Dec. 13, 1938. J. KANTOR 2,140,187

BOTTLE FILLING AND GASSING MACHINE

Filed May 10, 1935 3 Sheets-Sheet 1

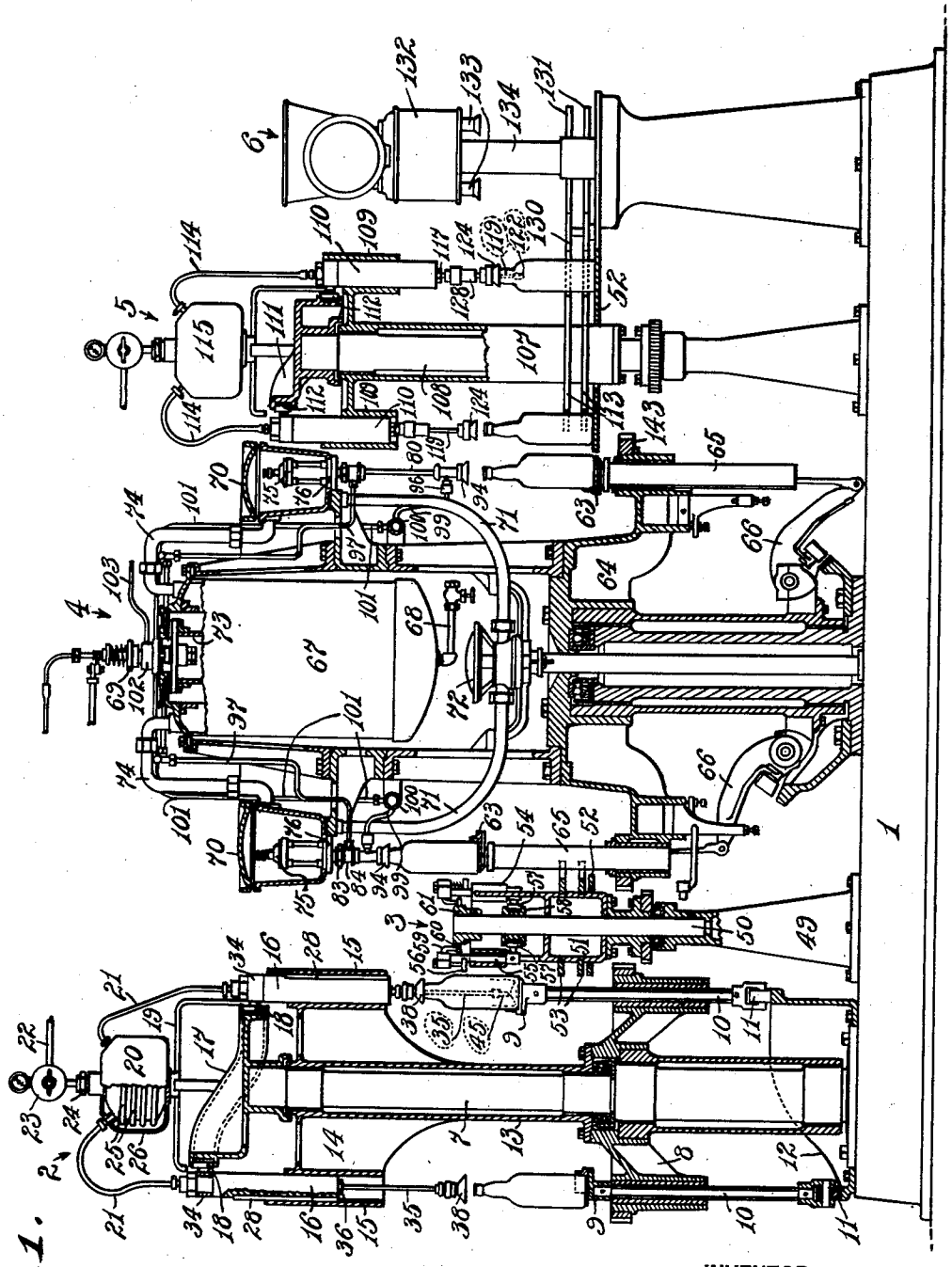

Fig. 1.

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Filed May 10, 1935 3 Sheets-Sheet 2

Fig. 2.

