

UNITED STATES PATENT OFFICE.

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MACHINE FOR BOTTLING AERATED WATER.

SPECIFICATION forming part of Letters Patent No. 447,508, dated March 3, 1891.

Application filed January 14, 1886. Serial No. 188,565. (No model.) Patented in Victoria June 29, 1885, No. 4,112; in Tasmania December 3, 1885, No. 380; in South Australia December 5, 1885, No. 628; in New Zealand December 10, 1885, No. 1,650; in England January 12, 1886, No. 513; in Cape of Good Hope January 18, 1886, No. 335; in France January 20, 1886, No. 173,658; in Belgium January 30, 1886, No. 71,713; in New South Wales February 1, 1886; in India March 13, 1886; in Canada February 16, 1887, No. 26,019; in Queensland November 5, 1887, No. 304, and in Germany November 30, 1887, No. 41,611.

To all whom it may concern:

Be it known that I, THOMAS FERGUSON, bottler, a subject of the Queen of Great Britain, residing at Harold Street, Albert Park, near Melbourne, in the British Colony of Victoria, have invented an Improved Machine for Bottling Aerated Liquids, (for which patents have been granted abroad as follows, to wit: in Great Britain, dated January 12, 1886, No. 513; in Canada, dated February 16, 1887, No. 26,019; in France, dated January 20, 1886, No. 173,658; in Belgium, dated January 30, 1886, No. 71,713; in Germany, dated November 30, 1887, No. 41,611; in Queensland, dated November 5, 1887, No. 304; in Tasmania, dated December 3, 1885, No. 380; in India Gazette, dated March 13, 1886; in Victoria, dated June 29, 1885, No. 4,112; in South Australia, dated December 5, 1885, No. 628; in New Zealand, dated December 10, 1885, No. 1,650; in Cape of Good Hope, dated January 18, 1886, No. 335, and in New South Wales, dated February 1, 1886,) of which the following is a specification.

This invention consists of an improved machine for bottling aerated liquids, such as aerated waters and aerated wines; but its principal use is in the bottling of aerated waters. Its main object is to regulate the quantity of liquid admitted into each bottle and to insure as far as possible that the pressure in each shall be the same. It also seeks to accomplish its object without the aid of skilled labor. At the present time it requires an experienced hand to fill bottles to an approximately even and regular degree, and more especially to fill them to approximately the same pressure. An unskilled hand is very irregular in his filling, very uncertain and uneven in his pressure, wastes gas, bursts bottles, and perhaps injures himself or his fellow workmen; but by my machine he cannot fill them too full or at an irregular pressure, and the danger of losing gas or causing accidents is reduced to a minimum.

The essential feature of my invention is the arranging of the bottles while filling at such

an angle or incline that when they have received a sufficient quantity the surplus will simply overflow or blow out through a passage provided for the purpose.

A secondary feature of my invention is the so constructing, combining, and arranging the parts that by the simple turning of a handle the whole working of the machine can be effected, save and except the placing of the bottle and the cork in their respective positions—that is to say, that after the bottle and cork have been placed in the machine the partial rotation of the handle brings the bottle up to the filling position. The further partial rotation pumps the sirup and admits the aerated water into the bottle, and at the same time forces the cork into its first position. Then when the overflow indicates the fullness of the bottle, the further partial rotation of the handle forces the cork into the bottle and allows of the needful “sniff,” as it is technically called, either through the overflow-passage or through it and another additional passage, as may be preferred, while a fourth motion, which completes the rotation of the handle, releases the bottle and drops it into a suitable receiver, leaving the machine ready to receive a fresh bottle and cork.

Referring to my drawings, Figure 1 shows a side elevation of my improved machine as used for bottling aerated waters, (but without the cork-feeding device shown in Figs. 11 and 12,) and Fig. 2 a plan of same, the guard which partially surrounds the bottle being broken away in each case. Fig. 2^a shows a longitudinal section showing the level to which the bottle is filled before it overflows. Figs. 3 and 4 show on a larger scale a part sectional plan and an end sectional elevation of the bottle-charging cone which I prefer to use and which is shown on a smaller scale in Figs. 1 and 2. Figs. 5, 6, and 7 show, respectively, plan, longitudinal section, and end sectional elevation of another and alternative form of bottle-charging cone which may be used instead of that shown in Figs. 3 and 4. Fig. 8 shows a side view, on a larger scale, of

the cam for actuating the bottle-holding mechanism. Fig. 9 is a side view, also on a larger scale, of the cam for actuating the lever of the sirup-pump. Fig. 10 is a side view of an alternative method of arranging the sirup-pump. Fig. 11 is a side view, and Fig. 12 a front view, of my cork-feeding device, showing how it may be attached to the bottle-charging cone.

