

No. 712,454.

Patented Oct. 28, 1902.

C. HITZL.

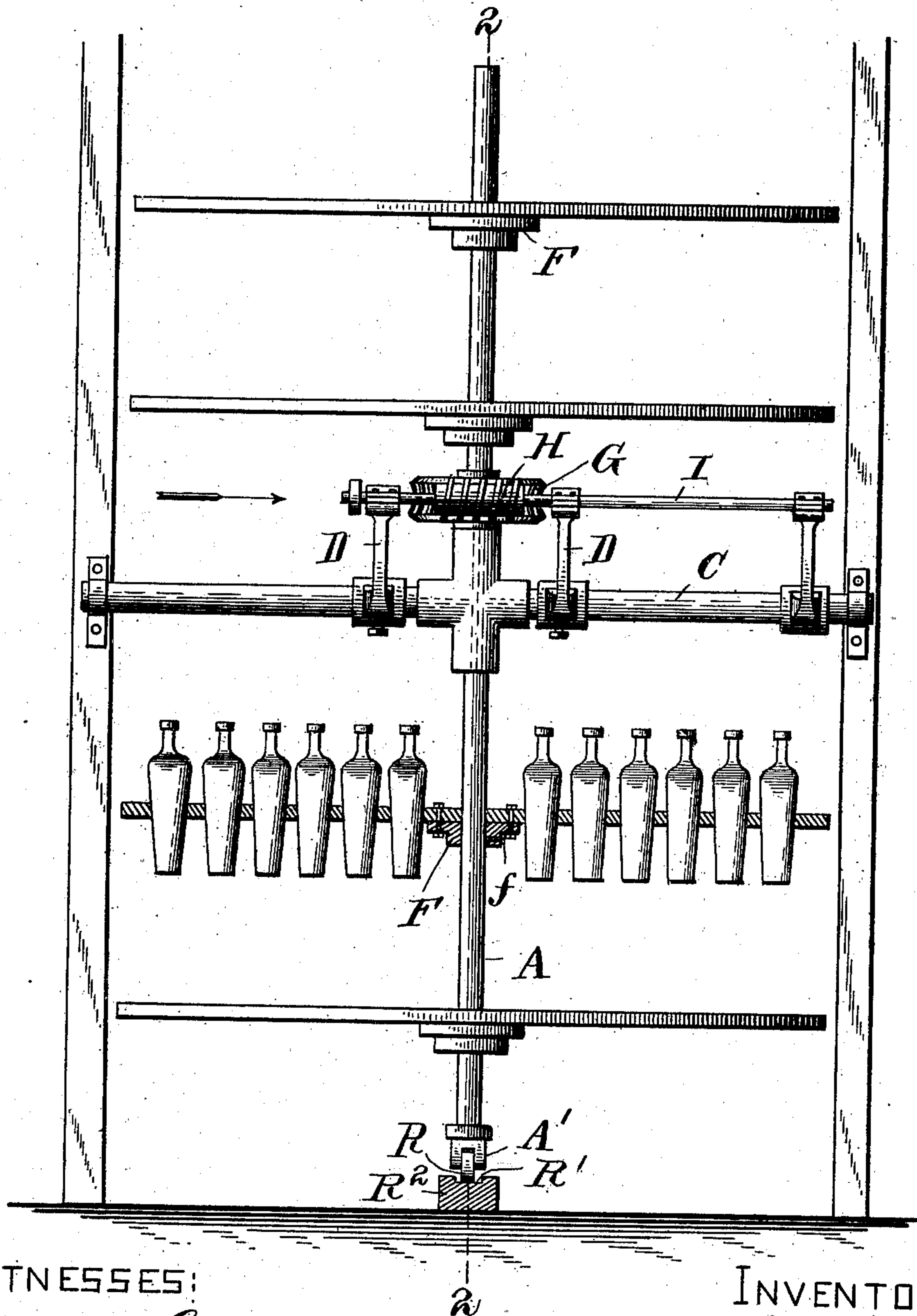
APPARATUS FOR FILLING BOTTLES.

