2 Sheets—Sheet 1.

A. P. MINNICK.

Churn.

No. 218,129. Patented Aug. 5, 1879.

Fig. 1.

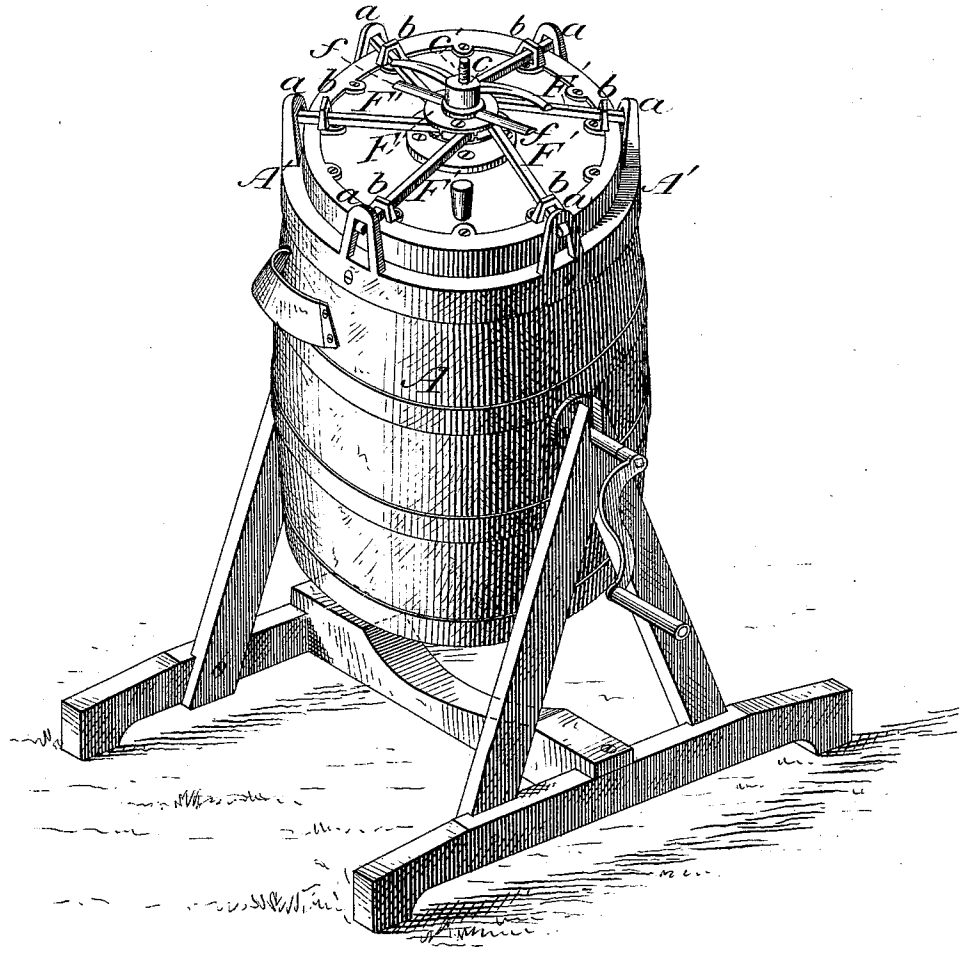
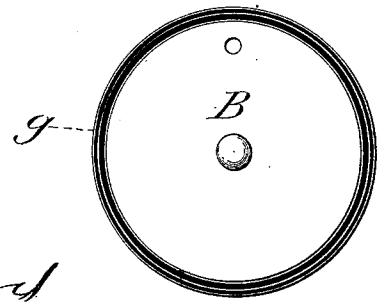


Fig. 3.



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Inventor:

Alexander P. Minnick

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2 Sheets—Sheet 2.

A. P. MINNICK.

Churn.

No. 218,129. Patented Aug. 5, 1879.

Fig. 3.

