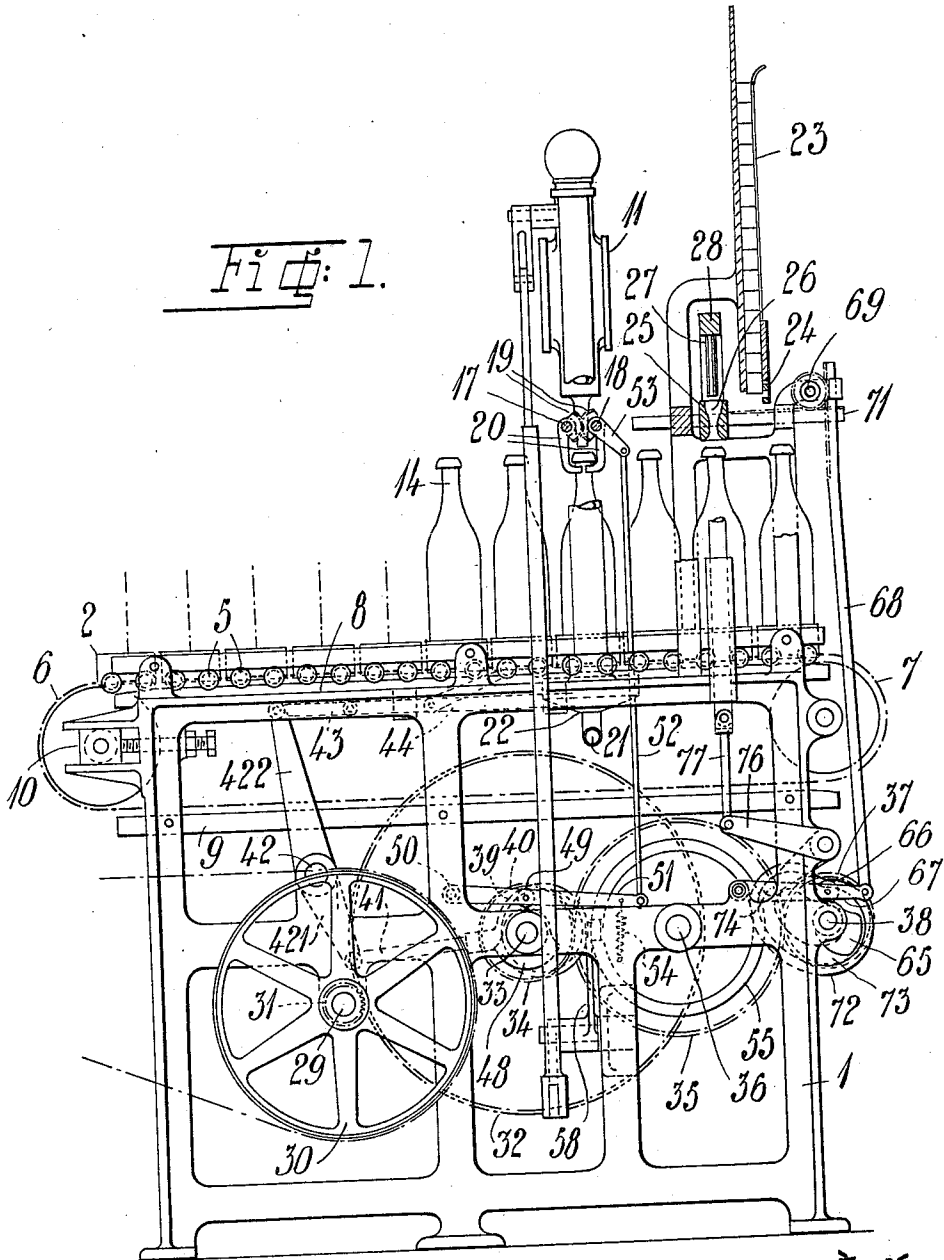


G. WIBERG.
MACHINE FOR BOTTLING LIQUIDS.
APPLICATION FILED APR. 11, 1912.

Patented Jan. 21, 1913.

