(No Model.)

H. J. ANDERSON.

COMBINED Cchurn AND BUTTER WORKER.

No. 590,951. Patented Oct. 5, 1897.

Fig. 1.

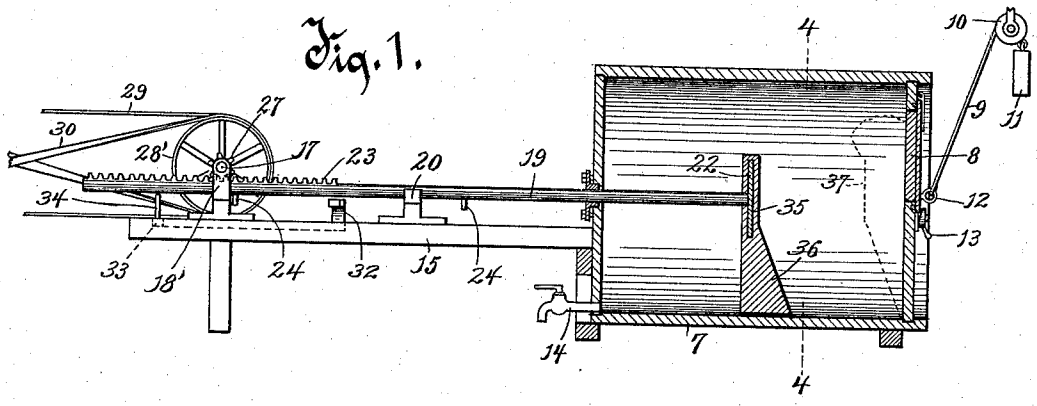


Fig. 2.

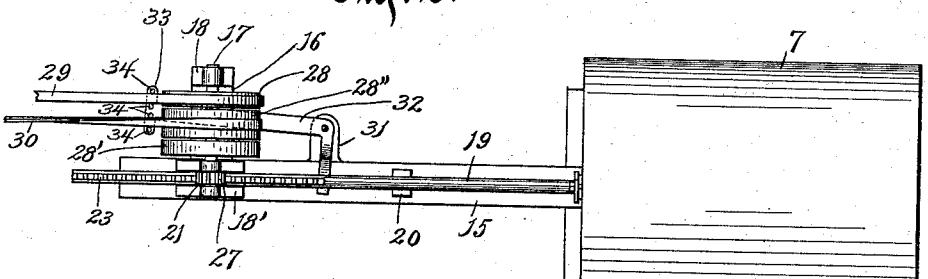


Fig. 5.

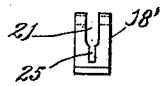


Fig. 4.

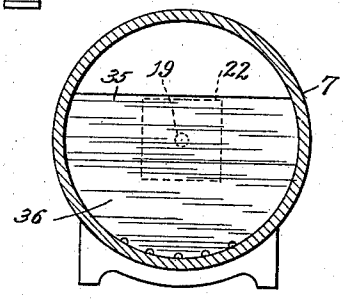
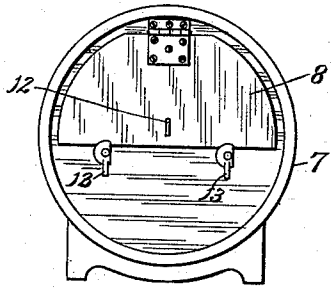


Fig. 3.



Witnesses.

A. Keeney.

Emma V. Faust.

Fig. 6.

Inventor.

Hans J. Anderson,

By Benedict and Morsell.

Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HANS J. ANDERSON, OF LAKE MILLS, WISCONSIN.

COMBINED CHURN AND BUTTER-WORKER.

SPECIFICATION forming part of Letters Patent No. 590,951, dated October 5, 1897.

Application filed May 21, 1896. Serial No. 592,385. (No model.)

To all whom it may concern:

Be it known that I, HANS J. ANDERSON, of Lake Mills, in the county of Jefferson and State of Wisconsin, have invented a new and useful Improvement in a Combined Churn and Butter-Worker, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in combined churns and butter-workers.

The object is to provide a simple construction which is equally adaptable for use as a churn and butter-worker, and which will effectually accomplish either operation with the least possible loss of time.

