

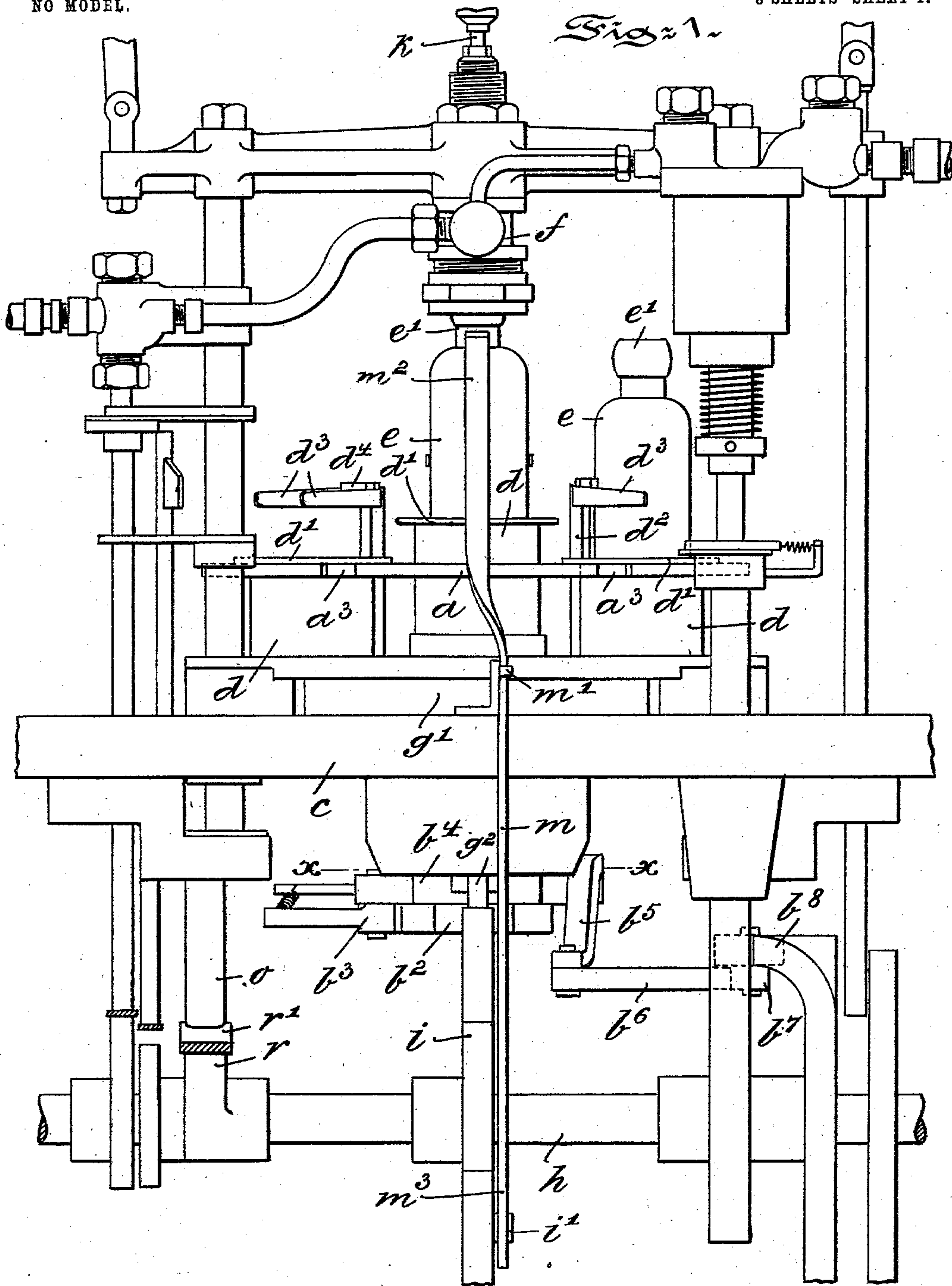
No. 740,997.

PATENTED OCT. 6, 1903.

