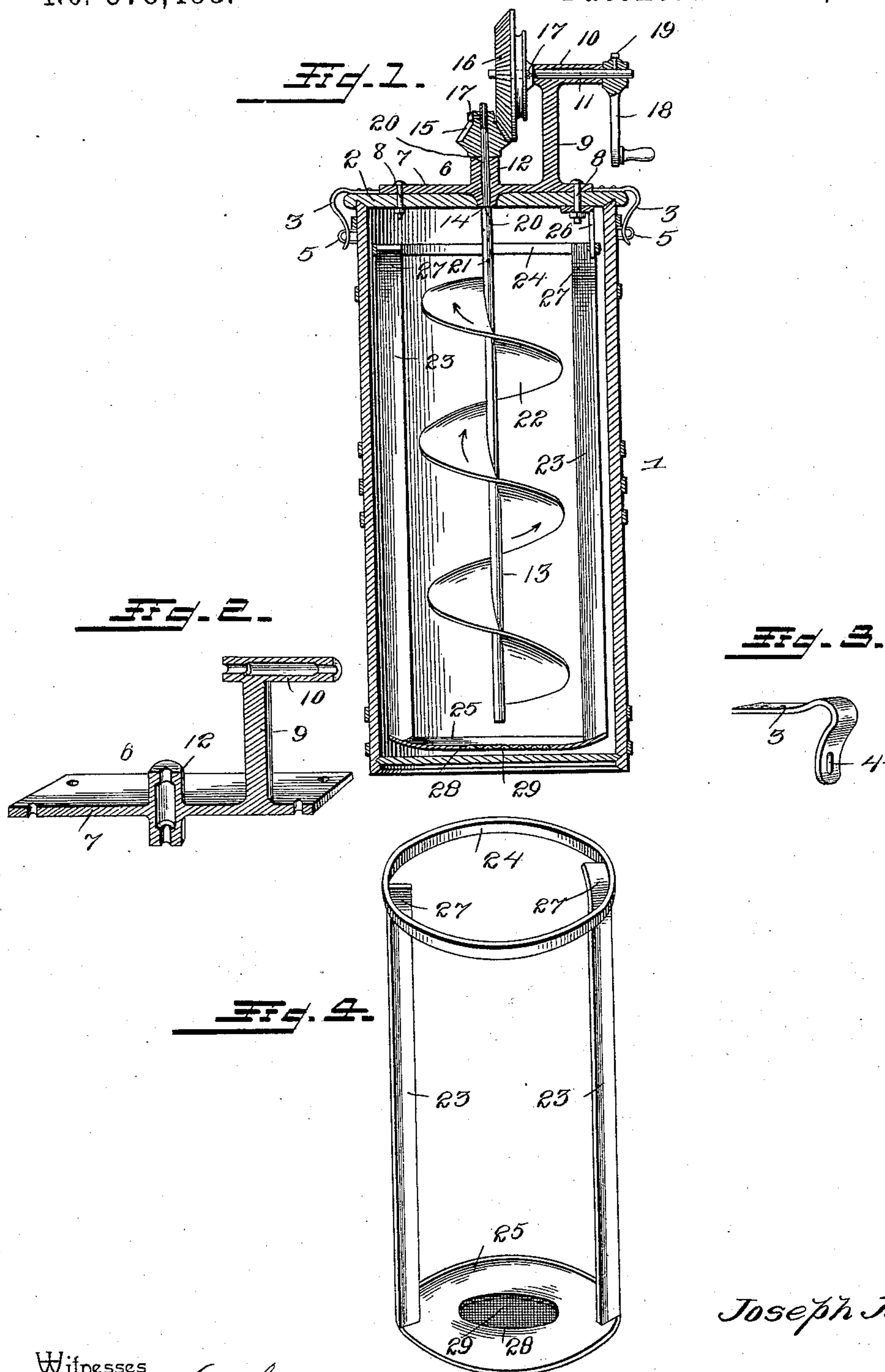


(No Model.)

