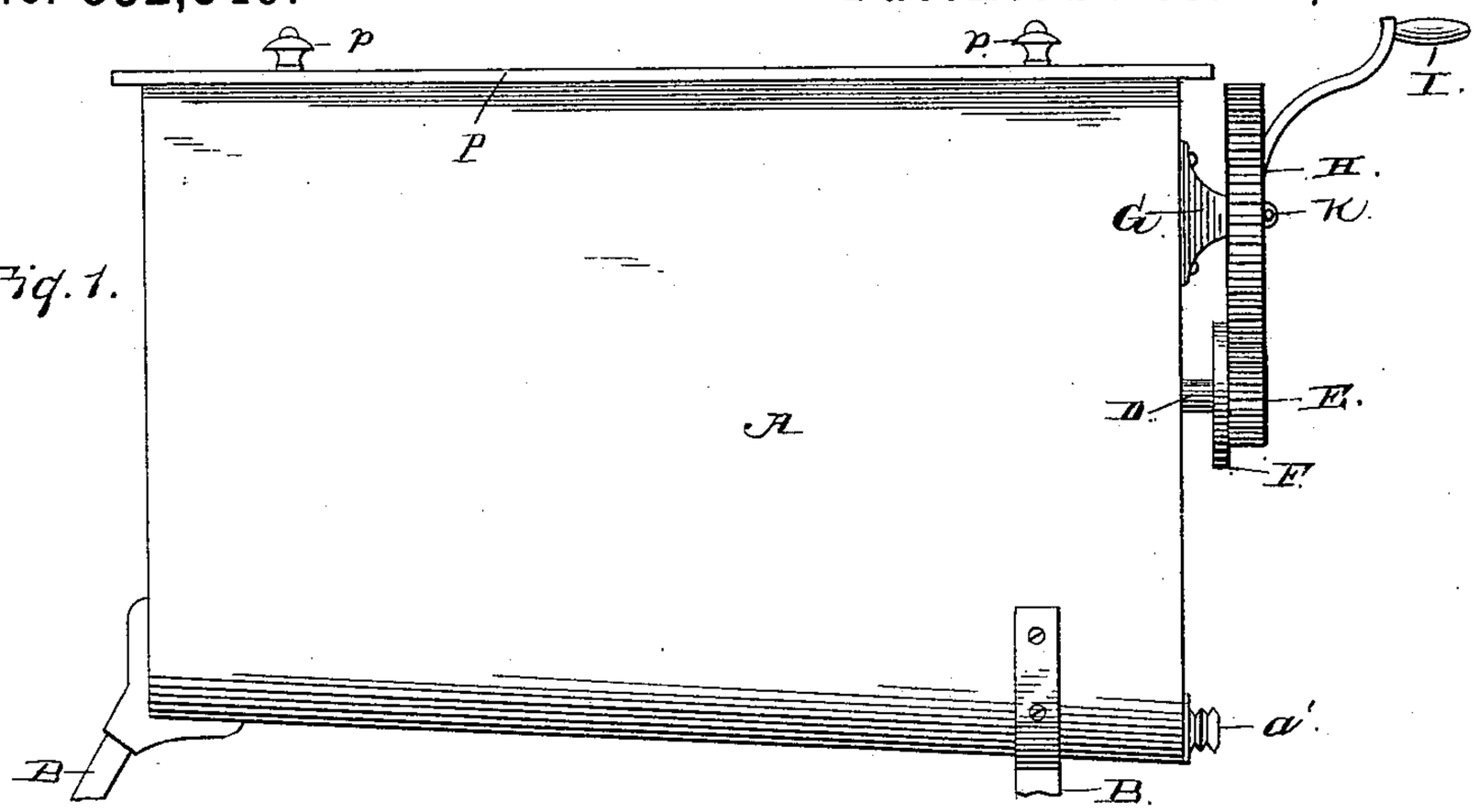
(No Model.) 2 Sheets—Sheet 1.

