

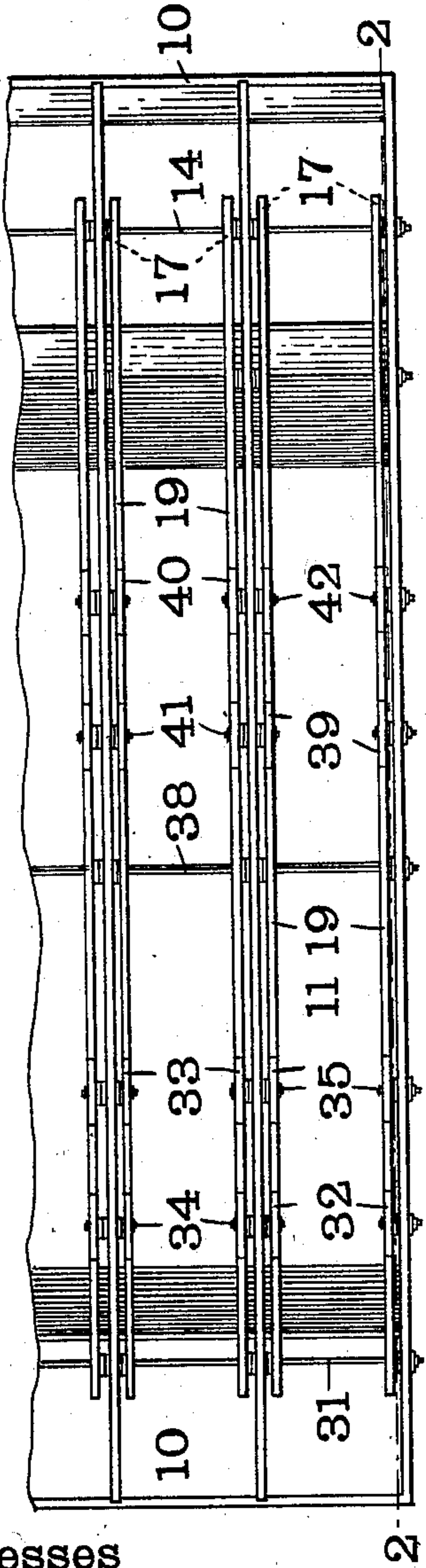
J. H. KOEHLER & G. LINDE.
BOTTLE CLEANSING MACHINE.

APPLICATION FILED JAN. 10, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

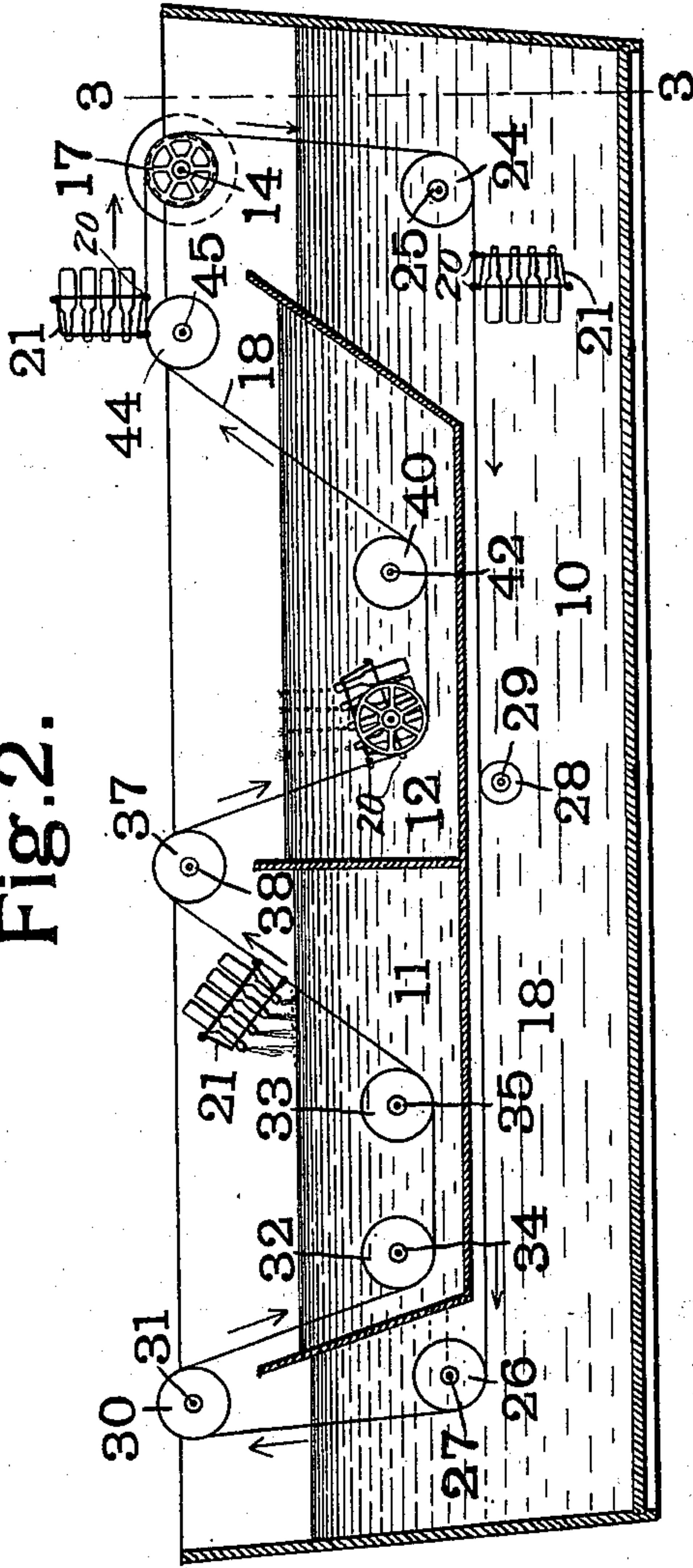
Fig. 1.



