No. 836,865. PATENTED NOV. 27, 1906.

H. COLE.

WATER ELEVATOR.

APPLICATION FILED MAY 29, 1905.

2 SHEETS—SHEET 1.

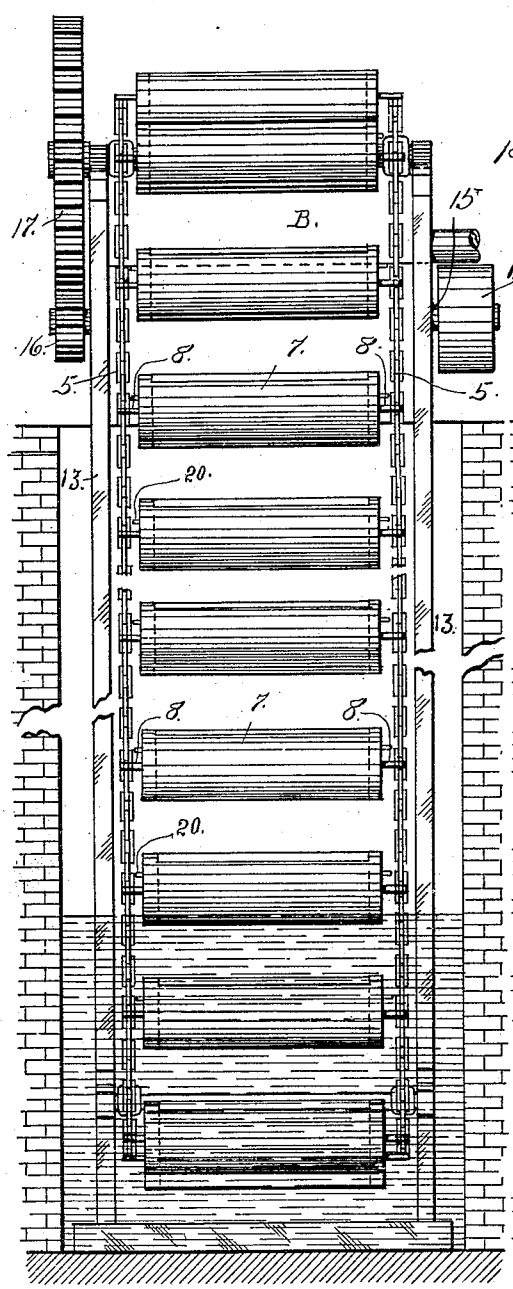


Fig. 1.

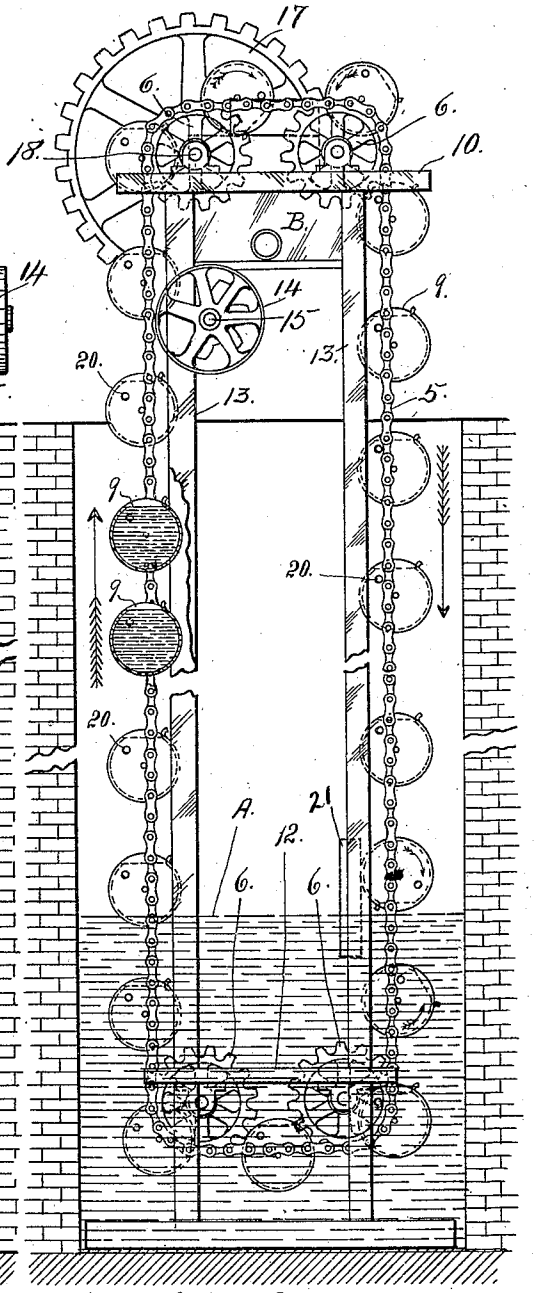


Fig. 2.