H. R. KNOX.

CHURN.

No. 332,349. Patented Dec. 15, 1885.

Fig. 1.



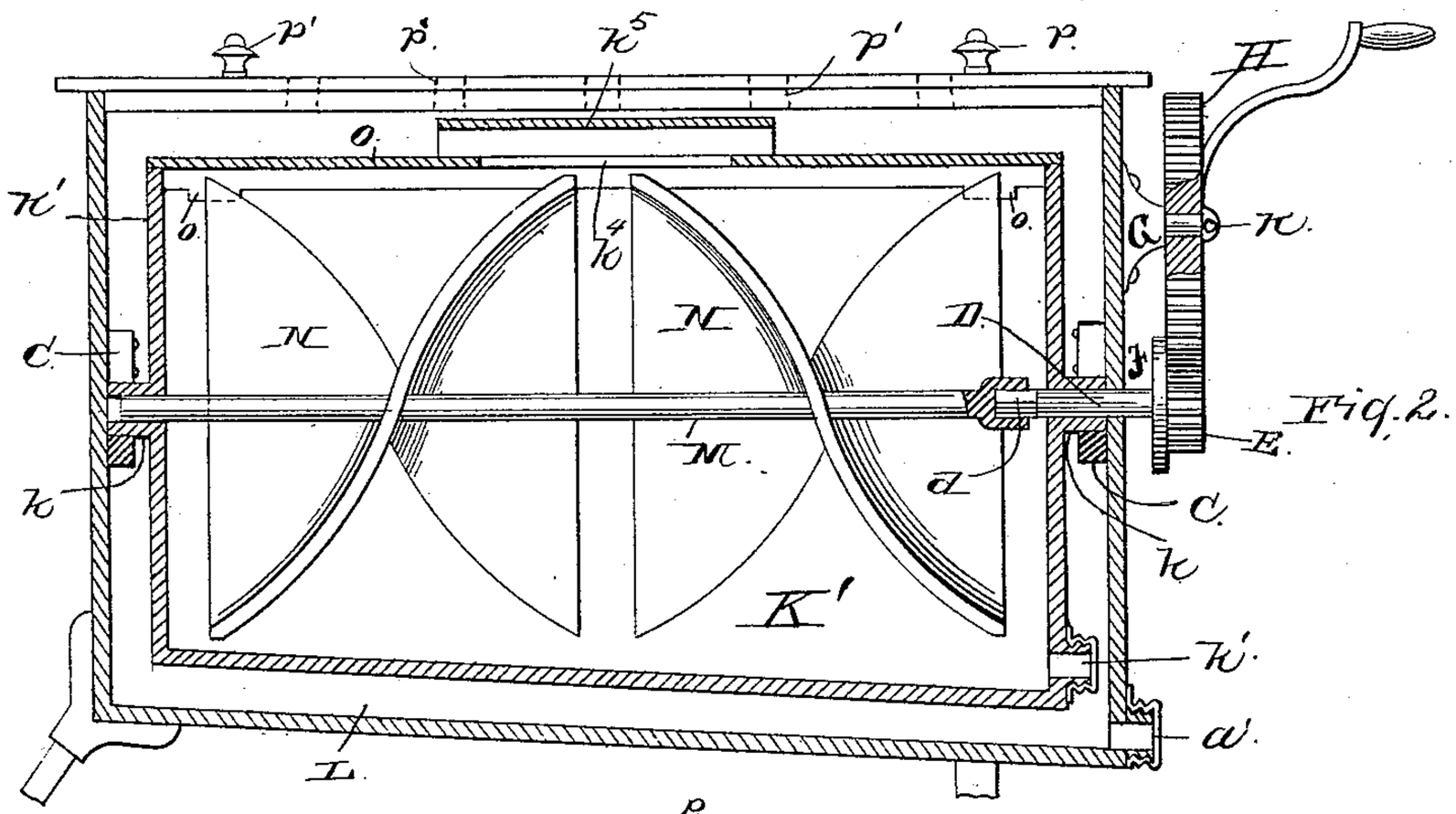


Fig. 2.