Witnesses

W. A. Alexander
J. R. Watkins

Fig. 2.



Inventors
J. H. Koehler
Gustav Linde

By Attorneys

Lawson & Bryson

No. 723,881.

PATENTED MAR. 31, 1903.

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2 SHEETS—SHEET 2..

Fig. 4.

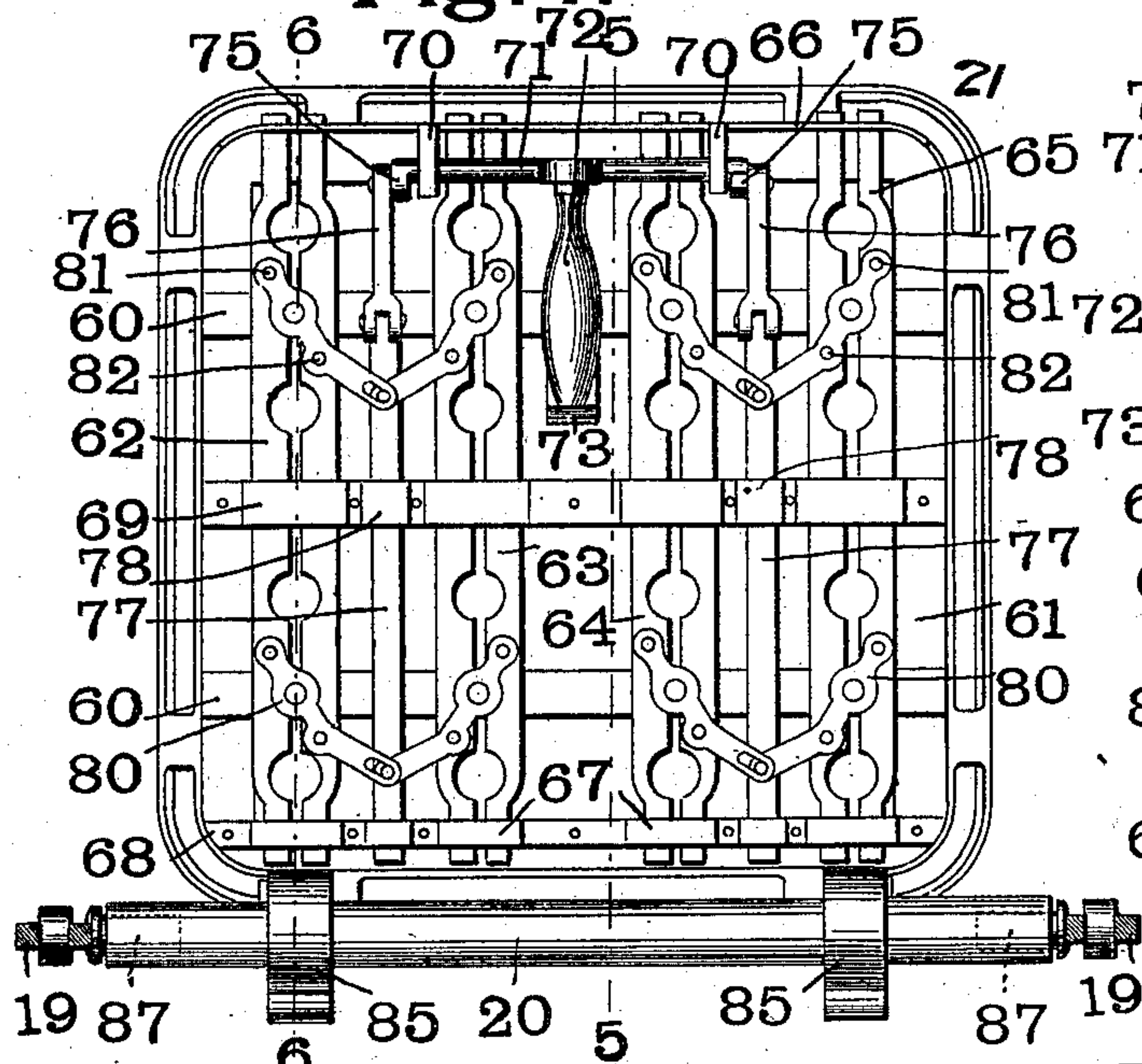


Fig.5.

