E. E. KALLENBACH.

FILLING MACHINE.

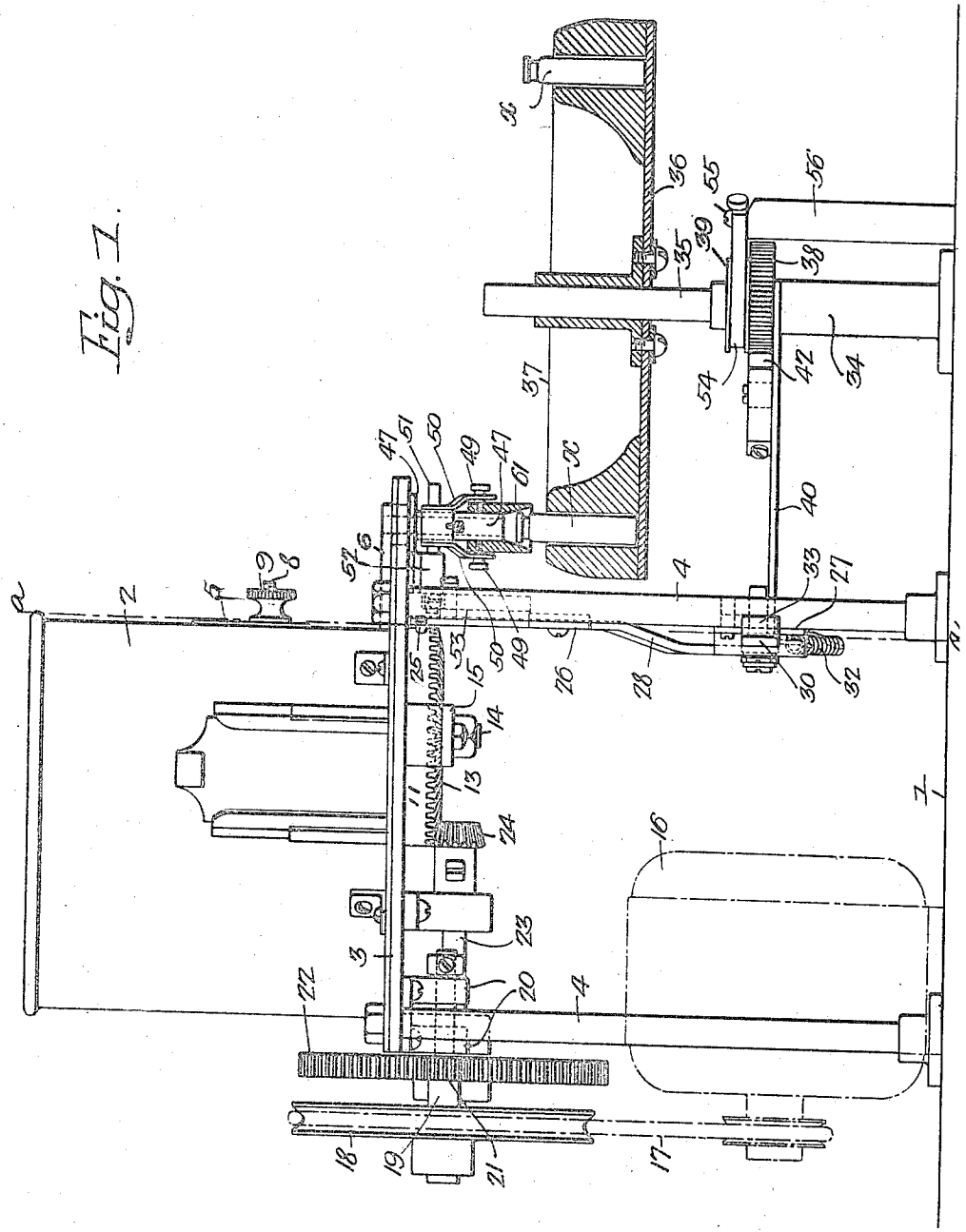
APPLICATION FILED OCT. 13, 1914.

1,248,339.

Patented Nov. 27, 1917.

4 SHEETS—SHEET 1.

Fig. 1.