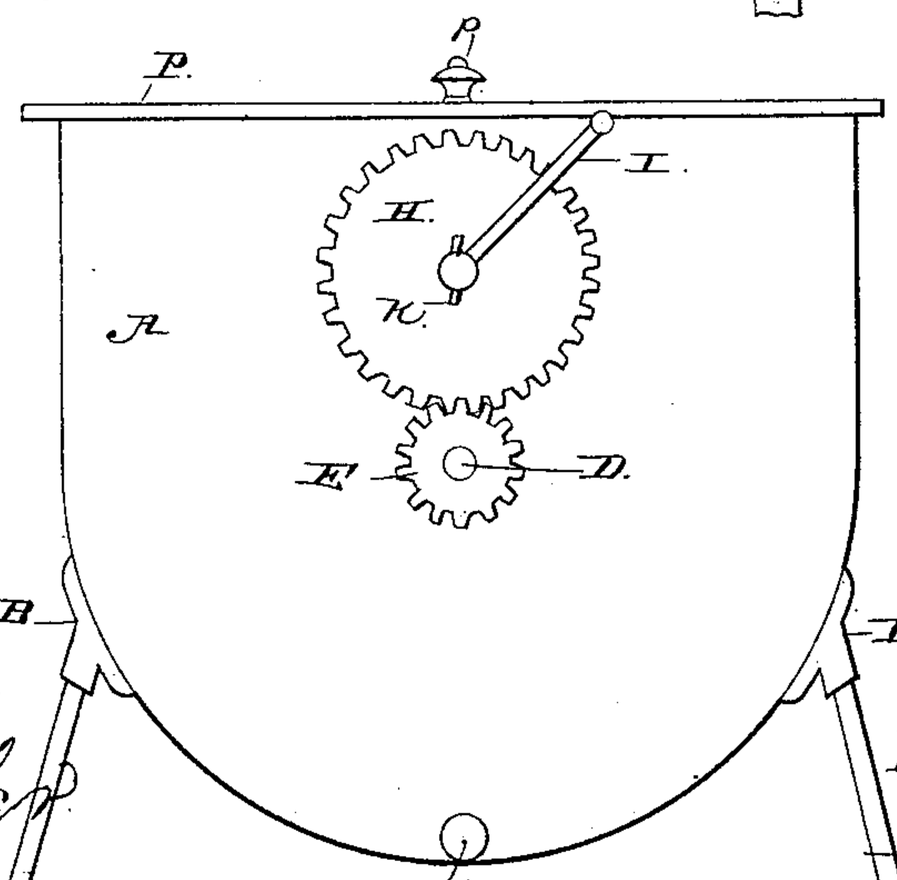


Fig. 3.

WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

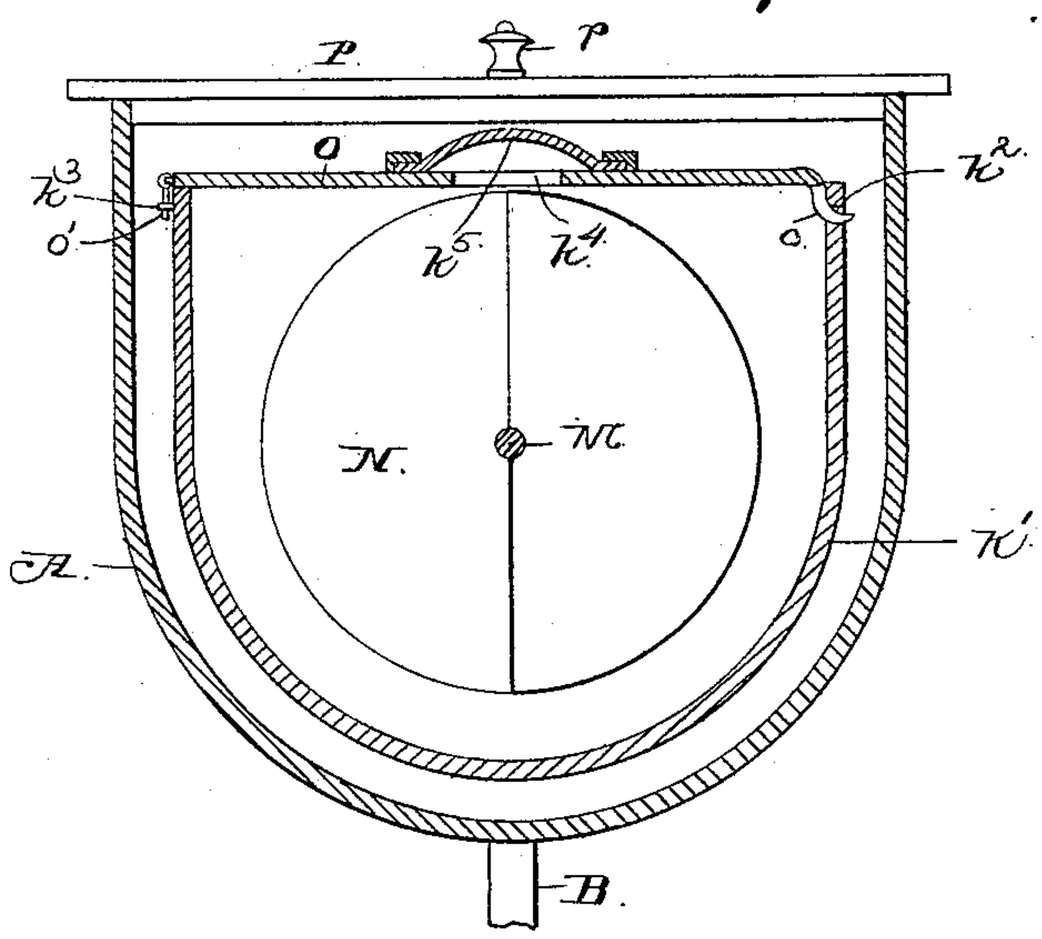


Fig. 5.

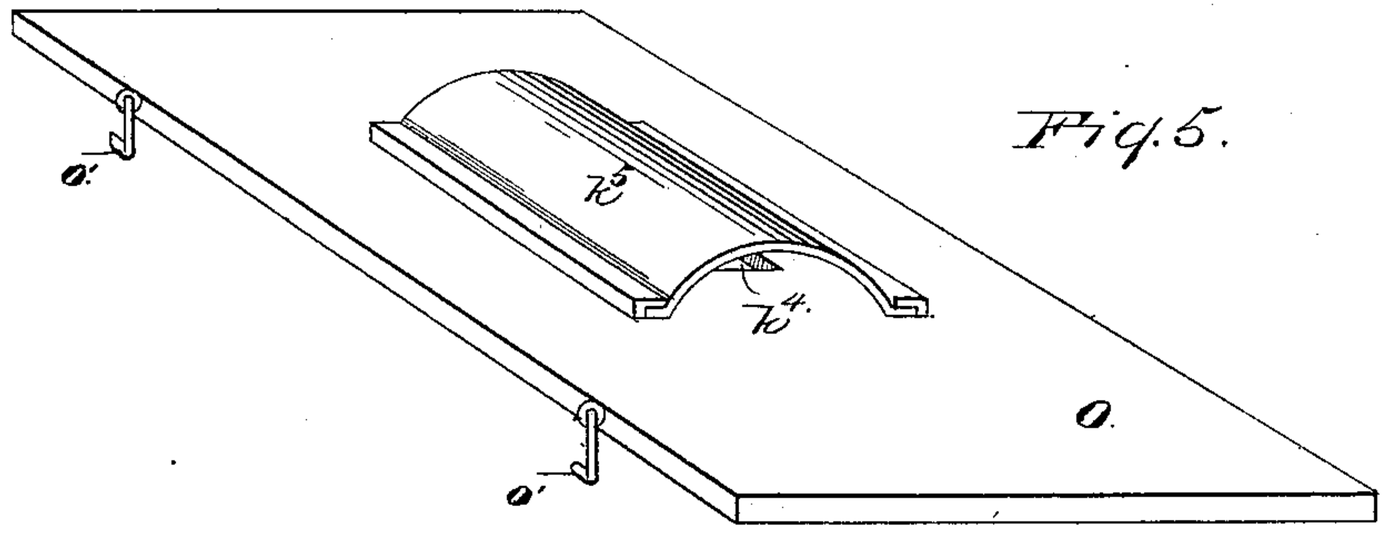
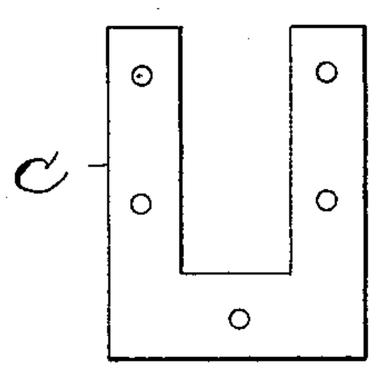