J. K. WEED.
BOTTLE FILLING MACHINE.
APPLICATION FILED JULY 23, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:
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Jas. C. Wolbrunith

Inventor:
Jacob K. Weed,
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Attorney

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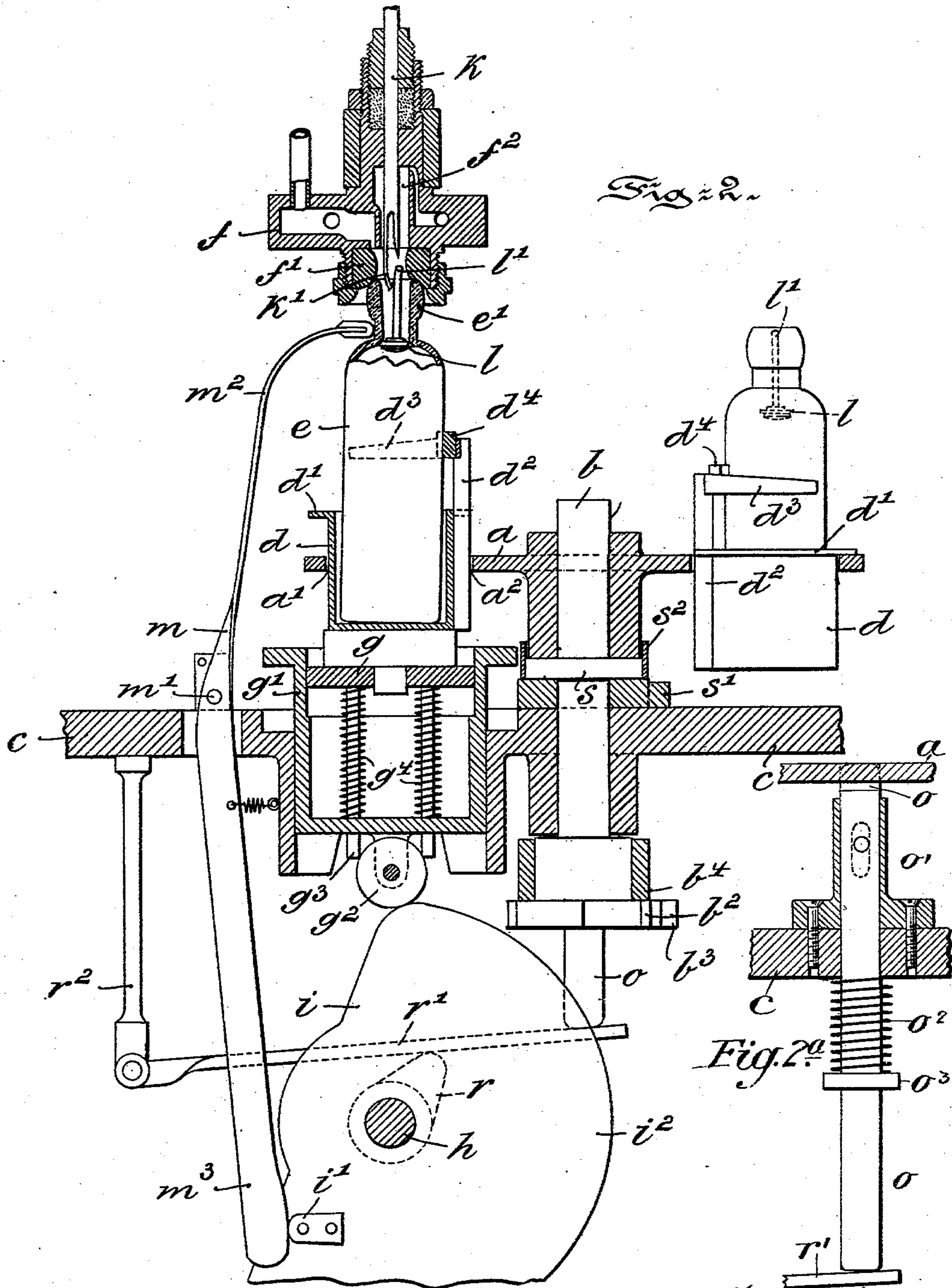
