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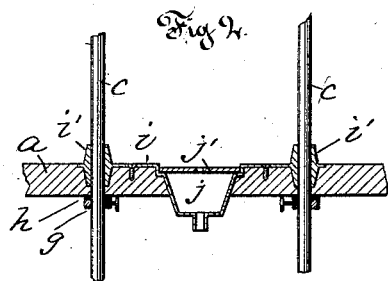
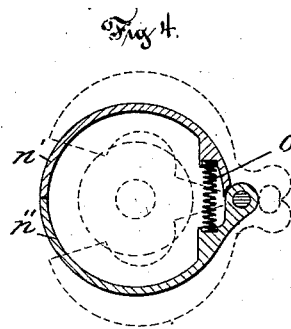
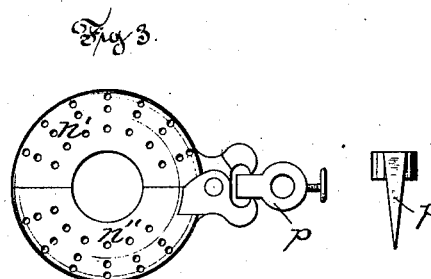
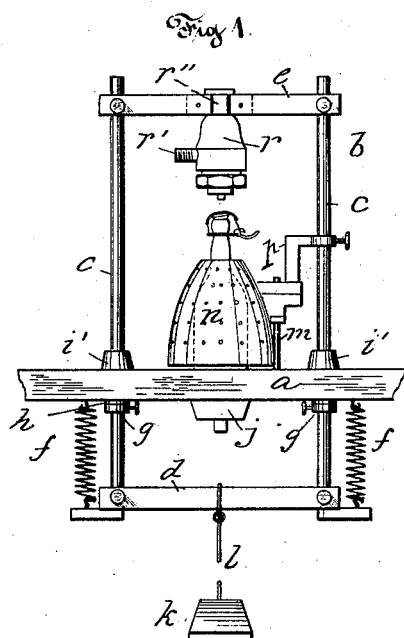
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F. B. THATCHER & J. W. JOHNSON.

BOTTLE FILLING MACHINE.

No. 305,353.

Patented Sept. 16, 1884.



Witnesses
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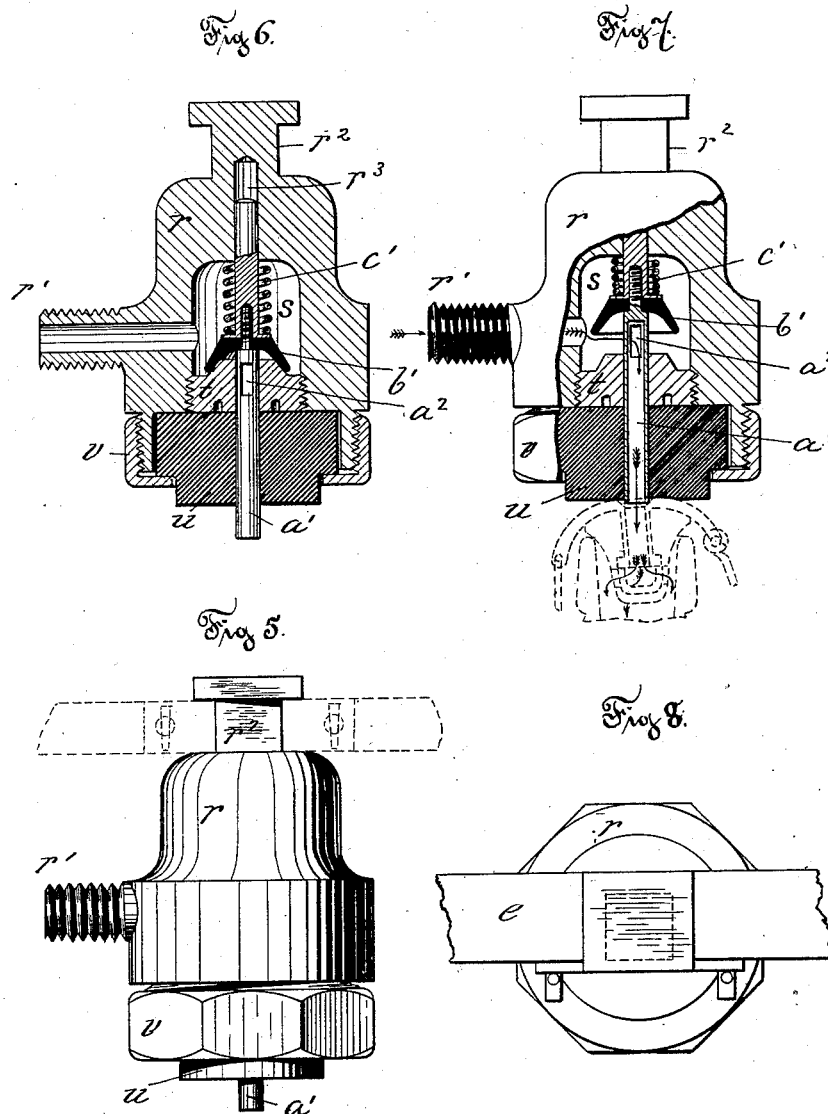
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UNITED STATES PATENT OFFICE.