(Application filed Feb. 28, 1902.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



WITNESSES:

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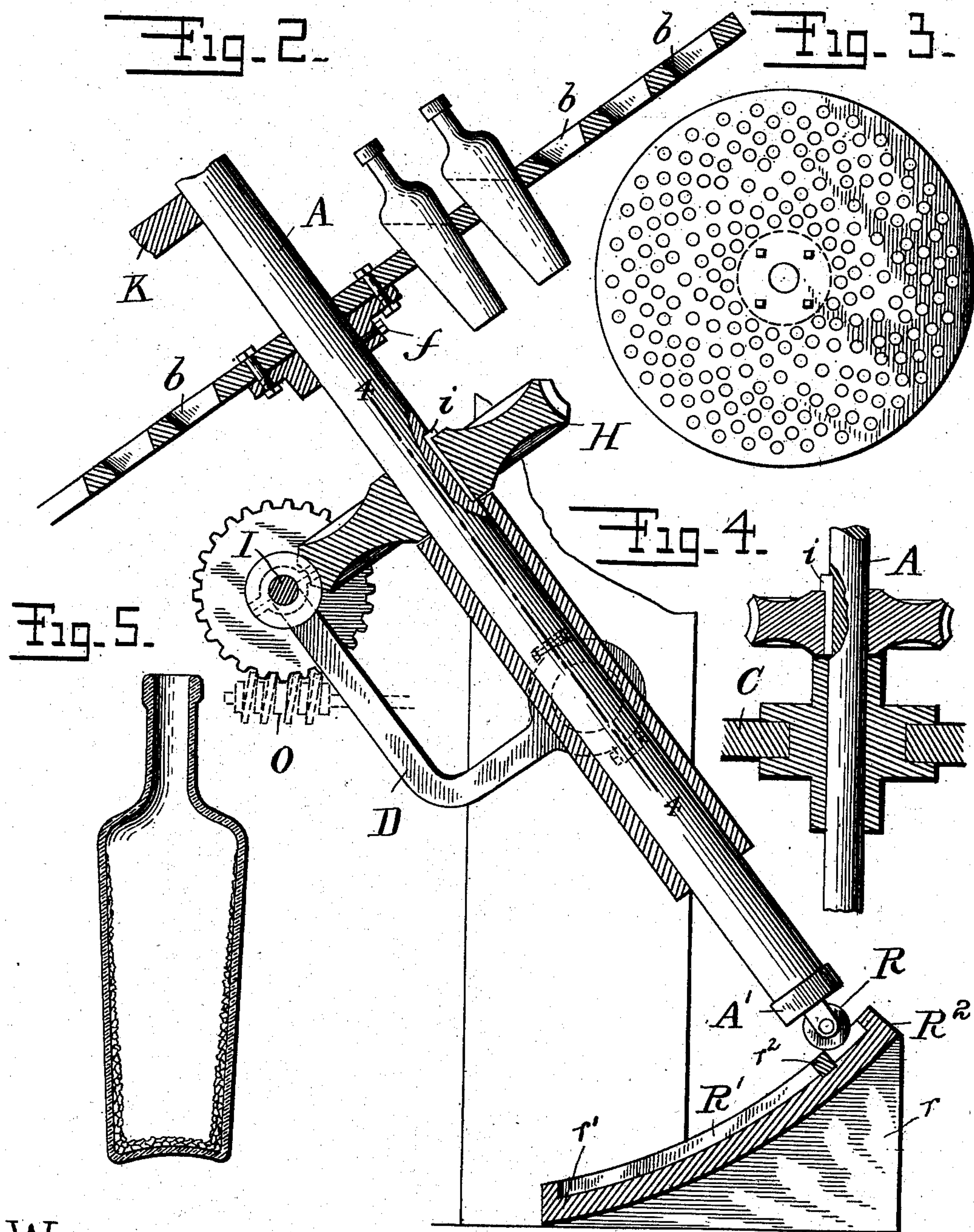
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