(No Model.)

# C. A. BARTLIFF.

## CHAIN PUMP.

No. 385,786. Patented July 10, 1888.

Fig. 1.

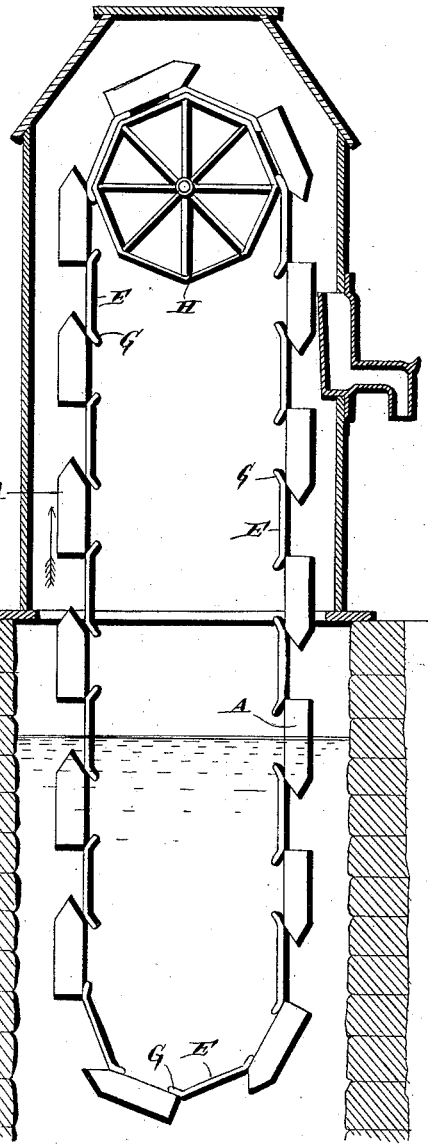



Fig. 2.

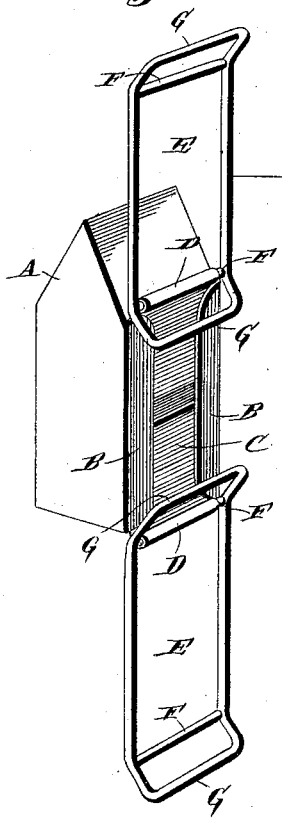



Fig. 3.

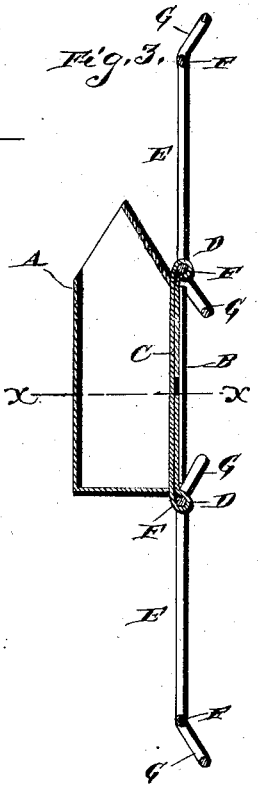
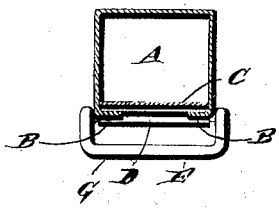



Fig. 4.




Witnesses.

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# UNITED STATES PATENT OFFICE.

CHARLES A. BARTLIFF, OF MEMPHIS, TENNESSEE.

## CHAIN-PUMP.

SPECIFICATION forming part of Letters Patent No. 385,786, dated July 10, 1888.

Application filed December 28, 1887. Serial No. 259,259. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. BARTLIFF, a citizen of Canada, residing at Memphis, in the county of Shelby and State of Tennessee, have invented a new and useful Improvement in Chain-Pumps, of which the following is a specification.

