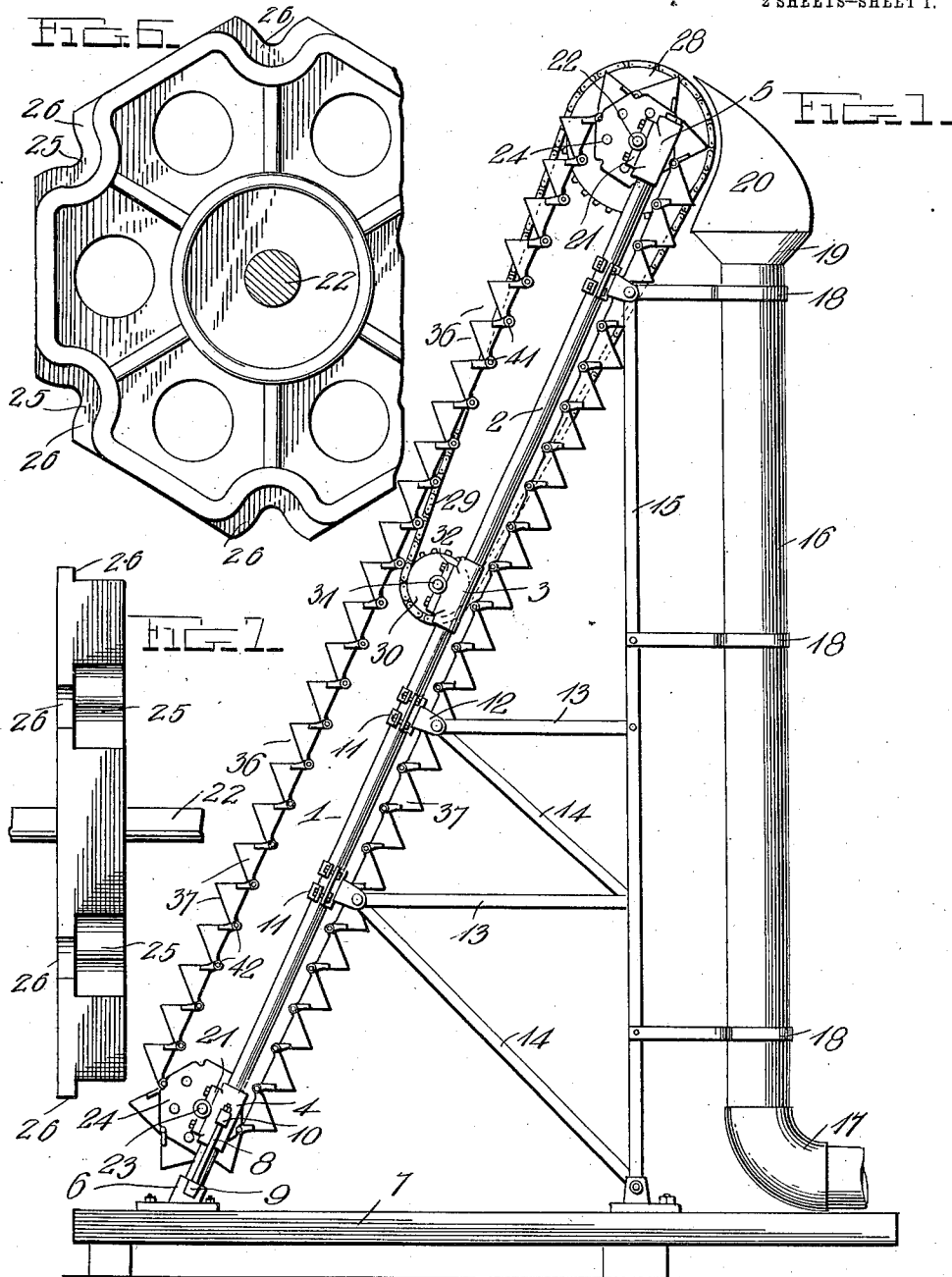


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WATER ELEVATOR.
APPLICATION FILED NOV. 7, 1910.

