

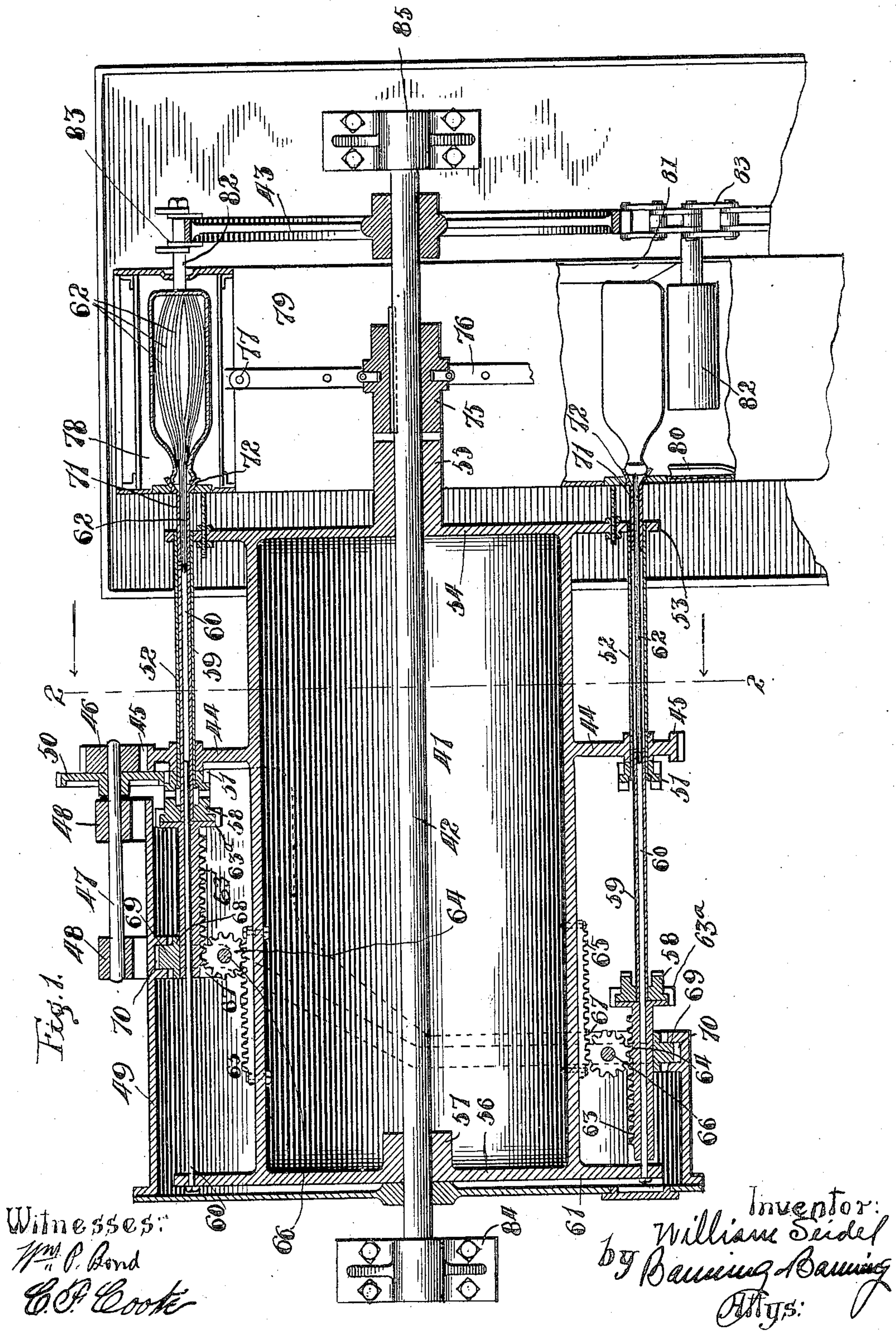
No. 875,001.

PATENTED DEC. 31, 1907.

W. SEIDEL.
BOTTLE SCRUBBING MECHANISM.

APPLICATION FILED OCT. 2, 1906.