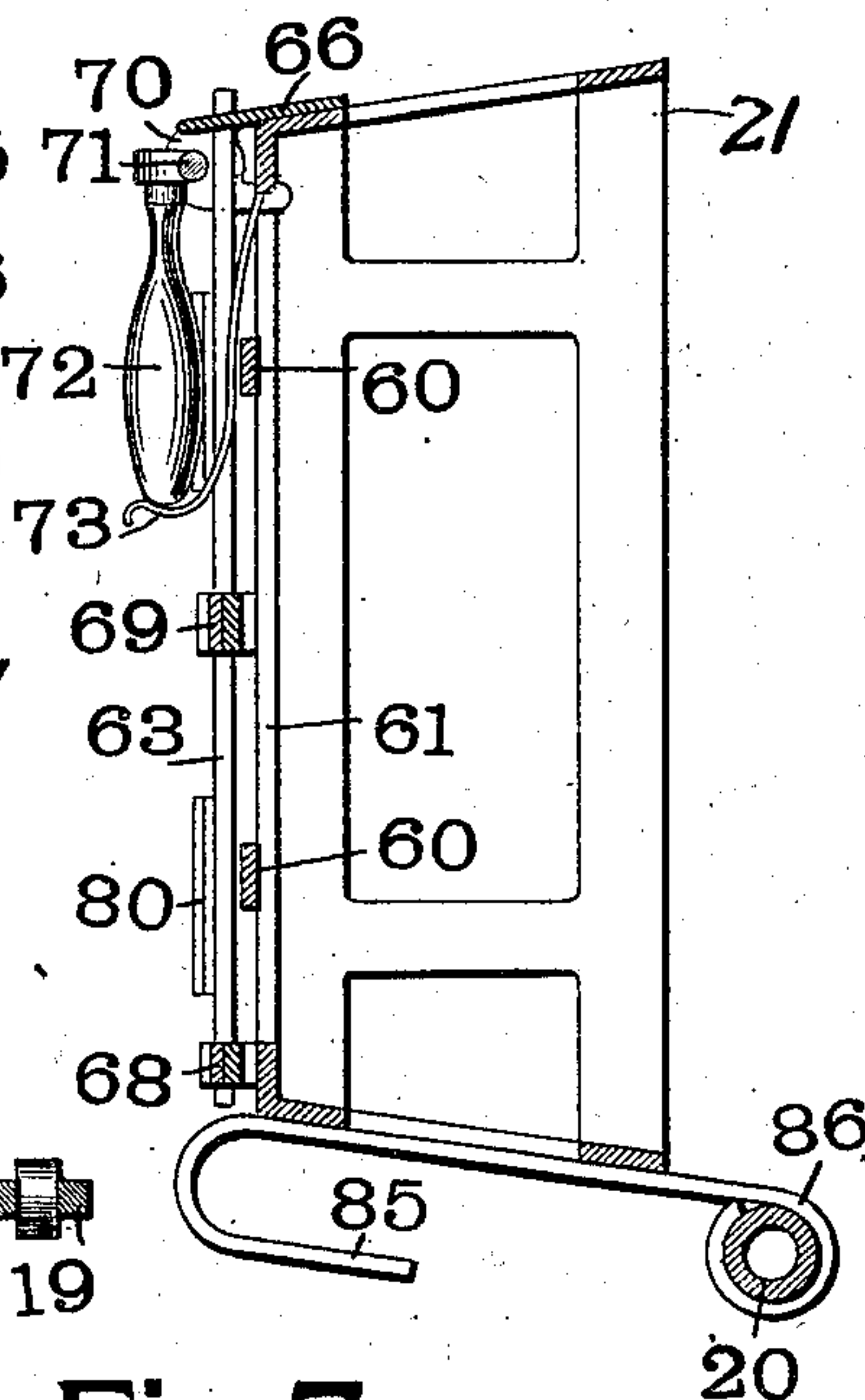


Fig. 6.