4 SHEETS—SHEET 1.

1,051,179.



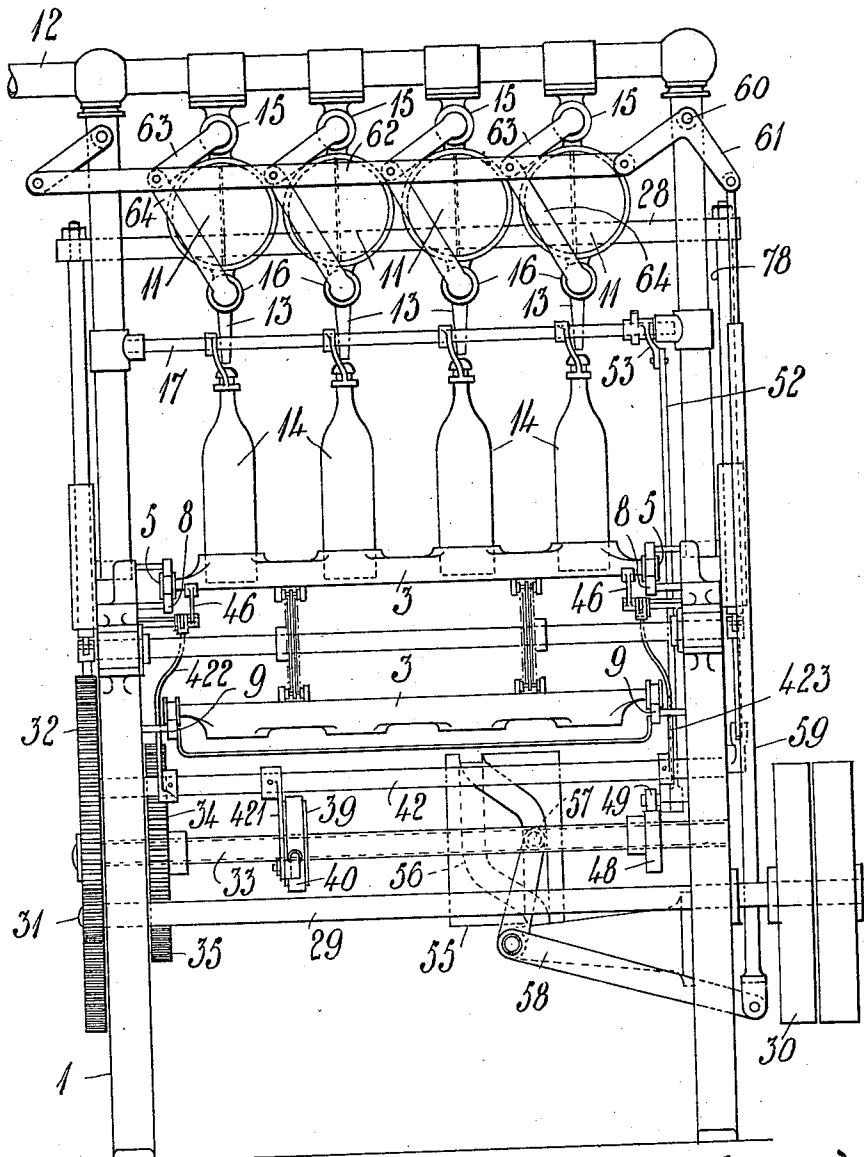
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4 SHEETS—SHEET 2.

Fig: 2.



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4 SHEETS—SHEET 3.

Fig. 3.

