

No. 861,307.

PATENTED JULY 30, 1907.

W. S. McKINNEY.  
BOTTLE WASHING APPARATUS.  
APPLICATION FILED MAY 6, 1905.

2 SHEETS—SHEET 1.

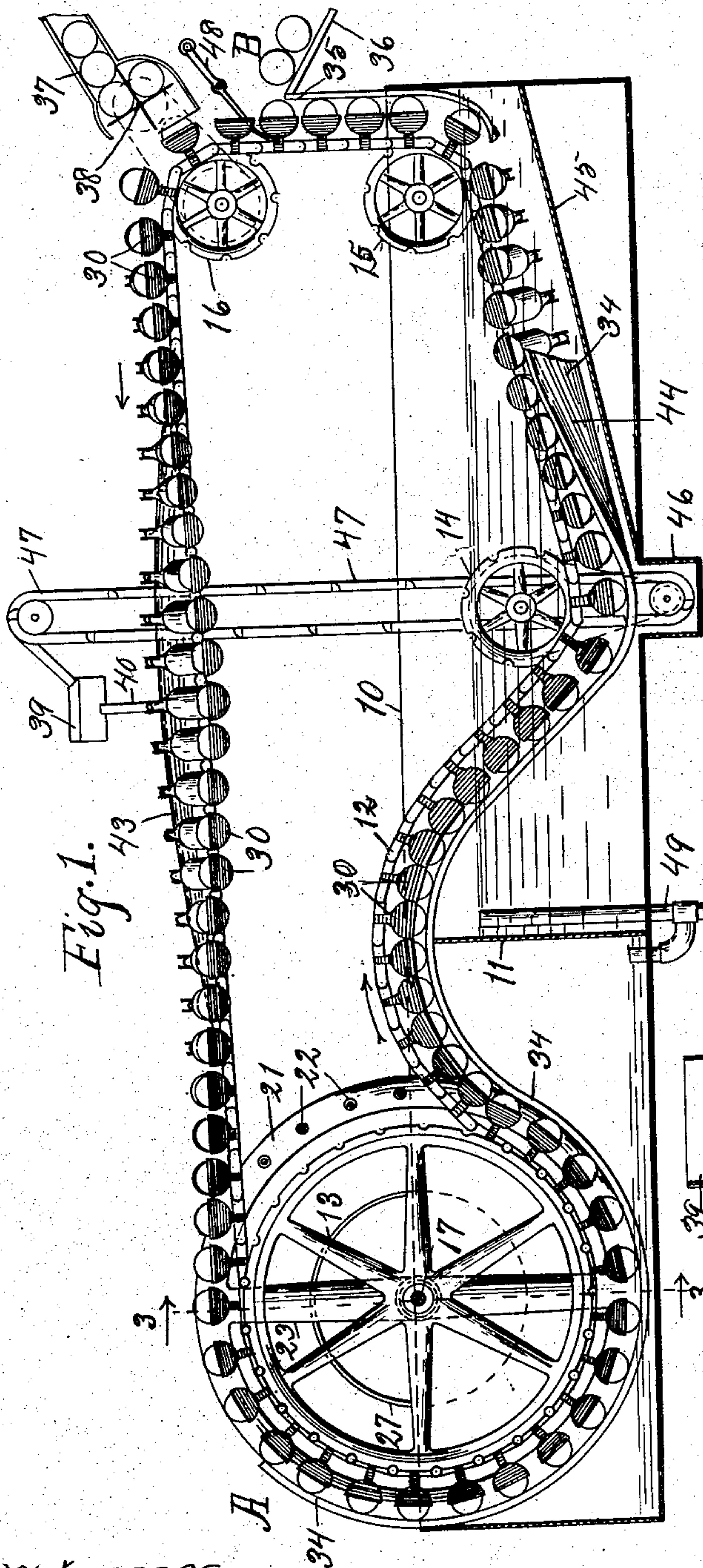


Fig. 1.