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Edward E. Kallenbach.
by his Attorneys—
Howson & Howson

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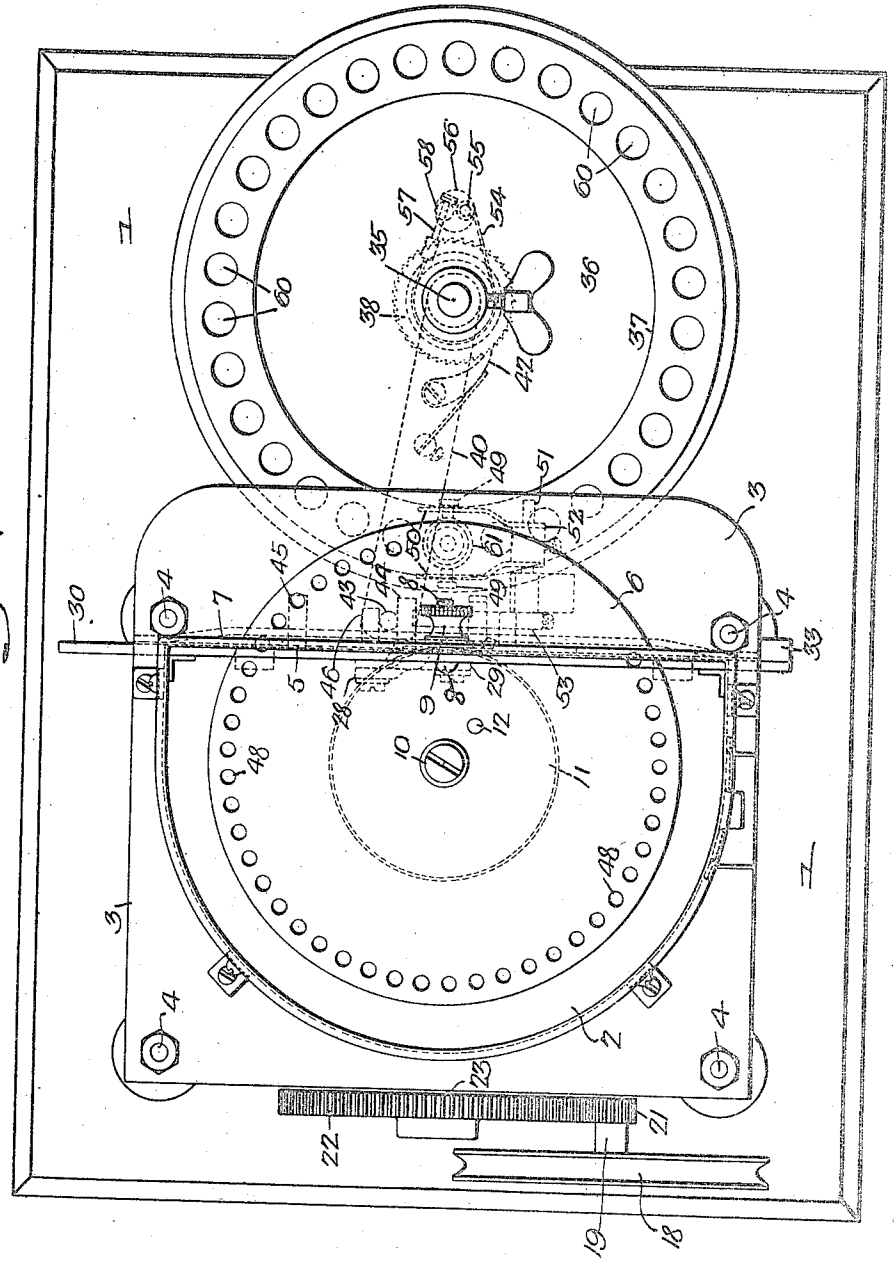
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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

Fig. 3.