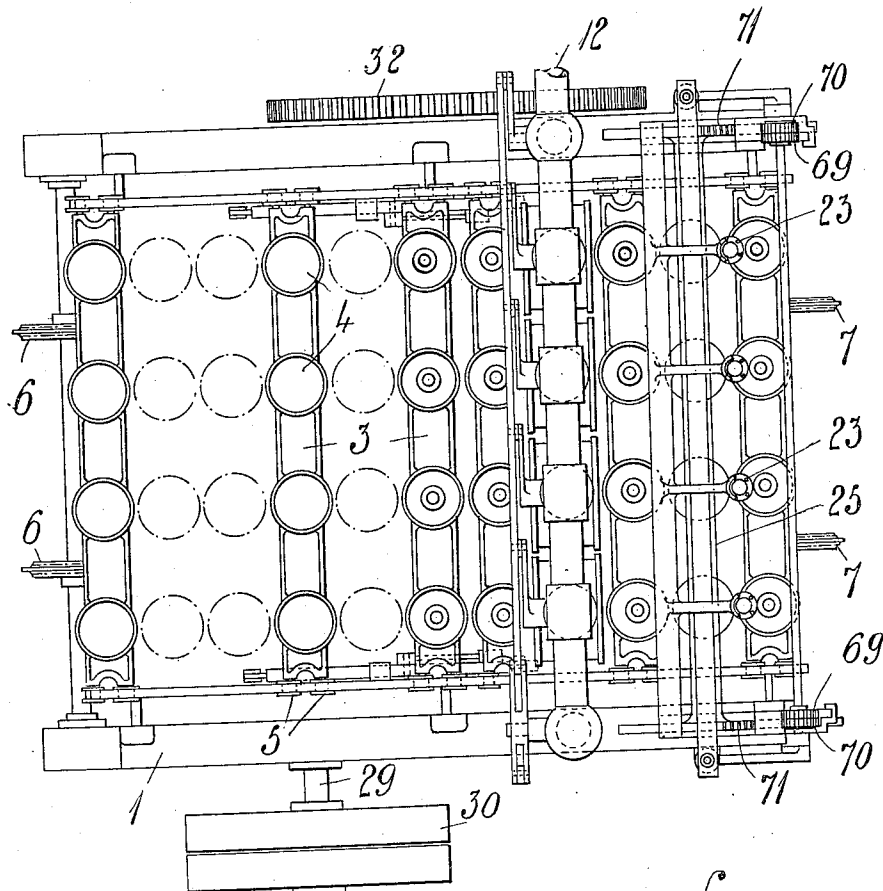
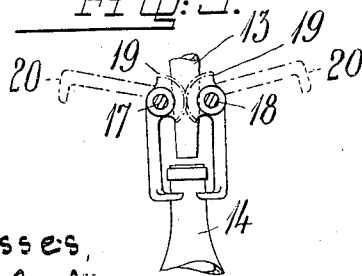
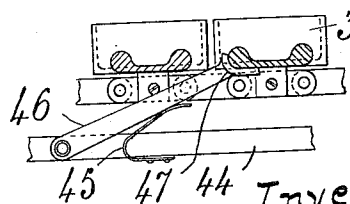


Fig. 5.



Witnesses,
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T. E. [Signature]

Fig. 6.

