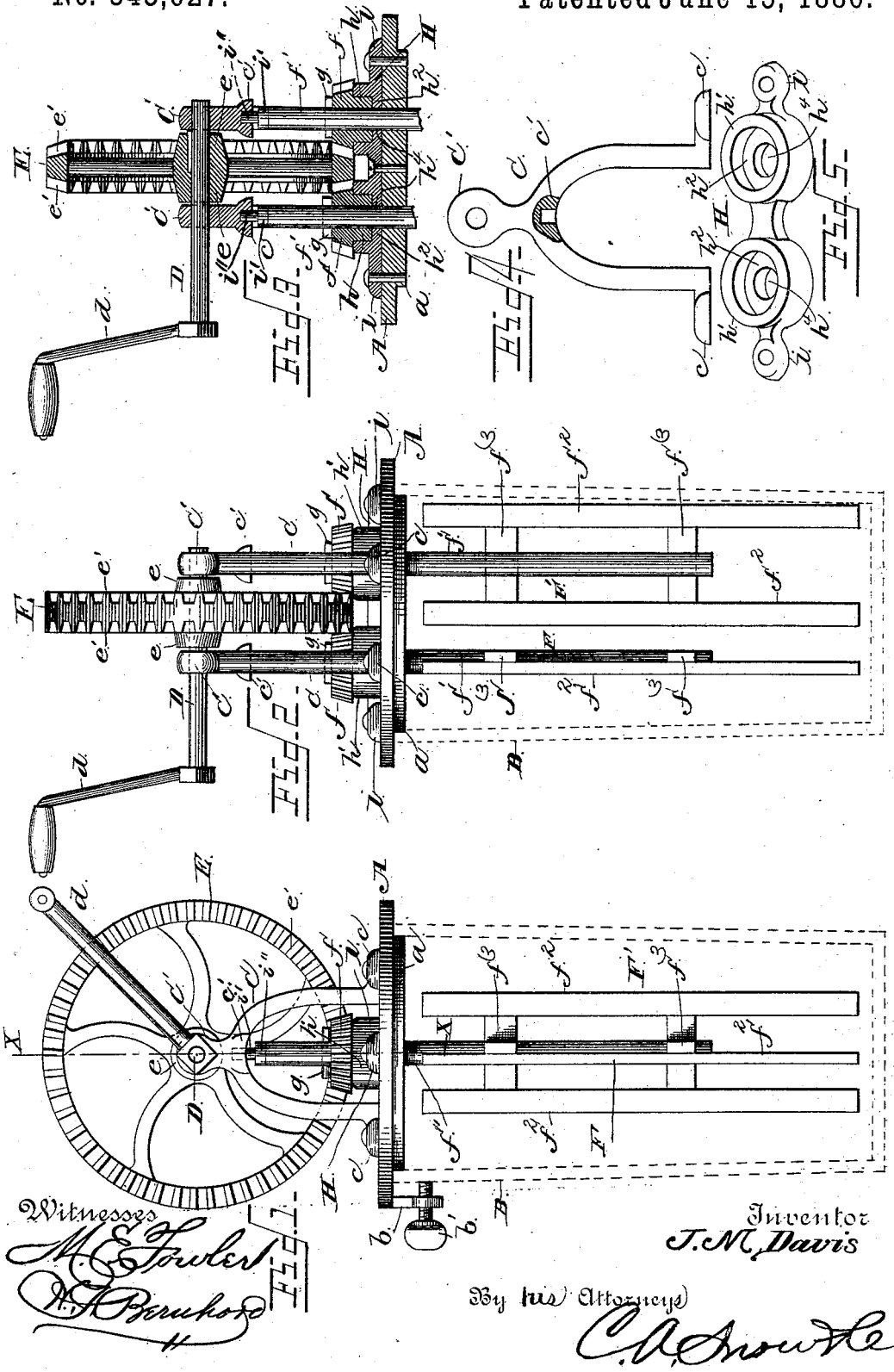
(No Model.)

J. McK. DAVIS.

CHURN.

No. 343,627. Patented June 15, 1886.



