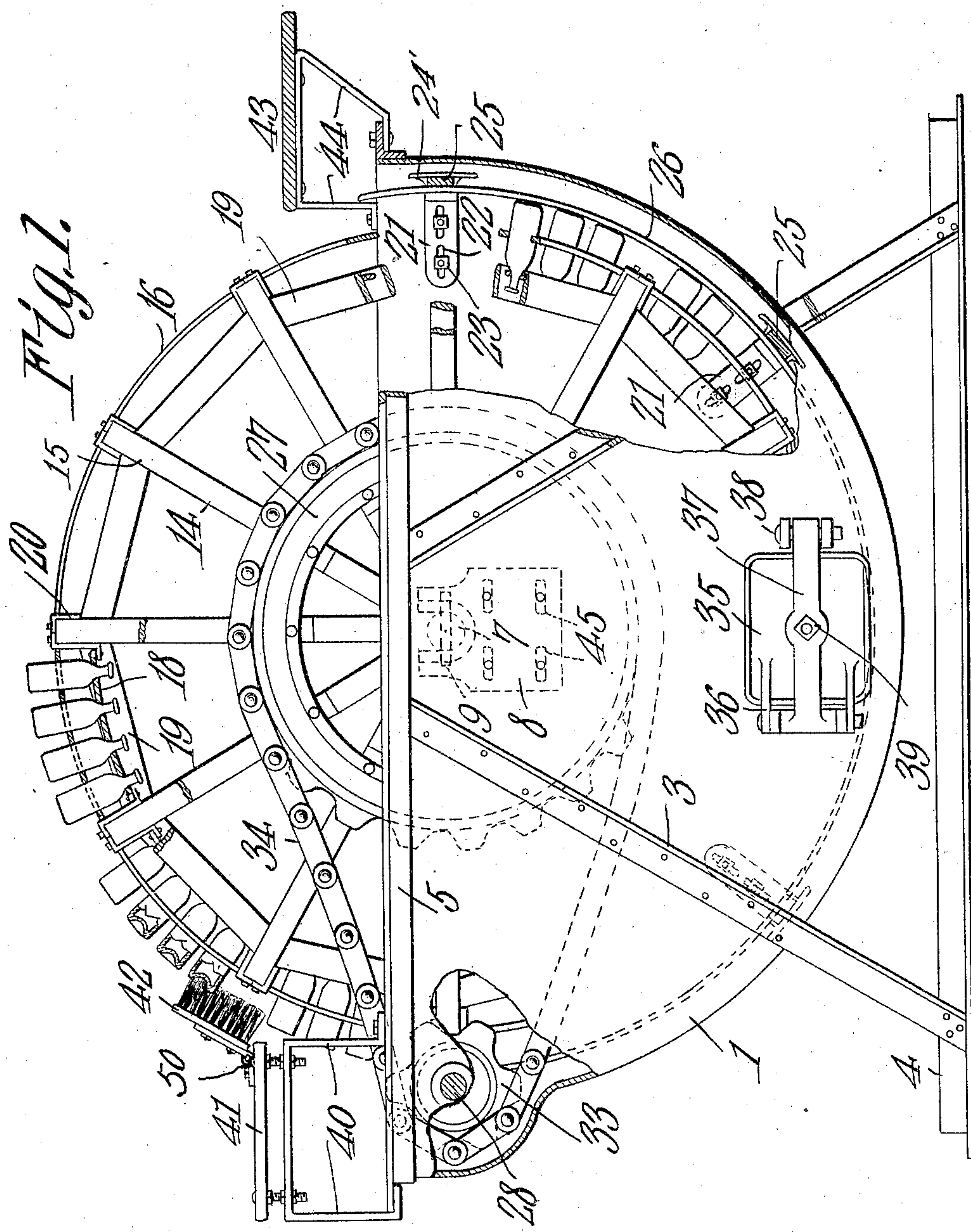


W. LIPPS.
 BOTTLE WASHING MACHINE.
 APPLICATION FILED MAY 26, 