

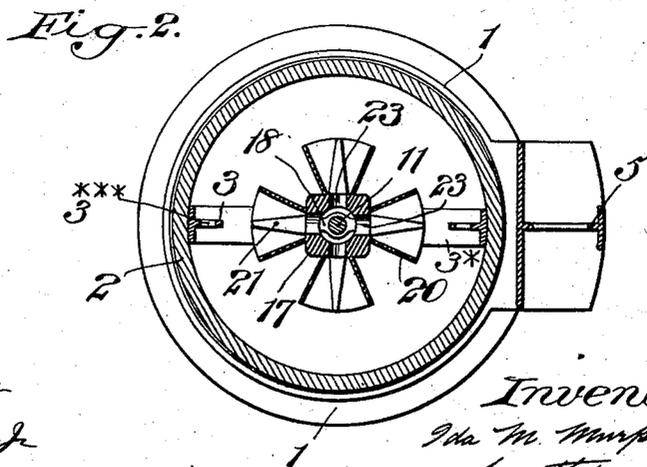
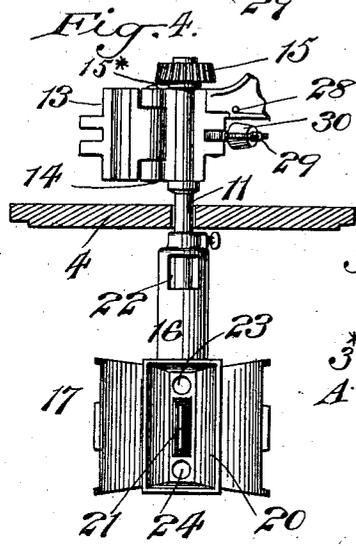
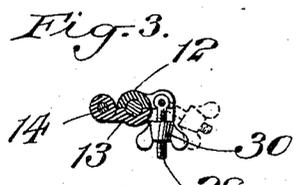
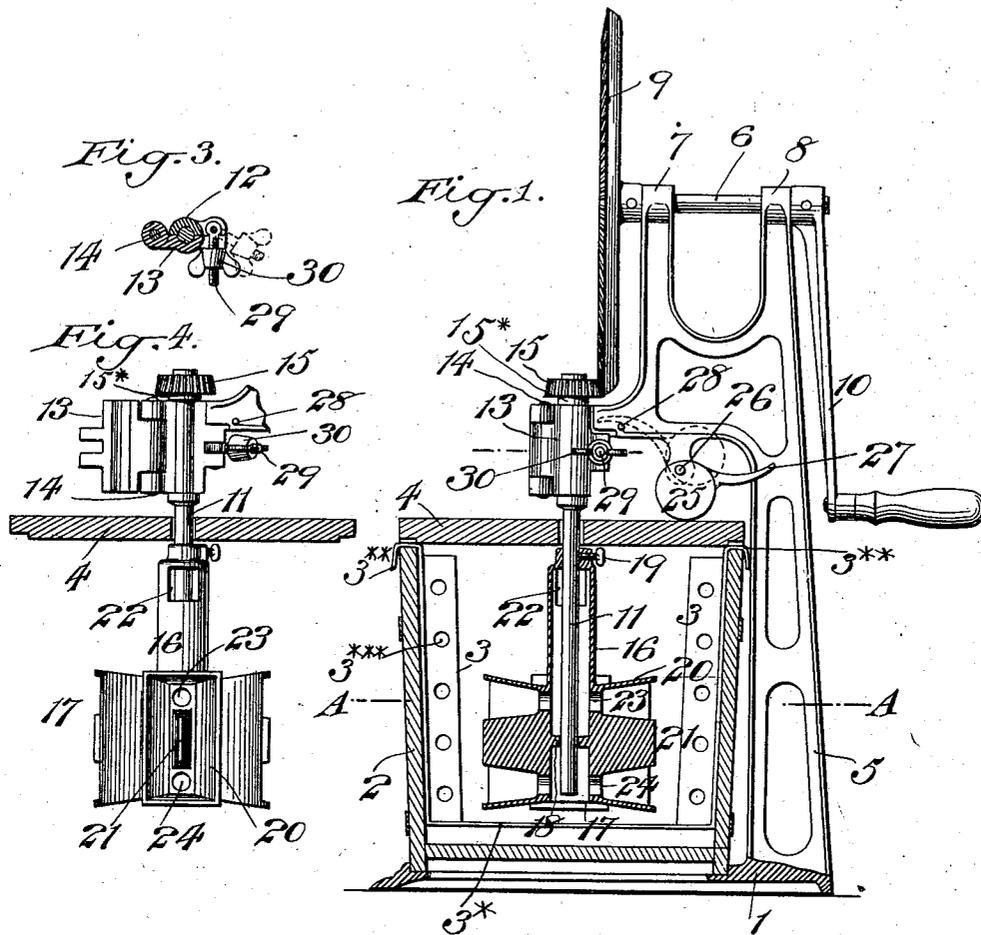
No. 723,900.

