W. GEE.

BOTTLE-FILLING APPARATUS.

No. 184,608. Patented Nov. 21, 1876.

Fig. 1.

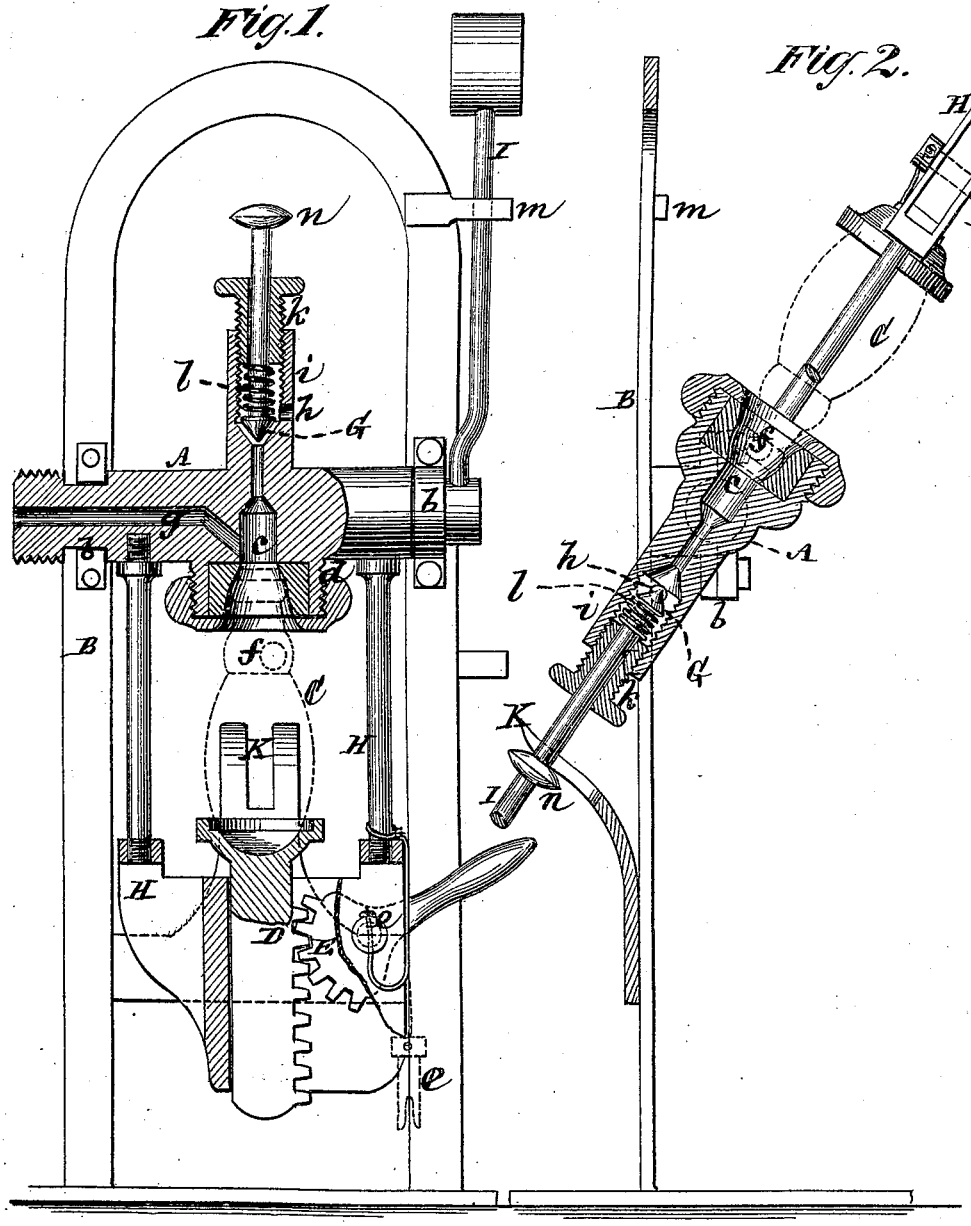

Fig. 2.

Witnesses
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IMPROVEMENT IN BOTTLE-FILLING APPARATUS.

Specification forming part of Letters Patent No. **184,608**, dated November 21, 1876; application filed October 4, 1876.

To all whom it may concern:

Be it known that I, WILLIAM GEE, of the city, county, and State of New York, have invented certain new and useful Improvements in Apparatus for Filling Bottles; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

This invention more particularly relates to apparatus for filling, with aerated or effervescing liquids, bottles having what are termed self-closing stoppers—that is, inside stoppers, which are held up to the mouths of the bottles, or otherwise made to close said mouths, by the pressure of air or gas within the bottles.

In carrying out my invention I use a filling-head which, like the filling-heads employed for bottling aerated liquids in bottles closed mechanically by forcible entry from the exterior of a cork into their mouths, has a filling-chamber that serves alike for the ingress of the water or liquid, and for the escape of air and surplus gas in filling, and renders unnecessary the projection into the bottle of a separate filling-tube and a separate air-tube.

The invention consists in the combination, with such a filling-chamber, of a valve constructed and arranged not only to regulate the pressure of the liquid in the bottle, and escape of surplus gas and air from the bottle, but also to act as a relief-valve for surplus liquid from said filling-chamber when the bottle is filled, and so facilitate the filling operation, by removing outside pressure from an inside stopper, for closing of the bottle by such a stopper.

