

C. E. FELT,
BOTTLE WASHING MACHINE.
APPLICATION FILED FEB. 14, 1908.

993,672.

Patented May 30, 1911.

2 SHEETS-SHEET 1.

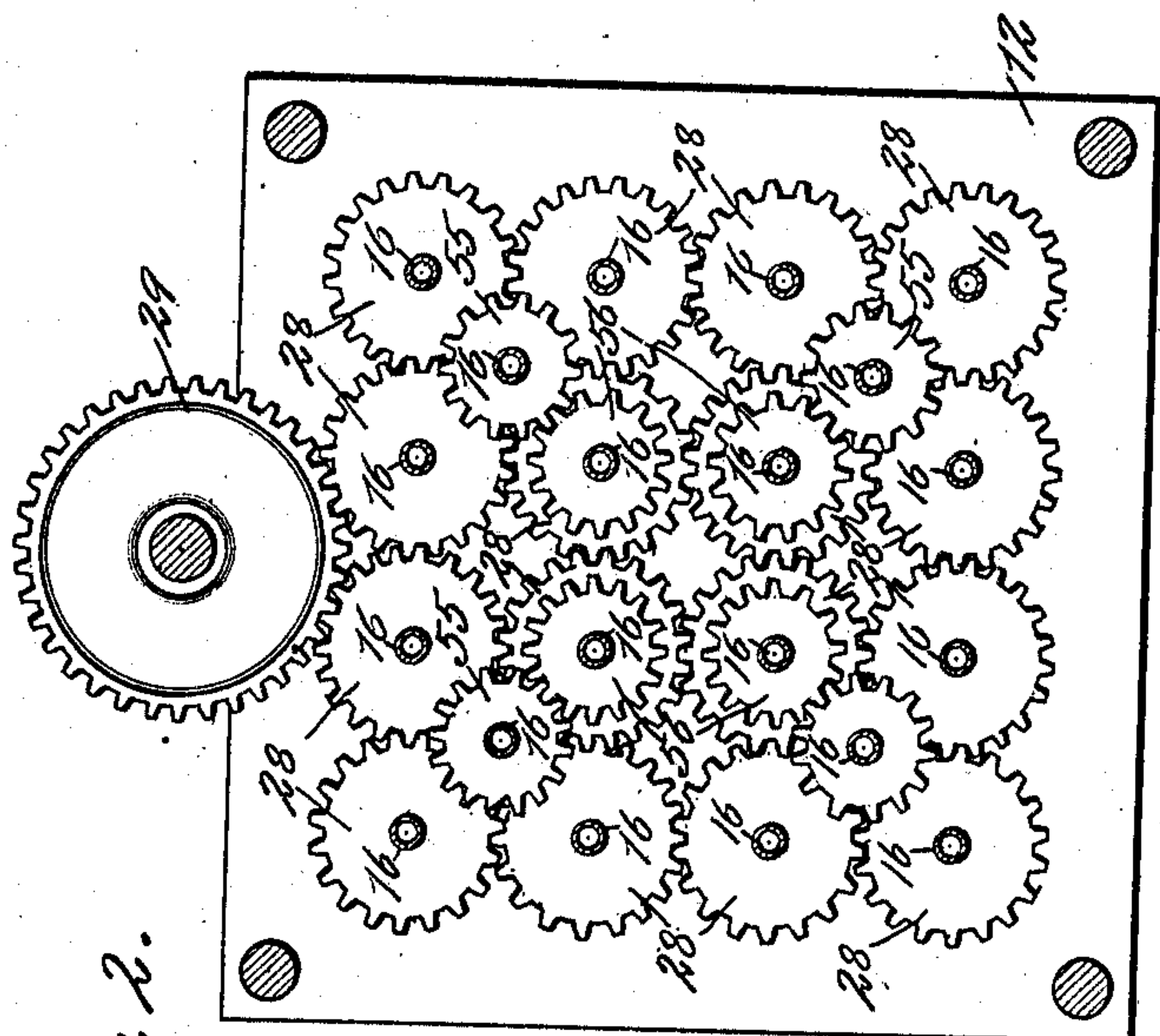


Fig. 2.

