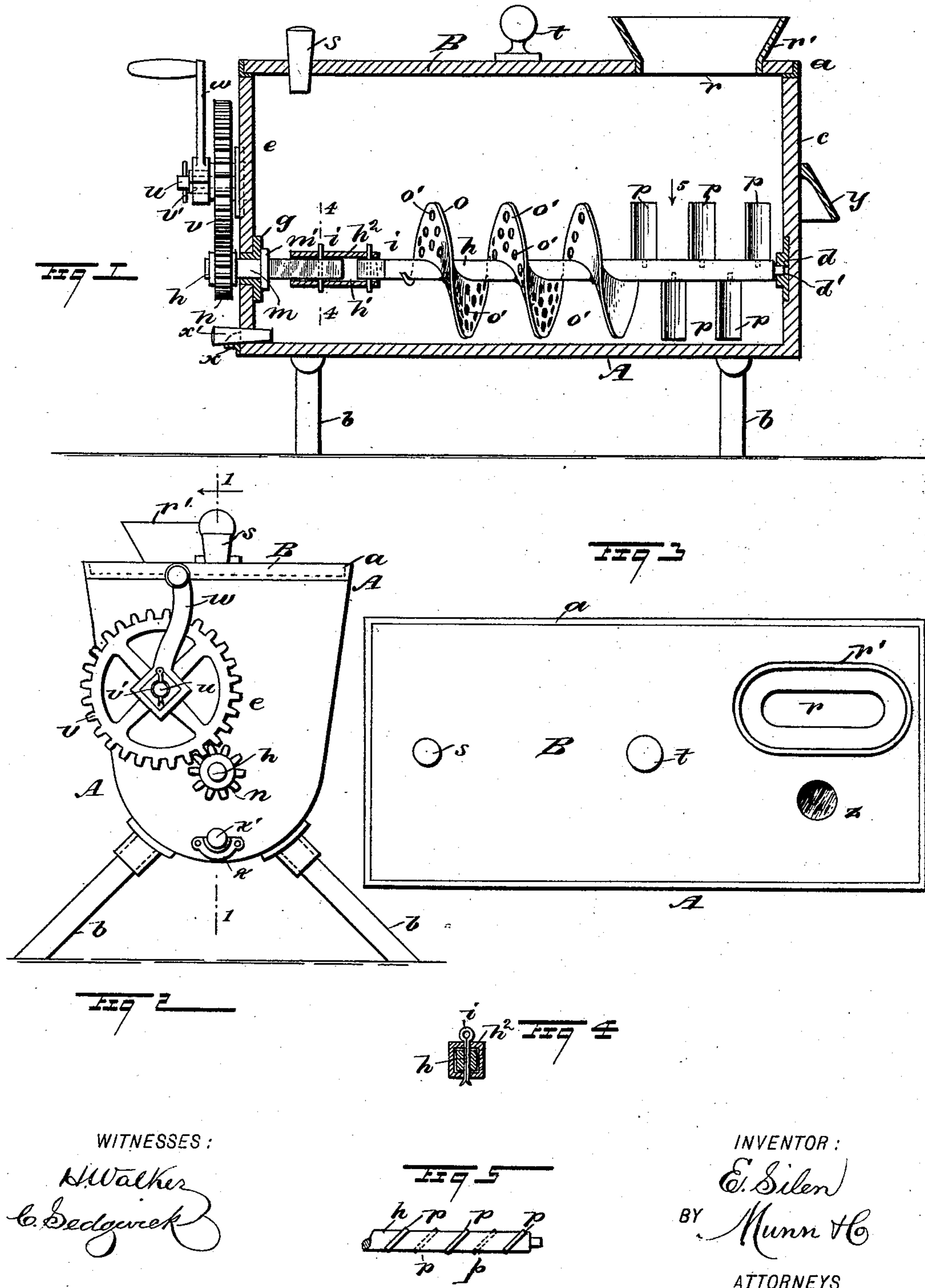


(No Model.)

E. SILEN.
COMBINED CHURN AND BUTTER WORKER.

No. 472,830.

Patented Apr. 12, 1892.



WITNESSES:

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ERIC SILEN, OF KELSO, WASHINGTON.