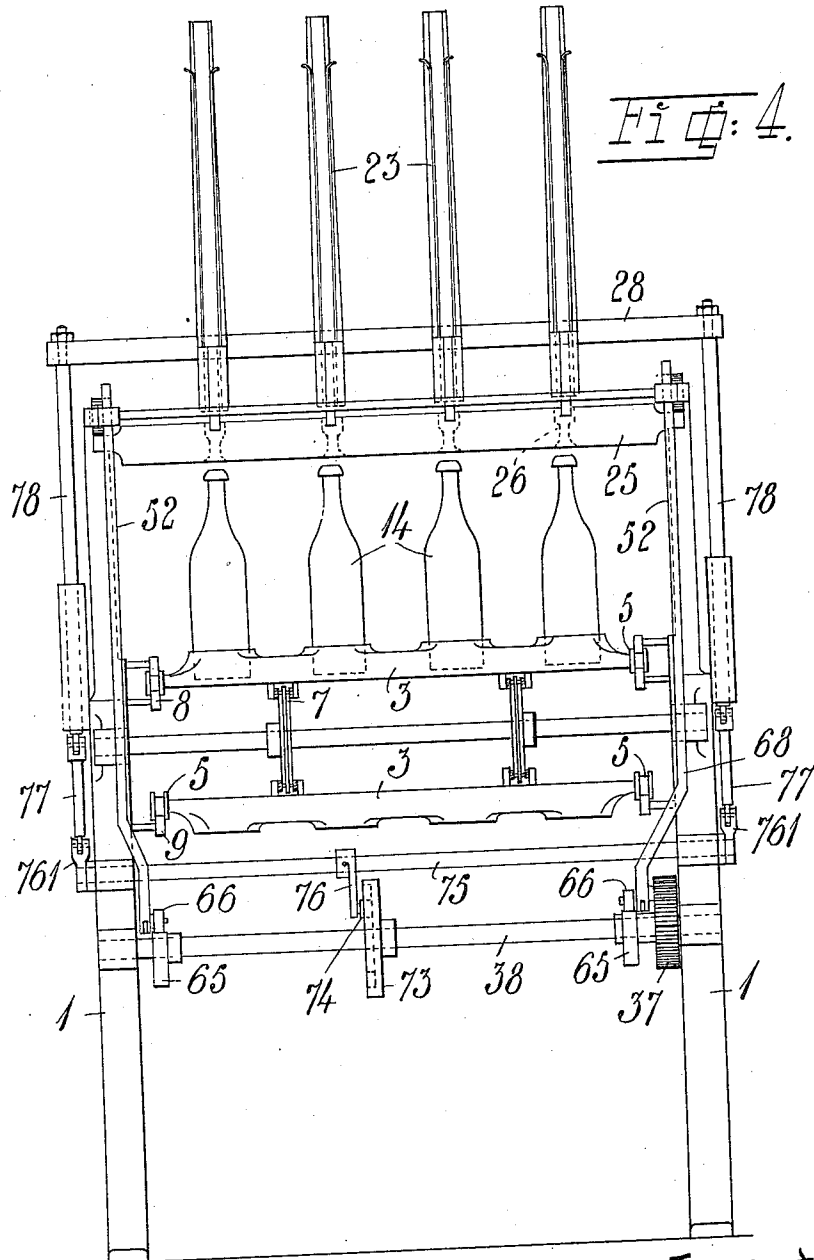


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UNITED STATES PATENT OFFICE.

GEORG WIBERG, OF STOCKHOLM, SWEDEN.

MACHINE FOR BOTTLING LIQUIDS.

1,051,179.

Specification of Letters Patent.

Patented Jan. 21, 1913.

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To all whom it may concern:

Be it known that I, GEORG WIBERG, a citizen of the Kingdom of Sweden, residing at Stockholm, Sweden, have invented new and useful Improvements in Machines for Bottling Liquids, of which the following is a specification.

The present invention relates to a machine for continuously and automatically placing liquids, such as malt-drinks, wine, spirits, water, milk and so on, in bottles and similar vessels.

The object of the invention is to render it possible to fill the bottles with an accurately determined quantity of liquid without causing any loss by spilling and at a speed of working of the machine that may be made great by arranging the machine for filling simultaneously a plurality of bottles.

The main feature of the invention consists in the combination of a step by step moving conveyer or the like for transporting the bottles or the like to be filled and a number of measuring vessels provided above said conveyer and each having two measuring chambers and inlets for the liquid to be bottled and also having supply and drawing off cocks actuated by the driving mechanism of the machine in such manner that one measuring chamber is filled while another is emptied, and vice versa.

The machine may further be provided with a corking device beneath which the filled bottles pass when moving away from the measuring vessels and are corked before leaving the machine.

In the accompanying drawings I have shown one embodiment of the present invention.

Figure 1 shows a side view of the machine. Fig. 2 shows an end view of the machine from the inlet end thereof, Fig. 3 shows a plan and Fig. 4 shows an end view of the machine from the delivery end thereof. For the sake of clearness some details are dispensed with in some figures. Figs. 5 and 6 show details hereinafter specifically referred to.

1 indicates the frame of the machine, which is suitably made of cast iron and in which the various working parts are built up.

