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UNITED STATES PATENT OFFICE.

THEODORE WORTMAN, OF CHAMBERLAIN, DAKOTA TERRITORY.

CHAIN-PUMP.

SPECIFICATION forming part of Letters Patent No. 362,695, dated May 10, 1887.

Application filed February 19, 1887. Serial No. 228,255. (No model.)

To all whom it may concern:

Be it known that I, THEODORE WORTMAN, a citizen of the United States, residing at Chamberlain, in the county of Brule and Territory of Dakota, have invented new and useful Improvements in Chain-Pumps, of which the following is a specification.

The invention relates to improvements in chain-pumps, the objects being to provide such a pump of simple and cheap construction, and one that will be thoroughly effective at all times; and it consists in the construction and novel arrangement of parts, hereinafter described, illustrated in the drawings, and pointed out in the claims hereto appended.

In the accompanying drawings, Figure 1 represents a side view of the invention with the side of the casing removed and the well sectioned vertically. Fig. 2 represents an end view of the invention with the end of the casing removed and the well sectioned vertically. Fig. 3 is a side view of the casing, showing the crank, ratchet, pawl, and means for adjusting one of the rollers; and Fig. 4 is a vertical longitudinal section of an improved form of bucket.

Referring to the drawings, A designates the well, and B the well-casing or the housing standing thereon.

C C are two large similar chain-wheels secured to a shaft, *c*, having suitable bearings in the sides of the casing or housing, and provided with a crank-handle, *c'*, on one of its journals extended and squared.

*c*² is a ratchet-wheel on the shaft to the inner side of the crank-handle, and *c*³ is a pawl pivoted to the outside of the casing, and engaging said ratchet-wheel, so as not to permit the improper motion of the shaft *c*, and consequently the chain and buckets, hereinafter described, to be reversed.

D is the inclined delivery-spout, passing through and secured to the end of the casing opposite that through which the chain descends into the well. The upper and inner end of the delivery-spout extends inward a little beyond the shaft of the chain-wheels, so that it may catch all the water that falls from the buckets.

E E' are transverse rollers journaled in bearings in the sides of the casing a sufficient dis-

tance above the chain-wheels for the chain, hereinafter described, to run horizontally from the tops of said wheels to the lower portion of the surface of the roller E'. The journals of the said rollers pass through slots *b* in the side of the casing, and turn in semicircular bearings *e* made in the outer ends of the bearing-blocks *e'*, which are provided with the longitudinal slots *e*², by means of which and the set-screws *e*³, which pass through said slots and openings in the sides of the said casing, (being engaged by nuts on the inside thereof,) the roller E' can be adjusted farther from or nearer to the roller E, the bearings of latter being fixed.

F is a roller similar to the rollers E E', and journaled in bearings secured to proper supports at a suitable distance above the bottom of the well or below the water therein, and *ff* are chains having their links respectively engaged by the teeth of the chain-wheels C C'. Each chain passes over one of said wheels to the under side of the roller E', then from the top of said roller to the top of roller E, and then downward and under the roller F, whence it ascends to the chain-wheel, with which it corresponds.

g g are transverse metal straps having their ends secured to opposite links in the two chains, and serving to keep the same at all points the same distance apart, and to cause each link to be in proper line with the corresponding chain-wheel.

The straps *g* are at equal and suitable distances apart, and each has secured to its outer surface a cup or bucket, G, the latter being provided with a flat side, which is secured by rivets or otherwise to the center of the strap.

The buckets may be made, if desired, with upwardly-opening valves in their bottoms, the preferred form being a spherical valve, *g'*, which is prevented from escaping from its valve-seat by the retaining or stop frame *g*², as shown in Fig. 4.

The operation is evident from the foregoing description.

The pump is of simple and durable construction, and can be easily attached to any well or cistern. The buckets are not pivoted to the straps of the chain, and there is none of the usual tripping mechanism, the buckets be-

ing turned lengthwise, so as to discharge their contents by the direction the chain takes from the chain-wheels to the rollers E', and the discharge takes place on the upper part of the spout D. (See Figs. 1 and 2.)

The device may be used as a well-cleaner by securing the bearings of the roller F very near to the bottom of the well. The buckets will then raise the mud, sand, and other impurities to the surface, and by lowering the said bearings from time to time the well can be effectually cleaned. The links of the chains are preferably made similar to those of the harvesting-machine.

I claim—

1. In a chain-pump, the combination, with the chain, buckets, and delivery-spout, all constructed substantially as described, of the chain-wheels secured to a shaft having bearings in the sides of the casing or housing and the roller journaled in bearings in the casing on the side of the said wheels opposite the well at a suitable distance from the wheels, and with its lower surface about on the same level with the upper edge of the wheels, so that the buckets will turn between the wheels and said roller and discharge their contents into the spout, substantially as specified.

2. In a chain-pump, the combination of the chain or sprocket wheels having their common shaft journaled in bearings made in or secured to the sides of the casing, the roller journaled in bearings secured at a proper point within the well, the roller journaled vertically above the roller in the well in bearings made in or secured to the casing, the roller journaled in bearings made in or secured to the casing on the opposite side from the well a suitable distance outward from the chain-wheels, and with its lower surface about on a level with the upper edges of said wheel, the chains moving, as described, upon said wheels and rollers, the buckets secured firmly to the metal straps connecting the chains, the delivery-spout, and means, substantially as described, to rotate the shaft of the chain-wheels, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

THEODORE WORTMAN.

Witnesses:

W. C. GRAYBILL,
A. M. MILLIN.