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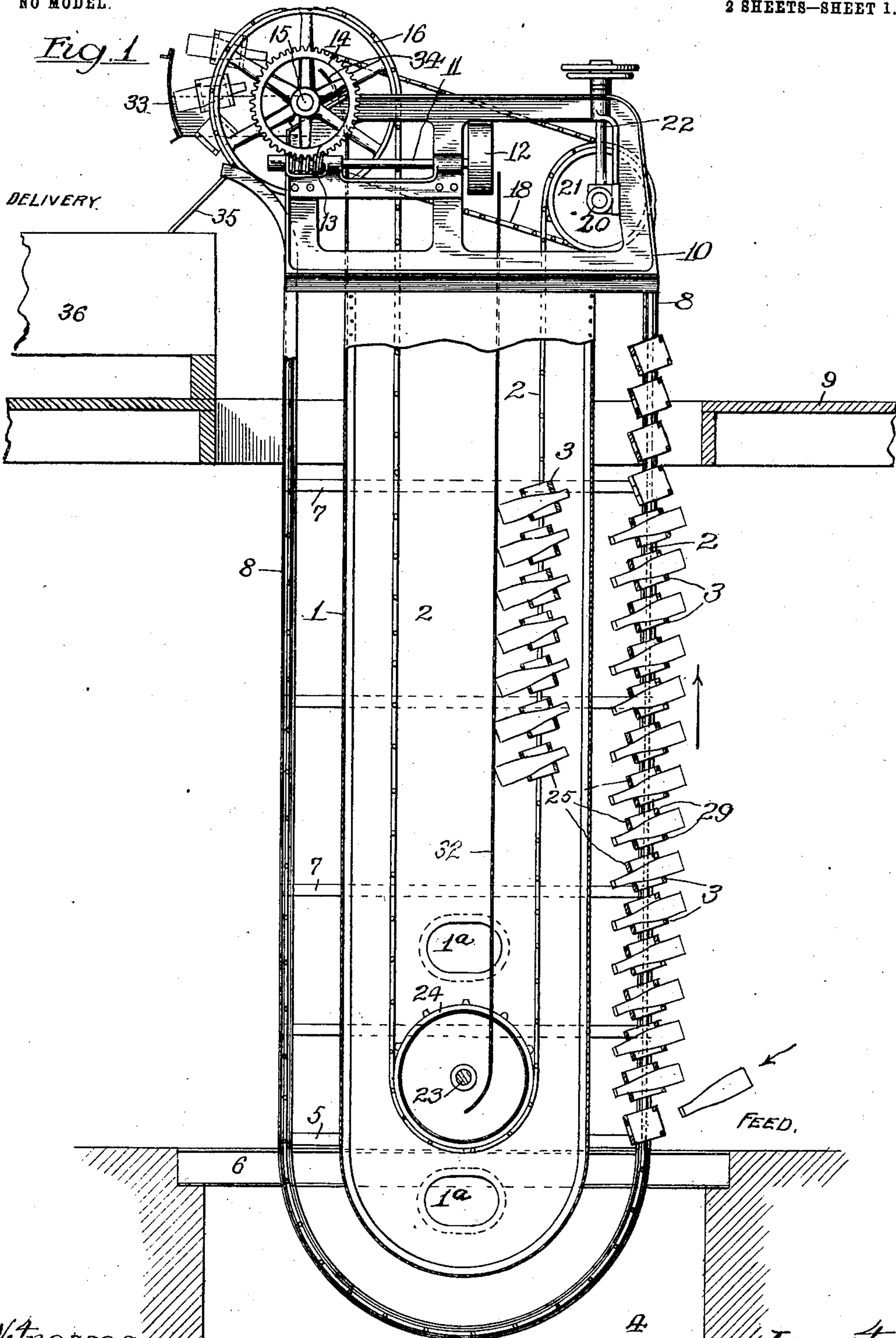
PATENTED AUG. 11, 1903.

