(No Model.)

2 Sheets—Sheet 1.

H. & C. F. DICKINSON.

CHAIN PUMP.

No. 324,243. Patented Aug. 11, 1885.

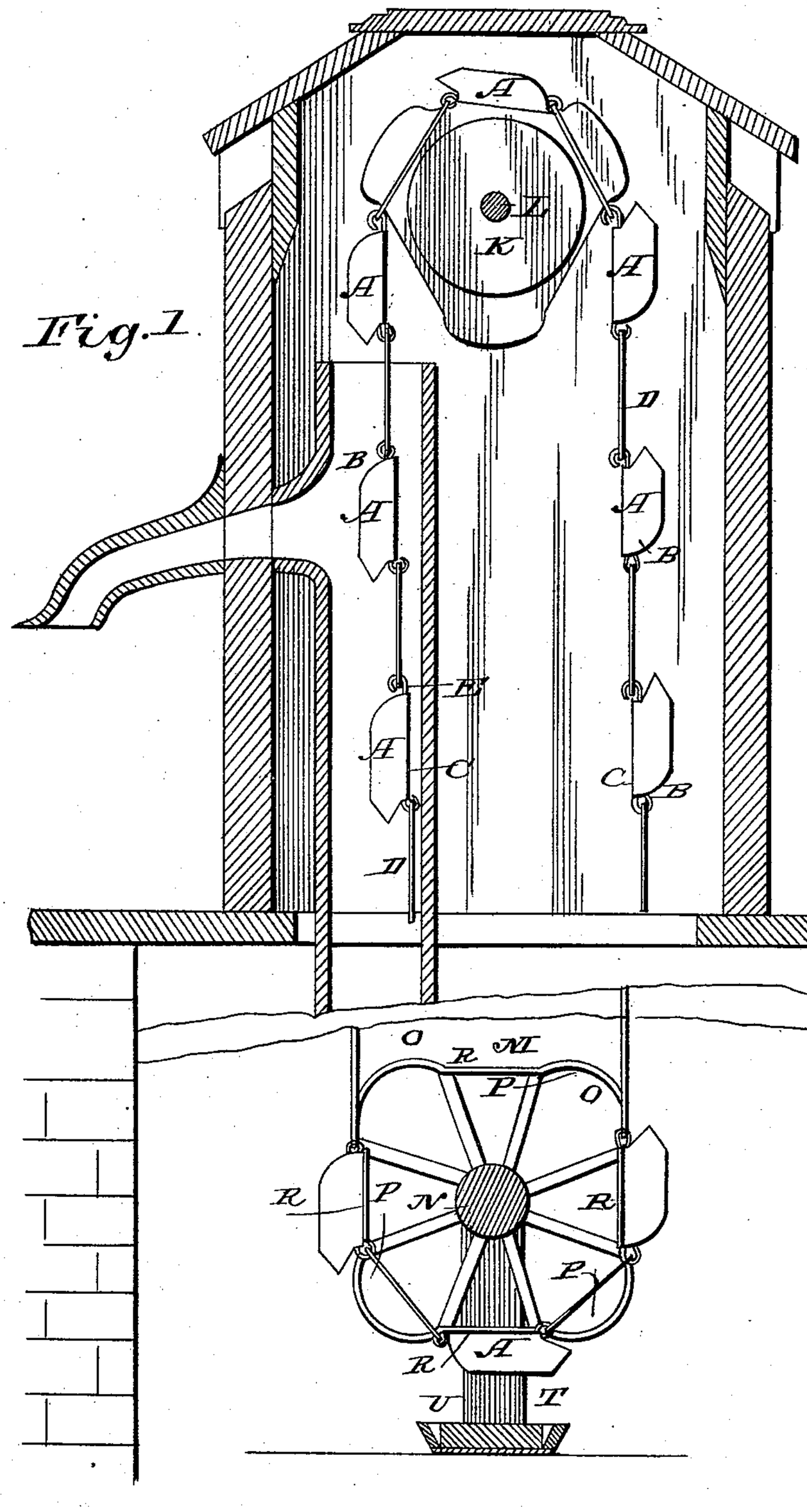

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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CHAIN PUMP.