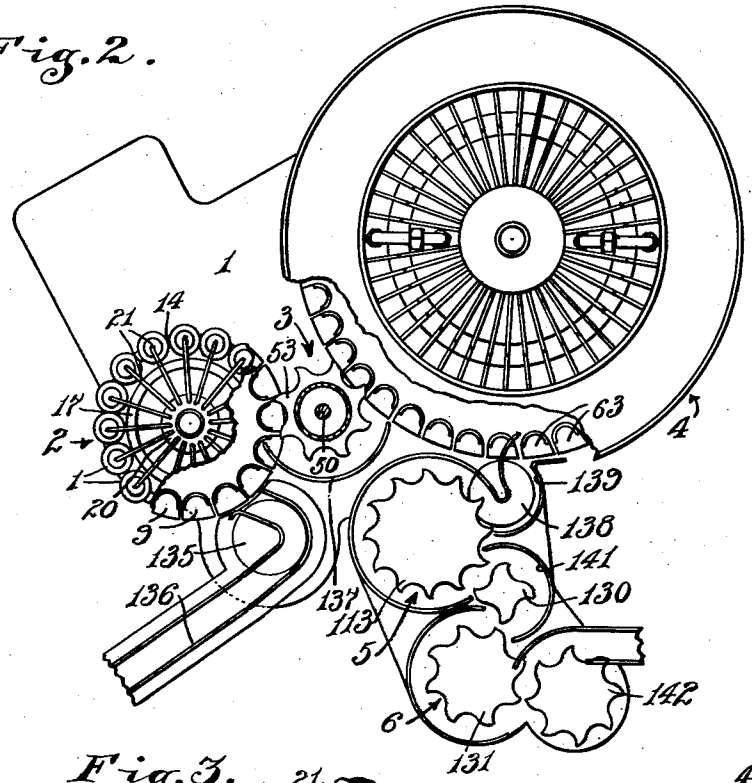


Fig. 3.

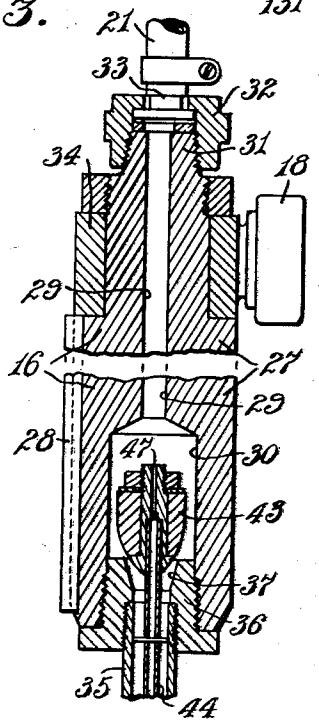
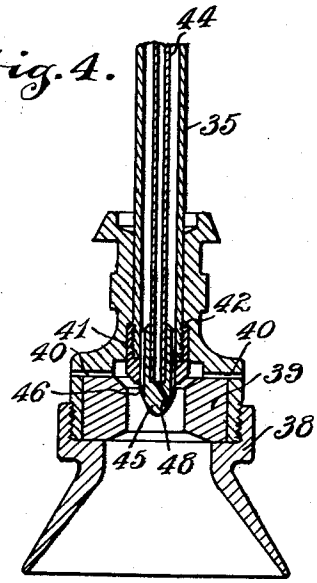


Fig. 4.



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Filed May 10, 1935 3 Sheets-Sheet 3

Fig. 5.

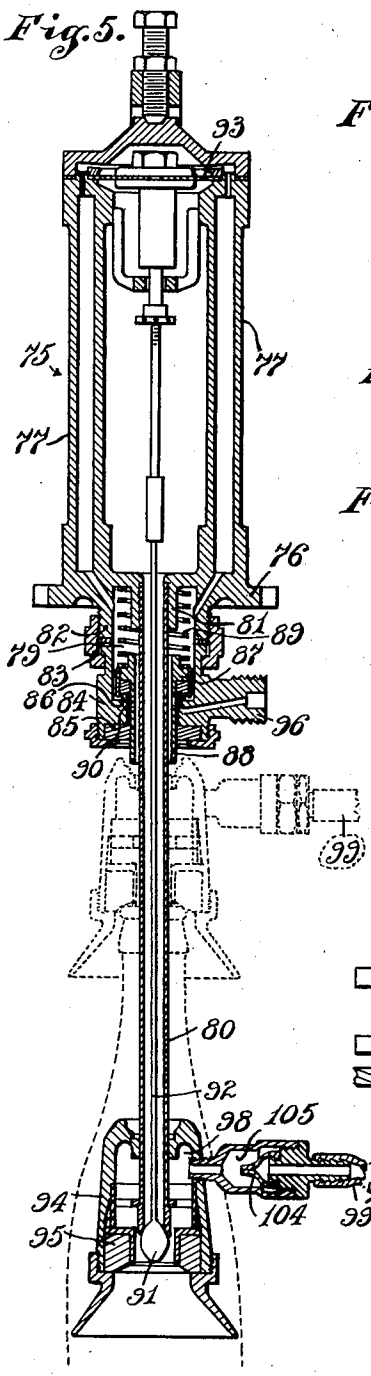


Fig. 6.

