

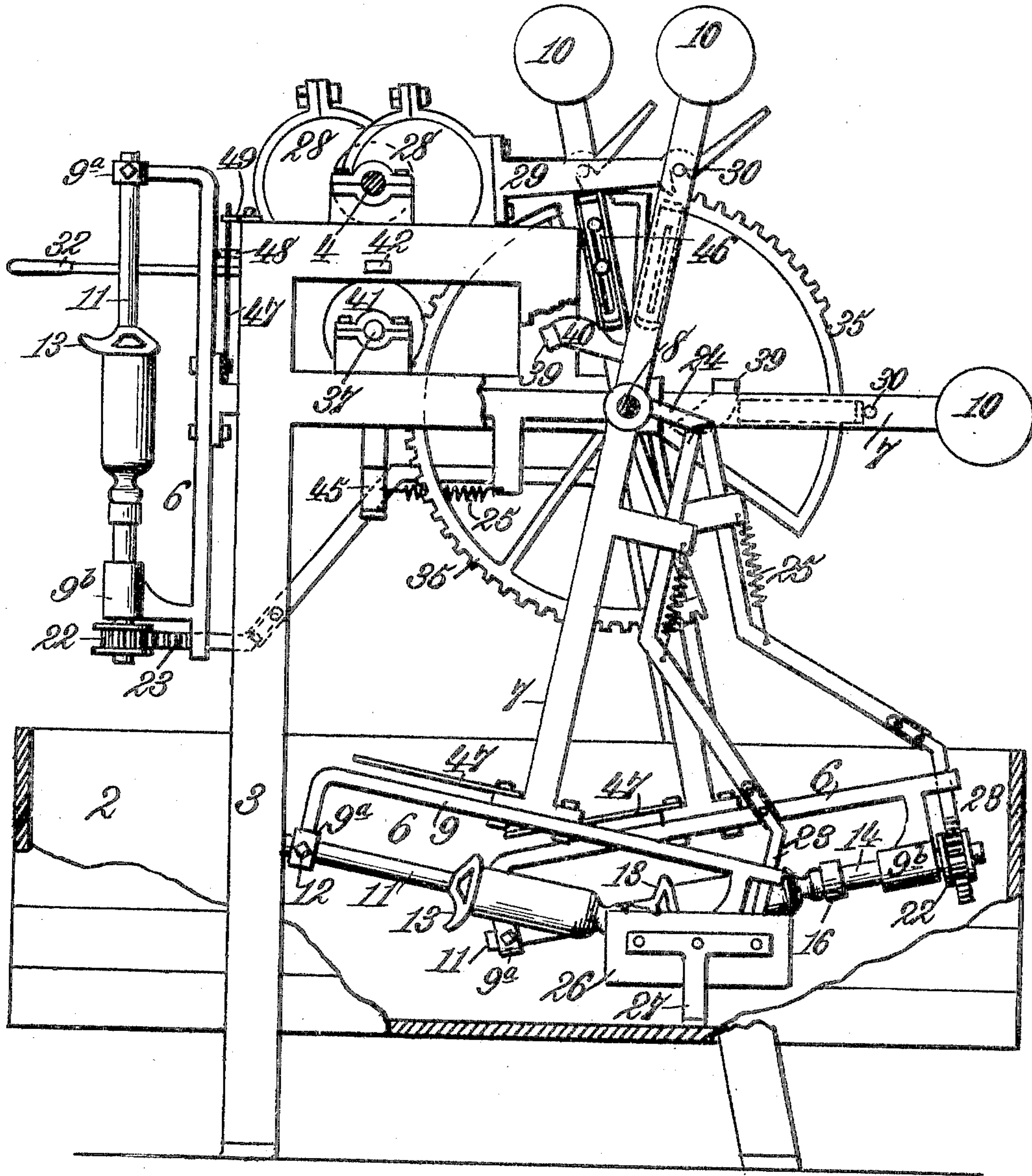
No. 797,782.

PATENTED AUG. 22, 1905.

L. C. SEARS.  
BOTTLE CLEANING MACHINE.  
APPLICATION FILED JAN. 12, 1905.

4 SHEETS—SHEET 1.

*Fig. 1.*



Witnesses.  
*Robert Everett.*  
*James L. Morris, Jr.*

Inventor.  
*Leonard C. Sears.*  
*By James L. Norris.*  
*Att'y.*

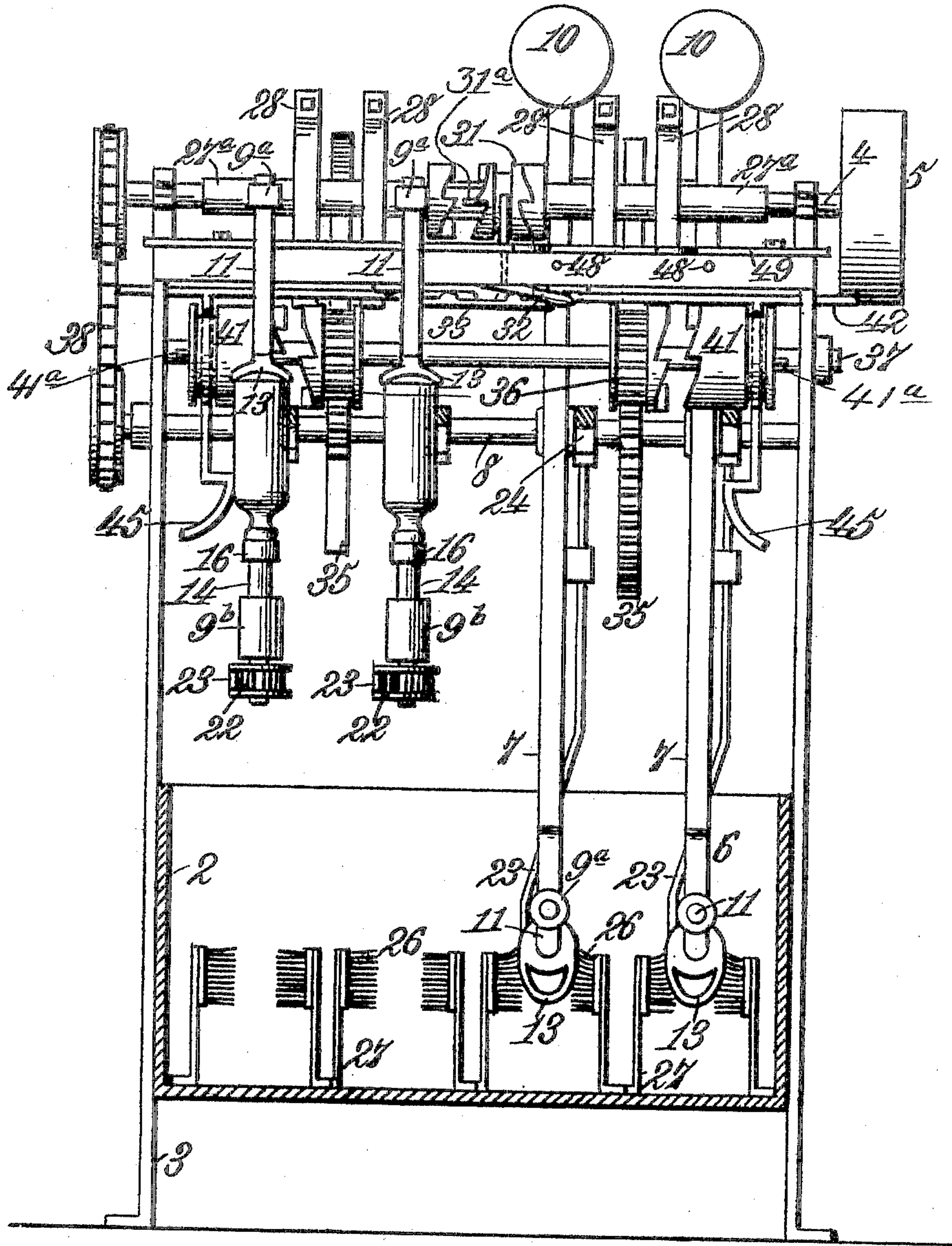
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4 SHEETS—SHEET 2.