3 SHEETS—SHEET 1.



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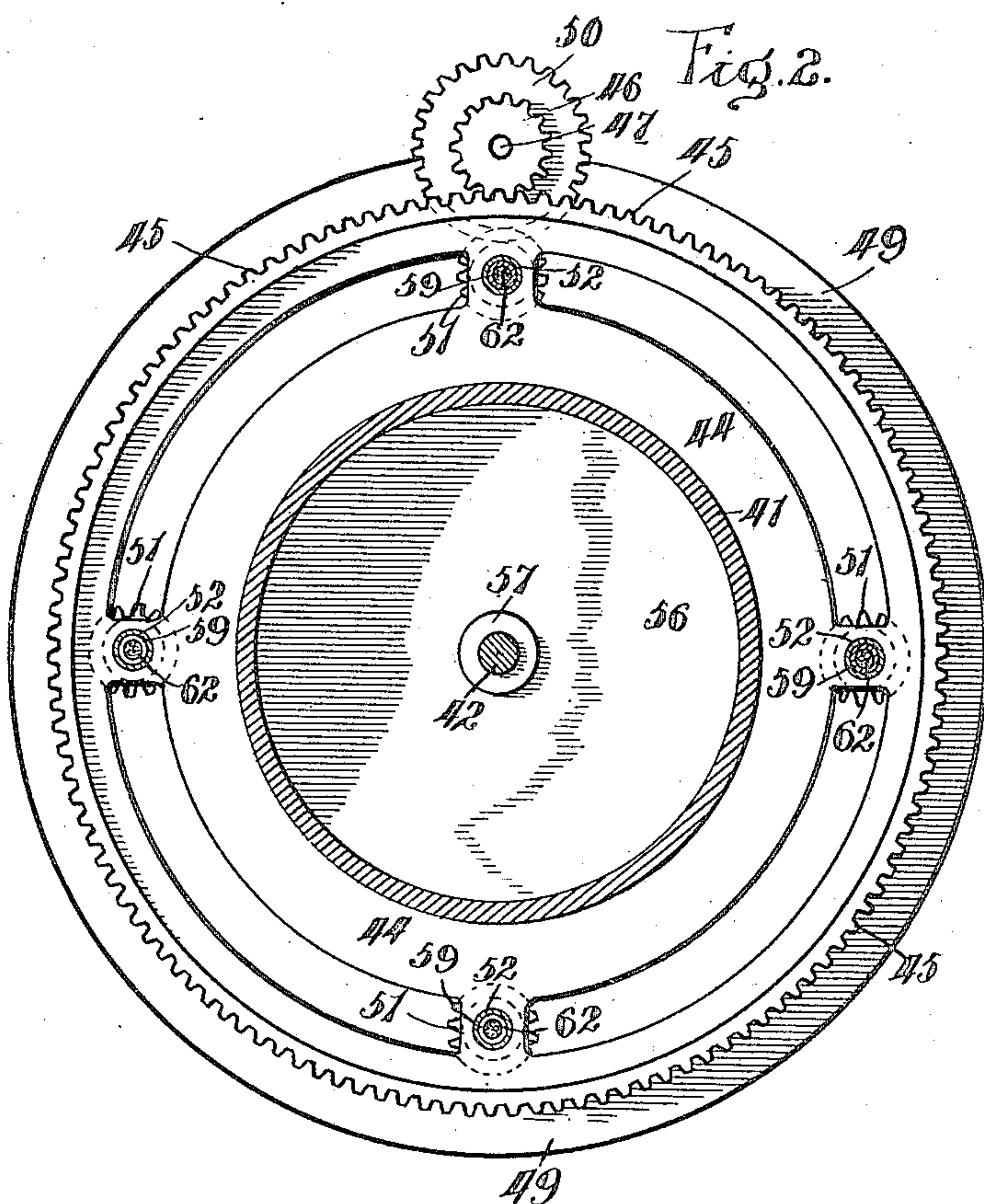
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 4.