2 is an endless conveyer composed of plates or strips 3 which are connected to each other and are provided with pockets 4 for taking up the bottles to be filled, said pockets

being formed by recesses, flanges, or the like. The conveyer 2 runs around wheels 6 and 7 and by means of rollers 5 provided on the plates 3 on rails 8 and 9 arranged between the wheels 6 and 7. The wheels 6 are suitably journaled in a bearing 10 adjustable in the longitudinal direction of the conveyer in order to render it possible to stretch the latter when required.

In the drawing I have shown four pockets 4 in each plate 3, but it will be understood that such pockets may be increased in number, if desired, without affecting my invention.

Though I have shown in the drawing an endless conveyer 2, I may in certain cases more advantageously use a conveyer passing rectilinearly through the machine and in such cases I add to the conveyer at the inlet end of the machine new plates 3 on which unfilled bottles are placed either before or after connecting the plates to the conveyer, while I shorten the conveyer at the delivery end of the machine by removing the plates supporting the filled and eventually corked bottles. In such case the wheels 6 and 7 may be dispensed with as only the rails 8 and 9 are required for supporting and guiding the conveyer 2. In such case the said rails 8 and 9 are suitably made so that a certain number of the plates 3 may be placed on the same at the inlet end in front of the filling device and that the rails at the delivery end extend a certain distance beyond the filling device or the corking device.

The filling device consists of a number of measuring vessels 11 corresponding to the number of pockets 4 of the plates 3, the volume of said measuring vessels corresponding to the quantity of liquid to be filled in each bottle. The measuring vessels 11 are at the top connected to an admission pipe 12 for the liquid to be bottled and are at the bottom provided with spouts 13 beneath which the bottles 14 stop during the stepwise movement of the conveyer 2. The filling of the measuring vessels is accomplished by opening the supply cocks 15 at the top of the measuring vessels, while at the same time the drawing off cocks 16 at the bottom of the measuring vessels are kept closed. As will be more particularly described herebelow, the cocks are opened and closed automatically by being actuated from the driving mechanism of the machine.

In the constructional form shown in the

drawings the measuring vessels 11 are double-acting and of such construction that each measuring vessel consists of two chambers which are alternately filled and emptied by means of the cocks 15 and 16 designed to be connected alternately to the supply pipe 12 and the corresponding spout 13 respectively, the said cocks being by preference three-way cocks. By using double-acting measuring vessels it is possible to reach a high speed of working of the machine, said speed being in a high degree dependent on the time required for filling the bottles and the measuring vessels. Obviously each double-acting measuring vessel may consist of two separate vessels which are connected to a common spout and are provided with separate supply and drawing off cocks, though I prefer to use the measuring vessels shown in drawing on account of their simplicity.

In order during the filling of the bottles to obviate spilling in the event the bottles do not stop exactly in right position beneath the spouts 13, shafts 17 and 18 are journaled at said spouts said shafts being connected to each other by means of toothed segments 19 and supporting grippers 20 (compare Fig. 5) which, immediately before the filling of the bottles commences, are turned into engagement with the necks of the bottles and during the filling operation lock the bottles in proper position beneath the spouts 13 and after the filling has been accomplished are disengaged from the bottles, so that the conveyer 2 is free to continue its movement. The arrangement for actuating the grippers will be hereinafter described in detail.

At the bottling point and below the conveyer 2 is arranged a receptacle 22 provided with outlet pipes 21 and adapted to receive the liquid spilled from bottles or the liquid dropping from the spouts during the movement of the conveyer.

Behind the filling devices with reference to the direction of movement of the conveyer 2, is provided a corking device. The latter consists in the embodiment shown of a cork magazine, a feeding and guiding device for the corks, and stamps for forcing the corks into the bottle necks.

The cork magazines consist of pipes 23 corresponding in number to the pockets of the plates 3. At the bottom said pipes are provided with a checking device consisting of a spring 24 or the like which normally prevents the corks from dropping from the magazine. The pipes 23 are removable so that they may conveniently be replaced by new filled pipes, as soon as they have been emptied. The feeding and guiding device for the corks consists of a beam 25 or the like which is movable to and fro in horizontal direction from a position beneath the stamps to a position beneath the cork magazines.