Witnesses
M. E. Fowler
W. A. Brookes

Inventor
J. McK. Davis

By his Attorneys
C. A. Snow & Co

UNITED STATES PATENT OFFICE.

JAMES McKUNE DAVIS, OF NOKOMIS, ILLINOIS.

CHURN.

SPECIFICATION forming part of Letters Patent No. 343,627, dated June 15, 1886.

Application filed December 21, 1885. Serial No. 186,352. (No model.)

To all whom it may concern:

Be it known that I, JAMES MCKUNE DAVIS, a citizen of the United States, residing at Nokomis, in the county of Montgomery and State of Illinois, 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 improvements in churns, and the novelty consists of the peculiar construction and arrangement of parts, substantially as hereinafter fully set forth, and specifically pointed out in the claim.

The primary object of my invention is to provide means whereby a violent agitating motion is imparted to the cream to throw the same outwardly from the center toward the sides of an inclosing-vessel, and in contact therewith, to facilitate the operation of the churn.

A further object of my invention is to provide a churn with two dashers, which are arranged at right angles to each other and rotate simultaneously; to provide the dasher-shaft with gear-wheels, which are supported in bearings to impart a steady rotary movement; to provide improved bearings for the master driving-gear, and to provide means which shall be simple, strong, and durable in construction, thoroughly effective and easy in operation, cheap of manufacture, and capable of ready application to and removal from a vessel of the ordinary character.

In the accompanying drawings, Figure 1 is a side elevation of a churn embodying my invention, the vessel being shown in dotted lines. Fig. 2 is a front or end view of Fig. 1. Fig. 3 is a vertical cross-section on the line *x x* of Fig. 1. Figs. 4 and 5 are detached detail views of parts of my improvements.

Referring to the drawings, in which like letters of reference indicate corresponding parts in all the figures, A designates the top or cover of a churn-vessel, B, which is shown in dotted lines in Figs. 1 and 2. This cover has a plate, *a*, on its under surface, which is of a size and shape to fit in a vessel, B; and said cover has a depending arm or bracket, *b*, at or near the outer edge, and this arm carries an adjusting or clamping screw, *b'*, that bears against the churn-vessel and holds the cover rigidly thereon.

C C designate supporting brackets, one of which is shown in detail in Fig. 4, each bracket being cast in one piece. The brackets are made curved or bow-shaped, and at their lower ends they have perforated lugs or feet *c*, through which pass screws or other fastening devices to secure them to the top or cover. At their upper ends the brackets have enlarged heads C', which have openings therein that provide boxes or bearings in which are journaled a shaft, D, one end of which extends beyond the brackets and the cover A to receive a crank or handle, *d*, for rotating the shaft by hand or otherwise. The upper ends of the supporting-brackets C are provided with lugs *c'*, that are cast with and project beyond the side faces of said brackets, (see Figs. 2 and 3,) and the lower faces of these lugs are recessed or countersunk to provide bearings or sockets for the upper ends of the dasher-staffs, to steady the motion thereof, as will presently appear.

E designates a master or driving gear-wheel, which is keyed or otherwise suitably secured on the shaft D between the parallel supporting-brackets, and so as to rotate in a vertical plane, said gear-wheel having projecting hubs *e* on each side that bear against the enlarged heads or bearings of the supporting-brackets, to steady its rotatory motion. The said master gear-wheel has teeth *e'* formed on both of its vertical side faces near the periphery thereof, and these gear-teeth mesh with and rotate bevel or miter gear-wheels *f* of the dasher-staffs *f'*.

F F' designate the dashers, each of which comprises a staff, *f'*, two or more vertical blades, f^2, and two or more horizontal arms or blades, f^3, which are secured at or near their middle to the staff *f'* and at their ends to the vertical blades f^2, to support the latter on the staff. The blades of the dasher F are arranged in a plane at right angles to the plane of the blades of the dasher F'—that is to say, the thin edges of the dasher-blade F' are presented at all times to one of the side faces of the blades of the dasher F, as will be very readily understood. The dashers are rotated in opposite directions and at the same speed, and as they are located at the center of the churn-vessel they are rotated in a horizontal plane to throw or force the cream from the

center of the vessel outwardly toward the sides thereof and in contact therewith, to impart a violent agitating motion to the cream and facilitate the churning. The upper end of the dasher-staff f' of each dasher is extended through the cover A, and receives a bevel-pinion, f, which is keyed thereon, so as to rotate said staff.