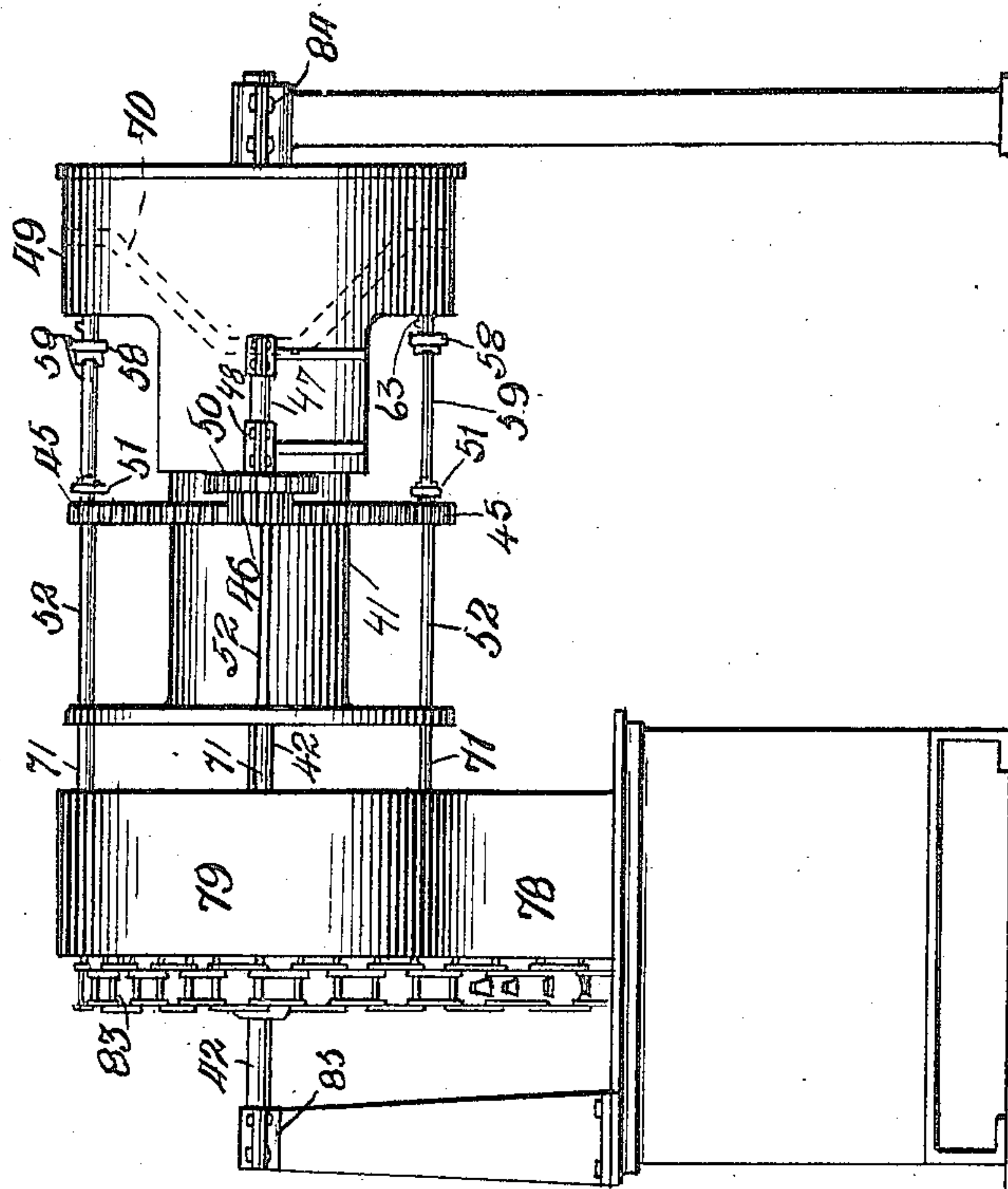
