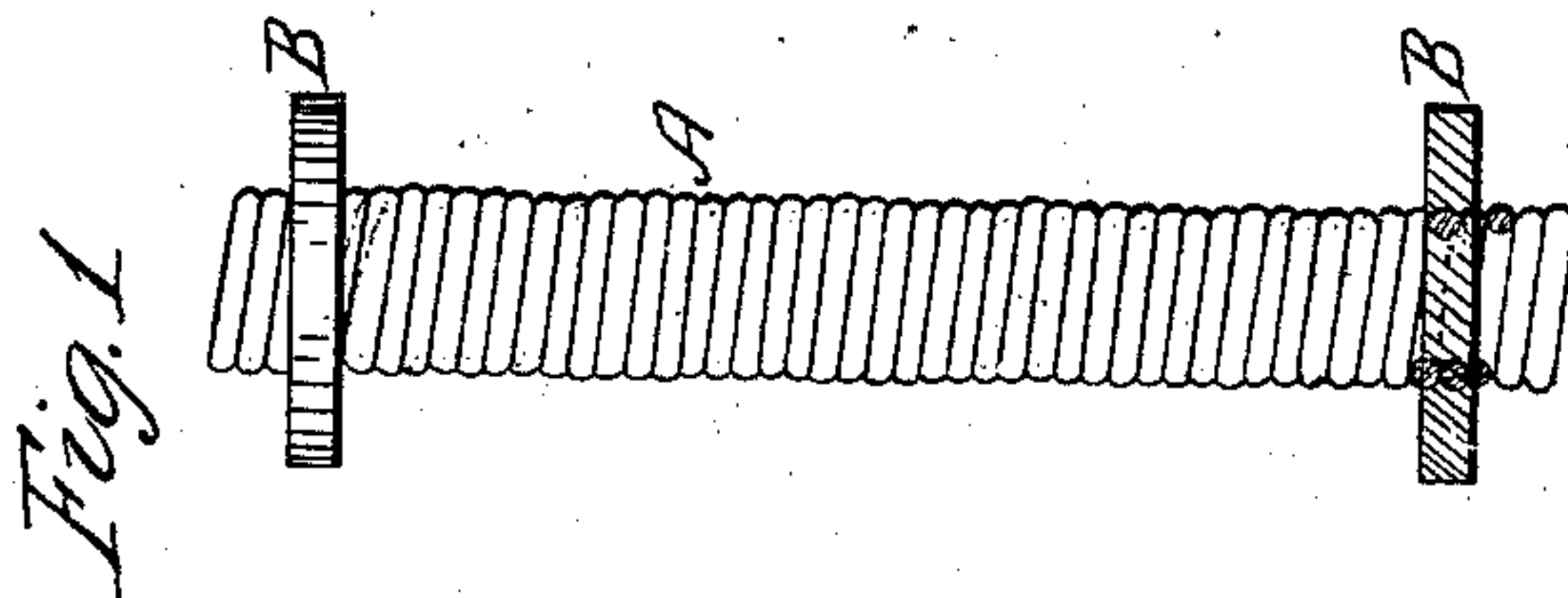
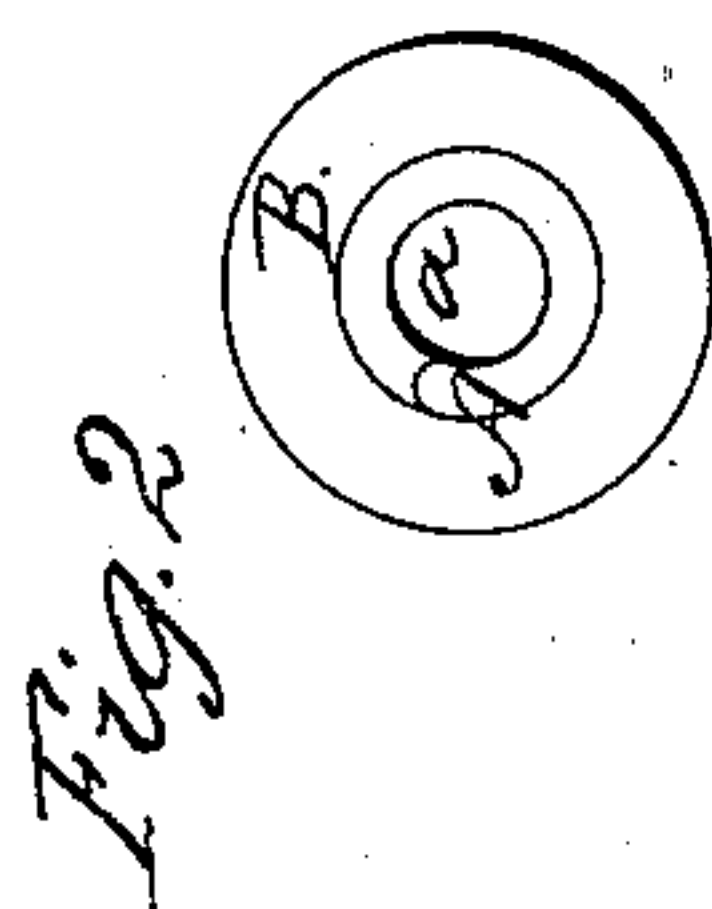


J. Harrison, Jr.,

Chain Pump,

No 17,217,

Patented May 5, 1857.



