(No Model.)

2 Sheets—Sheet 1.

W. HILTON.

WATER ELEVATOR.

No. 548,196. Patented Oct. 22, 1895.

FIG. 1.

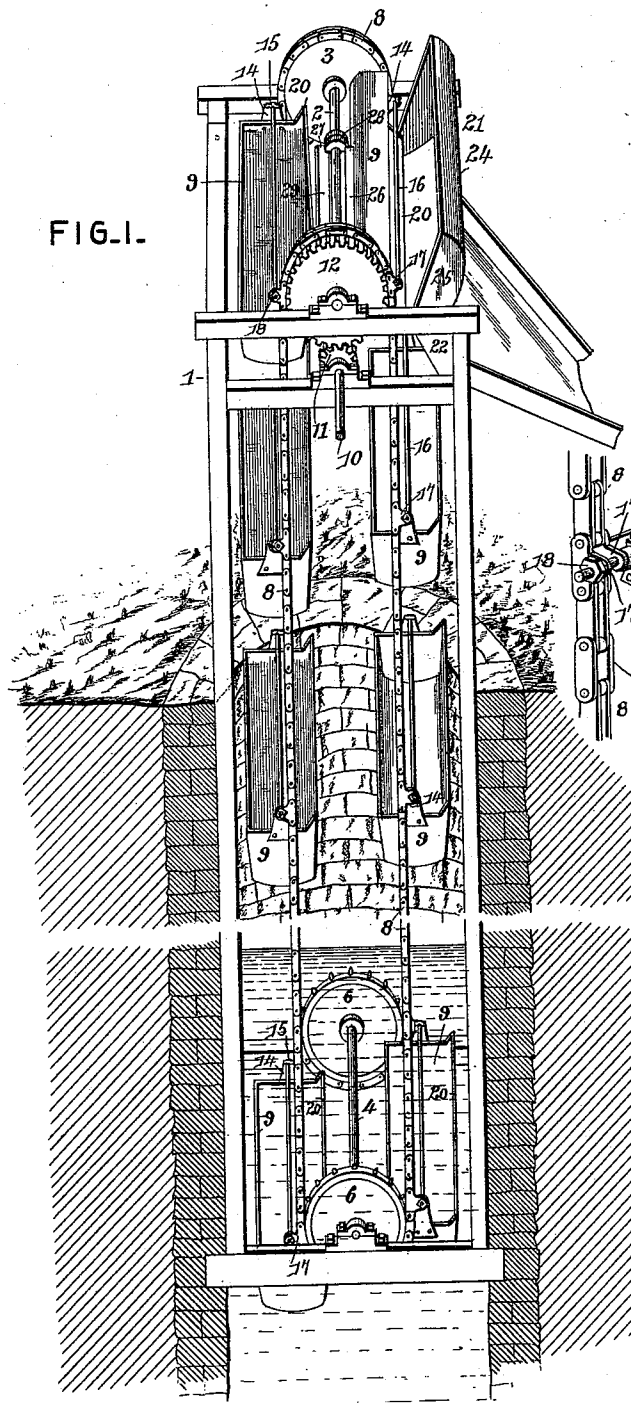


FIG. 3.

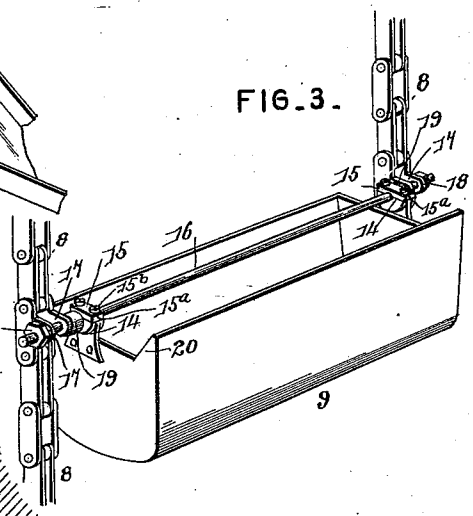
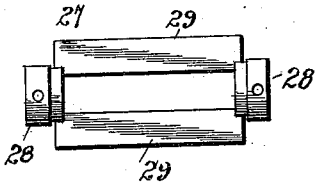


FIG. 5.



Witnesses

Jas. K. McCathran

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(No Model.) 2 Sheets—Sheet 2.

W. HILTON.

WATER ELEVATOR.

No. 548,196. Patented Oct. 22, 1895.

FIG. 2.