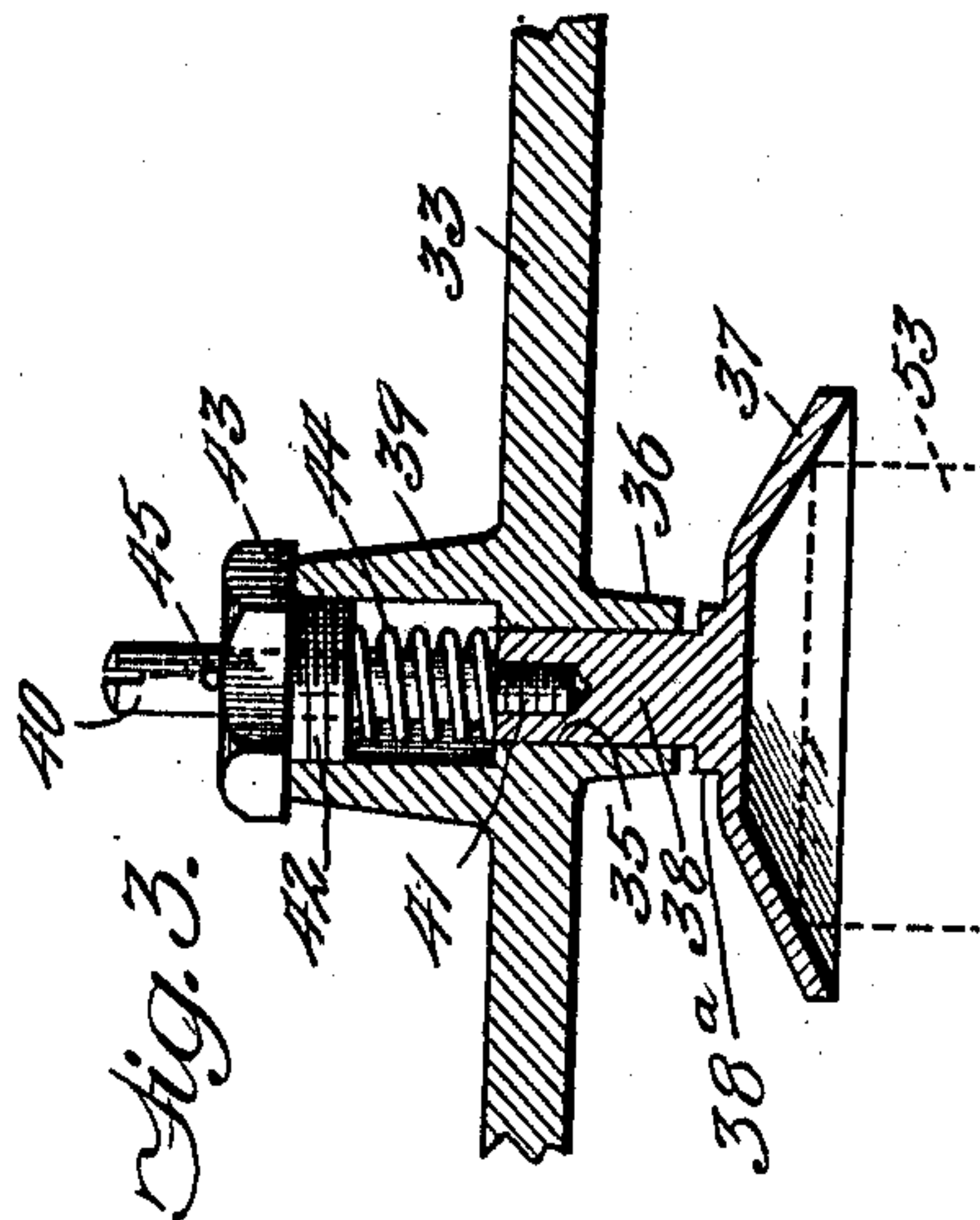


Fig. 3.

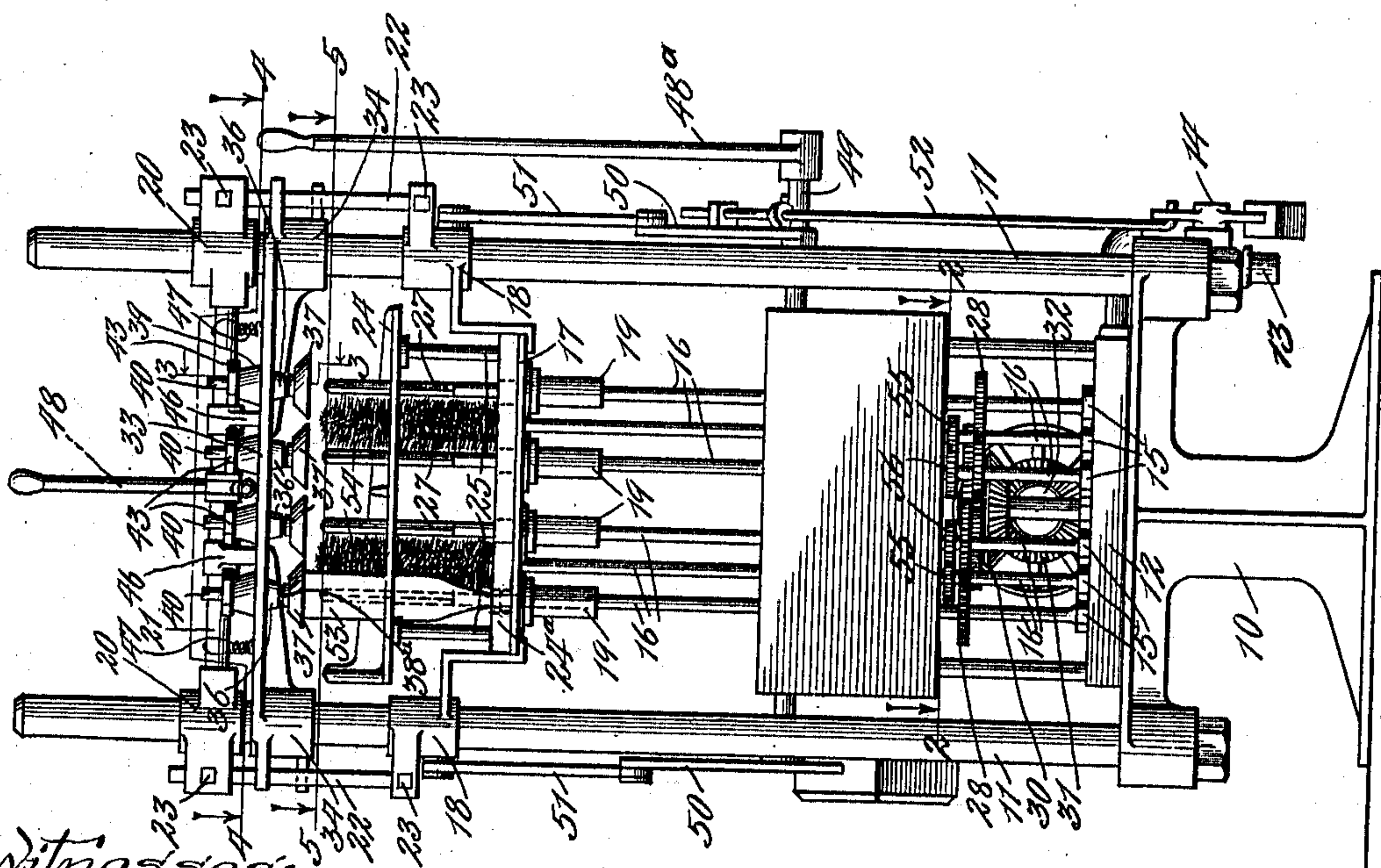


Fig. 1.

