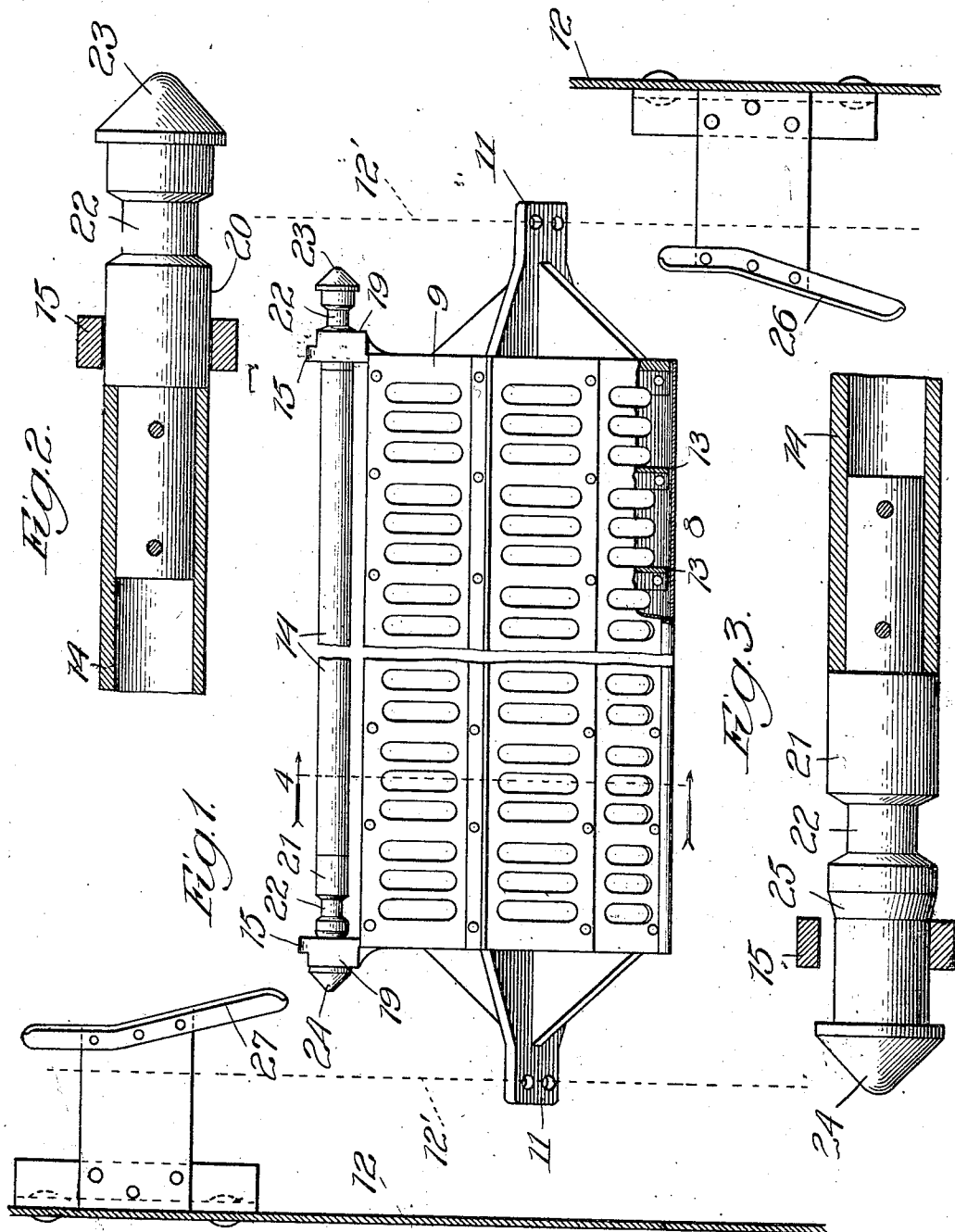


A. HANNAFORD.
 RACK FOR BOTTLE CLEANSING MACHINES.
 APPLICATION FILED AUG. 3, 1912.

1,055,631.

Patented Mar. 11, 1913.

2 SHEETS—SHEET 1.



Witnesses:
Ed. Lybald.
G. F. Chase.

