

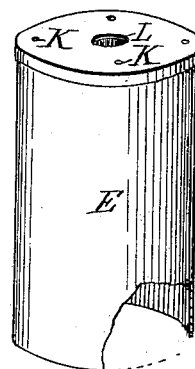
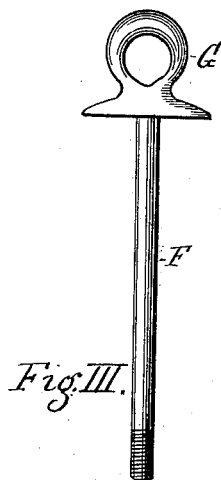
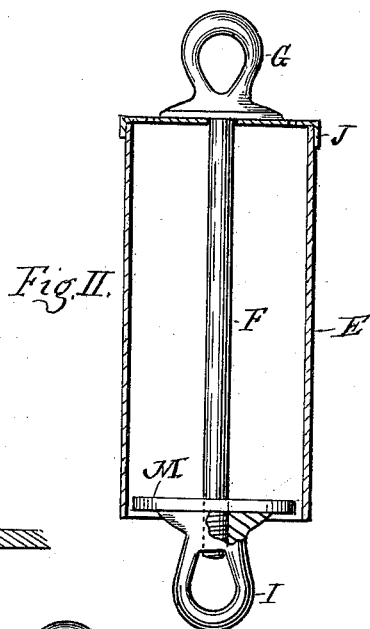
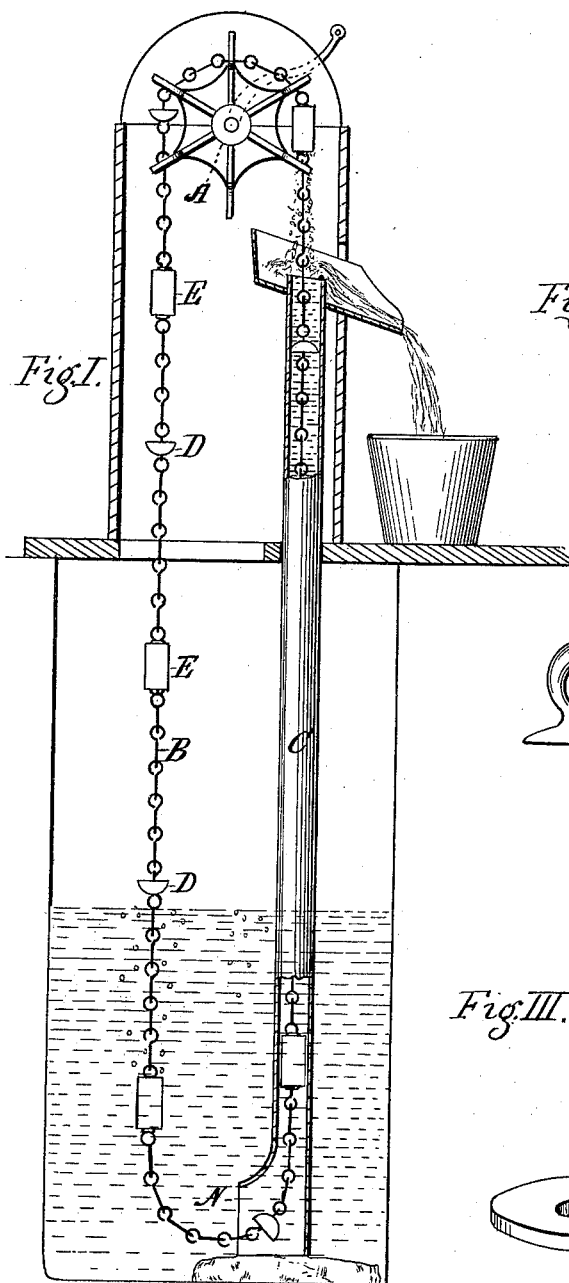
(No Model.)

W. MILD.

AERATING ATTACHMENT FOR CHAIN PUMPS.

No. 383,476.

Patented May 29, 1888.



WITNESSES:

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By

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# UNITED STATES PATENT OFFICE.

WILLIAM MILD, OF HAMILTON, OHIO.

## AERATING ATTACHMENT FOR CHAIN-PUMPS.

SPECIFICATION forming part of Letters Patent No. 383,476, dated May 29, 1888.

Application filed August 8, 1887. Serial No. 246,446. (No model.)

### *To all whom it may concern:*

Be it known that I, WILLIAM MILD, of Hamilton, in the county of Butler and State of Ohio, have invented a new and useful Improvement in Aerating Attachments for Chain-Pumps, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a vertical elevation, partly in section, of a chain-pump equipped with my aerating attachment; Fig. 2, an enlarged vertical section of the aerating cup and link; Fig. 3, a view of the detached portions of the link; and Fig. 4, a perspective view of the cup, partly in section.