A is the bottle held in position for being filled between the charging-cone B and the recessed shoe or buffer C. The charging-cone B has a bell-mouthed front B' screwed into its socket, which has also within it an india-rubber washer B², against which the head of the bottle is pressed. The back of the charging-cone is furnished with a cork-trough B³, having a hole through its end for the passage of the ram D, which forces the cork forward at the proper time.

B⁴ is the sirup-supply passage leading to the cone, and B⁵ is a check-valve.

B⁶ is the aerated-water-supply passage leading to the cone, and B⁷ is a check-valve therein, which is kept closed by its spring until it is forced open by a button or stud E', projecting from the ratchet-disk E.

In the charging-cone illustrated in Figs. 5, 6, and 7, the pipe leading to the passage B⁶ is furnished with a check-valve similar to that shown in Fig. 3, so as to regulate the supply to said passage, although said check-valve is not shown in said figures.

B⁸ is a snifting or air-relief passage provided with a regulating thumb-valve B⁹, and B¹⁰ is the vent or overflow-passage, also furnished with a similar regulating-valve B¹¹.

B¹² is the foot-bracket formed on the charging-cone to enable it to be secured to the bracket F of the machine.

The buffer or shoe C consists of a metal socket having within it the recessed piece of wood C', against which the end of the bottle rests. This socket is secured to the screwed stem C², which is supported in one end of the cross-head C³, working in the guide-bracket C⁴. The opposite end of this cross-head has secured to it the rod C⁵, which is supported at its other end in the guide-bracket C⁶. This rod is forked to receive a friction-roller C⁷, against which the cam C⁸, keyed upon the spindle G, works. C⁹ is another friction-roller, also centered upon said cross-head, and the end of the weighted lever C¹⁰, which is centered upon the vertical standard H, abuts against it, as shown in Fig. 1.

A' is a wire guard of the form shown, secured to the strap A², which is secured, as shown, to the frame of the machine.

A³ is a guide-prong secured to the guard so as to guide the bottle to its position in the shoe or buffer.

The ram D works in the guide-bracket D', and its end is secured in the sliding block D², which works in the slide-bracket D³. This sliding block is connected by the rod D⁴ with the crank-pin D⁵, affixed to the before-men-

tioned ratchet-disk E, which is secured on the inner end of the spindle G. This spindle is supported in the bearings F' F', and is provided at its outer end with the crank-handle E², as shown.

E³ is a pawl centered at E¹ to the frame F. This pawl engages with the teeth of the ratchet-disk, and thus prevents the spindle rotating in the wrong direction.

The sirup-pump J is secured to the frame F, and its piston is actuated by the lever J', which is centered upon the pin J². The other end of this lever is forked, and is furnished with a friction-roller J³, against which the cam J⁴, keyed upon the spindle G, works.

J⁵ is a valve-box of ordinary construction attached to the sirup-pump.

In the alternative method of arranging the sirup-pump (shown in Fig. 10) the lever J' is arranged under the pump and forces the piston-rod downward, while a coiled spring J⁶, compressed between the nut on the spindle and a bracket J⁷, attached to the frame, forces the piston up again to its normal position. The vertical standard H and column H', which support the above mechanism, are secured to one another at their top by the tie-rod H², and their bottom flanges are supported upon and bolted to the bed-plate H³, as shown.

In Figs. 11 and 12 I have shown a cork-feeding attachment which may be affixed to the charging-cone B, above the cork-trough B³. It consists of an inclined chute K, widened out at its top and having its front partially open to enable the operator to force down the corks K' with his finger should they get jammed within the chute.

