

No. 756,427.

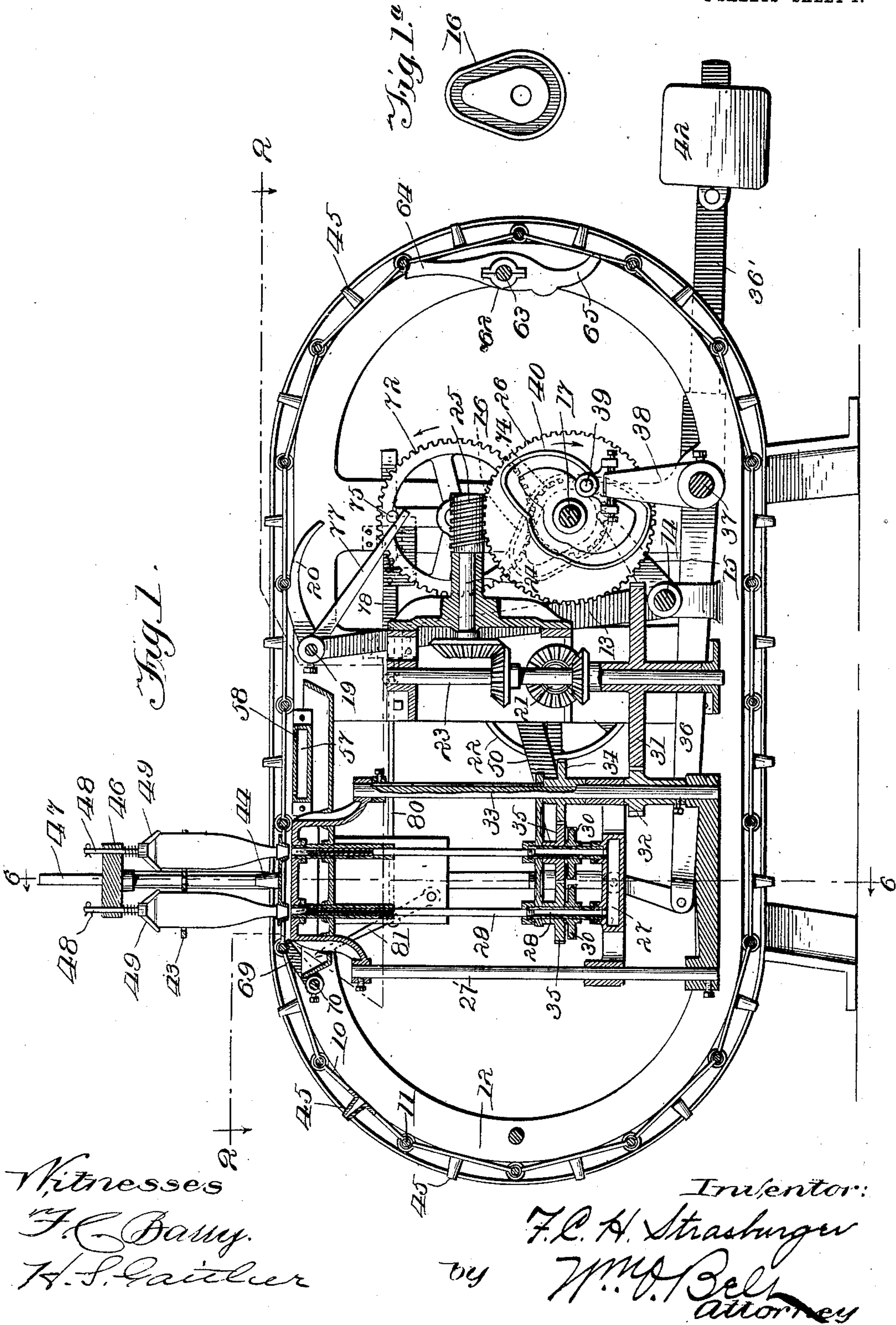
PATENTED APR. 5, 1904.

F. C. H. STRASBURGER.
BOTTLE WASHING MACHINE.

APPLICATION FILED JULY 9, 1903.

NO MODEL.