S. VOLZ.
BOTTLE SOAKING MACHINE.

APPLICATION FILED JULY 22, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

Harold Bennett
Louis B. Erwin

Inventor

Simon Volz
By Rector & Hibben
his atts

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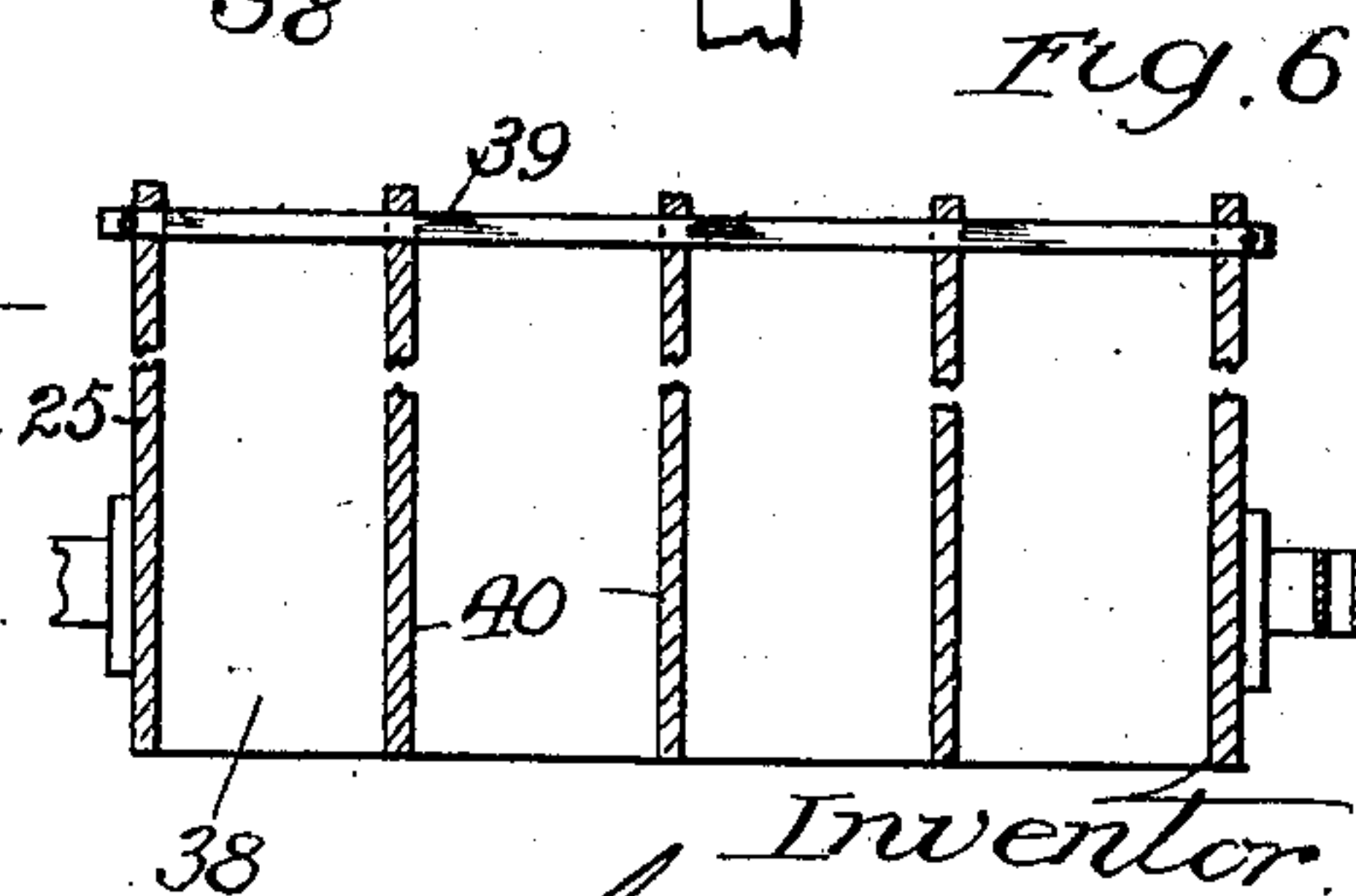
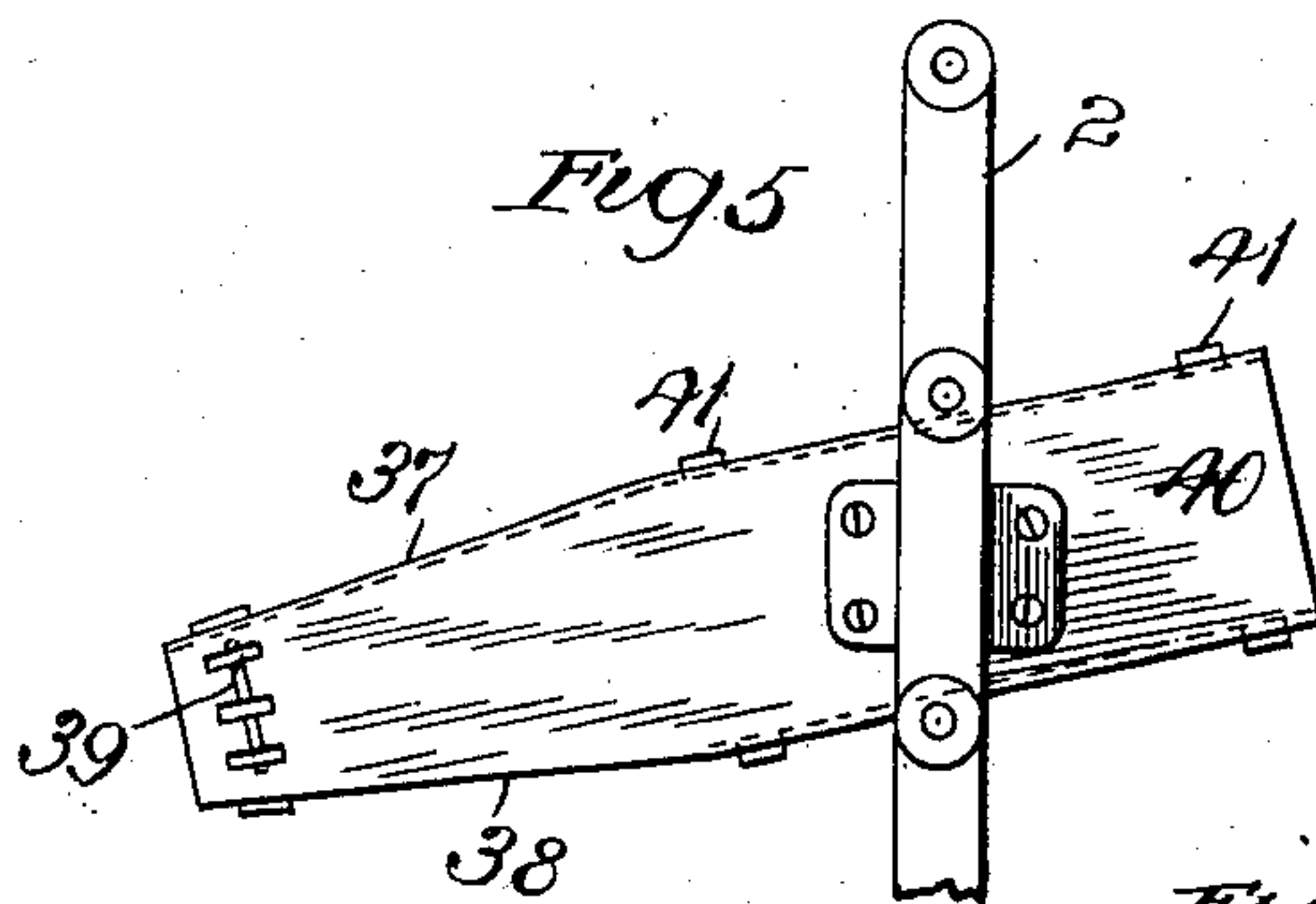
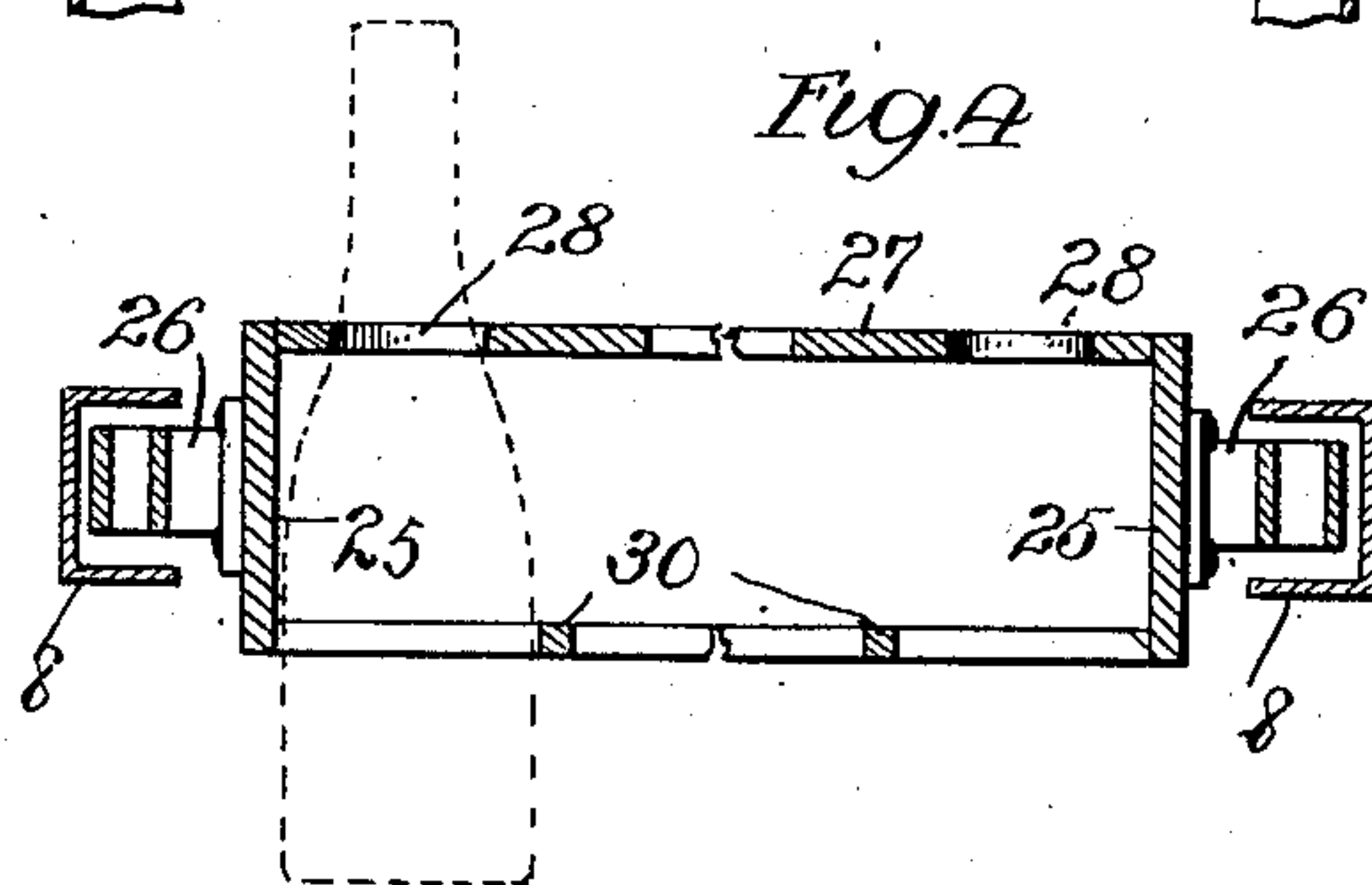
