(No Model.)

J. C. COLE.

CHURN.

No. 385,696. Patented July 10, 1888.

Fig. 1

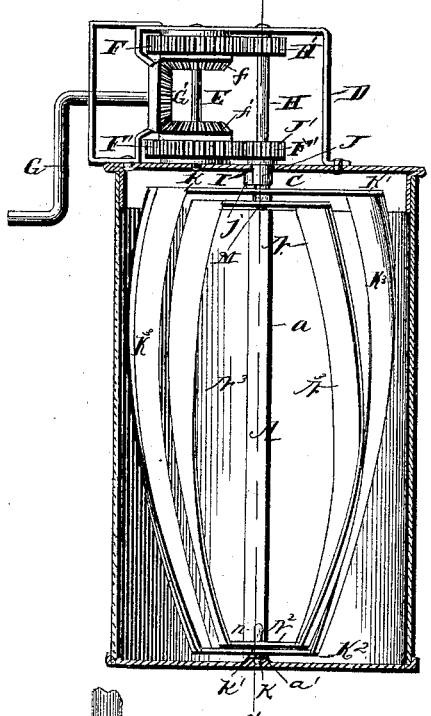
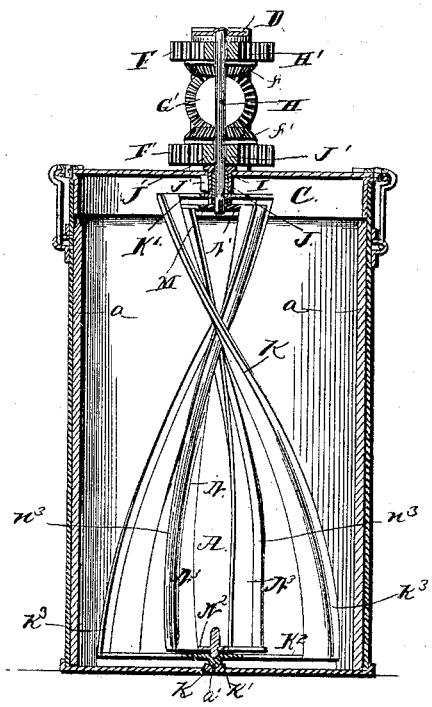


Fig. 2.



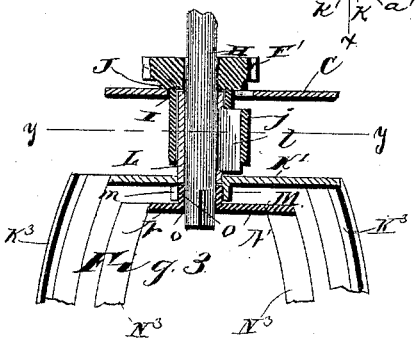


Fig. 3.

Fig. 4.

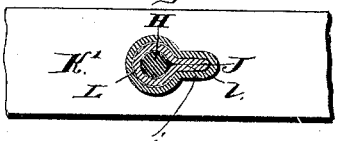
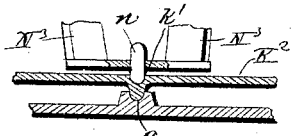


Fig. 4

Fig. 6.



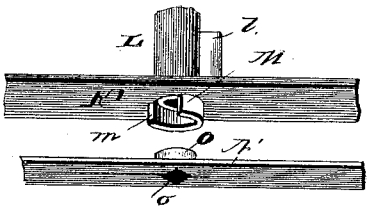


Fig. 5.

Witnesses.

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CHURN.

SPECIFICATION forming part of Letters Patent No. 385,696, dated July 10, 1888.

Application filed September 21, 1887. Serial No. 250,325. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. COLE, a citizen of the United States, residing at Brents, in the county of Lincoln, Washington Territory, have invented new and useful Improvements in Churns, of which the following is a specification.

My invention relates to improvements in churns; and it consists in a certain novel construction and arrangement of parts, fully set forth hereinafter, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of the device, with the churn-body shown in section. Fig. 2 is a section on the line *x x* of Fig. 1. Fig. 3 is a detached detail view of the joint between the revolving sleeve and the outer dasher. Fig. 4 is a horizontal section through the said joint on line *y y* of Fig. 3. Fig. 5 is a detail view showing the manner of coupling the upper bars of the dashers. Fig. 6 is an enlarged detail view of the lower ends of the dashers.

Referring by letter to the drawings, A designates the body of the churn, provided on the inside with vertical ribs *a a*, to serve as breakers for the contents of the body.