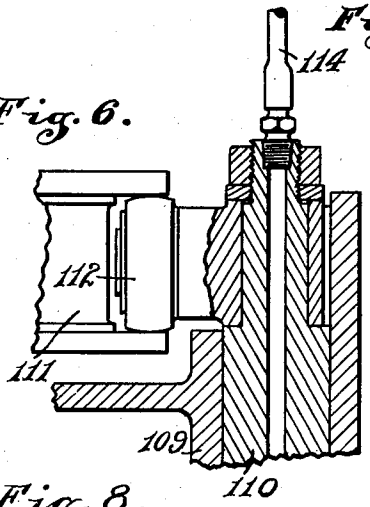


Fig. 8.

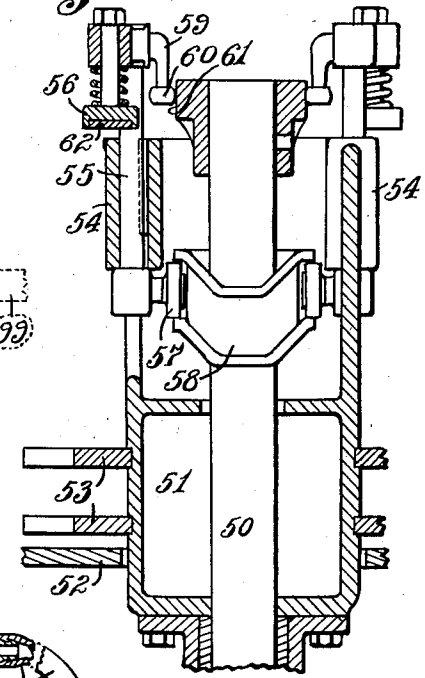
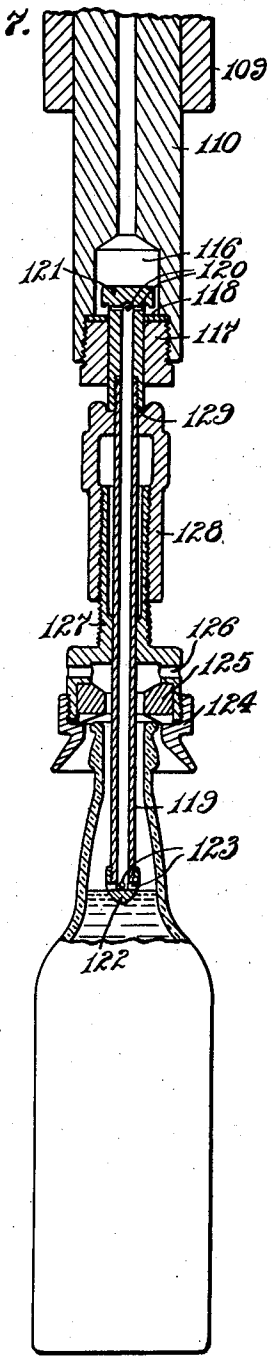


Fig. 7.



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Patented Dec. 13, 1938 2,140,187

UNITED STATES PATENT OFFICE

2,140,187

BOTTLE FILLING AND GASSING MACHINE

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Application May 10, 1935, Serial No. 20,725

6 Claims. (Cl. 226—68)

My invention relates to improvements in bottle filling machines particularly adapted for filling bottles with beer, and to a method of filling bottles with beer.

It has been found that air has a decidedly deteriorating effect on beer and it has been found that where beer has been bottled and the content of air in the bottles is comparatively large, that after storage for a short period the bottled beer not only deteriorates as to color but as to the taste.

As a matter of fact, in the bottling of beer, if the air content of the bottle, after it has been crowned, is greater than two per cent, the deteriorating effect is decidedly noticeable.

It is one of the objects of my invention to provide a machine and method for filling bottles with beer and to fill the same in such a manner that the air content of the bottle after crowning is reduced to the minimum.

In the apparatus and in the method in which I am able to fill the bottles, I am enabled to deliver filled and crowned bottles with approximately not more than four-tenths of one per cent of air. For the purpose of describing my invention, I have illustrated certain embodiments thereof in the accompanying drawings, in which:

Fig. 1 is an elevation of a machine embodying my invention, part of the same being shown in section;

Fig. 2 is a plan view, more or less diagrammatic, of a machine embodying my invention, showing the path of travel of the bottles during the filling operation;

Figs. 3 and 4 are, together, a longitudinal sectional view of the initial gassing valve;

Fig. 5 is a longitudinal sectional view of the filler valve;

Figs. 6 and 7, taken together, constitute a longitudinal sectional view of the final gassing valve; and,

Fig. 8 is an enlarged sectional view of the bottle sealer.