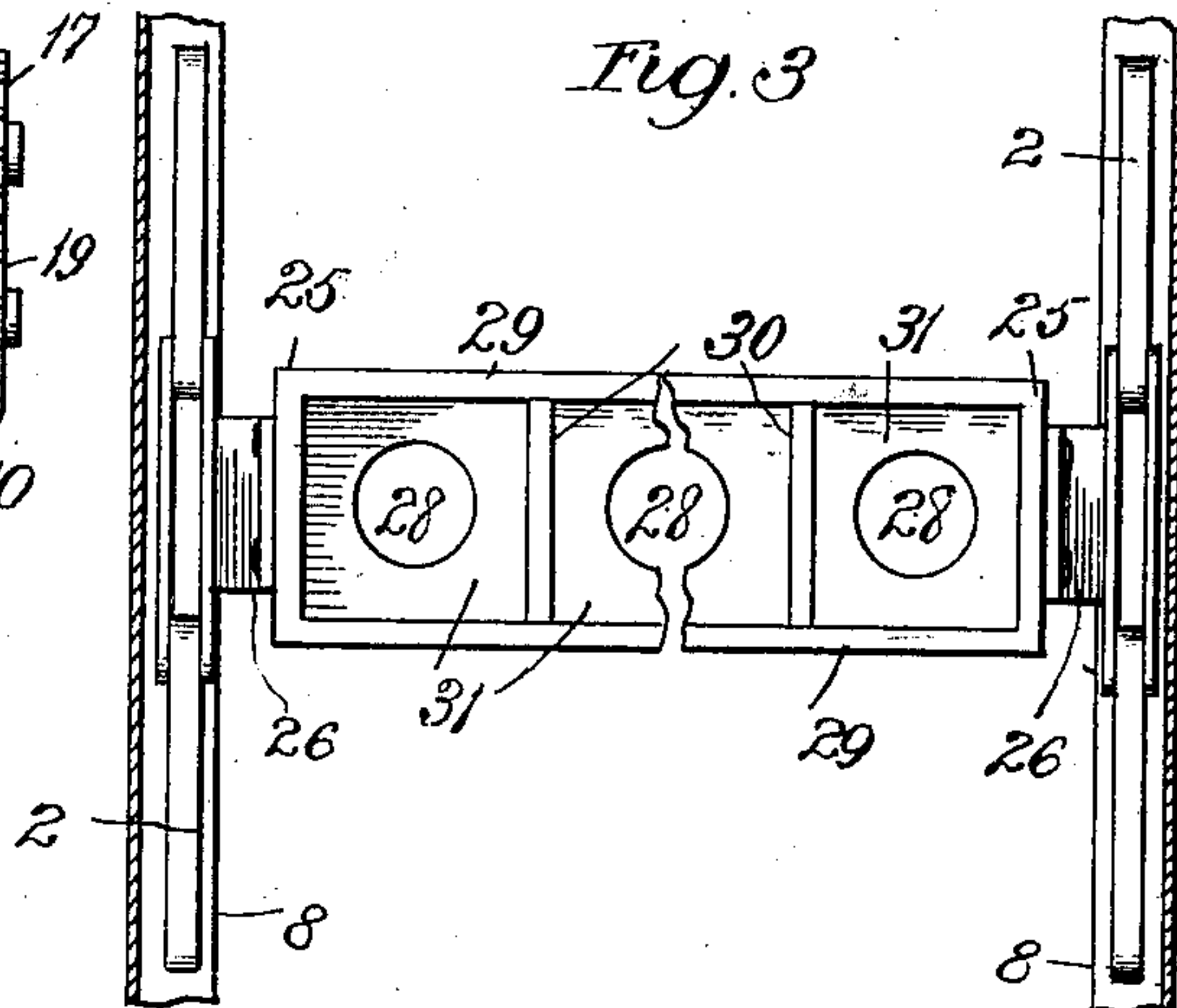
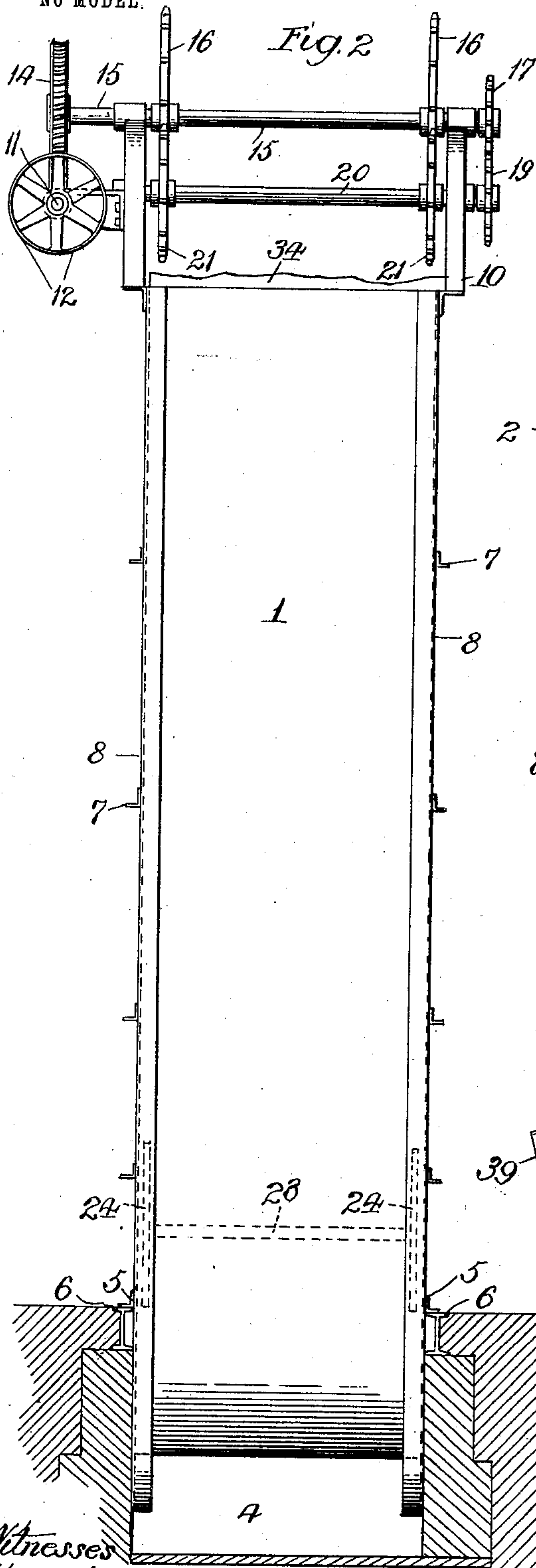
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2 SHEETS—SHEET 2.