*Fig. 2.*



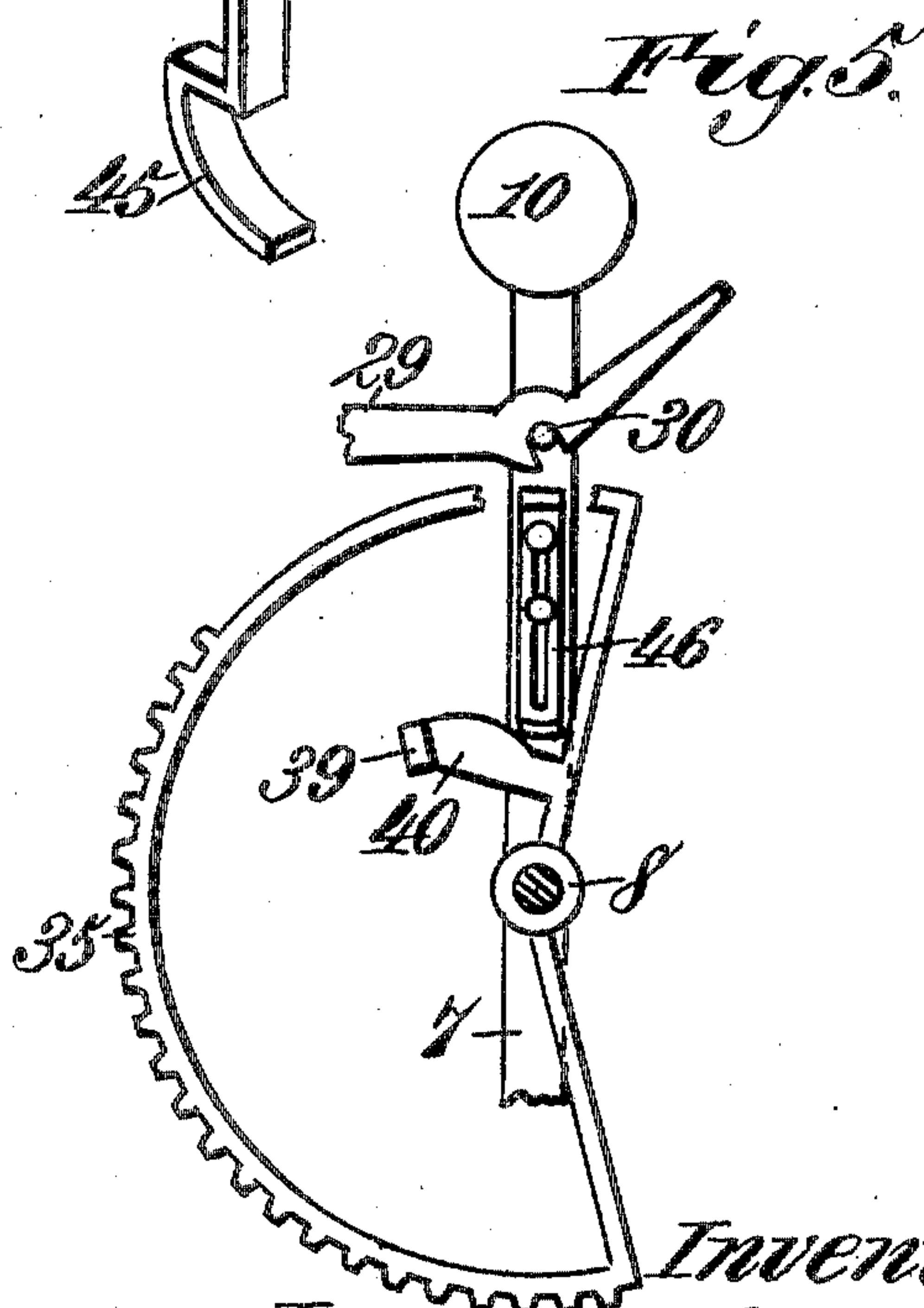
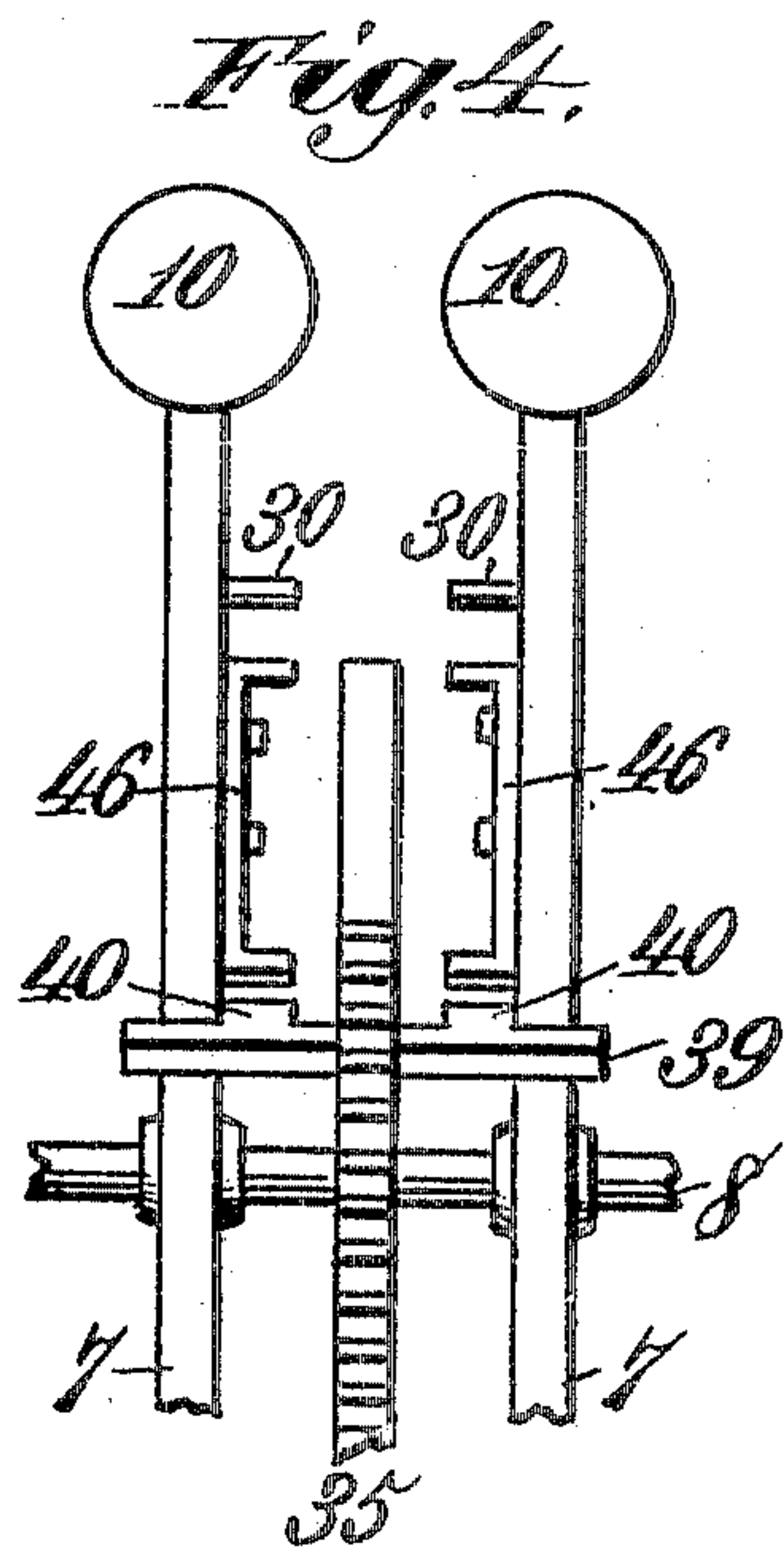
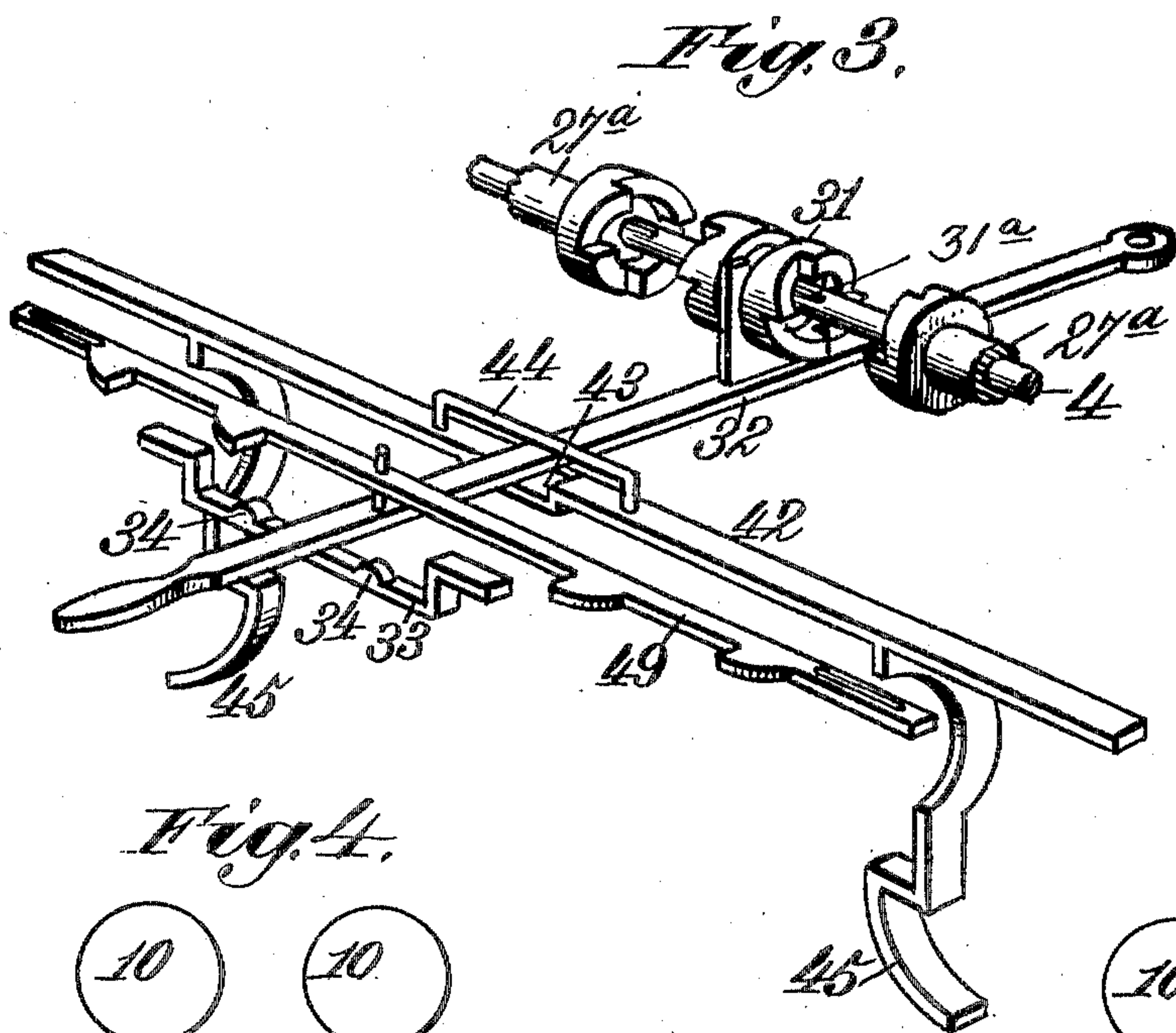
Witnesses.  
*Robert Emmett,*  
*James L. Morris, Jr.*

Inventor.  
*Leonard C. Sears,*  
By *James L. Morris,*  
*Att'y.*



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4 SHEETS—SHEET 3.



Witnesses,  
Robert Everett,  
James L. Morris, Jr.