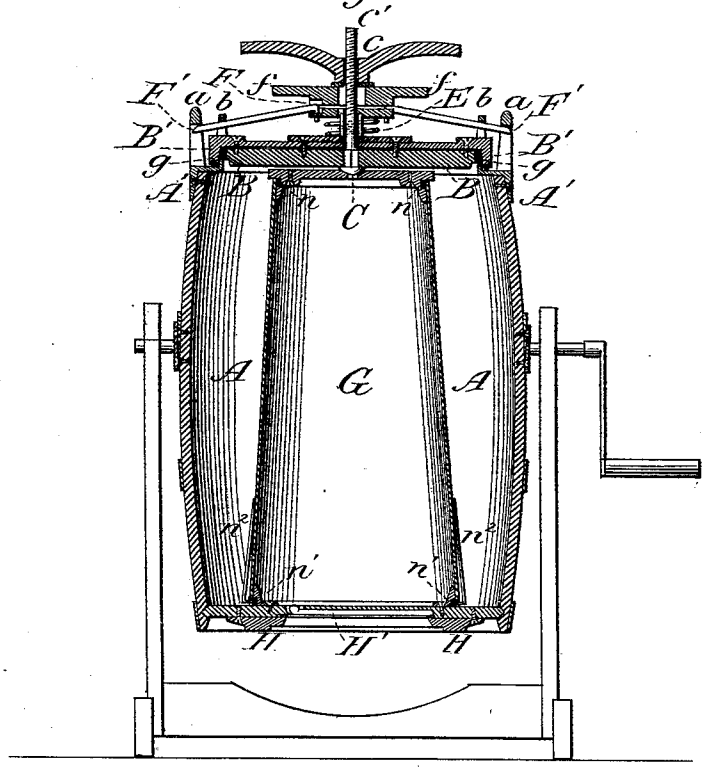
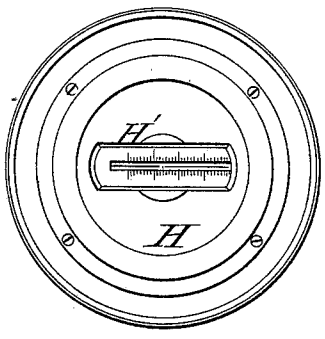


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALEXANDER P. MINNICK, OF ROCKFORD, ILLINOIS.

IMPROVEMENT IN CHURNS.

Specification forming part of Letters Patent No. **218,129**, dated August 5, 1879; application filed January 4, 1879.

To all whom it may concern:

Be it known that I, ALEXANDER P. MINNICK, 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 churn. Fig. 2 is a longitudinal sectional view with the cover removed, but with the cooler in position. Fig. 3 is an inside view of the cover, showing the manner of packing so as to secure a tight joint; and Fig. 4 is an end view, showing the thermometer for temperature-regulating purposes.

Similar letters of reference denote corresponding parts in all the figures.

The object of the invention is to provide a secure head-fastening for an end-over-end revolving churn, and an improved cooling apparatus with a thermometer permanently attached, so that the temperature of the inclosed cream may at all times be known without removing the cover; and consists of the ordinary barrel-shaped body, mounted upon trunnions within a supporting-frame, so as to allow of an end-over-end revolution; a metallic cylinder having the ends made tight with a soft metallic or cork packing; a head secured to the body by metallic levers, which enter within ears attached to an open flanged ring or hoop; a metallic packing between the cover and barrel, and a thermometer secured to the body in such manner that the bulb containing the mercury will at all times come in contact with the inclosed fluid, all of which will be hereinafter described.

In the drawings, A represents the churn-body, and A′ the metallic ring or hoop upon the open end of the body. This ring has secured to it a flange (which takes the place of the top hoop) extending over the outside of the chine, and, if desired, an inner flange may be made to pass down the inside, so as to form a recess for the reception of the staves forming the body.

B is a wooden cover surrounded and incased within the metallic rim B′. C is a metallic hub secured centrally to the wood cover, and carrying an upright stem, C′, screw-threaded upon the free end, and carrying a screw-nut, *c*. This nut *c* has a cross-bar extending out longitudinally sufficiently far to be used as a lever for turning the nut. E is a spring coiled about the stem C′ for raising the disk F.

F is a disk having a vertical movement upon the stem C′, and provided with arms or levers *f*, by which a partial revolution may be given to said disk. F′ are radial levers pivoted to the disk F at one of their ends. The other, or the free ends pass through eyes or guides designated *b*, forming a part of the ring B′.

a are ears located upon the ring A′, and through which the radial levers are thrust by a partial revolution of the disk F or otherwise, as may be desired. These radial levers enter loosely within the opening in the ears, and are all simultaneously tightened by screwing down the nut, so as to lower the disk, the arms forming levers, the edge of the cover forming a fulcrum by which a leverage is attained. It will be observed that by this process great leverage is had, and the parts are firmly and securely united, so as to prevent leakage.

g is a soft metallic packing inserted in the cover-ring, either in the downward-projecting flange or in the bottom of the recess, or in both, as may be desired. When used in the flange, the packing rests upon the top surface of the churn-ring. When used in the recess of the cover, the packing rests upon the uprising lip situated upon the churn-ring. By the use of my system of levers the packing may be entirely dispensed with by having the metal rings upon the churn-body and upon the cover fit closely together; but I prefer the soft metallic packing, for the reason that the joint is easily made tight.