FREDERICK B. THATCHER AND JOSEPH W. JOHNSON, OF NEW BRITAIN, CONNECTICUT, ASSIGNORS TO LYMAN B. GOFF, TRUSTEE, OF PAW-TUCKET, RHODE ISLAND.

BOTTLE-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 305,353, dated September 16, 1884.

Application filed January 24, 1883. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK B. THATCHER and JOSEPH W. JOHNSON, both of New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Bottle-Filling Machines, of which the following is a description, reference being had to the accompanying drawings, where—

Figure 1 is a view of our device in elevation, showing a portion only of the table or stand and the parts in position for filling a bottle. Fig. 2 is a detail view in vertical section of the bottle-stand and part of the table. Fig. 3 is a detail top view, on enlarged scale, of the guard device. Fig. 4 is a detail view, on enlarged scale, in horizontal section, of the guard device. Fig. 5 is a detail side view, on enlarged scale, of the head of the machine. Fig. 6 is a view of the head in central vertical section, valve shut. Fig. 7 is a detail view of the head with parts in section, the view showing the position of the valve when a bottle is filling and a portion of a bottle and stopper in dotted lines. Fig. 8 is a top view of the head and a part of the cross-bar to which it is fastened.

Our invention relates to the class of bottle-filling machines used for filling bottles with liquids under pressure—as those containing carbonic-acid gas.

It consists in details of the reciprocating frame, in the adjustable stand for the bottles while filling, in the automatic guard against flying pieces of bottles that break under the pressure, and in details of the head and contained valve, as more particularly hereinafter set forth.

In the accompanying drawings, the letter *a* denotes a portion of a table or bench; *b*, a vertically-reciprocating upright frame formed of side rods, *c*, cross-bars *d* and *e* vertically adjustable upon the rods. Springs *f f*, fast to the table and to projections on the rods, hold the frame in a position determined by the adjustable stops or collars *g*, bearing on their upper surfaces against elastic washers *h*. Fast to the upper surface of the table is a metallic plate, *i*, with the guides *j* for the rods and the

central depression, *j*, the bottom of which serves as a seat for the bottle when long bottles are being filled. The bottom of this depression is provided with a drip-tube or outlet, through which fluids draining into the depression escape. The upper part of this depression is formed with a shoulder, as shown, fitted to which is a plate or cover, *j'*, having a central perforation, and which is used as a seat for the bottle when short bottles are being filled. The frame is operated by means of treadle *k* and connecting-rod *l*. On a vertical rod, *m*, fast to the table, is pivoted the automatic guard *n*, formed in two parts, *n'* *n''*, formed and arranged to inclose the bottle when shut, held open by spring *o*, lodged in seats formed in the sections of the guard, as shown, and closed by the wedge *p*, adjustably secured to the frame, which is thrust between the jaws of the guard back of the rod *m*, when the frame is depressed. The guard is held closed by the wedge until the frame is raised, and is perforated to allow the gas to escape to avoid pressure, which might otherwise burst the guard with the bottle; but it is sufficiently close to intercept the flying pieces of glass. The head *r* is preferably of cast metal, and has a screw-threaded lateral stem, *r'*, to which the leader pipe from a force-pump may be coupled, a flanged rectangular neck, *r''*, which fits and is firmly held within a socket in the upper cross-bar, and a central cavity, *s*, opening downward. This cavity is closed from below by a screw-threaded plug, *t*, and elastic packing *u*, held in place by the flanged coupling-nut *v*. Within the head and passing through plug and packing is arranged the reciprocating valve-stem *a'*, the upper end of the stem moving in the guide-cavity *r''* and its lower end protruded below the bottom of the plug by spring *c'* within the head. The upper surface of the plug *t* has a raised tapering seat, upon which is fitted the metallic or, as preferred, india-rubber cup-shaped packing *b'*. When the valve is closed, the opening *a''* in the lower and tubular part of the valve-stem is below the upper surface of the plug.