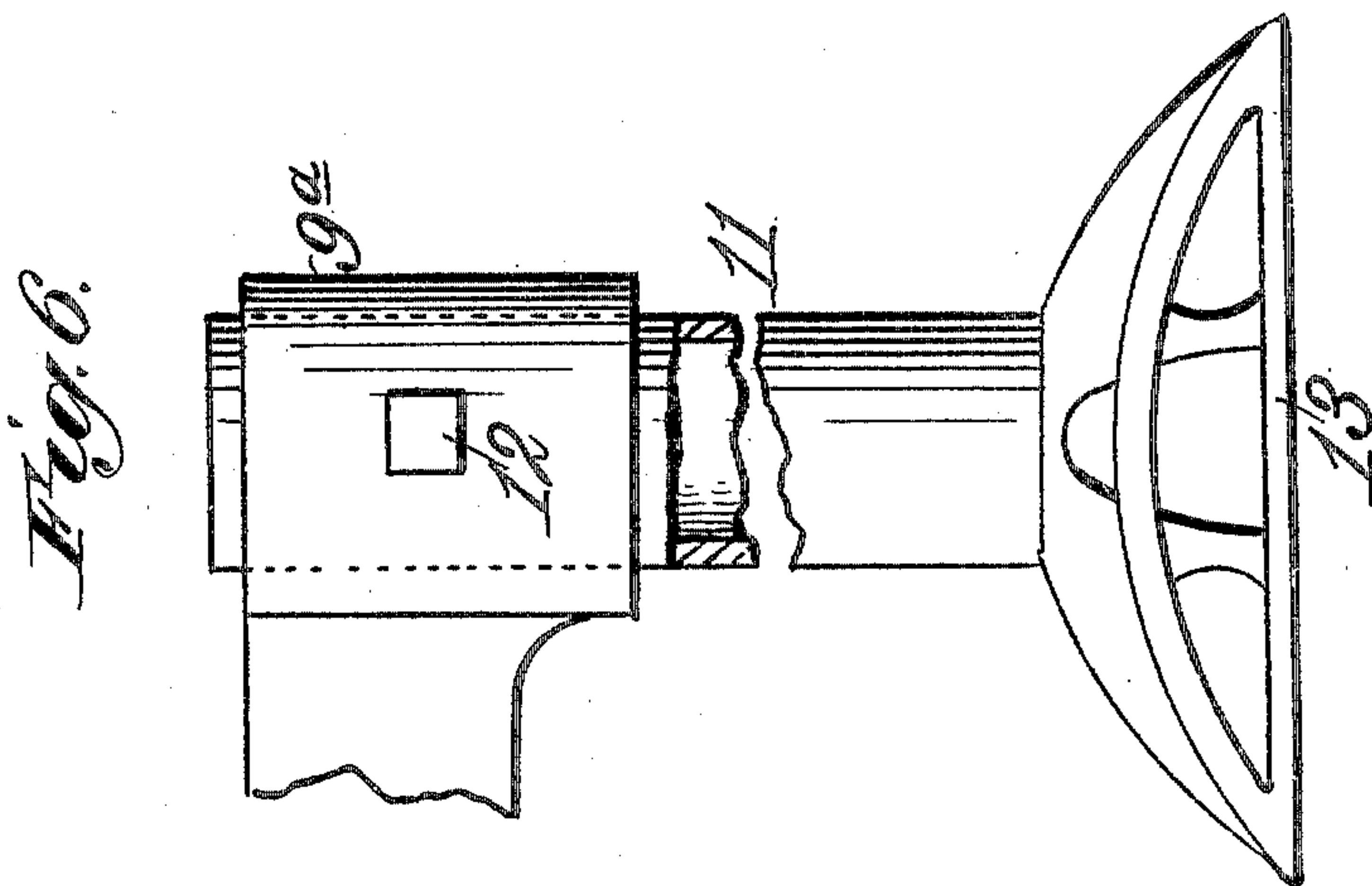
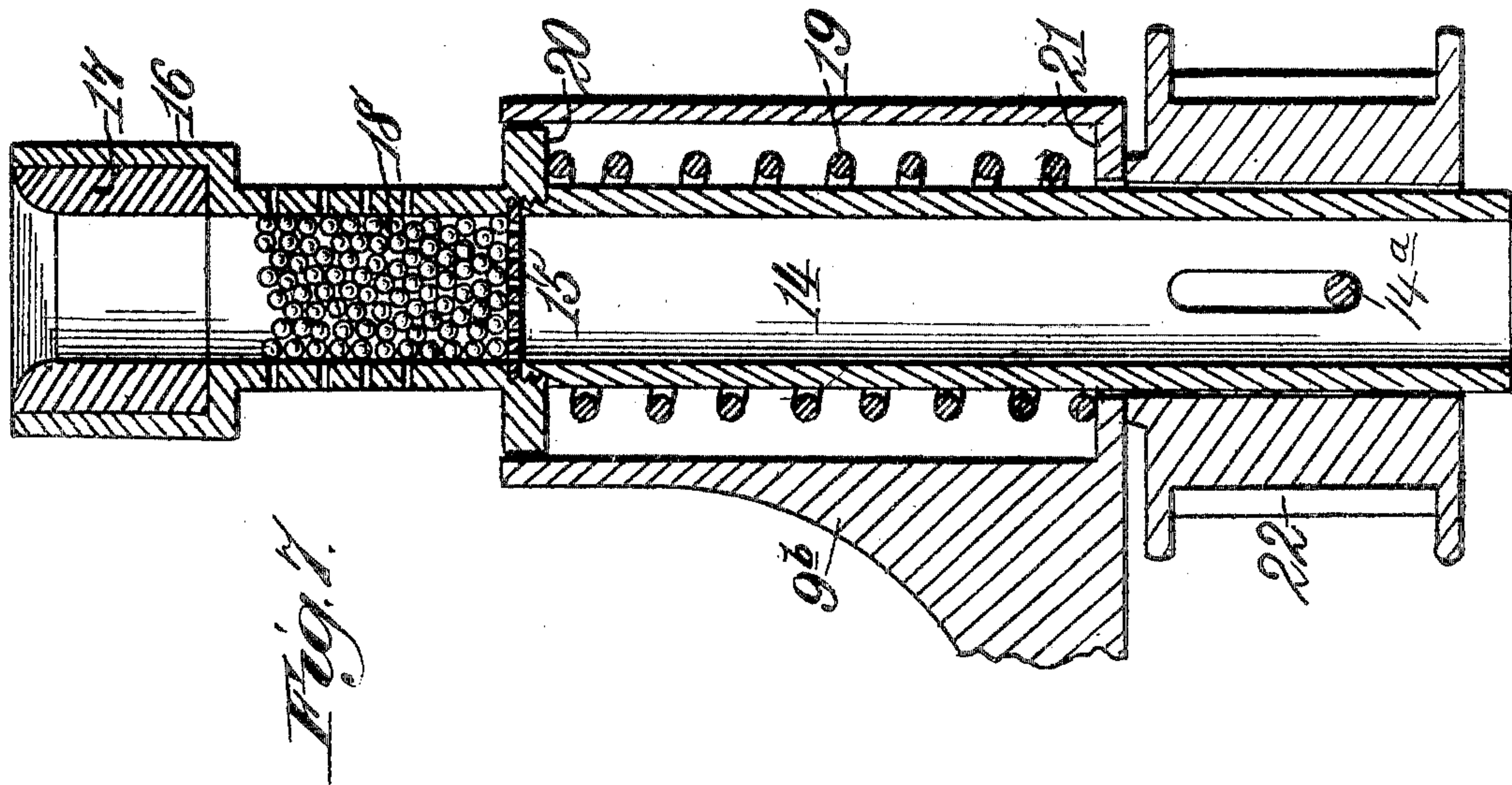
Inventor,  
Leonard C. Sears.  
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4 SHEETS—SHEET 4.