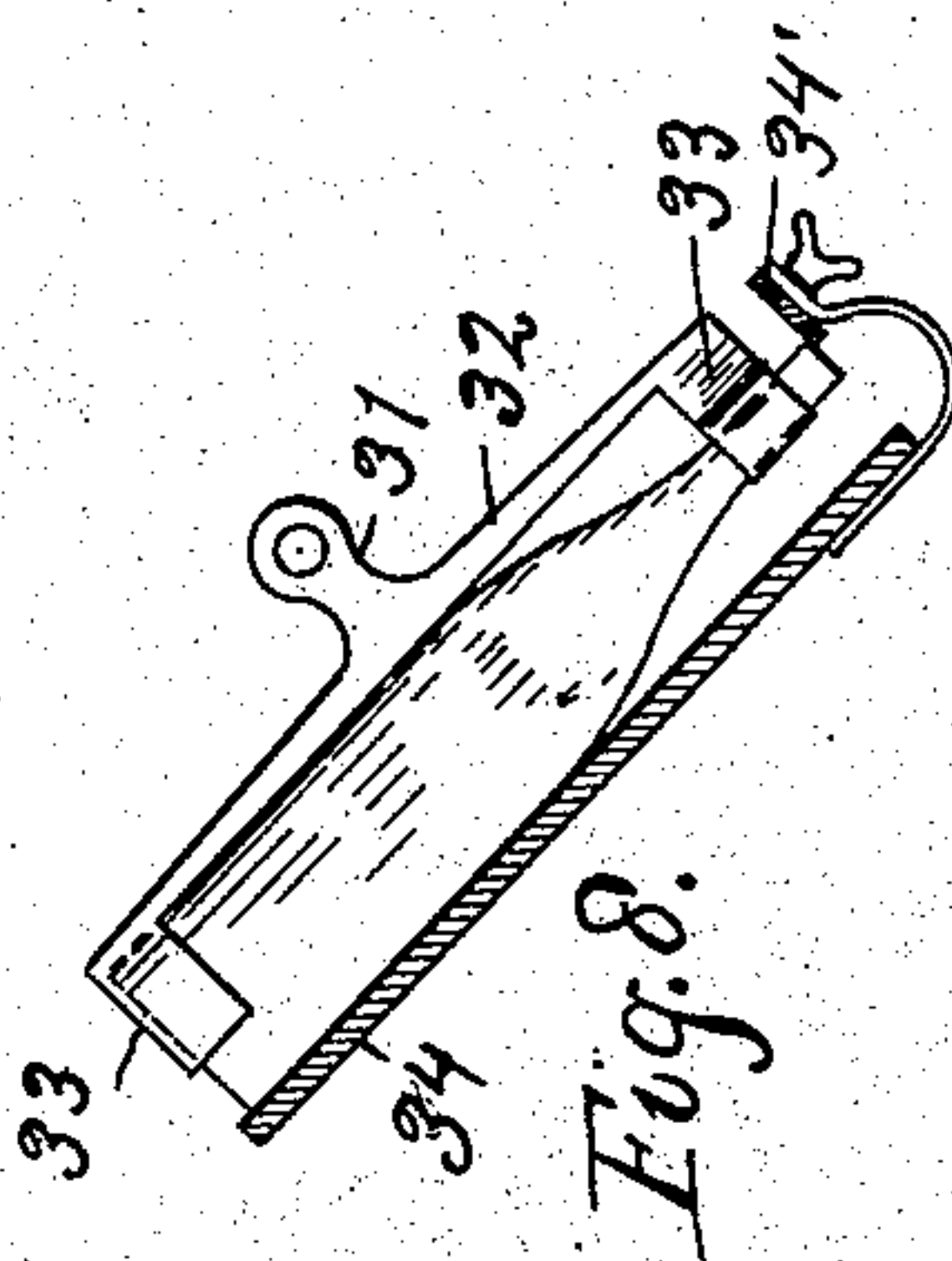


Fig. 8.