1,014,879.

Patented Jan. 16, 1912.

2 SHEETS-SHEET 1.



Witnesses

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W. B. Hopkins

Inventor

G. M. Holt

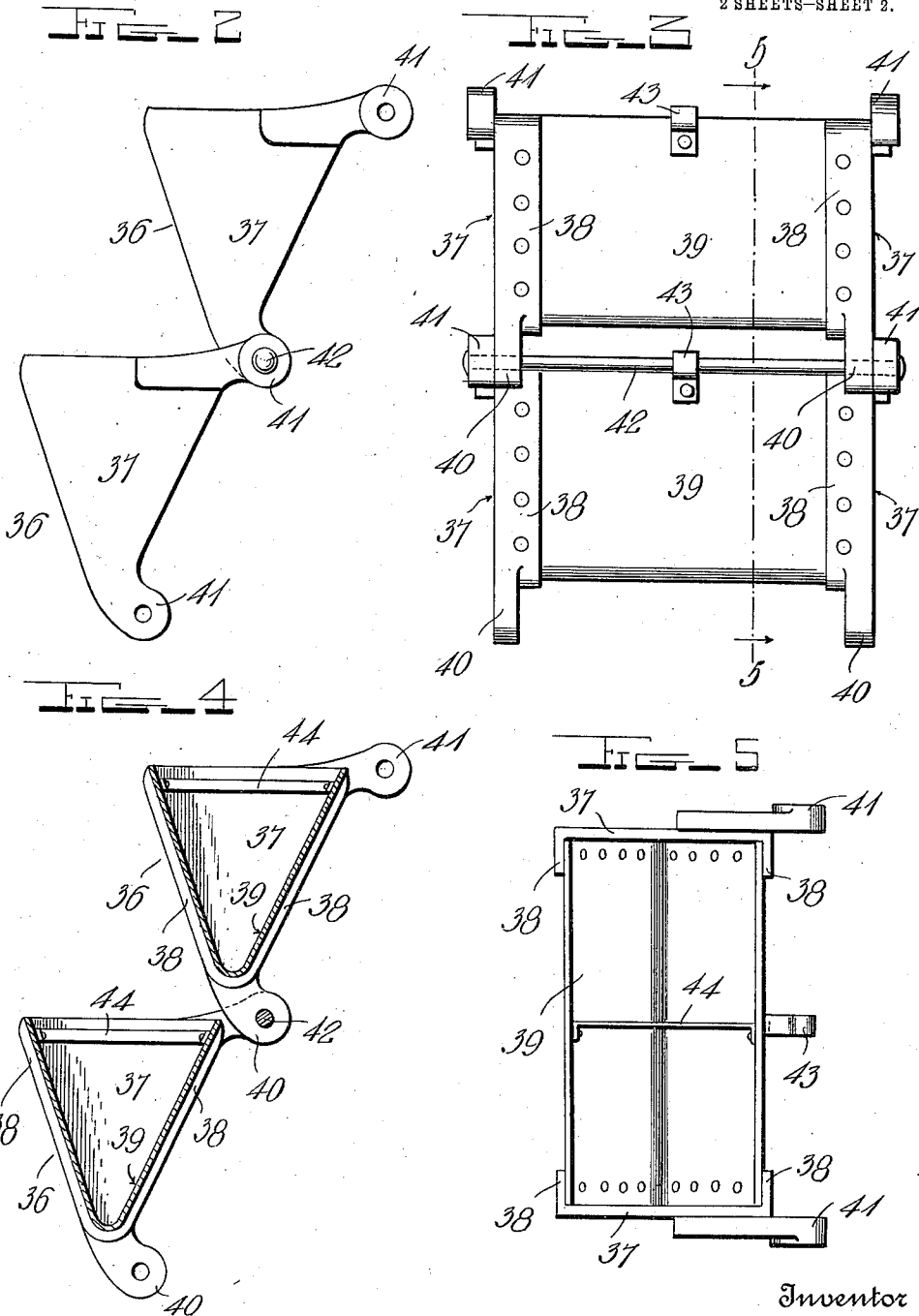
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UNITED STATES PATENT OFFICE.