Witnesses,  
Robert Everett,  
James L. Norris, Jr.

Inventor,  
Leonard C. Sears,  
By James L. Norris,  
Att'y.



# UNITED STATES PATENT OFFICE.

LEONARD C. SEARS, OF ONAWA, IOWA.

## BOTTLE-CLEANING MACHINE.

No. 797,782.

Specification of Letters Patent.

Patented Aug. 22, 1905.

Application filed January 12, 1905. Serial No. 240,786.

*To all whom it may concern:*

Be it known that I, LEONARD C. SEARS, a citizen of the United States, residing at Onawa, in the county of Monona and State of Iowa, have invented new and useful Improvements in Bottle-Cleaning Machines, of which the following is a specification.

This invention relates to bottle-cleaning machines. This title is employed simply as a convenient one, for it will be evident that as the purpose of the invention is explained a machine involving said invention can be advantageously employed for cleaning other articles.

I have selected for illustration in the drawings accompanying and forming a part of this specification a simple organization of parts which is represented as involving my invention, and I will fully describe the same hereinafter; but I do not limit myself to the disclosure thus made, for certain variations may be adopted within the scope of my claims.

In Letters Patent No. 780,236, granted to me January 17, 1905, is covered a machine for cleaning bottles. The machine embodied in the present case is in the nature of an improvement upon that embraced by said Letters Patent, and the improved features will be hereinafter particularly described. One of them is in lifting the bottle-carriers by power instead of by hand, as in the patented machine.

The present machine is simple in construction, compact, and comprises as few parts as possible to secure the desired results.

As stated in the specification of the Letters Patent hereinbefore mentioned, it is essential that for sanitary and other reasons the interiors of certain kinds of bottles—for example, those that are to contain carbonated liquors, milk, or other beverages—should be thoroughly scoured. The machine hereinafter described accomplishes this result in a thorough manner and also, like the patented machine, cleans the exteriors of the bottles.

In the drawings, Figure 1 is a side elevation of the machine with certain parts in section and broken away. Fig. 2 is a front elevation of said machine, the water-receptacle being in section. Fig. 3 is a detail view of certain clutch-shipping mechanism and associated parts hereinafter more particularly described. Fig. 4 is an elevation of the upper portions of two bottle-carriers, elevating means therefor, and certain adjunctive devices. Fig. 5 is a side view of certain of the

parts represented in the preceding figure, both of them being on an enlarged scale. Fig. 6 is a detail view of a seat for the bottom of a bottle and a part of a carrier. Fig. 7 is also a detail view in section of the seat for the neck of the bottle and certain coöperating parts, both seats being supported by and forming a part of a bottle-carrier.

Like characters refer to like parts throughout the different views.

The bottle-cleaning machine represented in the drawings includes the use of a tank, vat, or other suitable receptacle, as 2, for holding water. The water-containing receptacle is illustrated as supported by a framework (denoted in a general way by 3) and which also supports the operative parts of the apparatus. The receptacle or tank is adapted to contain the water employed in conjunction with the shotting and scrubbing means hereinafter described for cleaning interiorly and exteriorly the bottles, which bottles during the cleaning operation are caused to move back and forth in the water through the agency of suitable mechanism hereinafter described. As will be understood, the bottles are interiorly cleaned by shot which traverse the interiors thereof. At this point I wish to state that I use the term "shot" in a generic sense to include equivalent articles, for the interior cleaning agent need not necessarily be shot, as it may be steel disks or their equivalents, which traverse the insides of the bottles at a high velocity on the motion of the carriers to thereby thoroughly remove all objectionable substances adhering to the interiors thereof.

Supported by suitable bearings upon the upper side of the framework 2 is a main shaft 4, which may be operated in any desirable way—for example, either by hand or by power. I illustrate means, however, for operating the said main shaft by power, it being shown as equipped for this purpose at one end with a driving member, as 5, illustrated as a pulley adapted to be belted to a suitable motor. (Not illustrated.) As will be understood, a bottle while being cleaned is interiorly shotted and exteriorly scrubbed, being supported for this purpose by a suitable carrier, and the machine may be equipped with any desirable number of these carriers. In fact, one of them may be employed; but I prefer for obvious reasons to employ several of said carriers—for example, four—they being arranged, as will hereinafter appear, for alternate operation—that is, two will be rocked



back and forth, while the other two will be elevated, so as to permit the water in the bottles supported thereby to drain therefrom. The carriers are each designated in a general way by 6, and as they are all of the same construction a detailed description of one will answer for the others.

A carrier 6 involves in its make-up an elongated shank or bar 7, freely supported for oscillation between its ends upon a shaft 8, extending across the machine below and to the rear of the main shaft 4. It will be understood that all the carriers are adapted to swing on the shaft 8. The lower end of the shank or bar 7 is connected substantially centrally to the body or cross-bar of a yoke, as 9, the connection between these two parts being of any desirable character. The upper end of said shank or bar is equipped with a balance-weight 10. The arms or branches of the yoke 9 terminate in hubs designated, respectively, by 9<sup>a</sup> and 9<sup>b</sup>. The hub 9<sup>a</sup>, which is at the front of the yoke when the same is immersed in the water, receives the elongated stem 11, longitudinally adjustable and held in adjusted relation by a set-screw 12, carried by said hub 9<sup>a</sup> and adapted to bind against the stem 11. The inner end of the stem is provided with a seat 13 for the bottom of a bottle, said seat being of skeleton or open-work form in order to provide for the passage of water through the openings therein to reach the bottom of the bottle as the latter is moved back and forth through the water in the receptacle 2, said stem being tubular to aid in such result.

It will be understood that the bottom of the bottle fits solidly within the seat 13 when held by a carrier.

The hub 9<sup>b</sup> receives for turning movement the tube 14, represented as consisting of two sections in threaded engagement with each other, a perforated disk 15 being fitted within the two-part tube and held in place by reason of the threaded engagement between them. The forward or inner section of the two-part tube 14 is enlarged or expanded, as at 16, and between said enlarged or expanded portion and the hub 9<sup>b</sup> the said front tube-section is circumferentially perforated, there being a large number of these perforations. Within the forward section of the two-part tube 14 is fitted a rubber gasket 17 of circular form, the internal diameter of which substantially agrees with that of the forward section of the tube 14 and the tapered front end of which is adapted to receive the neck of a bottle at the mouth thereof. Within the forward or shot-receiving section of the tube 14 are "shot," as 18, which term, as hereinbefore indicated, is employed to cover devices other than those of globular form.