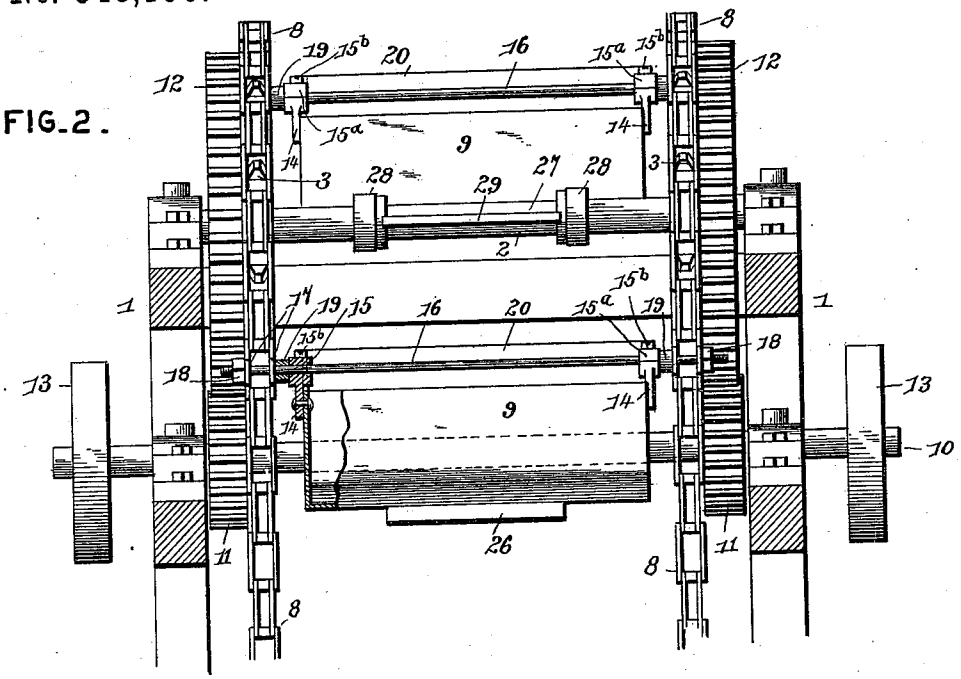
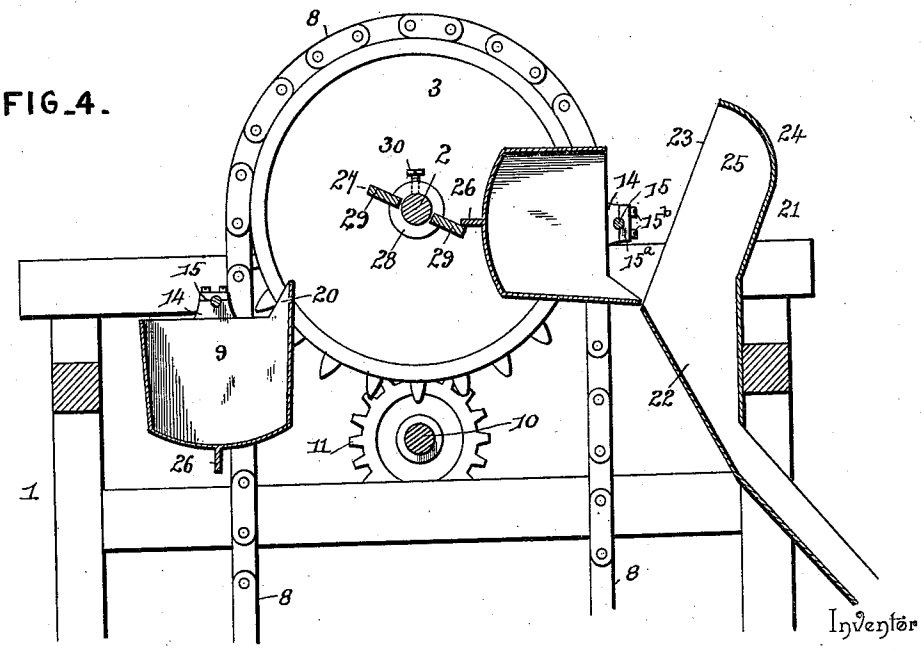


FIG. 4.



Inventor

William Hilton

Witnesses

Jas. K. McCathran

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UNITED STATES PATENT OFFICE.

WILLIAM HILTON, OF DU BOIS, PENNSYLVANIA.

WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 548,196, dated October 22, 1895.

Application filed June 28, 1894. Serial No. 515,992. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HILTON, a citizen of the United States, residing at Du Bois, in the county of Clearfield and State of Pennsylvania, have invented a new and useful Water-Elevator, of which the following is a specification.

My invention relates to conveyers, and particularly to water elevating or pumping devices, the objects in view being to provide an endless-bucket elevator having means for automatically tripping the buckets successively at a predetermined point to discharge their contents into a receiving trough or chute and to provide a simple, inexpensive, and efficient means for detachably securing the buckets to the carrier.