GEORGE M. HOLT, OF SPOKANE, WASHINGTON, ASSIGNOR TO L. F. BOOTHE, OF SPOKANE, WASHINGTON.

WATER-ELEVATOR.

1,014,879.

Specification of Letters Patent.

Patented Jan. 16, 1912.

Application filed November 7, 1910. Serial No. 591,173.

To all whom it may concern:

Be it known that I, GEORGE M. HOLT, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, 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.

This invention relates to improvements in water elevators.

One object of the invention is to provide an elevator having an improved construction of buckets which may be connected together in such manner as to form the links of an endless sprocket chain, and which are so designed and arranged that the top of the bucket will be level or in a horizontal plane on the working stroke of the chain.

With these and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts as will be more fully described and particularly pointed out in the appended claim.

In the accompanying drawings: Figure 1 is a side view of an elevator constructed in accordance with my invention; Fig. 2 is a side elevation of two of the water buckets forming part of the elevator; Fig. 3 is a rear elevation thereof; Fig. 4 is a vertical section on the line 5—5 of Fig. 3; Fig. 5 is a plan view of one of the buckets; Fig. 6 is an enlarged side view of one of the sprocket gears for supporting and operating the chain of buckets; Fig. 7 is an edge view thereof.

Referring more particularly to the drawings, 1 denotes the supporting frame of an elevator upon which my improved bucket may be used, said frame comprising a mast or frame formed of two standards 2 which are preferably of tubular or angular construction or formed of lengths of pipe, said pipe lengths being secured together by T-coupling members 3 and 4 which also form bearing members for chain supporting and operating shafts hereinafter described. On the upper ends of the standards 2 are also arranged T-couplings 5 which provide bearing members for the upper shaft of the chain. The standards 2 are secured at their lower ends in sockets 6 which are suitably

fastened to a supporting frame or base 7 as shown. The lower ends of the standards 2 are secured in the sockets by tie rods or bolts 8 the lower ends of which are secured in lugs 9 formed on the outer sides of the sockets 6 while the upper ends of the bolts are engaged with apertured lugs 10 formed on the lower couplings 4. The ends of the bolts project through the lugs 10 and are provided with nuts which when screwed up into engagement with the lugs 10 will securely hold the lower ends of the standards in engagement with the sockets.

On the standards 2 at suitable intervals are arranged clips 11 on which are formed apertured lugs or ears 12 with which are connected the outer ends of horizontally disposed brace bars 13 and obliquely disposed brace bars 14 the rear ends of which are bolted or otherwise connected to a vertically disposed supporting bar 15 the lower end of which is secured to the base 7 and the upper end to the upper clip 11 on the standards 2. At a suitable distance in the rear of the supporting frame is a vertically disposed stand pipe 16 on the lower end of which is arranged an elbow 17 whereby the pipe is connected to a suitable water conducting pipe (not shown). The pipe 16 is connected to the supporting bar 15 by horizontally disposed straps 18 or similar braces by means of which the pipe is held upright in the proper position with respect to the elevating mechanism. On the upper end of the stand pipe is arranged a water receiving funnel 19 which is covered by a hood 20 open on the side adjacent the discharge point of the elevating mechanism whereby the water thrown from the buckets of the elevator when they reach this point will be caught and directed into the stand pipe.

Revolubly mounted in bearings 21 formed on the lower and upper T-coupling members 4 and 5 are upper and lower elevator shafts 22 and 23. On the shafts 22 and 23 adjacent their outer ends are fixedly mounted sprocket wheels 24 which are preferably of hexagonal shape and have formed in each corner or angle formed by the flat sides of the wheel, a curved recess 25 and a flange 26 having a notch 27 the purpose of which will hereinafter appear. On one end of the shaft 22 is mounted a sprocket gear 28 which is connected by a sprocket chain 29

with a sprocket gear 30 mounted on one end of a drive shaft 31 which is revolvably mounted in bearings 32 formed on the couplings 3 of the standards 2.