It is well known in the art to which this pertains that if air is forced into a body of still water the oxygen imparts life to the water, giving it the same vitality that is secured by running water. Still water is well known as "dead" water. To this end pumps have been constructed in which cups are placed at intervals on chain or other carrying medium, so that the downward dip of the cup would carry sufficient air to the bottom of the mass of the water and, when the cup was inverted, permit the air to permeate the water and thus purify it. It has also been shown that the mere stirring or agitation of water is not effectual to vitalize it, unless at the same time it can be exposed to fresh air, and this is generally an impossibility in cisterns and in many closed wells. The common chain pump provided at intervals with buttons has long been a favorite means of raising water, and its strong stirring motion as the rough chain passes through the water is also a favorable feature in using chain-pumps; but it must be admitted that the button and chain do not have the effect of forcing air into the mass of the water to any appreciable depth.

My design is to attach to the buttons at intervals cups or small cylinders of the same diameter as the buttons, and preferably about twice as long as the diameter, and these cups are perforated at each end, or open at one end and perforated at the other, the open end, however, being of such area as to gradually permit the air to escape as it descends into the body of the water and not too rapidly force the water through the perforations of the opposite end. Instead of attaching these cups

or cylinders to the buttons, the buttons may be dispensed with and the cylinders substituted. The latter means I prefer, as it is much cheaper and subserves the purpose equally as well.

I will now refer to the annexed drawings in order to more specifically set forth the manner in which I construct and attach the cups and to explain the operation of the same.

A represents the windlass, B the chain, and C the tube, of an ordinary chain-pump. The usual buttons, D, placed at intervals on the chain, are of the common form and attached in any manner to the chain. The cups E, which constitute my attachment, are disposed along this chain at suitable intervals instead of the buttons D. Fig. 2 shows these cups in vertical section, in which F represents a link or a stem having at one end an eye or ring, G, and screw-threaded at its opposite end, H, to receive the ring or eye I, which has a screw-threaded aperture to fit the stem F. The cup or cylinder has a head, J, of the same diameter as the button of the chain, and this head is provided with perforations K for air and a central aperture, L, through which the stem F passes. The lower end of this cylinder-shell is open.

It will be observed by reference to Fig. 3 that a disk, M, is placed on the stem F in the open end of the shell E. The disk is preferably smaller than the inner diameter of the shell, and the size of this may be regulated by having disks of different sizes prepared and placed therein when required. The object of this disk is to graduate the inflow of the water to the cylinder as it descends on the chain, or prevent the too rapid escape of air.

I have herein shown no particular means for fastening the head J to the link or ring G or the stem F; but it is obvious that to do this would not require any invention. It may be either soldered to the head J, or the head J and ring G may be cast together; or a thimble or tube may be interposed between the disk M and head J.

In operation the cups are placed on the chain so that they will be inverted while in motion in the tube C of the pump, and the open end of the cup is therefore on top as the chain descends into the cistern. In its upward progress through the water-tube C the

cup, after passing the discharge-spout N, is immediately filled with air, the water having been discharged therefrom, the aperture between the disk M and the open mouth of the cylinder readily permitting this to be done. 5 The air therefore received within the cup is the fresh air taken above the surface of the ground, or above the curb of the cistern. As it is plunged into the water filled with pure 10 air, the water gradually forces out the air, so that by the time the lower end of the chain reaches the upward curve the cup is entirely filled with water and exhausted of its air.

I would call particular attention to the fact 15 that the ordinary chain-pump is operated with greater rapidity than the well-known water-purifying pumps, because in the latter the water is actually carried up to the discharge-spout in the cups themselves; hence the motion must be comparatively slow, so as to prevent an overdischarge of water; but in chain-pumps the water is forced up by being confined in the tube, in which is an upward movement of a succession of buttons, so that speed 20 is a necessary requirement.

It is not pretended or claimed that the cups in this invention aid in raising the air, except

in so far as the natural conformity or elongated shape of the cup might lend in this direction; but the principal object is to utilize the ordinary chain-pump by attaching thereto devices 30 which will force the air into the water in the same manner as is done by the purifying-pumps.

Therefore what I claim as new is—

1. An aerating-cup composed of a cylinder 35 open at one end and having a perforated head at its other end, in combination with the stem having a link or eye at each end, and the disk for partially closing the cup, substantially as herein set forth. 40

2. The combination of the cup E, having the perforated head, and the central stem, F, having fixed at one end the eye G and upon its other screw-threaded end the disk M, of smaller diameter than the cup, and eye I, with 45 the chain, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand, this 12th day of July, 1887, in the presence of two witnesses.

WILLIAM MILD.

Witnesses:

EDWARD E. HULL,  
WM. O. CAMPBELL.