E. RHOADES.

ROTARY CHURN.

No. 187,907. Patented Feb. 27, 1877.

FIG 1

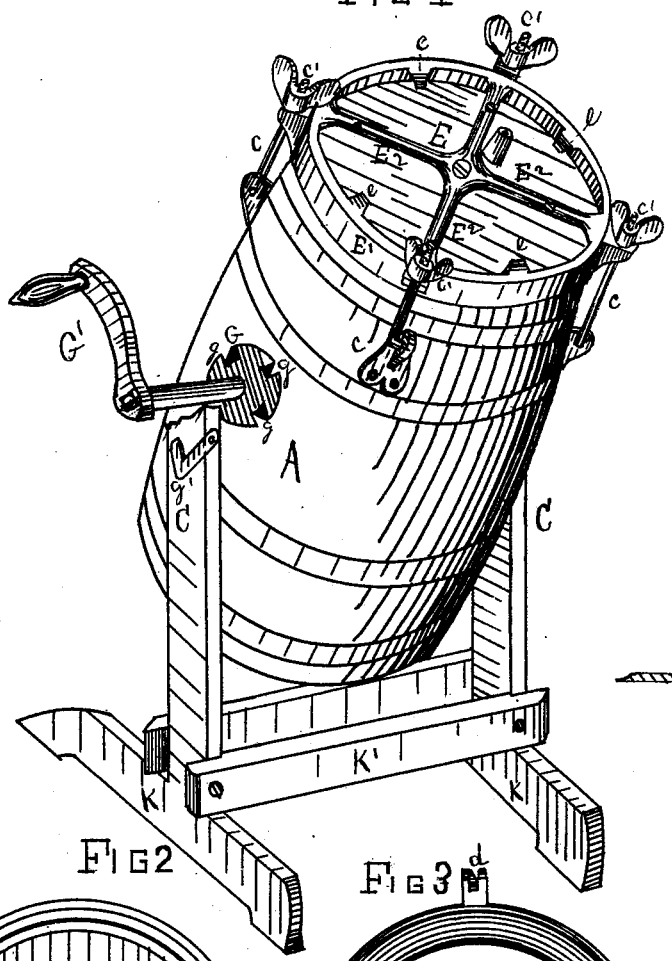


FIG 4

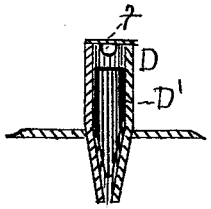


FIG 2

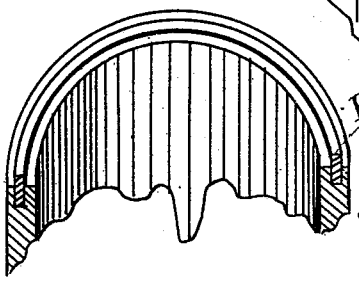
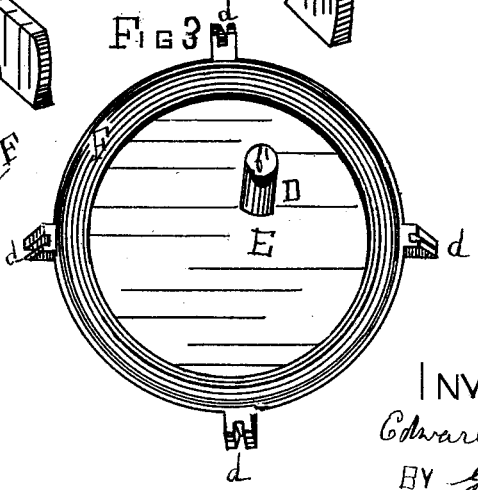


FIG 3



WITNESSES

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EDWARD RHOADES, OF ROCKFORD, ILLINOIS, ASSIGNOR TO HIMSELF AND CHARLES W. FARRINGTON, OF SAME PLACE.

IMPROVEMENT IN ROTARY CHURNS.

Specification forming part of Letters Patent No. **187,907**, dated February 27, 1877; application filed June 8, 1876.

To all whom it may concern:

Be it known that I, EDWARD RHOADES, of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Improvement in Churns; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is a perspective view of the mounted churn, having one bearing broken away to show the locking device. Fig. 2 is a view of the top of the barrel with the cover removed, showing the manner in which the packing may be inserted in the open end of the said barrel. Fig. 3 is a view of the under side of the cover, with the same removed from the barrel, and showing a modification in the manner of packing the joint, also showing the location of the venting device. Fig. 4 shows a longitudinal sectional view of the venting apparatus detached and separate from the cover.

Similar letters of reference denote corresponding parts in each figure.