Witnesses
Hawley & Barrett
Louis B. Erwin

Inventor
S. Volz
By Rector & Hittner
Attorneys

UNITED STATES PATENT OFFICE.

SIMON VOLZ, OF MILWAUKEE, WISCONSIN, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE 20TH CENTURY MACHINERY CO., A CORPORATION OF ILLINOIS.

BOTTLE-SOAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 736,037, dated August 11, 1903.

Application filed July 22, 1902; Serial No. 116,504. (No model.)

To all whom it may concern:

Be it known that I, SIMON VOLZ, residing at Milwaukee, Milwaukee county, Wisconsin, have invented certain new and useful Improvements in Bottle-Soaking Machines, of which the following is a specification.

My invention relates to what are known as "bottle-soaking" machines for washing bottles by means of a soaking or cleansing solution contained in a tank or reservoir through which the bottles are carried by an endless chain.

The object of my invention is to provide a novel, efficient, and reliable machine of this character as well as one taking up a minimum amount of space and one capable of feed on one floor and of delivery on another or upper floor.

Heretofore the tanks of bottle-soaking machines have been arranged in a horizontal position upon a floor, and the large size required for their purposes has consumed considerable floor-space, the head room or space above the tank not being of course utilized. Again, the bottles arrive in the works or establishment at the lower floor, and the same are required for bottling on an upper floor, more generally the next or second floor, the bottle-cleansing occurring on either the lower floor or the next floor. However, in either case several handlings of the bottles are required, entailing considerable labor and expense.