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J. H. Johnson, Jr.

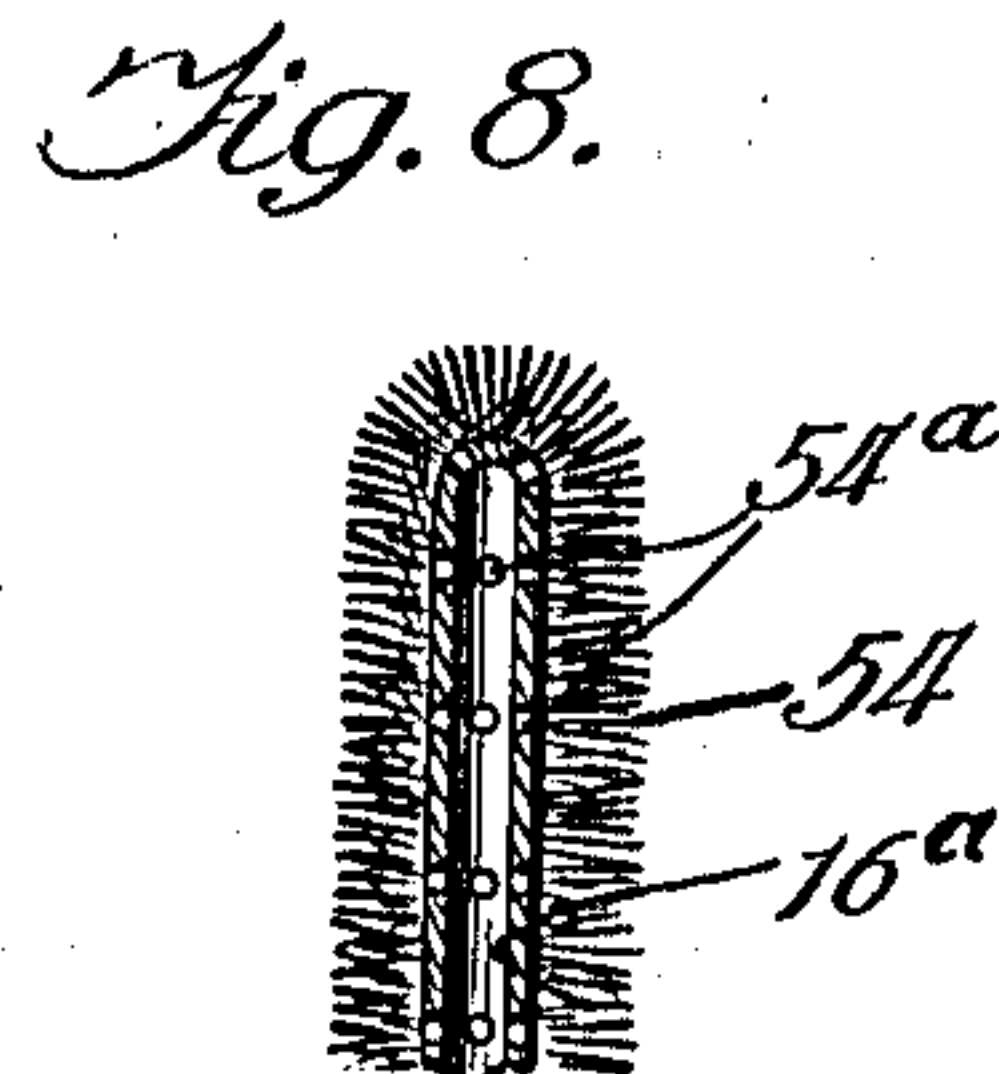
