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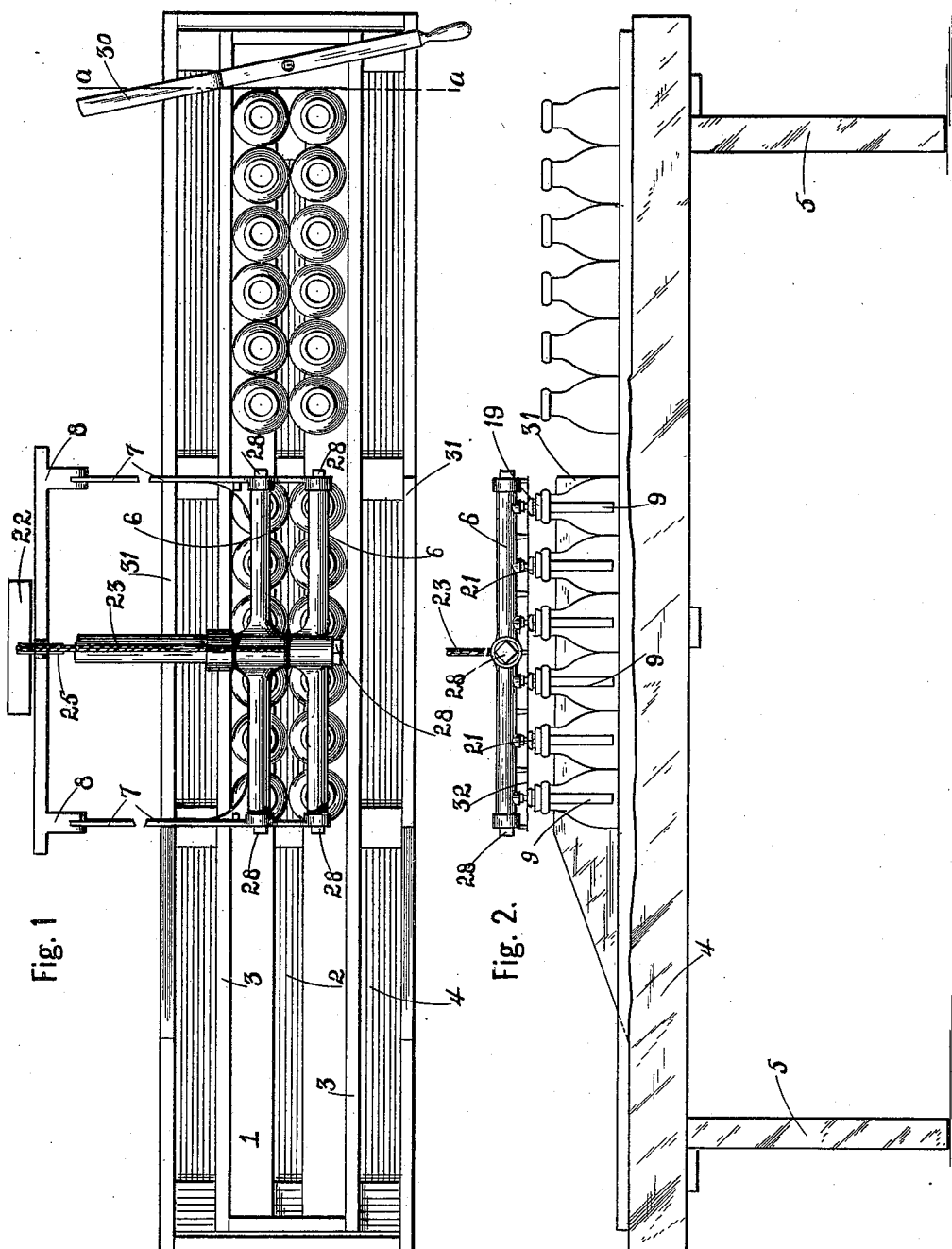
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BOTTLING DEVICE.

(Application filed Aug. 29, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.