4 SHEETS—SHEET 1.



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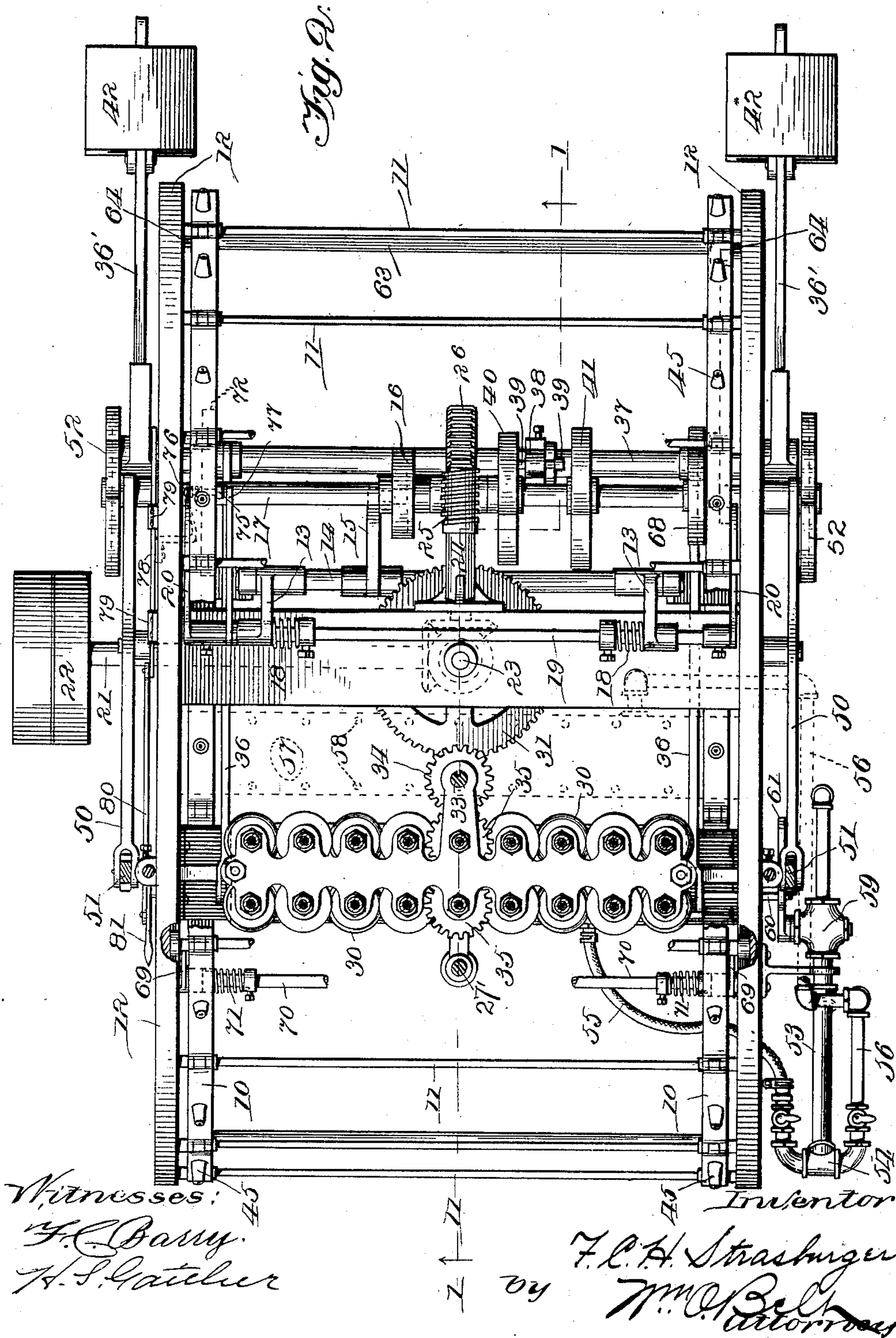
