

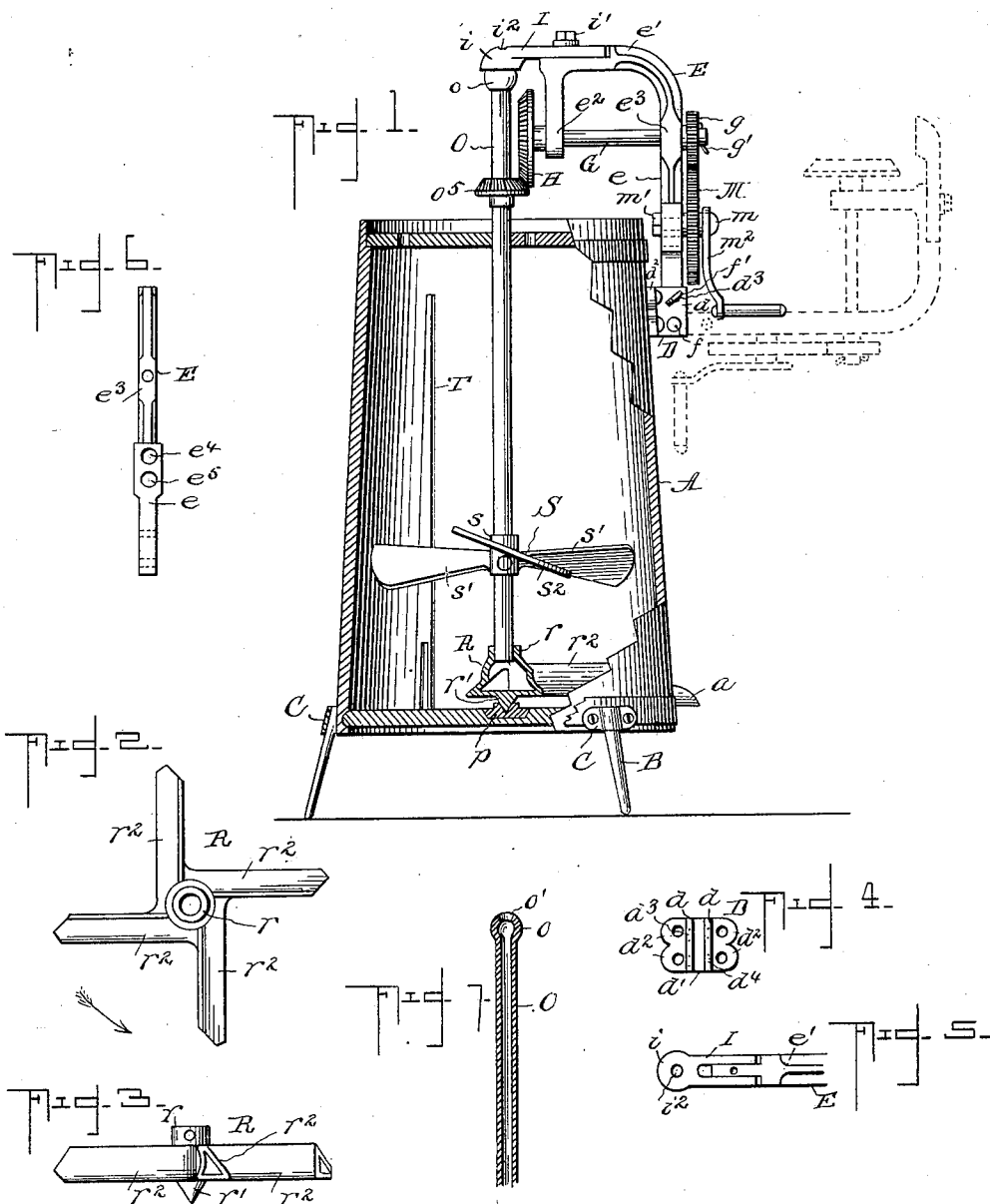
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PATENTED MAR. 15, 1904.

J. MEYRICK, JR.
BUTTER SEPARATOR.

APPLICATION FILED SEPT. 25, 1903.

NO MODEL.



Witnesses:
R. J. Beall.
Sue C. Thomas.

Joseph Meyrick, Jr.,
 Inventor,
 by *John Thomas & Co.,*
 Attorneys.

UNITED STATES PATENT OFFICE.

JOSEPH MEYRICK, JR., OF LOUISVILLE, KENTUCKY, ASSIGNOR OF ONE-HALF TO GEORGE E. CAIN, OF LOUISVILLE, KENTUCKY.

BUTTER-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 754,931, dated March 15, 1904.

Application filed September 25, 1903. Serial No. 174,653. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH MEYRICK, JR., a citizen of the United States, residing in Louisville, in the county of Jefferson and State of Kentucky, have invented a Butter-Separator, of which the following is a specification.