Fig. 6.



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UNITED STATES PATENT OFFICE.

HOWARD R. KNOX, OF BRUCE, MICHIGAN.

CHURN.

SPECIFICATION forming part of Letters Patent No. 332,349, dated December 15, 1885.

Application filed July 30, 1885. Serial No. 173,064. (No model.)

To all whom it may concern:

Be it known that I, HOWARD R. KNOX, a citizen of the United States, residing at Bruce, in the county of Macomb and State of Michigan, have invented a new and useful Improvement in Churns, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to an improvement in churns; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a churn embodying my invention. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is an end elevation. Fig. 4 is a vertical transverse sectional view. Figs. 5 and 6 are detailed views.

A represents the churn box or body, which is provided with a concave bottom that is lower at one end than at the opposite end, as shown. This body is preferably made of wood, but may be made of any suitable material, and is provided with supporting-legs B. To the inner sides of the ends of the box, in a horizontal line with each other, are secured V-shaped seats C.

D represents a short shaft that is journaled in the front end of the box, and extends rearwardly through the center of one of the keepers or seats C, and has its inner end squared, as at *d*. To the outer end of the shaft D is rigidly secured (or may be formed with the shaft) a spur-pinion, E, having an inner flange-disk, F.

G represents a bracket that is secured to the front end of the box A, above the shaft D, and has an outwardly-extending shank, on which is journaled a gear-wheel, H, that meshes with pinion E, and is provided with a crank-handle, I. A linchpin, K, keeps the wheel H on the shank. When this pin is withdrawn, the wheel H can be removed, and the shaft D, having the pinion, withdrawn from the box. The flange-disk bears against the inner edge of wheel H when the gear is coupled, and holds the shaft D from slipping outwardly, as shown.

K′ represents an inside box, which is made of sheet metal and corresponds in shape to the box A. This inside box is considerably smaller than box A, and is suspended therein by means of projecting lugs *k*, that are secured to its ends and fit in the seats C, as shown at Fig. 2. By this construction a space, L, is left between the inner and the outer box, which completely surrounds the sides, ends, and bottom of the inner box. The inner end of shaft D passes through one of the lugs *k* and enters the inner box, and in the opposite lug from the inner side thereof is made an opening in which is stepped one end of a horizontal shaft, M, the other end of which has a countersunk opening to receive the reduced squared end of shaft D. On the ends of the shaft M are screw blades or dashers N, which are curved in opposite directions, so as to force the cream in the inner box from its ends to the center thereof when the shaft is rotated. The inner box is provided with a screw-cap, *k′*, at its lower side, and the outer box has a similar screw-cap, *a′*, at its lower side.