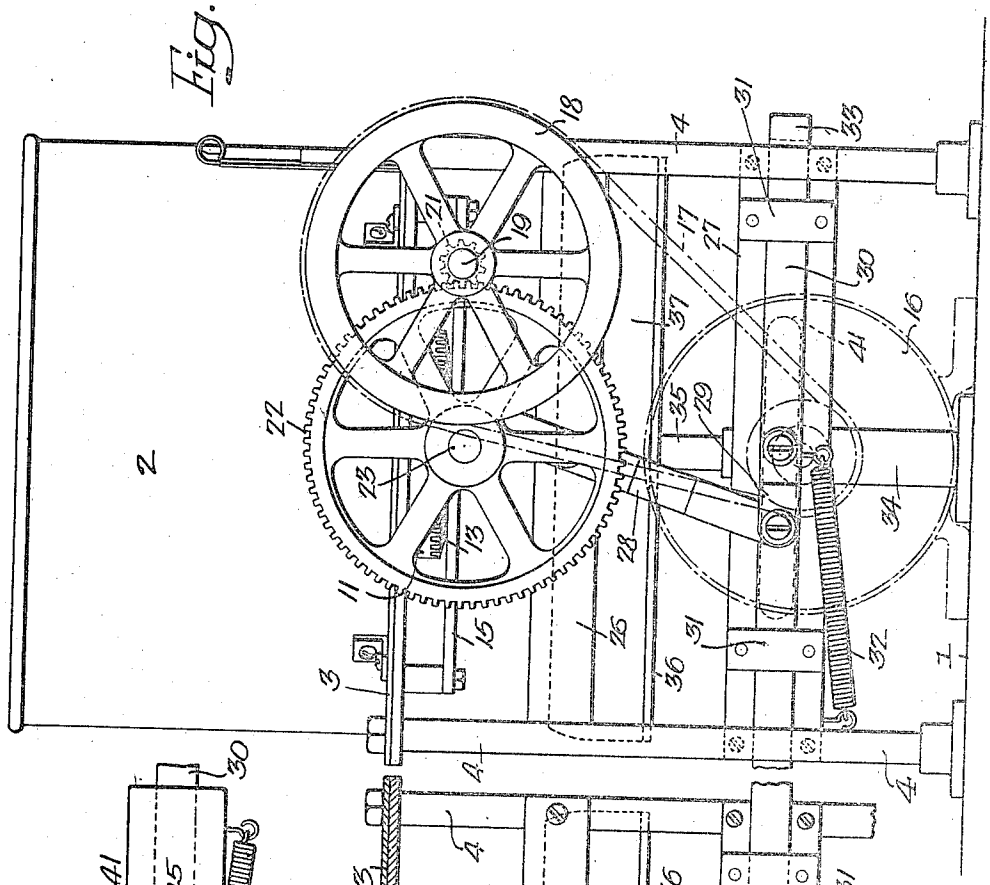


Fig. 6.

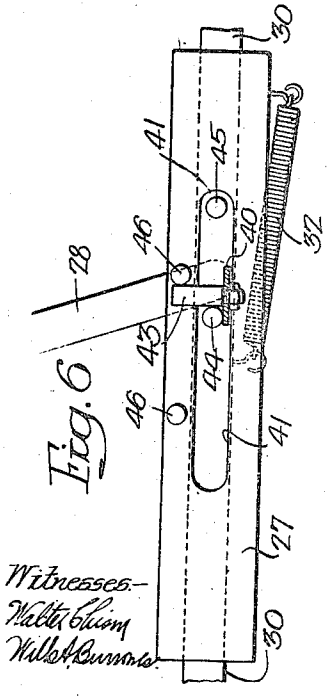
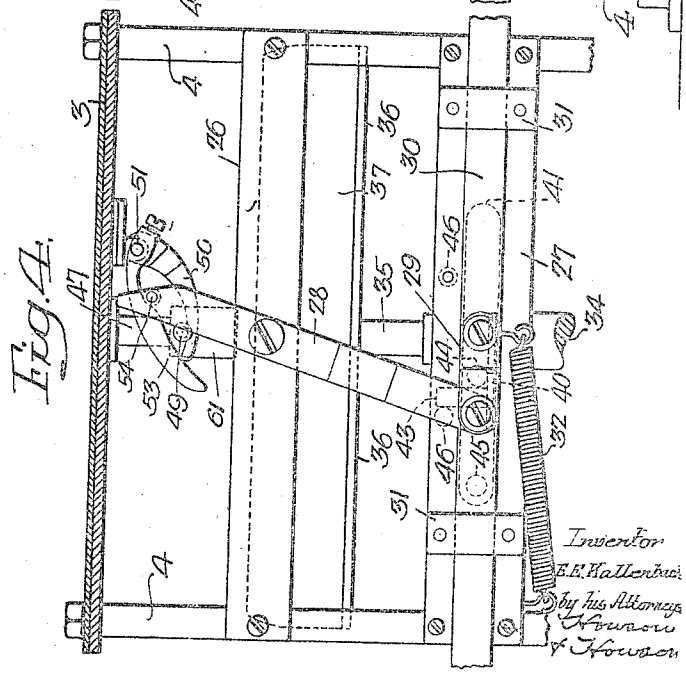


Fig. 4.