1909. Patented Aug. 16, 1910.
 967,399. 2 SHEETS—SHEET 1.



WITNESSES:
E. J. [Signature]
 F. J. Chapman

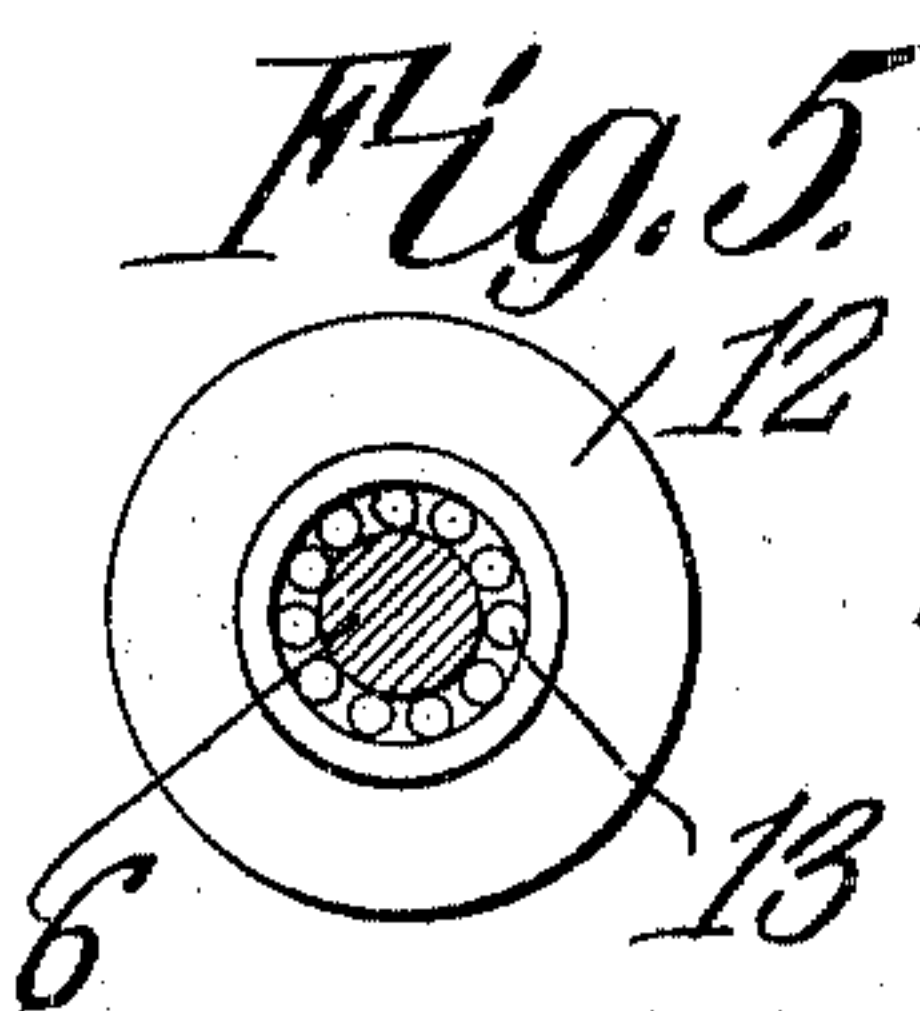
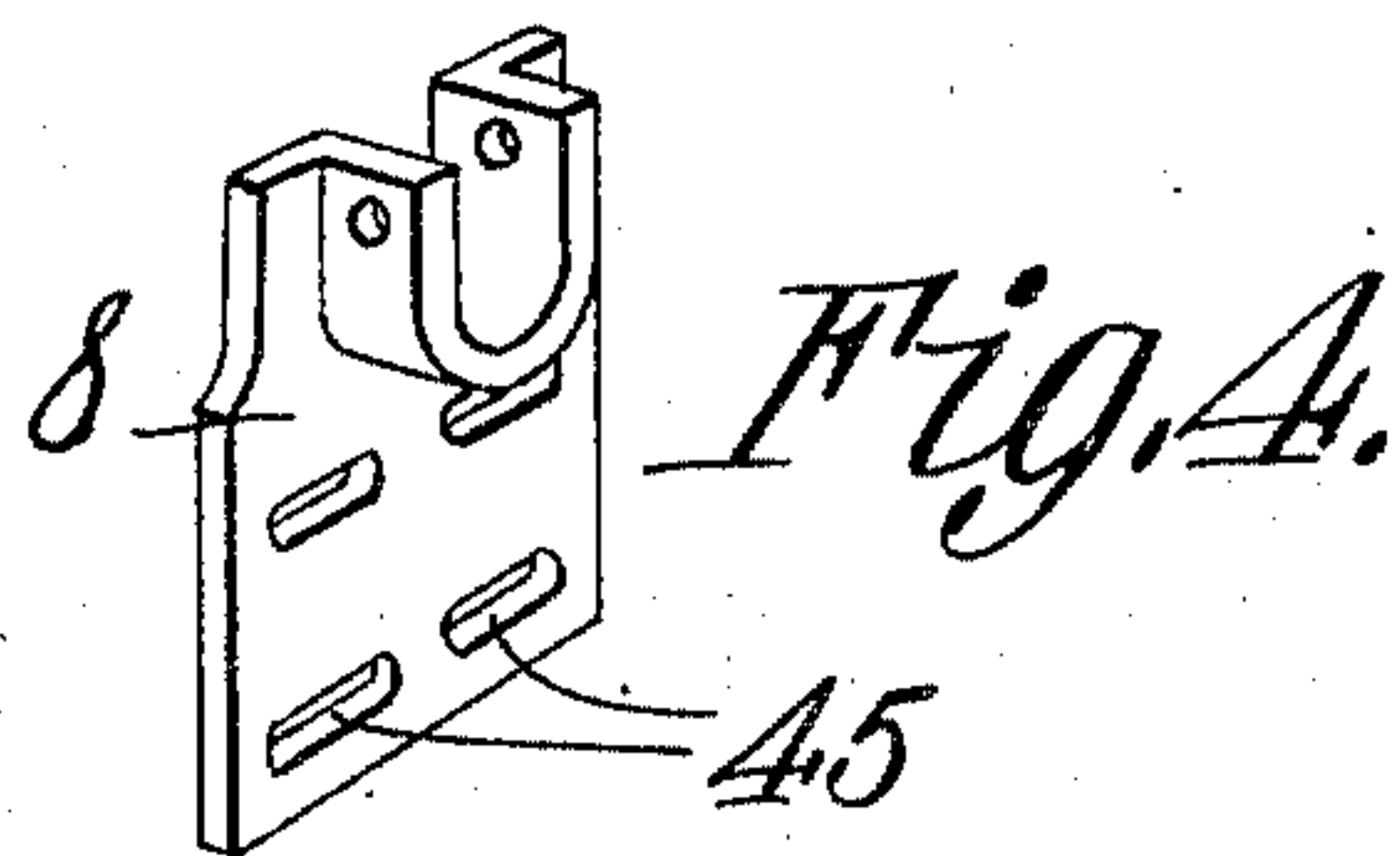
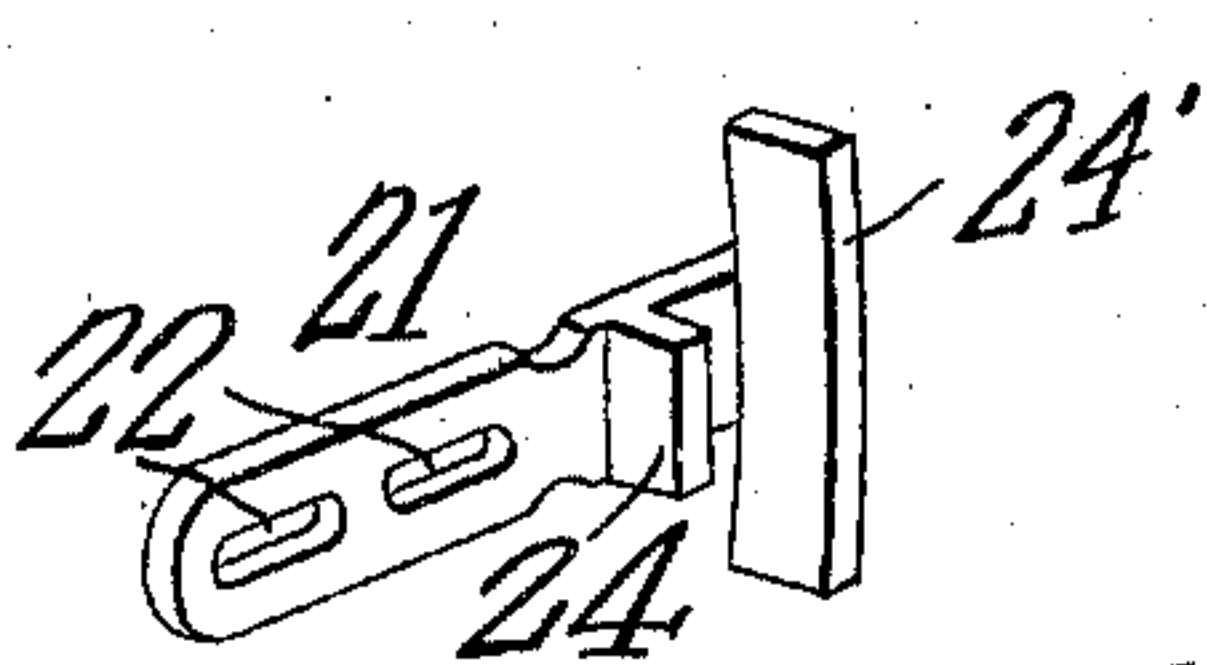