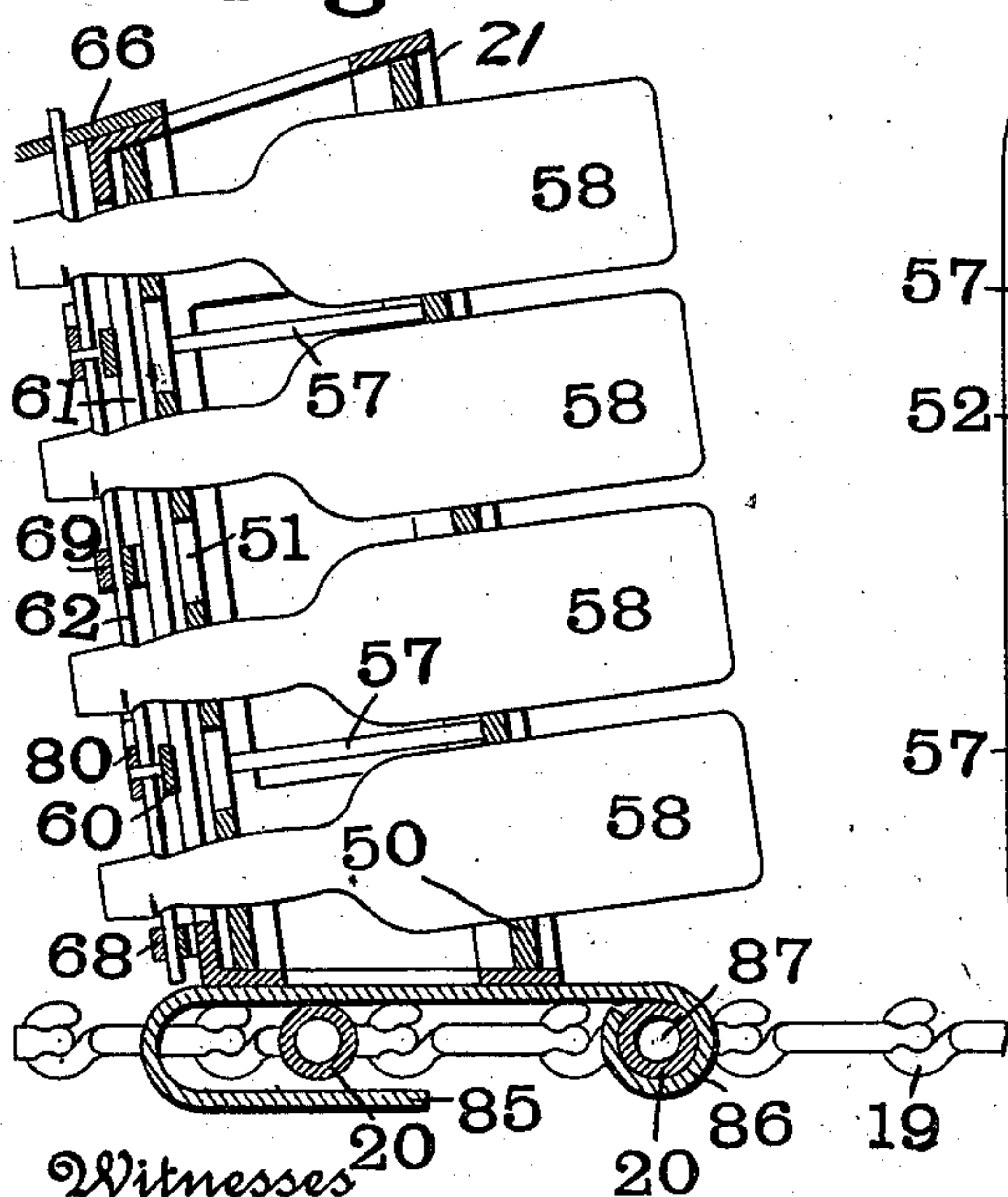