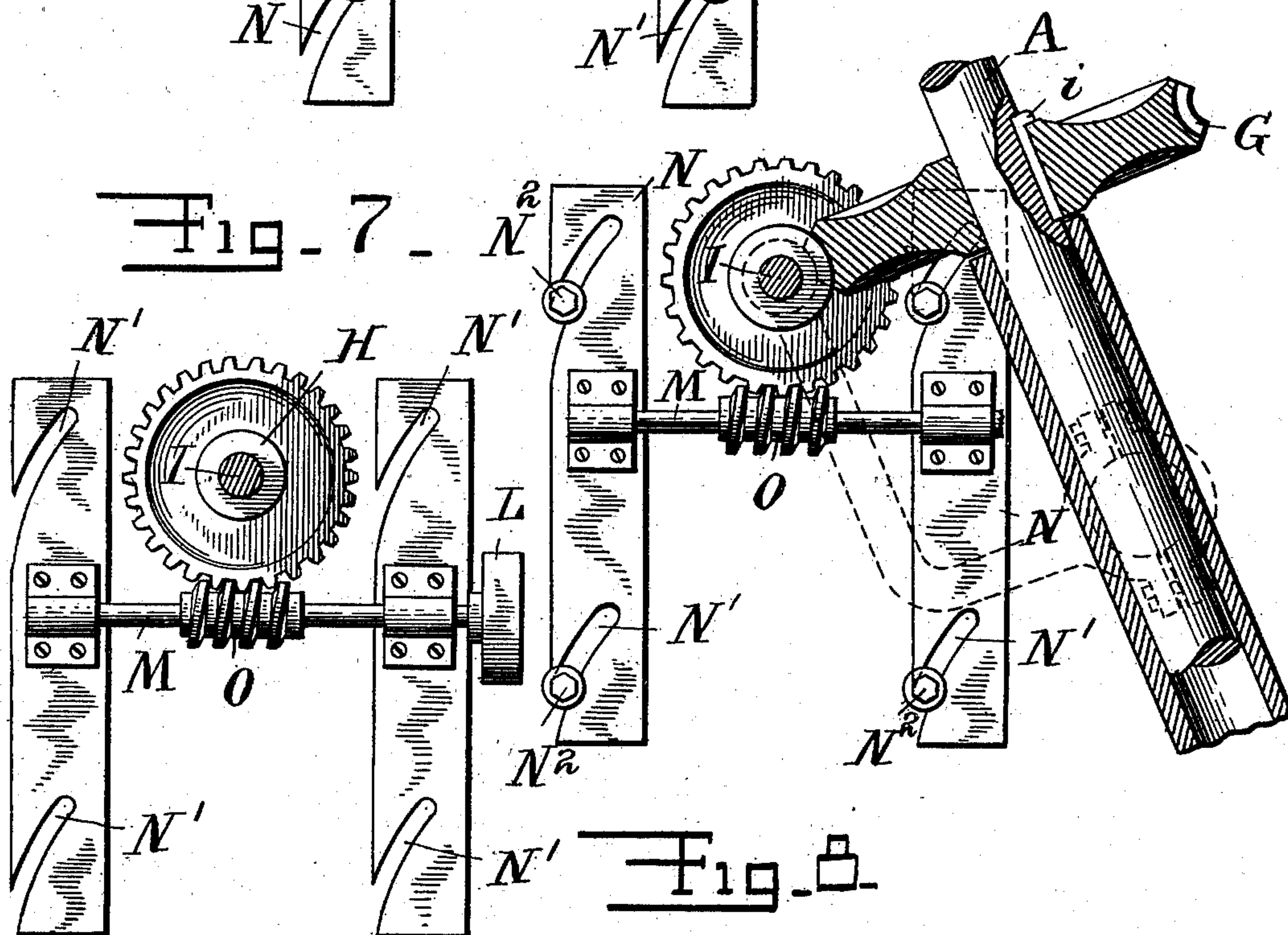
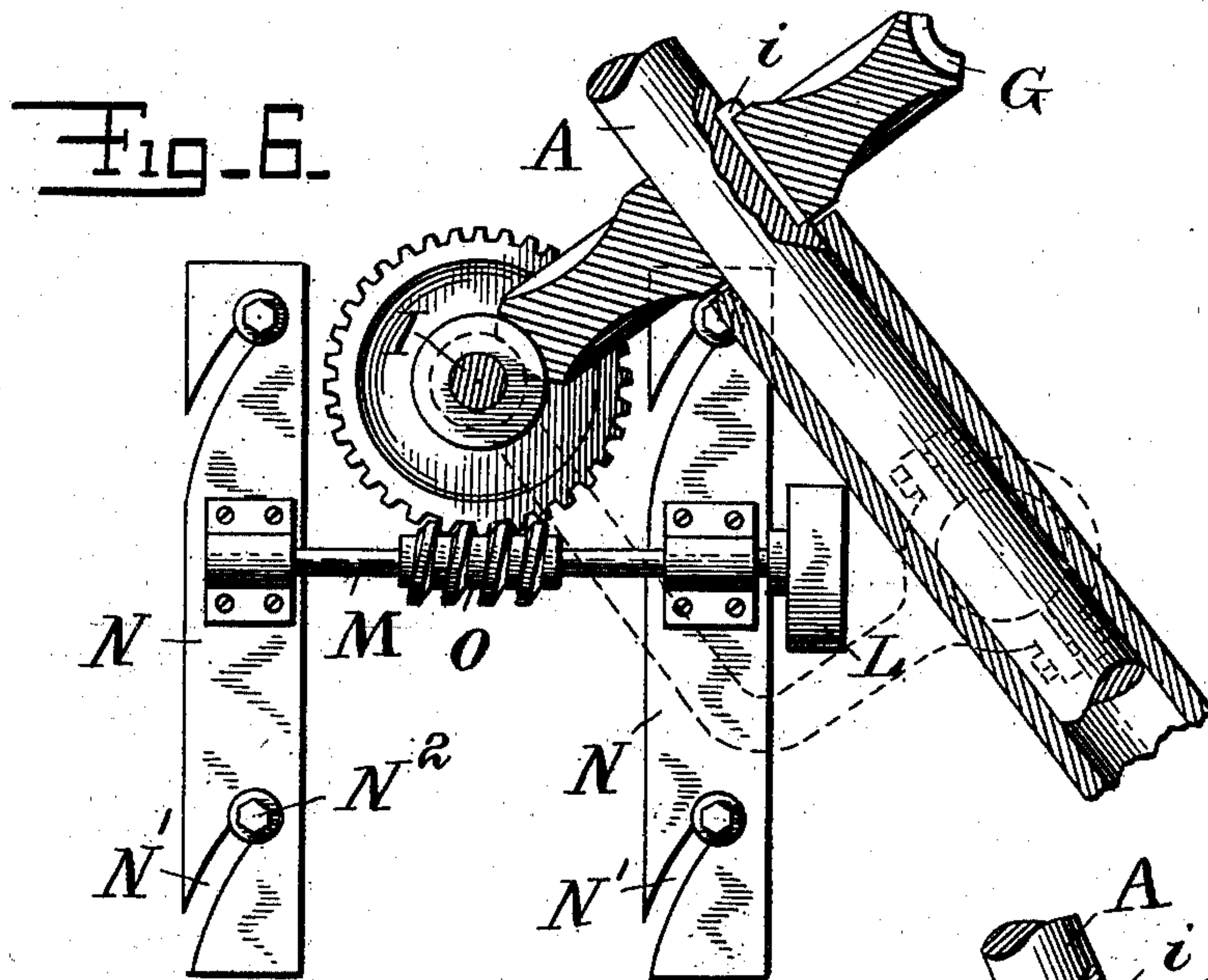
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR FILLING BOTTLES.