My machine is designed to obviate the above-stated objections, and to this end the tank is arranged vertically and extends from floor to floor, thereby consuming a minimum amount of floor-space and utilizing the head-room, and, further, the construction is such that the bottles may be fed at the lower floor, then carried through the tank and cleansed, and eventually discharged or delivered automatically at the upper floor where required for use. The arrangement is also such that the bottles may, if desired, be fed to the machine at the upper floor.

In the drawings, Figure 1 is a sectional elevation of my machine; Fig. 2, an elevation of the same with the foundation in section,

with the bottle-carrier and sprocket-chains removed, and parts broken away; Fig. 3, an elevation of a portion of the conveyer and a bottle-rack; Fig. 4, a central section of the rack of Fig. 3, and Figs. 5 and 6 detail views of a modified form of construction of bottle-rack.

The machine comprises, essentially, the tank 1, endless chains 2, and bottle-racks 3 between the chains, said elements being arranged and cooperating substantially in the manner hereinafter explained. The tank may be of suitable shape and dimensions; but as herein shown it is elongated, rectangular in cross-section, and arranged in a vertical plane. In the present instance the tank is supported in and above a pit 4 in the lower floor, and to this end angle-plates 5 are arranged on the opposite sides of the tank, Fig. 2, so as to rest upon cross-beams 6, extending transversely at the upper end of the pit. The tank is also provided on its outside with a suitable number of angle-plates 7, which extend transversely of the tank and project beyond the side thereof to form a support for the channel-irons 8, whose flanges are inwardly directed. These channel-irons extend around all sides of the tank except over the top thereof, and their function is to form a guide for the endless conveyer, to be hereinafter described. As clearly illustrated in Fig. 1, the tank, which has a comparatively small base considering its capacity, extends vertically from the lower floor and preferably entirely through and above the second floor, (indicated at 9.) To carry and support the actuating mechanism of the conveyer, a frame or support 10 is in the present instance built or arranged on the upper end of the tank, as shown, and provided with bearings for a driving-shaft, here a worm-shaft 11, driven from a pulley 12. This worm-shaft has a worm 13, driving a worm-gear 14, mounted on a shaft 15, having bearings in said frame and on which the pair of sprocket-wheels 16 for the conveyer are secured. This shaft 15 also carries a smaller sprocket-wheel 17 connected by a chain 18 with a driven sprocket-wheel 19 on a shaft 20, also having bearings in said

frame. This shaft 20 also has a pair of sprocket-wheels 21 for the conveyer. The pairs of wheels 16 and 21 are arranged immediately above and in alinement with the guides 8, before described. A suitable tightener may be provided for the wheels 21, and, as shown, a screw 22, cooperating with the bearing-boxes of shaft 20, is employed. Within the tank and near the lower end thereof is journaled a shaft 23, to which is secured a pair of sprocket-wheels 24 for the conveyer.

I have described in detail the actuating mechanism for the conveyer; but it is evident and will be understood that any suitable driving mechanism may be employed so far as my invention is concerned.

The conveyer-chains 2 extend upwardly from the lower floor over the wheels 21, downwardly in the tank over wheels 24, then upwardly therein over the wheels 16, thence downwardly and around under the tank to the place of beginning. While running alongside of and under the tank the chains are confined in and guided by the guides 8. Between the chains and arranged obliquely thereto is the series of bottle-racks 3, which are open-work boxes, as illustrated in Figs. 3 and 4. Each rack, which is of suitable width and arranged to accommodate a desired number of bottles, consists of end pieces 25, secured to the chains by lugs or angle-plates 26, Figs. 3 and 4, which end pieces are connected by a rear or inner strip 27, provided with a row of holes 28 of a size to loosely receive the necks of bottles. The front of the rack has top and bottom strips 29 and vertical cross-pieces 30, thereby forming the large square openings 31. As clearly illustrated in Fig. 1, the bottle-racks are not only so fastened as to be inclined or oblique to the plane of the chains, but are arranged so as to intersect such plane and to lie partly on one side thereof and partly on the other side. Moreover, these racks are so constructed in the present instance as to leave considerable of the bottle projecting, and, furthermore, the racks being of open-work the bottles are fully exposed to the action of the soaking solution when traversing the tank. In order to keep the bottles from dropping out of their racks when descending in the tank, I provide a suitable guide or grating 32, arranged vertically therein and extending substantially the entire height of the tank. On the upward stretch within the tank no such guide is required; but at a point just before delivery at the wheels 16 it is preferred to provide a curved guide 33, secured to the frame 10.