The manner of using my machine is as follows: In the first place, the handle E² is so set that the cam C⁸ forces backward the rod C⁵ with its attached shoe or buffer C. When this is done, the bottle A is placed in the guide-prong A³ between the wooden piece C' in the shoe and the washer B² in the cone, and the cork K' is then placed (or falls from the chute K) into the trough B³. The handle E² now receives its first partial rotation, which causes the tail of the buffer-cam C⁸ to pass over its friction-roller C⁷, and thus allows the weighted lever C¹⁰, (whose top end bears against the roller C⁹), to force forward the cross-head C³ and so hold the bottle securely in position while it is being filled and corked. The handle then receives its second partial rotation by which the cork K' is forced by the ram D into the cone B, the sirup pumped into and the aerated water admitted into the bottle until it is sufficiently full. When the sirup and aerated water enter the bottle, they drive out the air through the snifting-passage B⁸ and the overflow-passage B¹⁰. When the bottle is sufficiently full, the overflow-passage begins to spout and the supply must then be immediately cut off. This is accomplished by the third partial rotation of the handle, which also forces the cork into the bottle at the same time. A still farther

or fourth partial rotation brings the handle to its starting-point, forcing back the shoe or buffer C and allowing the now filled and corked bottle A to drop into a suitable receiver. The machine is then ready to receive a fresh bottle and cork. The passage B¹⁰ by its snifting enables the operator to regulate the supply and pressure to a nicety. The guard A' is simply to protect the operator from being injured by pieces of glass bottle in case of the bottle bursting.

Although I have shown and described two passages B⁸ and B¹⁰ from the cone, I do not think both are absolutely necessary. The overflow-passage B¹⁰ is the one that is absolutely necessary, as it prevents the bottle being filled above the required level, and no matter how long the machine is allowed to remain filling after the overflow begins to spout the bottle will receive no more, so that if by carelessness or ignorance the filling should be continued too long nothing occurs but the loss of the aerated liquid. The bottle does not burst because it is not and cannot be overcharged and the pressure in each bottle is the same under any circumstances.

If the machine were required to be used for bottling aerated wines or other liquids in bottles of a different shape to that shown in my drawings, it would be needful so to regulate the angle of the machine that as soon as the bottle was filled to the required level it would begin to spout, otherwise there need be no alteration.

Having now particularly described and explained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim, is—

1. In a bottling-machine, the combination of a bottle-support comprising a shoe or buffer composed of a metal socket and a recessed wooden block carried thereby to receive the bottom of the bottle, a vertical stem supporting said socket, and a cross-head attached to said stem, a rod attached to said cross-head, cam mechanism connected with and adapted to reciprocate said rod, and the thereto-connected cross-head and bottle-bottom support, a wire bottle-guard, a pronged bottle-guide, and a bottle-charging cone having an over-

flow-passage therein, and a valve for controlling the supply to the bottle, substantially as set forth.

2. In a bottling-machine, the combination, with the shoe or buffer herein described rigidly held vertically to support the bottle-bottom in inclined position, and mechanism, as described, for longitudinally reciprocating said buffer, of a bottle-charging cone having a bell-mouth and an elastic washer therein to receive the bottle-head, an air-relief passage having a regulating thumb-valve, an overflow-opening having a similar valve and fluid-supply passages guarded by spring check-valves, a ratchet-disk having a stud or studs adapted as said disk revolves to engage with and open the fluid-supply valves, and devices, as described; for actuating said ratchet-disk.

3. The combination, with the shaft G and buffer or shoe C, of the recessed block C' to receive the bottle-bottom, a screwed stem secured to the rear of said block or socket C', cross-head C³, supporting said stem, a longitudinally-adjustable guide-bracket, a rod and cam mechanism, substantially as described, for reciprocating the bottle-bottom support, and a rod connecting said supporting devices and the operating mechanism.

4. The combination, with the spindle or shaft G, a horizontally-adjustable and reciprocating support for the bottle-bottom, a cam keyed upon said spindle to engage with and operate a rod connected to said bottle-support and having a friction-roller, a weighted lever adapted to hold the reciprocating parts rigid, a handle for actuating said spindle and parts connected therewith, a filling-cone having an elastic washer to receive the bottle-head, valve-guarded overflow and air-relief passages, valve-guarded fluid-supply passages, a rearwardly-extending cork-trough communicating with the rear end of the cone, a ram for forcing the corks to and into the bottle-neck, and means, substantially as described, for actuating said ram.

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Witnesses:

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WALTER SMYTHE BAYSTON.