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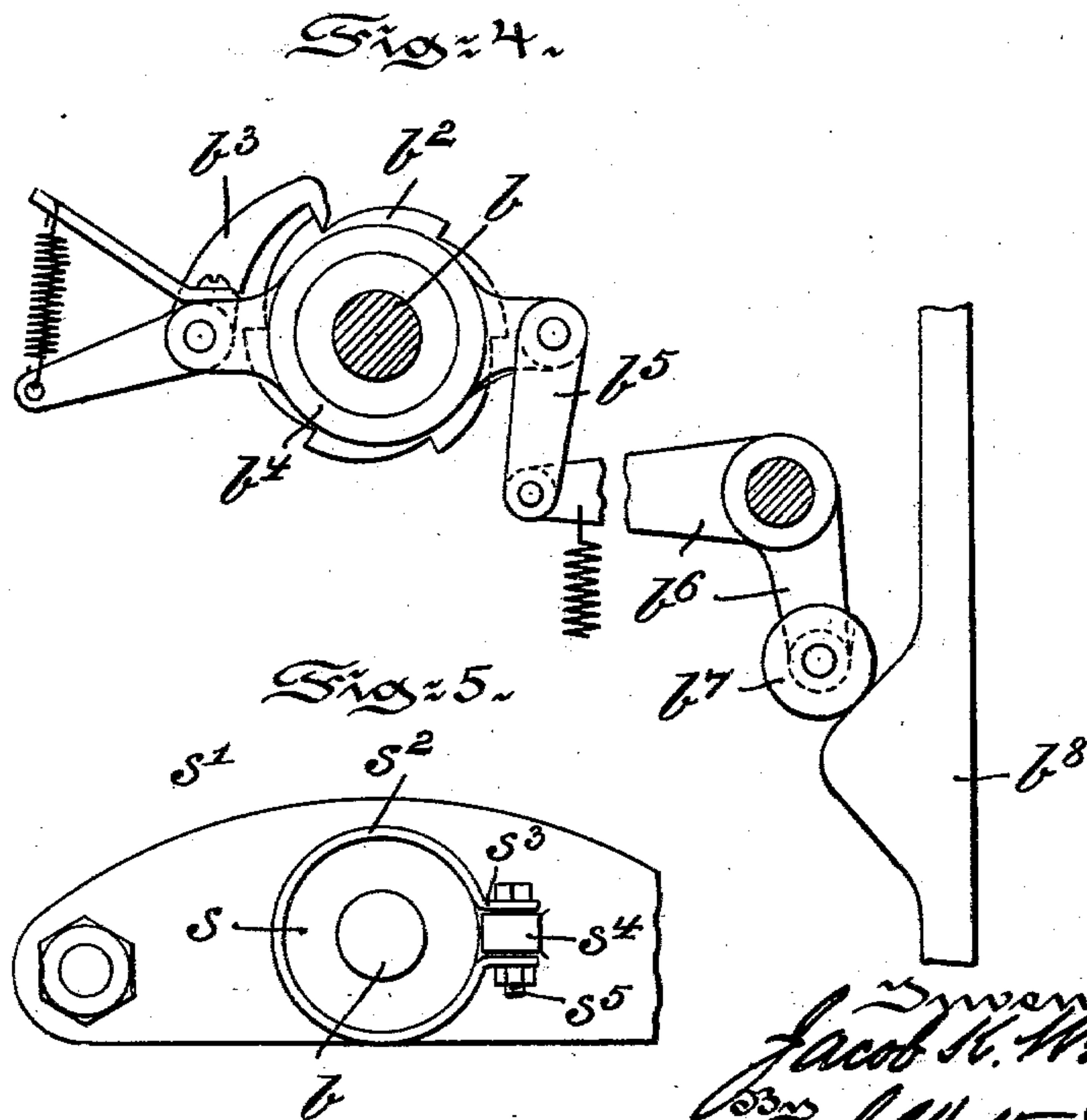
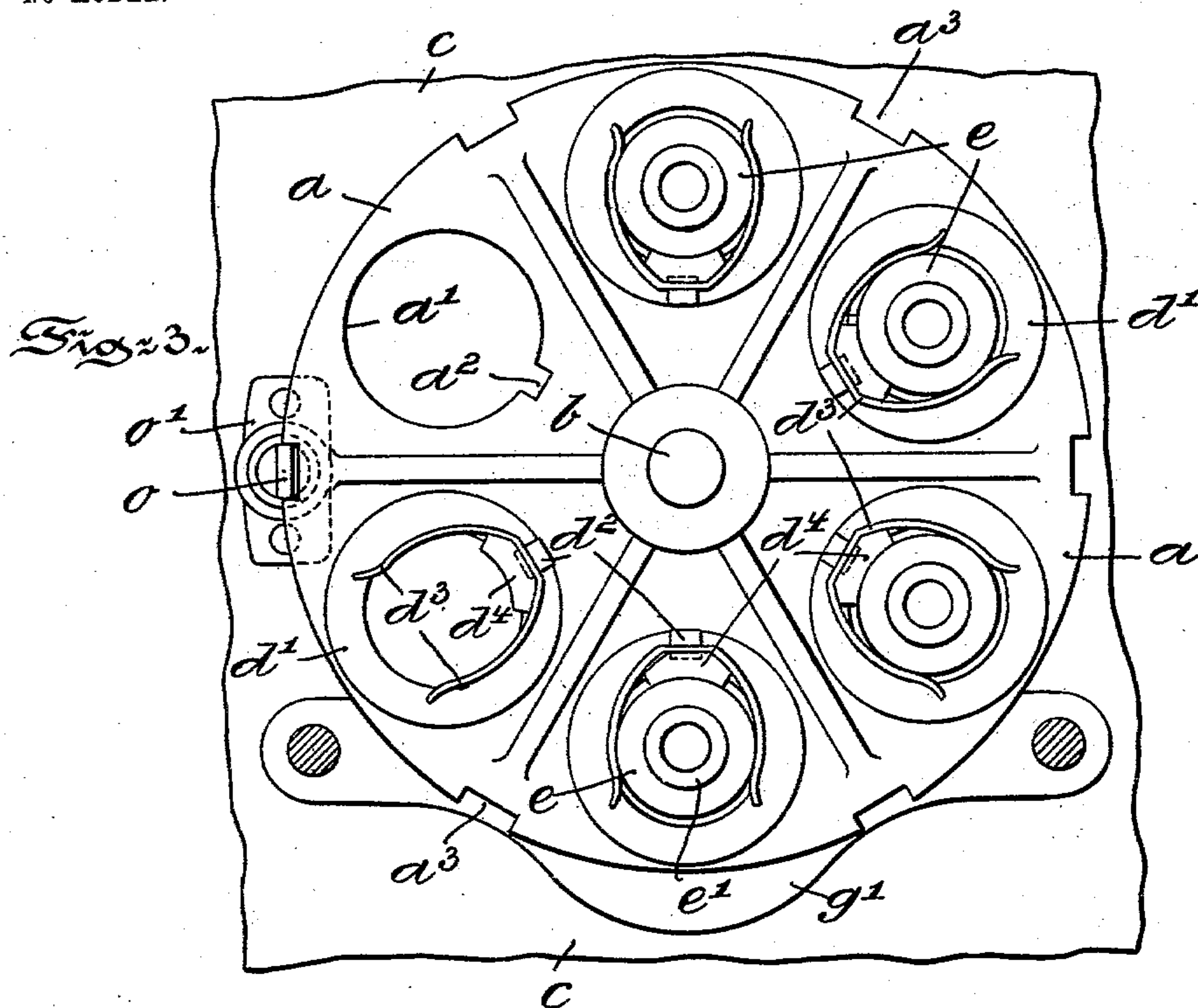
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UNITED STATES PATENT OFFICE.

