

(No Model.)

2 Sheets—Sheet 1.

S. D. PALMER.
VENT FOR CHURNS.

No. 516,275.

Patented Mar. 13, 1894.

Fig. 1.

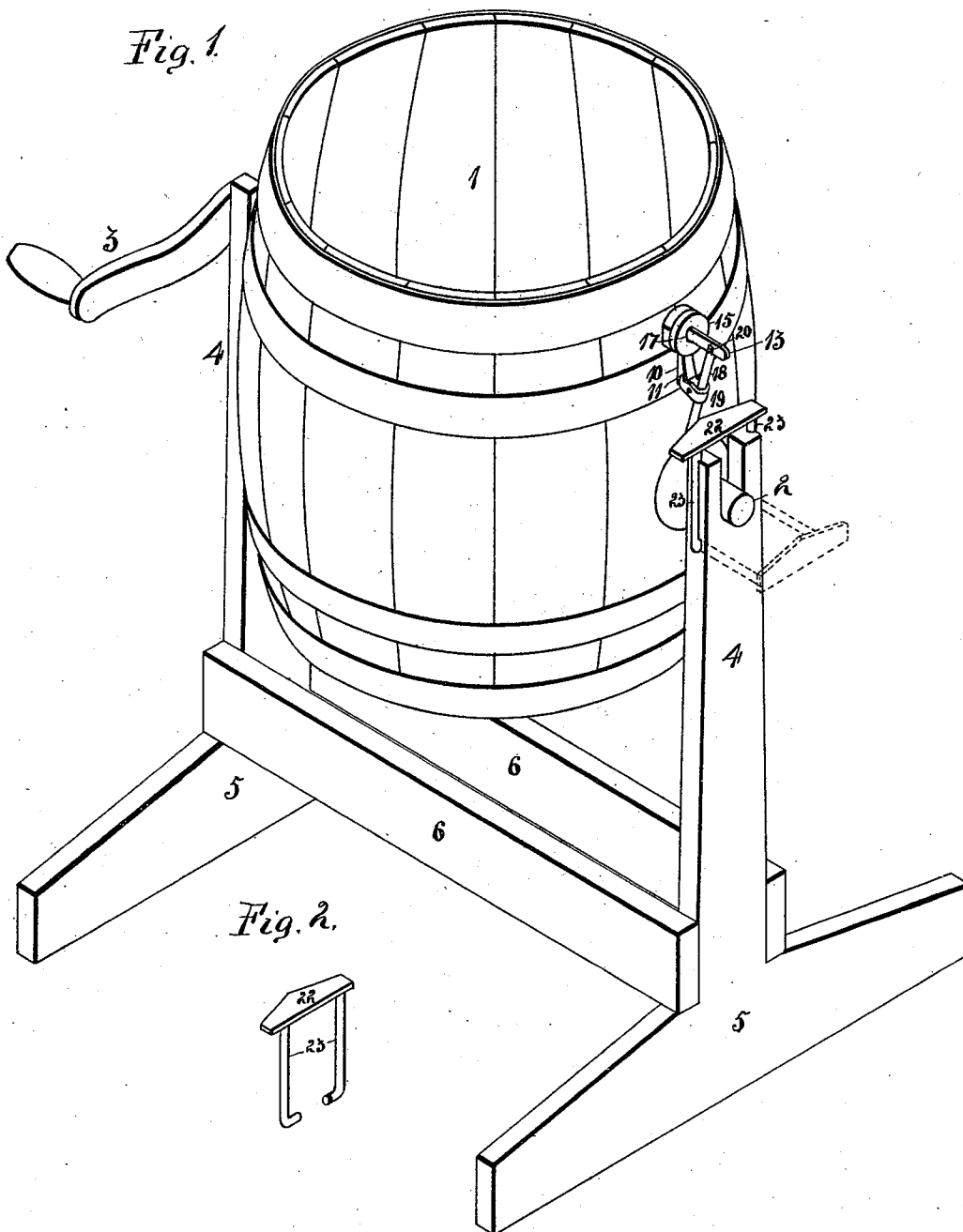


Fig. 2.