5 The drive shaft 31 may be connected to any suitable power for operating the elevator.

The means for elevating the water comprises a series of buckets 36 each of which
10 comprise substantially triangular end plates 37 having on their edges inwardly projecting right angularly formed flanges 38 to which are riveted or otherwise securely fastened the sheet metal body portion 39 of the
15 buckets, said body portion being formed from a single piece of metal bent to form the front and rear sides and bottom of the bucket as shown. The bottom or lower end of the body portion is formed on a curve or rounded
20 as shown thus facilitating the entire discharge of the water from the buckets when the latter are brought to the proper discharging position.

On the lower ends of the end plates 37 of
25 the buckets are formed rearwardly curved apertured lugs 40 which are formed on said edges of the plates in such manner that the outer surface of the lugs will be flush with the outer sides or surfaces of the end plates
30 37. On the outer sides of the end plates at the upper rear corners thereof are formed rearwardly projecting apertured bearing lugs 41 which are offset or have their inner
35 ends flush or in line with the outer surface or sides of the end plates 37. By thus constructing the lugs 40 and 41 the upper lugs 41 of one bucket will engage or fit against the lower lugs 40 of the next adjacent bucket and when thus engaged said lugs are pivotally
40 connected together by bolts or rivets 42. When thus connected together the buckets will form an endless sprocket chain which when engaged with the sprocket gears 24 on the upper and lower supporting shafts 22
45 and 23 will be supported in operative position. When the buckets are thus engaged with the sprocket wheels 24 the rounded ends of the lugs 41 will engage the notches 25 in the edges of the sprocket wheels. When the
50 lugs thus engage the notches 25 the turning of the wheel will bring the flat square edges of the wheels into engagement with the flat rear portion of the flanges 38 of the ends of the bucket so that when the buckets have been
55 brought around to the point of discharge by the wheels the water will be entirely discharged therefrom. The flanges 26 on the sprocket wheels engage the outer sides of the

lugs 41 and thereby prevent lateral shifting of the buckets while the notches 27 accommodate the ends of the pivot or tie rod. 60

The ends of the buckets are connected together at the rear side of the buckets by tie rods 42 which are secured to the rear flanges of the end plates in any suitable manner and
65 when the buckets are very long and require support in the center, a lug 43 is riveted onto the back of the bucket in line with the tie rod 42 and is formed with an aperture through which the tie rod is adapted to pass, said rod
70 thus bracing the bucket. If desired an additional brace may be provided in the form of a cross bar 44 having right angularly bent opposite ends, said bar being arranged across the center of the bucket adjacent the upper
75 edges thereof and the lugs on the ends of the bar riveted or otherwise secured to the front and rear sides of the buckets, as shown.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation. 80

Various changes in the form, proportion and the minor details of construction may be
85 resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined in the appended claim.

Having thus described my invention, what I claim is: 90

The combination of an endless chain of buckets each provided at its lower corners with rearwardly projecting apertured lugs having their outer faces flush with the outer
95 end surfaces of the buckets and at their upper corners with laterally offset rearwardly extending apertured lugs fitting against the outer sides of the lower lugs of the preceding buckets, pivots inserted through and projecting
100 beyond the said lugs, and sprocket wheels having straight faces to engage the backs of the buckets and provided between said faces with recesses to engage said lugs and flanges at the outer sides of said recesses
105 to engage the outer sides of said offset lugs and thereby maintain the alinement of the buckets, the flanges having notches to receive the pivots.

In testimony whereof I have hereunto set
110 my hand in presence of two subscribing witnesses.

GEORGE M. HOLT.

Witnesses:

J. B. CAMPBELL,
L. H. MACOMBER.