JACOB K. WEED, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO S. TWITCHELL COMPANY, OF CAMDEN, NEW JERSEY, A CORPORATION OF NEW JERSEY.

BOTTLE-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 740,997, dated October 6, 1903.

Application filed July 23, 1903. Serial No. 166,784. (No model.)

To all whom it may concern:

Be it known that I, JACOB K. WEED, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Bottle-Filling Machines, of which the following is a specification.

My invention has relation to certain improvements in a bottle-filling machine of the type illustrated and described in United States Letters Patent No. 703,870, granted to me under date of July 1, A. D. 1902, in which the bottles to be filled with carbonated or other liquids are fed to the filling-head of such a machine and then removed therefrom; and in such connection it relates to the general construction and arrangement of such a machine to improve and thus perfect the operation thereof.

The principal objects of my invention are, first, to provide a bottle-filling machine of comparatively simple construction and arrangement adapted to receive and feed the bottles in succession automatically to and from the filling-head of the machine; second, to provide a revolving table with removable cups or receptacles adapted to receive the bottles and to permit of the raising and lowering of the same by the machine independently of the table; third, to provide cups or receptacles for the bottles with a gripping or clamping device adapted to engage and hold the bottles in proper position and permit of tilting of the same; fourth, to provide in a bottle-filling machine means to rotate the table, cups, or receptacles and bottles with a step-by-step movement to bring the bottles to be filled successively into the filling position below the filling-head of the machine and the yielding table thereof and to lock the table in such position, and, fifth, to provide in a bottle-filling machine means adapted to engage a bottle after the filling of the same to permit of the release of the spring-latch of a sealing-disk of the bottle from the draw-hook of the filling-head of the machine.

The nature and scope of my present invention will be more fully understood from the following description, taken in connection

with the accompanying drawings, forming part hereof, in which—

Figure 1 is a front elevational view of the upper portion of a bottle-filling machine provided with a revolving table embodying main features of my invention. Fig. 2 is a view, partly in section and partly in front elevation, illustrating a bottle in engagement with the filling-head of the machine and showing also the means for disengaging the sealing device for the bottle from the draw-hook of the machine. Fig. 2^a is a detail view, partly in section and partly in elevation, illustrating the means for locking the revolving table in a position to permit of the filling of a bottle. Fig. 3 is a top or plan view of the revoluble table, illustrating one of the removable cups or receptacles adapted to receive and hold a bottle as removed from the table and one cup thereof without a bottle and also illustrating the means for locking and holding the table in a position to permit of the filling of a bottle by the machine. Fig. 4 is a detail view taken on the line X X in Fig. 1, certain portions of the machine being removed, illustrating in top or plan view the means adapted to impart a step-by-step movement to the table; and Fig. 5 is a detail view illustrating in top or plan view a brake device to retard the movement of the table.

Referring to the drawings, there has been illustrated as to several features a machine of the type of my prior patent, No. 703,870, of July 1, 1902, and such features of the machine have not been lettered on the drawings nor described, as it has been deemed necessary only to make reference to the said patent as to its structure and to confine the literal description and lettering of the parts of the machine illustrated of my said prior patent, to which my present invention is especially applicable, to that portion and parts of the said machine which constitute the essential features of my present invention, in which—

a represents a revolving disk or table which is engaged and held in a horizontal position by a shaft *b*, movably arranged in the bed-plate *c* of the bottle-filling machine, as shown in Fig. 1. The table *a* is provided with openings *a'*, adapted to receive cups or re-

ceptacles d , into which the bottles e are placed. Each of the cups or receptacles d is supported in the table a by a laterally-projecting rim or flange d' , which in the normal position of the cups d rests upon the table a , as shown in Figs. 1 and 2. Each of the cups d is, moreover, provided with a vertically-arranged bar or rod d^2 , engaging an extension a^2 of the openings a' of the table a and in this manner preventing the cups d from turning within the openings a' . At the end of the bar d^2 of each of the cups d is arranged a spring-clamp d^3 , which serves to engage and hold the bottle e in proper position within the cup d and is assisted therein by a yielding pad or washer d^4 , carried by the clamp d^3 , against which the bottle e rests for a purpose to be presently more fully explained. The central axis of the openings a' of the table or disk a is arranged in alinement with the vertical axis of the filling-head f and the yielding table g of the bottle-filling machine, and hence it follows that when the table a is rotated for a distance corresponding to the distance of two openings a' a cup d and bottle e will be brought directly below the filling-head f and above the yielding table g , as shown in Fig. 2.

