

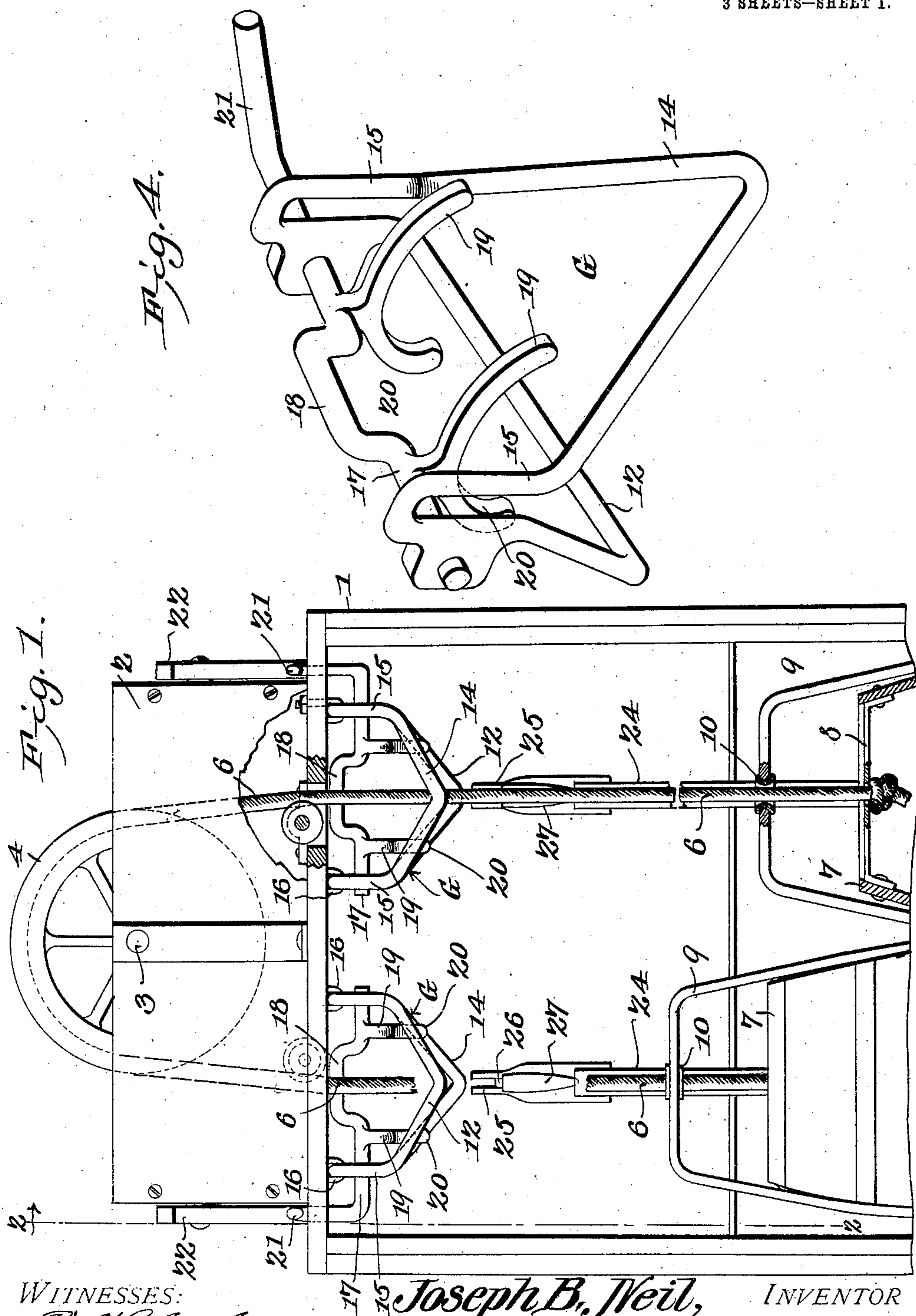
No. 844,534.

PATENTED FEB. 19, 1907.

J. B. NEIL.
WATER ELEVATOR.

APPLICATION FILED JAN. 22, 1906.