For the purpose of more fully understanding the apparatus, it may be said that in carrying out my invention initially the bottles to be filled with beer are filled with CO_2, delivered at a very low pressure, to the bottom of the bottle, and in a chilled condition. The bottles as they are received from the washing machine, having been rinsed in cold water, are in a chilled condition, and in order to maintain the density of the CO_2 the CO_2 is, as above stated, chilled to approximately the temperature of the bottles or to a temperature of approximately 40° F. The admission of the CO_2 being heavier than the air, drives out the air and fills the bottle to the top with the CO_2. The bottle is then transferred to the beer filling machine. In order to prevent any escape of the CO_2 during the transfer operation and to prevent the admission of air to the bottle, the bottle is sealed during this transfer period. The filling operation, naturally, drives out the CO_2 in the bottle and supplants the same with beer. To allow for expansion of the liquid in the bottle, and for other reasons, the bottle is not filled clear to the top with beer but there is a small space in the neck of the bottle which is allowed to remain unfilled. In order to insure that no air shall penetrate to this space during the capping operation, before the bottle is delivered to the capper, the bottle goes through a final gassing operation which admits CO_2 to the top of the bottle above the liquid contents, so that when the bottle is delivered to the crowner the bottle is completely filled with liquid and CO_2, preventing all possible chance of the entry of air to the bottle. Furthermore, as the bottle is fed through the crowning machine, the crown is applied by a relatively slowly operating crowning, so that there is little chance of air being forced into the neck of the bottle by the rapid descent of the crown on the top of the bottle.

In the machine embodying my invention, illustrated in the drawings, I provide a base 1, on which is mounted the various instrumentalities for carrying out by invention. On this base is mounted an initial gasser 2, a sealer 3, a filling apparatus 4, a final gasser 5, and a crowner 6. These various instrumentalities all continuously rotate in synchronism and means are provided for passing the bottle from one instrumentality to the other continuously. In each of the devices the various filling apparatus rotate with the bottle, so that the bottle continuously progressively moves through the machine.

Referring first to the initial gasses, a central standard 7 extends vertically from the base 1, and on this central standard is rotatively mounted a spider 8, in which are reciprocably mounted bottle saddles 9. Each of these saddles is mounted upon the upper end of a reciprocating post 10, the lower end of which is provided with a roller 11 adapted to move over a stationarily mounted cam 12, whereby, as the spider 8 rotates, the saddles will be vertically moved up and down.

The spider 8 is provided with a vertically-extending hollow sleeve 13, rotating with the spider and surrounding the post 7. The upper end of this sleeve is provided with a second spider 14,

each of the arms of which has at its outer end a tubular socket 15 for the reception of a gassing valve 16. Rotatively stationarily mounted on the top of the standard 7 is a cam member 17, having a cam groove in the face thereof, and each of the gassing valves is provided on its side with a roller 18 operating in the cam groove, whereby the valve will reciprocate.

A supporting spider 19 is secured to the rotating spider 14 to support above the cam member 17 a CO_2 reservoir 20, which therefore rotates with the gassing valves, and this reservoir is connected to each of the gassing valves by a flexible conduit 21. The reservoir 20 is supplied with CO_2 from a suitable source through the supply pipe 22 which passes through a reducing valve 23 connected by a suitable swivel 24 with the reservoir. This reservoir 20 is surrounded by suitable refrigerating coils 25 enclosed in a casing 26 and receiving a suitable refrigerating medium from any source of supply, so that the temperature of the CO_2 contained therein is maintained comparatively low and to coincide substantially with the temperature of the bottles as they are received by the gasser from the washing machine.

Referring to Figs. 3 and 4, wherein I have illustrated a detail of one of the gassing valves 16, the gassing valve comprises a vertically reciprocating casing 27, reciprocably mounted in the tubular socket 15 of the spider 14 and keyed against rotative movement by a key 28. This casing is provided with a hollow bore 29, expanded at its lower end to provide a valve chamber 30. The upper end of the casing is provided with a neck 31, of reduced diameter, on which is screw-threaded a clamping screw 32 for clamping the valve end 33 of the supply tube 21 to the upper end of the casing and in communication with the bore 29. The roller 18 is preferably mounted on a collar 34 surrounding the reduced neck 31.

Extending downwardly from the casing 27 is a filler tube 35, screw-threaded into a plug 36, in turn threaded into the lower end of the valve chamber 30; this plug being provided on its upper face with a valve seat 37. The lower end of the tube 35 has reciprocably mounted thereon a bottle bell or throat 38 containing a bottle engaging washer 39, and above this bottle engaging washer there is provided air vent openings 40. This bottle bell is retained against dropping off the lower end of the tube 35 by a retaining nut 41 screw-threaded on the lower end of the tube 35 and engaging a shoulder 42 on the interior of the bell.

The passage of gas through the tube 35 is controlled by a sealing valve 43 at the upper end of the tube, which seats on seat 37 when closed. This valve is mounted on the upper end of a tubular stem 44 which extends to the bottom of the tube and at the lower end is provided with a manipulating tip 45 secured on the lower end of the stem and provided with gas passages 46, the arrangement being such that when the tube is inserted into a bottle this tip 45 will engage the bottom of the bottle, raising the valve 43 and permitting the passage of CO_2 into the bottom of the bottle.