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2 SHEETS—SHEET 2.

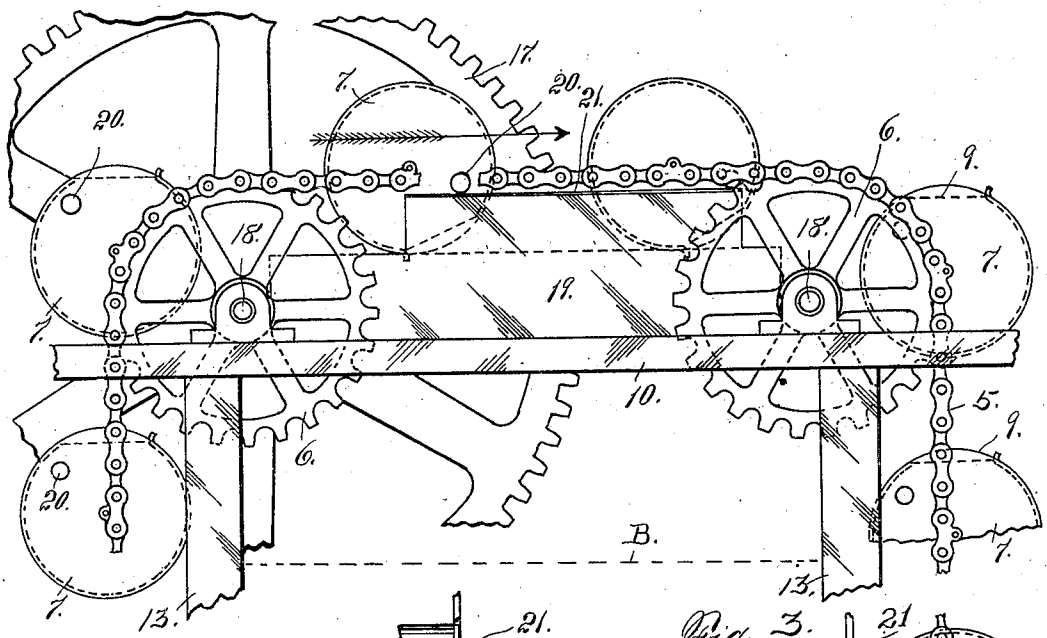


Fig. 3.

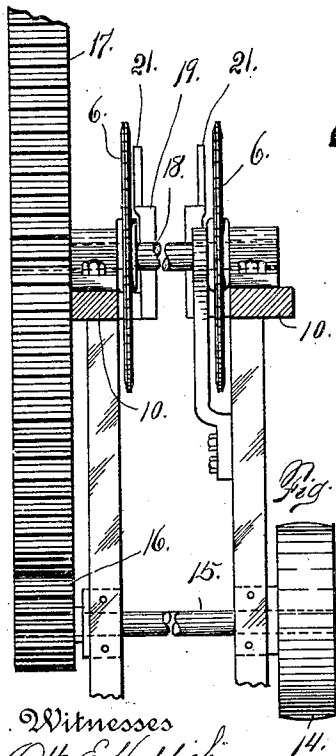


Fig. 5.

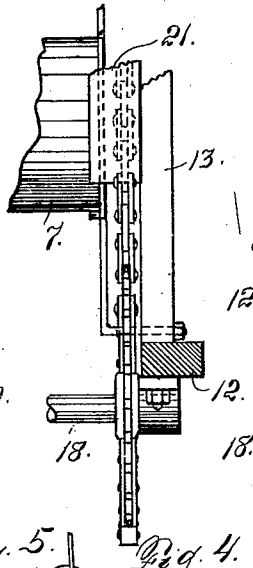
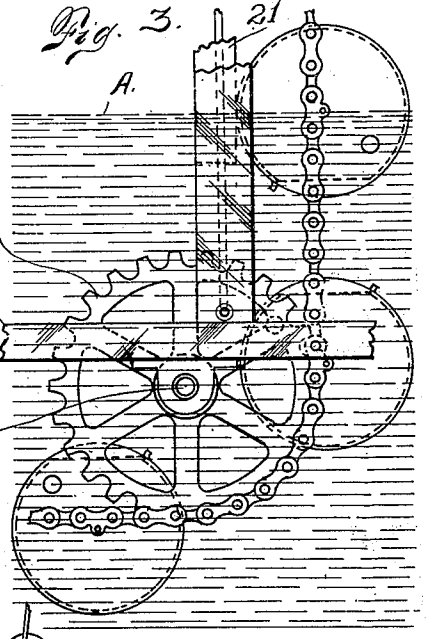


