(No Model.) 2 Sheets—Sheet 1.

W. G. KENDALL.

MEASURING CONVEYER.

No. 564,329. Patented July 21, 1896.

Fig. 1.

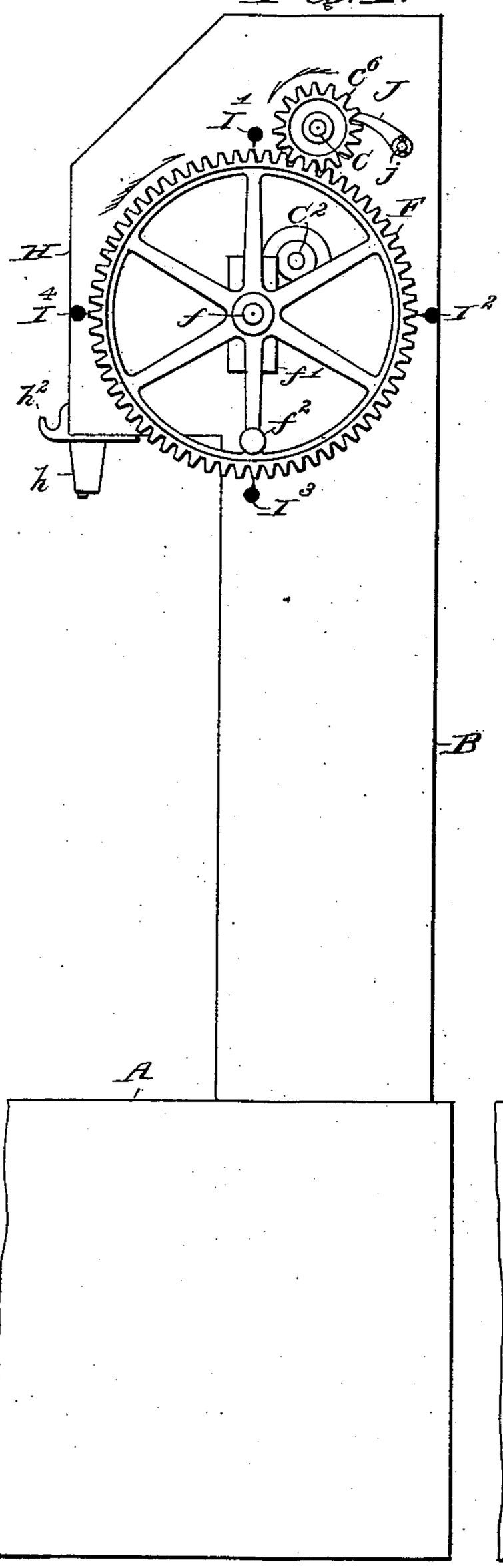
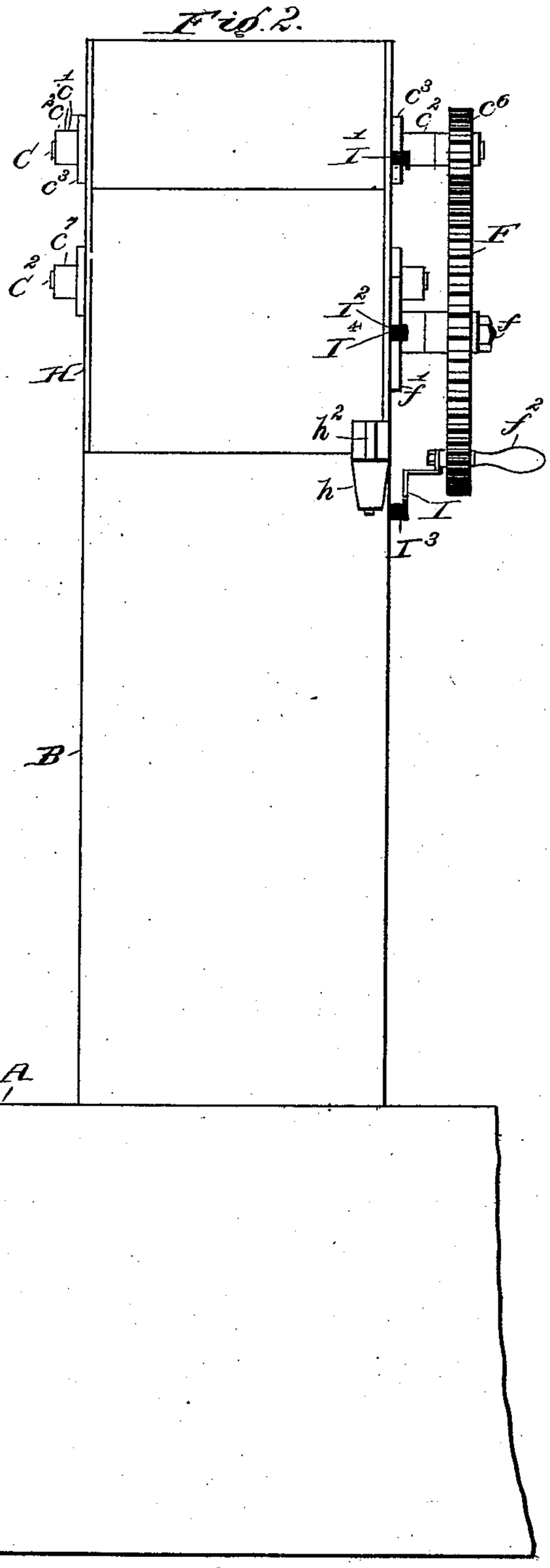