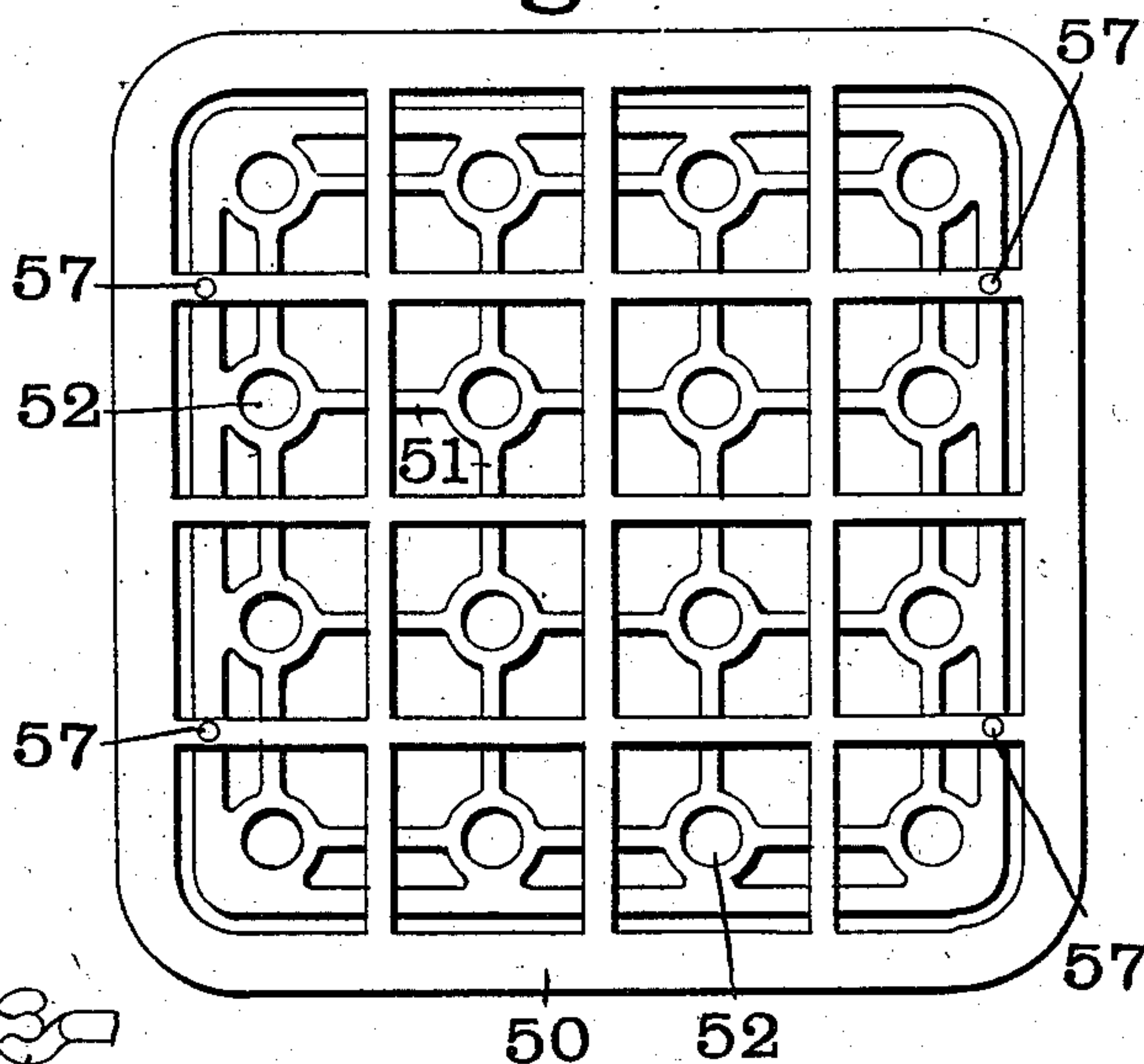


Fig.7.