L. M. Billings.

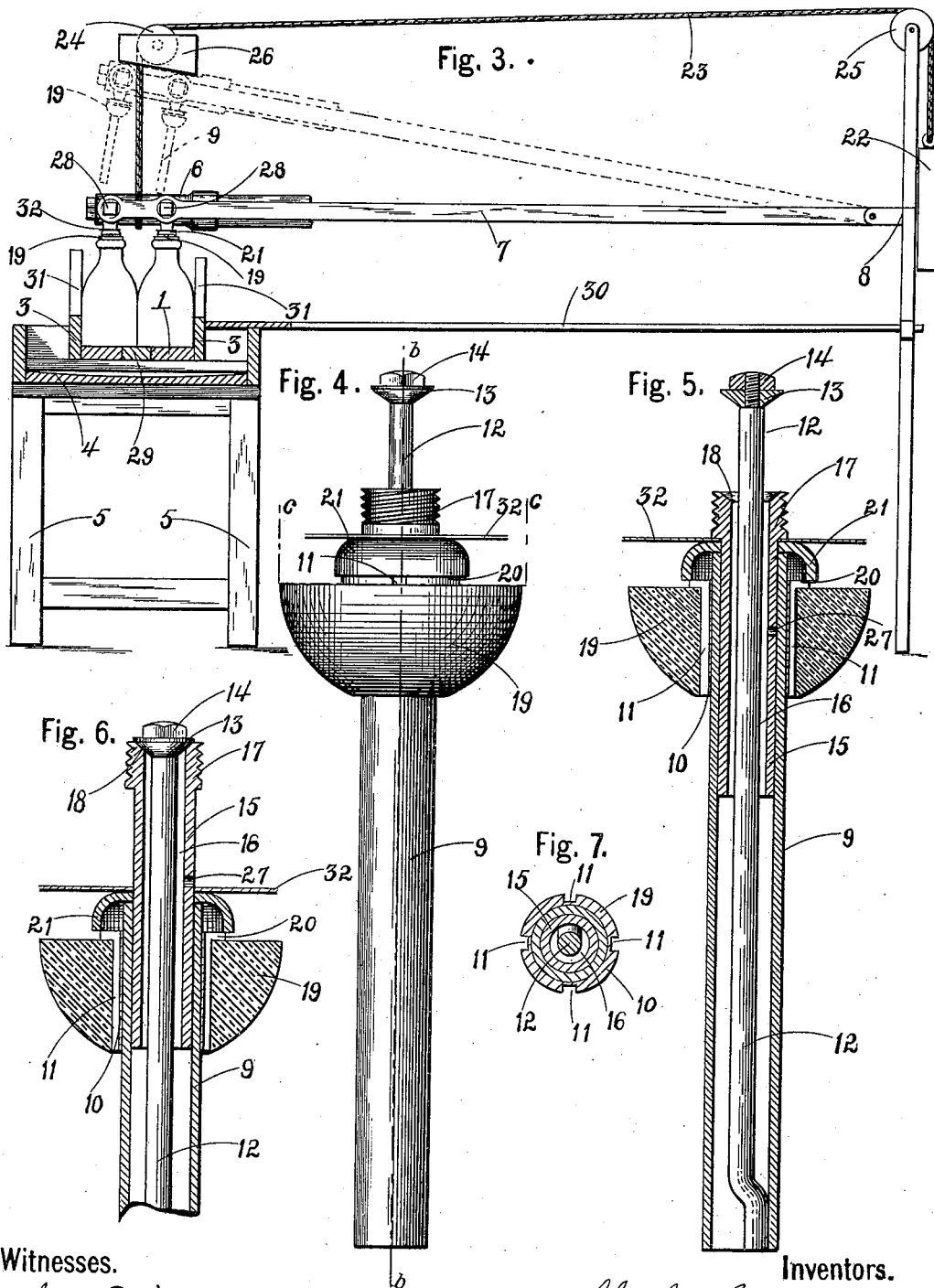
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UNITED STATES PATENT OFFICE.

CHARLES S. ADAMS AND ALBERT J. RICE, OF ATTICA, NEW YORK.

BOTTLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 648,138, dated April 24, 1900.

Application filed August 29, 1899. Serial No. 728,838. (No model.)

To all whom it may concern:

Be it known that we, CHARLES S. ADAMS and ALBERT J. RICE, citizens of the United States, residing at Attica, in the county of Wyoming and State of New York, have invented certain new and useful Improvements in Bottling Devices, of which the following is a specification.

Our invention relates to an improved device for bottling milk or other liquid; and the object of the invention is to provide a cheap, easily-operated, rapid device of this character, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 represents a top plan view of our improved device. Fig. 2 is a side elevation of the same. Fig. 3 is a transverse section on or about line *a a*, Fig. 1, looking in the direction of the arrow *V*. Fig. 4 is an enlarged side elevation of one of the tubular valved portions with the valve in its open position. Fig. 5 is a longitudinal section on or about line *b b*, Fig. 4. Fig. 6 is an enlarged side elevation of one of the tubular valved portions, illustrating the valve closed. Fig. 7 is a section on or about line *c c*, Fig. 4, looking downward, the rubber stopper being removed. In referring to the drawings in detail like numerals designate like parts.