UNITED STATES PATENT OFFICE.

JAMES HARRISON, JR., OF NEW YORK, N. Y.

CHAIN-PUMP.

Specification of Letters Patent No. 17,217, dated May 5, 1857.

To all whom it may concern:

Be it known that I, JAMES HARRISON, JR., of the city, county, and State of New York, have invented a new and useful Improvement in 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 accompanying drawings, making a part of this specification, in which—

Figure 1 is a portion of a coiled wire, or wire rope, which forms the connection between the buckets; said portion of wire or rope having two buckets attached. Fig. 2 is a transverse section of the coiled wire or rope.

The pump known as the "chain pump" is formed by attaching a series of disks, termed "buckets," to an endless chain; the buckets being placed at equal and suitable distances apart. The chain passes over a wheel, at the upper part of the well; and one side of the chain passes through a tube placed vertically in the well; the chain passing around a pulley at the lower end of the tube near the bottom of the well. By rotating the wheel at the upper part of the well, the chain and buckets are drawn up through the vertical tube and a partial vacuum produced therein; the vacuum, in connection with the lift of the buckets, raising the water and discharging it from the upper end of the vertical tube.

This invention consists in the use of a coiled wire rope in combination with the buckets or valves of the pump, as herein-after set forth.

A represents a portion of the coiled wire or wire rope, and B B represent two buckets attached thereto. These are circular disks the diameter of which should correspond to that of the bore of the tubing. The buckets may be constructed of metal, or of metal combined with leather or other material to serve as packing. In short, the buckets may be constructed in any of the known ways, and they may be attached to the rope in any proper manner; the rope passing through the centers of the buckets.

The rope A, is formed of a single wire or strand coiled or bent spirally, as shown plainly in Fig. 1, so as to form a hollow center (a) as shown in Fig. 2. The coils of the wire are in contact with each other. The

wire may be of any suitable thickness, and the diameter of the rope should be about one-half the diameter of the buckets.

By substituting the coiled wire or wire rope for the chain, a more durable, efficient, and cheaper connection for the buckets is obtained, and one that is not liable to wear or abrade the tubing, which is most generally constructed of wood. The coiled wire or wire rope is also very elastic, and will work or run readily through the tubing and around the wheel and pulley; the wire or rope readily conforming to any irregularities of the tubing.

Another advantage of my improvement is that the water is raised without noise. But in the ordinary pumps of this kind, the chain links, in passing over the ends of the spokes of the driving wheel, make a continual clatter. But when the valves are combined with a coiled wire rope as described, the pump runs noiselessly.

In the rejected application of S. F. Gasanay, it is proposed to use a lifting rope of gutta-percha; but this would be obviously impracticable, because it is well known that that gum becomes brittle when exposed to intense cold. A pump-rope of gutta-percha would break, if openly exposed to the atmosphere of our winters. On the other hand, the said gum softens and extends when warmed; therefore, such a rope would be as useless for pumps in summer as in winter.

My improvement renders the chain-pump more durable than those in common use, because the wire cord, by its elasticity, moves in a straight line, and the pump-box therefore cannot become worn and scored as is generally the case where a chain is used. The chain, being limpsy, sways from side to side in the box, and wears or scores the same. The coiled wire cord is also cheaper in price, length for length, than the chain.

My improvement is more efficient, because the weight of the coiled wire cord is less than the chain; consequently more water will be lifted with the same expenditure of power.

One advantage of elasticity in the cord is that the buckets will yield slightly when the pump is suddenly started, and the strain or blow upon the hand of the operator at the

crank will not be so great as in the common pump; liability to break by a sudden blow is also obviated.

I do not claim, broadly, the use of ropes composed of wire. But, to the best of my knowledge and belief, it is new to combine the buckets of chain-pumps with a lifting cord composed of coiled wire, as herein shown.

What I claim as new in chain-pumps, and 10
desire to secure by Letters-Patent, is:

The use, in combination with the buckets B, of a lifting cord A, composed of coiled wire, as described.

JAS. HARRISON, JR.

Witnesses:

J. F. BUCKLEY,
W. TUSCH.