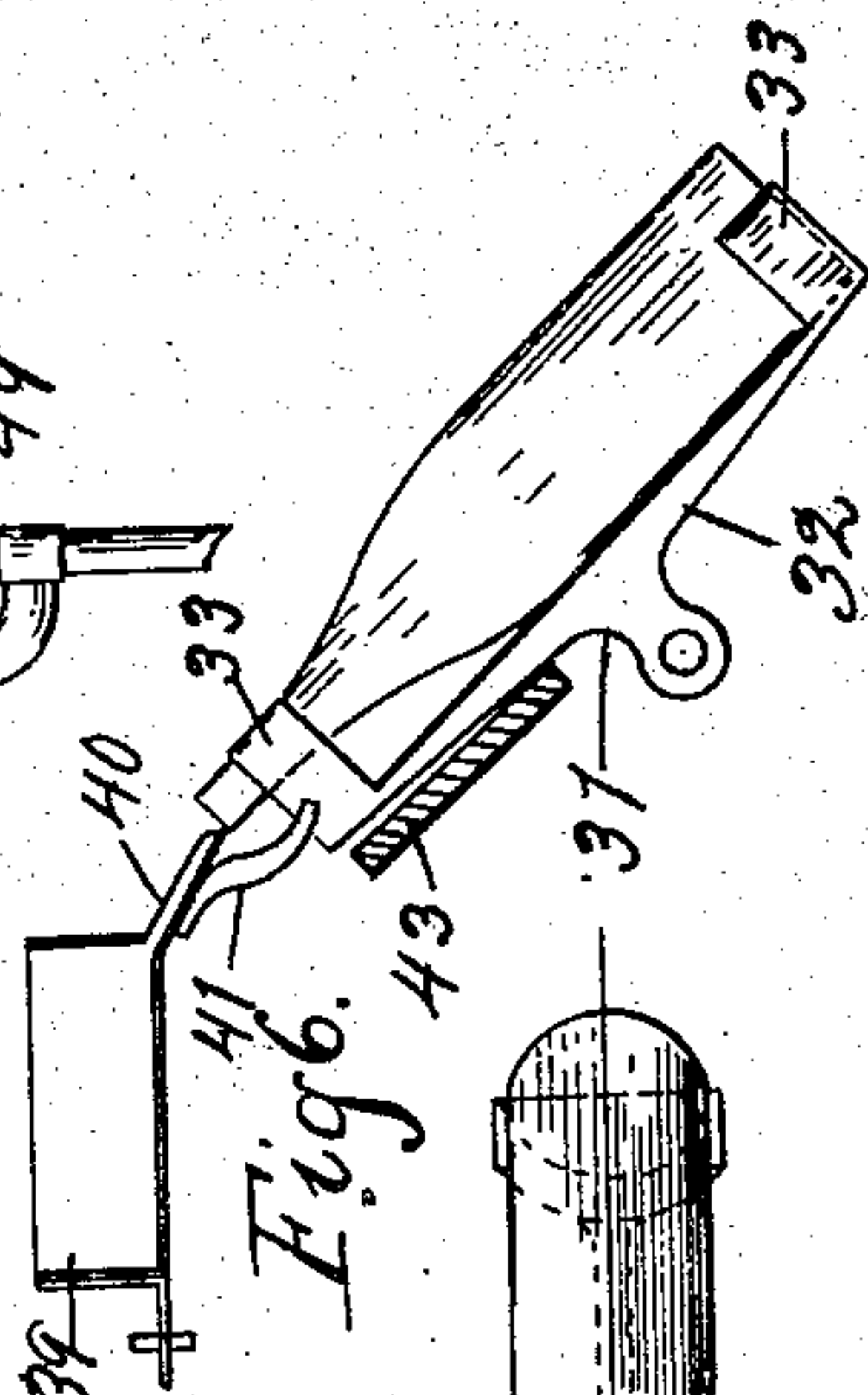


Fig. 6.