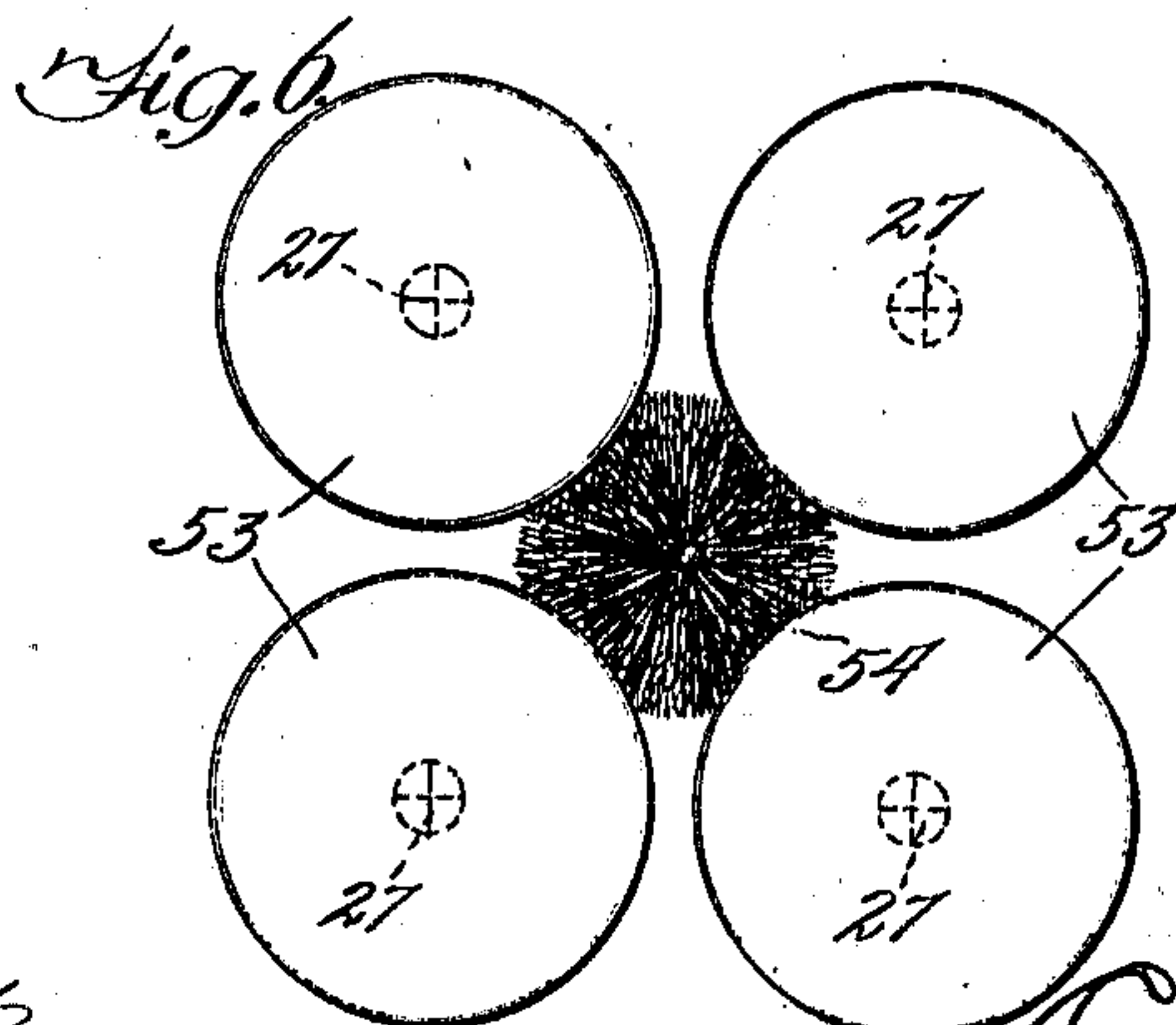
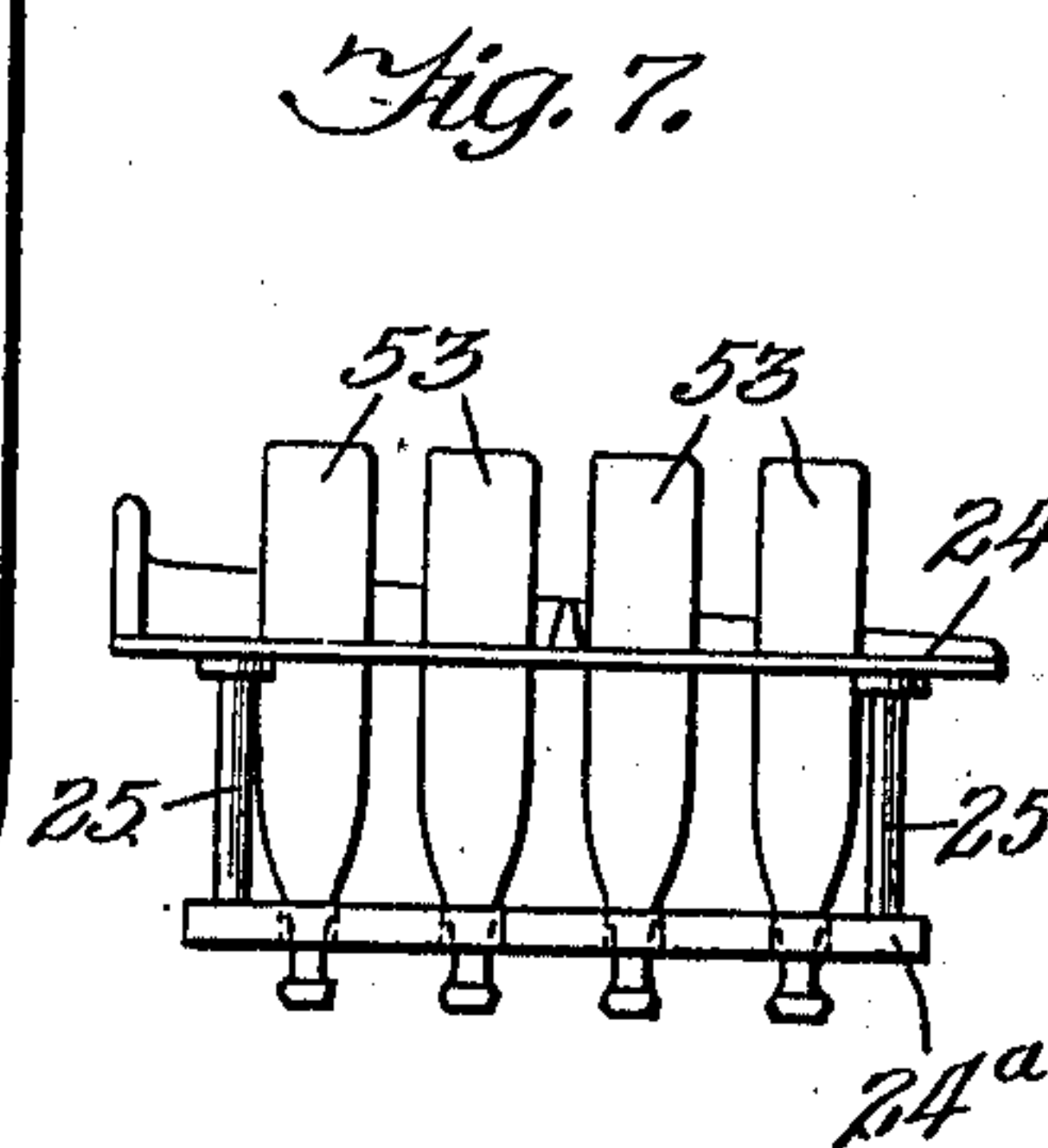
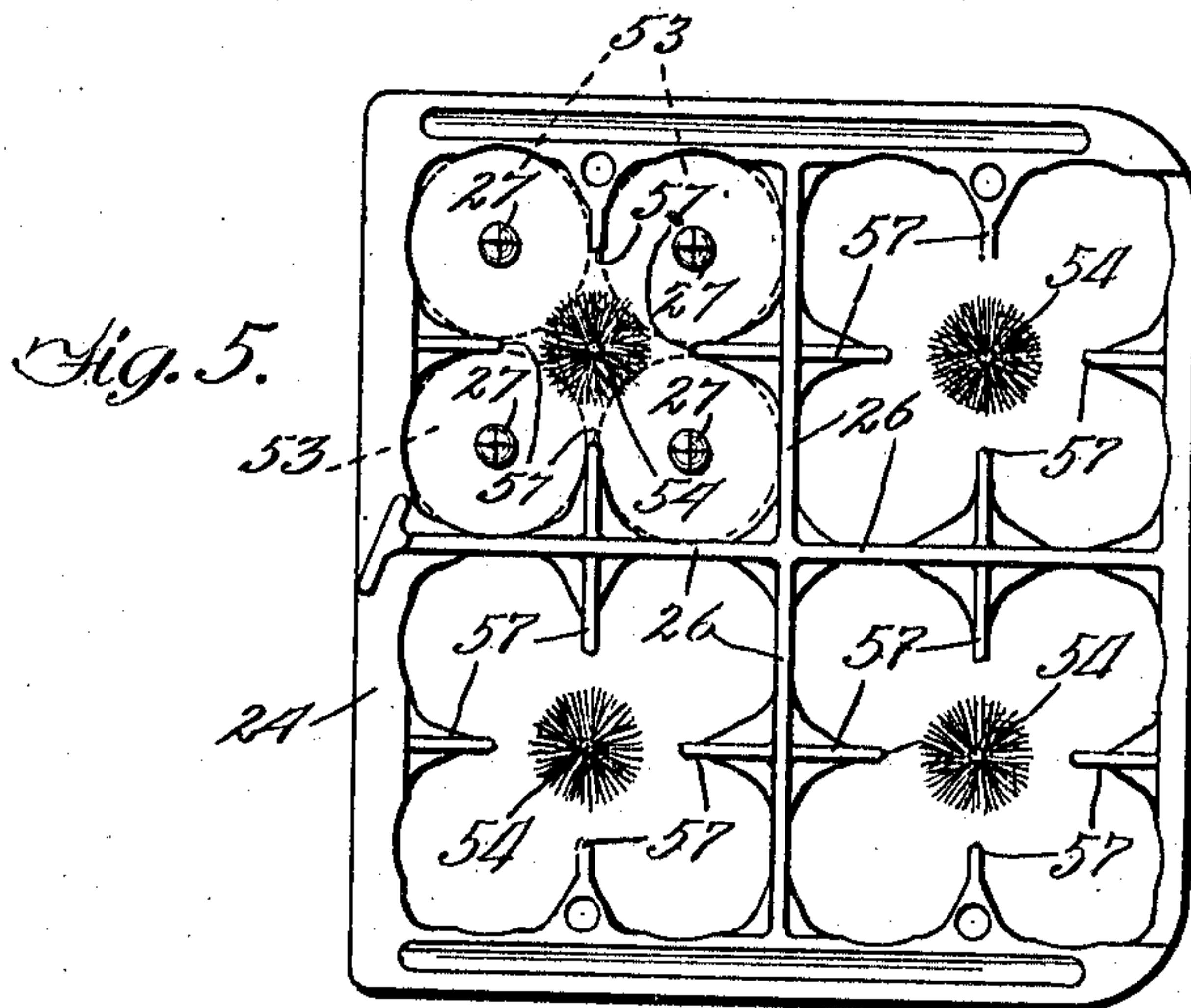