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Fig. 2

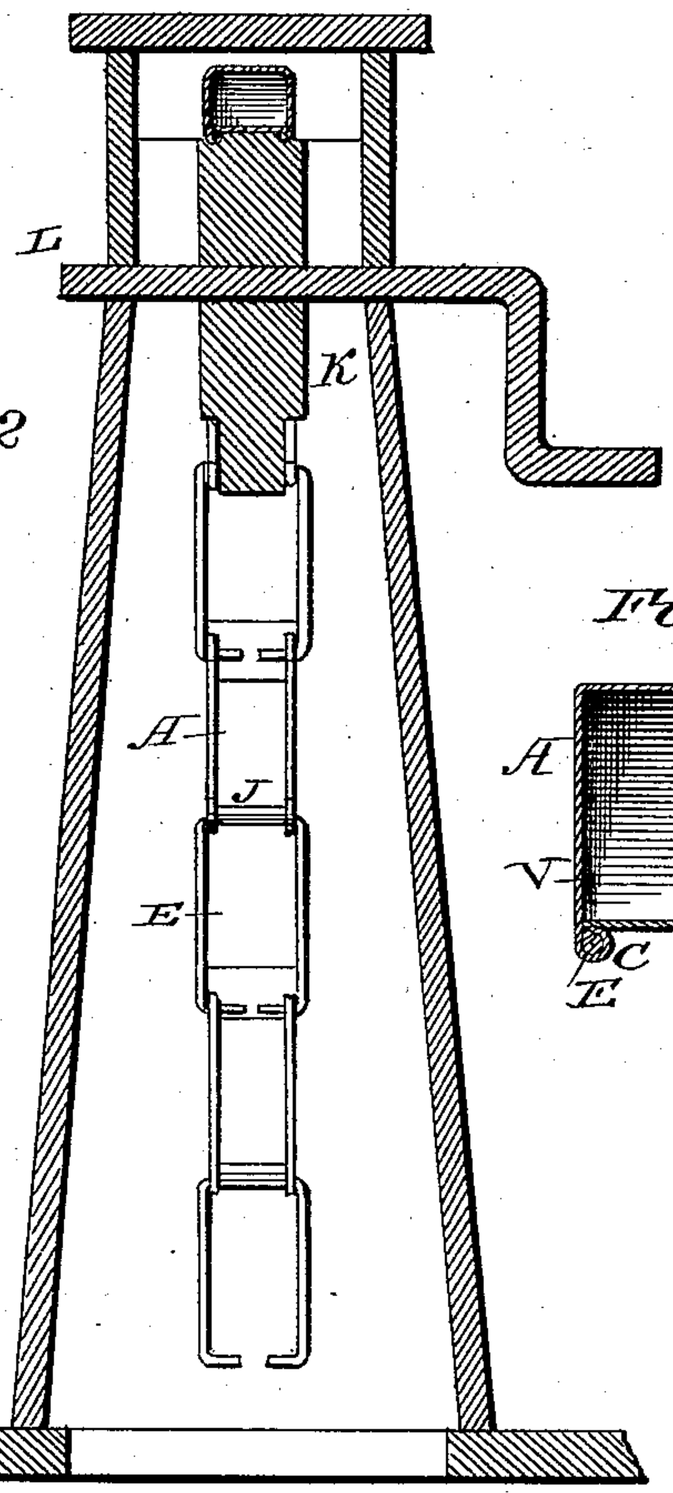


Fig. 4

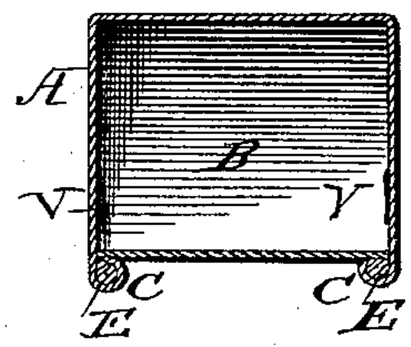


Fig. 3.