3 SHEETS—SHEET 1.



WITNESSES:

E. J. Stewart
Wm. Baggett

Joseph B. Neil,

INVENTOR

By

C. A. Snow & Co.

ATTORNEYS

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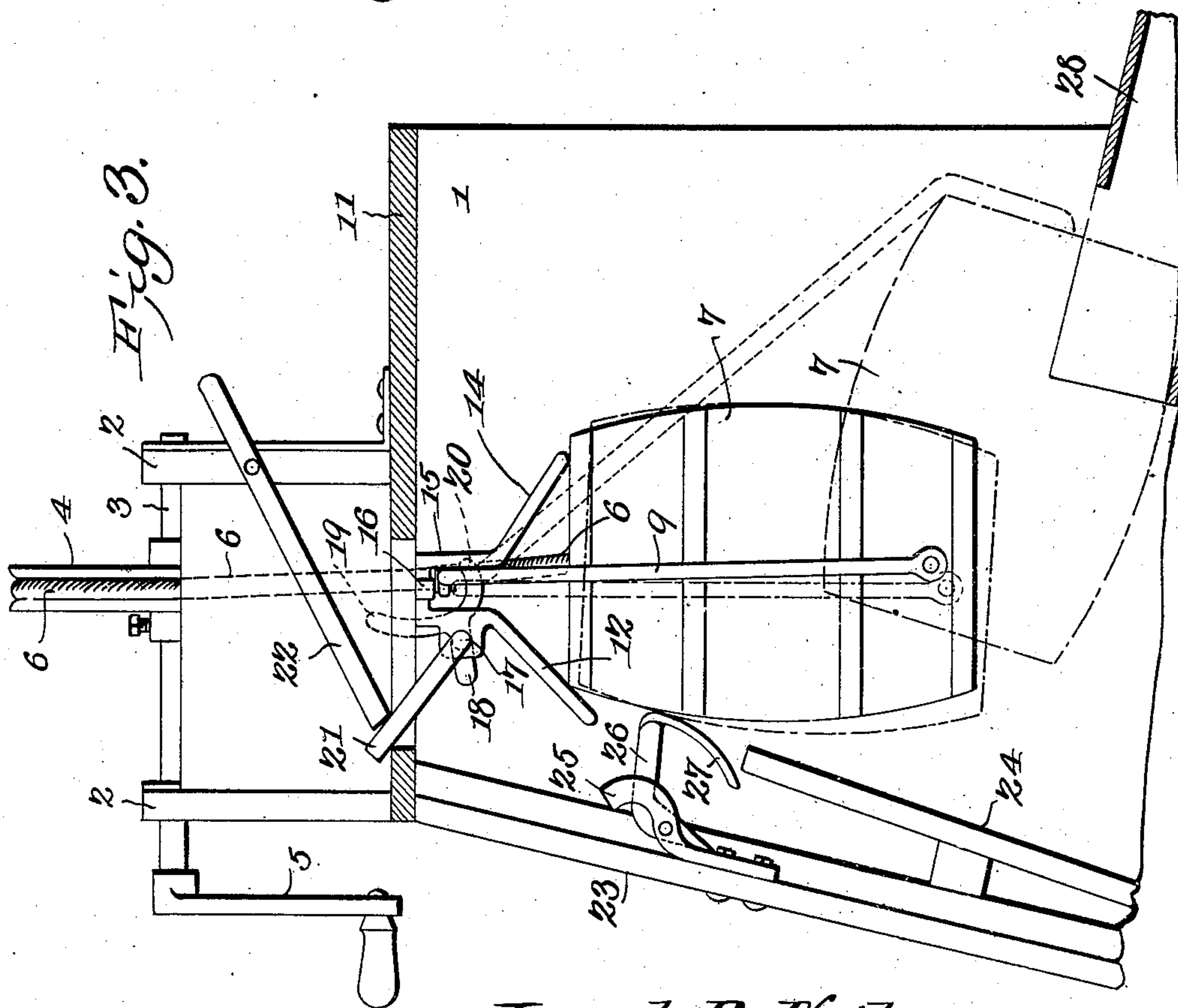
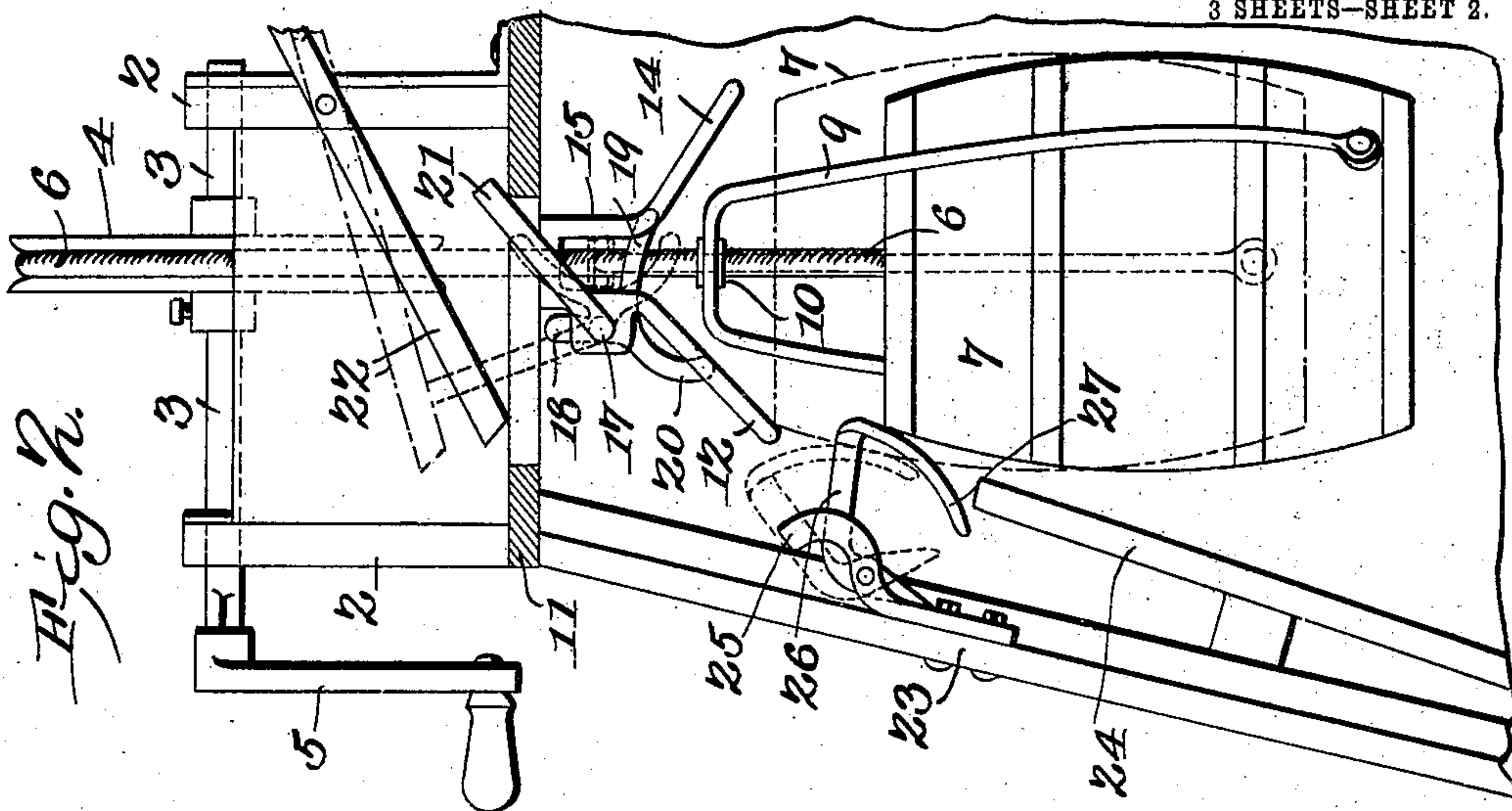
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3 SHEETS—SHEET 2.