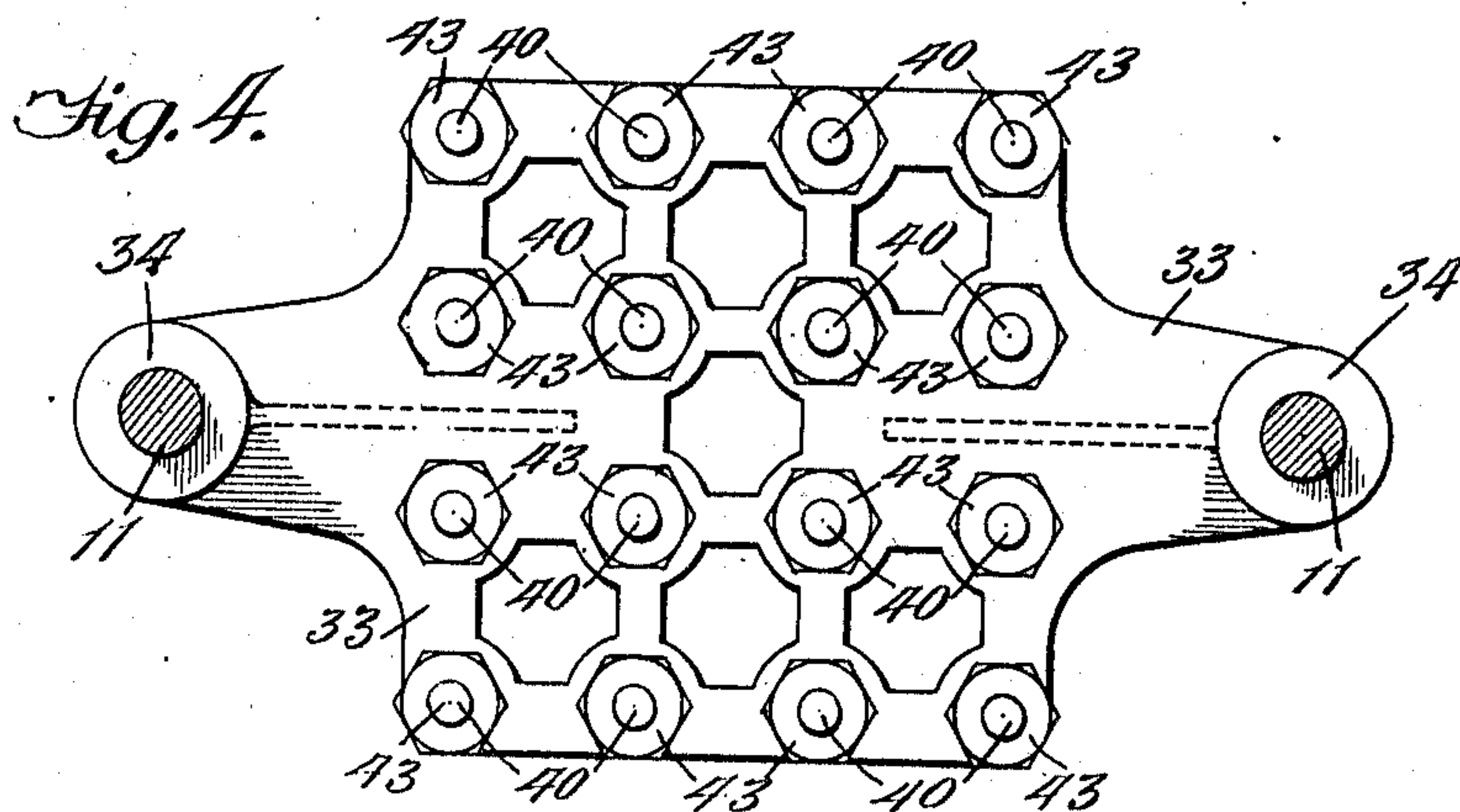
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