The beam 25 is provided with the number of apertures 26 tapered downward, the number of said apertures corresponding to the number of pockets of the plates 3. When the beam 25 is in position beneath the cork magazines it presses away the spring 24, so that the lowermost corks in the cork pipes can drop into the apertures 26. When the beam moves back from the cork magazines into the position below the stamps, the springs 24 again become active and prevent the corks from dropping from the magazines. The stamps 27, which also correspond in number to the pockets of the plates 3, are secured to an up and down movable frame 28 and pass in their downward movement through the apertures 26 of the beam 25, so that the corks resting in said apertures are forced downward into the necks of the filled bottles which for the moment stand beneath the beam 25. After the corking operation the stamps move upward to such a level that they do not prevent the movement of the beam 25.

On a main shaft 29 journaled in the frame 1 is mounted a pulley 30 to which driving power is transmitted by means of belt transmission from a suitable source of power. The machine may, however, if desired be provided with a special power motor, for instance an electric motor, provided on the main shaft or connected thereto by means of suitable gearing. On the main shaft 29 is further provided a pinion 31 which meshes with a toothed wheel 32 secured to a shaft 33. To the latter is secured a second toothed wheel 34 engaging a toothed wheel 35 having twice the number of teeth of the wheel 34. The wheel 35 is mounted on a shaft 36 which will rotate at one-half the speed of the shaft 33. The wheel 35 meshes with a toothed wheel 37 which has the same number of teeth as the wheel 34 and is secured to a shaft 38. The gearing is so arranged that the shafts 33 and 38 will make one revolution during the time required for feeding and filling and corking the bottles supported by a plate 3.

The power necessary for moving the conveyer is taken from the shaft 33. For this purpose the shaft 33 supports an eccentric 39 which through its ring 40 and the connecting rod 41 transmits a rocking movement to a shaft 42 which is journaled in the frame of the machine and is provided with arms 421, 422 and 423. The upper ends of the arms 422 and 423 are by links 43 connected to horizontally movable slides 44 provided in the upper part of the frame. Each of said slides supports a pawl 46 which is pressed upward by a spring 45 and which by means of its tooth 47 engages the plates 3 of the conveyer for moving the same forward when the slide is moved from left to right, (Figs. 1 and 6.) The gearing of the

slides 44 is such that the pawls 46 in each feeding movement move the conveyer 2 a distance that corresponds exactly to the distance between the middle lines of two adjacent plates 3. Power is further taken from the shaft 33 for actuating the grippers 20. For this purpose there is mounted on the shaft 33 a cam 48 on which bears an anti-friction roller 49 supported by a lever 51 pivoted to a pin 50 of the frame, said lever being by means of a link 52 connected to an arm 53 secured to the shaft 18. The lever 51 and the link 52 are actuated in a downward direction by a spring 54, a weight or the like when the anti-friction roller 49 is on the lowermost portion of the cam 48, the grippers 20 being then in engagement with the bottle necks, while the said grippers 20 will be brought out of an engagement with the bottle necks when the higher portion of the cam presses up the lever 51 and the link 52.

The power for actuating the measuring vessels is taken from the shaft 36. For this purpose there is provided on the shaft 36 a grooved drum 55, in the groove 56 of which engages a roller 57 secured to one end of an angle lever 58 pivoted to the frame. The other end of said angle lever is by means of a link 59 connected to one arm of an angle lever 61 pivoted to a pin 60 in the upper part of the frame, the other arm of the angle lever 61 being by means of a rod 62 connected to arms 63 and 64 which are secured to the supply and drawing off cocks respectively of the measuring vessels 11. The arrangement of the lever gearing described is such that the cocks 15 and 16 are moved in one direction or the other immediately after the grippers 20 have engaged the bottle necks. With the device for operating the cocks, for instance the rod 62, may be combined a recording device which records the number of adjustments of the cocks and thereby controls the number of filled bottles.