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Att'y.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

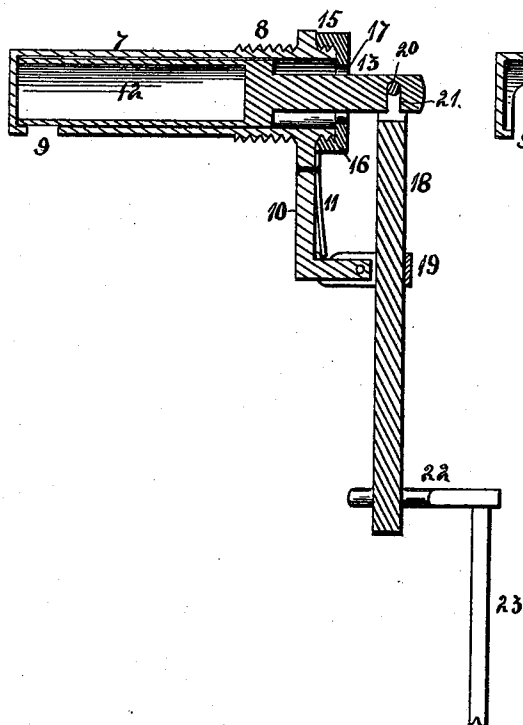


Fig. 4.

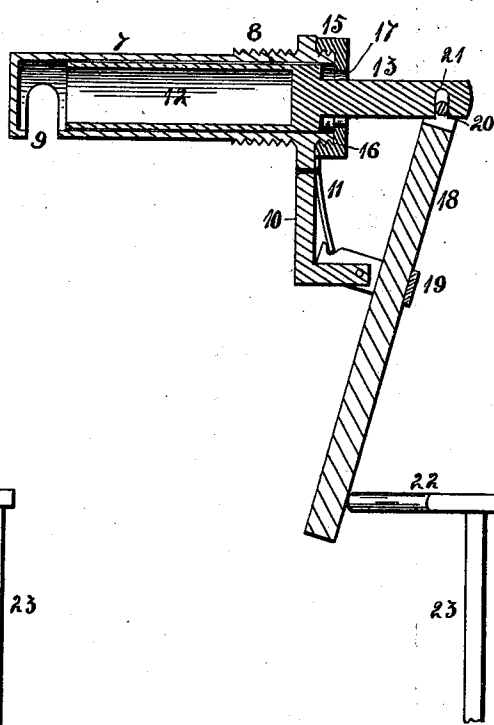
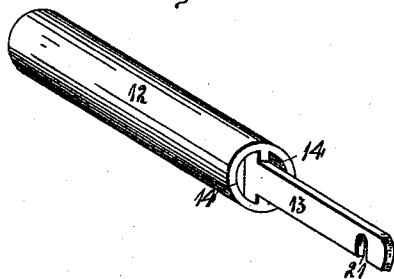


Fig. 5.



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UNITED STATES PATENT OFFICE.

SAMUEL D. PALMER, OF ROCKFORD, ILLINOIS, ASSIGNOR OF ONE-HALF TO
GEORGE E. KING, OF SAME PLACE.

VENT FOR CHURNS.

SPECIFICATION forming part of Letters Patent No. 516,275, dated March 13, 1894.

Application filed November 2, 1892. Serial No. 450,787. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL D. PALMER, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Automatic Vents for Churns, of which the following is a specification.

The object of this invention is to construct a churn having a vent and means for positively operating the vent in one direction and a spring for operating it in the opposite direction.

The further object of this invention is to make the device which operates the vent and which has a connection with the supporting frame, movable, out of the range of the vent, so that the vent will remain in its closed position, when the object for which the vent has been employed has been accomplished.

In the accompanying drawings—Figure 1 is an isometrical representation of a churn, showing my improvements in connection therewith. Fig. 2 is an isometrical representation of the cam, which has a connection with the supporting frame which operates the vent. Fig. 3 is a vertical central section of my improved vent in its closed position. Fig. 4 is a vertical, central section of the vent in its open position. Fig. 5 is an isometrical representation of the valve employed in my improved vent.