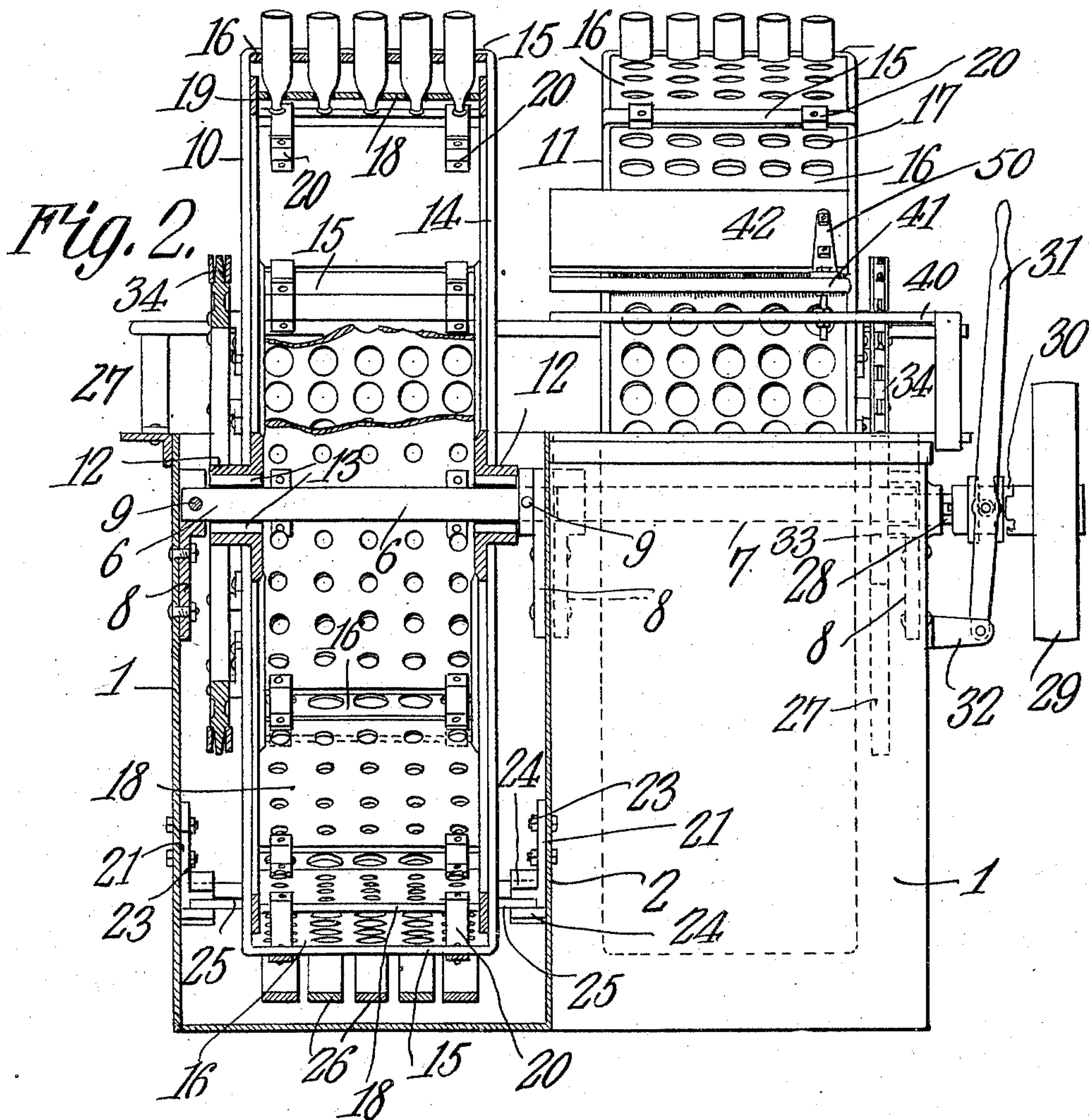
William Lipps
 INVENTOR
 By *C. A. [Signature]*
 ATTORNEYS