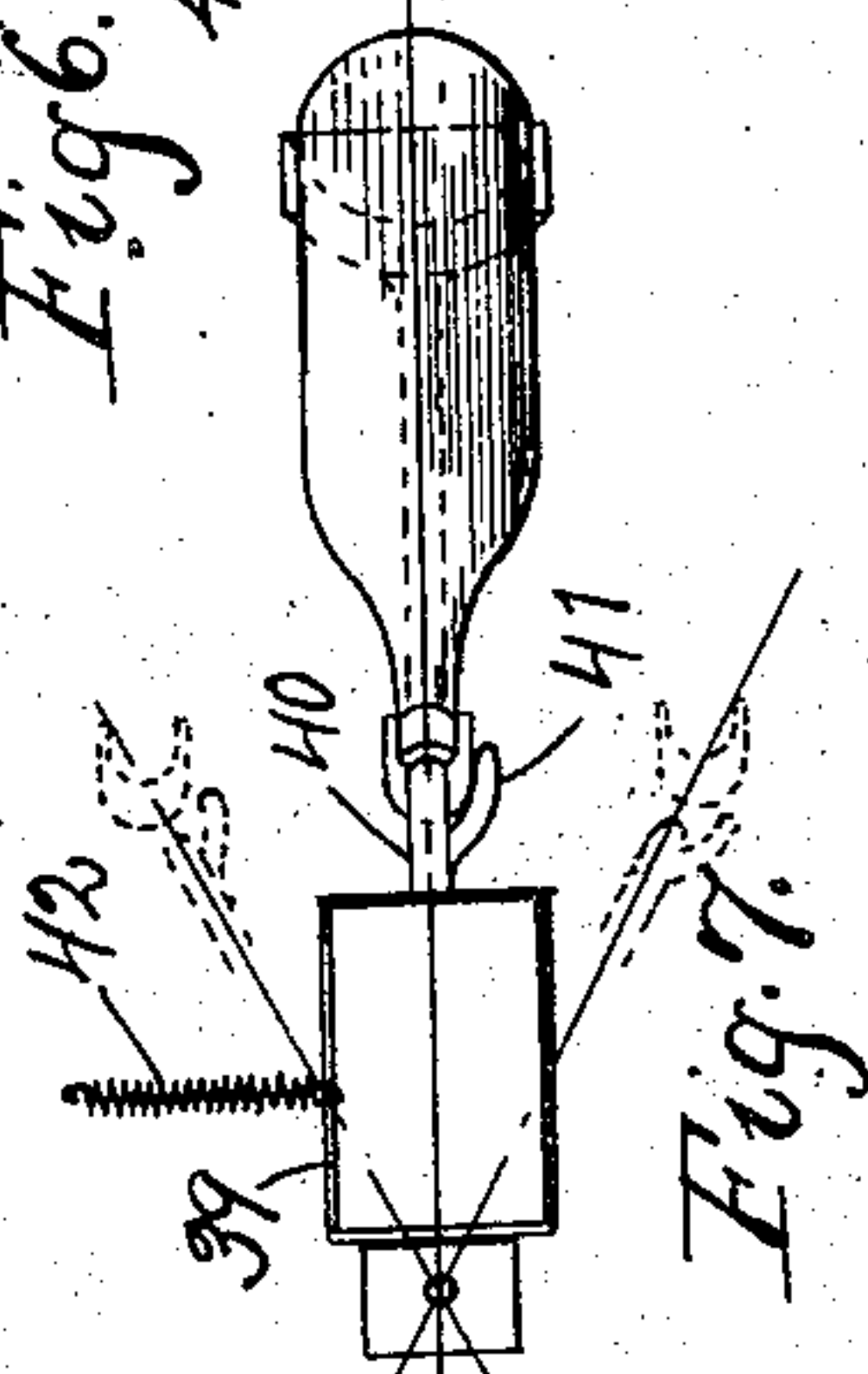


Fig. 7.