COMBINED CHURN AND BUTTER-WORKER.

SPECIFICATION forming part of Letters Patent No. 472,830, dated April 12, 1892.

Application filed November 17, 1891. Serial No. 412,140. (No model.)

To all whom it may concern:

Be it known that I, ERIC SILEN, of Kelso, in the county of Cowlitz and State of Washington, have invented a new and useful Combined Churn and Butter-Worker, of which the following is a full, clear, and exact description.

One object of this invention is to provide a churn of the rotary-dasher type with a peculiarly-constructed cream-agitator which will afford efficient means to gather and work the churned butter before removal from the churn, a further object being to provide means to prevent a discharge of liquid from the joint where the lid of the churn engages with the body, and, furthermore, to produce a simple, convenient, and inexpensive device with which butter may be quickly churned, gathered, washed, and worked to remove water and thoroughly mix salt therewith.

To these ends my invention consists in the construction and combination of parts, as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation in section, taken on the line 1 1 in Fig. 2. Fig. 2 is an end view of the device. Fig. 3 is a plan view with parts removed at the ends. Fig. 4 is a cross-section of working parts, taken on the line 4 4 in Fig. 1; and Fig. 5 is a plan view, broken, of the churn mechanism opposite the arrow 5 in Fig. 1.

The churn-body A is elongated and interiorly concave on the bottom, transversely considered, and upon the upper edge has a preferably metallic rectangular frame a secured, which is rabbeted on its inner and upper edge, thereby affording a seat for the lid B, which fits neatly within the recessed frame when in place, as shown in Fig. 1.

There are four legs b provided for the support of the churn-body A, obliquely located on its cylindric bottom wall in pairs oppositely and at a short distance from each end.

Within the churn-body A, upon one end wall c, a bearing-block d is secured at a point that will locate a perforation d' therein at the radial center of the curve or arc of concavity given to the segmental cylindric bottom wall of the churn-body, and oppositely

on the other end wall e another perforated block g is inserted in an aperture in said end wall, having a flange on its inner end that impinges upon the inner face of the end wall and is thereto secured by any suitable means. The blocks d and g are for the rotatable support of the shaft h, which is divided into two pieces at h', that are held together and in alignment by a sleeve h², which is slipped upon the adjacent end portions of the shaft-sections and is removably attached thereto by spring-keys i, that pass through the sleeve and shaft portions so as to lock them together, a cross-section (shown in Fig. 4) indicating such a connection of one key. A reduced journal end is formed on the shaft h, where it loosely engages the bearing-block d, and a larger journal m is formed on the other end portion of said shaft, which passes through the bearing-block g and projects beyond to receive a pinion n, that will be further mentioned, there being a collar m' formed on or secured upon the shaft at the inner terminal of the journal m, that bears with a liquid-tight joint against the true inner face of the flange on the block g.

Upon the main portion of the shaft h, that extends between the sleeve h² and the bearing-block d, the cream-agitators are affixed. These are composed, essentially, of a spiral blade o, radially projecting from the shaft, so as to produce a coarse pitched screw, which is of such a proportionate length to that of the shaft as to allow space on the latter between the screw-blade and block d for the attachment of the beater-blades p.

As shown in Figs. 1 and 5, the blades p are located in two series oppositely on the shaft-body h, any preferred number being provided, and by preference the blades on one side are placed at spaced intervals between the blades in the similarly-spaced row on the other side of the shaft, all the blades p being set at an equal angle of divergence from the plane of the shaft-axis, and are therefore parallel to each other.

The spiral blade o is numerously perforated, as at o', throughout the major portion of its area, one turn of the blade that is nearest to the radial beater-blades p being left intact to assist the beater-blades p when used to work churned butter.

In the lid B a longitudinal slot r is formed

near the end wall *c* of a proper length, there being a flaring border-wall *r'* projected above the slot to serve as a funnel through which to pour water into the churn when required without removing the lid. An air-vent hole at the other end of the lid B is closed by a plug *s*, and centrally a knob *t* is affixed upon the lid to facilitate its handling.

