(No Model.)

2 Sheets—Sheet 1.

S. D. PALMER.

VENT FOR CHURNS.

No. 516,222. Patented Mar. 13, 1894.

Fig. 1.

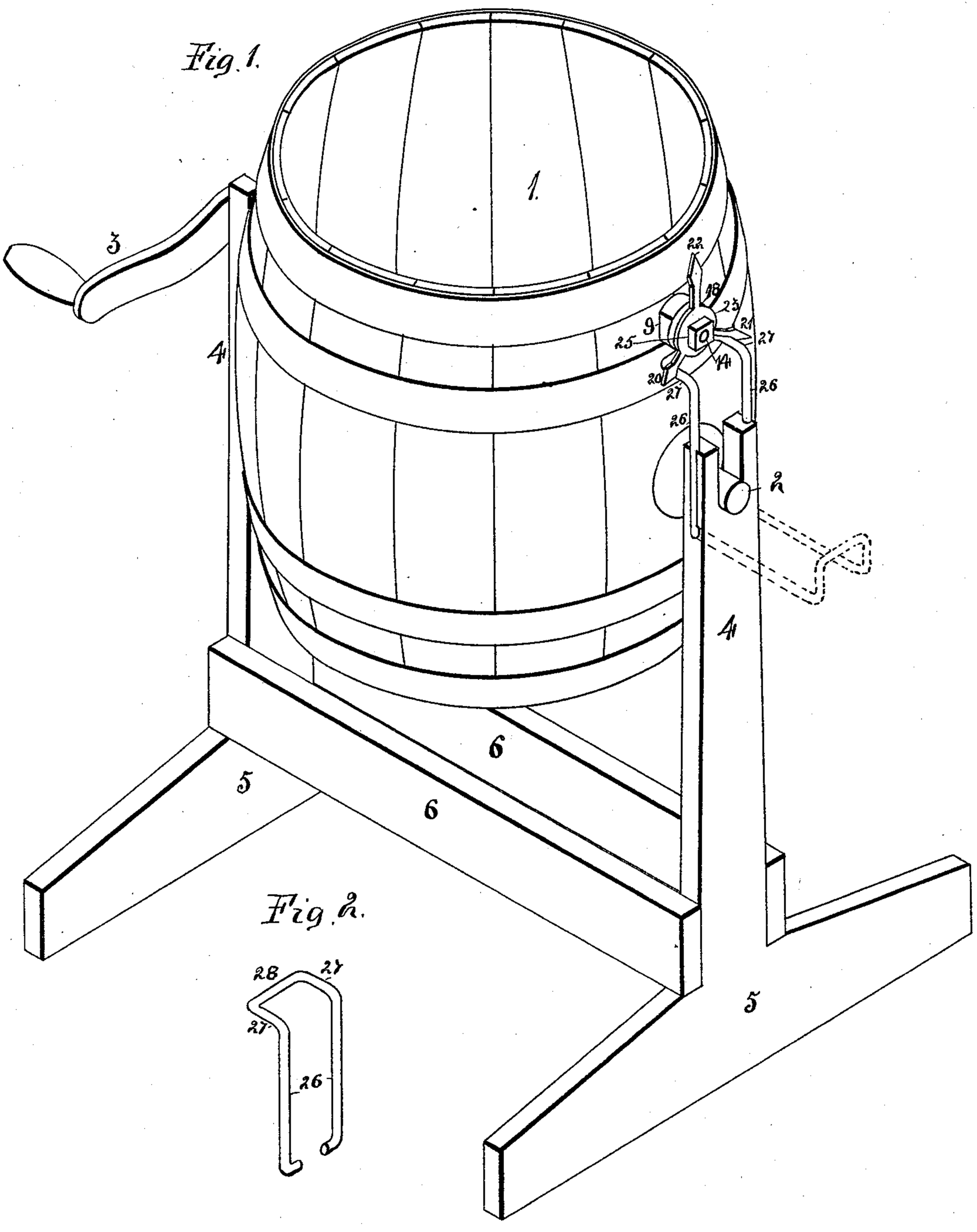

Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