Fig. 4.



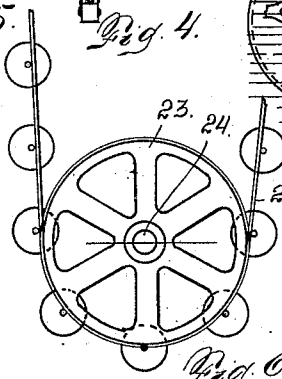


Fig. 6.

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UNITED STATES PATENT OFFICE.

HENRY COLE, OF DENVER, COLORADO.

WATER-ELEVATOR.

No. 836,865. Specification of Letters Patent. Patented Nov. 27, 1906.

Application filed May 29, 1905. Serial No. 262,882.

To all whom it may concern:

Be it known that I, HENRY COLE, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Water-Elevators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in water-elevators, my object being to provide a cheap and efficient means of raising water for irrigating and other purposes.

It is well known that a cheap and efficient water-elevating device would be valuable for irrigating purposes in those districts, which are numerous, where there is plenty of water located only a few feet below the level of the ground where the irrigation is required. My improved device is intended for this work. It also may be used to advantage in raising water from considerable depths, if desired.

The invention consists of an endless carrier composed of two flexible devices, as chains, connected by buckets, which are adapted to pass through a body of water, whereby they become filled. The construction of the top of the apparatus is such that the buckets are automatically dumped by a rolling action.

Having briefly outlined my improved construction, as well as the function it is intended to perform, I will proceed to describe the same in detail, reference being made to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a view of my improved device when in position for use. Fig. 2 is a view taken at right angles to Fig. 1. Fig. 3 is a fragmentary view of the same mechanism, shown on a larger scale. Fig. 4 is a fragmentary view showing a detail of construction. Fig. 5 is a fragmentary view of the upper part of the apparatus. Fig. 6 is a view illustrating a modified form of construction.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate each of two endless sprocket-chains engaging two pairs of upper sprocket-wheels and two pairs of lower sprocket-wheels 6. These chains are connected by buckets 7, whose extremities are provided with spindles 8, journaled in the chains. Each bucket is open at the top, as shown at 9, whereby it normally has a tendency to assume the upright position, or the position with the opening 9 uppermost, since the material of the bucket is cut out to form this opening, thus making the device lighter above than below the horizontal center.

The upper and lower pairs of sprocket-wheels are journaled in a suitable frame composed of upper and lower parts 10 and 12 and upright posts 13. Motion is transmitted to the endless carrier by connecting a pulley 14 with any suitable power. This pulley is mounted on a shaft 15, to which is made fast a gear 16, meshing with a larger gear 17, fast on a shaft 18, to which two of the upper sprocket-wheels 6 are made fast. A second shaft 18 carries the other two sprocket-wheels 6. The upper part of the framework 10 is provided with a track 19, adapted to engage the exterior surface of the bucket 7, causing them to roll sufficiently to assume the dumping position or to discharge their contents through their openings 9. Attention is called to the fact that the buckets are of cylindrical shape, whereby as they engage the tracks 19, one on each side, they roll until they are in position to discharge their contents. Each bucket is provided at each end with a pin or projection 20, which is adapted to engage a stop-plate 21, which projects above the track and is somewhat shorter than the latter. The pins engage the said stop-plates as soon as the buckets have rolled to the dumping position, or that shown at the top of Fig. 3. After the pins engage these plates the buckets slide along on the tracks 19 until the pins 20 reach the extremities of the stop-plates. It is now assumed that the buckets are empty, and they may either turn over and assume the upright position or assume the same position without turning over, according to the details of construction. In other words, if the pins 20 disengage the stop-plates before the cylindrical surfaces of the buckets are released from the tracks 19 the tendency would be for the friction between the tracks and the buckets to turn the latter over, whereas if the pins should disengage the stop-plates at the same moment that the cylindrical surfaces of the buckets leave the

tracks 19 the tendency would be for the buckets to assume the upright position by moving in the direction of the arrow shown at the upper part of Fig. 2.