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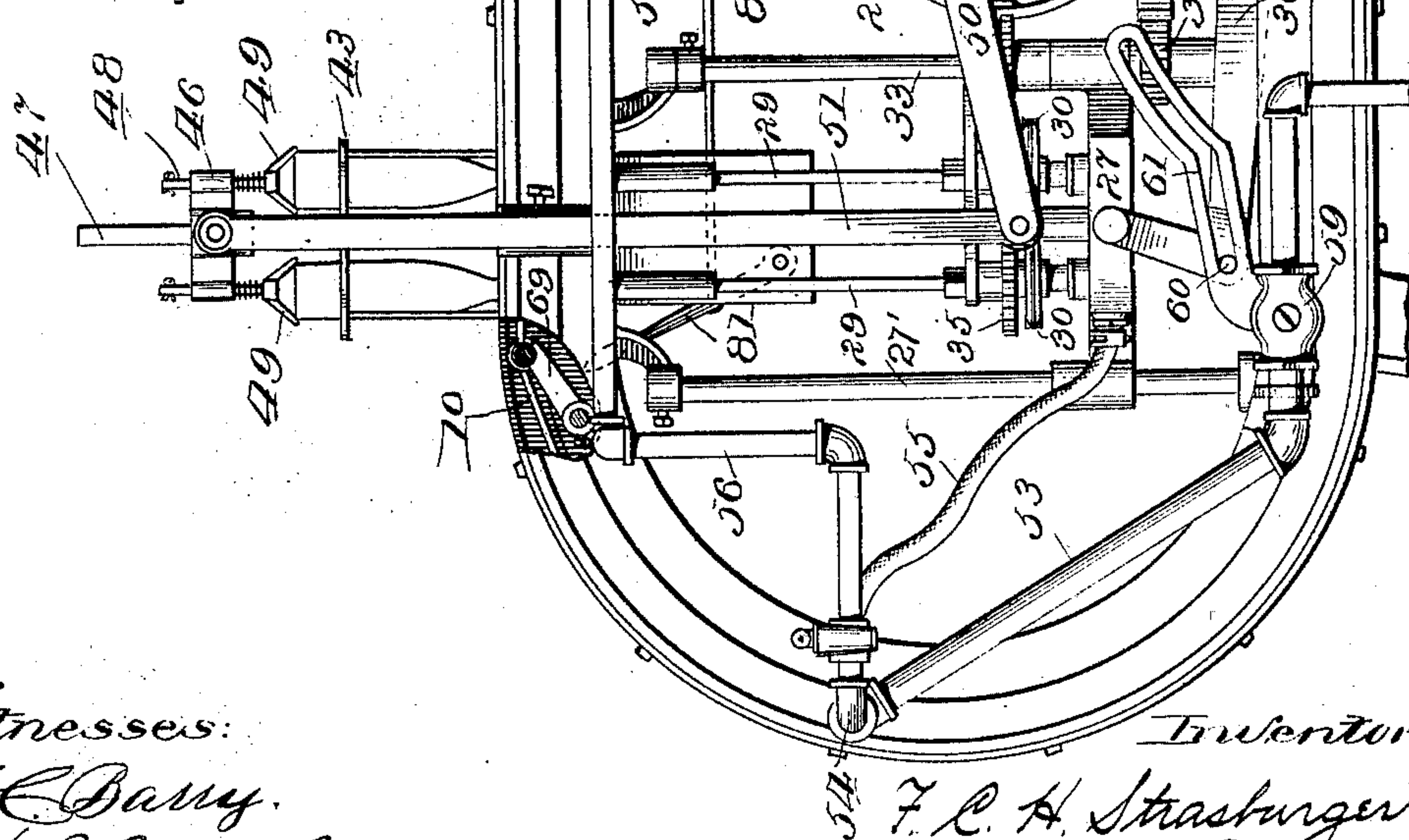
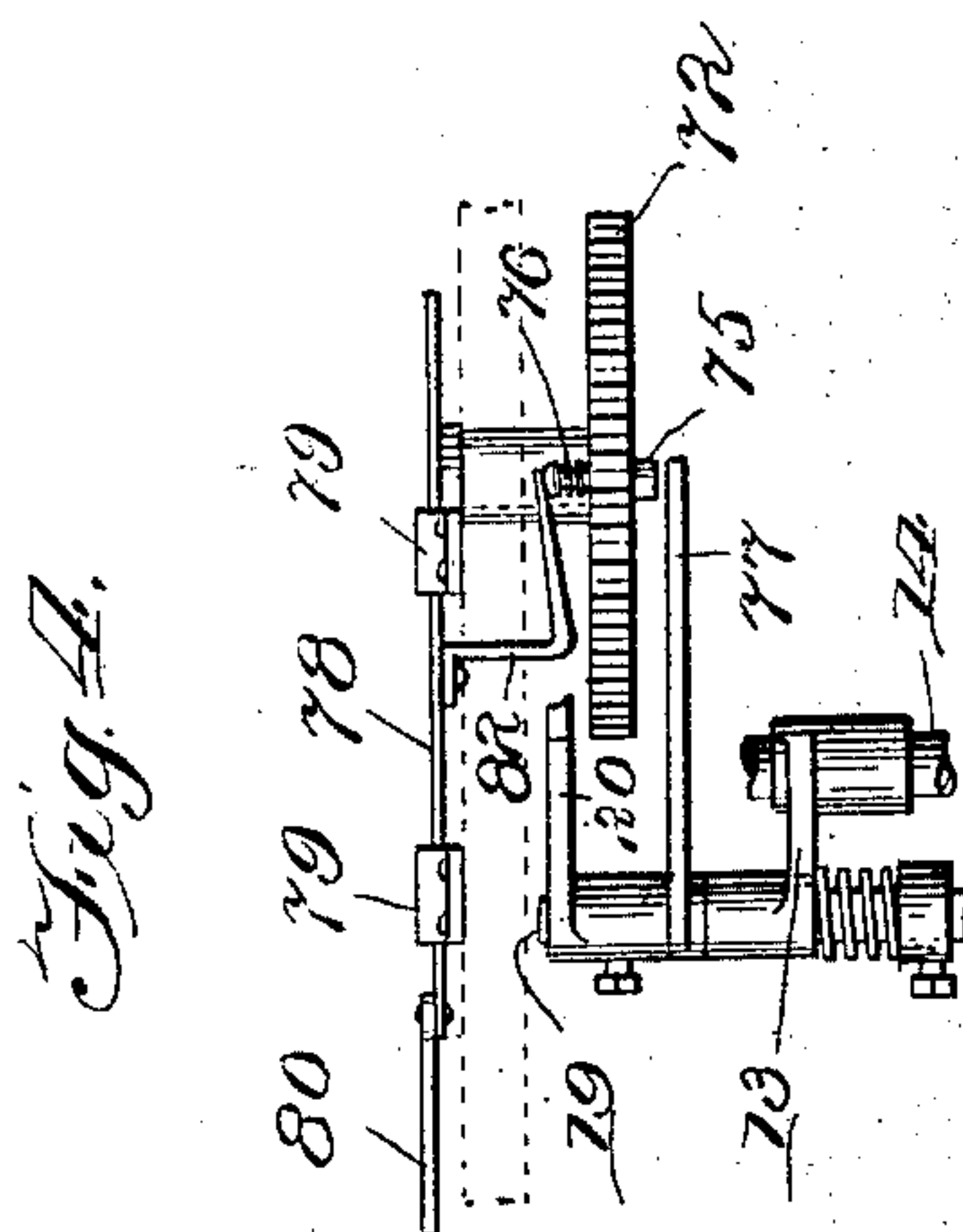