PATENTED MAR. 31, 1903.

I. M. MURPHY.
CHURN.

APPLICATION FILED JUNE 14, 1902.

NO MODEL.



Witnesses:-
George Barry Jr.
Henry J. Heine.

Inventor:-
I. M. Murphy
by attorney
Thorn & Seward

UNITED STATES PATENT OFFICE.

IDA M. MURPHY, OF NEW YORK, N. Y., ASSIGNOR TO THE ONE-MINUTE CHURN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

CHURN.

SPECIFICATION forming part of Letters Patent No. 723,900, dated March 31, 1903.

Application filed June 14, 1902. Serial No. 111,667. (No model.)

To all whom it may concern:

Be it known that I, IDA M. MURPHY, a citizen of the United States, and a resident of the borough of Manhattan, in the city and State of New York, have invented a new and useful Improvement in Churns, of which the following is a specification.

My invention relates to an improvement in churns, and has for its objects to provide certain new and useful improvements in the construction, form, and arrangement of the several parts of the churn, whereby the tub may be very readily inserted into and removed from its position and the cover of the tub may be locked against movement when the tub is in position.

A further object is to provide an improved mechanism for removably securing the dasher-shaft to the support.

A still further object is to provide a dasher-head of improved form, whereby the butter may be formed from the cream more rapidly than has hitherto been possible.

In the accompanying drawings, Figure 1 represents the churn in side elevation, the tub and the dasher being shown in vertical central section. Fig. 2 is a transverse section taken in the plane of the line A A of Fig. 1. Fig. 3 is a detail view of the means for removably mounting the dasher-shaft in its bearings in the support-frame; and Fig. 4 is a detail side view of the dasher, its shaft, the cover of the tub, and the bearing for the dasher-shaft, one half of the bearing being shown swung away from the other half of the bearing to more clearly illustrate the method of mounting and removing the dasher-shaft.

The base of the churn is denoted by 1, which base is fitted to receive and support the tub 2. This tub 2 is provided with removable abutments 3, located diametrically opposite each other and connected at their lower ends by a cross-bar 3*, which cross-bar is preferably spaced above the bottom of the tub to permit a free agitation of the cream below as well as above the said cross-bar. The abutments are removably supported within the tub by means of handles 3** at their upper ends, which project over the top of the tub beneath the removable cover 4 thereof. These

abutments are preferably provided with series of holes 3*** therethrough for assisting in the aeration of the cream within the tub when the dasher is rotated.

A supporting-frame 5 uprises from the base 1, which supporting-frame projects over the top of the tub when the tub is in position on the base, as shown. A drive-shaft 6 is mounted in suitable bearings 7 and 8 in the top of the supporting-frame 5, which shaft has fixed thereto a large driving gear-wheel 9 and an operating crank-handle 10.

A rotary dasher-shaft 11 is mounted in extended bearings in the supporting-frame, which bearings in the present instance comprise a stationary half-bearing 12, forming part of the frame, and a half-bearing 13, hinged thereto, as shown at 14, so as to swing away from the stationary half-bearing to permit the insertion and removal of the dasher-shaft. The bearing for the dasher-shaft is of sufficient length to support the shaft firmly therein without the necessity of mounting the lower end of the shaft in a second bearing, thus doing away with the use of a bearing within the tub. The two half-bearings are locked and released by means of a swinging bolt 29, hinged to the stationary half-bearing, and a lock-nut 30, which is caused to engage the outer face of the swinging half-bearing 13 when the bearings are closed. This rotary dasher-shaft 11 is provided above its extended bearing in the supporting-frame with a small pinion 15, which is brought into mesh with the large driving-gear 9 when the shaft is inserted in position within its bearings. The dasher-shaft 11 is further provided with a circumferential bearing-shoulder 15* intermediate the small pinion 15 and the top of the extended bearing, which shoulder 15* rests upon the top of the extended bearing, so as to support the shaft vertically. This arrangement obviates the necessity of supporting the lower end of the shaft, as the extended bearing is made of sufficient length to cause the shaft to rotate steadily when being operated. The portion of the shaft below the extended bearing is fitted to extend downwardly within the tub 2 and is there provided with the dasher, which