SPECIFICATION forming part of Letters Patent No. 712,454, dated October 28, 1902.

Application filed February 28, 1902. Serial No. 96,034. (No model.)

To all whom it may concern:

Be it known that I, CARL HITZL, a citizen of the United States, residing in the borough of Brooklyn, in the city of New York, in the county of Kings and State of New York, have invented a new and useful Improvement in Apparatus for Filling Bottles, of which the following is a specification.

My invention relates to an apparatus for filling bottles and more particularly bottles containing liquors supersaturated with sugar.

As is well known, it is desirable in filling bottles with liquids containing an excess of sugar so to manipulate the fluids as to secure the deposit of a coating of sugar crystals upon the interior surface of the bottles. This adds to the appearance and increases the salability of the bottled goods.

The process by which I treat the liquors forms the subject-matter of a separate application for Letters Patent, the apparatus in which it is partially carried out being the subject-matter of this application; but it will be understood that I shall necessarily have to describe much of the process in describing the apparatus.

My apparatus consists, essentially, of one or more bottle-supports provided with means for rotating them slowly and continuously and also with means for tilting them at an angle and keeping them so tilted while being rotated.

In the drawings, Figure 1 is a front elevation and partial section of the apparatus with the end of the shaft 1 broken off and the driving mechanism applied to said shaft omitted to avoid confusion. Fig. 2 is a transverse vertical central section on the plane of the line 2 2 in Fig. 1. Fig. 3 is a plan view, on a small scale, of one of the bottle-supports. Fig. 4 is an enlarged sectional detail showing the manner of connecting the horizontal shaft with the shaft of the bottle-supports. Fig. 5 is a central vertical section of a filled bottle, and Figs. 6, 7, and 8 are detail views of the driving mechanism and adjustable bracket to which the same is secured viewed in the direction indicated by the arrow in Fig. 1.

In the drawings, A is a shaft to which are secured at intervals the bottle-supports B by means of flanges F and set-screws *f* or any

other suitable means. The bottle-supports are preferably made of wood or metal, are circular in form, and are provided with a central aperture to receive the shaft A and numerous smaller apertures *b b b b*, &c., to receive the bottles. The shaft A is provided at its lower extremity with a shoe A' and caster R, by means of which latter it easily oscillates up and down in a curved groove R' in a guide R², supported upon the floor. Said guide consists of a base-block *r* and a grooved metal plate *r'*, grooved at R'. A stop *r*², mounted to be adjusted in the groove R' into engagement with said caster, affords a suitable means for holding the same in place when the shaft is tilted, as shown in Fig. 2, and for holding or assisting in holding said shaft adjustably in tilted position. The particular means of mounting said block *r*² so that it may be adjusted or particular means for adjusting the same are not essential to my invention, and for this reason are not shown herein. The shaft A is also rotatably supported by a horizontal shaft C, on which it is adapted to tilt or oscillate. The shaft C is mounted in bearings in the walls of the chamber in which the apparatus is placed or in some other framework provided for the purpose.

K is a stop to prevent the tilting of the shaft too far in one direction. Said stop may be merely a beam or bracket projecting from the wall, as indicated in Fig. 2.

One or more hangers or brackets D are secured to the shaft C by set-screws or otherwise. These brackets are curved, and at their other extremities support a shaft I, upon which is mounted a worm H, adapted to mesh with a circular gear-wheel G, rigidly secured to the shaft A by a key *i* or other similar means, and which wheel when turned causes the shaft to rotate. The shaft I is in turn connected with the driving mechanism, which may consist of any means whereby a continuous but slow rotation is imparted to the shaft A.

In the operation of the device the shaft A is tilted to various degrees. No means for tilting said shaft are shown, as none are necessary to an operative construction. In the construction shown the shaft A will be tilted

by hand. The shaft I partakes of the tilting movement of the shaft A, during which movement both of the shafts A and I swing around shaft C as the axis thereof. The shaft I is rotated to rotate the shaft A, and the means for rotating said shaft I preferably employed and therefore shown in the accompanying drawings include a gear-wheel P, fixed on one end of said shaft I and intermeshed with a worm O, mounted on a shaft M below said end of the shaft I. It therefore becomes necessary to provide for an adjustment of the shaft M with its worm O, corresponding with the adjustment of the shaft I and gear-wheel P to the end that said gear-wheel P and worm O may intermesh in all the positions of adjustment of the shaft A and I. This is conveniently accomplished by raising or lowering the brackets N, which carry said shaft M, according as the shaft I is raised or lowered and in an arc or arcs concentric to that traversed by said shaft I in its adjustment with the shaft A. To this end the brackets may be, as shown, provided with elongated curved slots N', through which extend suitable fastening-bolts N², by means of which the brackets may be fixed in adjusted position. In Fig. 6 there is indicated what for purpose of illustration may be assumed to be the maximum inclination of the shaft A. Obviously in such maximum inclination of said shaft the shaft I will be at its lowest position as well as its extreme position toward the left, and to accord with said position the fastening means N² of the brackets will be in the upper closed ends of the curved slots N', as shown in said figure. Now referring to Fig. 8, which for purpose of illustration may be assumed to indicate the minimum inclination of the shaft, it will be seen that the shaft I has reached a position wherein it is higher and farther to the right than that shown in Fig. 6, and the brackets have been similarly adjusted upward and toward the right-hand side to accord with the changed position of said shaft I, being now in position wherein the fastening-bolts N² are approximately at the mouths of the respective slots. The shaft A is normally inclined in the operation of the device. The rotation of the shaft A and the bottle-supports attached to it, upon the shaft C, which is suspended at points distant from the point at which the shaft A is supported, produces a slight but continuous vibration in all of the parts, which I have found to be advantageous in carrying out my process.