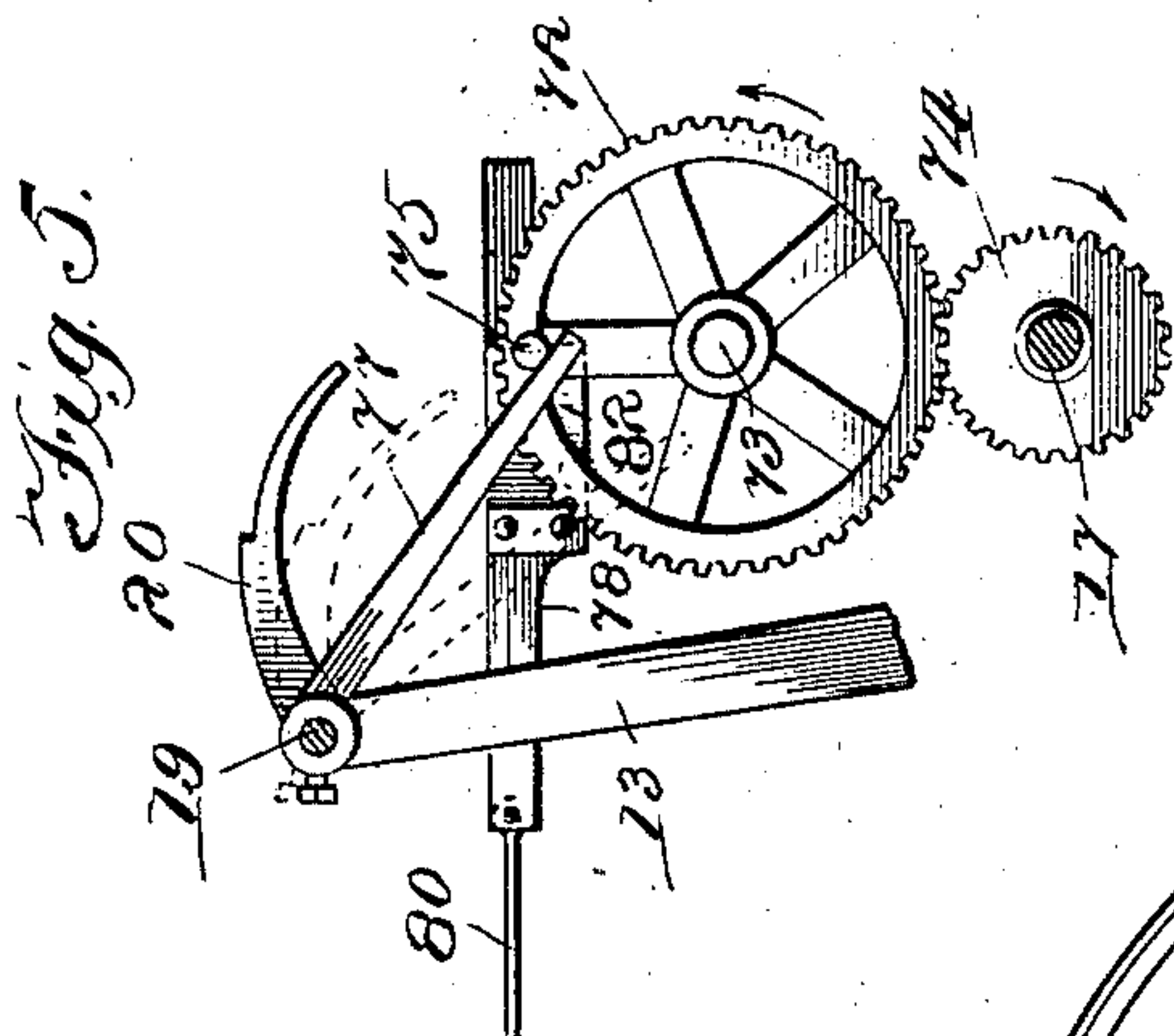
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4 SHEETS—SHEET 3.