C designates the lid of the churn, which is fitted in the upper end of the body, and may be secured in place in any desired manner.

D designates a standard or yoke arranged on the upper side of the lid, in which is journaled the operating mechanism of the churn.

E designates a vertical rod, secured at its upper end in the upper side of the standard D, and at the lower end in the lid of the churn, and the said rod is provided at its upper and lower ends, respectively, with gear-wheels F F′. The wheel F is provided on the lower side with the small bevel gear-wheel *f*, which is rigid with the gear F, and the gear F′ is provided on the upper side with the bevel gear-wheel *f′*, which is rigid therewith.

G designates a shaft journaled in the side of the standard, to the inner end of which is attached the bevel gear-wheel G′, which is adapted to engage at opposite sides with the bevel gear-wheels *f* and *f′*, and the opposite end of the said shaft is provided with a crank or a similar means by which power may be conveyed to the churn-dashers.

It will be understood that the gear-wheels F and F′ are journaled on the rod E, and when the gear-wheel G′ revolves the said gear-wheels are rotated in opposite directions.

H designates a vertical shaft journaled at its upper end in the upper side of the standard D, and passing at the lower end loosely through an opening in the lid. The upper end of the shaft H is provided with a rigid gear-wheel, H′, which meshes with the gear-wheel F, the gear-wheel H′ being much smaller than the wheel F.

The opening I in the lid, through which the lower end of the shaft H passes, is much larger than the said shaft, and in the bearing thus formed is journaled the sleeve J, which surrounds the shaft H near its lower end. The said sleeve extends above the lid, and is provided on its upper end with a gear-wheel, J′, and the said sleeve extends below the lid, and is provided on one side with a loop, *j*, which forms a groove communicating with the interior of the sleeve. The shaft H extends a short distance below the lower end of the sleeve J, and is squared.

K designates the outer or larger dasher, comprising the upper cross-bar, K′, and the lower cross-bar, K^2, and the blades K^3 K^3, connecting the extremities of the said bars. The upper side of the cross-bar K′ is provided with a vertical sleeve, L, adapted to receive the lower end of the shaft H, and the said sleeve is provided on one side with the rib *l*, adapted to fit in the groove in loop *j* on one side of the sleeve J and prevent the sleeve L from turning independently of the sleeve J. Thus it will be seen that when the rib *l* is engaged in the groove in loop *j* on the side of the sleeve J, if the sleeve J is rotated by means of the gear-wheel J′, the outer dasher will also be rotated; but at the same time the said dasher may be removed from engagement with the lower end of the sleeve J at any time. The lower side of the cross-bar K′, around the opening therein, is provided with a downwardly-extending flange or barrel, M, provided in one side with an opening, *m*, for a purpose hereinafter described.

N designates the inner or smaller dasher, which comprises the upper cross-bar, N′, the lower cross-bar, N^2, and the blades N^3, secured

at the ends to the extremities of the cross-bars. The upper cross-bar, N′, is provided on the upper side with the upwardly extending flange or barrel O, adapted to be passed into the barrel M through the opening *m* in the side thereof, and adapted also to rotate in the said barrel. The said barrel O on the upper side of the bar N′ surrounds the square opening *o* in the said bar, and also embraces the lower end of the shaft H, and the squared lower end of the shaft H fits in the square opening *o* and causes the inner dasher to rotate with the upper gear-wheel, H′, which is secured to the upper end of the shaft H. Thus it will be seen that if the gear-wheels F and F′ rotate in opposite directions the gear-wheels H′ and J′ will also rotate in opposite directions, and consequently the dasher will rotate in opposite directions. The lower cross-bar, K^2, of the outer dasher is provided on the lower side at the center with a depending pintle, *k*, adapted to be stepped and operate in the socket *a′* in the center of the bottom of the body A, and the upper side of the said cross-bar is provided directly over the pintle *k* with a socket, *k′*. The lower side of the cross-bar N^2 of the inner dasher is provided with a depending pintle, *n*, adapted to bear and operate in the socket *k′*, before mentioned.

The blades of the dashers are twisted outwardly at the upper ends, and the lower ends thereof are projected forward of the upper ends. The dasher-blades are also provided on the outer edges with flanges k^3 and n^3, respectively, which are adapted to draw the contents of the tub inwardly, while the twisting of the blades tends to throw said contents outwardly at the upper ends.