The invention also consists in the combination of a rocking or tumbling filling-head, having a chamber or cavity that serves alike for the ingress of the water or liquid, and for the escape of air and surplus gas, a pressure-regulating valve constructed to operate also as a relief-valve, and a cam or means for automatically opening said relief-valve as the filling-head is rocked for the purpose, and for the closing of the bottle by the stopper.

The invention also consists in the combination of a removable fulcrum with a toothed bottle-lifting lever and rack-formed bottle lifter or holder, whereby said bottle-lifter may be readily adjusted to hold bottles of different lengths up against the filling-head, and to remove them therefrom, without inconveniently changing the length of stroke of the bottle lifter or holder.

Figure 1 represents a partly sectional front elevation of a bottling apparatus constructed in accordance with my invention, applicable to the bottling of various aerated liquids; and Fig. 2, a mainly centrally sectional side view of the same in a plane at right angles to Fig. 1.

A is the filling-head, which is fitted to rock in bearings *b b* on an upright or frame, B. Arranged within said filling-head is the chamber or cavity *c*, which serves alike for the ingress of the aerated water or liquid, and for the escape of air and surplus gas when filling the bottle C. This chamber or cavity *c* forms a part of, or is in free communication with, the filling-nozzle *d*, which receives the mouth of the bottle up within it when filling, the bottle being held up to its place therein, as shown in Fig. 1, by means of a rack-formed lifter, D, actuated by a toothed lever, E, that works on a removable fulcrum-pin, *e*. By withdrawing this pin, as shown by dotted lines in Fig. 1, and adjusting the toothed lever up or down, said lever, after the fulcrum-pin has been again inserted, may be made to have the same range of motion in raising bottles of different lengths up against or within the filling-nozzle, and in reversing the action of the lifter D to remove the bottles.

Any suitable inside closing-stopper may be used in the bottle C; but a ball-valve, *f*, as now commonly used, is preferred.

The water or liquid with which it is required to fill the bottle is introduced to the chamber or cavity *c* by a duct, *g*, in the rocking filling-head A, and the air or surplus gas entering said chamber when filling the bottle escapes by a vent, *h*, in a valve-box, *i*, mounted on the filling-head, or forming part of said head. This valve-box contains a pressure-regulating valve, G, which controls the communication between the chamber or cavity *c* and the vent *h*. Said valve is formed with a stem, which passes freely through a stuffing-box, *k*, applied to the valve-box *i*. Around this stem, and between the inner end of the

stuffing-box and the back of the valve G, is a spring, *l*, that has a tendency to bear the valve down on its seat against the pressure of the gas in the filling liquid, said valve yielding, however, more or less to such pressure, to allow of the escape of air and surplus gas through the vent *h* when filling the bottle. By screwing or unscrewing the stuffing-box *k* the pressure of the spring is increased or diminished to regulate said valve, as required.

The bottle holder or lifter D is connected with the filling-head A by a frame, H, arranged on one side of said head, and swinging with the head when rocked in its bearings *b b*. On the opposite side of the filling-head is a counterbalance-lever, I, which serves to facilitate the rocking or turning of said head with its attached frame.

When filling a bottle the parts occupy the position shown in Fig. 1, with the frame H inclining downwardly, as arrested by a stop, *m*, applied to the counterbalance-lever I. After the bottle has been filled, and when it is required to close the same, the frame H, by means of the attached filling-head, is swung to occupy a raised position, as shown in Fig. 2. This change of position and movement of the bottle causes the stopper to close the latter, and at the same time it brings a button or projection, *n*, on the stem of the valve G over a fixed cam, K, which causes said valve to be more fully opened than it was in filling the bottle, thereby allowing a free escape through the vent *h* for the surplus liquid in the filling-chamber *c* and its attached filling-duct *g*, thus removing pressure from the outside of the inside stopper, and so facilitating its closing action on the mouth of the bottle by pressure within the latter. The bottle having thus been filled and closed, the frame H is swung back to its normal position, (shown in Fig. 1,) and the lifter D lowered to allow of the removal of the bottle.

I claim—

1. The combination, with the filling-chamber *c*, serving both for ingress of liquid to the bottle and for the escape of air and surplus gas, of a valve applied to said chamber for regulating pressure and escape of air and surplus gas, and for relieving said chamber of surplus liquid after the bottle is filled, whereby not only one and the same valve performs several functions, but the closing of the bottle by an inside stopper is facilitated, and the projection of either a filling-tube or air-escape tube within the bottle may be dispensed with, substantially as specified.

2. The combination, with a rocking or tumbling filling-head, A, having a cavity, *c*, for the ingress of the aerated effervescing liquid and escape of the air and surplus gas, of a pressure-regulating valve, G, constructed to operate also as a relief-valve for the overflow incidental to the filling and closing of the bottle, and the cam K, or means for automatically opening said valve, to act as a relief for overflow when the filling-head is adjusted to close the bottle by its stopper, essentially as described.

3. The combination of the removable fulcrum-pin *e* with the toothed lever E and the bottle holder or lifter D, provided with a rack which gears with said lever, substantially as and for the purpose herein set forth.

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Witnesses:

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