The corking device is driven from the shaft 38. For feeding the corks two cams 65 are secured to the shaft 38. Against said cams bear anti-friction rollers 66 mounted on levers 67. The latter are connected to levers 68 the upper ends of which are provided with teeth engaging toothed wheels 69, the latter being rigidly connected to toothed wheels 70 which are in engagement with racks 71. The latter are connected with the beam 25. When the levers 67 are pressed upward by the highest portions of the cams 65, the levers 68 are lifted and rotate the wheels 69 (Fig. 1), the toothed wheels 70 moving through the racks 71 the beam 25 from its position beneath the stamps 27 to the position beneath the cork magazines. The return movement of the beam is accomplished by springs or the like when the highest portion of the cams 65 has passed the rollers 66. The driving device for the beam

25 is so constructed that the movement of the beam takes place approximately simultaneously with the feeding movement of the conveyer so that the beam will have returned to its position with the corks in the apertures 26 when a row of filled bottles is fed into corking position.

For actuating the stamps 27 there is provided on the shaft 38 a grooved cam 72 in the groove 73 of which engages a roller 74 supported by an arm 76 secured to a shaft 75 which is provided with arms 761 which by means of links 77 and sliding rods 78 are connected to the frame 28. When the latter with the stamps 27 is moved downward by the grooved cams 72, the stamps 27 force the corks through the apertures into the bottle necks. After the corking operation the stamps return to their positions above the beam 25. Instead of effecting the movement of the stamps by the grooved cams 72 one may obviously effect the said movement by means of springs 28 (or weights) acting on the frame and being set by means of a cam on the shaft 38 and released in the desired moment so that the frame with the stamps is moved downward with the power necessary for forcing the corks into the bottle necks. If vessels are to be filled which do not have to be corked, for instance milk bottles, which are closed by means of disks of paste board or the like, the corking device described above obviously should be modified correspondingly. If the bottles are not to be closed in the machine, the corking device obviously may be dispensed with or be put out of operation.

Instead of the arrangement described above for moving the beam 25 one may connect the latter with the slides 44 if for driving the same is used a mechanism which imparts to the slides 44 an oscillating movement and thereupon leaves them still standing during the time necessary for the corking operation.

The working of machine described above does not require any special explanation, inasmuch as it will be easily understood from the foregoing description. The unfilled bottles are inserted into the machine at the inlet end thereof, while the filled and corked bottles are removed at the delivery end of the machine. During the movement periods of the conveyer the grippers 20 are disengaged from the bottles and at the same time the apertures 26 are filled with corks. During the idle period of the conveyer the filling of the bottles beneath the filling device is accomplished and simultaneously the filled bottles beneath the corking device are corked.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a machine for continuously bottling

liquids, the combination of an intermittently moved conveyer having pockets arranged in rows and adapted to take up bottles to be filled, measuring mechanisms corresponding in number to the rows of pockets, means for driving the conveyer, gripping mechanisms for locking bottles in correct positions to enable the bottles to receive liquid from the measuring mechanisms, and means intermediate the said driving means and the gripping mechanisms for actuating the latter by the former; each of the said measuring mechanisms comprising measuring chambers, a drawing-off spout and supply and drawing-off cocks actuable by the driving means in such manner that one chamber is filled during the emptying of the other and vice versa.

2. A machine for continuously bottling liquids, comprising straight guides extending throughout the machine, and a conveyer having plates detachably connected together; the conveyer being formed by adding plates one by one at the receiving end of

the machine and being shortened by removing plates at the discharge end of the machine.

3. In a machine for continuously bottling liquids, the combination of a conveyer made up of connected plates, and means for driving the conveyer step by step; the said means comprising slides having pawls, a continuously rotating drive-shaft, and means actuable by the shaft for imparting an oscillating motion to the slides; the pawls being constructed and arranged to engage the conveyer plates during the forward movement of the conveyer and move the latter forward a distance corresponding to the distance between the middle lines of two adjacent plates.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

GEORG WIBERG.

Witnesses:

CONRAD ILMAN,
HILDUR HÅKANSON.

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