CHARLES E. FELT, OF CHICAGO, ILLINOIS.

BOTTLE-WASHING MACHINE.

993,672.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed February 14, 1908. Serial No. 415,906.

To all whom it may concern:

Be it known that I, CHARLES E. FELT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bottle-Washing Machines, of which the following is a specification.

This invention relates to improvements in bottle washing machines, and the primary object of the same is to provide an improved, simple, durable and effective machine of this character for washing a plurality of bottles, and improved means for washing the outside of the bottles while the insides are being washed.

A further object is to provide improved means for cleaning the outside of the bottles, which means is also adapted at the same time to impart an axial rotation to the bottles.

A further object is to provide an improved crate or basket for the bottles.

A further object is to provide improved means for holding the bottles in position to be washed and which also serve as bearings to permit the axial rotation of the bottles.

To the attainment of these ends and the accomplishment of other new and useful objects, as will appear, the invention consists in the features of novelty in the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawings, illustrating the embodiment of the invention and in which—

Figure 1 is a front view of an improved machine of this character constructed in accordance with the principles of this invention. Fig. 2 is a detail sectional view on line 2—2 of Fig. 1, showing the gearing for operating the cleaning devices. Fig. 3 is a detail sectional view on line 3—3 of Fig. 1. Fig. 4 is a detail sectional view on line 4—4, Fig. 1. Fig. 5 is a detail plan view of the top member of the crate or basket for the bottles, showing the relative positions for the brushes and indicating in dotted lines some bottles in position in the crate. Fig. 6 is a diagrammatic view showing a plurality of bottles encompassing the brush, which latter is adapted to clean the outsides of all of the bottles of the group. Fig. 7 is an elevation of the bottle crate or basket showing

the bottles in position therein. Fig. 8 is a detail sectional view of the brush for cleaning the outside of the bottles.

Referring more particularly to the drawings and in the present exemplification of the invention, the numeral 10 designates the base of the machine which supports two uprights or standards 11, spaced from each other, and arranged therebetween is a reservoir 12 having a suitable water connection 13 provided with a valve 14. Leading from the reservoir 12 is a plurality of discharge outlets 15 and supported by these outlets 15 and communicating therewith are tubular spindles 16, 16^a.