It will be noted that this stem 44 is hollow throughout and the valve 43 is provided with a conduit or passageway 47, so that the interior of the tubular stem communicates with the gas chamber 30 in the valve. The lower end of this stem is provided with an angularly disposed vent opening 48, so that, even though the valve 43 is in a closed position, there is provided a slight leakage of gas through the stem 44.

In the operation of the gassing valve as the bottle is received from the delivery mechanism it is deposited on one of the saddles 9 which, in its receiving position, is in its lowermost position, with the roller 11 on the bottom portion of the cam 12 and the gassing valve 16 is in its uppermost position with the roller 18 at the highest point of the cam 17. As the spider 8 and spider 14 rotate, due to the cams 12 and 17, the bottle will be moved upwardly toward the gassing valve and the gassing valve will be moved downwardly toward the bottle, eventually engaging the bottle bell with the neck of the bottle, thus sealing the bottle, and projecting the tube 35 into the bottle until the tip 45 of the stem 44 engages the bottom of the bottle and a continued approach of the bottle to the valve 16 will cause this stem to raise the valve 43, admitting CO_2 to the bottom of the bottle. This CO_2 is admitted to the bottle at an extremely low pressure, say two or three pounds, and as it flows into the bottle fills the bottle, forcing the air out of the bottle, until by the time the bottle has moved to its delivery position it will have been completely filled with CO_2 and the air exhausted therefrom. As the bottle and the valve 16 separate from one another, due to the riding down of the roller 11 on the cam 12 and the riding up of the roller 18 on the cam 17, the valve 43 is lowered on its seat 37, thereby shutting off further delivery of CO_2 to the bottle. It must be borne in mind, however, that this movement is comparatively rapid, and the rapid withdrawal of the tube 35 from the bottle tends to create a slight vacuum or suction in the bottle, which would tend to draw back into the bottle through the vent openings 40 a slight proportion of air. In order to break up this slight vacuum, even though the valve 43 is closed, there is a continued discharge of gas into the bottle—to be sure, a very small discharge—through the hollow stem 44 and through the diagonally-disposed vent opening 48 in the tip 45.

By moving the gassing valve toward the bottle, during the time the bottle is moved toward the gassing valve, I am enabled to materially reduce the height of the cam lift of the bottle saddles 9. It must be understood that it is desirable to give the greatest possible time during the rotation of the bottle for the delivery of the CO_2 thereto, and with an extremely high cam lift for the bottle a greater proportion of the circle of the cam is given to the cam proper and comparatively small portion is given to the straight run. By moving the valve toward the bottle and the bottle toward the valve, the cam lift is materially reduced, whereby a longer straight portion of the cam may be provided with a corresponding greater period during the rotation of the bottle in which the gas can be admitted to the bottle with no relative movement between the bottle and the valve.

After the bottle has been filled with CO_2 it is delivered to the intermediate sealer 3. This sealer is provided with a base portion 49 carrying a vertical post 50 rotatively stationary, and surrounding this post and rotating on the same is a bottle carrier 51 which extends through the table top 52 and is provided with a pair of bottle transfer stars 53 adapted during their rotation to engage the bottle while on its saddle 9, and while the saddle is in its lower position, and rotate the bottle to a position to be delivered to the filler 4. Mounted on the bottle carrier and above the

stars 53 is a plurality of vertically disposed bearings 54 adapted to receive the stems 55 of the bottle sealers 56. These bottle sealers are reciprocable to be moved down into sealing engagement with the top of the bottle as it is received on the carrier 52, and the stems of the sealers are provided with rollers 57 operating in a cam 58 stationarily mounted on the post 50 and provided with a cam track so disposed as to lower the sealer 56 on a bottle as it is received from the bottle saddle 9 and maintain the bottle sealed until it is delivered from the sealer to the filler, at which time the cam will raise the sealer from engagement with the bottle to permit this delivery to the filler. The sealers are adapted to swing in and out during their vertical movement so that they will clear the bottles of the initial gassing machine. To this end, each sealer is mounted on a cross arm mounted to swing on a vertical axis on the top of its supporting stem 55. One end of the cross arm carries the sealer 56 and the opposite end is bent slightly downwardly and carries at its end a roller 60 which engages a cam surface 61, being biased in an engaging direction by suitable spring means (not shown). As the stem 59 is lowered, the roller 55 moving to the smaller portion of the cam surface, will permit the sealer to swing, on a vertical axis, out from the center of the circle and in a position to engage on the top of the neck of the bottle. These sealers preferably comprise cup-like members provided with sealing washers 62.