Within the hub 9<sup>b</sup> is a coiled push-spring 19, bearing at one end against an annular circumferential shoulder 20 on the tube 14 and

at its opposite end against an inwardly-extending annular shoulder 21 of the said hub 9<sup>b</sup>. The spring 19 therefore thrusts the bottle-neck-receiving portion of the tube 14 toward the bottle-bottom seat 13 in order to hold the bottle in place in a yieldable manner. It will be apparent that by pressing the enlarged head 16 of the tube toward the hub 9<sup>b</sup> the neck of a bottle can be readily introduced into the flared portion of the gasket 17 or removed therefrom.

To clean a bottle, the neck thereof is inserted into the gasket 17, and the bottom is subsequently put into the skeleton seat 13. In removing the bottle it will be pulled out of the skeleton seat, following which the neck can be taken out of said gasket. It will be understood that the carriers or hangers 6 rock to carry the bottles supported thereby through the water in the receptacle, and this motion is a relatively rapid one, and during the same the shot 18 from the forward section of the tube 14 enter the bottle and then leave the same to return to the tube, the forward end of which, as will be understood, is open. During the motion of the carrier through the water such water can enter the interior of the bottle by way of the perforations in the forward part of the tube 14, through said tube 14 and perforated diaphragm 15.

During the shotting of the bottle I subject the same to a turning motion, the same being in the present case, as in the Letters Patent hereinbefore referred to, a step-by-step one, in order to effectually clean every part of the bottle. In addition to this I exteriorly scrub the bottle, and by virtue of the turning motion thereof every part of the outside of the bottle will be effectually and thoroughly cleaned, this applying not only to the body of the bottle but to the neck and also to any imprinted matter thereon.

When two carriers are in action or being oscillated, two other carriers will be out of action or will occupy in the present case a horizontal position, so that the bottles supported thereby will assume a vertical and inverted position in order to permit any water that may be therein to flow out of said bottles, and the means for operating the carriers and for throwing them out of action and for positively elevating the two that are out of action to permit the drainage of their bottles and the passage of the water from the latter into the tank will be hereinafter described.

As hereinbefore set forth, I subject the bottle while being shot to turning motion, so as to bring every part thereof under the action of brush mechanism and so, also, as to effectually clean every part of the bottle interiorly thereof, and this turning of the bottle is in the present case secured by rotating the tube 14, which carries a seat for the bottle neck or top, said seat being illustrated as the



rubber gasket 17, which has a non-rotative connection with the tube, for example, by being fitted tightly or snugly within the enlarged head of said tube.

Non-rotatively carried by the outer end of said tube 14 is a ratchet-wheel 22, with which the lower end of a rod, as 23, coöperates, said lower end being adapted to engage the teeth of the ratchet-wheel to thereby impart a step-by-step motion thereto and constituting for this purpose, in effect, a pawl. I have shown a pin 14<sup>a</sup> on the tube 14, extending into a longitudinal slot 22<sup>a</sup> in the ratchet-wheel, so that when the ratchet-wheel is turned the tube will be also turned. The way in which I have pinned the ratchet-wheel to the tube will permit longitudinal movement of the latter with respect to the wheel. The rod 23 is guided by suitable means on the shank 7 and yoke 9, respectively, and is given a longitudinal movement by engaging against a fixed abutment, as 24. The abutment 24 moves the rod 23 in opposition to a coiled spring, as 25, connected with said rod and with the hanger.

As a bottle is moved back and forth through the water in the receptacle 2 it passes between a pair of brushes, as 26, the bodies of which are connected with upright arms, as 27, rising from the bottom of the receptacle 2 and suitably secured thereto. Each brush device therefore comprises a pair of brushes, between which the bottle is projected on the motion of its carrier 6. The arms 27 are resilient, they being made of some springy material for this purpose, so that not only do I provide for each brush device adjustability with respect to the bottle, but also cause the bristles of the brushes to press firmly against the outer side of the bottle, whereby every part thereof will be cleaned, this being particularly advantageous where the bottles have characters blown therein.

As a carrier oscillates, the upper end of the pawl-rod 23 carried thereby will strike a co-operating fixed abutment 24, so as to impart a longitudinal movement to said rod and cause the turning of the ratchet-wheel 22. On the return motion of the carrier the spring 25 will return the said pawl-rod to its original position, so that the lower end thereof can engage behind another tooth of the ratchet. During the return of the pawl-rod to its original position the lower end thereof will ride idly over the teeth of the ratchet-wheel without rotating the latter, substantially in a manner disclosed in full in the Letters Patent hereinbefore referred to. The brushes 26 are so set that the initial turning motion of the bottle occurs when it enters between the same, and as the bottle turns the bristles of the brushes will penetrate the indented portion of the neck of the bottle and around the lettering on said bottle, if there be any.

The main shaft 4 is illustrated as loosely

carrying two sleeves, designated each by 27<sup>a</sup> and each carrying rigidly two eccentrics set oppositely to each other and each designated by 28. Pitmen (each denoted by 29) are adapted to transmit the motion of the eccentrics 28 to the carriers 6, the upper branches of said carriers having pins, as 30, to enter apertures in the respective pitmen, in order to operatively connect the latter and the carriers. The sleeves 27<sup>a</sup> are arranged for alternate action—that is, they will be alternately thrown into working relation with the main shaft 4—and when one sleeve is in operation two carriers will be driven thereby through the intervention of the eccentrics 28 and pitmen 29, the latter at this time being connected with the pins 30 in order to oscillate or rock two of the carriers or hangers.

To alternately operate the eccentrics 28, I illustrate a clutch device 31, said clutch device being in the nature of a double one and being feathered on or splined to the main shaft 4, the feather or spline being denoted by 31<sup>a</sup>, from which it will be understood that when the main shaft is turned by the pulley 5 the clutch device 31 will be also turned. When, therefore, the latter is engaged with a sleeve 27<sup>a</sup>, the latter will be operated. The adjacent faces of the two sleeves between which the clutch device 31 operates are provided with teeth which are adapted to alternately mesh with teeth on the opposite faces of the clutch device.

The shifter for the clutch device is denoted by 32, and it is represented as consisting of a lever arranged for horizontal motion and fulcrumed upon a suitable bearing upon the framework of the machine. The lever near its forward end extends through a loop 33 on the framework, and the body of this loop has on its upper side the cams 34, which are adapted to elevate the lever for a reason hereinafter described, and the pivot of the lever being for this purpose a loose one. The lever between its fulcrum and handle is provided with the customary fork or equivalent means to enter a peripheral channel in the clutch device 31. It will be assumed that the clutch device 31 is in engagement with the sleeve 27<sup>a</sup> on the left, so that the two pitmen 29 coöperative with said sleeve will be given a back-and-forth motion in order to oscillate the two corresponding carriers 6, provided the carriers and pitmen be connected. When the clutch member is moved from out of engagement with the sleeve on the left and moved into engagement with the sleeve on the right, the carriers on the latter side will be operated should they be engaged with their corresponding pitmen, while the carriers on the left will be thrown out of action or stopped, so that they can be elevated into what I have described as a horizontal position to secure the drainage of the bottles thereon. When the clutch device is in an in-



intermediate position, as shown in Fig. 3, neither of the sleeves 27<sup>a</sup> will be operated. I have described the eccentrics 28 as oppositely set, so that when two of them drive through the intermediate coupled connections—two carriers—the latter will move in opposite directions.