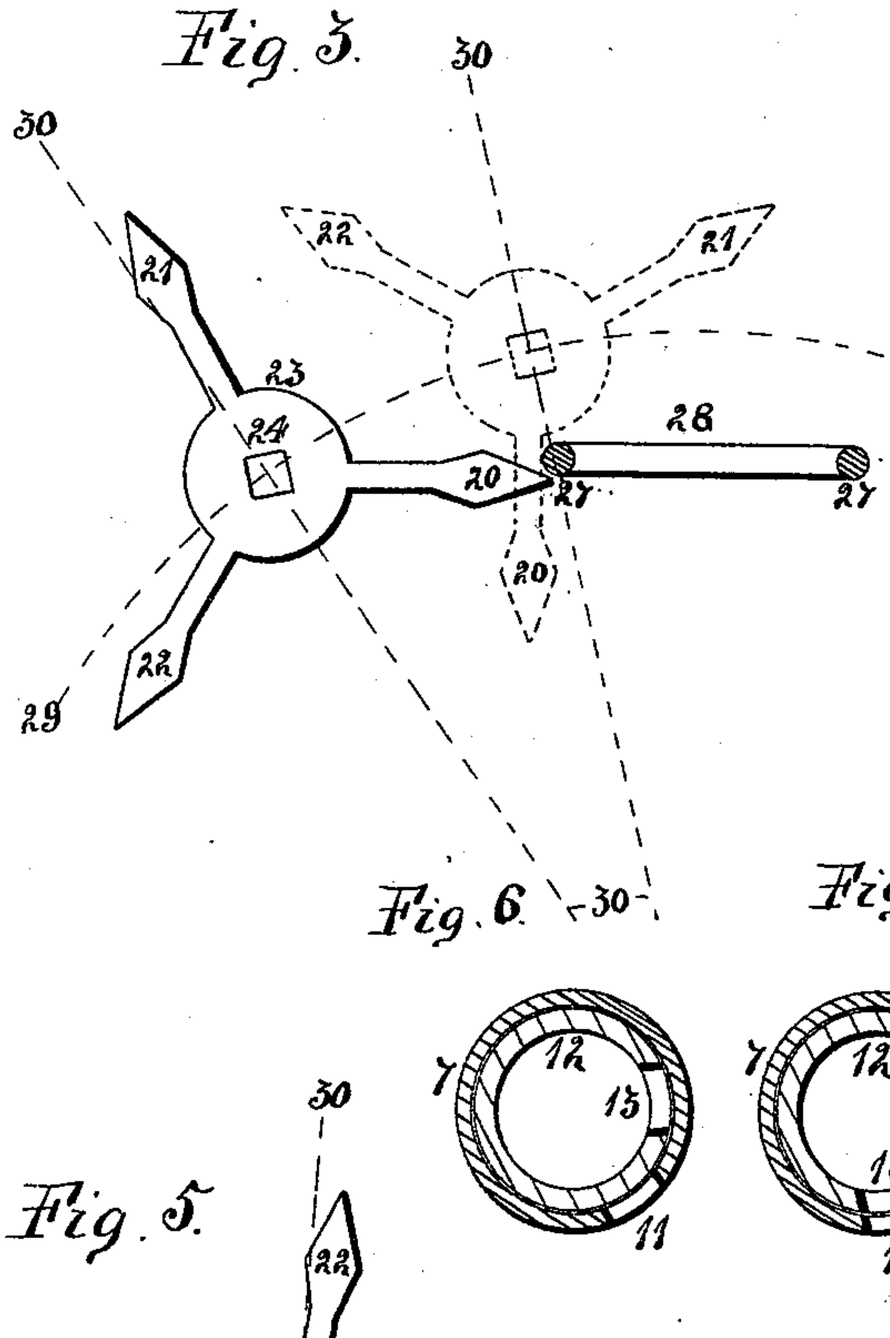


Fig. 4.

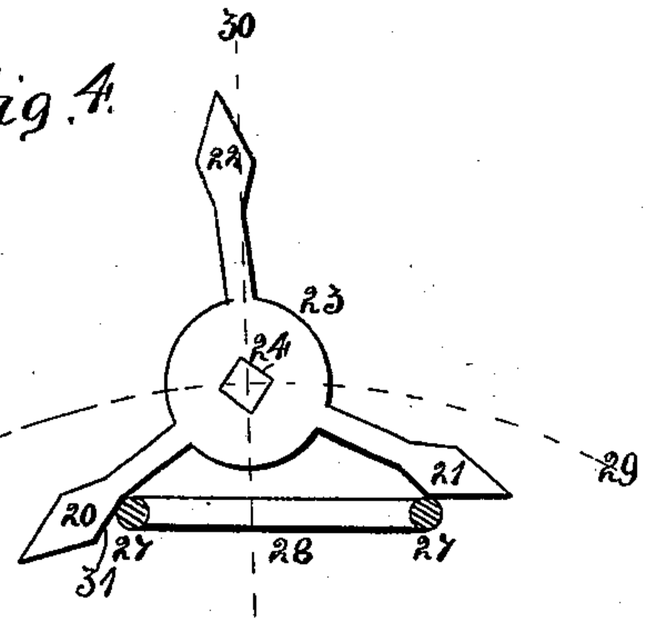


Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

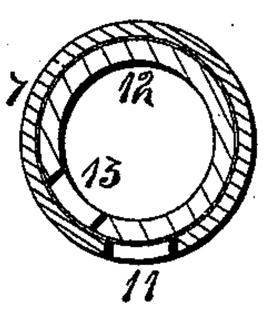


Fig. 5.