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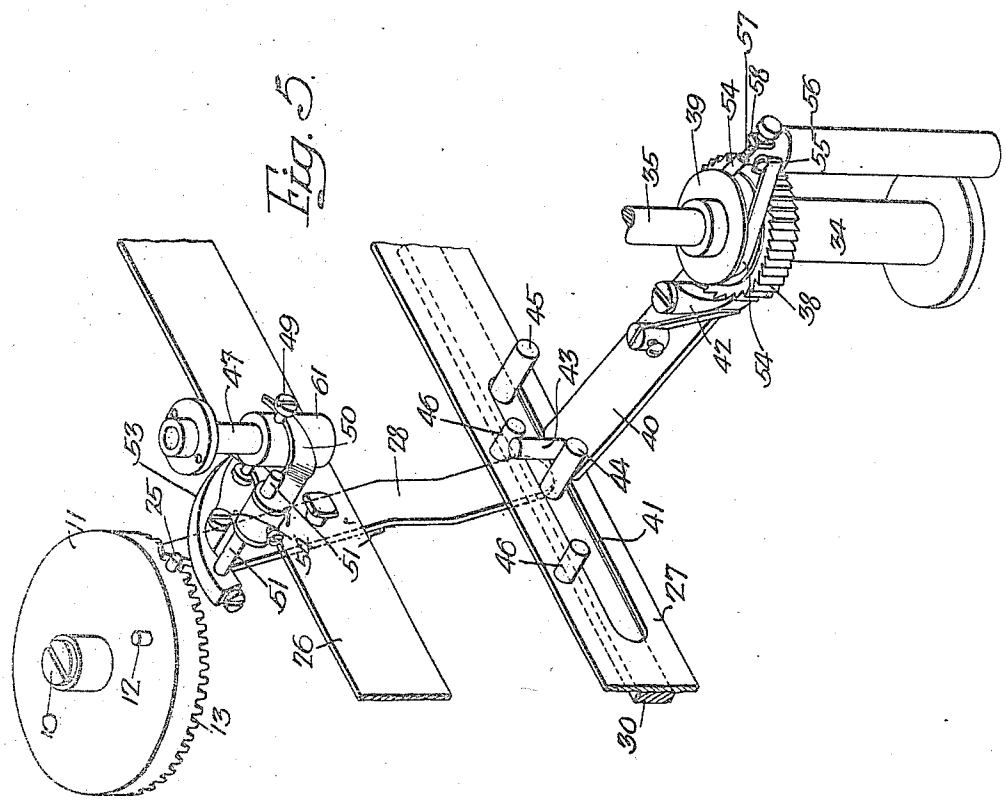
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4 SHEETS—SHEET 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

EDWARD E. KALLENBACH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO WILLIAM R. WARNER & COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

FILLING-MACHINE.

1,248,339. Specification of Letters Patent. Patented Nov. 27, 1917.

Application filed October 13, 1914. Serial No. 866,524.

To all whom it may concern:

Be it known that I, EDWARD E. KALLENBACH, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Filling-Machines, of which the following is a specification.

One object of my invention is to provide a novel and relatively simple as well as substantial device for filling bottles or other containers with predetermined numbers of pills, tablets or similar objects, the invention contemplating more particularly novel mechanism for intermittently moving the container carrying member and for preventing it from drifting or continuing to turn after the turning mechanism has ceased to act.

I further desire to provide a machine of the above noted class with novel means for insuring a predetermined, intermittent movement of the container carrying member together with a novel form of brake or holding mechanism for insuring the stoppage of the carrier after the feeding mechanism has ceased to act.

Another object of the invention is to provide novel means for supporting and presenting empty bottles to a pill feeding device designed to periodically deliver predetermined numbers of pills.

These objects and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings in which;—

Figures 1 and 2 are respectively a side elevation partly in section and plan of a filling machine constructed according to my invention;

Fig. 3 is an end elevation of the machine shown in Figs. 1 and 2.

Fig. 4 is a vertical section on the line *a*—*a* Fig. 1;

Fig. 5 is a perspective view illustrating certain of the mechanism constituting my invention, and

Fig. 6 is a fragmentary elevation of a portion of my invention.