The preferred mechanisms for imparting a step-by-step rotary movement to the table a are as follows: As shown in Fig. 2, at the end of the shaft b , rotating the table a , is arranged a ratchet-wheel b^2 , which is engaged by a pawl b^3 , carried by a sleeve b^4 , surrounding the shaft b and supported by the ratchet-wheel b^2 . The sleeve b^4 , by means of a link b^5 , is pivotally connected with a bell-crank lever b^6 , the roller b^7 of which is arranged in the path of a cam-disk b^8 , carried by a shaft h . At each revolution of the shaft h , imparted to the same by means not shown, the cam-disk b^8 is brought into engagement with the roller b^7 of the bell-crank lever b^6 , which, through the intervention of the link b^5 , sleeve b^4 , and pawl b^3 , imparts to the table a a movement which brings the cup d and bottle e below the filling-head f in regular sequence. As soon as a cup d and bottle e have been placed above the table g of the bottle-filling machine a cam i , secured to the shaft h , is brought into engagement with a roller g^2 of a cup-shaped support g' for the table g and raises the same. The table g is held within the support g' by means of guide-rods g^3 and is supported therein by springs g^4 , engaging the guide-rods g^3 , which springs g^4 , as soon as the neck e' of the bottle e has entered the filling-head f and engaged a washer or gasket f' thereof, permits of a lowering of the table g within the cup-shaped support g' . In this position the bottle e is held until the same is filled with liquid in a manner and by means similar to that shown and described in my prior patent, No. 703,870. As soon as the filling of the bottle e with liquid is completed the draw-hook k' of a draw-rod k , terminating in the filling-chamber f^2 of the filling-head f , which has

been brought into engagement with the spring-latch l' of the sealing-disk or stopper l , is raised, and thus closes the bottle by the sealing-disk l in a well-known manner. After the bottle e has been closed by the sealing-disk l the draw-hook k' is again lowered, as shown in Fig. 2, in which position the spring-latch l' of the sealing-disk l is freed from the draw-hook k' and is automatically disengaged therefrom by the following preferred mechanism:

As shown in Figs. 1 and 2, adjacent to the bottle e and the cam i is arranged a lever-arm m , pivotally secured in the point m' to the bed-plate c of the machine. When the draw-hook k' has been lowered to free the spring-latch l' of the sealing-disk or stopper l , the upper end m^2 of the lever-arm m , by means of a cam projection i' , secured to the cam i , engaging the lower portion m^3 of the same, is brought into engagement with the neck e' of the bottle e and tends to tilt the same toward the right in Fig. 2. At the same time the roller g^2 of the cup-shaped support g' for the yielding table g has reached the end of the throw portion i^2 of the cam i and is descending, as shown in Fig. 2. This downward movement of the support g' permits the table g , still under the tension of the springs g^4 , to follow this downward movement, and the neck e' of the bottle e is gradually released from the gasket f' of the filling-head f . The end m^2 of the lever-arm m bearing against the neck e' of the bottle e tilts the same toward the right, as shown in Fig. 2, and brings the spring-latch l' of the sealing-disk l out of engagement with the draw-hook k' of the draw-rod k . During the tilting of the bottle e in the cup d the same rests against the pad d^4 of the clamp d^3 , which returns the bottle to its normal vertical position as soon as the neck e' is entirely freed from the filling-head f by the complete lowering of the support g' and table g . In order to hold the revolving table a , its cup d , and the bottle e , placed therein, in their proper position in alinement with the filling-head f , the same is provided at the periphery with notches a^3 , one of which is engaged in each fixed position of the table a by a bolt o , arranged in a bracket o' , secured to the bed-plate c , as shown in Figs. 2 and 3. The locking-bolt o is held in its normally depressed position and out of engagement with the revolving table a by a spring o^2 , bearing against the underside of the bed-plate c , and a collar o^3 , secured to the bolt o , as shown in Fig. 2. The bolt o is raised at predetermined intervals and brought into engagement with a notch a^3 of the revolving table a by means of a cam r , secured to the shaft h and engaging a lever-arm r' , which engages the end of the bolt o , and this lever-arm is pivotally connected with a bracket r^2 , as shown in Fig. 2. In order to retard the movement of the revolving table a and to hold the same in each position, the shaft b thereof is provided with a disk s , resting on