Fig. 2.



Witnesses:
Kirkby Hyde.
Grace E. Hibbert.

Inventor:
Webber G. Kendall,
By Albert M. Moore,
His Attorney.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

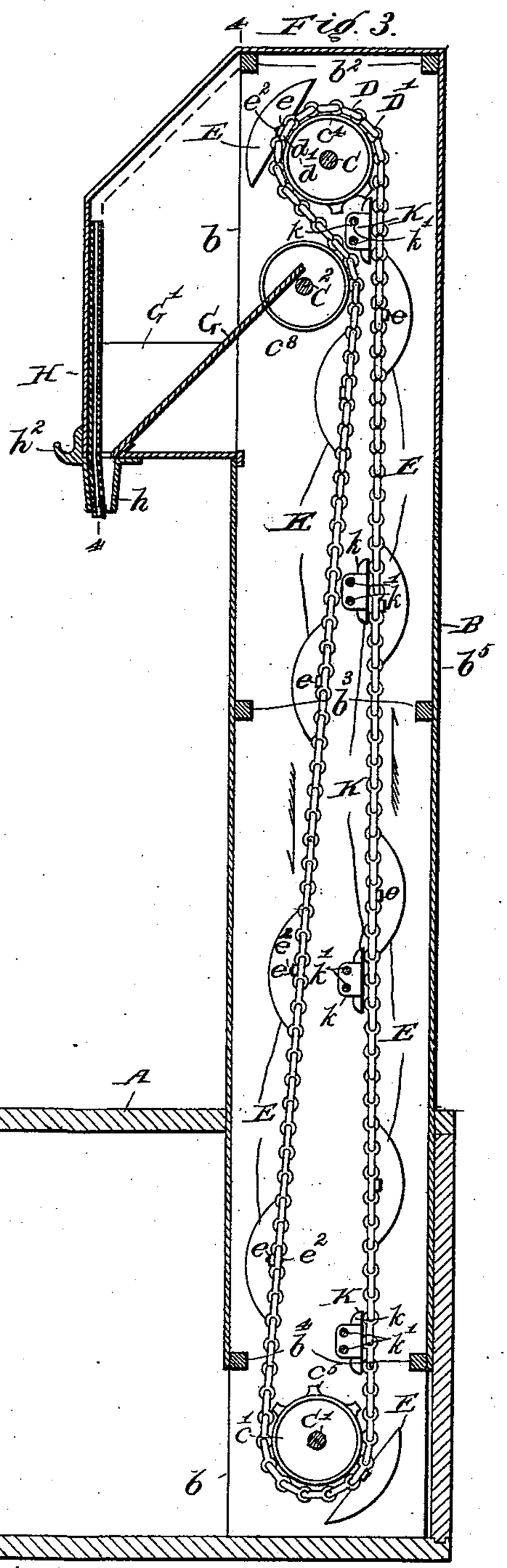


Fig. 4.