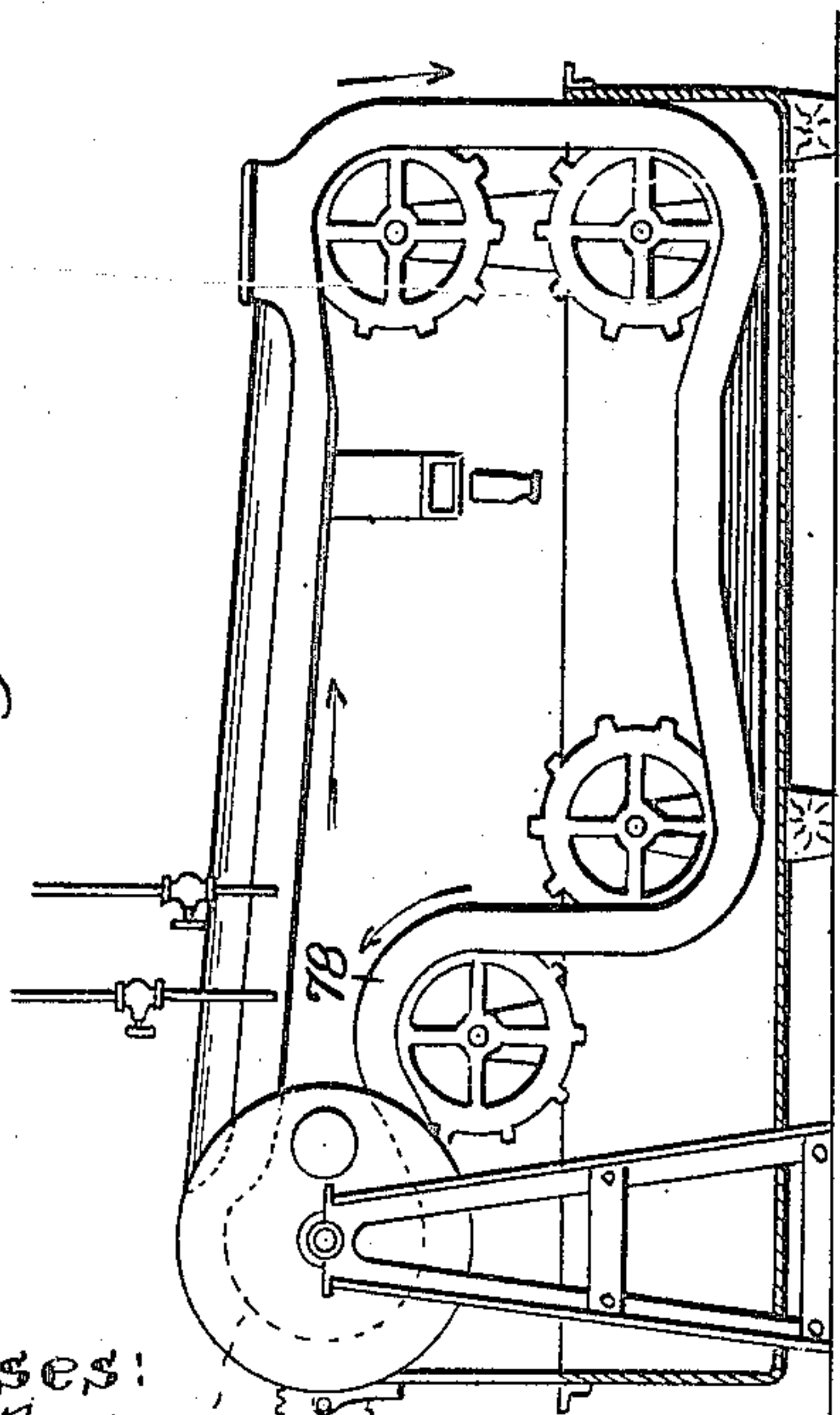