A support 17 is provided with sleeves 18, which latter surround and are movable on the uprights or standards 11. This support 17 is provided with a plurality of apertures through which the extremities of the spindles 16, 16^a are adapted to project, and secured beneath each of the apertures through which spindles 16 pass is a guide 19. Surrounding the uprights or stands 11 above the support 17 are sleeves 20, which are connected by a cross bar or member 21 and the sleeves 20 are connected with the respective sleeves 18 by means of a member 22 secured thereto in any suitable manner, such as by means of clamping bolts 23 for holding the sleeves 18 and 20 spaced with relation to each other and these members also serve to cause the sleeves 18 and 20 to move in unison when the latter are adjusted in a manner to be set forth.

A crate or basket is provided for the bottles and comprises a base 24^a and a frame 24 spaced above the base and which is supported by means of uprights or standards 25 which rise from the base 24^a, and the basket or crate is adapted to be placed in the machine so that the base thereof will rest upon the support 17. This frame 24 is preferably divided by means of ribs 26 so as to hold the bottles in groups, preferably in groups of four, as shown more clearly in Fig. 5. The uprights or standards 25 are of any desired length but preferably of a length to support the frame 24 in a position to engage the bottles midway of their length when the latter are placed therein and the base 24^a also comprises a frame through which the nozzles of the bottles project, so that the nozzles will rest upon the support 17 when

the crate or basket is placed in position as shown in Fig. 1.

The spindles 16 16^a are arranged so that brushes or cleaners 27, which are supported by the extremities thereof, will enter the respective bottle as shown more clearly in dotted lines in Fig. 1 of the drawings when the bottles are in position to be washed, and when in operation water will be forced through these hollow spindles and into the bottles. Supported by each of the spindles 16 16^a at any convenient point, preferably adjacent the base of the machine, are gear wheels 28 arranged preferably in two sets in different planes, the gears in the respective planes being arranged to mesh with each other, as shown more clearly in Fig. 2 of the drawings and a rotary motion is imparted to these gear wheels so that the spindles 16 16^a and cleaners 27 will be rotated by means of a suitable gear wheel 29 meshing with some of the gears 28, and motion is imparted to the gear 29 through the medium of intermeshing beveled gears 30, 31, (see Fig. 1 of the drawings) which latter derive motion from a suitable power shaft 32. A plate 33 is slidingly mounted upon the uprights or standards 11 intermediate the cross bar 21 and the frame 24, by means of sleeves 34 which surround the uprights or standards and this plate is provided with a plurality of apertures 35 (shown more clearly in Fig. 3 of the drawings) and surrounding the apertures is a depending flange or collar 36. Any number of these apertures 35 may be provided in the plate 33 but there is preferably provided one aperture for each of the bottles to be cleaned. A cup-shaped member 37 is provided with a spindle 38 and a shoulder 38^a and the spindle is adapted to project into the aperture 35 from one side of the plate 33 and through the depending sleeve 36. The other side of the plate 33 is provided with a sleeve or flange 39 which surrounds the aperture 35 to form a housing preferably of a diameter somewhat greater than the diameter of the aperture 35. Any suitable means may be provided for holding the cup-shaped member 37 against displacement with relation to the plate 33. A suitable and efficient means for accomplishing this purpose comprises a screw or bolt 40 which is provided with a threaded extremity 41 adapted to enter the extremity of the spindle 38, so that the body portion thereof will stand within the housing formed by the sleeve 39. The sleeve 39 projects for any desired distance beyond the upper face of the plate 33 and is screw threaded adjacent its upper extremity to receive the threaded portion 42 of a nut or cap 43, and surrounding the bolt 40 intermediate the nut 43 and the extremity of the spindle 38 is a yielding member 44, preferably in the form of a coil spring, one extremity of which engages the

nut 43 and the other the extremity of the spindle 38, so as to normally hold the shoulder 38^a out of engagement with the extremity of the sleeve 36 when the member 37 is in engagement with the end of the bottle in the manner to be set forth. The nut 43 is adapted to be adjusted with relation to the plate 33 so as to vary the tension of the spring and consequently the gripping effect of the cap 37 when it engages and rests upon the extremity of the bottle when the plate 33 is adjusted in a manner to be set forth and the bottle is in position. A suitable pin or bolt 45 is provided which passes transversely through the bolt 40 above the nut 43 to hold the cap or cup-shaped member 37 against displacement with relation to the plate 33 when the bottles are removed.

The cross bar 21 is preferably mounted for axial rotation in the sleeves 20 and supported thereby are cams 46 which are adapted to engage and rest upon the upper face of the plate 33, the latter being normally held in proximity to the bar 21 by means of suitable yielding members 47, such as springs or the like, one extremity of each of which is secured to the plate and the other extremities surround the bar or rod 21. Connected to the bar 21 is a handle or lever 48 so that when the said handle or lever is adjusted to turn the bar or rod 21 in its bearings, the cam-shaped members 46 will be brought into engagement with the plate 43 to force the latter downwardly to bring the cup-shaped members 37 into engagement with the ends of the bottles when the latter are in position and will engage the bottles only with such friction as to hold them in position but will allow the bottles to axially and freely rotate.

A suitable operating lever 48^a is connected to a rock shaft 49, to which latter are secured suitable crank arms 50 and these crank arms 50 may be connected by suitable links 51 to the sleeves 18 so that when the lever 48 is moved to rock the shaft 49, the bottle support 17, plate 33 and bar 21 will be lowered to the position shown in Fig. 1 of the drawings when the bottles are in position so as to cause the cleaning members 27 to enter the bottles. During this operation the valve 14 will be opened through the medium of the bar or rod 52 which is connected to the valve and to the crank arm 50 to permit water to be supplied to the machine and which passes through the tubular spindles 16 16^a into the bottles to clean the insides thereof.