In the employment of rotary churns it is a known fact that for the first few rotations of the churn gases will arise, which has been found to deter the process of forming the butter, and the object of this invention is to construct an automatic vent which will allow the escape of the gas at predetermined intervals, in this instance, once at each revolution, and when the gas has ceased to form the mechanism for operating the vent is thrown out of the range of the vent and the churning process continued.

The churn shown in the drawings is of the usual rotary barrel form, the mechanism for holding the end or cover in position has not been shown, as it was no part of this invention, and such device may be any that will hold the cover in proper position.

To the opposite sides of the churn, 1, are

secured trunnions, 2, to one of which is connected the handle 3 for rotating the churn. A supporting frame consisting of the vertical posts 4 and the horizontal feet 5, are connected by bars 6, the upper ends of the posts 4 being slotted to receive the trunnions of the churn, thereby supporting the churn in a rotatable manner.

My improved vent consists of a cylindrical shell 7, having one end closed and the other end being provided with external screw threads 8. A slot 9 is formed in the shell near its closed end. From the lower side of the shell extends an L shaped bracket 10, to the front end of which is riveted a flat spring 11. Within the shell is located a cylindrical valve 12, shown at Fig. 5, which has a rectangular stem 13 connected therewith and extending from its forward end, leaving side openings 14, which communicate with the interior of the valve. This cylindrical shell is secured to the staves forming the churn body near the upper end of the churn, by the screw threads 8 engaging the staves. The valve is then placed in position within the shell and a cap 15, internally screw threaded engages the external screw threads 16, of the shell, which is provided with a central opening 17, which allows the stem of the valve to move in a lengthwise direction and the cap prevents the valve from being withdrawn. A lever 18 has a pivotal connection with the lower portion of the L shaped bracket by means of a yoke 19 and at its upper end has a connection with the valve stem by means of a pin 20 engaging the slot 21 in the stem. The flat spring 11 engages the free end of the yoke and when free to act presses downward on the free end of the yoke, moving the upper end of the lever 18 toward the churn body, consequently holding the valve in its innermost position.

To the upper end of one of the vertical posts 4 is secured a cam, consisting of the plate 22 and the depending arms 23, having their lower ends turned toward each other. These lower ends are inserted in holes in the upper end of the frame, and the cam, as such, is held in a vertical position by the arms 23 lying in depressions formed in the frame. This cam is so located with reference to the lever 18, of

the vent, as to move the lower end of the lever toward the body of the churn. In use the cam is placed in its vertical position for the purpose shown in Fig. 1 of the drawings, and when the cream has been placed in the churn and the cover secured thereon, the churn may be rotated by means of the handle, and at each revolution the lower end of the lever 18 will come in contact with the inclined face of the cam plate 22, which will move the lever upon its pivot, consequently moving its upper end outward, which will withdraw the valve stem, allowing the gas within the churn to enter the opening 14 on the under side of the shell 7, passing through the valve and escaping to the outside of the churn. By continuing the rotation of the churn the lever 18 will pass beyond the cam and the action of the flat spring will force the valve to its inner or closed position, thereby cutting off the communication with the interior of the churn.

This vent is automatically operated once during each revolution of the churn, and by locating the vent in the end of the churn the height of the cream within the churn will be below the vent during the opening and closing process of the valve. As the gas from the cream only

forms during the first few revolutions of the churn it is unnecessary to operate the vent except during the interval the gas is forming. I have made the cam for operating the vent movable out of range of the cam, which is accomplished by simply moving the cam upon its pivotal connection with the supporting frame of the churn as shown in dotted lines in Fig. 1 and the balance of the churning process can be accomplished without operating the vent.

I claim as my invention—

A churn provided with a vent, consisting of a tubular shell, having a screw thread engagement with the churn, and having an opening near its inner end communicating with the interior of the churn, a tubular plunger located in the shell capable of a longitudinal movement, a shank extending from the plunger, an arm pivoted to a bracket depending from the shell, one end engaging the shank, and means secured to the churn frame for operating upon the other end and the spring for the arm.

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Witnesses:

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