In practice the operator stands at the lower floor and inserts the bottles in their racks. As these racks are downwardly inclined, the bottles remain therein by their own gravity. The racks and their bottles are carried upwardly, as indicated by the arrow, to the floor above, around the wheels 21, and thence downwardly, on which stretch the bottoms of the bottles ride against the grating 32 and

are held in thereby. Upon this descending stretch the bottles fill with the solution. The racks and bottles then pass around below the wheel 24 and then upwardly through the tank and around the wheels 16. Upon leaving the tank the contents of the bottles are emptied, and to insure the draining thereof into the tank I provide a drip-plate 34 adjacent the wheels 16. Passing onward around the wheels 16, the racks finally come to the point of delivery and the bottles slide down the incline 35 into a rinsing-tank 36 or into a receiver. The racks then pass downwardly alongside the left-hand side, Fig. 1, of the tank, thence into the pit around underneath the tank, and finally to the point of feeding, ready for other bottles. Provided that the bottles to be washed were already on the second floor, they could be fed into the racks on that floor; but it saves a handling thereof by feeding them at the lower floor, in which last case the machine acts both as a washer and an elevator, thereby saving time and expense in handling.

As hereinbefore described, the bottles can be fed to the endless conveyer at any point of the stretch thereof outside one of the sides of the tank and either at a lower floor near the bottom of the tank or at the upper end of the tank, whereby the bottles are fed at a lower floor or an upper floor, as desired, then carried through the tank, and finally delivered directly to the rinsing-tank, which is located in close proximity to the place of discharge of bottles from the conveyer. This arrangement or provision is of advantage, not only because the machine possesses the additional function of an elevator, delivering the bottles from a lower to a higher level where required in the bottling operation, but also because the bottles after being carried through the soaking solution are delivered or discharged directly into the rinsing-tank before the bottles have had any chance or opportunity to dry, so that the bottles are perfectly cleansed and all of the soaking solution removed.

The bottle-racks are simple, but most efficient, each rack consisting of a frame open at its top and bottom and having a rear wall or side provided with a row of holes for loosely receiving the necks of the bottles. Advantages result from such open construction of rack not only in that the bottles are fully exposed to the action of the soaking solution, but also in that the labels soaked off are permitted to fall from the rack and into the bottom of the tank, from which they can be removed through either of the hand-holes 1^a. Moreover, my racks are capable of accommodating many different sizes and styles of bottles.

In Figs. 5 and 6 is shown a modified form of bottle-rack comprising upper and lower plates 37 and 38, converging at their inner ends and there provided with a grating 39, against which the mouths of the bottles may

rest. Partitions 40, having projections 41 passing through holes in the plates, form compartments for the bottles. These racks are likewise secured to the chains so as to be oblique thereto and to be partly on one side of the chain and partly on the other side.

I claim—

1. A bottle-soaking machine comprising a vertical tank, rolling supports arranged above two opposite sides of the tank, a rolling support arranged within the tank, a track or guideway connected to the sides and bottom of the tank on the outside thereof, and an endless bottle-conveyer traveling over said supports and in said track or guideway.

2. A bottle-soaking machine comprising a vertical tank, rolling supports arranged above two opposite sides of the tank, a rolling support arranged within the tank, an endless bottle-conveyer traveling over said supports and around two opposite sides and bottom of the tank, and a rinsing-tank located in close proximity to one of the rolling supports which are situated above the sides of the tank, said conveyer being arranged to receive bottles along one of the side stretches of the conveyer outside the tank and, after carrying them through the tank, to discharge them directly into the rinsing-tank whereby the bottles are not given an opportunity to dry.

3. A bottle-soaking machine comprising a vertical tank, a bottle-conveyer extending upwardly along one outer side of the tank, thence downwardly and upwardly through the tank to a place of discharge, thence extending downwardly along an opposite outer side of the tank and finally below and around the lower end of the tank, and a guard arranged within the tank and adjacent the conveyer to prevent the falling out of the bottles.

4. A bottle-soaking machine comprising an upright tank, a framework arranged at the upper end thereof, rolling supports bearing in said framework and respectively arranged above two opposite sides of the tank, a track or guideway around two opposite sides and bottom of the tank, an endless bottle-conveyer arranged to traverse the interior of the tank and to pass over said supports and outside the tank, and also along said track or guideway, and a guard arranged within the tank adjacent the conveyer to prevent the falling out of the bottles.

5. A bottle-soaking machine comprising an upright tank extending from floor to floor of a building, a bottle-conveyer arranged to travel downwardly and upwardly within the tank longitudinally thereof and to travel along two opposite outer sides of the tank, and means for guiding the conveyer at points outside the tank.

6. A bottle-soaking machine comprising a tank, a bottle-conveyer extending along opposite sides and under the bottom of the tank and traversing the interior thereof, and guides arranged adjacent the tank for guiding the

conveyer around two opposite sides and the bottom of the tank.

7. A bottle-soaking machine comprising a tank and a bottle-conveyer therefor consisting of endless chains and bottle-racks, each comprising an open-work frame arranged between and secured to the chains at its central transverse axis and provided with openings for a single row of bottles which openings are larger than the bottle-necks and permit such necks to project beyond the rear end of the frame.