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WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM LIPPS, OF CHATTANOOGA, TENNESSEE.

BOTTLE-WASHING MACHINE.

967,399.

Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed May 26, 1909. Serial No. 498,450.

To all whom it may concern:

Be it known that I, WILLIAM LIPPS, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented a new and useful Bottle-Washing Machine, of which the following is a specification.

This invention has reference to improvements in bottle washing machines, and its object is to produce a device wherein the bottles may be subjected to a number of successive immersions in a cleansing liquid with interspersed drainings and may then be thoroughly rinsed by a number of immersions in clear water with a corresponding number of interspersed drainings.

The invention will be fully understood from the following detailed description taken in connection with the accompanying drawings forming part of this specification, in which,—

Figure 1 is a side elevation, with some parts in section and others broken away, of a bottle washing machine constructed in accordance with the invention; Fig. 2 is an end elevation, partly in section, of the bottle washing machine; and Figs. 3, 4 and 5 are detail views.

Referring to the drawings, there is shown a semicylindrical trough 1 divided by a central partition 2 into two compartments. This trough 1 is supported upon legs 3, which may, for convenience, be made of angle iron, and these legs are connected together at the bottom by base strips 4, which may also be made of angle iron, and the upper rim 5 of the trough 1 may also be made of angle iron. The body of the trough may be made of any suitable material, such, for instance, as sheet-iron, or, if desired, of zinc. Extending across the trough near its upper edge are two shaft sections 6—7 supported at their ends in brackets 8 fast on the interior side walls of the trough and to the central partition 2. These shaft sections are fast in the brackets 8 by means of through pins 9 so that the sections are held against rotation. These sections are circular in cross section and constitute stationary axes upon which are mounted two drums 10—11. These drums

are each composed of two spaced hubs 12 of such interior diameter as to receive anti-friction rollers 13 traveling upon the fixed shafts 6—7. These hubs carry spokes 14 joined in pairs at their outer ends by integral cross strips 15 within which is a peripheral band 16 having circular series of passages 17 of sufficient size to receive the bodies of bottles. At a suitable distance within the band 16 and substantially concentric therewith is a series of short band sections 18 supported at their edges upon side bars 19, and these bands are supported at their ends upon brackets 20 hung from the cross strips 15 connecting the outer ends of the spokes 14. These band sections 18 are provided with perforations equal in number and matching the perforations 17, but of such size as to permit the passage of the neck of a bottle without permitting the passage of its body.

The diameter of each drum is such that the bottle bodies project some little distance diametrically outward from the drum and are still at a distance from the peripheral wall of the corresponding section of the trough 1. Within the trough 1 are arranged a number of radially disposed brackets 21 having slots 22 and secured to the side walls and partition 2 by suitable bolts 23, so that the brackets may be adjusted radially with relation to the axis of the cylinder and of the drums, the axis of the cylinder and the axes of the drums being coincident. Each bracket 21 is provided with two spaced, parallel, laterally-projecting lips 24 and 24' between which engages the end of a cross strip 25 extending from each bracket 21 to the matching bracket on the opposite side of the particular compartment containing the brackets. As shown in the drawings, there are four pairs of brackets 21 in each compartment and a corresponding number of strips 25. These strips carry a number of flexible parallel bands 26 concentric with but slightly spaced from the curved wall of the trough 1, and their ends project slightly above the upper rim of the trough. The strips 26 are so located with reference to the drums 10 and 11 as to form tracks engaging the bottoms of the bottles as they

are carried down into the trough and up out of the same and prevent the bottles from disengaging from the holding members 16 and 18. These tracks 26 are stationary except as to their adjustability radially with reference to the axis of the trough, and they may be so adjusted as to permit the drums to receive at the same time bottles of considerable variation in length, and the range of adjustment is sufficient to permit the same machine to be set for bottles of almost any desired size.