a bracket s' , secured to the bed-plate c . The disk s is preferably engaged by a band-brake s^2 , the ends s^3 of which are adjustably secured to a projection s^4 of the bracket s' by a bolt s^5 , as shown in Fig. 5, whereby upon the tightening of the band-brake s^2 upon the disk s , integral with the shaft b , the frictional contact between the band-brake s^2 and disk s may be increased or decreased according to the degree of tightening of said band-brake to retard the movement of the shaft b and also to permit of the arresting of the table a , cups or receptacles d , and bottles e when therein in the filling position of the machine.

It will be manifestly obvious that as to some of the details of the machine as described modifications may be made therein without departing from the spirit and scope of my said invention, and hence I do not wish to be understood as limiting myself to all the details thereof as illustrated and described; but,

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the character described, a filling-head, a draw-hook arranged therein and a yielding table, a revolving table having openings, cups or receptacles adapted to receive and support bottles having spring-latches and sealing-disks, means connected with said cups or receptacles adapted to clamp and hold said bottles in proper position and to permit of tilting of the same within said cups or receptacles, means adapted to rotate said revolving table to bring a cup and bottle with its spring-latch below said filling-head and its draw-hook and above said yielding table, means adapted to raise and lower said yielding table to bring said cup and bottle and its spring-latch into engagement with said filling-head and its draw-hook, and means adapted to engage said bottle when lowered to move said spring-latch out of the path of said draw-hook.

2. In a machine of the character described, a filling-head and a yielding table, a revolving table having openings, cups or receptacles adapted to receive and support bottles arranged in said openings, means connected with said cups adapted to hold said bottles in a vertical position within said cups or receptacles and return the same thereto when moved out of said vertical position, means adapted to rotate said revolving table to bring a cup and a bottle below said head and

above said yielding table, means adapted to retard the rotary movement of said revolving table, and means adapted to lock said revolving table in the filling position.

3. In a machine of the character described, a filling-head and a yielding table, a revolving table having openings and extensions, cups or receptacles adapted to receive and support bottles arranged in said openings and supported by said revolving table, a bar connected with each cup or receptacle adapted to engage the extension of said opening to prevent the turning of each cup or receptacle in said revolving table, a clamp carried by said bar adapted to engage said bottle, a yielding pad carried by said clamp adapted to engage said bottle and to hold the same in conjunction with said clamp in proper position within the cup or receptacle and to return the same thereto when moved out of such position, and means adapted to be brought into engagement with a bottle to tilt the same in its supporting-cup.

4. In a machine of the character described, a filling-head, a draw-hook, and a yielding table, a revolving table having openings, cups or receptacles adapted to receive and support bottles having spring-latches and sealing-disks arranged in said openings, bars connected with said cups or receptacles adapted to support clamps, yielding pads or washers connected with said clamps adapted to engage bottles and to hold the same in conjunction with said clamps in proper position in said cups in respect to said filling-head, means adapted to actuate said revolving table, to bring a cup and a bottle with its spring-latch below said filling-head and its draw-hook and above said yielding table, means adapted to lock said table in each position, means adapted to raise and lower said yielding table to bring said cup or receptacle, its bottle and spring-latch into engagement with said filling-head and its draw-hook, a lever-arm actuated by said raising means and adapted to tilt the bottle during the lowering of the same to move its spring-latch out of the path of said draw-hook.

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

JACOB K. WEED.

Witnesses:

J. WALTER DOUGLASS,
THOMAS M. SMITH.