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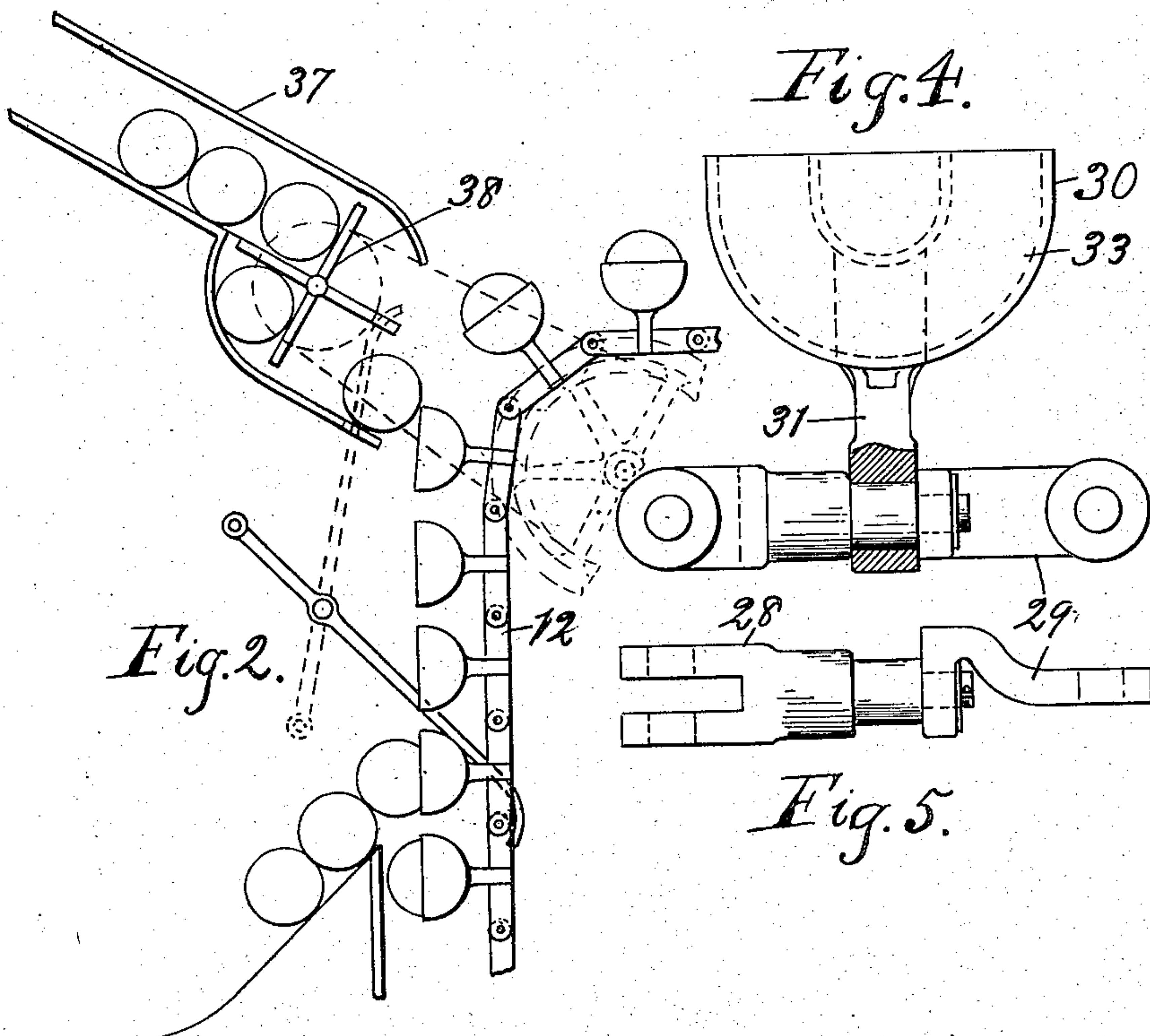
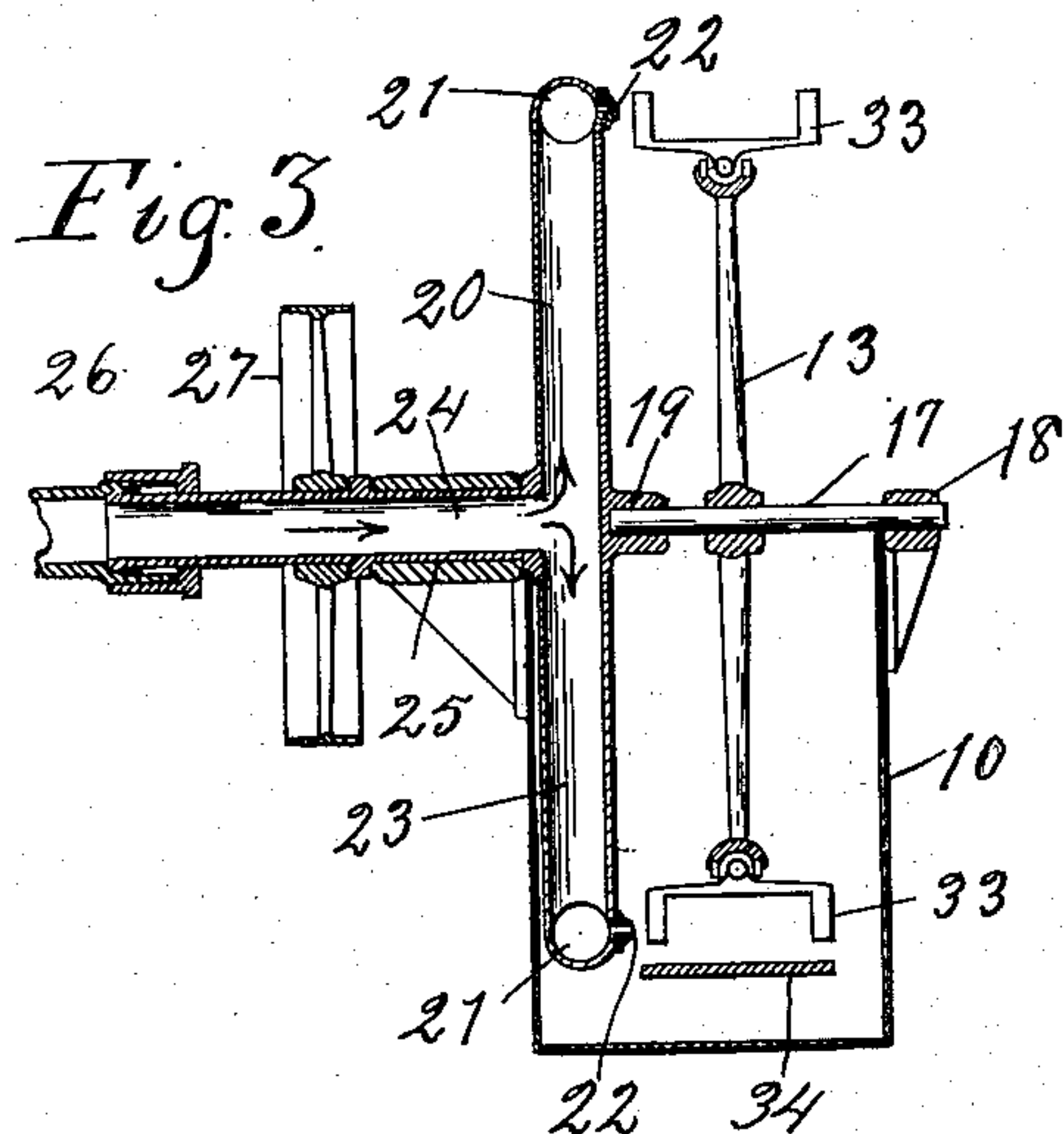
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