Upon the outer side of the end wall *e* a journal-stud *u* is secured to project at a proper distance above the shaft end, whereon the pinion *n* is affixed, so as to permit a gear-wheel *v* to mesh with the pinion when in place on the stud. There is a squared sleeve *v'* formed on the wheel *v* exteriorly, through which the stud *u* passes, and on said sleeve a crank-handle *w* is mounted, the latter having its hub end apertured laterally to fit upon the sleeve *v'*, whereon it is retained by a cross-pin that is inserted through a transverse hole in the stud outside of the crank-handle.

A discharge-aperture having a guard-lip *x* and closed by a plug *x'* is formed in the end wall *e* of the churn-body, which aligns nearly with the inner surface of the bottom wall of the latter to remove whey or water therefrom, and to aid this a handle-piece *y* is placed on the end wall *e*, as shown in Fig. 1, the elevation of this end of the churn-body causing a discharge of liquid from the hole above the guard-lip in an obvious manner when the plug *x'*, that closes it, is removed.

At one side of the slot *r* in the lid B a sight-hole is formed in said lid, which is covered with any suitable transparent material *z*, so as to permit an inspection of the contents of the churn when butter is being made, or after it is churned and is receiving the finishing action of the butter-working blades *p*.

In operating the device cream in proper condition for churning butter is placed within the body A and the lid B placed in position thereon. The handle *w* is now rotated in a proper direction to propel the contents of the churn-body toward the end wall *c*, which will be forcibly effected by the action of the spiral blade *o*, the series of holes *o'* therein serving to subdivide the current of cream and aid to break the butter globules. The projection of the mass of the liquid longitudinally in the direction stated will cause it to encounter the inclined edges of the radial beater-blades *p*, that coact to disintegrate the butter globules and release the butyric granules therefrom. The propulsion of the cream toward the end wall *c* being continuous a return upper current is formed, so that a constant circulation of the liquid is established that will speedily churn the cream into butter and whey. As the dash of the churning will project the butter mainly toward the end wall *c*, the gathering of the same into a mass may be readily effected after the whey has been removed through the vent-hole in the end wall *e* by the manipulation of the crank-handle *w*, the beater-blades *p* acting to knead the butter and remove the buttermilk.

At this stage of the operation pure water may be introduced through the slot *r*, so as to wash the mass of butter and facilitate the extraction of whey therefrom. Then salt in proper quantity is introduced through the same aperture and thoroughly mixed with the churned and worked butter. When the shaft *h* is to be removed, one of the spring-keys *i* is withdrawn, which will permit the end portions of the shaft-sections to be slid together in the sleeve *h²*, and thus release the journal end of said shaft, that loosely engages the bearing-block *d*, the other key being similarly displaced to permit the sleeve to be slid toward the end wall *e*, which will release the main portion of the shaft, that may then be removed from the churn-body, when the butter can be molded in a lump and lifted therefrom in condition for use or formation into prints. After the butter is taken from the churn-body the latter may be thoroughly renovated by the introduction of scalding hot water therein (a previous replacement of the shaft *h* and lid B having been effected) and then rotating the shaft so as to dash the hot water against all parts of the interior.

It will be understood that in the construction of the churn the proportion of parts should be such that the spiral blade *o* will extend as near as possible to the end wall *e* of the body of the churn, so as to insure the gathering of all the butter when it is churned.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the churn-body, of a horizontal spiral foraminated dasher mounted therein and having a series of radial beater-blades at one end beyond its spiral portion, the said spiral dasher being constructed to gather and force the butter when formed into the path of the beater-blades to be worked thereby, substantially as set forth.

2. The combination, with an elongated churn-body having a concave bottom wall and a lid thereon that is slotted longitudinally near one end, of a horizontal shaft having a spiral blade on one part, which blade is numerous perforated throughout the major portion of its area, two series of beater-blades arranged oppositely on the shaft in sequence with the spiral blade, and gearing to rotate the shaft, substantially as described.

3. In a churn having an elongated body and a rotatable longitudinally-extended shaft therein having a spiral blade and radial beater-blades thereon in sequence, a lid that is slotted above the beater-blades and has a funnel-shaped border-wall thereon to permit water and salt to be introduced upon butter that is being worked by the beater-blades, substantially as described.

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Witnesses:

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JOHN S. BEALL.