The objects of my invention are to provide a butter-separator which shall be simple and cheap in construction, effective in operation, and in which the parts of the apparatus are readily detachable, so that they may be conveniently packed within the body of the separator for convenience in transportation and storage.

The invention consists in the peculiar construction of detail parts of the butter-separator, whereby to provide an apparatus of this character which will thoroughly aerate and agitate the milk and cream to quickly separate the butter therefrom, will permit of adjustments to suit varying conditions, and will provide for readily and conveniently removing the butter from the body of the separator.

The following specification enters into a detail description of my invention, reference being had to the accompanying drawings, and to letters of reference thereon, which designate the different parts, like letters indicating like parts in the several views, and what I claim as new, and desire to secure by Letters Patent, is more specifically set forth in the appended claims.

In the drawings, Figure 1 is a side elevation of a butter-separator constructed in accordance with my invention, the barrel or body being partly broken away to show the arrangement of agitators and aerators. Fig. 2 is a detail plan view of the agitator and aerator. Fig. 3 is a side elevation of same. Fig. 4 is a detail view of the pivot-bearing for the supporting-frame carrying the driving mechanism. Fig. 5 is a detail plan view of the upper adjustable bearing for the separator-shaft. Fig. 6 is a detail elevation of the supporting-frame for the driving mechanism. Fig. 7 is a detail sectional view of the upper end of the hollow separator-shaft. Fig. 8 is a detail view showing the manner of connecting the breakers to the sides of the barrel.

Referring to said drawings, A designates a barrel which forms the body of the apparatus, the said barrel being preferably tapered from the bottom to the upper end to provide inclined side walls, as shown. This barrel is supported upon legs B, the reduced upper ends of which latter fit into socketed castings C, secured to the sides of the barrel. The legs are removable, so that they may be placed within the barrel when the apparatus is arranged for storage or transportation. In one side of the barrel on a line with the bottom thereof may be an opening, as is usual, through which the buttermilk is drawn off, and said opening may lead into a spout, as *a*, and is closed by a plug.

Near the upper end of the barrel A and on the outer side thereof is rigidly secured a pivot bearing or casting D, adapted to support the frame which carries the operating mechanism, and comprises vertical parallel plates *d d*, connected by a plate *d'*, which latter is provided with attaching-ears *d''*. The plates *d d* of this pivot-bearing are provided with upper and lower bolt-holes, *d'''* and *d''''*, respectively, and the lower end or foot-piece of the vertical standard *e* of the supporting-frame E is provided with bolt-holes which register therewith. Through the lower bolt-holes of the pivot-bearing and standard passes a bolt *f*, which pivotally connects the frame so that it may be swung to the position shown in dotted lines, Fig. 1, away from the barrel and in an upright or operative position, as in full lines, in which latter position it is firmly held by means of a cotter-pin *f'*, passed through the upper set of bolt-holes. By employing this means of connection the frame and the operating mechanism which is carried thereby may be readily swung out of the way for convenience in removing the butter from the barrel, and when arranged to support and drive the shaft of the separator will be firmly locked in such latter position.

The supporting-frame for the driving mechanism of the apparatus comprises the standard *e*, an upper horizontal arm *e'*, and a depending member or shaft-bearing *e''* at the inner end of the latter, said shaft-bearing being on a line with a similar bearing *e'''* in the

standard. In these bearings is mounted a horizontal driving-shaft G, upon the inner end of which and beyond the bearing e^2 is fixed a bevel-wheel H, and upon the opposite or
 5 outer end beyond the bearing e^3 is attached a pinion g by means of a cotter-pin g' . The pinion g meshes with a gear-wheel M, loosely mounted on a stub-shaft m , removably secured to the standard e by means of a nut m' , and
 10 the said gear-wheel is turned by the crank-handle m^2 , attached thereto. The stub-shaft supporting the main gear-wheel is thus removable, so that it may be secured in either one of two apertures e^4 and e^5 in the standard
 15 of the supporting-frame E, and this arrangement is provided so that either one of two different size pinions, as g , may be used on the driving-shaft to give different speeds. The end of the horizontal arm e' of the supporting-
 20 frame is cut away at each side to receive the bifurcated end of an adjustable casting I, which latter is provided with a socket i , which, in connection with the spherical upper end o of the separator-shaft O, forms a ball-and-socket
 25 joint or connection for supporting said shaft in an upright position. The casting or socket is slidable upon the supporting-arm, so that its position may be changed to give any desired set to the shaft, being held in any of its ad-
 30 justed positions by means of the set-screw i , threaded into the arm e' and impinging against the bifurcated portion of the casting. The vertical shaft O is hollow throughout its length, and the spherical portion o at its up-
 35 per end is provided with an opening o' , which alines with an opening i^2 in the socket i , so that air may pass freely into the shaft. The lower end of the shaft is threaded into the central portion or hub r of a combined agi-
 40 tator and aerator R, which latter is provided on its under side with a conical bearing r' , stepped in a hardwood block p , let into the bottom of the barrel A. The combined agi-
 45 tator and aerator is provided with hollow arms r^2 , projecting at a tangent from the hub and are triangular in cross-section, with the vertical wall curved slightly inward, as shown. The outer end of each arm is cut at an angle
 50 extending inward from its forward edge, so that as said arms are revolved in the direction of the arrow, Fig. 2, the liquid passing up the inclined wall will tend to create a vacuum in the rear of the vertical wall, thus drawing the air from the hollow shaft and arms and
 55 discharging the same into the liquid aerating the same.