The sealer, in effect, comprises a transfer mechanism for removing the bottle from initial gasser and delivering the same to the filler, acting, at the same time, to seal the bottle during this transfer. As the bottle rotates with the sealer it eventually comes into a position to be delivered by the stars 53 thereof to one of the saddles 63 of the filling machine. This filling machine, to a large extent, is more or less standard, and it is not believed necessary to enter into a full detailed description thereof, except so much of the same as is necessary for the understanding of the present invention. The filler is provided with a rotating support 64 provided with a plurality of reciprocating bottle saddles 63, which saddles are mounted on reciprocating supports 65, vertically moved through the instrumentality of the cam-operated arms 66. This support carries the usual water check tank and high pressure cylinder 67 into which is admitted through the pipe 68 water and through the gas swivel valve 69, CO_2 under pressure. It must be borne in mind that the water which is admitted is not admitted continuously, but the pipe 68 is merely a supply pipe and when the proper supply level of water is obtained in the tank the supply is cut off.

This support 64 also carries an annular filler tank 70 to which the beer is admitted through the supply pipes 71 connected with a pressure control valve 72 in turn connected with the supply. To the filler tank are attached a plurality of filling valves 75, each of which connects to the high pressure tank cylinder 73 in the water check tank 67 through the medium of a communicating pipe 74.

Each filler valve comprises a filler tube 80 communicating with the interior of its tank 70 and supported in a casting 76 forming a portion of the bottom of its filler tank 70. This casting is provided with a neck 81 into which the tube 80 is screwed and also is provided with a neck 82 to which is attached by a coupling nut 83 a counter-pressure valve casing 84. A pair of pressure tubes 77, extending upwardly from the casting, have communication with the chamber 79 in which is arranged the counter pressure valve 87 adapted to seat on the seat 86. The upper ends of these two tubes communicate with a chamber having arranged therein a diaphragm 93. Arranged at the lower end of the neck 82 is a sealing washer 85. The valve 87 surrounds the filler tube 80 and is provided with a tubular neck 88 surrounding the tube and projecting below the sealing washer 85. The valve is biased in its closed position by a coiled spring 89 and the neck 88 is provided with bleeding openings 90, for a purpose more fully hereinafter to appear.

The bottom of the filler tube 80 is closed by a pear valve 91, downwardly opening, and secured to the end of a stem 92 the upper end of which is connected to the diaphragm 93. The normal position of the diaphragm is such as to maintain the valve 91 in its closed position. Also mounted on the filler tube 80 is a bottle bell or throat 94 provided with a sealing washer 95 and surrounding the tube. The top of this bell, when the tube is inserted in a bottle the proper distance, is adapted to engage the bottom end of the neck 88 to thereby raise or open the counter pressure valve 87. The counter-pressure chamber or compartment 79 is connected through a ported stem 96 and a conduit 97 with the top of the gas and water tank 67, in which CO_2 is maintained under pressure, varying from eight to twenty-two pounds, depending upon the nature of the beer to be bottled, which, however, is slightly lower than the head of the beer in each of the filler tanks 70.

In addition to the above supply of CO_2 the bottle bell 94 above the sealing washer 95 is provided with a gas chamber 98 connected by a flexible tube 99 with a ring 100. This ring in turn is connected by a conduit 101 through a gas swivel valve 102 with a CO_2 inlet pipe 103, connected with a CO_2 supply, and delivering CO_2 at a decidedly reduced pressure as compared with the pressure delivered through the tube 97. In commercial use I have found that the pressure delivered through this tube should be only about three pounds. The end of the tube 99 is provided with what is commercially known as a "Thomas" check valve 104, which in effect constitutes a soft rubber nozzle having an opening through which the gas under the pressure of three pounds may pass; but with a back pressure introduced in a chamber 105 surrounding this Thomas valve exceeding the three-pounds opening pressure, the valve would be closed to prevent back flow.

In operation, when the bottle is first lifted, it engages the bottle bell 94, the neck of the bottle being sealed by a sealing ring or washer 95. The bell raises with the bottle until the top of the bell engages the neck 88 of the counter-pressure valve, raising the counter-pressure valve off its seat. This admits counter-pressure into the tubes 77—77, which, flowing through the neck 90, and through the bell 94, flows into the bottle to establish counter-pressure therein. When the counter-pressure in the bottle has been built up it continues to build up above the diaphragm 93 to open the valve 91, permitting the flow of beer into the bottle against the counter-pressure of the gas. The counter-pressure of the gas is slightly below the head of the beer in the filler tank, so that this beer will flow therein. By the time the bottle has been filled to the point desired, the bottle will commence to move downwardly first