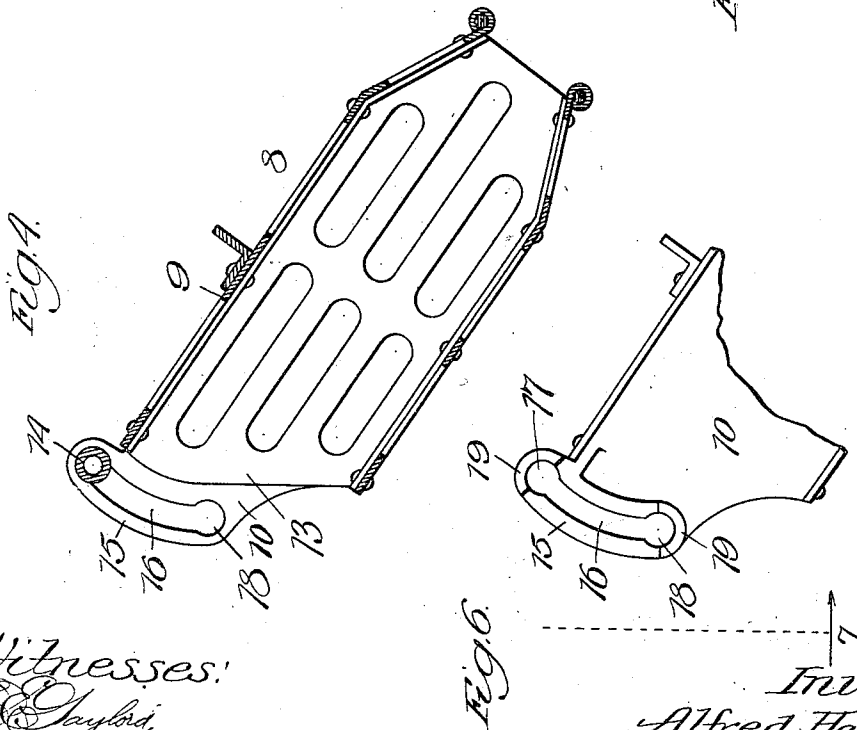
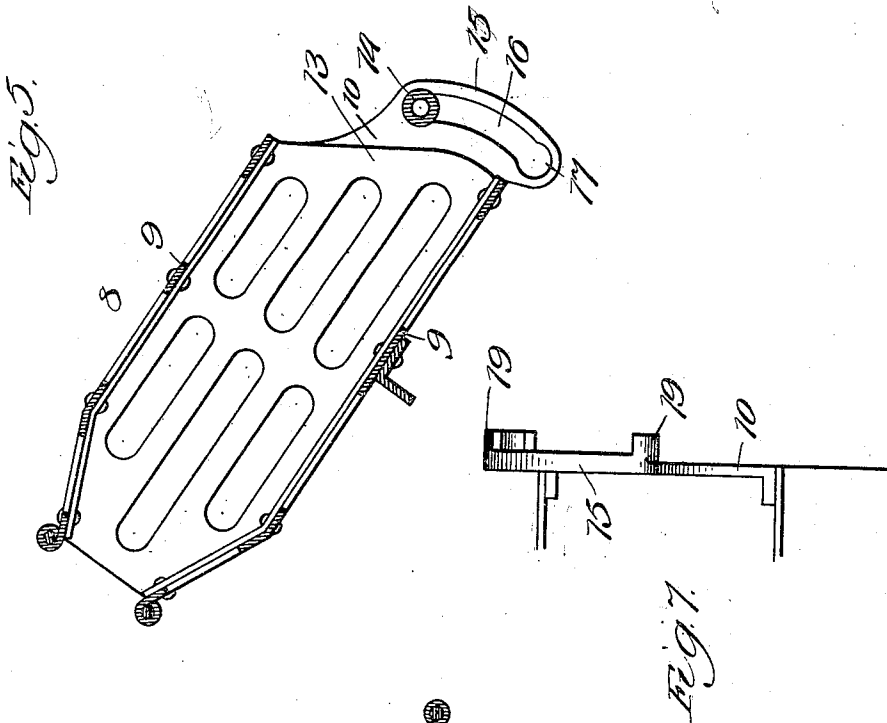
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Alfred Hannaford,
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Witnesses:
E. J. Taylor
G. F. Chase

Inventor:
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UNITED STATES PATENT OFFICE.

ALFRED HANNAFORD, OF CHICAGO, ILLINOIS.

RACK FOR BOTTLE-CLEANSING MACHINES.

1,055,631.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Application filed August 3, 1912. Serial No. 713,071.

To all whom it may concern:

Be it known that I, ALFRED HANNAFORD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Racks for Bottle-Cleansing Machines, of which the following is a specification.