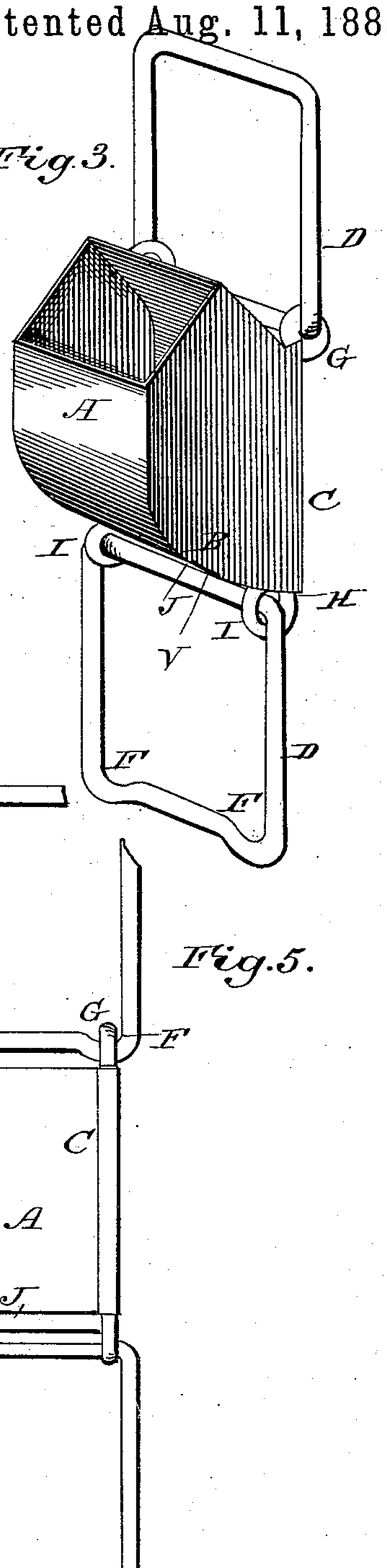
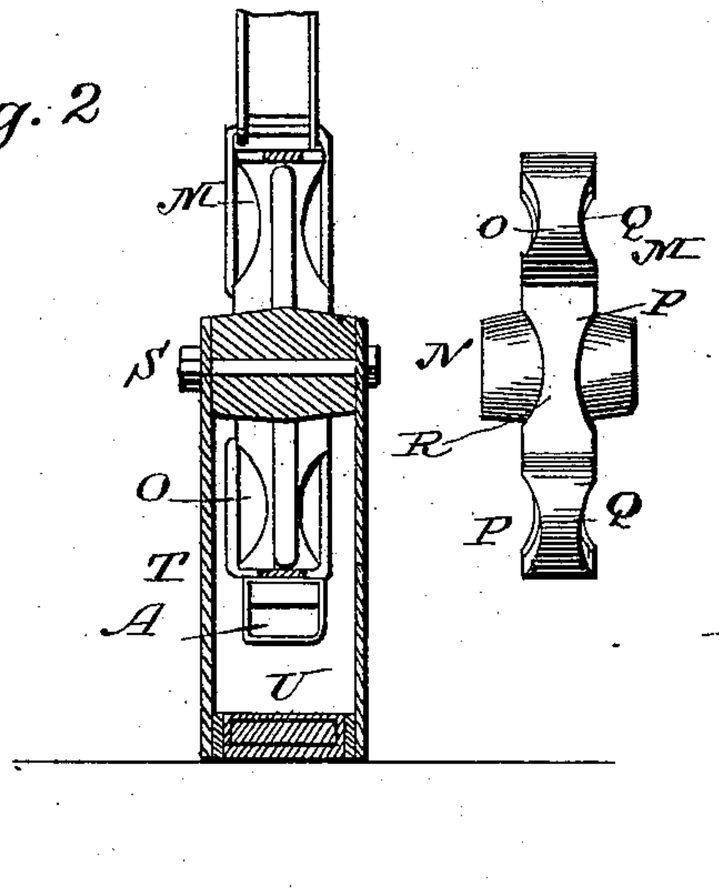


Fig. 5.

Fig. 2



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UNITED STATES PATENT OFFICE.

HENRY DICKINSON AND CYRUS FRANCIS DICKINSON, OF LOWELL, INDIANA.

CHAIN-PUMP.

SPECIFICATION forming part of Letters Patent No. 324,243, dated August 11, 1885.

Application filed September 29, 1884. (No model.)

To all whom it may concern:

Be it known that we, HENRY DICKINSON and CYRUS FRANCIS DICKINSON, of Lowell, in the county of Lake and State of Indiana, have invented certain new and useful Improvements in Water-Elevators; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a vertical sectional view of our improved water-elevator. Fig. 2 is a vertical transverse sectional view taken on the line *x x*, in Fig. 1. Fig. 3 is a detail view in perspective, on an enlarged scale, of one of the buckets and a portion of the carrying-chain. Fig. 4 is a horizontal sectional view taken through one of the buckets, and Fig. 5 is a rear view of one of the buckets with a portion of the carrying-chain.

The same letters refer to the same parts in all the figures.

This invention relates to water-elevators of that class in which a series of buckets are carried upon a suitably-operated endless chain; and it has for its object to provide a device which shall possess superior advantages in point of simplicity, durability, and general efficiency.

With these ends in view the invention consists in certain improvements in the construction of the chain for carrying the buckets, and of the combination of said chain and the buckets for elevating the water, all of which will be hereinafter fully described and claimed.