This form of head and valve is adapted for

use with bottles having stoppers with centrally-perforated caps and elastic plug closing the mouth of the bottle, of the class shown in our application filed October 25, 1882.

5 The operation of the device is as follows: The bottle is placed in the depression *j* or on the cover or plate *j'*, and the frame bearing the head *r* is brought down by means of the treadle until the projecting end of the tubular valve-
10 stem sets on the metal cap of the stopper, substantially as shown in Fig. 7 of the drawings by the dotted lines. The pressure being continued, the valve is lifted from its seat until the port in the stem of the valve is carried
15 above the screw-threaded plug *t* and the liquid forced into the bottle through the opened valve down through the opening in the cap and stem of the metal part of the stopper, and through the side ports formed in the elastic
20 packing of the stopper, as indicated by the arrows in Fig. 7 of the drawings. When the bottle is filled, the lever by which the cork or stopper is secured is clamped, and the pressure from the inside closing the ports in the elastic
25 packing, the bottle is thereby securely sealed. Simultaneously with the lifting of the frame to remove the filled bottle the guard is opened, the valve *a'* is closed by the spring, and the apparatus ready for filling another bottle.
30 In our improved head and valve the cavity is securely closed and packed against leakage of the liquids under any working-pressure at its only opening (stem not considered) by the plug and elastic packing. The valve is sure
35 to close under pressure of the spring, and cannot be held open by upward pressure on the valve, as happens in cases where gravity operates the valve in closing, and all work upon the valve and plug can be done before assembling
40 the parts at an advantage over other forms.

We claim as our invention—

1. In a bottle-filling machine, table *a*, frame *b*, with adjustable cross-bars *d* and *e*, springs *f*, automatic guard *n*, and adjustable wedge *p*,
45 with means for vertically reciprocating the frame *b*, all substantially as described.

2. In a bottle-filling machine, the combination, with the table *a* and vertically-reciprocating frame *b*, of the plate *i*, formed or provided with the guides *i'*, the central shouldered depression, *j*, and the cover *j'*, as and for the purpose set forth. 50

3. In a bottle-filling machine, frame *b*, springs *f*, adjustable stops *g*, and elastic cushions *h*, all substantially as described. 55

4. In a bottle-filling machine, the combination of a reciprocating frame, *b*, with the adjustable wedge *p*, and an automatic guard, *n*, all substantially as described.

5. In a bottle-filling machine, in combination 60 frame *b*, with the adjustable wedge *p*, springs *f*, automatic guard *n*, stand *j*, rod *l*, and treadle *k*, all substantially as described.

6. The shield or guard *n*, consisting of the perforated sections *n'* *n''*, pivotally secured together and formed with interior spring-seats, and provided with a spiral spring lodged in said seats, substantially as and for the purpose set forth. 65

7. The combination of the head *r*, elastic 70 packing *u*, nut *v*, valve *a'*, and spring *c'*, all substantially as described.

8. The combination of head *r*, having cavity *s*, opening downward, plug *t*, bearing the valve-seat, and tubular valve *a'*, with packing *b'*, all 75 substantially as described.

9. The combination of head *r*, having cavity *s*, opening downward, plug *t*, valve *a'*, spring *c'*, elastic packing *u*, and nut *v*, all substantially as described. 80

10. In a bottle-filling machine, the head *r*, bearing the tubular valve *a'*, having its opening *a''* below the level of the plug when closed, all substantially as described.

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