My invention relates to an improvement in bottle-racks of the type shown and described in United States Letters Patent No. 1,012,843, granted to Sigmund L. Goldman, December 26, 1911; and it relates, particularly, to an improvement in the construction of the gate-operating means, the object being to cause the gate-forming bar, by shifting it lengthwise, alternately in opposite directions, from one locked position to another, to move by gravity to its respective rack opening and closing positions, thereby greatly to simplify the construction.

In the accompanying drawings, Figure 1 shows the rack provided with my improvement by a broken view in elevation, the view presenting, in a diagrammatic way, stationary cams interposed in the paths of the opposite ends of the gate for shifting it lengthwise respectively in opposite directions; Fig. 2 is an enlarged sectional view of one end-portion of the gate in its guiding-loop, and Fig. 3 is a similar view showing the opposite end-portion of the same; Fig. 4 is a section through the rack on line 4, Fig. 1, showing the angle of inclination at which it is carried vertically through the tank of the machine; Fig. 5 is a view of the rack like that represented in Fig. 4, but showing it extending in the reverse direction, or that in which it extends when on the opposite side of the machine; Fig. 6 is a broken face-view of one of the rack-heads showing the gate-guiding loop thereon, and Fig. 7 is an end view of the rack-head shown in Fig. 6, as regarded in the direction of the arrow on the line 7 in that figure.

The rack 8 shown is of the same construction, as to its body-portion, as that illustrated and described in said patent, and comprising the perforate sides 9, end-heads 10 having reinforced ears 11 projecting from their outer faces to be riveted to endless chains, indicated at 12' in Fig. 1, forming the vertically traveling conveyer in the tank 12 of the machine, and perforate partitions 13 extending at intervals between the sides to form pockets.

On corresponding ends of the heads 10 are provided (being preferably cast thereon for guiding and locking the gate 14, as hereinafter described) similar loops 15, each forming an arc-shaped slot or passage terminating in end-sockets 17 and 18, greater in diameter than the width of the slot and each having its wall elongated or extended outwardly as shown at 19 to increase its bearing surface. The sockets 18 aline with each other and are each midway between the lateral edges of a head 10; and the sockets 17, which also aline, extend beyond corresponding corners of the opposite heads. The gate 14 is a bar, preferably formed of a section of metal pipe, with similar solid stems 20 and 21 secured in its opposite ends to extend therefrom. Each stem is formed with a circumferentially-reduced intermediate section 22 of a diameter adapting it to traverse a loop-slot 16, the greater diameter of the stem-sections at opposite sides of the section 22 adapting them to fit in the sockets 17 and 18, but preventing their entrance into the slots; and these stems terminate at their outer ends in similar heads 23 and 24, shown of tapering form. In Fig. 3, the stem 21 is shown to be somewhat reduced in diameter between the head 24 and section 22 to form a beveled section 25 for the purpose hereinafter explained.

In use, the rack is one of a series of racks extending, at proper intervals, between the conveyer-forming chains, in a tank 12, and to which the racks are fastened by riveting through their ears 11.

Following, now, one rack through the tank: As represented in Fig. 1, the gate 14 rests at the larger sections of its stems or end-portions in opposite sockets 18 of the guides 15, thus in its open position, being locked to permit the empty rack to be filled with bottles, the rack being on the rear or filling side of the machine, with a cam 26 projecting from a wall of the tank into the path of the gate-head 23. In the downward travel of the rack the head 23 encounters the cam 26, whereby the gate is shifted lengthwise in its bearings 17 to bring its reduced sections 22 into registration with the corresponding ends of the loop-passages 16, through which said sections pass by the gravity of the gate, causing it to drop into the lower sockets 18, there to close the rack by extending the gate centrally along its mouth.

This after the rack has been filled with bottles. Thereupon in the continued travel of the rack on the same side of the machine, the then projecting head 24 encounters another or second cam (not shown, but like the cam 26) projecting into its path from the wall of the tank opposite that from which the cam 26 projects. By this encounter the gate, in its closed position, is shifted lengthwise in the sockets or bearings 18 to remove the sections 22 out of registration with the slots 16 and bring the larger sections of the gate-ends into such registration, thereby locking the gate in its rack-closing position, in the sense of obstructing it against movement through the slots 16 from the socket bearings confining it. Thus the head 23 is again protruded as represented in Fig. 1, from a then lowermost socket 18. In the continued travel of the rack it attains and moves upwardly along the discharging side of the machine, on which there projects from a wall of the tank into the path of the head 23 a third cam (not shown, though like but inverted relative to the cam 26). By this encounter the gate is shifted lengthwise in its then uppermost bearings 18 to register the reduced end-sections 22 with the adjacent ends of the slots 16, through which they pass by the gravity of the gate, which drops into the sockets 17, thus opening the rack to permit the bottles to discharge from it automatically by reason of its downward inclination toward the rack-mouth. The discharge may take place, as usual, upon a suitable chute (not shown) in proper position to receive it. In the continued upward travel of the rack, the then protruding head 24 encounters a cam 27, like the aforesaid third cam, projecting into the path of that head from a wall of the tank opposite the wall thereof from which such third cam projects; and by this encounter the gate is shifted lengthwise to lock it in its rack-opening position in the sockets 17, in the same way and sense hereinbefore described of its being locked in the rack-closing positions in the sockets 18. When, therefore, in the continued travel of the rack, with its gate open and locked, it again attains the filling-side of the machine, repetition of the operations thus described will ensue.