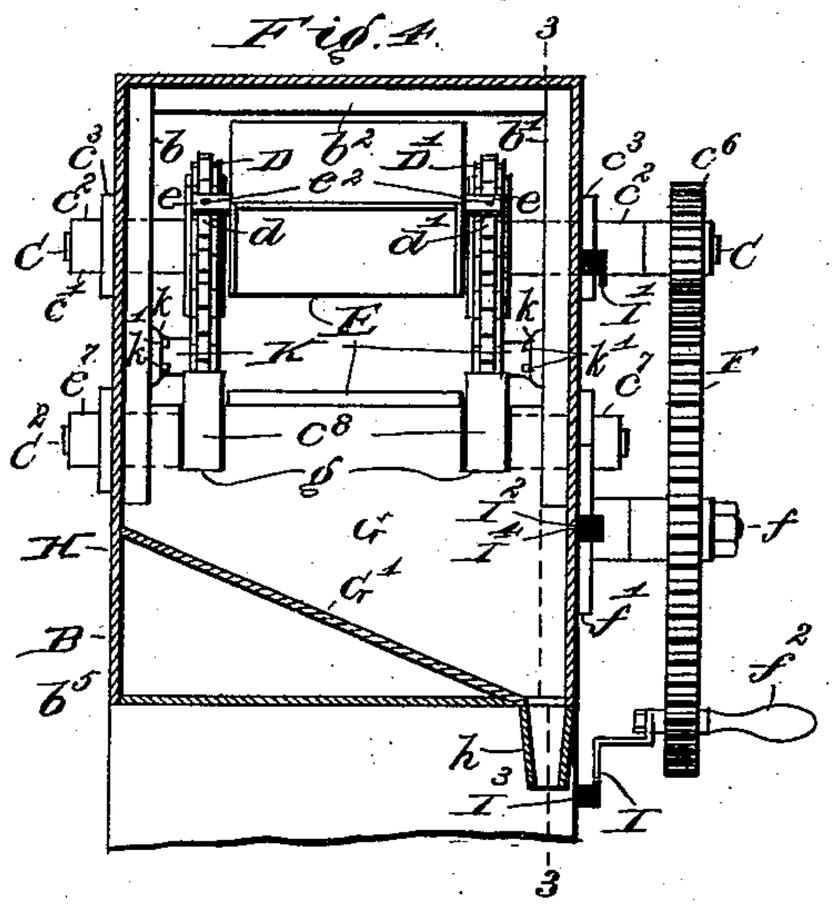
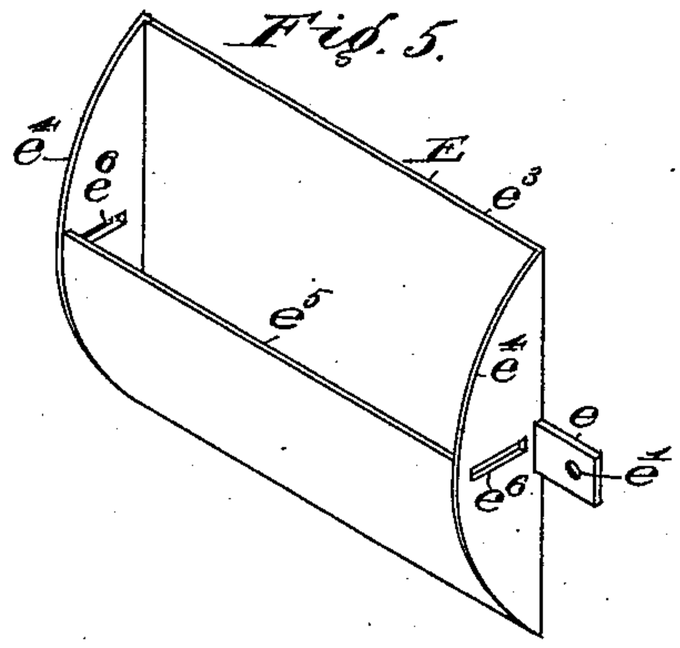


Fig. 5.



Witnesses—
Kirkley Hyde.
Grace E. Hibbert.

Inventor—
Webber G. Kendall,
By Albert M. Moore,
His Attorney.

UNITED STATES PATENT OFFICE.

WEBBER G. KENDALL, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO THE KING OIL ELEVATOR COMPANY, OF PROVIDENCE, RHODE ISLAND.

MEASURING-CONVEYER.