closing the counter-pressure valve 87. This shuts off the counter-pressure supply and the bleeding of the CO_2 from the compartment 79 through the bleeding openings 90 will so reduce the pressure in the compartment and against the diaphragm 93 that the valve 91 will close, shutting off the flow of beer through the filler tube. As long as the counter-pressure valve is open and the counter-pressure gas is admitted through the bottle bell and into the chamber 98, this pressure will be greater than the pressure in the pipe 99, and thereby maintain the Thomas valve 104 closed to prevent the back flow of the counter-pressure through this valve and into the pipe 99. When the bottle bell is lowered and breaks contact with the bottom of the neck 88 this back pressure no longer exists and the two or three pounds pressure of gas in the pipe 99 is sufficient to open the Thomas valve 104 and flood the bell with gas. If this bell top were not so flooded with gas there would be an appreciable quantity of air sucked into the bell top, due to the suction created by the removal of the tube from the bottle, and this air would pass down into the bottle proper. However, by flooding the bell top with CO_2, any air which might have been trapped in there is driven out, and the entry of any air is prevented, thus insuring the freedom of the neck of the bottle from air.

The bottle thus filled in the filling machine then transfers to the final gassing apparatus. This gassing structure is substantially the same as the initial gassing structure, with the exception that the bottles are carried on the table 52 instead of on reciprocating saddles 9. This table surrounds a sleeve 107 surrounding and rotatively mounted on a vertical post 108. The vertical post carries sleeve 107, and carries the spider having formed at the outer portion thereof a plurality of tubular sockets 109 for the reception of the final gassing valves 110. The post 108 carries the cam 111 which cooperates with the rollers 112 on the valves for raising and lowering the valves. In view of the fact that the delivery tube of the sealing valve does not have to enter the bottle very far, the relative reciprocatory movement between the valve and the bottle does not have to be as great, and therefore the vertical movement of the bottle itself is dispensed with. The sleeve has mounted or formed thereon a pair of bottle carrying stars 113 which receive the bottle from its saddle 63 of the filling machine, and moves them on the table to beneath the final gassing valves. As shown, each of these gassing valves is connected by a tube 114 with a gas reservoir 115, supplied like the reservoir 20 with CO_2.

The reciprocating gassing valve casing 115 is substantially the same in construction as the gassing valve casing 27, being provided with a chamber 116 closed by a plug 117 having on its upper face a valve seat 118. The gassing valve tube 119 extends through the plug 117, being provided at its upper end with inlet ports 120 with a valve 121 adapted to seat on the valve seat 118; and it will be noted that when the valve 121 is seated, no communication exists between the chamber 116 and the filler tube. The lower end of the tube 119 is provided with a tip 122 provided with horizontally disposed delivery openings 123 connecting with the tube, so that CO_2 delivered at the lower end of the tube will be delivered horizontally against the side of the bottle, and thereby not tend to agitate the liquid in the bottle. Surrounding the gassing tube 119 is a bottle bell 124 provided with the usual sealing washer 125 and provided above the sealing washer with vent openings 126. This bell has an upwardly extending neck 127 externally screw-threaded to receive an adjustable stop member, 128, adapted when the bell is raised to the limit of its upward movement by engagement with the bottle, to engage the shoulder 129 on the tube 119 and raise the valve 121 off its seat. It is therefore obvious that as the final gassing valve is lowered the gassing tube 119 will be projected into the neck of the bottle, stopping just short of the liquid level, and at the same time the bottle bell will be raised sufficiently to open the valve 121, admitting CO_2 under very low pressure to the neck of the bottle, and thereby forcing out any air which might have collected in the neck, up through the bell and through the escape openings 126, and displacing this air with CO_2.

After the final gassing, the bottles are engaged by transfer stars 130 which remove the same from the final gassing apparatus and deliver the same to the underlying stars 131 on the crowner 6. This crowner is a well known commercial structure, and it is not believed that a detailed description thereof is necessary except to say that the crowner is preferably of the eight-head type for a filling machine delivering bottles at the rate of 120 per minute or more. The crowner head carrying member 132 is provided with reciprocating crowning heads 133 which are rotated on the standard 134 carrying the stars 131 and descend upon the bottle, crowning and sealing the bottle. I mention the fact that I preferably use an eight-head crowner for a filling machine operating at the rate of 120 bottles per minute, as I have discovered that it is advisable and desirable to have the crowning head approach the bottle at a comparatively slow speed. If the crowning head drops upon the bottle at high speed, the rapid descent of the crown has a tendency to force a percentage of air into the bottle, but I have found that where the crowning head reciprocates at approximately only fifteen times per minute, as would be the case with an eight-head crowning machine under the conditions above described, very little, if any, air is forced into the neck of the bottle by the crowner.