Fig. 3.



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Fig. 6.

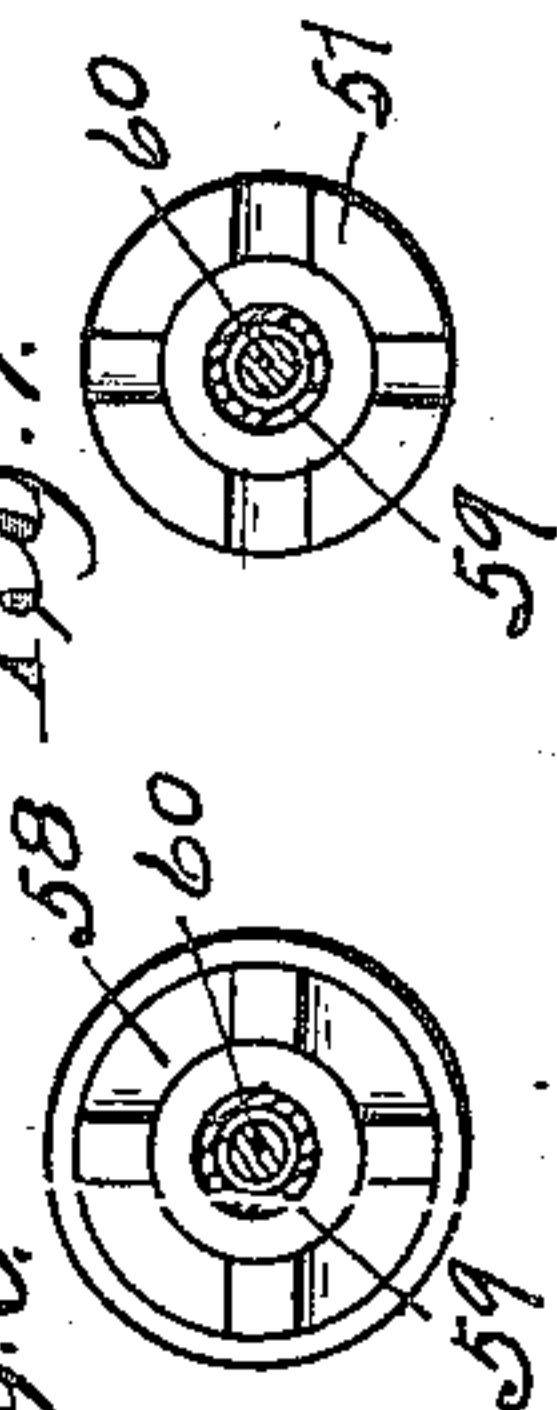


Fig. 7.

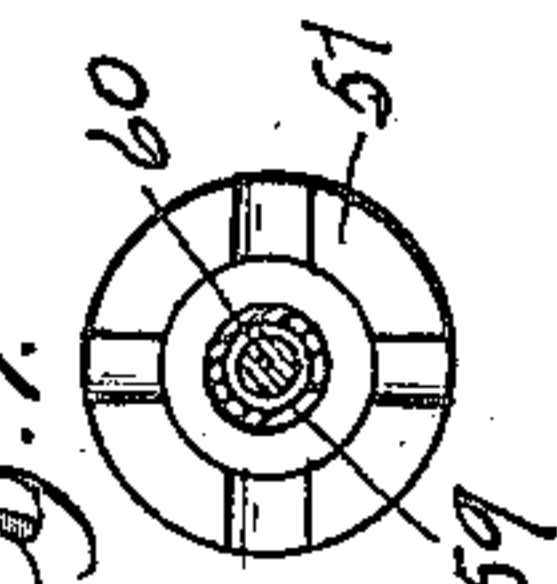
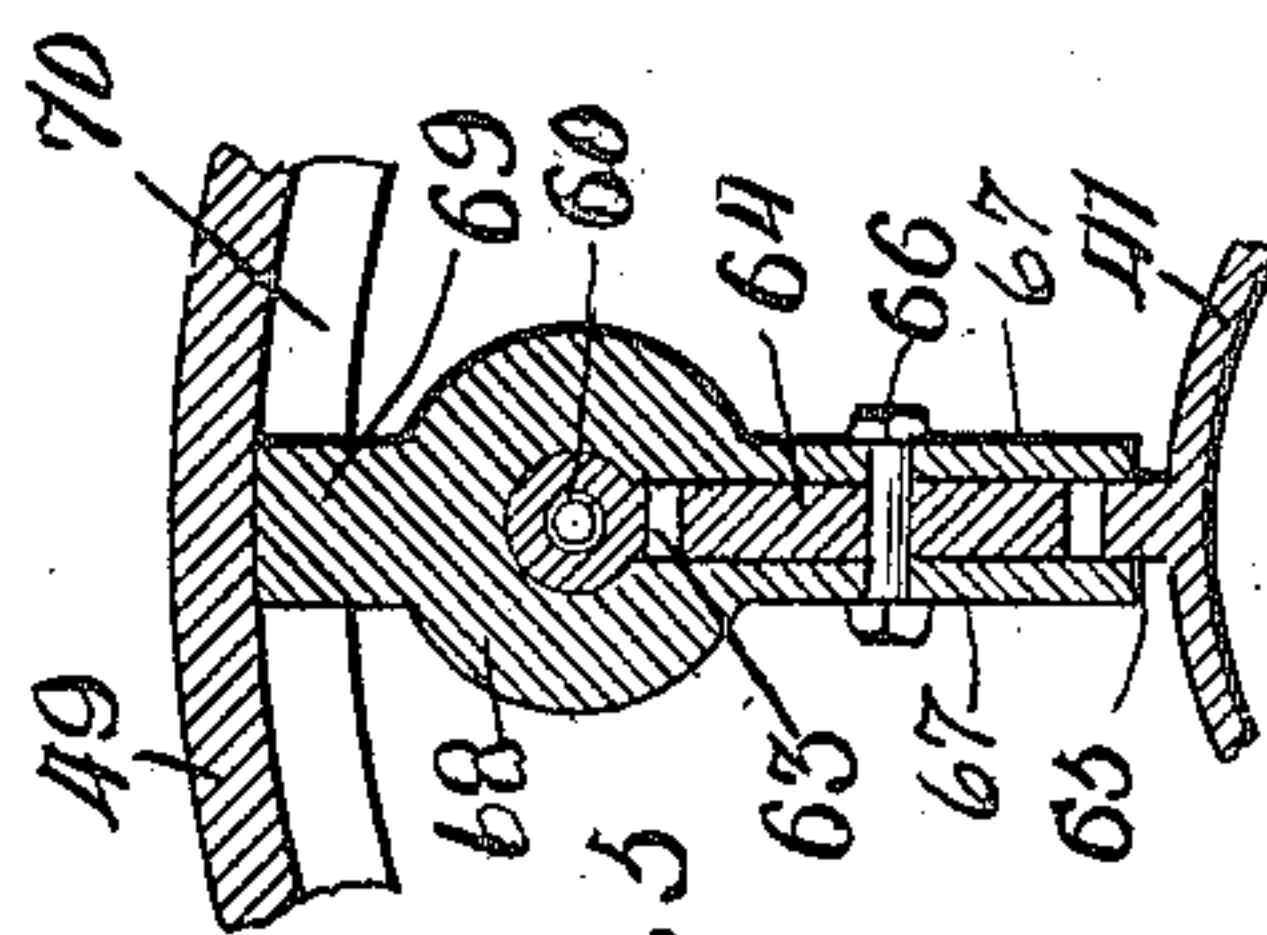