J. JAQUE.
CHURN.

No. 578,488.

Patented Mar. 9, 1897.



Witnesses

H. North
C. E. North

By his Attorneys,

C. A. Snow & Co.

Inventor
Joseph Jaque

UNITED STATES PATENT OFFICE.

JOSEPH JAQUE, OF ST. LOUIS, MISSOURI.

CHURN.

SPECIFICATION forming part of Letters Patent No. 578,488, dated March 9, 1897.

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To all whom it may concern:

Be it known that I, JOSEPH JAQUE, a citizen of the United States, residing at St. Louis, State of Missouri, have invented a new and useful Churn, of which the following is a specification.

My invention relates to churns, and has for its object to provide a simple and efficient construction and arrangement of operating mechanism carried solely by the lid or cover and adapted to be applied to an ordinary form of churn-body or receptacle, to provide improved means in connection with the agitating devices for forcing atmospheric air through the contents of the receptacle, and also to provide simple and efficient means for gathering and removing the particles of butter from the receptacle after the completion of the churning operation, said means being removable with the dasher from the receptacle.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a vertical section of a churn constructed in accordance with my invention. Fig. 2 is a detail view in perspective of the frame or casting upon which the operating parts of the apparatus are mounted. Fig. 3 is a similar view of one of the catches whereby the lid or cover is secured to the receptacle. Fig. 4 is a similar view of the breaking and gathering devices detached.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a receptacle of the ordinary construction, that illustrated in the drawings being cylindrical and being fitted with a removable lid or cover 2, which is held in place by means of spring clips or ears 3. These clips or ears are secured at their upper ends to the upper surface of the lid or cover and depend at their outer ends contiguous to the outer surface of the receptacle, said ears or clips being provided near their free ends with vertical slots 4, which are adapted to engage loops or staples 5, secured to the outer surface of the receptacle.

Secured to the upper surface of the lid or cover is a frame or casting 6, consisting of a base-plate 7, preferably secured to the lid or cover by means of bolts 8, a vertical standard 9, which supports a horizontal bearing 10 for the driving-shaft 11, and a vertical bearing 12 for the agitating or dasher shaft 13.

The agitating or dasher shaft is reduced to form a shoulder 14 to bear upon the lower end of the bearing 12 and prevent the upward displacement of said shaft, and secured to the portion of the shaft above the upper end of said bearing is a beveled pinion 15, which prevents downward displacement of the dasher-shaft, and which meshes with a master or drive gear 16, secured to the driving-shaft 11. Set-screws 17 are employed to secure the gears to their respective shafts, and a crank-arm 18 is secured by means of a similar set-screw 19 to the outer end of the driving-shaft.

The upper portion of the agitating or dasher shaft 13 is tubular, as shown at 20, the vertical bore thereof being open at the upper end of the shaft to admit atmospheric air, which is discharged through the outlet-perforations 21 within the receptacle close to the plane of the lid or cover. The dasher, which is used in connection with the improved apparatus and is carried by said agitating or dasher shaft, consists of a spiral blade 22, encircling said shaft as a center and extending continuously from a point contiguous to and slightly below the lowermost outlet-opening 21 to the lower extremity of the shaft. By rotating this dasher in the direction indicated by the arrows in Fig. 1 the upper extremity thereof is adapted to cut the contents of the receptacle and thus cause a downward pressure upon said contents. This dasher-pressure of the contents at the center or contiguous to the center of the receptacle induces a corresponding upward current contiguous to the sides or walls of the receptacle, and rotary movement of the contents is impeded by the approximately vertical breakers 23, consisting of flat strips or bars arranged at diametrically opposite points contiguous to the sides of the receptacle. These breaker strips or bars are carried by the churn lid or cover, and hence are removable from the receptacle with said lid or cover. In order to attain this removability of the breaker strips or bars, they are