WITNESSES:

E. H. Stewart
Wm. Ragger

Joseph B. Neil, INVENTOR.

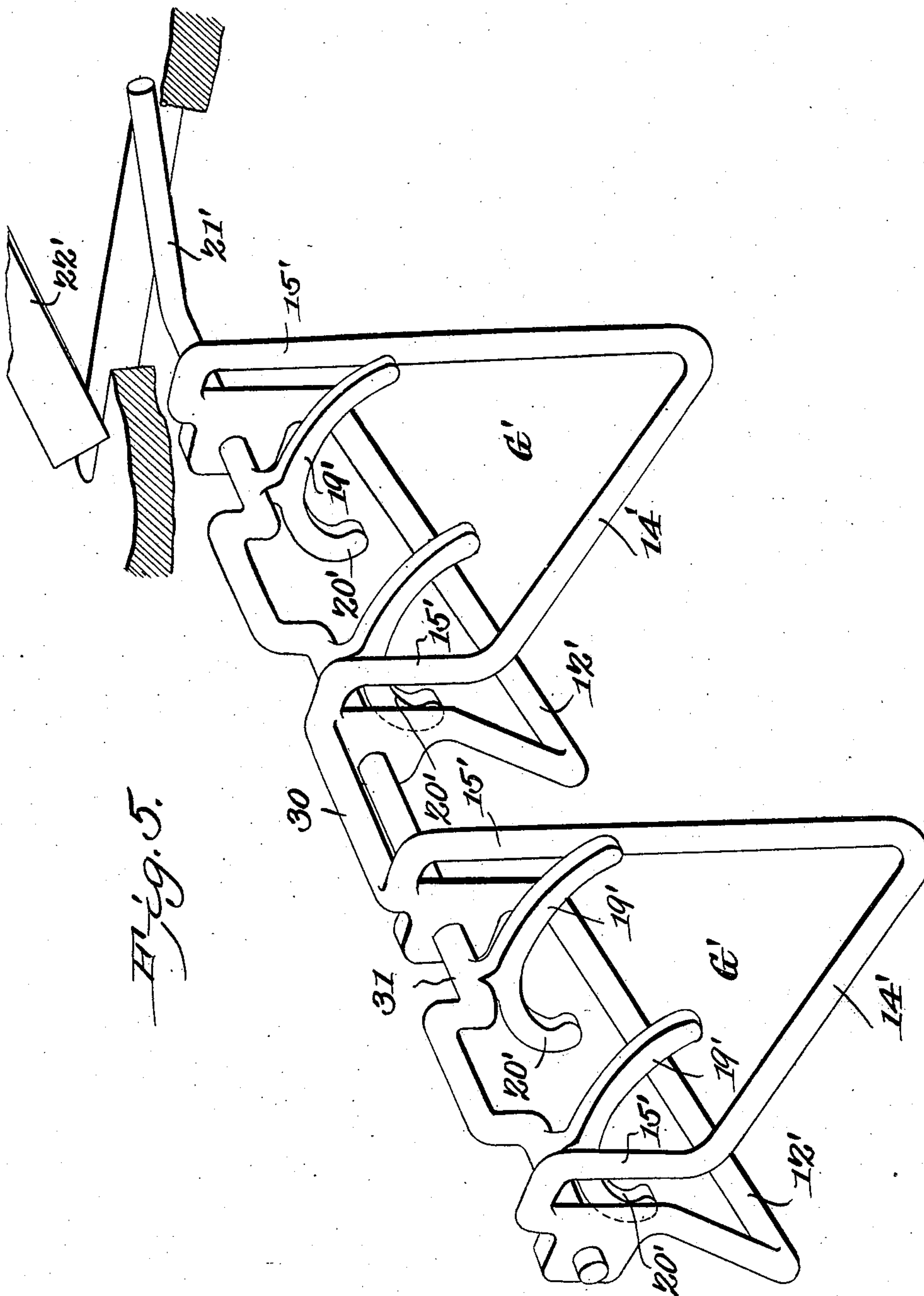
By *C. A. Snow & Co.*
ATTORNEYS

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3 SHEETS—SHEET 3.



WITNESSES:

E. J. Stewart
Wm. Ragger

Joseph B. Neil,
INVENTOR.

By *Chas. Snow & Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

JOSEPH BROWN NEIL, OF FILBERT, SOUTH CAROLINA.