WALTER SABIN MCKINNEY, OF CHICAGO, ILLINOIS.

## BOTTLE-WASHING APPARATUS.

No. 861,307.

Specification of Letters Patent.

Patented July 30, 1907.

Application filed May 6, 1905. Serial No. 259,171.

To all whom it may concern:

Be it known that I, WALTER SABIN MCKINNEY, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bottle-Washing Apparatus, of which the following is a specification.

This invention relates to bottle washing apparatus of that general type wherein an endless conveyer carries the bottles through washing and rinsing tanks and then discharges them at a predetermined point.

Among the salient objects of the invention are to provide an apparatus of the character referred to in which the bottles in addition to and during the forward movement of travel, are agitated for the purpose of thoroughly washing the interior thereof; to provide an apparatus in which each bottle during its travel automatically picks up a supply of shot or analogous scrubbing substance and automatically discharges it at a predetermined location during its travel; to provide an apparatus in which the bottles, during their forward movement, are tilted out of their normal position into positions to receive and to discharge the cleaning materials used therein; to provide an apparatus in which the shot is continuously transferred from the place of discharge to the place where it is picked up by the bottles; and in general, to provide an apparatus of the character referred to by means of which the operation of washing bottles is carried on continuously and automatically.

The invention will be readily understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of one embodiment of the invention, with one side of the tank removed; Fig. 2 is an enlarged fragmentary detail of that portion of the apparatus at which the bottles are fed to the conveyer, and as seen from the opposite side to that shown in Fig. 1; Fig. 3 is a transverse sectional view taken on line 3—3, of Fig. 1 with the bottles removed; Fig. 4 is a detail view of one of the links of the conveyer chain and bottle carrier or cradle, with a part thereof shown in section; Fig. 5 is an edge view of said link, showing the swivel construction; Fig. 6 is an enlarged detail view showing one of the bottles in position to receive a supply of shot or other scrubbing substance; Fig. 7 is a top plan view of what is shown in Fig. 6; and Fig. 8 is a detail view showing a bottle and bottle carrier in the position in which it travels along the lower lap of the conveyer upon a guide way.

In the drawings 10 designates a tank divided transversely by a partition 11.

12 designates an endless conveyer chain arranged to travel over the guide wheels 13, 14, 15 and 16, the wheel 13 constituting a drive wheel as well and being considerably larger than the other wheels. Said drive wheel 13 is mounted upon an axle 17 (Fig. 3), one end of

which is supported in a bearing 18 upon the upper edge of the tank 1 and the other end of which is made rigid with the hub-like portion 19 of a hollow spray wheel, designated as a whole 20. Said spray wheel comprises a hollow rim portion 21 provided with a series of spray nozzles 22. Said rim is carried by and communicates with the hollow arms 23 extending radially from the hollow axle 24, rotatably mounted in the bearing member 25 upon the side of the tank 1 directly opposite the bearing 18. The outer end of said hollow axle 24 communicates with a supply pipe 26 which in turn communicates with a source of water supply under pressure. The water is thus forced through the nozzles of said spray wheel at points directly opposite the location of the bottle carriers upon said conveyer chain 12, whereby the bottles are supplied with water and are also sprayed on the outside.