In the locked positions of the gate, its weight retains it in place in the bearings against the tendency of jarring to shift it longitudinally; but this tendency is further resisted by the beveled section 25 of the stem 21 in presenting an inclined surface against riding into the bearing-socket 17 or 18 then adjacent to it.

As will be understood from the foregoing description, the gist of my improvement lies in supporting the gate-forming bar at its end-portions lengthwise-shiftingly in bearings on the opposite ends of the rack for the

open and closed positions of the gate, the bearings for each gate-end being connected by a guide-passage for movement of the gate by gravity from one position to the other when shifted in one direction, but the gate becoming locked in its bearings against such movement when shifted in the opposite direction. It is to be realized, therefore, that considerable variation is possible in the details of construction herein shown and described, and I do not intend by illustrating a single specific or preferred embodiment of my invention to be limited thereto; my intention being in the following claims to claim protection upon all the novelty there may be in my invention as broadly as the state of the art will permit.

What I claim as new and desire to secure by Letters Patent is—

1. In combination with a bottle-rack body, a gate-forming bar, bearings on each end of said body for the end-portions of said bar in the open and closed positions of the gate, in which bearings said bar is lengthwise-shiftingly supported, the bearings for each of said end-portions being connected by a guide-passage for movement of the gate from one position to the other when shifted in one direction, and means locking said end-portions in their bearings against said movement of said bar when shifted in the opposite direction.

2. In combination with a bottle-rack body, a gate-forming bar provided with end-heads, bearings on each end of said body for the end-portions of said bar in the open and closed positions of the gate, in which bearings said bar is lengthwise-shiftingly supported, the bearings for each of said end-portions being connected by a relatively-narrow passage for movement therethrough of the gate from one position to the other when shifted in one direction, and means on said end-portions locking them in their bearings against said movement of said bar when shifted in the opposite direction.

3. In combination with a bottle-rack body, guides on the ends of the body having relatively-large end-sockets and relatively-narrow passages connecting them, and a gate supported at its end-portions lengthwise-shiftingly in corresponding sockets, said end-portions having relatively-small sections to register with and traverse said passages when the gate is shifted in one direction, and relatively-large sections seating in said sockets and locking therein the gate when shifted in the opposite direction.

4. In combination with a bottle-rack body, loops on the ends of the body, each forming relatively-large end-sockets and a relatively-narrow arc-shaped slot connecting them, and a gate-forming bar supported at its end-portions lengthwise-shiftingly

in corresponding sockets, said end-portions having relatively-small sections to register with and traverse said slots when said bar is shifted in one direction, and relatively-large sections seating in said sockets and locking therein the gate when shifted in the opposite direction.

5. In combination with a bottle-rack having end-heads, loops on corresponding ends of said heads each forming relatively-large end-sockets and a relatively-narrow slot connecting them, and a gate-forming bar supported at its end-portions lengthwise-shiftingly in corresponding sockets, said end-portions having relatively-small intermediate sections to register with and traverse said slots when said bar is shifted in one direction, and relatively-large sections seating in said sockets and locking therein said bar when shifted in the opposite direction.

6. In a bottle-cleaning machine, the combination with a tank, of a bottle-rack body traveling vertically therein in inclined position, a gate-forming bar supported near its ends in bearings on said body to extend along the mouth-portion thereof and be shifted lengthwise and movable by gravity from one to the other of its rack-opening and closing positions, means for locking said bar in said positions, and cams at intervals in the paths of the opposite bar-ends for shifting the bar alternately in opposite directions to unlock it and permit it to move by gravity from one to the other of said positions, and re-lock it in said positions.

ALFRED HANNAFORD.

In presence of—

J. G. ANDERSON,
R. A. SCHAEFER.