A plurality of unfilled bottles are placed in a frame in parallel rows and a device connected to the source of liquid-supply and having a similar number of downwardly-extending tubular portions having normally-closed valves which are arranged in similar parallel rows above the bottles and so that each downwardly-extending portion is adapted to enter into or be removed from the top opening of the bottle beneath it, the valves being so arranged that they are automatically opened to fill the bottles by the entering of the downwardly-extending portions therein and automatically closed by gravity when the downwardly-extending portions are removed therefrom. The bottle-supporting frame has a long narrow rectangular bottom 1, provided with a central longitudinal opening 2 and sides 3, and is supported in a tray or sink 4, which is mounted upon legs 5.

In the preferred construction of our device

shown in the drawings the filling mechanism comprises a tubular frame 6, having arms 7, which are pivoted or hinged to a support 8; and a plurality of downwardly-extending valved portions, the upper ends of which are connected to the tubular frame 6. Each of these tubular valved portions are preferably composed of a tube 9, having a tubular portion encircling its upper end forming a peripheral enlargement 10, which is provided with longitudinal channels or grooves 11 to form air passages or openings for the escape of the air from the bottles when the liquid is poured therein, a rod 12, extending longitudinally through the tube 9 and having its lower end bent into contact and rigidly fastened to the interior of the lower portion of the tube and its upper end extending above the upper end of the tube 9 and screw-threaded, a cone-valve portion 13, screwed or otherwise secured upon the upper end of the rod, a lock-nut 14 for said portion 13, and a tube 15 sufficiently smaller in peripheral circumference to fit loosely within the tube 9 and having an opening 16 of sufficient diameter to loosely encircle the rod 12 and provide a passage for the liquid, and an enlarged screw-threaded upper end 17, which screws into one of a series of openings in the lower portions of the tubular frame 6 to operatively secure the valved portions thereto and which terminate in a beveled upper or top edge, which forms a valve-seat 18 for the cone-valve 13. A stopper 19 for the mouth of the bottle, preferably formed of rubber or other suitable elastic material, is mounted upon the enlargement 10, said enlargement having a flanged upper edge 20 to form a shoulder, against which the upper surface of the stopper abuts. A collar 21 is mounted on the top edge of the tube 9 and extends over the openings formed between the interior of the stopper 19 and the exterior of the enlargement 10 by the channels or grooves 11 to interrupt the upward movement of any liquid that may be forced outwardly through the openings. In attaching these valve portions to the frame 6 the screw-threaded upper end of the tube 15 of each valve portion is screwed in one of the openings in the lower surface of the frame, as before described, the valve being normally closed by gravity and the upper end of the rod 12 ex-

tending into the interior of the tubular frame when the valve is raised.

In the drawings the valve device is shown in its normally-closed position in Fig. 6 and in an open position in Figs. 4 and 5.

The tubular frame 6 is balanced by the weight 22, which is suspended from one end of a rope 23, which passes over pulleys 24 and 25, and is connected at its opposite end to the frame. The forward pulley is journaled in a support 26, which also serves as a stop to limit the upward movement of said frame, substantially as shown in dotted lines in Fig. 3.

The tube 15 of each valve portion is preferably provided with an air vent or opening 27 to afford means for the air to enter the tubes below the valve, so the liquid will run out of the tube quickly as the frame is raised from the filled bottles.

The tubular frame 6 is provided with caps 28, which are easily removed to afford means for cleaning the interior.

In filling bottles with liquid by the aid of this device a plurality of bottles are arranged in the bottle-supporting frame and are moved into operating position beneath the filling mechanism by means of the block 29, which is supported and moves in the frame, and its operating-lever 30, the side edges of the upper side extensions 31 of the tray or sink 4 acting as stops to limit the movement of the lever, and thus arrange the bottles in exact position beneath the filling mechanism. The tray or sink 4 serves to catch any liquid that may drop from the filling mechanism or bottles, and the raised side extensions 31 intercept any liquid that may spurt from the filling mechanism or bottles during the filling and prevent it from contaminating the clothes of the operator. The filling mechanism is now depressed, entering and pressing the downwardly-extending valve portions into the mouth of the bottles and opening the valves to permit the liquid to flow in and fill the bottles. When filled to the desired extent, the filling mechanism is raised and the valves automatically closed by gravity.

To provide means for closing the valves more quickly, a spring is preferably used to supplement the gravity. The preferred form of this spring is shown in the drawings, in which a flat strip of spring material 32 is provided with a series of holes or openings, through which the lower portions of the tube 15 are passed, the spring being held in position between the top of the collars 21 and the lower edge of the enlarged portions 17 and coming in contact with the projection from the tubular frame. By this means a single integral spring will serve for an entire row of valves.

Some bottles are higher and of a different form than others, and the spring by forming a spring-tensioned yielding back to the movable portion of the valve also serves to seat the valve-stoppers in the mouths of such bottles, thereby providing for the inequality in

bottles. One or more of these valved portions may be screwed into the bottom of a vessel containing the liquid to be bottled and advantageously employed on a small scale by slipping the bottles under and pressing them up against the stopper. In this case an independent spring to each valved portion is preferable.