The liquids which I propose to treat in this apparatus are composed practically of water, to which has been added sugar in excess to form a thick heavy syrup, alcohol, and some chosen flavoring material—such as whisky, kummel, peppermint, honey, rose, or any fruit flavor. These materials are incorporated into one mass in an ordinary steam-jacketed kettle, the sugar being added to the water and slowly stirred while being heated

until a thick syrup is the result. This takes place at a temperature which should not be less than 180° Fahrenheit, but that will be determined by prior experiment in each case. After the syrup has been formed the alcohol and flavoring material are added, the heat being shut off, but the kettle being covered to prevent excessive radiation. The warm liquid is then allowed to flow through a tube and by means of a suitable nozzle provided with a check-valve of a nature readily understood by those skilled in the art is introduced into the bottles which have been placed in the bottle-supports, each aperture in the bottle-supports being filled by an empty bottle. The operator introduces the nozzle into the neck of the bottle and allows the liquid to flow in until it has obtained the desired height. He may do this with one hand and use the other to cork the bottle as soon as the filling operation is completed. After all of the bottles contained in the bottle-supports have thus been filled and corked the machinery is started and the shaft A is caused to be slowly and continuously rotated. I have found by experience for most of the liquors which I treat that a period of twenty minutes for one complete rotation of the shaft is sufficient for my purpose. The temperature of the room in which the crystallizing operation now takes place should be such that the bottles and the liquor contained therein are permitted slowly to cool. As the cooling and continual rotation of the bottles proceeds the crystals of sugar separate out and, acted upon by gravity, fall to the lower portion of the liquor and successively deposit upon the inner surface of the bottle, forming, as this deposit proceeds, a coating of crystals upon such surface. Nine or ten rotations are usually sufficient to secure the desired thickness of deposit. It will readily be seen that the degree of obliquity of the shaft, and consequently the degree of obliquity of the bottles, will control the height within the bottles of the layer of crystals deposited. Other factors—such as the relative specific gravities of the ingredients in the liquor, the change of temperature of the liquor while rotating, and the initial temperature of the crystal-containing mass—all together serve to control the nature and extent of the deposit which the operator desires to secure. After the apparatus has been running the desired length of time the bottles are then removed from the bottle-supports and placed in an upright position and permitted to cool further, the process of crystallization continuing somewhat, this depending upon the degree of saturation of the liquor. I have found by experience that the vibration of the parts of the apparatus by reason of an intentionally-produced greater or less looseness of parts in their bearings tends somewhat to secure greater rapidity in the process of crystallization.

Having described my invention, what I claim as new is—

1. In an apparatus for filling bottles with liquor containing an excess of sugar in solution, in the presence of alcohol and flavoring materials, the combination with a multiple rotating bottle-support, of means for slowly and continuously rotating said support, means for tilting the support to any desired angle and means for retaining it in any position while being rotated.

2. In an apparatus of the class described, a series of multiple rotating bottle-supports, means for rotating them to which they are adjustably secured, such as a shaft, means for tilting the shaft to any desired position and means for maintaining the shaft and bottle-supports in such position during rotation.

3. In an apparatus of the class described a shaft having means by which it may be adjusted into different inclined positions and held in each of its said different inclined positions, a support for a multiplicity of bottles carried by said shaft and partaking of the movements thereof, and means for rotating said shaft in each of its inclined positions.