In the drawings hereto annexed, A A designate the buckets, which are constructed, preferably, of galvanized sheet metal with rounded or tapering bottoms B, and rearwardly-extending flanges C, by means of which they are mounted upon the chain, as will be presently described. The said chain consists of links D and E, formed of wire of suitable dimensions, according to the length and strength which the chain is intended to have. Thus for a long chain, which will naturally be subjected to a greater strain than a short one, heavier wire is used in the manufacture of the links, although the same machinery may be employed for the manufacture of links of a given size. The links D are nearly rectangular, closed centrally at their lower ends, and formed at their lower corners with shallow recesses or depressions F, adapted to receive the eyes G at the upper ends of the intermediate U-shaped links E. The lower ends of the latter are bent upwardly, as at H, forming loops or eyes I I, in which the upper bars of the links D are adjusted, as shown, thus forming a strong and flexible chain.

The wire of which the chain is constructed is not galvanized until after the chain has been formed, when the molten metal will serve to solder or close the joints. The recesses F F, in which the upper ends of the links E E are adjusted, also serve to prevent the joints or open ends of the links D from pulling apart.

The buckets A are connected to the chain by the flanges C C, which are bent or clinched around the side bars of the links E in such a manner that the buckets can be slipped up and down on the side bars for the purpose of putting in or taking out links of the chain, as desired, and whereby the buckets are caused to rest upon the lower upturned bars, J, of the said links E, thereby not only strengthening the chain by preventing the links from pulling apart, but also greatly increasing the durability of the attachment of the buckets by relieving much of the strain upon the attaching flanges.

The chain is in practice supported upon a chain-wheel, K, mounted upon a shaft, L, which is journaled in the casing over the well and of sufficient strength to support the weight of the device. The said chain-wheel may consist of a solid disk having suitable projections to engage the alternate open chain-links and flat portions to support the buckets as the device is being operated, although its construction may be changed or modified, if desired, without departing from the spirit of my invention. The lower end of the chain runs over a wheel, M, consisting of a hub, N, radiating spokes N′, and a rim, O, which may be made of cast iron or heavy sheet metal, and which consists of alternating curved sections P, having recessed edges Q, adapted to enter and engage the open links of the chain, and flat sections R, adapted to support the buckets when the device is in operation. The hub

N is mounted upon a spindle, S, on the ends of which is pivoted a stirrup, T, having at its lower end a box or receptacle in which a weight, U, may be placed, or the said stirrup may be weighted in any suitable manner. This stirrup will not only prevent the wheel from slipping off the chain, but, being weighted, it also serves to keep the chain stretched and taut, thereby greatly facilitating the operation of the device and preventing it from getting out of order.

The bottom of each of the buckets is to be provided with a small perforation, V, not large enough to cause any perceptible loss of water during the operation of the device, but large enough to permit the water to drip out of the buckets when the device is not in operation.

The operation and advantages of this invention will be readily understood from the foregoing description, taking in connection with the drawings hereto annexed. The construction of the chain is exceedingly simple, and renders it practically impossible for the links to be separated from ordinary causes. The buckets are easily and durably attached, and owing to their rounded or tapering shape they are easily filled or discharged, as the case may be. When it is desired to open the chain for the purpose of adding or removing links and buckets, it is only necessary to push one of the buckets slightly upward off the bottom bar of the link E, upon which it rests so as to permit the adjoining link D to be slipped out or in, as may be desired. By the combination of the bottom wheel of the stirrup the said bottom wheel is retained securely without danger of dropping out, a difficulty which is often experienced in this class of water-elevating devices, and which necessitates the tedious process of fishing the wheel out of the bottom of the well and readjusting it in position for operation. The bottom wheel being a spoked wheel also serves to agitate the water thoroughly during the operation of the device, thereby assisting in aerating and purifying it.

The general construction of the device is simple and inexpensive, and it is easily adjusted and manipulated.

We would have it understood that we do not limit ourselves to the precise construction of details herein described, but reserve to ourselves the right to all such modifications as may be resorted to without departing from the spirit of our invention.

Having thus described our invention, we claim and desire to secure by Letters Patent of the United States—

In a water-elevator, a chain composed of sections consisting each of two links, one of which has recesses at its lower corners, and the other provided with eyes on its upper end fitting in said recesses and having its lower part bent outward and upward, in combination with the bucket provided with rearwardly-projecting sleeves sliding upon the sides of said links, substantially as and for the purpose set forth.

In testimony that we claim the foregoing as our own we have hereunto affixed our signatures in presence of two witnesses.

HENRY DICKINSON.
CYRUS FRANCIS DICKINSON.

Witnesses:
JOHN MCNUY,
C. E. CHAFEE.