Arranged between each group of four bottles 53, as shown more clearly in Figs. 5 and 6 of the drawings, is a cleaning brush 54 and these brushes are each mounted upon one of the tubular spindles 16^a and are preferably of a height substantially equal to the height of the bottles, and these spindles are provided with apertures 54^a through which

the water is discharged to the brushes 54. Each of the spindles 16 16^a to which the brushes 54 are secured is provided with a gear wheel 55, shown more clearly in Fig. 2 of the drawings, and these gear wheels 55 are preferably offset with relation to the gears 28, as shown more clearly in Fig. 1 of the drawings. One of the spindles 16 of each group of four, other than the spindle to which the gear 55 is secured is provided with a supplemental gear 56, (see Fig. 2 of the drawings) and these supplemental gears 56 are adapted to mesh with the gears 55 so that when the gear 29 is rotated a rotary motion will be imparted to all of the spindles 16.

When the crate or basket is filled with bottles to be cleaned, which latter are placed therein with their nozzles extending downwardly, the crate or basket may be then placed upon the support 17. By then adjusting the lever 48 the parts will be moved to their operative positions and during such movement the cleaners 27 will pass into the bottles and at the same time the brushes 54 will pass through the base frame 24^a of the crate or basket and between the bottles of the respective group to be encompassed by the bottles in the groups. When in this position and when motion is imparted to the spindles 16, the cleaning members 27 will clean the insides of the bottles and the brush 54 will engage the outside of all of the bottles of the respective group. The bottles being held in position for axial rotation by the cup-shaped members 37, which latter are mounted for rotary motion with respect to the plate 33, it will be seen that the rotary brushes 54 will impart axial rotation to the bottles 53 to thereby bring all of the outer surface of the bottle into contact with the brushes.

Obviously any number of bottles may be provided to form the group and the brush 54 may be of any desired size and the bristles of any desired length to meet the existing conditions but in the present exemplification the groups of bottles are shown as being comprised of four bottles each. The cup-shaped members, being yieldingly supported by the springs 44, the tension of the springs may be varied by adjusting the nut 43 so as to vary the friction of the bottle upon the support to meet the existing conditions. If desired, the openings in the plate 24 for receiving the groups of bottles may be provided with ribs 57 (see Fig. 5) to separate the bottles and to form bearings for the bottles and at the same time preventing the bottles from being laterally displaced with respect to each other.

In order that the invention might be fully understood by those skilled in the art, the details of the foregoing embodiment thereof have been thus specifically described, but

What I claim as new and desire to secure by Letters Patent is:—

1. In a bottle washing machine, in combination, a crate comprising spaced members, one of said members being provided with openings to receive the mouth ends of the bottles, the other member being provided with an aperture, and partitions extending from the walls of the said aperture toward and terminating short of each other to form a plurality of compartments adapted to receive the bodies of the bottles, said compartments encompassing and having communication with a centrally disposed space into which space a brush may be inserted between and outside of the bottles.

2. In a bottle washing machine, in combination, a crate comprising spaced members, one of said members being provided with openings to receive the mouth ends of the bottles, the other member being provided with an aperture, and means dividing said aperture into a plurality of compartments encompassing and having communication with a centrally disposed space, said compartments being adapted to receive the bodies of the bottles and said space being adapted to receive a brush inserted between and outside of the bottles.

3. In a bottle washing machine, in combination, a crate comprising spaced members, one of said members being provided with openings to receive the mouth ends of the bottles, the other member being provided with a plurality of compartments encompassing and surrounding a centrally disposed space and each compartment having an opening forming communication between the compartments and said space, the size of each of said openings being less than the greatest diameter of the respective compartments, said compartments being adapted to receive the bodies of the bottles and said space being adapted to receive a brush inserted between and outside of the bottles.

4. As an article of manufacture, a crate for bottle washing machines and the like comprising spaced superposed members connected together, one of said members being provided with apertures to receive the mouth ends of the bottles, the other member being provided with a plurality of apertures, each of the last said apertures being provided with a plurality of partitions extending from the walls thereof toward and terminating short of each other to form a plurality of compartments encompassing and having communication with a centrally disposed space.

5. A machine of the class described including in combination means for holding the bottle on end, a support adjacent the other end of the bottle and provided with an aperture, a cup shaped member adapted to engage the free end of the bottle, said member

- being provided with a stem projecting into the aperture in the said support, means engaging the said stem for holding the member against displacement with relation to the support, a yielding member disposed between the last said means and the support, and means for cleaning the outside of the bottle, said means also imparting axial rotation to the bottle, and said yielding members being adapted to clamp the cup shaped member against the end of the bottle whereby said member will form a rotatable bearing for the bottle.
6. A machine of the class described including in combination means for holding the bottle on end, a support adjacent the other end of the bottle and provided with an aperture, a cup shaped member adapted to engage the free end of the bottle, said member being provided with a stem projecting into the aperture in the said support, a spring surrounding the said stem, a member adjustably mounted on the stem adjacent the other side of the support and beyond the spring for supporting the cup shaped member and for varying the tension of the spring and means for cleaning the outside of the bottle, said means also imparting an axial rotation to the bottle and said spring being adapted to clamp the cup shaped member against the end of the bottle whereby said member will form a rotatable bearing for the bottle.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 31st day of January, A. D. 1908.

CHARLES E. FELT.

Witnesses:

CHAS. H. SEEM,
FRANCIS A. HOPKINS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."