Fig. 10.

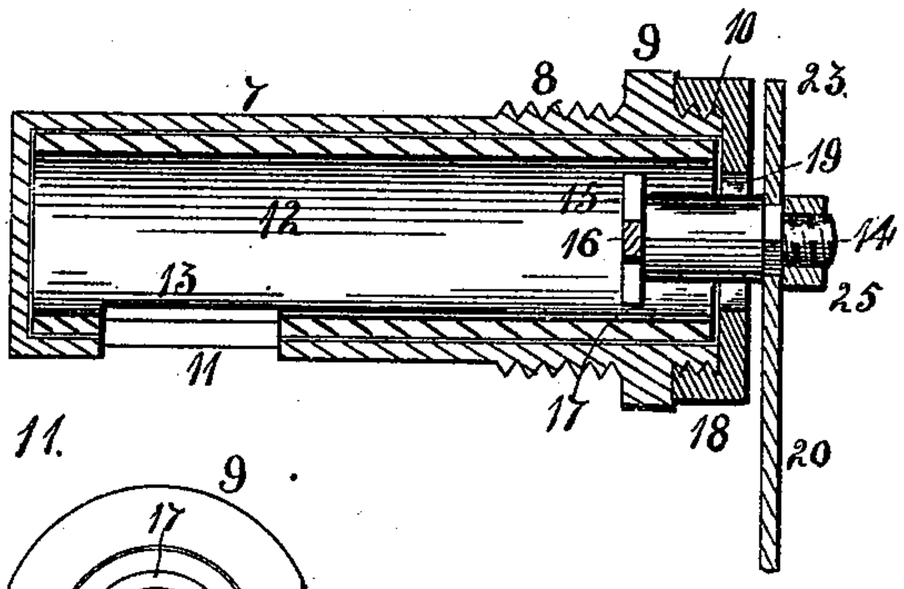
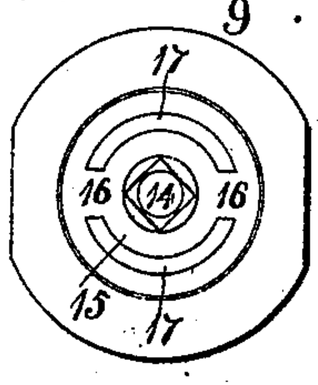


Fig. 11.



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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. 516,222, dated March 13, 1894.

Application filed November 10, 1892. Serial No. 451,513. (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 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 its opening and closing movements.

In the accompanying drawings—Figure 1 is an isometrical representation of a churn equipped with my improved vent. Fig. 2 is an isometrical representation of the device secured to the framework of the churn for operating the vent. Figs. 3, 4 and 5 show the various positions which the vent occupies during its opening and closing movements. Figs. 6, 7, 8 and 9 show the position of the valve during the opening and closing movements. Fig. 10 is a lengthwise vertical section through the vent. Fig. 11 is an end elevation of the vent with certain portions removed to show the interior construction.

My improved vent consists of an outside shell and an inside valve, the valve capable of an intermittent rotary movement, the movement being imparted to the valve by devices having a connection with the supporting frame.

The churn represented in the accompanying drawings is of the usual construction and consists of the churn body 1, provided with trunnions 2 and a handle 3. The trunnions are located in the upper end of the vertical bars 4 which are connected with horizontal feet 5; said vertical bars connected by cross bars 6, which compose the supporting frame.

I have not deemed it necessary to show the device for securing the removable head of the churn in position as various devices are employed for this purpose and it not being a part of this invention.