Further objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of an elevating mechanism embodying my invention arranged for use as a pump or water-elevator. Fig. 2 is a side view partly broken away. Fig. 3 is a detail view, in perspective, of one of the buckets and adjacent portions of the carriers. Fig. 4 is a vertical section of the upper portion of the mechanism to show the means for tripping the buckets. Fig. 5 is a detail view of the tripping device detached.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a framework, at the top of which is mounted a transverse carrier-shaft 2, to which are attached the carrier-wheels 3, said carrier-wheels in the construction illustrated in the drawings consisting of chain or sprocket wheels, and 4 represents a lower carrier-shaft parallel with the upper carrier-shaft and provided with similar carrier-wheels 6. The endless carriers 8, which in this instance consist of chains, extend around the pairs of carrier-wheels on the upper and lower shafts, and to the said carriers are attached the buckets 9.

The driving-shaft 10 is mounted, preferably, below the upper carrier-shaft and is provided with pinions 11, meshing with gear-wheels 12, fixed to the upper carrier-shaft, said driving-shaft being provided with belt-pulleys 13 or similar devices for communicating power from a driving mechanism (not shown) to the elevating mechanism.

The buckets are arranged between the vertical planes of the endless carriers and are provided at their ends with ears 14, which extend above the upper edges of the end walls and form bearings 15, which are mounted upon the transverse pins or connecting-rods 16. These pins or connecting-rods are attached terminally to the endless carriers by means of perforated ears 17, formed upon the links of the carriers and nuts 18, threaded upon the projecting extremities of said pins or rods. Washers 19 are arranged between the upstanding ears on the extremities of the buckets and the adjacent ears on the carrier. The bearings which are formed in the ears rising from the extremities of the buckets are provided with removable caps 15^a, which are secured in place by means of screws 15^b or similar devices.

From the above description it will be seen that the buckets are adapted to swing freely between the planes of the carriers so as to maintain at all times an upright position when unaffected by auxiliary devices, and for the purpose of insuring a proper discharge of the contents of the buckets they are provided upon their front sides with extensions or lips 20.

21 represents a hopper adapted for the reception of the contents of the buckets, said hopper communicating with a suitable receptacle or chute 22, by which the liquid or other material elevated by the conveyer is conducted to a point of use. The hopper is preferably provided at its outer side with an upstanding hood or guard 23, adapted for preventing spilling or scattering of the material as it is discharged from the buckets, said hood being provided with an upper overhanging lip 24 and connected sides or ears 25.

The means for tripping the buckets successively as they reach the proper point for discharging into the hopper consist of webs 26, depending from the under or preferably rounded sides or bottoms of the buckets, and a winged trip 27, secured to the upper carrier-shaft. This trip consists of the end collars 28, connected by the radial wings 29, and the

trip is held in the desired position upon the carrier-shaft by means of set-screws 30.

The operation of the trip mechanism is as follows: The winged trip rotates with the upper carrier-shaft, and hence makes a complete revolution during the same time as the periphery of the upper carrier-wheels; but inasmuch as the wings of said trip are arranged nearer the center of rotation than the peripheries of the carrier-wheels it is obvious that they have less distance to travel, and hence move more slowly. These trip-wings are arranged in the path of the webs depending from the buckets and are arranged in such relation with the other parts of the mechanism as to cause said webs to engage therewith after the buckets have passed slightly beyond the vertical plane of the axis of the carrier-shaft. Hence inasmuch as the trip-wings move more slowly than the peripheries of the carrier-wheels it will be obvious that after the engagement of the webs with the wings the lower sides or bottoms of the buckets will be retarded in movement and will not move as rapidly as the tops thereof, which are connected by means of the transverse pins or rods with the portions of the carriers which are moving over the carrier-wheels. Hence as the buckets approach the hopper they are gradually inverted and discharge their contents. This engagement of the trip-wings with the webs on the bottoms of the buckets continues until after the front edges or lips of the buckets have passed below the adjacent edge of the hopper, after which said webs are released and slide down the inner inclined surface of the wall of the hopper and again assume an upright or vertical position, as shown clearly in Fig. 2 of the drawings.

It will be understood that various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

Having described my invention, what I claim is—

1. In a device of the class described, the combination with parallel endless carriers, a carrier-shaft provided with carrier-wheels over which said carriers extend, and buckets suspended from and between the planes of the carriers and provided upon their bottoms with depending webs, of a trip device secured to the said carrier-shaft and provided with wings arranged in the path of the depending webs on the buckets and means for adjusting the trip angularly to vary the point of engagement of its wings with the webs of the buckets, substantially as specified.

2. In a device of the class described, the combination with parallel endless carriers, a carrier-shaft provided with carrier-wheels over which said endless carriers extend, means for operating the carrier-shaft, and buckets loosely suspended from and between the planes of the carriers and provided upon their bottoms with depending webs, of a trip-device having terminal collars, radial wings, and means for securing said collars to the said carrier shaft, the radial wings being arranged in the path of the depending webs on the buckets, substantially as specified.

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

his
WILLIAM × HILTON.
mark

Witnesses:
E. H. WILSON,
F. R. SCOFIELD.