After the buckets have left the track and are moving downwardly on one side it is desirable before they come in contact with the water A that they should assume a reversed position in order to allow the water to enter them, and thus avoid the resistance due to the buoyancy resulting from an attempt to force the empty buckets into the water. In order to accomplish this object, a friction-plate 21 is mounted on the frame, which the cylindrical surfaces of the buckets are adapted to engage just before they enter the water, whereby the buckets are rolled sufficiently to cause them to assume a position partly inverted as they enter the water in such a manner that the dipping action may be easily accomplished—that is to say, when the bucket first begins to fill the mouth is partly exposed to the atmosphere, thus allowing the air within the bucket to escape as the water enters. This operation may be so regulated that the air will be practically all out of the bucket before the latter is completely immersed.

In the form of construction shown in Fig. 6 it is assumed that a pair of wheels 23 are mounted on an axle 24 and engaged by a pair of flexible devices 25, carrying buckets 26. The gravity of the wheels 23 is assumed to be sufficient to cause the buckets to enter the water. Under this arrangement there would be two wheels only at the bottom of the apparatus, while there would be four at the upper part thereof, as illustrated in Figs. 1, 2, and 3. Attention is called to the fact that in Fig. 6 only one side of the apparatus is shown; but as the complete apparatus is only a duplication of the side illustrated further illustration is not deemed necessary, since this view is only intended to illustrate my idea that the buckets may be caused to enter the water by a pair of wheels supported only by the endless carrier.

From the foregoing description the use and operation of my improved apparatus will be readily understood. Assuming that the apparatus is in the position shown in Figs. 1, 2, and 3, if power is transmitted to the endless carrier in the manner heretofore explained the filled buckets as they first rise to the top of the apparatus will be in the upright position. Now as these buckets pass to the tracks 19 and engage the latter they begin to roll on these tracks, and as they roll they begin to discharge their contents into a suitable receptacle B. Now as soon as they have reached the dumping position in order to remain in this position long enough to completely discharge their contents the pins 20 on their extremities engage the stop-plates 21, whereby further rolling action of the buckets is prevented, causing them to slide along on their tracks until their contents are completely discharged.

Having thus described my invention, what I claim is—

1. In a water-elevator, the combination of endless flexible devices, buckets whose opposite extremities are journaled in said devices, a track located at the upper part of the apparatus and arranged in the path of and adapted to engage the outer curved surface of the buckets causing the latter to roll to the dumping position, the exterior surface of the buckets being curved to facilitate the rolling action.

2. In a water-elevator, the combination of an endless carrier composed of flexible devices, and buckets journaled in said devices, the buckets having curved exterior surfaces, a track located at the dumping-terminal of the apparatus and arranged in the path of and adapted to engage the exterior surfaces of the buckets causing them to roll to the dumping position.

3. An endless carrier provided with cylindrical buckets, a track mounted at the dumping-terminal of the apparatus and adapted to engage the exterior surfaces of the buckets whereby the latter are adapted to roll to the dumping position, and means for limiting the rolling action of the buckets after they have reached a predetermined limit, substantially as described and for the purpose set forth.

4. A water-elevator consisting of an endless carrier provided with cylindrical buckets open at the top, a track located at the dumping-terminal of the apparatus and adapted to engage the buckets and cause the latter to roll to the dumping position, each bucket having a pin, and a stop mounted in the path of the pin whereby the rolling action of the bucket is checked at a predetermined point, substantially as described.

5. An endless water-elevator composed of two endless devices and cylindrical buckets connecting the endless devices, the buckets being journaled at their extremities in the flexible devices, wheels engaging the flexible devices and supporting the carrier, means connected with the lower part of the carrier for causing the buckets to enter a body of water at their downward limit, means located at the upper terminal of the apparatus for engaging the exterior surface of the buckets whereby the resulting friction causes the buckets to roll to the dumping position, and means for limiting the rolling action of the buckets, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY COLE.

Witnesses:
DENA NELSON,
EBERT O'BRIEN.