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM SEIDEL, OF WHEELING, ILLINOIS.

BOTTLE-SCRUBBING MECHANISM.

No. 875,001.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Original application filed March 30, 1906, Serial No. 308,836. Divided and this application filed October 2, 1906. Serial No. 337,090.

To all whom it may concern:

Be it known that I, WILLIAM SEIDEL, a citizen of the United States, residing at Wheeling, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bottle - Scrubbing Mechanism, of which the following is a specification, the same being a division of application Serial No. 308,836, filed March 30, 1906.

The object of the present invention is to provide mechanism for automatically scrubbing out the interior of bottles and thereafter delivering them in scrubbed condition at a suitable point for discharge; and the invention more especially relates to the rotatable scrubbers and the means by which they are actuated.

The invention further relates to means employed for successively delivering the bottles into position to have their mouths inserted into and held within the sealing heads during the scrubbing operation; to the means for advancing and retracting the brushes; and to the means for imparting, at the proper time, a rotary motion thereto.

The invention is intended to be used in combination with a soaking tank or tanks from which the bottles are received in a wet condition, or partially filled with water, and after having been cleansed on the outside, the scrubbing mechanism of the present invention is intended exclusively to provide means for cleaning the interior of the bottles.

The invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings illustrating the invention Figure 1 is a longitudinal sectional plan view of the scrubber as a whole; Fig. 2 a cross sectional view of the same taken on line 2—2 of Fig. 1. Fig. 3 a view showing the trough mechanism with which the scrubber coöperates; Fig. 4 a side elevation of the scrubber and trough; Fig. 5 a cross sectional detail of the rack and pinion for actuating the brushes; and Figs. 6 and 7 details showing the acting faces of the brush actuating clutch members.

The scrubber comprises an inner drum 41 loosely mounted upon a shaft 42 upon which is also mounted a sprocket wheel 43. The drum is provided with a circumferentially extending rib 44 provided on its periphery with a toothed rack 45 which meshes with a gear wheel 46, fixedly secured to a shaft 47, mounted within journal boxes 48 on a sta-

tionary outer shell 49. The shaft 47 has also fixedly mounted thereon a gear wheel 50, which, being rotatable with the shaft 47 and the gear wheel 46, will be constantly rotated by the intermeshing of the gear wheel 46 with the rack 45; and said gear 50, which maintains a fixed position, is adapted to mesh at suitable intervals with gear wheel clutch sections 51 which are rotatably mounted on the ends of tubular sleeves 52 which are passed through and fixedly mounted within the rib 44 at the outer end, and at the inner end are secured within an end flange 53 at the inner end of the drum, which drum is provided with a closing end 54 having in its center a hub 55. The outer end of the drum is likewise inclosed by means of an end wall 56 having in its center a hub 57.