In order that the travel of the bottles throughout the above described path may be more fully understood, I have illustrated in Fig. 2 a plan view, more or less diagrammatic, of the filling machine as a whole. As illustrated in this plan view, the initial gasser 2 receives the bottles from a rotating disk support 135 onto which the bottles are delivered through the guide-way 136. The initial gasser rotates in a clockwise direction and ultimately delivers the bottles to the sealer, the stars 53 of which are disposed between the initial gasser and the filling machine. This sealer rotates in a counter-clockwise direction, the bottles being maintained in their position by a guide 137, and ultimately delivers the bottles to the saddles 63 of the filler 4. The filler rotates in a clockwise direction, and the filling process takes place where it is received from the stars 53, until it is delivered upon a delivery disk 138, which rotates in a clockwise direction and tends to move the bottles through the guide-ways 139 into a position to be engaged by the stars 113 of the final gasser 5. The final gasser 5 rotates in a counter-clockwise direction, and the bottles, after final gassing, are eventually picked off the final gasser by a transfer star 130, and delivers the same to the stars 131 of the crowner 6, suitable guide-ways 141 being provided for the bottles. After

the crowning operation, it being noted that the crowner rotates in a counter-clockwise direction, the bottles are eventually picked off the crowner by the delivery stars 142 and transferred to a suitable conveyor or other apparatus.

The spider 64 of the filling machine is driven through any suitable power apparatus, as by an electric motor, or the like, and the remaining apparatus, including the gassers, the sealer and the crowner, are intergeared so that the parts of the various devices will operate in unison. I have shown a master gear 143 on the spider 64 which through suitable intergears is adapted to drive gears on the gassers, sealers and other parts. These are not illustrated, as it is believed that it would tend toward confusion of the parts, while it is believed that understanding of the operation can be obtained without illustrating these detailed parts.

I claim as my invention:

1. In a bottle filling machine, the combination with means for initially filling the bottle with an inert gas to expel the air therefrom, of means for filling the bottle nearly full with a beverage, means for transferring the bottle from said initial filling means to said beverage filling means, means for sealing the bottle during its transition by said transfer means from the initial gas filling means to the beverage filling means, means for introducing a quantity of inert gas into the bottle above the beverage after it leaves the beverage filling means, means for transferring said bottle from the beverage filling means to said introducing means, means for applying a sealing crown to said bottle and means for transferring the bottle from said introducing means to said crown applying means.

2. In a bottle filling machine, the combination, of a continuously rotating means for initially filling the bottle with an inert gas to expel the air therefrom, of a continuously rotating means for delivering into the bottle a quantity of beverage sufficient to nearly fill the same, continuously rotating means for sealing the bottle during its transition from the initial gas filling means to the beverage delivering means, continuously rotating means for introducing a quantity of inert gas into the bottle above the beverage after the bottle leaves the beverage delivering means, and a continuously rotating means for applying a sealing crown to said bottle.

3. In a bottle filling machine, the combination with means for delivering a quantity of beverage into a bottle to nearly fill the same, of means for initially filling the bottle with an inert gas to expel the air therefrom prior to its delivery to the beverage delivery means, means for transferring the bottle from said initial filling means to said beverage delivering means, means for introducing a quantity of inert gas into the bottle above the beverage after the bottle has left the beverage delivery means, means for transferring the bottle from said beverage delivery means to said introducing means, means for applying a sealing crown to the bottle after the introduction of said inert gas above the contents of the bottle, and means for transferring the bottle from said introducing means to said sealing means.

4. In a bottle filling machine, the combination with a continuously rotating means for delivering to the bottle a sufficient quantity of liquid to nearly fill the same, of continuously rotating means for filling the bottle with an inert gas to expel the air therefrom prior to its delivery to said liquid delivery means, means for transferring the bottle from said filling means to said liquid delivery means, continuously rotating means for introducing a quantity of inert gas into the bottle above the liquid after it leaves the liquid delivering means, means for transferring the bottle from the liquid delivering means to said introducing means, continuously rotating means for applying a crown to said bottle after the final delivery of said gas, and means for transferring the bottle from said introducing means to said crown applying means.

5. In a bottle filling machine, the combination, with a continuously rotating means for delivering to the bottle a quantity of beverage, of a continuously rotating means for initially filling the bottle with an inert gas to expel the air therefrom, and a continuously rotating transferring means for transferring the bottle from said initial gassing means to said beverage delivering means, said transferring means including means for sealing the bottle during said transfer.

6. The method of filling bottles with beer, which consists in delivering a sufficient quantity of inert gas through a single instrumentality to the bottom of the bottle at a pressure low enough to flow the gas into the bottle without agitating the gas to fill the bottle, and maintaining a delivery of gas into the bottle during the withdrawal of the instrumentality, sealing the bottle after the withdrawal of said instrumentality and transferring the bottle in its sealed condition to a beer filling machine, unsealing the bottle, flowing a supply of beer into said bottle through a single instrumentality to partially fill the bottle, withdrawing said instrumentality while maintaining a continued flow of gas under a pressure sufficiently low as not to agitate the beer into the bottle during said withdrawal, flowing a supply of inert gas into said bottle to fill the bottle above the liquid with said gas and sealing the bottle.

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