Witnesses:

J. E. Barry.

H. S. Gauthier

Inventor:

F. C. H. Strasburger

by W. M. O. Bell
Attorney.

No. 756,427.

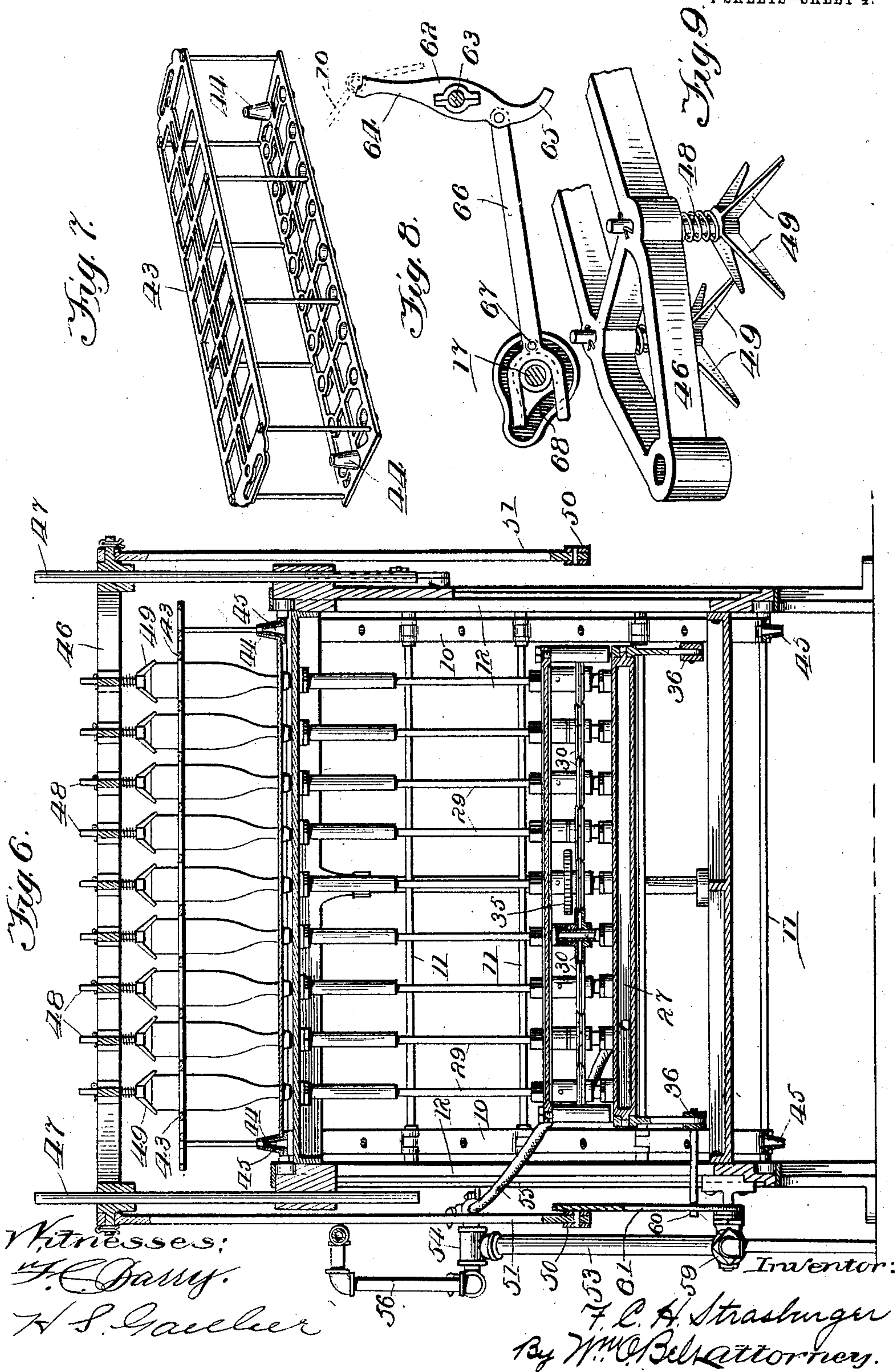
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4 SHEETS—SHEET 4.