27 designates a drive pulley mounted upon the axle portion 24 and by means of which the spray wheel 20 and the drive wheel 13 are rotated to drive the conveyer chain 12. Each link of the conveyer chain is composed of two pieces 28—29 (see Figs. 4, 5, 6 and 8) coupled together by a swivel connection, and is provided with a bottle carrier or cradle 30 consisting of a stem 31, the body portion 32 and the confining end pieces or clips 33 carried thereby.

34 designates a guide track extending along the lower lap of the conveyer chain, passing down into the tank, up over the partition 11 and down into the opposite side of the tank, and thence upwardly to the point 35 where it meets a chute 36 upon which the bottles are discharged from the carriers or cradles 30. As the conveyer travels along, the bottles engage said guide track 34 from one end to the other, which engagement causes the bottles to be rolled in the bottle carriers or cradles as they pass along the guide track from A until they are discharged at B upon the chute 36.

37 designates a feed chute from which the bottles are fed into the carriers or cradles 30. Said chute 37 is enlarged at its discharge end and provided therein with a rotary turnstile 38 operated by the guide wheel 16 and so timed therewith that a bottle is fed from the chute as each passing cradle upon the conveyer chain comes into position to receive it.

39 designates a receptacle for shot or other scrubbing substance used in cleaning the bottles, said receptacle being pivotally mounted (see Figs. 1 and 7) at its rear side and provided with a spout 40 at its front side. 41 designates a projecting finger mounted upon the front of said spout and adapted to be engaged by the clip 33. Normally a spring 42 holds the receptacle 39 inclined towards the approaching bottles. The spring clip, 33, engaging the finger 41 brings the end of the spout of the shot receptacle into register with the mouth of the bottle carried in the cradle, allowing the shot to run into the bottle. The shot receptacle is swung around on its



pivot by the action of the clip 33 on the finger 41, and the spout continues in register with the mouth of the bottle until the finger is swung out of the path of the carrier. The spring 42, which is attached to the receptacle on the side nearer the wheel 16, then swings the receptacle back to its normal position to be engaged by the next bottle. Thus the shot or other material is fed into the bottles as they are carried successively by on the conveyer.

10 In order to tilt the bottles during their travel for the purpose of receiving and discharging the shot, the upper lap of the conveyer chain and the carriers pass over a guide member 43 (Figs. 1 and 6), by which the bottles and bottle carriers are tilted upwardly, as indicated in Fig. 6, to receive the scrubbing substance from the receptacle 39. At the lower lap of the conveyer the guide track 34 is tilted, as at 44 so as to turn the bottles downwardly, substantially as indicated in Figs. 1 and 8, whereupon the shot is discharged from the bottles and falls upon an inclined guide plank 45 mounted in the tank 1, and run down into a box 46. The guide track 34 is provided at its lower edge along the tilted portion with a spring mounted retaining strip 34', as indicated in Fig. 8, if desired. This prevents any tendency of the bottles and carriers to slip.

47 designates an endless bucket or pocket conveyer which dips down into the box 46 and elevates the shot to the receptacle 39, as clearly shown in Fig. 1.

48 designates a switch lever mounted between the places of feed and discharge and so arranged that it can be swung into the position shown in Fig. 1 to facilitate the discharge of the bottles upon the chute 36, or it can be swung into the position shown in dotted lines in Fig. 2 to stop the feed of the bottles from the feed chute 37.

49 designates a drain pipe for carrying off the water from both sides of the tank 1. It is obvious that the water discharged from the spray wheel into and over the bottles in one side of the tank and being emptied from the bottles into the other side thereof, necessitates a drain to prevent flooding the tank.

The operation of the device is no doubt obvious from the foregoing description, but may be briefly restated as follows: The bottles are fed one at a time from the chute 37 into the carriers or cradles 30 as they pass along over the guide wheel 16, pass along the guide member 43 by which they are tilted upwardly into position to receive a supply of shot from the receptacle 39 through the spout 40, then over the drive wheel 13 opposite the spray nozzles 22 moving therewith, whereupon each bottle is supplied with water. Upon passing down between the guide track 34 at A and the conveyer, the bottles engage the guide track and are rolled over and over in the carriers or cradles, being deflected downwardly at 44 for the purpose of discharging the shot the water being discharged as they rise above the level thereof. At B the bottles are permitted to roll out on to the chute 36 by which they are conveyed to any desired location. As the shot is emptied from the bottles it rolls down the inclined board 45 into the box 46 from which it is continuously conveyed upwardly into the receptacle 39, from which it runs into the bottles as they pass, thus making a continuous operation.