In the above drawings 1 represents a suitable base or supporting structure upon which is mounted an elevated reservoir for the reception of pills or other objects which it is desired to feed into bottles or containers, this being mounted on the plate or platform 3 carried on four legs or columns 4. The container 2 which is substantially semicylindrical in form has a flat vertical side which has a long horizontal opening extending for practically its entire length immediately above the platform 3 and partly closed by a vertically slidable door 5. This latter is slotted at its lower edge to permit of the passage of a feeding or measuring disk 6, being slidable in suitable guideways parallel with the flat face 7 of the container and held in any desired position by a clamping bolt 8. This latter is slidable in a vertical slot formed in the front side 7 of the container and has a clamping nut 9 whereby it may be tightened to hold the door in any adjusted position. The measuring disk 6 is removably fastened by a screw 10 to a rotary plate 11 whose top surface is substantially flush with the bottom of the container 2 and is operatively connected to said disk by a projecting pin 12 designed to fit into a hole therein. The plate 11 has its lower face provided with inclined radial teeth 13 so that it constitutes in effect a beveled gear which is rotatable on a suitable spindle 14 carried by a transversely extending bar 15 supported at its ends from the underside of the platform 3.

For rotating this gear and plate I provide an electric motor 16 mounted on the base 1 and having its armature shaft connected through a belt 17 with a pulley 18 fixed to a shaft 19 carried by bearings 20. Also fixed to this shaft is a pinion 21 meshing with a gear 22 fixed to a shaft 23 on which is also fixed a beveled pinion 24 engaging the gear 13.

The two columns or legs 4 at the front end of the machine are connected by a pair of horizontal bars or braces 26 and 27, to the first of which is pivoted a lever 28 whose upper end extends adjacent the beveled gear 13 so as to be periodically engaged by a projecting pin or lug 25 thereon as said gear is turned. The lower end of this lever is connected through a link 29 with a reciprocable bar 30 operative in a way provided by the cross bar 27 and a pair of E shaped guides 31, there being a spring 32 extending between said bar 30 and some

portion of the frame whereby the bar is normally held at one extremity of its path of movement.

In order to prevent noise and jarring action, the end of the bar 30 farthest from the spring has fixed to it a resilient or other suitable form of stop which by engaging one of the legs 4 serves to limit and check its movement under the action of the spring. Mounted upon the base in front of the container 2 is a standard or bracket 34 in which is rotatably mounted a spindle 35 having clamped to it a circular plate 36 on which is mounted a bottle-carrying ring 37. This latter is preferably made of wood and has formed in it circular recesses all concentric with the spindle 35 and designed to receive the bottles to be filled. Fixed to the spindle 35 is a ratchet wheel 38 and a brake drum 39, in addition to which it is loosely engaged by one end of an arm 40 whose other end is supported so that it is free to oscillate upon the lower edge of an elongated slot 41 formed in the cross bar 27, as shown in Fig. 6. This arm 40, adjacent the ratchet wheel 38, carries a spring pressed pawl 42 in engagement with the teeth of said wheel, and its outer extremity has a lug or projection 43 capable of engaging either of two pins 44 or 45 projecting horizontally through the slot 41 for the reciprocable bar 30. The cross bar 27 is also provided with a pair of horizontally projecting pins 46 designed to limit the angle through which the arm 40 may oscillate, their position being such that they will be engaged by the vertical projection 43 of said arm at the extremities of its swing.

The measuring disk 6 consists of a circular plate of wood or other suitable material having a predetermined number of perforations or holes all at the same distance from its center and arranged at the same distance apart, although they are omitted from a certain definite arc of the circle on which they are formed. In the platform 3 is mounted a downwardly extending tube 47 having its upper end flush with the top surface thereof and its center line at the same distance from the center of revolution of the plate 6 as are the holes 48 therein, so that as the latter pass over the upper end of said tube their contents will naturally fall therein under the action of gravity.

Slidably mounted on this tube is a bottle engaging cap 61 having a passage therethrough whose lower end is downwardly flared so that it will receive and fit down over the tops of the bottles or containers carried by the ring 37. This cap is provided with a pair of oppositely projecting lugs or trunnions 49 resting upon and supported by the prongs of a fork 50 fixed to a horizontal spindle 51 mounted in a suitable bearing 52 on the under side of the platform 3. Also fixed to this spindle is a curved arm 53 placed to be engaged and moved by a pin 54 projecting from the upper end of the lever 28.

The brake drum 39 on the spindle 35 is engaged by a brake band 54 one of whose ends is permanently attached by a screw 55 to a post 56 projecting upwardly from the base 1, while its second end has connected to it a screw 57 whose end passes through a lug 58 on the top of said post and is provided with a nut whereby the band may be tightened on the drum as desired.