The construction of the device is simple and the operation thereof will be found very effective, causing butter to be separated very quickly and thoroughly.

It will be seen from the above description that the lid of the churn may be taken off, leaving the dashers in the body. This is possible because the lower squared end of the shaft H will slip out of the opening in the upper end of the dasher N, and the sleeve L will slip out of the sleeve J. It will also be seen that when the dashers are detached from the operating mechanism they do not become separated, as the barrel on the upper side of the upper bar of the inner dasher is held in the barrel on the lower side of the upper bar of the outer dasher, while the spindle on the lower end of the inner dasher is engaged in the socket in the lower end of the outer dasher.

This construction enables the dashers to be freed from the operating mechanism, so that the former may be cleaned before being removed from the churn-body, while the operating mechanism may be removed and taken out of the way.

Having thus described my invention, I claim—

1. In a churn, the combination, with the body A, having a lid, of the standard D, secured to the said lid, the rod E, secured in the said standard and having the independently-moving gear-wheels F and F′ loosely mounted on the upper and lower ends thereof, respectively, the bevel gear-wheels *f* and *f′*, secured rigidly to the lower and upper sides of the gear-wheels F and F′, respectively, shaft G, journaled in the side of the standard, and having the gear-wheel G′ on its inner end engaging with the gear-wheels *f* and *f′* at opposite sides, the vertical shaft H, journaled at its upper end in the upper side of the standard and at its lower end in a bearing in the lid, and having a gear-wheel rigidly secured to its upper end, and meshing with the gear-wheel F and the dasher on its lower end, the sleeve supported by the churn-lid and surrounding the lower end of the said vertical shaft, and having a gear-wheel on its upper end meshing with the gear-wheel E′, and a dasher connected to said sleeve and revolving around the dasher secured to the shaft H, all arranged and operated substantially as and for the purpose specified.

2. In a churn, the combination, with the body having a lid, C, of the vertical shaft H, having a gear-wheel on its upper end adapted to be operated in one direction, the sleeve J around the said shaft and journaled in a bearing in the said lid, the sleeve being provided at its upper end above the lid with a gear-wheel adapted to be operated in the opposite direction to the wheel on the shaft H, the loop *j* on the side of the sleeve J below the lid forming a groove communicating with the sleeve, the outer dasher, K, having its upper cross-bar provided at the center with a barrel, and a sleeve, L, to embrace the shaft H and pass within the sleeve J, the said sleeve L being provided on the side with a rib, *l*, to fit in the groove formed by the loop *j*, and the inner dasher, N, having a barrel fitted loosely in the barrel on the upper bar of the dasher K and connected to the shaft H, all constructed and arranged substantially as and for the purpose specified.

3. The combination, in a churn, of the vertical shaft H, having a gear-wheel on its upper end and squared at its lower end, the sleeve J, operating on the said shaft a short distance from the lower end, said sleeve having a gear-wheel on its upper end and grooved at its lower end, which groove communicates with the interior of the sleeve, the outer dasher, K, having a cross-bar, K′, provided on its upper side with a vertical sleeve, L, adapted to surround the shaft H and pass within the sleeve J, and having the rib *l* on its side fitting in the groove in the sleeve J, the barrel M on the lower side of the cross-bar K′ having an opening, *m*, in its side, the inner dasher, N, connected to the lower end of the shaft H, and having a cross-bar, N′, provided on its upper side with a barrel, O, adapted to fit in the barrel M, the lower ends of the dashers being detachably pivoted together, substantially as and for the purpose specified.

4. In a churn, the combination of the outer dasher, K, comprising the upper cross-bar, K′, provided on its upper side with a sleeve, L, adapted to be rotated by means substantially as described, and on its lower side with the barrel M, provided with an opening, *m*, in its side, the lower bar, K^2, having a socket in its upper side and a pintle on its lower side, the blades K^3, attached to the said cross-bars, the shaft H, operating loosely in the sleeve L and having its lower end squared, the dasher N, comprising the upper cross-bar, N′, provided at the center with a squared opening fitting on the lower squared end of the shaft H, and the barrel O, arranged around the said opening, embracing the shaft H and entering the barrel M, the lower cross-bar, N^2, having a pintle on its lower side operating in the socket in the cross-bar K^2, and the blades N^3, connecting the ends of the cross-bars N′ and N^2, all constructed and arranged substantially as and for the purpose specified.

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

JOHN C. COLE.

Witnesses:
M. E. YOUNT,
FRANK ERICKSON.