UNITED STATES PATENT OFFICE.

FRANK C. H. STRASBURGER, OF CHICAGO, ILLINOIS.

BOTTLE-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 756,427, dated April 5, 1904.

Application filed July 9, 1903. Serial No. 164,814. (No model.)

To all whom it may concern:

Be it known that I, FRANK C. H. STRASBURGER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bottle-Washing Machines, of which the following is a specification.

This invention comprises certain novel improvements on the bottle-washing machine disclosed in United States Letters Patent No. 741,241; granted October 13, 1903.

The primary objects of the invention are to effectively regulate and control the operation of the carrier so that the bottles will always be properly arranged to receive the brushes, to automatically lock the bottles in the crate during the washing operation, and to provide for thoroughly washing very dirty bottles.

The invention also has in view certain changes in the construction and arrangement of parts which simplify and improve the machine and which will be fully pointed out hereinafter in the detailed description.

In the accompanying drawings, Figure 1 is a sectional view on the line 1 1 of Fig. 2. Fig. 1^a shows the cam 16. Fig. 2 is a sectional view on the line 2 2 of Fig. 1. Fig. 3 is a side elevation with a part of the main frame broken away. Fig. 4 is a top plan view, and Fig. 5 is a side elevation, of the mechanism for tripping the carrier-actuating arms. Fig. 6 is a transverse sectional view on the line 6 6 of Fig. 1. Fig. 7 illustrates one form of crate which may be used. Fig. 8 shows the escapement device. Fig. 9 is a detail view of one end of the bottle-clamp.

Referring to the drawings, in which like numerals of reference indicate corresponding parts in the several figures, an endless carrier, consisting of a pair of link belts 10, connected by rods 11, is arranged to travel around an elliptical frame 12, and is intermittently operated by the actuating-arms 13, mounted on a rock-shaft 14, which also carries the arm 15, provided on its end with an antifriction-roller working in the grooved cam 16 on the cam-shaft 17. Springs 18 on the rod 19, carried by the actuating-arms 13, hold the fingers 20 on the ends of said rod up in position to engage the carrier. The power-shaft 21 carries

a belt-pulley 22 and is geared with the upright shaft 23, which in turn is geared with the worm-shaft 24, carrying a worm 25, which operates a gear 26 on the cam-shaft 17. The washing mechanism is located within the elliptical frame and comprises a vertically-movable water-chest 27 and revoluble tubes 28, connected with said water-chest and carrying hollow brush-spindles 29. The water-chest extends transversely of the machine and is guided in its vertical movement on the rod 27' and the shaft 33. To lessen the noise of the machine, I prefer to employ instead of a train of gears for revolving the tubes and brush-spindles friction-disks 30 on the tubes 28, which are driven from the upright shaft 23 through the gear 31 on the shaft 23, the gear 32, rigid on the shaft 33, the gear 34, splined on said shaft 33 and movable vertically with the washing mechanism, and the intermeshing gears 35 on a pair of tubes. The washing mechanism is moved vertically by means of the levers 36, secured on a rock-shaft 37, which also carries an arm 38, provided with a roller 39, operating in one of the grooved cams 40 41 on the cam-shaft 17. One of the cams, as 40, is constructed to operate the washing mechanism for washing pint bottles and the other, as 41, for washing quart bottles, and the change can be quickly made by simply shifting the arm 38 along shaft 37 to cause roller 39, which projects laterally from each side of the arm, to engage the proper cam. The washing mechanism is counterbalanced by adjustable weights 42, carried on levers 36', fastened to the rock-shaft 37 and forming, in practical effect, extensions of the levers 36.