4. In an apparatus of the class described, a shaft mounted to be adjusted into inclined position, a support carried thereby and constructed to hold a multiplicity of bottles, and means for rotating said shaft in its various positions of adjustment, comprehending a shaft geared therewith and partaking of the tilting movement thereof, a gear carried by the latter shaft and means to drive the latter gear, said driving means being adjustable to accord with the adjustability of said latter shaft.

5. In an apparatus of the class described, the combination of a shaft provided with a support for a multiplicity of bottles, said shaft being pivoted between its ends, a roller at the lower end of said shaft, an inclined track engaging said roller, adjustable means engaging said roller to hold the shaft and bottles-support in inclined position and means for rotating said shaft and bottles-support while in said inclined position.

6. In an apparatus of the class described, the combination of a rotary shaft provided with a support for a multiplicity of bottles, said shaft being pivotally mounted so as to be adjustable into inclined position, means for holding it in its adjusted positions, and adjustable mechanism for rotating said shaft in its different positions of adjustment.

7. In an apparatus of the class described, the combination of a shaft provided with a support for a multiplicity of bottles, said shaft being pivotally mounted so as to be adjustable into inclined positions, means for holding it in its inclined positions, and means for rotating said shaft in its various positions of adjustments, including a second shaft geared with the same and partaking of the adjustments thereof, a gear on the end of said second shaft, a gear intermeshed with the gear on said second shaft, a shaft supporting

the latter gear, bearings for the last-mentioned shaft, adjustable to accord with the adjustments of said second shaft, and means for securing said bearings in their adjusted positions.

8. In an apparatus for filling bottles with liquor containing an excess of sugar in solution, in the presence of alcohol and flavoring materials, the combination with a rotative bottle-support, mounted to be tilted to any desired angle, of means for slowly and continuously rotating said support, comprehending driving-gears adjustable into positions to accord with the adjustments of said support, means for retaining said support in its adjusted position while being rotated, and means for holding the driving mechanism in adjusted position.

9. In an apparatus for filling bottles with liquor containing an excess of sugar in solution, in the presence of alcohol and flavoring materials, the combination with a rotative shaft mounted to be tilted to any desired angle, and a support fixed thereon and constructed to carry a multiplicity of bottles containing said liquor, of means for slowly and continuously rotating said shaft, comprehending driving-gears adjustable into positions to accord with the adjustments of said shaft, means for retaining said shaft in its adjusted position while being rotated, and means for holding the driving mechanism in adjusted position.

10. In an apparatus for filling bottles with liquor containing an excess of sugar in solution, in the presence of alcohol and flavoring materials, the combination with a rotative shaft mounted to be tilted to any desired angle, and a support fixed thereon and constructed to carry a multiplicity of bottles containing said liquor, of means for slowly and continuously rotating said shaft, comprehending a second shaft geared therewith and partaking of the tilting movement thereof, a gear, carried by said second shaft, an adjustably-supported gear intermeshed with the gear on said second shaft, means for holding said adjustably-supported gear in its adjusted position, and means for retaining the first-mentioned shaft in its adjusted position while being rotated.

11. An apparatus of the class described, including in its construction a shaft provided with a support for a multiplicity of bottles, means by which said shaft may be adjusted and held in various inclined positions, and means for rotating said shaft in each of its various inclined positions, said construction also including a loose mounting of parts in their bearings to cause a continuous vibration to be imparted to said shaft while it is being rotated.

12. An apparatus of the class described, including in its construction a shaft adjustable into inclined position and provided with a support for a multiplicity of bottles, a second

shaft, connected with the first-mentioned shaft
between its ends and serving as an axis there-
for in the adjustment thereof, said second
shaft being suspended at points distant from
5 the point at which the first-mentioned shaft
is supported, a third shaft, supported by said
second shaft and geared with the first-men-
tioned shaft, and means for driving said sec-
ond shaft to thereby rotate said first-men-
10 tioned shaft, said construction including a

looseness of parts in bearings, for the purpose
specified.

Witness my hand, this 24th day of Febru-
ary, 1902, in the presence of two subscribing
witnesses.

CARL HITZL.

Witnesses:

MABEL K. WHITMAN,
ERNEST H. BOYCE.