In the accompanying drawings, Figure 1 is an elevation of the complete device, showing the body in longitudinal section. Fig. 2 is a plan view of the complete device. Fig. 3 is an end elevation. Fig. 4 is a cross-section on the line 4 4 of Fig. 1, looking toward the dasher. Fig. 5 is a detail view of one of the bearings for the shaft, which also forms a guide and support for the outer end of the dasher-staff; and Fig. 6 is a detail view of the inner guide and support for the dasher-staff.

Referring to the drawings, the numeral 7 indicates the body of the churn and butter-worker. This body is preferably cylindrical in form and is provided at one end with an opening through which the milk and cream or the butter is introduced. This opening is controlled by means of a lid 8. A convenient arrangement for opening and closing this lid may be provided by a rope or cable 9, running over a pulley 10 and having at its free end a weight 11. The opposite end of the rope is secured to a screw-eye or other device 12, extending from the lower end of the lid. This end of the box at its upper edge may also be provided with a catch or catches 13, which are turned so as to normally hold the lid closed. When the catches are turned down out of engagement with the lid, said lid is automatically raised by the descent of the weight.

Projecting from the opposite end of the churn-body is a drain-spigot 14. Also projecting longitudinally from this end of the body is a frame 15, which is provided with a lateral extension 16.

The numeral 17 indicates a driving-shaft which at one end is mounted on a bearing 18, projecting upwardly from the extension 16, and at its opposite end is mounted in another bearing 18′.

Arranged above the frame 15 is a dasher-staff 19. This staff works in the guide-bearing 20, extending upwardly from an intermediate point of the frame 15. The staff also fits in and is guided by a downwardly-extending slot 21 in bearing 18′. The inner end of the dasher-staff extends through the end of the body and is formed or provided on its inner end within the body with a head 22, which may be cast or otherwise secured thereto. The outer end of the staff upon its upper side is provided with a series of teeth which extend a suitable distance inwardly and form a rack-bar 23. Depending from the under side of the dasher-staff are fingers 24 24. The downwardly-extending slot 21 of the bearing 18′ is prolonged to form an extension-slot 25, and the bearing 20 is provided with a similar slot 26. These slots allow for the passage therethrough of the fingers 24 as the dasher-staff is reciprocated.

Mounted upon the shaft 17, between the sides of the slot 21 of the bearing 18′, is a cog-wheel 27, which is adapted to mesh with the rack-bar 23. Also mounted on the shaft 17, between the bearings 18 and 18′, are three pulleys, the outer ones being indicated by the numerals 28 28′ and the intermediate one by the numeral 28″. The outer pulleys are fast on the shaft, while the intermediate pulley is loose thereon. Around one of the pulleys is adapted to be passed a straight belt 29 and around another of said pulleys a crossed belt 30. These belts are extended to and around a pulley (not shown) mounted upon a line-shaft.

Projecting from the frame 15 is a lug 31. To this lug is pivoted a bell-crank lever 32. The long arm of this lever is formed or provided at its end with a transverse head 33, said head having extending upwardly therefrom a series of pins 34, between which pins the belts 29 and 30 are received.

Secured to the head 22, which is formed at the inner end of the dasher-staff, is a dasher 35. This dasher is of uniform thickness from its upper end downwardly for a desired dis-

tance and then of a gradually-increasing thickness to its lower end, said gradually-increasing thickness being formed by beveling one face of the dasher from the point where the uniform thickness terminates to the lower end of the dasher, as indicated by 36.