connected at their upper ends by means of a band or hoop 24, which is of less diameter than the interior of the receptacle, and are connected at their lower ends to a disk 25, which is also of less diameter than the interior of the receptacle, a bracket 26 being attached to the hoop or band 24 and engaged by one of the bolts 8 or by its equivalent, as shown clearly in Fig. 1. While disposed at diametrically opposite points, the strips or bars are not disposed upon diametrical lines, but are inclined or disposed diagonally with relation to the radii of the receptacle, and hence are disposed diagonally with relation to the whirling or rotary movement of the contents of the receptacle. The hoop and disk hold the upper and lower ends of the breaker strips or bars in the proper relative positions and provide for the insertion or removal of the breaker strips with the dasher.

In order to deflect the contents of the churn inward at the upper ends of the breaker strips, the latter are curved, as shown at 27, and hence the liquid, as it rises to give room for the downward current caused by the spiral dasher, is deflected by the portions 27, and hence thrown inward or toward the center of the receptacle. The lateral bending of the upper extremities of the strips or bars, by reason of the diagonal disposition of said bars, causes said extremities to incline slightly inward or toward the interior of the receptacle. This inward projection of the liquid causes a partial aeration by coming in contact with the air admitted through the openings 21, and at the same time the air thus admitted and depressed or thrown vertically downward by the liquid deflected by the breaker strips is brought within reach of the upper end of the dasher-blade, and is thus carried vertically downward with the other contents of the receptacle to insure the further aeration of the liquid and induce the formation of lactic acid, and hence the curdling of the milk, by supplying the required amount of oxygen.

The disk 25 is provided with a central opening 28, fitted with a screen 29, and inasmuch as the disk is approximately coextensive with the interior of the receptacle, or is approximately equal in diameter thereto, it is obvious that when the breaker-frame, which includes the breaker strips, the band 24, and the disk 25, is withdrawn from the churn-receptacle the floating or separate particles will be gathered, thus materially simplifying this portion of the churning operation. The disk 25 is preferably dished in shape, or is provided with a concave upper surface, and hence when the lid or cover is detached and the breaker-frame removed from the receptacle

said disk forms a suitable holder for the butter, while the screen allows the liquid contents of the receptacle to drain out.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. In a churn, the combination of a lid or cover adapted to be removably fitted upon a receptacle, a dasher, operating mechanism mounted upon the cover, and a breaker-frame secured to and carried by the cover and having opposite cross-sectionally flat breaker strips or bars disposed diagonally with relation to the diameter of the receptacle and curved laterally at their upper ends, as at 27, to deflect the contents of the receptacle inwardly, said strips supporting a butter-gathering dish below the lower end of the dasher, substantially as specified.

2. In a churn, the combination with a receptacle, of a rotary dasher-shaft and means for operating the same, a continuous flat spirally-disposed dasher-blade carried by and concentric with the dasher-shaft, and approximately vertical opposite breaker strips or bars arranged in fixed positions in the receptacle with their inner edges contiguous to the peripheries of the coils of the blade, said strips or bars being disposed cross-sectionally at an angle to the diameter of the receptacle, and hence diagonally with relation to the direction of movement of the whirling contents of the receptacle, to deflect the contents inwardly, substantially as specified.

3. In a churn, the combination with a receptacle having a removable lid or cover, of a rotary dasher-shaft mounted in and supported by the lid or cover, operating mechanism for the dasher-shaft also carried by the lid or cover, and a continuous flat spirally-disposed dasher-blade carried by the dasher-shaft and adapted to exert a downward pressure upon the contents of the receptacle, the upper portion of the dasher-shaft being hollow or tubular with an inlet-opening above the plane of the lid or cover and outlet-openings within the receptacle contiguous to the upper end of the dasher-blade, substantially as specified.

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

JOSEPH JAQUE.

Witnesses:

J. H. SULLIVAN,
FRANK D. WISE.