Upon the shaft 8 are loosely carried gear devices, as 35, illustrated as segments which are adapted to mesh with cooperating gear devices 36, loosely carried by the shaft 37, located below the main shaft 4 and illustrated as driven therefrom—for example, by means of sprocket-gearing, (denoted in a general way by 38.) The segments 35 serve to elevate the carriers 6 to a horizontal position, each segment being adapted to operate simultaneously through the agency of suitable means on two of the carriers. Each segment is indicated as having a cross-bar 39 connected therewith by a shank, as 40, the cross-bar and shank presenting a structure that is substantially of T form and each cross-bar when its cooperating segment is operated being adapted to engage two carriers to move the same from an approximately upright position to a horizontal position.

The pinions 36 run loose on the continuously-driven shaft 37, but are adapted to be alternately coupled thereto by the intervention of clutch devices, each designated by 41 and feathered on or splined to said shaft 37, and consequently rotative therewith. The feathers or splines for these clutch devices are each designated by 41<sup>a</sup>. One clutch device is adapted to engage one pinion, while the other clutch device is adapted to engage the other pinion. When, therefore, a clutch device 41 is engaged with a pinion 36, the two parts having meshing teeth for this purpose, the said pinion will be rotated and will serve to operate the segment 35, in the present case, in an upward and forward direction, so that the cross-bar 39 on said segment can engage two carriers to move the same from their normal to a horizontal position, during which motion the carriers will be disconnected from their cooperating pitmen 29, as will hereinafter more particularly appear.

The clutch devices 41 have a common shifter, which I will denote by 42, and which is illustrated as being of substantially yoke form and as suitably guided for motion laterally of the machine by the framework thereof. The branches of this shifter or yoke 42 have pins to enter peripheral grooves of the two clutch devices 41 to simultaneously operate the same as the said shifter 42 is moved laterally of the machine. The shifter 42 is operated by the shifter or lever 32 and may be also, as will hereinafter appear, operated independently of said lever. For the purpose of securing the operation of the yoke-shaped shifter by the shifter-lever 32 the former has a notch,

as 43, to receive the latter, and is further equipped with a loop, as 44, through which the lever passes to properly guide the latter, both the notch and loop being located substantially centrally of the body portion of the yoke.

The side branches of the yoke or shifter 42 have cams, as 45, adapted to be engaged by the outermost carriers when the same are elevated or moved to a horizontal position to effect the drainage of the bottles thereon in order to impart a motion to said part 42 in a direction to move simultaneously both clutch devices 41 longitudinally of their supporting-shaft. The reason for this will hereinafter appear.

It will be assumed that two of the carriers 6 are up, or as occupying a horizontal position, and that the other two of them are down and occupying substantially upright positions, as indicated in Figs. 1 and 2; that the shafts 4 and 37 are in operation, and that the several clutch devices 41 are out of engagement with the cooperating pinions 36, and, further, that the clutch device 31 on the main shaft 4 is in its intermediate position. It will be understood that as the two carriers 6 on the left in Fig. 2 were elevated the outer one of them struck the adjacent cam 45 to impart a longitudinal movement to the yoke-formed shifter 42 to thereby move it and the clutch devices 41 into the position shown in said Fig. 2 and with both clutch devices 41 out of engagement with the cooperating pinions. To start the two carriers 6 that are down, the lever 32 will be swung toward the left in Fig. 2, so as to move the clutch device 31 into engagement with the sleeve 27<sup>a</sup> on the left, whereby the two carriers on the left will be operated through the intermediate connections, it being understood, of course, that the pitmen 29, which cooperate with said carriers on the left, are in engagement with the pins 30. To stop the carriers on the left, the lever 32 will be swung toward the right to move the clutch device 31 out of engagement with the sleeve 27<sup>a</sup> on the left, and when this is accomplished the lever will be pressed into the notch 43, so that as the lever continues to swing the yoke-form shifter 42 can be moved with the lever to carry the clutch device 41 on the left into engagement with the cooperating pinion 36, whereby the latter will be rotated to operate the segment 35, which meshes therewith, and cause the elevation of the corresponding two carriers. When the clutch device 41 just mentioned is in engagement with the pinion, the lever will ride against the cam 34 on the right, so as to cause the elevation of said lever out of the notch 43—that is to say, the lever and yoke will be positively disconnected, so that as the lever swings to carry the clutch device 31 into engagement with the sleeve 27<sup>a</sup> on the right the yoke will not move with the



lever during the final part of the stroke of the latter. In the opposite movement of the lever the conditions will be reversed. During the initial part of the motion of the lever toward the right in Fig. 1 it operates a device hereinafter described for effecting the release of the two carriers on the right, which were originally upheld, so that they can drop to carry bottles which have been applied thereto into the water. As soon as the said two carriers on the right have dropped and as soon as the clutch device 31 engages the sleeve 27<sup>a</sup> on the right the last-mentioned carriers will be vibrated back and forth to project the bottles therein through the water in the tank 2. The carriers 6 are provided near their upper ends with knock-off devices, as 46, shown as plates slidable longitudinally thereon and the upper ends of which are adapted to strike the under sides of the pitmen 29 to positively disconnect the pitmen from the pins. Just prior to the time that a cross-bar 39 engages two of the segments 35 the cam-face of the shank of said cross-bar will engage two knock-off devices or sliding plates 46 to impart an upward thrust to the same to disconnect the two pitmen from the pins on the carriers, so that the latter can be freely elevated. It will be understood that the two carriers on the left are elevated by the engagement of the clutch device 41 on the left with the corresponding pinion 36 in the manner hereinbefore described. As said two carriers are elevated the outer one will strike against the effective face of the adjacent cam 45 and will move said cam laterally, so as to impart a longitudinal movement to the yoke 42 to carry the same in the present case toward the left in Fig. 1, and consequently to disengage the clutch device 41 on said left side of the machine from the adjacent pinion. This will release the pinion, and hence the coöperating toothed sector 35, so that the latter can drop to its original position.