WATER-ELEVATOR.

No. 844,534.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed January 22, 1906. Serial No. 297,323.

To all whom it may concern:

Be it known that I, JOSEPH BROWN NEIL, a citizen of the United States, residing at Filbert, in the county of York and State of South Carolina, have invented a new and useful Water-Elevator, of which the following is a specification.

This invention relates to that class of water-elevators which are used in connection with wells for the purpose of elevating water by means of buckets; and one object of the invention is to provide improved means for tilting the bucket to discharge its contents, for supporting the bucket while being tilted, and for otherwise manipulating the bucket.

Another object is to improve the construction of the bucket.

Other objects of the invention are to simplify and improve the construction and operation of this class of devices.

With these and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations, and modifications within the scope of the invention may be made when desired.

In the drawings, Figure 1 is a vertical sectional view taken through a well-curbing equipped with the improved water-elevating mechanism. Fig. 2 is a vertical sectional view taken on the plane indicated by the line 2 2 in Fig. 1, approximately at right angles to said figure and showing, respectively, in full and in dotted lines the bucket in two different positions as it approaches the upward limit of its movement. Fig. 3 is a view similar to Fig. 2, but showing in full lines the bucket at the upper limit of its movement, dotted lines being used to represent the bucket after it settles upon the supporting means and also after it has been tilted to discharge its contents. Fig. 4 is a perspective detail view of the bucket guiding and sup-

porting means. Fig. 5 is a perspective view illustrating a modification.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

The well-curbing 1 supports a pair of upwardly-extending brackets or members 2 2, having bearings for a shaft 3, carrying a flanged operating-wheel 4 and provided with a crank 5, whereby it may be manipulated.

In the preferred form of the invention two buckets are used, one of said buckets moving upward while the other is moving in a downward direction; but it is to be understood that the invention to be hereinafter described is applicable where a single bucket is used. In the form of the invention illustrated in the drawings hereto attached a rope or other flexible element 6, passing over the wheel 4, carries at each end a bucket 7. The buckets, which are of identical construction, are provided each at its upper end with a stationary cross-bar 8, with which the hoisting element is suitably connected, said hoisting element passing through an aperture in a bail 9, the lower ends of which are pivoted exteriorly upon the bucket near the lower end of the latter, so that the bucket will be capable of tilting between the arms of the bail. The latter is preferably provided with an anti-friction member—such as a smooth collar or tube 10, of glass or other suitable material—for the passage of the flexible hoisting element in order to avoid excessive wear upon the latter.

Upon the under side of the top member 11 of the well-curbing there are secured guiding devices G, one for each bucket. These guiding devices are of identical construction; and the description of one will apply to both. Each of said guiding devices includes two pointed approximately V-shaped guiding-yokes 12 and 14, flaring or diverging downwardly and connected at their upper ends by inverted-U-shaped bracket members 15, which are suitably secured, as by means of staples or eyebolts 16, upon the under side of the top of the curbing. The yokes 12 and 14 are of unequal length, and the longer yoke 12 is pointed in the direction of what will be regarded as the front side or wall of the curbing, adjacent to which the crank 5 of the shaft 3

is located. The front sides of the inverted-U-shaped brackets 15 are provided with bearings for a rock-shaft 17, which is preferably provided with an intermediate offset or cranked portion 18 for the purpose of not interfering with the operation of the device by contact with the bail of the bucket when the latter is being elevated. The rock-shaft 17 is provided with a pair of curved arms 19, extending rearwardly across the vertical plane of the bracket members 15, and said curved arms are provided at their front ends with terminal hook members 20, said hook members being quite short and not excessively curved, the ends of said hook members being pointed or extended in a downward direction when the arms 19 are in the normal position. (Illustrated in Fig. 4 of the drawings.) The rock-shaft 17 is provided with a terminal arm or crank 21, which normally supports a latch member consisting of a lever 22, which is pivoted in a suitable position—as, for instance, upon one of the bracket members 2. The function of this latch member will presently be made apparent.