The operation of filling a large number of bottles with liquid—milk, for instance—is performed very rapidly by the assistance of this device, one series of bottles being placed in the supporting-frame in readiness to be moved under the filling mechanism, while another series is being filled beneath the filling mechanism and a third series of filled bottles is being stoppered or capped and removed from the tray, the operation of arranging the bottles in the support, filling them with liquid, and stoppering and removing them being performed in successive order until the required number of bottles are filled.

One of the great advantages of this device is that it prevents any appreciable amount of foaming of the milk or other liquid while filling the bottles, owing to the fact that the tubular valved extensions reach to the bottom of the bottles and are therefore below the surface of the liquid during the latter part of the filling operation.

We claim as our invention—

1. A bottle-filling device comprising a support for a plurality of bottles, and a tubular frame arranged above said support and having a plurality of downwardly-extending tubes adapted to enter the mouths of the bottles; said tubes having valves adapted to open by pressure against the mouth of the bottle and to close by gravity and a spring having connection with said valves for supplementing the force of gravity and thereby closing the valves more quickly, as set forth.

2. A bottle-filling device comprising a support for a plurality of bottles arranged in rows, and a tubular frame arranged above said support, and counterbalanced to remain in any position to which it may be moved, and having a plurality of downwardly-extending tubes arranged in similar rows and adapted to enter the mouths of the bottles, said tubes having valves adapted to open by pressure against the mouth of the bottles, and to close by gravity and a spring device for each row arranged to supplementarily press the valves into a closed position with a spring tension, as set forth.

3. A bottle-filling device comprising a fixed support for a plurality of bottles, means for moving said bottles in said support, and a filling mechanism above said support having a plurality of downwardly-extending tubular portions adapted to enter the mouths of the bottles, and each composed of two loosely-telescoping tubes, a fixed tube having one member of a valve and a movable tube having the opposite valve member, the outer tube having a series of exterior longitudinal

channels forming air-passages and a flanged upper end, and an annular elastic stopper mounted on said outer tube on the exterior of the channels and having its top edge abutting against the flanged upper end.

4. A bottle-filling device comprising a support for a plurality of bottles and a filling mechanism above said support having a plurality of downwardly-extending tubular portions adapted to enter the mouths of the bottles, and each composed of two loosely-telescoping tubes, and each tube having one member or part of a valve, the inner tube having an air-vent and the outer tube having a series of exterior longitudinal channels forming air-passages, and an elastic stopper mounted on said outer tube.

5. A bottle-filling device comprising a support for a plurality of bottles and a filling mechanism above said support having a plurality of downwardly-extending tubular portions adapted to enter the mouths of the bottles, and each composed of two loosely-telescoping tubes, a fixed tube having one member of a valve and a movable tube having the opposite valve member, the outer tube having a series of exterior longitudinal channels forming air-passages an elastic stopper mounted on said outer tube, and a collar mounted upon the tubes and extending over the air-passages to interrupt the upward movement of any liquid that may be forced through said air-passages.

6. A bottle-filling device comprising a tray or sink having side extensions, a support for a plurality of bottles in said sink, bottle-filling mechanism, a bottle-moving block arranged in the support and longitudinally movable therein and a lever for operating the block adapted to be stopped in its forward movement by the side extensions, as set forth.

7. A bottle-filling device comprising a support for a plurality of bottles and a filling mechanism above said support having a plurality of downwardly-extending tubular portions adapted to enter the mouths of the bottles, and each composed of two loosely-telescoping tubes, a fixed tube having one member of a valve and a movable tube having the opposite valve member, the outer tube having a series of exterior longitudinal channels forming air-passages and an elastic stopper mounted on said outer tube and the inner tube having an air-vent.

8. A bottle-filling device comprising a support for a plurality of bottles arranged thereon in rows and a filling mechanism having a similar number of downwardly-extending tubular portions arranged in similar rows and adapted to enter the mouths of the bottles, and a strip of spring material mounted upon the tubular portions of each row and having a series of openings through which said tubular portions pass, as set forth.

9. A bottle-filling device comprising a support in the form of a long narrow frame for supporting a plurality of bottles arranged thereon in rows, a tubular frame having a like number of downwardly-extending tubular portions arranged in like rows and adapted to enter into the bottles, each tubular portion being formed of two tubes, one telescoping loosely within the other; one fixed to the frame and the other moving upon said fixed tube, and each having one member of a valve and a strip of spring material mounted upon each row of tubular portions and adapted to press against the movable tubes, as set forth.

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