The clutch section 51 is intended to engage with a clutch section 58 which is fixedly secured to and adapted to impart rotation to a brush tube 59 which surrounds an inner guide rod 60 fixedly secured at its outer end to a flange 61 corresponding in size and shape with the flange 53 at the opposite end of the drum. The brush tube 59 has inserted therein at its inner end a plurality of fine spring steel rods 62 adapted to enter the mouth of a bottle, and a reciprocating motion is imparted to the brush tube 59 by means of a rack 63, having a head 63^a, in which the clutch member 58 is rotatably mounted, and the rack and head are slidably mounted on the guide rod 60. The teeth of the rack mesh with a gear wheel 64, which in turn meshes with a fixed rack 65 on the outer face of the drum. The gear wheel 64 is mounted on a shaft 66 which is carried between side arms 67 of a yoke having a cross head 68 provided with a flange 69 which enters a cam groove or track 70 which is formed on the inner face of the outer stationary cylindrical casing 49 which surrounds the outer end of the inner drum. The cam track, as shown in dotted lines, extends in a diagonal direction, so that a portion of the track tends to give a forward thrust to the cross head 68 and the gear wheel 64 carried thereby, and a portion of the track tends to retract the cross head and gear wheel. The yoke, carrying the gear wheel, straddles the rack 63 which is slidably mounted within the yoke, so that, as the cam track directs the movement of the yoke, the gear wheel, which at all times meshes with the fixed rack 63, will tend to give a forward thrust or rear-

ward retraction of the rack and the brush tube and brush rods carried thereby. At the inner end of the fixed guide tube 52 is a tubular sealing neck 71 which terminates in a flaring mouth 72 adapted to receive the mouth of a bottle.

In order to permit the drum 41 to be operated at will, it is loosely mounted upon the shaft 42 and is adapted to have rotation imparted thereby through the medium of a clutch member 75 fixedly secured to the shaft, which clutch member is operated by means of a lever 76 pivoted at one end between ears 77 secured to the inner wall of a trough 78, which arrangement enables the endless feed chain to constantly rotate the shaft and enables the drum to be clutched or unclutched at will.

It will be understood that the brush mechanism and gear and rack mechanism heretofore described are duplicated at suitable intervals around the periphery of the drum so that the bottles, fed to the scrubber by means of the feed chain and rollers, will each be scrubbed out on its interior during its progress through the scrubber. The bottles are fed to the scrubber through the closed trough 78 which is looped or curved at its end 79 and forms a runway, curved to conform to the curvature of the periphery of the scrubber; and the curved end of the trough lies between the sprocket wheel 43 and the row of sealing mouths 72 which project into the inner side wall of the curved end of the feed trough a sufficient distance to have the mouths of the bottles firmly and tightly inserted therein as the bottles are carried around the curved end of the trough and into proximity with the inwardly projecting sealing mouths. The feed trough is provided with a cam plate 80 on the side of the trough adjacent to the line of travel of the sealing mouths, the end of which cam plate is in substantial alignment with the outer edge of a sealing mouth and serves to thrust back the bottles sufficiently for the bottle mouth to clear the edge of the advancing sealing mouth preparatory to being thrust thereinto. On the opposite side of the trough is a second cam plate 81 which extends a considerable distance along the wall of the trough and serves, after the bottle has been given a backward thrust, to give it a forward or reverse thrust into the sealing mouth, in which position it will be held during a considerable period of time. The bottles are fed along through the trough 78 by means of rollers 82 attached at suitable intervals to a sprocket chain 83 which is carried by the sprocket wheel 43 and travels outside of the trough and closely adjacent thereto the periphery of the sprocket wheel being adjacent to and curved in conformity with the outer side wall of the curved end of the trough.

The ends of the shaft 42 are journaled within suitable mountings 84 and 85 which can be located upon or in suitable proximity to the soaking tanks in which the bottles are given their preliminary cleaning.

In use the bottles are fed between the traveling rollers on the sprocket chain, which likewise serves to impart rotation through the sprocket wheel and clutch 75 to the drum shaft 42, and the bottles are successively carried up into position to be entered into the sealing mouths of the scrubber in a manner heretofore described. The bottles are sealed, as shown at the lower side of Fig. 1, in which position the brush tubes and brush rods are retracted to permit the insertion of the bottle mouth; but after the bottle has been sealed it is carried around with the brush mechanism until the brush tube is thrust forward into the position shown at the upper side of Fig. 1, which causes the flexible brush rods or wires to be thrust forward into the body and against the end thereof, the contact of which causes the brush wires or rods to spread within the body of the bottle and abut against the sides of the bottle. This forward thrust of the brush rods is caused by the travel of the flange 69 within the cam groove or track 70 which is so shaped as to give a forward thrust to the brush after the bottle has been initially sealed and carried around a partial revolution. With the brush rods thus spread or expanded within the bottle, the brush tube will be momentarily revolved by the intermeshing of the teeth of the gear wheel 50 with the teeth of the gear clutch section 51, which, when brought into mesh with the gear 50, will be likewise clutched to the slidable gear section 58 to which the brush tube is fixedly secured. This gives a rapid, though momentary, revolution to the expanded brush wires within the bottle which serves to thoroughly scrub out the interior of the bottle and loosen up any dirt or sediment which may be lodged therein. If it is desired to give the scrubbing mechanism additional revolutions, this can of course, be accomplished by duplicating or multiplying the number of gear wheels 50 and pinions 46 to any desired extent, although ordinarily a single rapid revolving of the expanded brushes within the bottle will be sufficient to clean out the dirt or sediment contained therein.