Interiorly upon the front wall 23 of the well-curbing there are secured inclined guides 24, one for each bucket, the function of said members being to guide the buckets as they ascend in the direction of the guiding devices G. Upon the front wall 23, adjacent to the upper end of each of the guides 24, there is secured a bracket member 25, upon which is pivoted a lever 26, having at its rear end a depending curved arm 27, which overhangs the upper extremity of the guide 24, but the extremity of which extends forwardly of the upper end of said guide 24, so that it may not, under any circumstances, catch or engage the rim or upper edge of the ascending bucket.

The well-curbing is provided with a rearwardly-extending spout 28, into which the contents of the buckets may be discharged.

It will be readily seen that by rotating the shaft 3 one of the buckets, which will be assumed to have been filled with water, will be caused to ascend, while the empty bucket will descend, it being understood that the friction between the flexible hoisting element and the wheel 4 will be sufficient to prevent slippage. When the ascending bucket approaches the upper end of the curbing, it will engage the guide 24, and its tendency to swing or sway will thus be reduced, while the guide positively limits the movement of the bucket in the direction of the front wall of the curbing. As the bucket continues to rise it will strike the curved arm 27 of the lever 26, which latter will tilt upon its fulcrum, and the upper edge of the bucket will presently strike the lower extremity of the yoke 12. By the engagement of the rim of the bucket with the yoke 12 the bucket as it continues

to rise will be moved slightly in a rearward direction and out of engagement with the arm 27 of the lever 26, which latter will thus be free to drop to its normal position. As the bucket continues to rise the yokes 12 and 14 will guide the bail 9 into the bracket members 15, and as the bail enters into said bracket members it will strike the arms 19 of the rock-shaft 17, thus turning or oscillating the latter until the hook members 20 are brought into alinement with the brackets 15. As the rock-shaft turns the terminal crank member 21 will swing out from under the latch member 22, which latter will drop in rear of the crank, abutting upon the latter, as shown in Fig. 3 of the drawings, and preventing the rock-shaft from returning to its normal position. Further ascent of the bucket being checked by contact of the bail 9 with the upper ends of the brackets 15, the bucket is now permitted, by slightly reversing the movement of the shaft 3, to settle back until the bail 9 is supported upon the hook members 20, as will be seen in Fig. 3 of the drawings, where this position of the bucket is indicated in dotted lines. It will be noticed, however, that when the bucket settles back to this position its upper end will be engaged by the lever 26 and will be thereby slightly tilted in a rearward direction, so that when the reverse movement of the shaft 3 is continued the bucket will slowly tilt upon the pivots which connect it with the arms of the bail 9, and its contents will thus be discharged into the spout 28. As soon as the bucket has been emptied the operator by operating the latch-lever 22 releases the rock-shaft 17, which latter will be oscillated by the weight of the bucket and restored to its initial or normal position, the bucket-bail slipping readily off the hooks 20 and being restored to its normal vertical position by the strain of the rope upon the cross-bar 8.

Under the modified construction illustrated in Fig. 5 of the drawings the guiding devices for the two buckets, which are here generally designated G' G' and each of which includes the approximately V-shaped guiding-yokes 12' and 14', connected at their ends by inverted-U-shaped bracket members 15', are connected with each other by means of a cross-bar 30, so as to constitute practically a single member or casting, which is provided with bearings for a single rock-shaft 31, having arms 19', provided with bucket engaging and supporting hooks 20' and having at one end a crank 21', adapted to be engaged by a latch-lever 22'. When this modification is resorted to, it will be seen that a latch-lever is required at one end of the well-casing only, and the construction and operation of the device will be to that extent simplified.

From the foregoing description, taken in connection with the drawings hereto annexed,

the operation and advantages of this invention will be readily understood by those skilled in the art to which it appertains. The device is simple in construction, inexpensive, and thoroughly efficient for the purposes set forth.

Having thus described the invention, what is claimed is—

1. In a water-elevator a hoisting-bucket, a bail pivotally connected thereto, a flexible hoisting element connected with the bucket and normally holding the bail extended thereabove, means for removably engaging the bail to support the bucket, and a guiding device above and in the path of the bucket for directing the bucket and bail toward said means.