Mounted upon each drum is a large sprocket wheel 27 and at one side of the trough there is a power shaft 28 extending through the trough to the exterior thereof and there receiving a pulley 29 by means of which the shaft may be rotated from a source of power through the intermediary of a suitable belt. This pulley 29 may be normally loose upon the shaft 28 and the latter may be coupled to the pulley by means of a suitable clutch 30 under the control of a clutch-operating lever 31 secured at its lower end to a bracket 32 fast on the side of the trough 1. The shaft 28 carries sprocket pinions 33 in line with the sprocket wheels 27, and sprocket chains 34 serve to impart motion from the shaft 28 to the drums 10 and 11 to rotate them in unison.

The bottom of each compartment may be provided with a door 35 closing a suitable opening in the compartment. This door is provided with hinges 36 and on the same pintle is a latch arm 37 which may be engaged by a removable bolt 38 when placed in position to hold the door closed, and a clamp nut 39 may be provided on the latch arm 37 to force the door 35 into intimate water-tight connection with the opening provided in that particular compartment of the trough 1.

Mounted upon a frame 40 at one end of the trough 1 is an adjustable brush-holder 41 carrying a brush 42 which may be located so as to be engaged by the bottoms of the bottles as they pass it. The brush 42 is hinged at 50 to its support so as to normally lie upon the bottles but to yield when extra long bottles pass under it. At the other end of the trough 1 there is a shelf 43 suitably mounted upon a support 44. This shelf 43 extends across the faces of both drums, and the brush 42 may be duplicated so as to engage the bottles carried by each drum.

In order to provide for the centering of the drums in the trough the brackets 8 may have slots 45 so that they may be adjusted with relation to their position on the sides of the trough 1 or the partition 2.

By connecting the stationary shafts 6—7 with the brackets 8 by means of the pins 9 these shafts act as braces for the sides of the

trough and for the central partition and enable the trough to more readily withstand the pressure caused by the weight of the contained fluids, without the necessity of otherwise bracing the trough.

In the operation of the machine, one compartment of the trough is filled with a suitable cleansing liquid, such, for instance, as hot water containing caustic soda, and as the corresponding drum is revolved bottles are placed therein from above with the necks downward. When the bottles reach the tracks 26, which they do before they can fall out of the holders 16 and 18, they are prevented from leaving these holders when the necks of the bottles become uppermost. As the bottles are carried down into the cleansing fluid the air in the bottles escapes through the necks and the liquid rushes into the bottles. Ultimately the bottles are carried up out of the other side of the trough and as they pass into the air the liquid therein flows out through the necks of the bottles, which now are lowermost. The bottles are carried around through the cleansing liquid a suitable number of times so that the cleansing liquid alternately rushes into the bottom and then pours out of the same. This is found to be a very efficient manner of thoroughly cleansing the insides of the bottles, while the outsides of the bottles are also cleansed by being caused to travel through the cleansing liquid. The bottoms of the bottles are also subjected to the action of the brush 42, which serves to dislodge any foreign material which may have clung to the bottoms of the bottles. When in the judgment of the operator the bottles have received sufficient treatment by the cleansing liquid they are transferred to the other drum and are there subjected to a similar treatment with clear water whereby they are thoroughly rinsed and all traces of the cleansing liquid are removed from both the inside and the outside of the bottles. The cleansed bottles may then be removed to a suitable point for drying.

By the use of roller bearings for the drums there is no necessity for lubricating these bearings which, under the circumstances, could not be done because any lubricant which might be used would foul both the cleansing liquid and the rinsing water.

I claim:—

1. In a bottle washing machine, the combination with a trough, brackets adjustably secured to the interior of its walls, a shaft connecting the brackets, and pins through the latter and the ends of the shaft; of a drum having hubs mounted for rotation on the shaft, and bottle carrying means around the periphery of the drum.

2. In a bottle washing machine, the com-

5 bination with a trough, a drum journaled therein, and means around its rim for carrying bottles disposed radial to the drum; of brackets adjustably secured within the end walls of the drum and each having a pair of inwardly projecting lips, cross strips disposed at their extremities between the lips of opposite brackets, and flexible curved bands connecting said strips and constitut-

ing tracks disposed within and substantially 10 parallel to the periphery of the drum.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILLIAM LIPPS.

Witnesses:

JNO. S. MARTIN, Jr.,

C. E. KIRKPATRICK.