Under conditions of operation the container 2 is filled with pills or other material which it is desired to feed into bottles placed in the holes 60 of the ring 37 and current is supplied to the motor 16 which through the belt 17, pulley 18, gears 21, 22, and 24 drives the beveled gear 13 and the plate 11 which in this instance is integral therewith. The consequent rotation of the feeding disk 6 beneath the mass of pills in the container allows one or more of the latter to enter each of the holes 48, depending upon the thickness of said plate and upon the size of the pills, and the various parts are so proportioned that during the time that the holes 48 of the plate 6 are being passed over the upper end of the tube 47, the cap 61 rests upon the top of a bottle x in one of the holes 60 of the ring 37. As a consequence the pills carried by the holes of the disk 6 are successively discharged through the tube 47 into said bottle.

Immediately after the last of the holes 48 has discharged into the tube, the pin 25 engages the upper end of the lever 28 and swings it on its pivot so that its horizontal projecting pin 54, moving in engagement with the arm 53, turns the spindle 51 and swings upwardly the fork 50, thereby lifting the cap 61 out of engagement with the filled bottle. At the same time the lever 28 moves the bar 30 in its guides until its pin 45 comes into engagement with the vertical pin 43 of the arm 40, which through its pawl 42 turns the ratchet wheel 38, and with it the circular plate 36 and ring 37. Such turning continues until the pin 25 passes out of engagement with the upper end of the lever 28, which, with the bar 30, returns to its normal position under the action of the spring 32.

This forward swing of the arm 40 is sufficient to move the ring 37 through the angular distance between two adjacent holes 60, all of which, as before noted have been previously filled with bottles, so that when movement of the ring ceases, an empty bottle is imediately under the cap 61 while the filled bottle is removed by the operator. The cap 61 is lowered over this empty bottle upon the movement of the bar 30 to its normal position, since the pin 54 moves under

the arm 53 to such a position as will cause the fork 50 to lower said cap. This latter movement of the bar 30 does not affect the arm 40 until the pin 43 of the latter is struck by the horizontal pin 44, whereupon said arm is likewise carried to its normal position in which said pin 43 rests against the stop pin 46.

At the end of the forward swing of the arm 40, the momentum of the ring 37 and its attached parts would naturally tend to cause it to continue turning through a greater or less angle but by adjusting the brake band 54 by the nut on the screw 57, said ring is held by the drum 39 so that its movement ceases as soon as the pawl 42 stops its forward movement. Moreover said brake band and drum serve to hold the ring 37 and its attached parts from any possible backward movement during the time that the pawl 42 is being moved over the teeth of the ratchet wheel 38 by the arm 40, so that the ring 37 is always stopped with an empty bottle under the cap 61. Shortly after the cessation of movement of the bottle carrying ring, the continuously rotated feed plate 6 delivers another series of pills to the tube 47 thus filling a second bottle in the same manner as previously described, it being noted that this movement of the ring 37 to replace a filled bottle by an empty one in line with the tube 47 occurs while the unperforated space of the feed plate 6 is being moved over said tube and while the bottle engaging cap is raised.

I claim;—

1. The combination in a bottle filling mechanism of a vertical spindle; a horizontal rotary member having means for supporting a series of bottles; a ratchet wheel on said spindle; a lever mounted to oscillate on the spindle; a pawl on the lever operatively engaging the ratchet wheel; a second lever mounted to oscillate in a plane at right angles to the plane of oscillation of the first lever; means for periodically oscillating the second lever; and mechanism operatively connecting said two levers.

2. The combination in a bottle filling mechanism of a vertical spindle; a horizontal rotary member having means for supporting a series of bottles; a ratchet wheel on said spindle; a lever mounted to oscillate on the spindle; a pawl on the lever operatively engaging the ratchet wheel; a second lever mounted to oscillate in a plane at right angles to the plane of oscillation of the first lever; means for periodically oscillating the second lever; mechanism operatively connecting said two levers, consisting of a slide connected to the second lever and having projecting pins; with a projection on the first lever placed to be alternately engaged by said pins as the second lever is oscillated.

3. The combination in a bottle filling mechanism of a horizontal rotary structure having means for holding bottles to be filled; a ratchet wheel connected to said structure; a pawl operative on the ratchet wheel; a lever carrying said pawl and provided with a projection; a guide having stops placed to engage the projection and limit the movement of the lever; a slide operative on the guide and provided with two projections placed to alternately engage the projection of the lever when said slide is reciprocated; a spring tending to move said slide into a definite position; a second lever operatively connected to the slide; with means for intermittently swinging said second lever in opposition to said spring.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

EDWARD E. KALLENBACH.

Witnesses:

LYDIA M. TODD,

MAE KELLER.

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