comprises a tubular shank 16 and head 17. The dasher-shaft 11 extends along within the tubular shank and head of the dasher and is engaged therewith at the top of the tubular portion and by means of a spider 18 within the head. This dasher is adjustably secured along the shaft 11 by means of a set-screw 19, located at the top of the tubular portion of the head in position to impinge against the said shaft. The dasher-head comprises a plurality of outwardly-flaring funnels 20. In the present instance four are shown arranged in pairs, the two members of each pair being arranged diametrically opposite to each other and at right angles to the two members of the other pair. Tapered wings 21 project outwardly from the bases of the funnels 20 within the said funnels. An air-inlet 22 opens communication from the exterior to the interior of the tubular shank 16 of the dasher, at the upper end of the same. An upper annular series of air-holes 23 open communication from the interior of the tubular portion of the dasher to the interior of the flaring funnels 20 at the tops of the bases of the tapered wings 21, there being one upper hole 23 for each of the funnels. A similar annular series of holes 24 open communication from the interior of the tubular portion of the dasher to the interiors of the funnels at the bottoms of the bases of the tapered wings 21. The bottom of the tubular portion of the dasher is also preferably left open, so as to insure a complete circulation of air, and thereby a complete aeration of the cream, within the tub.

A cam 25 is hinged at 26 to the overhanging portion of the supporting-frame 5, and it is provided with an operating-handle 27. This cam is so located that when the tub is in position on the base of the supporting-frame the cam may be forced down upon the cover 4 of the tub to keep it locked in position while the churn is being operated. A stop 28 may be provided on the supporting-frame for engaging the handle 27 of the cam 25 when the cam is in its raised or disengaged position.

Supposing the parts to be in their unassembled position, they are assembled as follows: The abutments are first inserted into position within the tub. The cover 4 is then inserted onto the dasher-shaft 11. The dasher is then inserted upon the said shaft and adjusted to the required point. The dasher is then inserted into the tub and the cover placed in position thereon. The tub is then

placed in its position upon the base, and at the same time the dasher-shaft is inserted into the extended bearing in the frame with its pinion 5 intermeshing with the driving gear-wheel 9. The swinging half-bearing is then closed and locked in position by the swinging bolt 29 and thumb-nut 30. As the dasher is rotated the tapered wings 21 will throw the cream outwardly against the abutment 3 in the tub and will at the same time cause a tendency to produce a vacuum at their bases, thereby drawing the air rapidly from within the bore of the dasher into the body of the cream. As the milk or cream returns from the wall of the churn it will be disintegrated and thoroughly beaten by the abrupt vertical faces of the funnels 20, and this breaking up and beating of the cream will take place after the air has been thoroughly mixed therewith, the result being that the separation of the butter will take place in an unusually short space of time and will be accomplished with comparatively little expenditure of power.

What I claim as my invention is—

1. A churn comprising a tub, a dasher mounted to rotate within the tub, and means for rotating the dasher, the said dasher being provided on its periphery with outwardly-flaring funnels and tapered wings therein, an air-inlet leading from the exterior of the dasher to the interior thereof, and air-holes leading through the body of the dasher in proximity to the bases of the said tapered wings within the said funnels, said holes being in communication with the air-inlet, substantially as herein set forth.

2. In a churn, a dasher comprising a tubular shank and head, outwardly-flaring funnels projecting from the head, a tapered wing within each funnel, an air-inlet leading from the exterior of the dasher to the interior thereof, and air-holes leading from the hollow interior of the head to the interiors of the funnels at the top and bottom of the bases of the tapered wings, substantially as herein set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 12th day of June, 1902.

IDA M. MURPHY.

Witnesses:

FREDK. HAYNES,
HENRY THIEME.