When the two carriers are swung up, spring-latches, as 47, carried upon the yokes 9 of the carriers 6, will engage fixed pins or keepers, as 48, on the forward side of the framework. When two of the carriers are up or assume horizontal positions, the bottles carried thereby can be drained and when drained will be removed from the carriers and dirty bottles put in their stead. Upon the framework is a slide, as 49, operable by the handle lever and serving to actuate the two pairs of spring-latches 47 in alternation. When the lever 32 was moved toward the right to cause the elevation of the two carriers on the left in the manner hereinbefore described, said lever operated the slide 49 in a corresponding direction, so that the said slide engaged the spring-latches 47 on the right to cause the latter to be sprung off the pins 48, and consequently to

release the two carriers 6 on the right, whereby the latter can drop.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine of the class described, a rotative shaft, oscillatory carriers having bottle and shot carrying means, connections between the shaft and the carriers for operating the carriers in alternation, the latter being separable from said connections, and independent mechanism operable by the shaft for elevating the carriers when not in operation.

2. In a machine of the class described, oscillatory bottle-carriers, and power-driven mechanism for operating the carriers in alternation and for lifting a carrier not in operation.

3. In a machine of the class described, oscillatory bottle-carriers, power-driven mechanism for operating the carriers in alternation and for lifting a carrier not in operation, and spring-latches on the carriers, the framework of the machine having keepers for engagement by the spring-latches when the carriers are lifted.

4. In a machine of the class described, oscillatory bottle-carriers, a shaft, sleeves loose on the shaft, mechanism actuated by the sleeves for operating the carriers and detachable from said carriers, means for alternately positively operating said sleeves, to thereby operate the carriers in alternation, and mechanism for elevating a carrier when not in operation.

5. In a machine of the class described, oscillatory bottle-carriers, a shaft, sleeves loose on the shaft, mechanism actuated by the sleeves for operating the carriers and detachable from said carriers, means for alternately positively operating said sleeves, to thereby operate the carriers in alternation, and mechanism for elevating a carrier when not in operation, said mechanism being operable from said shaft.

6. In a machine of the class described, oscillatory bottle-carriers, a shaft, sleeves loose on the shaft, connections between the sleeves and the carriers for operating the latter and detachably connected with said carriers, means for rotating said shaft, a clutch device splined to said shaft and adapted to alternately clutch the sleeves thereto, whereby the carriers will be alternately operated, and means for elevating the carriers when not in operation.

7. In a machine of the class described, oscillatory bottle-carriers, a rotative shaft, sleeves loose on the shaft and provided with eccentrics, pitmen connected with the eccentrics and detachably connected with the carriers, a clutch device for alternately clutching the said sleeves to said shaft, to thereby



operate the carriers in alternation, and means for lifting the carriers when not in operation.

8. In a machine of the class described, a plurality of oscillatory bottle-carriers, a rotative shaft, sleeves loose on the shaft, a clutch device splined to the shaft and arranged to alternately clutch said sleeves to the shaft, eccentrics connected with the respective sleeves, pitmen operative with the eccentrics and detachably connected with the carriers, the pitmen serving to alternately operate the carriers as the said sleeves are alternately connected with said shaft, mechanism for lifting the carriers when not in operation, and means upon each carrier when it is lifted, for disconnecting the cooperating pitman therefrom.

9. In a machine of the class described, a rotative shaft, a plurality of oscillatory bottle-carriers, means detachably connected with the carriers and operable alternately from said shaft, a second shaft, connections between the first and second shafts for driving the latter, gear devices loose on the second shaft, gear devices meshing with the other gear devices and provided with means for elevating the carriers when not in operation, the first-mentioned gear devices running loose on their shaft, and means for clutching the first-mentioned gear devices to their said shaft.

10. In a machine of the class described, a plurality of bottle-carriers arranged in series, a shaft, mechanism operative from said shaft for operating the series in alternation, a second shaft operatively connected with the first shaft, gear devices loose on the second shaft, gear devices meshing with the other gear devices, and each having means for operating a series of carriers to elevate the same, and clutch devices for clutching the first-mentioned gear devices to their shaft.

11. In a machine of the class described, a rotative shaft, oscillatory bottle-carriers, a shaft upon which said oscillatory bottle-carriers are loosely mounted, connections between the first shaft and the carriers, for operating the latter, a third shaft operatively connected with the first shaft, gear devices loose on the third shaft, means for clutching the said gear devices to their shaft, gear devices loose on the second shaft and meshing with the first-mentioned gear devices, and means actuated by the said second gear devices for simultaneously elevating a series of carriers.

12. In a machine of the class described, a rotative shaft, a pair of oscillatory bottle-carriers, mechanism actuated by said shaft for operating said bottle-carriers, a segment, a shank connected with the segment and provided with a cross-rod for simultaneously engaging a plurality of carriers, a second shaft provided with a pinion meshing with said segment, the pinion being loose on its shaft, con-

nections between the two shafts, and means for clutching the pinion to its shaft, the pinion, when clutched to its shaft, serving to operate the segment, whereby said cross-rod will be moved to simultaneously elevate the carriers.

13. In a machine of the class described, a rotative shaft, a plurality of oscillatory bottle-carriers, mechanism including a clutch, for operating the carriers in alternation, means for lifting the carriers when not in operation, said means involving intermeshing gear devices, a shaft loosely carrying one of the gear devices, and operatively connected with the other shaft, and shifters for the gear devices, one of the shifters being operable by the other.

14. In a machine of the class described, a rotative shaft, oscillatory bottle-carriers, mechanism actuated from said shaft for alternately operating series of the carriers and including a clutch device, a second shaft operable from the first-mentioned shaft, pinions loose on the second shaft, segments meshing with the respective pinions and provided with means for lifting the carriers when not in operation, clutch devices for clutching the pinions to their shaft, a yoke-form shifter for the last-mentioned clutch devices, and a lever constituting a shifter for the first-mentioned clutch devices, said yoke-form clutch-device shifter being notched to receive the lever.

15. In a machine of the class described, a rotative shaft, oscillatory bottle-carriers, mechanism actuated from said shaft for alternately operating series of the carriers and including a clutch device, a second shaft operable from the first-mentioned shaft, pinions loose on the second shaft, segments meshing with the respective pinions and provided with means for lifting the carriers when not in operation, clutch devices for clutching the pinions to their shaft, a yoke-form shifter for the last-mentioned clutch devices, and a lever constituting a shifter for the first-mentioned clutch devices, said yoke-form clutch-device shifter being notched to receive the lever, and cams on the framework for elevating the lever as the same is moved back and forth to carry it out of said notch.

16. In a machine of the class described, a rotative shaft, oscillatory bottle-carriers, mechanism actuated from said shaft for alternately operating series of the carriers and including a clutch device, a second shaft operable from the first-mentioned shaft, pinions loose on the second shaft, segments meshing with the respective pinions and provided with means for lifting the carriers when not in operation, clutch devices for clutching the pinions to their shaft, a yoke-form shifter for the last-mentioned clutch devices, and a lever constituting a shifter for the first-mentioned clutch



devices, said yoke-form clutch-device shifter being notched to receive the lever, the said yoke-form shifting device having cams for operation by the carriers as they are lifted to impart a longitudinal movement to said yoke-form shifter for moving the clutch devices operative therewith.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LEONARD C. SEARS.

Witnesses:

C. H. HUNTINGTON,  
S. B. MYERS.