While I have shown and described a preferred embodiment of the invention, it is obvious that modifications and alterations can be made in the details of construction and arrangement without departing from the spirit of the invention and I do not therefore limit the invention to the details here shown and described except in so far as such details are made the subject matter of specific claims.

I claim:

1. In a bottle washing apparatus, the combination with an endless conveyer provided with bottle carriers, a guide track along the course of travel adjacent said conveyer and engaging said bottles as they are carried along, and means for feeding a supply of granular scrubbing material to said bottles during their forward movement. 70
2. In a bottle washing apparatus, an endless conveyer provided with bottle carriers, means for automatically and successively charging the bottles with granular scrubbing material while supported within their carriers and means for agitating said bottles during their forward movement of travel. 75
3. In a bottle washing apparatus, the combination with a conveyer provided with bottle carriers, of means for tilting said bottles towards upright and inverted positions during their forward movement, means for charging said bottles with the granular scrubbing material as the bottles pass in their uptilted position, and a traveling conveyer for transferring said granular scrubbing material from the place of discharge to the place of feeding it to said bottles. 80
4. In a bottle washing apparatus, the combination of a tank, an endless conveyer provided with bottle carriers, a drive wheel for propelling said conveyer, a spray wheel turning with said drive wheel and discharging into said bottles during their travel over said drive wheel, and means for spinning said bottles during their forward movement of travel. 85
5. In a bottle washing apparatus, the combination of a tank, an endless conveyer provided with bottle carriers, a drive wheel for propelling said conveyer, a spray wheel turning with said drive wheel and discharging into said bottles during their travel over said drive wheel, a guide track for tilting said bottles during their forward movement into upright and inverted positions, means for feeding a granular scrubbing material to said bottles while passing in the upright position, and means for spinning said bottles as they move forward in their travel. 90
6. A bottle washing apparatus comprising in combination, a tank, an endless conveyer provided with bottle carriers or cradles, means for feeding the bottles one at a time to said carriers, means for discharging said bottles one at a time from said carriers, a spray wheel for supplying a fluid to said bottles during their movement, means for supplying a granular material to said bottles during their travel, means for tilting said bottles to discharge said scrubbing substance, and means for spinning each bottle during its movement of travel. 95
7. In a bottle washing apparatus, the combination with a tank, of an endless conveyer provided with bottle carriers, a spray wheel connected with a supply of fluid and discharging into said bottles during their forward movement, a guide track adjacent said conveyer and engaging said bottles to cause the latter to rotate during their forward movement, said guide track being tilted in a portion of its length to tilt said bottles, means for feeding a granular scrubbing material to said bottles, and means for receiving the discharged scrubbing substance and conveying it back to the feeding mechanism, substantially as described. 100
8. In a bottle washing apparatus, the combination of a tank provided with an inclined bottom terminating in a box-like portion, an endless conveyer provided with bottle carriers, a receptacle for a granular scrubbing material discharging into said bottles as they pass, means for tilting said bottles to discharge said shot onto said inclined tank bottom, and an endless conveyer between said box-like portion and said receptacle for continuously conveying said scrubbing substance back to said receptacle. 105
9. In a bottle washing apparatus, the combination of an endless conveyer provided with bottle carriers arranged to support the bottles transversely upon the conveyer, a wheel about which said conveyer is arranged to travel, a 110



5 spray wheel arranged concentrically with the conveyer wheel and provided with a series of discharge openings discharging into the bottles carried by said conveyer, and means for tilting said bottles during their travel with the conveyer.

10 10. In a bottle washing apparatus, the combination of an endless conveyer provided with a series of bottle carriers connected to oscillate relatively to the carrier belt, supporting wheels upon which said conveyer travels and means for driving one of said supporting wheels, a spraying device arranged to deliver liquid into and over said bottles during their travel upon the conveyer, and a guide arranged contiguous to the conveyer and engaging the carriers to tilt the latter as they pass.

15 11. In a bottle washing apparatus, the combination of

a conveyer provided with a series of bottle carriers, means for supporting and actuating said carriers, and means for successively charging the bottles during their travel upon the conveyer comprising a receptacle, a spout forming a delivery for said receptacle and located adjacent to the conveyer, a member connected with the spout and adapted to be engaged by a part moving with a bottle, to hold the spout in register with the neck of the bottle, and means holding said spout yieldingly and affording a limited movement of the spout with the conveyer. 20

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