I employ a crate 43 of simple form for holding the bottles upside down, and at each end of the crate is a socket 44 to receive the hollow guides 45 on a pair of links of the carrier. To hold the bottles securely in position while being washed, I provide a clamping device, which comprises a vertically-movable frame 46, guided on posts 47 and carrying spring-pressed spindles 48 with forked ends 49 to engage the bottoms of the bottles in the crate. The spindles are of sufficient length to accommodate bottles which vary some in height, and the springs insure proper engagement of

the forked ends with the bottles. The frame 46 is operated to cause the clamping-spindles to engage the bottles by the levers 50, Fig. 3, connected with the frame by links 51 and carrying rollers which work in the grooved cams 52 on the cam-shaft. These cams are timed so that the clamp will engage the bottles as the washing mechanism moves upward, and the bottles are thereby held rigidly in position throughout the washing operation.

A water-supply pipe 53 is provided with a T branch 54, one end of which is connected with the water-chest of the washing mechanism by a flexible hose 55, and the other end is connected by a pipe 56 to the rinser 57, which is provided with jet-openings 58.

A valve 59 is located in the supply-pipe, and it is automatically operated by means of a pin 60, movable with the washing mechanism and shown as carried by one of the levers 36 and operating in a slotted arm 61, secured on the stem of the valve to turn the water on as the washing mechanism ascends and off as the washing mechanism descends.

It is important to regulate the movement of the carrier so that it will always carry a crate of bottles into washing position and to hold the carrier stationary during the washing operation, so that the bottles will be always properly alined with the spindles to receive the brushes. These results are attained by an escapement device and a locking-dog. The escapement device comprises an anchor 62, mounted on the rod 63 and provided with a pallet 64 to engage and hold the carrier against forward movement during the washing operation, and a hooked pallet 65, which is thrown forward at the proper time to engage and prevent the carrier from being moved more than a single step at each operation of the machine. This anchor is rocked by a lever 66, which carries a roller 67, operating in the grooved cam 68 on the cam-shaft, Fig. 8. The locking-dog 69 is carried by a rod 70 and held by a spring 71 in engagement with the carrier to prevent a backward movement thereof. I prefer to employ an anchor at each end of the rod 63 and a locking-dog at each end of the rod 70, and I preferably notch the ends of the locking-pallets and the locking-dogs to receive the rods 11 of the carrier. These devices cooperate to rigidly hold the carrier in fixed position during the washing operation, so that the bottles will be properly positioned to receive the brushes, and after the washing operation is completed the locking-pallets are withdrawn and the hooked pallets are thrown forward into position to engage the carrier and prevent it from being moved more than one step, so that a crate of bottles will not escape the washing operation, and the carrier will always be moved a distance which will bring a crate of bottles into washing position.

In the drawings, particularly referring to

Fig. 1, the machine is shown about the middle of one complete operation with the bottles clamped, the carrier locked by the pallet 64 and the dog 69, the washing mechanism lowered after the first washing and ready to rise for the second washing, and the fingers 20 engaged with the carrier to feed the carrier forward after the washing operation is completed. In this construction each crate of bottles is washed twice, the water being turned onto both the chest 27 and the rinser as the washing devices rise, so that water will be discharged into the bottles while the brushes are operating therein and at the same time the previously-washed crate of bottles will be rinsed by jets of water issuing from the openings 58.

To thoroughly cleanse very dirty bottles, I provide means for tripping the actuating-fingers so that the carrier will remain stationary during two operations of the machine, and thus permit the bottles to be washed four times instead of twice. This mechanism, Figs. 4, 5, comprises a gear-wheel 72, mounted on a stub-axle 73 on the frame and driven by a gear 74 on the cam-shaft. The gear 72 carries a bolt 75, which is normally held by a spring 76 out of the way of an arm 77, fastened on the actuating-finger rod 19. The bolt is thrown out to engage the arm 77 by a slide 78, operating in suitable guides 79 on the frame and connected by a link 80 with the lever 81. A wedge 82, carried by the slide, engages and throws outward the bolt when the lever 81 is operated to move the slide backward. This wedge is in the form of an elbow; but I do not restrict myself to this particular construction of the means for throwing the bolt, as the desired result can be accomplished in a variety of ways. When it appears that two washings are not sufficient to thoroughly cleanse the bottles, the operator will simply move the lever so that the wedge will be thrust forward into position to engage and push outward the bolt, and as the gear continues to revolve the projected bolt will strike the arm 78 and rock the rod 19 to disengage the fingers from the carrier and hold them depressed until the arms 13 have carried them forward beneath the rod 11 they had been engaging. The fingers 20 may be tripped as often as desired in order to thoroughly cleanse the bottles, and when tripped the washing operation will be repeated, while the carrier remains stationary and the rest of the mechanism operates in the usual manner.