My invention relates to an improvement in chain-pumps; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

The object of my invention is to provide an endless-chain pump with links, which connect the buckets together and are adapted to prevent the chain from becoming kinked or entangled while in operation, and thereby enable me to dispense with the wheel or pulley, which is usually arranged near the bottom of the well or cistern, and around which the lower side of the endless chain passes.

In the accompanying drawings, Figure 1 is an elevation of a chain-pump embodying my improvement, showing the same arranged in position for operation. Fig. 2 is a detached perspective view of a portion of a chain-pump embodying my improvements. Fig. 3 is a vertical sectional view of a portion of the same. Fig. 4 is a transverse sectional view taken on the line *x x* of Fig. 3.

A represents a series of buckets, which are made of sheet metal, of the form here shown, and have one end open and the opposite end closed. The inner side of each bucket is open and the side walls of the same are provided with flanges B, which are bent inwardly over the open side of the bucket, as shown.

C represents a series of straps, each of which is made from a single piece of sheet metal, having its ends doubled over the central or main portion of the strap until their edges meet, thereby forming loops D at opposite ends of each strap.

E represents a series of rectangular links which are employed to connect the buckets together. The said links are provided at a suitable distance from their ends with cross-bars F, which are engaged by the loop D, and beyond the said cross-bars extensions or arms G are formed at the ends of the links, which extensions or arms are bent at a suitable angle with relation to the main body of the links.

The operation of putting the parts of the chain together is as follows: The loops D or straps C are first caused to engage the cross-bars F on the opposing ends of the links, so as to connect the latter together in a series. The flanges B of the buckets A are then bent outward flush with the sides of the buckets, and are then caused to pass over the opposite edges of the straps, so as to cause the latter to cover the open sides of the bucket, and the said flanges B are then bent inward on the outer side of the said straps, so as to secure the same firmly to the buckets and prevent the ends of the straps from being straightened out and releasing the cross-bars of the links.

In Fig. 1 I illustrate the usual wheel or windlass, H, over which the upper portion of the endless bucket-chain passes, and from the same the said endless bucket-chain depends and extends into the well or cistern for a suitable distance. The arms or extensions G on the ends of the links bear against the inner sides of the buckets and cause the same to be arranged in form of a semicircle at the bottom of the well or cistern and prevent them from coming close together, and thereby entangling or kinking the endless chain. By this means I am enabled to dispense with the wheel or pulley which is usually employed near the bottom of the well or cistern to guide the lower portion of the endless bucket-chain, and thereby effect an economy in the construction of the chain-pump and enable the same to be operated as rapidly as may be desired without the danger of its becoming kinked or entangled.

Having thus described my invention, I claim—

1. The combination of the buckets, having the projecting loops D at their ends and the bent-over side flanges, and the links pivoted to said loops connecting the buckets together, and having the extensions G at their sides adapted to bear against the inner sides of the buckets, for the purpose set forth, substantially as described.

2. The combination of the buckets having the bent-over side flanges, the straps attached to the inner sides of the buckets and having the loops D projecting beyond the ends thereof, and the links having the cross-bars F engaged by the loops, and thereby connecting the buckets together, and being further provided with

the extensions or arms G, adapted to bear against the inner sides of the buckets, for the purpose set forth, substantially as described.

3. In an endless-chain pump, the combination of the buckets having the flanges B on their inner sides, the straps C, having the loops D at their ends and engaged by the flanges B, so as to secure said straps to the inner sides of the buckets, and the links having the cross-bars F near their ends, and the projecting arms or extensions G, the said cross-bars F being engaged by the loops D, and the said arms or extensions being adapted to bear against the inner sides of the buckets, for the purpose set forth, substantially as described.

4. The combination, in an endless-chain pump, of the buckets having the loops at opposite ends on their inner sides and the connecting-links pivoted to the said loops, and having the extensions or arms G projecting beyond their pivotal points and adapted to come in contact with the inner sides of the buckets, for the purpose set forth, substantially as described.

5. The buckets having the flanges B on their inner sides, the straps C, forming the inner sides of the buckets, and having their ends doubled and bent to form loops D, the flanges B being bent over the edges of the straps, for the purpose set forth, and the links connecting the buckets and engaging the loops, substantially as described.

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

CHARLES A. BARTLIFF.

Witnesses:
E. L. BARTLIFF,
R. P. WARING, Jr.