Witnesses

W. A. Alexander
J. R. Harkins

Inventors
J. H. Koehler
Gustav Linde

By Attorneys *Fowler Bryson.*

UNITED STATES PATENT OFFICE.

JULIUS H. KOEHLER AND GUSTAV LINDE, OF ST. LOUIS, MISSOURI.

BOTTLE-CLEANSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 723,881, dated March 31, 1903.

Application filed January 10, 1902. Serial No. 89,094. (No model.)

To all whom it may concern:

Be it known that we, JULIUS H. KOEHLER and GUSTAV LINDE, citizens of the United States, residing at the city of St. Louis, in the State of Missouri, have invented a certain new and useful Bottle-Cleansing Machine, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

Our invention consists generally in a machine for cleansing bottles composed of a plurality of tanks containing a liquid or liquids, a carrier adapted to pass the bottles through the tanks, and means for emptying the bottles on withdrawing them from one of the tanks and filling them again with the liquid contained in another of the tanks.

Our invention further consists in combining in a bottle-cleansing machine a tank, a second tank the bottom of which is above the bottom of said first-named tank, and a carrier passing through the tanks.

Our invention also consists in certain other mechanisms, which will be hereinafter more fully described, and pointed out specifically in the claims.

In the drawings attached to this specification, in which like characters of reference refer to similar parts in the different views, Figure 1 is a top plan view of a bottle-cleansing machine embodying one form of our invention. Fig. 2 is a vertical longitudinal section on the line 2 2, Fig. 1. Fig. 3 is a vertical transverse section on the line 3 3, Fig. 2. Fig. 4 is a front elevation of our mechanism for clamping the bottles upon the carrier of our machine. Fig. 5 is a section on the line 5 5 of Fig. 4. Fig. 6 is a section on the line 6 6 of Fig. 4, showing also the rack in which the bottles are brought to the machine in position in the clamping-frame. Fig. 7 is a bottom plan view of the bottle-rack shown in section in Fig. 6.

Referring first to Figs. 1 and 2, 10 is a tank partly filled with any desired liquid in which it is intended to immerse the bottles in order to clean them. Situated within this tank 10 are two other tanks 11 and 12, also partly filled with liquids. These tanks 11 and 12

are considerably smaller than the tank 10 and are supported with their bottoms considerably above the bottom of the tank 10. We prefer to form these smaller tanks 11 and 12 by fastening the partitions which compose the bottoms and ends of said tanks directly to the longer sides of the tank 10. By means of this construction the longer sides of the tank 10 serve also to form the longer sides of the smaller tanks 11 and 12. In Fig. 1 we have shown how two or more of these sets of tanks may be operated side by side, each set of tanks being provided with a carrier, which is now to be described. 14 is a shaft journaled in the sides of the tank 10 near one end of said tank. To this shaft 14 is fastened at one side of the tank 10 the driving-pulley 15, around which passes a belt 16, which is the means of furnishing power to operate the machine from any suitable source. 17 represents pulleys carried upon the shaft 14 and situated inside of the tank 10 near the sides of said tank. Over these pulleys 17 passes the endless belt or carrier 18. This carrier we prefer to construct of two endless chains 19, between which are carried rods 20, (see Figs. 4 and 6,) fastened to the chains 19 in a manner to be hereinafter described. These rods 20 serve to support frames 21, which carry in them the bottles to be cleansed. From the pulleys 17 the carrier 18 passes downward into the tank 10 and over idler-pulleys 24, carried upon a shaft 25, journaled in the sides of the tank 10. The carrier 18 passes from this point to the opposite end of the tank 10, where it passes upward over idler-pulleys 26, mounted on a shaft 27, also journaled in the sides of the tank 10. Midway between the pulleys 24 and 26 the carrier is supported and kept from sagging by passing over the small idler-pulleys 28, which are independently journaled on separate shafts 29 in the sides of the tank 10, so as to allow of the free passage of the bottle-holding frames 21 between them. From the idler-pulleys 26 the endless carrier passes upward to the top of the tank 10, where it travels over idler-pulleys 30, carried upon a shaft 31, journaled in the sides of the tank 10. After passing over these pulleys 30 the carrier 18 passes downward into the smaller tank 11, where it passes under two sets of