2. In a water-elevator a hoisting-bucket, a bail pivotally connected thereto, a flexible hoisting element connected with the bucket and normally holding the bail extended thereabove, means for automatically engaging the bail to support the bucket, and a guiding device including oppositely-disposed diverging members for directing the bucket and bail in the direction of the bail-engaging means.

3. In a water-elevator a bucket, a bail pivotally connected thereto, a flexible hoisting element connected to the bucket and normally holding the bail projected thereabove, means for automatically engaging the bail to support the bucket, and a guide device for directing the bail into engagement with said means, said device including oppositely-disposed diverging yokes.

4. In a water-elevator a bucket, a bail pivotally connected thereto, a flexible hoisting element connected to the bucket and normally holding the bail projected thereabove, means for automatically engaging the bail to support the bucket, and a guide device for directing the bail into engagement with said means, said device including oppositely-disposed downwardly-divergent yokes of unequal lengths.

5. A bail, a bucket tiltably connected therewith, a flexible hoisting element connected with the bucket and guided through the bail, guiding means for the bail, a rock-shaft having an arm extended in the path of the bail and provided with a terminal hook, and means for locking or securing the rock-shaft when the latter has been turned to present the hook in bail-engaging position.

6. A bail, a bucket tiltably connected therewith, a flexible hoisting element connected with the bucket and guided through the bail, guiding means for the bail, a rock-shaft having an arm extended in the path of the bail and provided with a terminal hook, a crank upon said rock-shaft, and a latch-lever normally supported upon the crank.

7. A bail, a bucket tiltably connected therewith, a flexible hoisting element con-

nected with the bucket and guided through the bail, means for automatically engaging the bail to support the bucket, a guiding device for directing the bail toward its engaging means, said device including divergent pointed yokes of unequal length, and means for guiding the rim of the bucket into engagement with the longer guide-yoke.

8. A bail, a bucket tiltably connected therewith, a flexible hoisting element connected with the bucket and guided through the bail, means for automatically engaging the bail to support the bucket, a guiding device for directing the bail toward its engaging means, said device including a pair of yokes of unequal length, and a tiltable guide member supported pivotally beneath the longer yoke and extended beyond the point of the latter.

9. A bail, a bucket tiltably connected therewith, a flexible hoisting element connected with the bucket and guided through the bail, means for automatically engaging the bail to support the bucket, guiding means for directing the bail toward its engaging means, said guiding means including oppositely-disposed downwardly-diverging yokes of unequal length, an inclined bucket-engaging guide member, and a tiltable guide member supported above the inclined guide, extended beneath the point of the longer guide-yoke and having a terminal curved arm.

10. A bucket, hoisting means for said bucket, a bail pivotally connected to the bucket, means for automatically engaging the bail to support the bucket, guide means for directing the bail toward its engaging means, said guide means including a pair of divergent yokes, and a tiltable member adapted to exert pushing action upon the bucket to initially tilt the bucket.

11. In a water-elevator, a bucket-supporting device including a rock-shaft, arms connected with the rock-shaft and having terminal hooks, and a crank upon the rock-shaft, in combination with a latch member normally supported upon the crank and adapted to abut upon the latter to lock the shaft against reverse rotation when it has been tilted to a bucket-supporting position.

12. In a water-elevator, a bucket-supporting device including an arm supported in the path of the bucket-bail and adapted to be tilted by contact therewith to a bail-engaging bucket-supporting position, and means for securing the arm in such position.

13. In a water-elevator, a suitably-guided hoisting element, bails carried at the ends thereof, buckets tiltably connected with the bails, guiding devices for the bails supported by the well-casing, a rock-shaft supported by said guiding devices and having a terminal crank, a latch-lever normally supported upon said crank, and arms connected with the

rock-shaft in the path of the bails and having terminal bail-supporting hooks.

14. A tiltable bucket, hoisting means therefor, and a tiltable member in the path of
5 the bucket for exerting a pushing action to initially tilt the bucket.

In testimony that I claim the foregoing as

my own I have hereto affixed my signature in the presence of two witnesses.

JOSEPH BROWN NEIL.

Witnesses:

PAUL T. McNEEL,
J. A. TATE.