In the operation of my invention as a churn the lid is raised and the milk and cream introduced through the opening in the end of the body. The drive-shaft is now rotated by starting the actuating mechanism, and by reason of the cog-wheel 27 of the drive-shaft meshing with the rack-bar 23, formed on the dasher-staff, said staff is caused to be reciprocated horizontally. As the dasher-staff moves inwardly it forces the contents against the end of the body, and as the dasher 35 does not fill entirely the interior of said body, a space being left between the upper edge of the dasher and the upper side of the body, said contents, as the dasher approaches closer toward the end of the body, passes over the top of the dasher to the opposite side of said dasher. When the dasher-staff has moved inwardly sufficiently far to cause the outer finger 24 to contact with the projecting end of the short arm of the bell-crank lever 32, said finger will cause a turning of the bell-crank lever on its pivot. This will necessarily throw the long arm of the lever toward the frame 15 and cause the pins 34 to shift the crossed belt 30 onto the inner pulley and the straight belt onto the intermediate pulley. This will have the effect of reversing the rotation of the driving-shaft 17, and consequently, through the intermeshing cog-wheel 27 and the rack-bar 23, cause an outward movement of the dasher-staff. On this outward movement of the staff the contents are pressed toward the opposite end of the body and are likewise forced over the upper edge of the dasher. This movement of the staff will continue until the inner finger 24 contacts with the projecting end of the short arm of the bell-crank lever, when the belts will be shifted back to their first position and an inward movement of the dasher-staff thereby again effected. It will thus be seen that the contents are alternately pressed against opposite ends of the body and likewise alternately forced over upon opposite sides of the dasher. It is obvious that this will effect a most thorough agitation of the contents, and thereby efficiently perform the operation of churning. When the churning operation ceases, the dasher is advisably brought back to the spigot end of the body, so that the butter is left at the opposite end.

In the operation of the machine as a butter-worker the butter is introduced into the body through the end opening, the lid of course being afterward tightly closed by the catches 13. The dasher-staff is now reciprocated in the manner clearly pointed out. Upon its in movement the dasher forces the butter tightly against the end of the body. Now by reason of the lower wedge-shaped formation of the face of the dasher and the upper straight portion, which is of uniform thickness, the butter is packed against the end of the body in somewhat the form illustrated by dotted lines in Fig. 1 and indicated by the numeral 37. It will be clearly seen that the greatest weight of the butter is then at the top, so that the moment the dasher starts on its outstroke and pressure against the butter is removed the top portion of said butter falls downwardly to the bottom of the body. The peculiar shape given to the compressed butter by the lower beveled face of the dasher, together with the upper straight extension of said dasher, secures the best results in producing an overbalancing-weight at the top and thereby causing the butter to fall. On the next in movement of the dasher-staff the butter is again forced up, as indicated at 37, and this operation is repeated throughout. It will be seen from this that a most thorough working of the butter is necessarily accomplished.

While I have herein shown and described the body as mounted horizontally and the dasher-staff as reciprocating horizontally, yet it is obvious that this is not absolutely necessary to successful results, as the body might be mounted vertically and the dasher-staff reciprocated vertically without departing from the spirit and scope of my invention.

What I claim as my invention is—

1. In a combined churn and butter-worker, the combination, of a receptacle or body closed throughout, a reciprocative dasher-staff extending therein, and a dasher connected to the inner end of the staff, the dasher being of less height than the diameter of the body, thereby leaving a space between the upper edge of the dasher and the top of the body and said dasher having a wedge-shaped lower end, said wedge-shaped end being formed by beveling one face of the dasher, the device, when used as a churn, adapted, when the dasher is reciprocated in either direction, to force the liquid contents on one side of the dasher over the upper edge of the dasher to the opposite side thereof, and when the device is used as a butter-worker the dasher, when reciprocated toward one end of the body, being adapted to force the mass against said end of the body.

2. The combination, of a body, a shaft having a cog-wheel thereon, bearings for said shaft, one of the bearings provided with a slot, and with a branching slot extending downwardly from the main slot, outer fast pulleys and an intermediate loose pulley mounted on the shaft, a straight belt around one of the pulleys, a crossed belt passing around another of the pulleys, a bell-crank lever having one end provided with projecting pins between which the belts are received, a dasher-staff extending into the body and provided upon its inner end with a dasher, and on its outer end with a rack, said rack fitting in the slot formed in one of the bear-

ings of the shaft, and said rack adapted to be engaged by the cog-wheel, and also provided with projecting fingers depending from the under side thereof, said fingers adapted, respectively, to act on the bell-crank lever on the opposite reciprocations of the dasher-staff, and another bearing for the dasher-staff said bearing provided with a downwardly-extending slot, the slot of this bearing and the branching slot of the bearing of the shaft adapted to permit the depending pins to pass therethrough when the dasher-staff is reciprocated.

In testimony whereof I affix my signature in presence of two witnesses.

HANS J. ANDERSON.

Witnesses:
O. Y. RAY,
W. H. WOOD.