pulleys 32 and 33, situated near the bottom of said tank 11 and journaled upon independent shafts 34 and 35 in the sides of the tank 11, so as to allow of the free passage of the bottle-holding frames 21 between them. The carrier 18 then leads upward out of the tank 11 over the idler-pulleys 37, carried by the shafts 38, journaled in the sides of the tank 10 directly above the division between the tanks 11 and 12. The carrier 18 then passes downward into the tank 12 and over two sets of pulleys 39 and 40, journaled upon shafts 41 and 42 in a manner similar to that described with respect to the idler-pulleys 32 and 33 at the bottom of the tank 11. The carrier 18 then passes upward out of the tank 12 and over the idler-pulleys 44, journaled upon the shaft 45 in the top of the sides of the tank 10, and thence passes back to the pulleys 17.

Referring now to Figs. 4, 5, 6, and 7, in Fig. 7 is represented a bottle-holding rack in which the bottles in our preferred method of handling the same are brought to the bottle-cleansing machine. This rack consists of a grating 50, having rectangular openings, and a second grating 51, having circular apertures 52, into which the necks of the bottles are inserted, as best shown in Fig. 6. These two gratings are connected by means of four rods 57, as is also best shown in Figs. 6 and 7. When the bottles 58 are in position in this rack, their necks are inserted through the openings 52, and the lower or body portion of the bottles are supported when the bottles are in substantially horizontal position by means of the gratings 50. In Figs. 4, 5, and 6 is represented a frame corresponding to the frame 21 shown in Figs. 2 and 3, attached to the carrier 18, into which the rack 50 is adapted to be inserted and to which both the rack 50 and the bottles 58, carried by said rack, are intended to be fastened by means of a clamping device carried by this frame. The frame consists of a metal box of approximately rectangular vertical longitudinal section, open at its rear end and having its sides tapering somewhat toward its front end. These sides are cut away, as shown, for the sake of lightness, as far as is consistent with the strength of the frame. The front end of the frame itself is also open, with the exception of the two horizontal bars 60 and the flange 61, which projects inward from the sides of the frame. At the front of this frame are four sets of clamping-plates 62, 63, 64, and 65, the edges of which are cut away at corresponding points to form circular openings, which register with the necks of the bottles 58 when the rack carrying said bottles is inserted into the clamping-frame. The upper ends of these clamping-plates are adapted to reciprocate in slots cut in the flange 66, fastened to the top of the frame. The lower ends of the clamping-plates are held in position by and adapted to reciprocate in yokes 67, formed by suitably-bent iron strips

68, fastened upon the flange 61. The clamping-plates 62, 63, 64, and 65 also pass at their middle points through yokes 69, formed similarly to the yoke 67. Fastened to the flanges 61 and 66 are eyes 70, through which passes the rotatable shaft 71, carrying the handle 72, which is adapted to be held in its inner position by the spring-clamp 73, fastened to the flange 61. Each end of the shaft 71 is provided with a crank 75, to which is pivoted a connecting-rod 76, having pivotal connection at its other end with the reciprocating bars 77. These bars 77 reciprocate in yokes 78, between the yokes 67 and 69. 80 represents bent levers pivoted at 81 and 82 to the sets of clamping-plates 62, 63, 64, and 65. These levers 80 are also pivoted at their free ends to the reciprocating bars 77. To the lower side of the frame are rigidly fastened two hooks 85. The ends of these hooks, which project beyond the rear of the frame, are bent to form eyes 86. The transverse rods or pintles are composed of short sections of iron gas-pipe and are fastened upon the carrier-chains 19 by having inserted into their ends cylindrical lugs 87, carried by the links of the chains 19. The eyes 86 encircle one of these rods, as shown in Fig. 6, while the hooks 85 inclose the neighboring one of these rods 20, thus operating to attach the bottle-carrying frame to the carrier in such a manner as to hold said frame positively in a practically constant position with relation to the carrier and at the same time to allow sufficient play or reciprocation at the joints to enable the frame to pass with the carrier around the pulleys, as described in connection with Figs. 1, 2, and 3.

In cleansing the bottles we prefer to fill the large tank 10 with a solution of washing-soda, which serves to remove the grease from the bottles, and we prefer to place in the tank 11 an antiseptic solution, while in the tank 12 we usually place clear water to give the bottles a final rinsing.