My improved vent is located near the upper end of the churn and consists of an outside shell 7, having a connection with the staves of the churn by the external screw threads 8. The outer shell of the churn is provided with an enlargement 9, which is sided in order to receive a wrench for turning the shell into position; and that portion 10 beyond the outside of the enlargement, is also screw threaded. An opening is formed in the shell on its under side, near its inner closed end. Within the shell is located a rotary valve 12, which has an opening 13, corresponding to the opening in the shell, and a valve stem 14, has a portion of its length sided and its outer end screw threaded. This valve stem has a connection with a disk 15, which is of smaller diameter than the interior of the valve and is connected therewith by projections 16, leaving openings 17 between the disk and the interior wall of the valve. This valve is held in place within the shell, against lengthwise movement, by the cap 18, which has a screw thread connection with the outer end of the shell. A central opening 19 is provided in the cap in order to admit of communication with the interior of the valve. As the shell has connection with the body of the churn it will rotate with the churn and hold its relative position therewith, and should a rotary movement be imparted to the valve by means of having a connection with the valve stem, the opening 13, of the valve will, once during each revolution, correspond with the opening 11 in the shell, consequently a communication will be formed between the interior of the churn and the outer air by passing through the center of the valve out through the opening 19 formed in the cap. I have provided means for imparting this movement to the valve which consists of a frame in spider form, composed of arms 20, 21 and 22 connected to a central disk 23 which is provided with a square opening 24. The ends of the arms are enlarged or pointed in arrow form. This frame has a connection with the valve stem by a square opening being placed over the square stem and a nut 25 firmly clamps the frame in position. It will be noticed however, that a space is left between the face of the frame and the cap 18 in order that the gases may escape.

To the upper end of one of the vertical bars 4 I have located a framework, consisting of the vertical bars 26, horizontal bars 27 and a connecting bar 28. The lower ends of the vertical bars 26 turning toward each other as shown at Fig. 2. The lower ends of the bars 26 enter holes formed in the upper end of the framework, forming a pivotal connection be-

tween the framework and the supporting frame of the churn. This framework is held in working position by the bars 26 lying in the recesses formed in the vertical bars of the supporting frame. When the parts are placed in position, as shown in Fig. 1 of the drawings and a rotary motion be imparted to the churn by means of the handle 3 the vent will be opened and closed when the arms of the spider frame come in contact with the horizontal bars 27.

At Figs. 3, 4 and 5 I have shown a curved dotted line 29, which is a portion of the circle described by the rotation of the vent, and have shown dotted lines 30 with respect to the lengthwise axes of the churn body and at Fig. 3 I have shown in solid lines the arm 20 in the position it occupies when about coming in contact with one of the horizontal bars 27 and in dotted lines in said figure have shown the position which the spider frame occupies when the churn has been rotated nearly to a vertical position, which illustrates that the spider frame has been rotated about a quarter of a revolution and at Fig. 4 have shown the position which the spider frame occupies when the arm 20 in its contact with the bar 27 has rotated the spider frame until the arm 21 comes in contact with the other bar 27 of the framework and at Fig. 5 have shown the position of the spider frame which it occupies when it has finished imparting the movement to the valve and it would occupy this position until the churn has made nearly a revolution or brought to its original position as shown in solid lines at Fig. 3, when the arm 31 will be presented to the under side of one of the horizontal bars 27. The movement from the position shown in solid lines in Fig. 3 to that shown at Fig. 5 has been about one third of a complete revolution. Owing to the arrow shaped ends of the arms the spider frame will be moved when the surface 31 (shown at Fig. 4) comes in contact with the horizontal bar 27, which will cause the arm 21 to move toward the center of the churn, sufficiently to place it in position to engage the under surface of the horizontal arm 21 in the next revolution of the churn.

At Figs. 6, 7, 8 and 9 I have shown the position the shell 7 and valve 12 occupy when the spider frame is in the positions shown in solid and dotted lines Fig. 3 and in Figs. 4 and 5, respectively. It will be seen that the opening of the valve will coincide with the opening into the shell once in each third revolution of the churn, but it is evident that three openings might be formed in the valve which would permit the escape of gas once in each revolution, and that the vent is operated when the lengthwise direction of the churn is nearly in a vertical position, or the head of the churn upward, so that the cream will not escape from the churn, and it will be further noticed that the disk 15 will break the force of the escaping gas which would prevent particles of cream being forced out through the vent.

As the formation of gas occurs only during the first few revolutions of the churn, the frame has a pivotal connection with the supporting frame of the churn in order that the frame work may be moved out of range of the vent as shown in dotted lines in Fig. 1 and the vent will remain closed during the continued revolutions of the churn.

It will further be noticed that both the opening and closing movements of the valve are positive and that a closed fit can be made between the valve and the shell to prevent the escape of cream, and by this construction of a vent the churn can be rotated in either direction.

I claim as my invention—

1. A vent for a churn consisting of a shell having a connection with the churn body, said shell provided with an opening, communicating with the interior of the churn, a valve located inside of the shell capable of a rotary movement and having an opening therein capable of communication with the opening in the shell, a cap having a connection with the shell, preventing the displacement of the valve, a frame composed of arms having a connection with the valve and a device having a connection with the supporting frame of the churn, against which the arms of the valve come in contact when the churn is rotated.

2. A vent for a churn consisting of a shell having a rotary valve located therein, arms having a connection with the valve, the ends of which are in arrow form and a device having a connection with the supporting frame of the churn against which the arms come in contact when the churn is rotated.

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