What I regard as new and desire to secure by Letters Patent is:

1. In a machine of the class described, the combination of a feed trough, constantly movable feeding mechanism located within the feed trough, a scrubber adjacent to the trough and comprising a plurality of sealing mouths adapted to have the mouths of bottles inserted therein, a constantly revoluble support for the sealing mouths, brushes carried by the revoluble support and adapted

to be thrust into the mouths of the bottles, and means for revolving the brushes within the bottle mouths, substantially as described.

5 2. In a machine of the class described, the combination of a feed trough, an endless chain adjacent to the trough, suitably spaced feed members secured to the chain and projecting into the trough and providing spaces
10 for the admission of bottles, a drum laterally adjacent to the trough provided with a series of sealing mouths arranged in a circle and adapted to have the bottle mouths inserted therein, slidably mounted brushes
15 entered through the sealing mouths, a gear wheel for actuating each of the brushes, a fixedly positioned gear wheel located in the line of circular travel of the brush gear wheels and adapted to give an intermittent
20 rotation thereto, means for advancing and retracting the brushes, substantially as described.

3. In a machine of the class described, the combination of a feed trough, traveling feed
25 members within the trough providing spaces for the admission of bottles between them, a drum laterally adjacent to the trough and provided with a series of sealing mouths adapted to have the bottle mouths inserted
30 therein, slidably mounted brushes entered through the sealing mouths, a gear wheel for actuating each of the brushes, a fixedly positioned gear wheel located in the line of circular travel of the brush gear wheels and adapted
35 to give an intermittent rotation thereto, a slidably mounted rack connected with each of the brushes, a companion fixed rack on the drum, a gear wheel mounted in a yoke and meshing with the two racks, a stationary
40 cam track for moving the yoke, substantially as described.

4. In a machine of the class described, the combination of a feed trough, a feed mechanism within the trough, a revoluble drum
45 laterally adjacent to the trough and provided with sealing mouths extending therefrom and adapted to have the bottle mouths entered therein, slidably mounted brushes carried by the drum and entered through the
50 sealing mouths, said brushes each consisting

of a brush tube having entered into its end a plurality of flexible brush wires adapted to be thrust into and expanded within the bottles, a clutch member on the brush tube, a gear clutch member adapted to be clutched
55 thereto, a fixedly positioned gear wheel adapted to mesh with the gear clutch member when brought into proper position by the rotation of the drum, and means for thrusting forward and retracting the brushes,
60 substantially as described.

5. In a machine of the class described, the combination of a feed trough, a revoluble drum laterally adjacent thereto and provided with a plurality of sealing mouths
65 adapted to have bottle mouths inserted therein, a feed mechanism in the trough, a slidably mounted brush tube having a plurality of flexible brush wires secured thereto and adapted to be entered into and expanded
70 within the bottles, a movable clutch member secured to the brush tube, a gear clutch member rotatably mounted and adapted to be clutched to the movable clutch member, a slidable rack secured to the movable clutch
75 member, a fixed rack on the drum adjacent to the slidable rack, a gear wheel between the two racks, a yoke within which the gear wheel is mounted, and a fixed cam track for moving the yoke to give a forward thrust and
80 retraction to the brush tube, substantially as described.

6. In a machine of the class described, the combination of feeding mechanism, a plurality of rotatably mounted sealing mouths
85 into which the bottle mouths are adapted to be inserted, brushes entered through the sealing mouths and provided with flexible brush wires adapted to be inserted into and expanded within the bottles, means for rotating
90 the sealing mouths with the bottles sealed therein, means for automatically inserting the brush wires into and retracting them from the bottles, and means for automatically rotating the expanded brush wires
95 in the bottles, substantially as described.

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Witnesses:

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