The dasher and its staff are suspended in the churn-vessel by a transverse pin, g, that bears on the bevel gear-pinions f, and is detachably secured in the dasher-staff, and the said pinions f have reduced hubs h, that fit in sockets of a bearing-plate, H. This bearing-plate is arranged transversely of and between the feet of the bow-shaped supporting-brackets C, and is secured to the top or cover A by screws or other suitable means passed through the perforated ears or lugs i thereof. The bearing-plate has raised bosses or lugs h', which are countersunk or recessed to provide a flange or ledge, h^2, and thus form the socket for the reduced hubs h of the pinions f, which bear on the upper edges of the bosses h, and the sockets have openings h^4 communicating therewith for the passage of the dasher-staffs f.

The dashers can be readily detached from the cover A, for the purpose of washing or cleansing them, by withdrawing the cross-pin g from the staff f, which can then be withdrawn from the gear-pinion f' thereon, and the upper end of the dasher-staff has a collar, i', and a pin, i'', that enters and bears in the countersunk bearing c' of the supporting-bracket C, as is obvious.

The operation of my invention will be readily understood from the foregoing description, taken in connection with the drawings.

Various slight changes in the form and proportion of parts can be made without departing from the principle of my invention.

In order to define the nature, scope, and advantages of my invention, I would state that heretofore it has been proposed to provide a churn which comprises a vessel having an open flaring mouth, a cross-piece secured to the upper edges of the vessel, brackets which are secured to the cross-piece, a driving-shaft having a crank and journaled in the brackets, a master-gear supported on the driving-shaft, and dasher-staffs which extend through the cross-piece and carry pinions which mesh with the master-gear, the said pinions having reduced hubs which extend through openings in the cross-piece, and thus provide extended flanges which rest on the cross-piece and serve to support the dashers in an upright position in the vessel. My invention differs from this construction in the fact that I employ a cover that wholly incloses the mouth of the churn-vessel, and to this cover I secure my supporting-brackets and a bearing-plate. The brackets are arranged parallel with each other, so that the bearings therein for the driving-shaft are in alignment with each other, and between the bifurcated legs of the brackets the bearing-plate is arranged and extends transversely across from one bracket to the other. The bearing-plate has countersunk open sockets, and through the openings in the sockets are passed the dasher-staffs, while the pinions of said staffs are provided with reduced hubs that are journaled in the sockets of the bearing-plate, and thus suspend the dashers in the churn-vessel.

I am also aware that a churn has been provided with two uprights which have lateral lugs, and in the upper ends of the uprights is journaled a driving-shaft carrying a master-gear which meshes with two pinions on the dasher-staffs, said staffs extending through the cover and journaled in the lateral lugs of the uprights. In my improved device the brackets or uprights are provided with bifurcated legs which are provided at their point of junction with enlarged lugs having countersunk recesses for the reception of the extreme upper ends of the dasher-staffs, which are arranged between and protected in a measure by the bifurcated legs of the brackets.

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

In a churn, the combination of the following elements, namely: a cover, A, the bifurcated supporting-brackets C, secured to the cover and provided with bearings C′ at their upper ends, and the enlarged lugs c', having the countersunk recesses at their point of juncture, a bearing-plate, H, provided with the connected bosses having the open reduced sockets h^2, said plate being arranged between the legs of the brackets transversely thereof and secured to the cover, a driving-shaft, D, journaled in the bearings C′ of the brackets and having a crank and a master-gear, and the dasher-staffs extending through the open sockets in the plate H, and having their free upper ends journaled in the countersunk recesses of the lugs c', said shafts being provided with pinions f, having reduced hubs which fit in the sockets h^2, and pins g for retaining the pinions on the dasher-staffs, substantially as described.

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

JAMES McKUNE DAVIS.

Witnesses:

ALBERT RHOADES,

JAS. F. KINNEY.