The object of the invention is to provide a revolving barrel-churn with an easily-removable head, the same being made of wood in such parts as come in contact with the cream, but with the periphery incased within a metal rim, and provided with two or more strengthening metal cross-bars, to which the wood portions of the cover are secured. This cover is also provided with other securing-lugs, for the purpose of fastening the wood to the rim, as well as for securing the cover to the barrel. By this arrangement of the cover it will be seen that no portions of the iron surface, of which the cover is constructed, comes in contact with the fluid when the same is confined within the churn. It also still further consists of an improved automatic venting device, whereby the gas which forms during the process of agitation of the confined cream is allowed to escape without the escapement of the confined fluid, all of which will be hereinafter described.

In the accompanying drawings, A represents the churn-body, made cylindrical in form, or of barrel shape, the same being longitudinally centrally mounted upon journals, and made to revolve in the uprights C in the direction of its length. *c* are hinged screw clamp-bolts, and *c'* the screw thumb-nuts, screw-threaded upon the same, and by means of which, in connection with the slotted ears *d* upon the outer rim of the cover E, the said cover is securely fastened to the churn-body. E^1 is a metal rim, preferably made of cast-iron, by which the wood cover is circumferentially bound. E^2 are arms, two or more in number, which extend laterally from a central connection, and are attached to the rim at four equidistant points of contact. These arms serve to keep the rim true to its circle, as well as furnishing means for securing the flat surface of the head E to the metal binding, and prevent the warping of the same when the inner surface is exposed to the inside moisture when in working position. *e* are lugs or ears secured to the inner surface, bent upon the upper edge of the rim E^1, and resting upon the wood cover at the periphery of the same, and midway between the aforesaid arms, for the purpose of more securely fastening the wood than can be done by the cross-arms alone.

It will be observed that the wood is flush with the under side of the metal rim, and extending over the opening in the body, and so constructed that the wood alone comes in contact with the fluid within the churn, or, rather, that no iron portions, which cause rust, come in contact with the fluid. F is a ring-packing, having a flat surface, flush with the cover E and casing E^1, the outer edge of which rests against the said casing, the inner edge against the shoulder of the rabbet formed in the wood, and within which the said packing is placed. F' is also a ring-packing, which may be used instead of the packing F, and consists of a flat strip of rubber, or other yielding substance inserted, in the annular groove for the purpose made in the end of the barrel, and in such manner that the upper outer edge shall project above the wood sufficiently far to form a tight joint when the cover is clamped against the same. One only of these packing devices is necessarily required; but both may be used, if desired. G represents the hub carrying the

bearing to which the crank G′ is attached, and clearly shown in Fig. 1, (the upright being broken away,) having on its periphery indents *g*, into which enters the pawl *g′* when it is desired to lock the barrel, which can, by the said locking device, be held in any position within the orbit of the revolution. D is a venting device, placed in the cover or other parts in the line of revolution, the construction of which, as shown in Fig. 4, will now be described.

It is well known by persons engaged in butter-making that in agitating cream in an air-tight vessel, a large amount of gas is generated, and for the safety of the vessel containing the same a chance for the escape must be had, while cream is retained. To obviate the difficulty heretofore encountered this invention has been made, by which an elongated pointed valve, D′, is inclosed in a cylindrical case, D, which is inserted in an orifice made through the cover, and having one open end of the case upon the outside of the said cover, with an internal tapering cylindrical cavity, to conform to the shape of the valve, and with which an air-tight joint is made, when the valve and the cavity are brought together at this point. This casing D is made longer than the valve which it incloses, and larger at the inner end, to allow the gas or air a free course upon the opening of the vent-hole. The inner or larger end of the valve is made concave in the end, with a corresponding convexity in the case, so that in case any fluid should enter the air-passages *f*, made through the casing, it will, by the concave form of the case, and by the heavy valve striking against the same, be expelled through the said air-passages and flow back within the churn. It will be observed that this valve operates automatically when the churn is revolved by gravity alone, being open when the cover is uppermost in its position, and closed when the same is in a reverse position, which will be understood without further description. K are the foot-rests, from which rise the uprights C, the same being tied together by the longitudinal bars K′, in the usual and well-known manner.

Having now described my invention, what I believe to be new, and desire to secure by Letters Patent, is—

1. A churn-head braced and surrounded by the crucial arms and surrounding rim, and having the inserted packing resting upon the chine, substantially as described, and for the purpose set forth.

2. A churn-vent consisting of an elongated shell, having small perforations in the larger end of said shell, concave bottom, and conical valve, substantially as described.

This specification signed and witnessed this 8th day of May, 1876.

EDWARD RHOADES.

Witnesses:

G. W. FORD,

CHARLES S. FORD.