The machine operates automatically after it is once started and with comparative rapidity and requires no special attention on the part of the attendant except as he will notice very dirty bottles and trip the machine, as heretofore described, to thoroughly cleanse them. The crates are filled with bottles bottom up and arranged by the attendant on the carrier at one end of the machine, and after

the bottles have been washed and rinsed the crate will be lifted off of the carrier when it reaches the other end of the machine by another attendant.

5 Without limiting myself to the exact construction and arrangement of parts herein shown and described, what I claim, and desire to secure by Letters Patent, is—

10 1. In a bottle-washing machine, the combination of a crate for holding a number of bottles inverted, washing mechanism, a carrier adapted to receive and carry the crate of bottles into washing position, a rock-shaft, a lever on said rock-shaft and connected with the
15 washing mechanism, a cam-shaft and means for operating it, a pair of grooved cams on said shaft for raising and lowering the washing mechanism, one of said cams being constructed for use when the machine is washing
20 pint bottles and the other being constructed for use when the machine is washing quart bottles, an adjustable arm mounted on the rock-shaft between said cams, and a roller carried by and projecting laterally from both
25 sides of said arm to engage either of said cams.

2. In a bottle-washing machine, the combination of a crate for holding a number of bottles inverted, washing mechanism, a carrier
30 adapted to receive and carry a crate of bottles into washing position above the washing mechanism, a frame, a clamping device for each bottle carried by the frame consisting of a spring-pressed spindle with a forked end, and
35 means for moving the frame to cause the forked end of the clamping devices to engage and hold the bottle during the washing operation.

3. In a bottle-washing machine, the combination of a carrier for receiving and carrying
40 the bottles into position to be washed, washing mechanism, and a spring-pressed locking-dog adapted to permit the carrier to move thereover but constructed to engage and lock
45 the carrier against backward movement after the bottles have reached washing position.

4. In a bottle-washing machine, the combination of a carrier for receiving and carrying
50 the bottles into position to be washed, washing mechanism, and independent devices located on opposite sides of the washing position to lock the carrier against any forward or backward movement during the washing operation.

5. In a bottle-washing machine, the combination of a carrier for receiving and carrying
55 the bottles into position to be washed, washing mechanism, and an escapement device to regulate the movement of the carrier and prevent a forward movement thereof during the
60 washing operation.

6. In a bottle-washing machine, the combination

of a carrier for receiving and carrying the bottles into position to be washed, washing mechanism, and an escapement device comprising a hooked pallet to engage and regulate
65 the forward movement of the carrier.

7. In a bottle-washing machine, the combination of a carrier for receiving and carrying the bottles into position to be washed, washing mechanism, and an escapement device comprising a hooked pallet to engage and regulate
70 the forward movement of the carrier to carry the bottles into washing position and a locking-pallet to prevent forward movement of the carrier during the washing operation. 75

8. In a bottle-washing machine, the combination of a carrier for receiving and carrying the bottles into position to be washed, washing mechanism, an escapement device comprising a hooked pallet to engage and regulate
80 the forward movement of the carrier, and a cam-operated lever to operate said escapement device.

9. In a bottle-washing machine, the combination of a carrier for receiving and carrying
85 the bottles into position to be washed, washing mechanism, an escapement device comprising a hooked pallet to engage and regulate the forward movement of the carrier and a locking-pallet to engage and prevent forward
90 movement of the carrier during the washing operation, and a spring-pressed locking-dog to engage and prevent backward movement of the carrier during the washing operation.

10. In a bottle-washing machine, the combination of washing mechanism, a carrier for receiving and carrying the bottles into position
95 to be washed, means for intermittently operating said carrier, and means for tripping said operating means to prevent movement of the carrier. 100

11. In a bottle-washing machine, the combination of washing mechanism, a carrier for receiving and carrying the bottles into position
105 to be washed, means for intermittently operating said carrier, an arm associated with said operating means, and a device for engaging said arm to trip the operating means and prevent the movement of the carrier.

12. In a bottle-washing machine, the combination of washing mechanism, a carrier for receiving and carrying the bottles into position
110 to be washed, means for intermittently operating said carrier, an arm, a revolving wheel, a bolt carried by said wheel, and means for
115 throwing said bolt into position to engage the arm to trip the operating means and prevent movement of the carrier.

FRANK C. H. STRASBURGER.

Witnesses:

WM. O. BELT,
MAUDE TOWNE.