8. A bottle-soaking machine comprising a tank and a bottle-conveyer consisting of endless chains and a series of transverse bottle-racks extending on both sides of the plane of the chains and obliquely to such plane, each rack comprising an open-work frame having openings for a single row of bottles and provided with a wall having a single row of openings through which the bottle-necks pass.

9. A bottle-soaking machine comprising a tank, a bottle-conveyer extending along opposite sides and under the bottom of the tank and traversing its interior and guides secured to and projecting from two opposite sides of the tank and extending around the bottom thereof and adapted to receive and guide the conveyer.

10. A bottle-soaking machine comprising a tank, a bottle-conveyer extending along opposite sides and under the bottom of the tank and traversing its interior, and channel-irons secured to two opposite sides of the tank and extending around the bottom thereof and forming guides receiving opposite edges of the conveyer.

11. A bottle-soaking machine comprising a tank, a bottle-conveyer extending along opposite sides and under the bottom of the tank and traversing its interior, strips or plates secured to and extending beyond the sides of said tank, and channel-irons fastened to said strips and extending along two opposite sides and under the bottom of the tank, and channel-irons receiving opposite edges of the conveyer and forming guides therefor.

12. A bottle-soaking machine comprising a tank, an endless conveyer having a series of bottle-racks, each consisting of a frame having a single transverse row of openings for bottles and provided with a rear wall having a single transverse row of holes to loosely receive the necks of the bottles, the frames being secured to the conveyer along their central transverse axis.

13. A bottle-soaking machine comprising a tank, an endless conveyer adapted to travel therein and having a series of bottle-racks, each consisting of a frame open at top and bottom and having a single transverse row of bottle-openings, fastening-lugs secured respectively to the conveyer and to the frames at the central axis thereof.

14. A bottle-soaking machine comprising a tank, an endless conveyer arranged to travel

therein, a series of bottle-racks operatively connected with the conveyer, a guide arranged within the tank adjacent the line of travel of the conveyer to prevent the bottles from falling out of their racks, each rack consisting of a frame having on its inner or rear side a series of openings larger than the necks of the bottles and through which such bottle-necks pass and project.

15. A bottle-soaking machine comprising a tank, an endless conveyer arranged to travel therein, a series of bottle-racks operatively connected with the conveyer and arranged transversely and obliquely to the plane or line of travel of the conveyer, a guide arranged within the tank adjacent the line of travel of the conveyer to prevent the bottles from falling out of their racks, each rack consisting of a frame having on its inner or rear side a series of openings larger than the necks of the bottles and through which such bottle-necks pass and project.

16. A bottle-soaking machine comprising a tank, an endless conveyer arranged to travel therein, a series of bottle-racks operatively connected with the conveyer and arranged transversely and obliquely to the plane or line of travel of the conveyer, a guide arranged within the tank and cooperating with the racks to keep the bottles from falling out, each rack consisting of a frame having end pieces 25 secured to the conveyer, and a rear wall 27 provided with a series of openings 28 larger than the necks of the bottles and through which they project.

17. The combination of a tank 1 extending vertically from floor to floor of a building, a pair of wheels 24 in the lower end of the tank, a pair of wheels 21 above and at one side of the tank, a pair of wheels 16 above and at the opposite side of the tank, and a bottle-conveyer passing over the wheels 21, thence over wheels 24, over wheels 16 and around the tank to the opposite side to the wheels 21 again.

18. The combination of a tank 1 extending vertically from floor to floor of a building and arranged over a pit, a pair of wheels 24 in the lower end of the tank, pairs of wheels 16 and 21 arranged above and at opposite sides of the tank, guides extending along both sides of the tank and through the pit and a conveyer passing over said wheels and following said guide around the tank.

19. The combination of a tank 1 extending vertically from floor to floor of a building, pairs of wheels 16 and 21 arranged above and at opposite sides of the tank, a pair of wheels 24 within the tank, a bottle-conveyer extending around said wheels and traversing the tank, and a water-drip plate 34 arranged adjacent to wheels 16 to receive and conduct back to the tank the drain from the bottles.

20. A bottle-soaking machine comprising a vertical tank extending substantially from floor to floor of a building, an endless bottle-conveyer running downwardly into the tank, then upwardly and around both outer sides and underneath the tank, and rolling supports at the upper end of the tank over which the conveyer passes in respectively entering and leaving the tank.

21. A bottle-soaking machine comprising a vertical tank extending substantially from floor to floor of a building, a bottle-conveyer arranged to travel partly within the tank and having stretches outside the tank along the sides thereof and underneath the same, rolling supports arranged above the top of the tank and on a substantial level with the upper floor and over which such conveyer passes, and a series of bottle-racks arranged in said conveyer and adapted to be fed with bottles at the lower floor and to be discharged at the upper floor after traversing the tank.

SIMON VOLZ.

Witnesses:

OTTO KRUEGER,
EDWIN L. OBERMANN.