In the operation of our invention the bottles are brought to the machine in the racks 50, each rack adapted to contain sixteen bottles. The carrier is then caused to move in the direction indicated by the arrows in Fig. 2. As the clamping-frames 21 pass over the pulleys 44 the racks containing the bottles are inserted into the rear ends of the frames, the handle 72 having been previously thrown back, causing the clamping-plates to be spread apart by means of the levers 80. The necks of the bottles then enter the circular openings between the clamping-plates. The handle 72 is then thrown back to its inmost position and fastened by means of the spring-clamp 73, thus firmly clamping the bottles by their necks in the frame 21, so that the bottles are positively held in a plane substantially parallel to the carrier 18, with their bottoms facing in the general direction of movement of said carrier. The frames 21, carrying the bottles, then pass over the pulleys 17 and downward into the tank 10, the

bottles entering the solution contained in the tank bottom first, so that they are immediately filled with said solution as soon as their mouths pass below the surface of the solution. The bottles then pass the length of the tank 10, receiving a prolonged soaking in the soda solution, and emerge from the tank at its opposite end bottom first, so that the bottles are immediately emptied of the solution contained in the tank 10 as soon as their mouths emerge from the surface of the solution, that portion of the solution which is contained in the bottles being returned to the tank 10. In a similar manner the bottles then pass through the tank 11, being filled on entering the tank 11 with the antiseptic solution and emptying themselves on emerging from the liquid in said tank, the solution contained in the bottles being returned to the tank 11. The operation of the machine as the bottles are carried into and out of the solution in the tank 12 is substantially the same, the solution contained in the bottles being in each instance returned to its proper tank, so that the various solutions contained in the different tanks do not become mixed through prolonged use. As the bottles pass upward over the pulleys 44 the attendant may ascertain whether or not they are thoroughly cleansed by looking through their bottoms, and if their condition is not satisfactory they may be passed through the machine again. If, however, they are thoroughly cleansed, the bottles are released by operating the handle 72, as above described, and the rack 51, containing said bottles, removed from the machine, a new rack filled with bottles being inserted in its place.

It will thus be seen that the solution contained in each tank is applied to both the exterior and the interior of the bottles, thoroughly cleansing the same, and that this is done in the shortest possible time, the machine operating to cleanse the bottles during both the outward and the return movement of the carrier, thus saving the time which is ordinarily lost while the bottles are returning from the outer end of the tank to the place where the attendant stands to remove them from the machine and insert new bottles in their place.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a bottle-cleansing machine, a tank adapted to contain a liquid, a second tank above the bottom of said first-named tank, and

a carrier for the bottles passing through said tanks.

2. In a bottle-cleansing machine, a tank, a second tank above the bottom of said first-named tank, and means for passing the liquid in said tanks into and out of the bottles.

3. In a bottle-cleansing machine, a tank, a bottle-carrier passing through said tank, and an attaching device for positively holding the bottles at all times approximately parallel to said carrier.

4. In a bottle-cleansing machine, a plurality of tanks, a bottle-carrier passing through said tanks, and an attaching device for positively holding the bottles at all times approximately parallel to said carrier.

5. In a bottle-cleansing machine, a carrier for the bottles, a tank adapted to contain a liquid and through which said carrier passes during its outward movement, and a second tank adapted to contain a liquid and through which said carrier passes during its return movement.

6. In a bottle-cleansing machine, a carrier for the bottles, a tank through which said carrier passes during its movement in one direction, and a second tank above the bottom of said first-named tank through which said carrier passes during its movement in another direction.

7. In a bottle-cleansing machine, a carrier, a rack open at one side for the insertion of the bottles and from the opposite side of which the necks of said bottles project, and a clamping device upon said carrier for fastening said bottles to said carrier by their necks.

8. In a bottle-cleansing machine, a carrier, a frame attached to said carrier, a rack for holding the bottles and adapted to enter said frame, and clamping mechanism carried by said frame for clamping the necks of said bottles.

9. In a bottle-cleansing machine, a carrier having transverse bars, and a bottle-holder pivotally carried by one of said bars, said bottle-holder being provided with a member embracing another of said bars so as to allow longitudinal movement between said member and bar.

In testimony whereof we have hereunto set our hands and affixed our seals in the presence of the two subscribing witnesses.

JULIUS H. KOEHLER. [L. S.]

GUSTAV LINDE. [L. S.]

Witnesses:

JAMES H. BRYSON,

JESSIE R. WATKINS.