The soft metal is also much more durable and cleanly than rubber or other yielding substance commonly used.

In an end-over-end revolving barrel-churn great difficulty has been experienced in finding a means of tightly securing the cover to the body. In the revolution of the barrel the milk in the churning process falls from one end of

the barrel to the other, so that it necessitates as secure a fastening of the cover as for the permanent head or bottom during the time the churning is being done. Heretofore rubber gaskets have been used as a packing between the cover and the body, in order that a tight joint may be made; but it has been found that the oily matter incident to butter-making very soon by use renders the rubber useless as a packing, when the said oily matter is brought in contact with it. To obviate this difficulty I have substituted for rubber the soft metal—such as lead, pewter, or equivalent substance—which is inserted between the cover and churn-body in any suitable manner. In this application a rib is cast (of hard metal) upon the ring of the churn-head. The cover is made with a groove in its metal rim, and the said groove is filled with the soft metal before mentioned, and so constructed that the aforesaid hard-metal rib of the ring rests upon this packing, and by the use of the screw-levers upon the cover is indented into the soft metal, thus making a tight and effective joint, by which leakage is prevented when in practical operation.

N is a packing of cork inserted in a metal ring; or a soft metallic packing may be used within the cover of the cooler G, which is made of a harder metal than the packing, and within which the cream to be churned is at first placed.

The space surrounding the cooler and within the churn is filled, or partially filled, with water, either hot or cold, as may be desired, for tempering purposes, and which was fully described in a patent granted unto me September 18, 1877, No. 195,224.

When the right temperature of the cream is reached the water is drawn off, the cylinder removed, and the churning finished with the cream within the body of the churn, as is usually done.

N^1 is a metallic or cork packing secured to the churn-bottom, and over which the larger end of the cooling-cylinder passes.

It will be observed that in tempering the cream by the use of the cooling-cylinder it must be removed each time the churn is operated, and to facilitate such removal the cylinder is made with open ends. The bottom of the churn-body (when in position for operating) forms the bottom of the cylinder. The cover of the churn (when on the churn) closes the other end of the said cylinder.

In order that leakage between the contents of the cylinder and the contents of the churn proper may be prevented, a suitable packing must be used in connection with the said cylinder that will not be affected by frequent use or by the moisture incident to butter-churning. Rubber packing upon a wood bottom, or wood alone without rubber, having been found to be impracticable, I have substituted the soft metal before mentioned, which may be used alone; or hard metal may be used by covering, or partially covering, the face with cork, which can be secured in any well-known manner. This packing is not affected deleteriously by the fluids, as is the case with both wood and rubber.

N^2 are spring-catches fastened to the larger end of the cooler, which hook over the packing, so as to keep the cooler in place while it is being filled.

H is a metallic balance-plate secured to the bottom end of the churn, and by which the thermometer H′ is fastened to the body. The bulb of the thermometer reaches through the church-bottom and rests within the cream-receptacle, so that the temperature of the cream can be known without opening the churn when the tempering is being done. The churn is mounted upon trunnions, in the usual way, and is made to revolve end over end in the well-known manner, all of which will be understood without further description.

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

1. The combination, with the churn-body A, provided with the flanged rim A′, having the projecting lugs *a*, of the cover B, with rim-plate B′ and lugs *b*, and the disk F, having the radial levers F′, substantially as specified.

2. In an end-over-end revolving churn, the combination of the metallic ring upon the end, forming part of the churn-body, the wooden cover incased with metal resting upon the said ring, and the softer metal packing, arranged and operating substantially as described.

3. In an end-over-end revolving churn, the combination of the open-end cream-holding cylinder G, the churn-body, the removable cover, and the cork or soft-metal packing secured to the bottom and cover, and entering within the ends of the cylinder, so as to form tight joints at either end when in use, substantially as described and set forth.

4. The combination of the cream-cylinder G, the springs N^2, and the projecting rim having the packing-ring N^1, all arranged and operating substantially as described.

This specification signed and witnessed this 31st day of December, 1877.

ALEXANDER P. MINNICK.

Witnesses:

G. W. FORD,

G. B. ALVERSON.