O represents the cover for the inner box, which cover is provided on one side with projecting hinge studs *o*, that enter recesses k^2, made in the inner box, and has on its opposite side hooks *o′*, adapted to engage with keepers k^3, and thus secure the cover in place. In the center of the cover is an opening, k^4, to admit air, and this opening is covered by a curved guard-plate, k^5, that is secured on the under side of the cover. The outer box has a cover, P, which fits between its sides and ends, and has a flange that extends outwardly over the upper edges of the box, and this cover is provided further with knobs or handles *p*, and with air-openings *p′*.

Having thus fully described the construction of my churn, I will next proceed to describe the operation of making butter therein.

It is well known to all persons skilled in the art of making butter that butter is most quickly produced from cream at a temperature of about sixty (60) degrees, and that butter produced from cream at that temperature is of a superior quality.

A difficulty heretofore existing in the manufacture of butter has been to get the cream to the right temperature in either extremely hot or cold weather, and this difficulty it is one of the objects of my invention to overcome. The cream is placed in the inner box, and hot or cold water poured into the space between the

inner and outer boxes. As the inner box is made of metal, the temperature of the water is quickly imparted to the cream in contact with the sides of the inner box. In order to raise or lower the temperature of the cream equally throughout all portions thereof, and avoid having one portion colder or warmer than another, I rotate the shaft carrying the screw-blades slowly by turning the handle I. This thoroughly mixes the cream, and when, by inserting a thermometer in the cream, I ascertain that it is at exactly the right temperature, I remove the cap *a'* and draw off the hot or cold water, so as to prevent the temperature of the cream from changing by longer contact therewith, and turn the crank rapidly for a short time, varying from fifteen seconds to five minutes. As the screw-dashers revolve the cream is forced with great violence from the ends of the box to the center thereof and precipitated against itself and against the sides and cover of the box, which quickly reduces the cream to butter of a very superior quality. The covers of the boxes are then taken off, the dasher-shaft removed, and free access permitted to the butter for its removal, the buttermilk being drawn off by removing the screw-cap *k'*.

No claim is made herein, broadly, for the combination of the inner and outer boxes having the space between them, nor for the peculiar construction of the dasher, nor for the peculiar arrangement and combination of the mechanism for operating the dasher, as these, I am aware, are not novel.

Having thus described my invention, I claim—

1. In a churn, the combination of the box A, having the seats C on the inner sides of its ends, said seats having the vertical open recesses, and the box K', having the projecting lugs *k* on its ends adapted to enter the recesses in the seats and suspend the box K' in the box A, and permit it to be readily lifted out of box A, substantially as described.

2. A churn comprising the outer box, A, having the seats C on the inner sides of its ends, said seats having the vertical open recesses, the box K', having the projecting lugs *k* on its ends, adapted to enter the recesses in the seats to suspend the box K' in box A, the dasher-shaft having one end journaled in an opening in one of the studs or lugs *k* and a socket at its other end, and the shaft D, journaled in an opening in the remaining lug *k*, one end of said shaft fitting in the socket of the dasher-shaft, and means for rotating the shaft D, substantially as described.

3. The combination, with the inner box, K', having projecting hollow lugs or trunnions *k*, of the outer box, A, having seats for the lugs or trunnions, the dasher-shaft M, having one end journaled in one of the lugs or trunnions and provided with a socket at the outer end, and the shaft D, passing through the box A and journaled in the other lug or trunnion, one end of the shaft D fitting in the socket of the dasher-shaft and the other end connecting with the operating means, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HOWARD R. KNOX.

Witnesses:

DWIGHT N. LOWELL,

CHARLES M. TACKELS.