SPECIFICATION forming part of Letters Patent No. 564,329, dated July 21, 1896.

Application filed August 5, 1895. Serial No. 558,226. (No model.)

To all whom it may concern:

Be it known that I, WEBBER G. KENDALL, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Measuring-Elevators, of which the following is a specification.

My invention relates to measuring-conveyers such as are capable of raising oil or similar liquid materials; and it consists in the devices and combinations hereinafter described and claimed, the object of said invention being to raise, by means of buckets on traveling endless chains, exactly the quantity of liquid desired at one revolution of the crank or a predetermined fraction of a revolution of said crank.

In the accompanying drawings, Figure 1 is a side elevation of a measuring-elevator provided with my improvement and a tank; Fig. 2, a front elevation of the same; Fig. 3, a vertical longitudinal section of the same on the line 3 3 in Fig. 4; Fig. 4, a vertical transverse section on the line 4 4 in Fig. 3 of the upper part of the case and spout, showing in front elevation the upper shaft and its bearings, pinion, upper sprocket-wheels, parts of chains, idle or guide wheels and their shaft, inclines, driving-gear, and indicating devices; Fig. 5, an isometric perspective view of a bucket.

A represents a tank or reservoir to contain oil, (or other liquid,) usually located in the cellar, while the oil therefrom is delivered above the first floor, but said tank may be on the same floor with the operator.

The frame of the case B consists of two wooden boards $b\ b'$, connected at their upper and lower ends and between their lower ends, at such intervals as may be necessary to preserve their parallelism, by braces $b^2\ b^3\ b^4$. Said frame $b\ b'$ is preferably rectangular in horizontal section and surrounded from the top to near the lower ends of the boards by a sheathing b^5 of galvanized iron or other sheet metal, the vertical edges of which are soldered together to prevent said sheathing from leaking. The boards and braces make the case very stiff and strong, while the whole construction allows of said case being light in weight and inexpensive, and the lower ends of the boards serve as legs to support the case and all the parts of the elevator.

Two parallel horizontal shafts C C′ pass entirely through the case and are supported in suitable journal-boxes $c\ c'$, the journal-boxes of the upper shaft C being represented in the drawings as pipe-boxes or sleeves c^2, having between their ends flanges c^3, secured to the outside of the case B, said sleeves extending inside the case to the sprocket-wheels named below and preventing an endwise movement of said shaft C. The journal-boxes c' of the lower shaft C′ might be precisely like those c above described, or the parts of the sleeves outside the flanges c^3 may be omitted in the case of said lower shaft when it is necessary to place the case B close to the side of the tank.

On each shaft C C′ is secured a pair of sprocket-wheels $c^4\ c^5$, each wheel of the lower pair being immediately under a wheel of the upper pair. On the wheels $c^4\ c^5$ run parallel sprocket-chains D D′, and to these chains are secured buckets E, Figs. 3, 4, and 5, each bucket being provided with laterally-projecting ears e, having holes e', through which and through corresponding holes in horizontally opposite links $d\ d'$ of the chains are driven rivets e^2.

Each bucket E is of the form shown in Fig. 5, its back e^3 being a rectangular plane, its sides e^4 being segments of circles concentric with the corresponding shaft C C′ when the links $d\ d'$, which support said bucket, are on one of the sprocket-wheels, (as in the case of the highest or lowest bucket in Fig. 3,) and the front e^5 of said bucket being a curved plate of the same radius as the curved edges of the sides of said bucket. The buckets are of sheet metal, preferably copper or brass. The sides of the bucket are in vertical planes, and the upper and lower edges of the front and back are horizontal. The curvature of the front of the buckets is to enable them to pass, throughout their front surfaces, as closely as possible without touching, to the

floor of the tank and to be filled when the tank is almost empty. The front of the bucket joins the back at the lower edges of said front and back and extends upward far enough to make the capacity somewhat greater than the quantity of liquid intended to be measured and delivered by said bucket, the excess of liquid flowing out of the drip-holes e^6 or slits, one such hole or slit being formed in each end of said bucket, so that when the liquid in the bucket—the bucket being upright—is on a level with the bottoms of said drip holes or slits the exact quantity contained therein is known. For the use of retail dealers in oil the bucket will preferably be made to hold one pint, that being the smallest quantity called for by customers.