S designates the upper agitator, which is an improvement upon the ordinary flutter-wheel, the peculiar disposition of the blades
 60 acting to cause counter-currents. This agitator or flutter-wheel consists of the hub s , by which it is attached to the vertical shaft, and blades $s' s'$ and $s^2 s^2$, projecting outwardly from said hub. In forming this wheel the
 65 blades $s' s'$ are disposed horizontally and are

deflected at an angle of about forty-five degrees, while the blades $s^2 s^2$ are arranged higher and deflected only slightly. In practice I have found that a flutter-wheel constructed in this manner will agitate the milk
 70 and cream more effectively than the flutter-wheel of ordinary construction.

T designates breakers which are disposed against the inner side of the barrel A and taper to their upper ends so that their inner
 75 edge will be on a vertical line. These breakers are made of wooden strips, the lower ends of which are bifurcated to provide openings through which the liquid is forced by the combined agitator and aerator R. These break-
 80 ers are removable, and to this end are provided with plates t , engaging metal loops v , the latter being secured to the sides of the barrel. (See Fig. 8.) It will be noted that the means of connection hold the breakers
 85 rigid when the latter are in position, and permit them to be readily removed for the purpose of scraping off the butter and in washing the parts.

The shaft O is provided near its upper end
 90 with a bevel-pinion o^5 , adapted to mesh with the bevel-wheel H on the inner end of the driving-shaft.

The operation will be readily apparent for supporting the parts to be assembled and ar-
 95 ranged as shown in full lines, Fig. 1. The turning of the crank-handle m^2 will operate the drive-shaft G through the intervention of the gear-wheel M and pinion g , and the bevel-wheel H at the inner end of said drive-shaft
 100 being in mesh with the pinion o^5 on the separator-shaft will turn the latter and revolve the agitators. When the butter is formed, the cotter-pin f' is removed and the frame which carries the driving mechanism is thrown
 105 back out of the way, as indicated in dotted lines, so that the shaft and breakers can be easily removed in taking out the butter.

When the separator is to be stored or shipped, the legs and the supporting-frame
 110 for the driving mechanism can be readily disconnected and packed in the barrel A, and by securing the cover in place the apparatus may be shipped without being crated.

Provision for using pinions of different sizes
 115 is provided, so that a small pinion may be used to give a rapid speed in separating butter from sweet milk and cream, while a larger pinion for a slower speed used in separating butter from sour milk and cream.
 120

Having thus described my invention, I claim—

1. In a butter-separator, the combination, of the barrel, a pivot-bearing secured near the upper end thereof, a frame pivoted in said
 125 bearing and carrying the driving mechanism, the separator-shaft geared to the latter, a spherical portion at the upper end of the separator-shaft, a casting bifurcated at one end and provided with a socket at its other end,
 130

the bifurcated end being slidable upon the frame and the socket adapted to receive the spherical head of the separator-shaft, and a set-screw threaded in the frame to impinge on the bifurcated end of the casting.

2. In a butter-separator, the combination, of the barrel, a pivot-bearing secured near the upper end thereof, a frame pivoted in said bearing to swing to and from the barrel, means for locking the frame in its upright position, a driving-shaft carried by the frame, a hollow separator-shaft having a spherical upper end with an opening through the same, and a socket laterally adjustable upon the frame and having an opening in line with the opening in the spherical head of the separator-shaft; to-

gether with a combined agitator and aerator attached to the lower end of the hollow shaft and having a conical bearing stepped in the bottom of the barrel, said combined agitator and aerator comprising a hub and hollow arms triangular in cross-section and rearwardly beveled at their outer ends, the parts being combined and arranged substantially as shown and described.

In testimony whereof I affix my signature in the presence of two witnesses.

JOSEPH MEYRICK, JR.

Witnesses:

W. S. HOGUE,
J. A. WIGHT.