The buckets are raised by the rotation of the upper sprocket-wheels c^4, fast on the shaft C, as above described, said shaft C having fast thereon outside of the case B a pinion c^6, which is driven by a gear F, supported on a stud f, having a flange f' bolted to the outside of the case, said gear having a suitable handle f^2, by which said gear may be turned.

When the gear F is turned, the buckets are raised full of the oil or other liquid and discharged when the bucket reaches the position of the uppermost bucket in Fig. 3, throwing the contents of the bucket upon an incline G, which contents run down said incline to the discharge-spout h, through which the customer's can or other vessel is filled. The spout h is preferably placed at a front corner of the head H to allow of the case being set close against the wall of the room in which it is placed, said head being merely a projecting upper part of the case B and providing a receptacle for the oil discharged from the buckets and containing the incline G above mentioned and another incline G', the two inclines forming two adjacent sides of a hopper to direct all the oil in said head to said spout h. The head is formed of the same sheet metal as the case proper. An air-tube is arranged in said spout and extends slightly below the spout h and so high within the head H that no liquid can be discharged from a bucket into the top of the same, the object of said tube being to allow the air from the vessel being filled to rise up into the head and to prevent the air coming from said vessel spraying out the oil. A hook h^2 is secured to the head to hold the bail of a can or similar vessel and support said vessel below the spout h.

In order that the incline G may extend as far as possible under the discharging bucket, another horizontal shaft C^2 is arranged below the shaft C and is supported in journal-boxes c^7, (which may be precisely like those c which support said shaft C,) and has fast thereon two idle-wheels or guide-wheels c^8, which hold the chains D D' away from said incline, the buckets descending between said wheels c^8. The incline G is notched at g to admit the wheels c^8 and to allow said incline to reach over the shaft C^2 as far as possible without reaching into the path of the descending buckets, and to intercept all the liquid discharged from said buckets.

As above stated, the buckets are conveniently of the capacity of one pint, and for convenience, also, the gear F has a number of teeth which is an exact multiple of the number of teeth of the pinion c^6, there being preferably four times as many teeth on said gear as on said pinion, so that a complete revolution of said gear will rotate said pinion four times, each revolution of the pinion causing the discharge of one bucket. Thus a quarter of a revolution of the gear F will deliver a pint, a half-revolution one quart, three quarters of a revolution three pints, and a complete revolution two quarts or half a gallon, and so on, two revolutions of said gear being necessary for the delivery of each gallon.

To enable the operator to draw from the tank the exact amount of liquid required, four indicator spots or points $I' I^2 I^3 I^4$ are arranged on the outside of the case B at equal distances from the center of the gear F and at equal angular intervals, and an index-finger I is secured to said gear F and is so arranged as to pass successively over said indicator-spots as said gear is revolved, showing at each such spot that one bucket has been discharged. The interval between one bucket and the next is so considerable that there is no difficulty in stopping the finger I near enough for all practical purposes to the proper indicating-spot.

A retaining-pawl J, pivoted at j on the case B and engaging the pinion c^6, prevents the partially-raised filled buckets from being carried back to the tank by gravity, so that there is always a full bucket in close proximity to the upper sprocket-wheels ready to be discharged by a single revolution of the shaft C and pinion c^6.

The loaded buckets are prevented from swinging the chains in under the shaft C and spilling the contents by guides K, having flanges k, to be secured by bolts or screws k' to the boards b b' and having vertical surfaces against which the inner faces of said chains bear.

It will be understood that the capacity of the bucket is the unit of measurement merely and may be any other quantity as well as a pint.

The elevator herein described obviates the objections commonly made to measuring-pumps and is not liable to get out of order, as it has no packings, valves, or piston to wear, become clogged by dirt, or get out of place, and does not vary its capacity, as a pump will do after use, and is operated with greater ease than a pump.

I claim as my invention—

An elevator-bucket, adapted to take up an excess of liquid and having a drip-hole below the rim of the same, to allow the contents of

said bucket to waste to the bottom of said holes and until the remaining contents of said bucket are of the desired quantity and to prevent the contents of said bucket from slopping over the front of the same, as and for the purpose specified.

In witness whereof I have signed this specification, in the presence of two attesting witnesses, this 3d day of August, A. D. 1895.

WEBBER G. KENDALL.

Witnesses:
ALBERT M. MOORE,
GRACE E. HIBBERT.