S. A. HYSON.

MULTIPLE DASHER ROTARY CHURN.

APPLICATION FILED MAR. 6, 1913.

1,108,991.

Patented Sept. 1, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

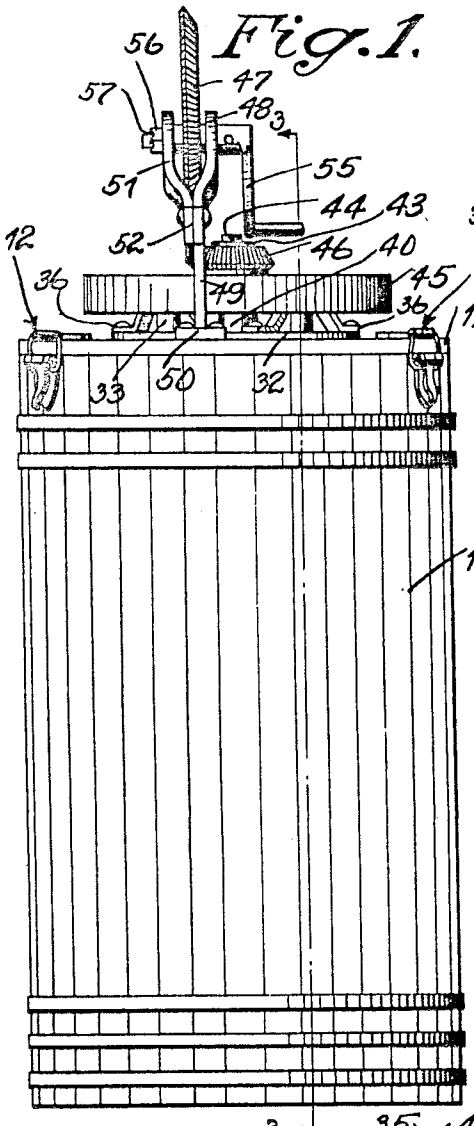


Fig. 3.

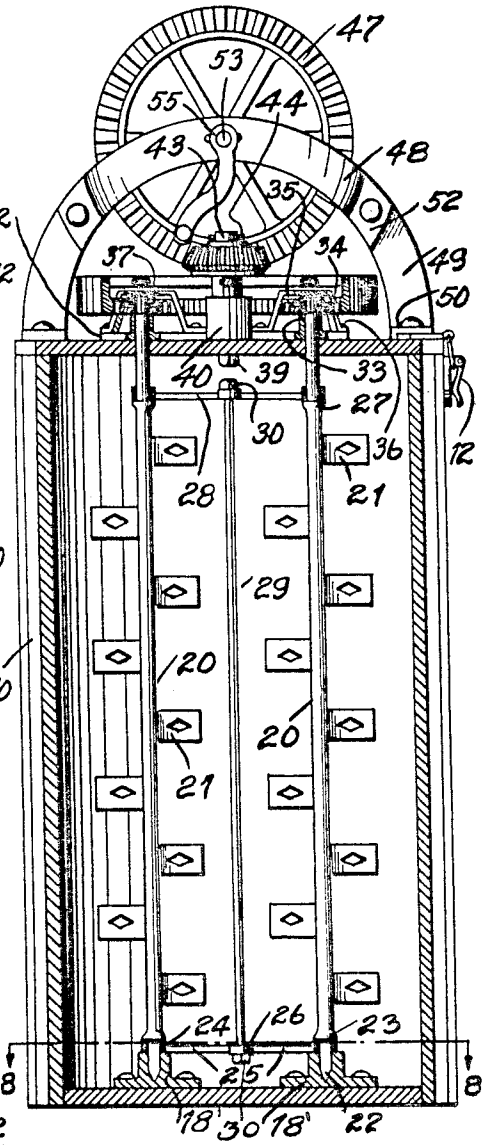
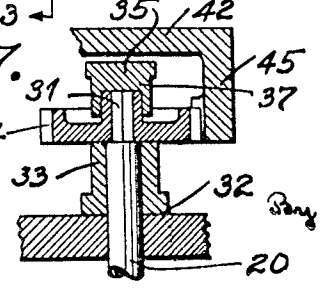


Fig. 7.



Witnesses
M. S. Watson
Jno. Burch.

Inventor
S. A. Hyson
Attorneys

THE COLUMBIA PRINTING CO. PHOTO-LITHO., WASHINGTON, D. C.

S. A. HYSON.

MULTIPLE DASHER ROTARY Cchurn.

APPLICATION FILED MAR. 6, 1913.

1,108,991.

Patented Sept. 1, 1914.

2 SHEETS-SHEET 2.

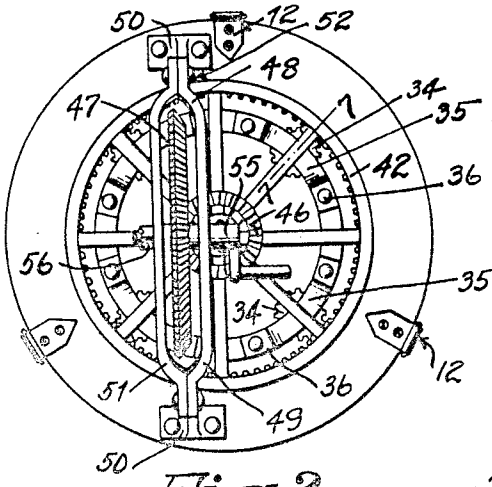


Fig. 2.

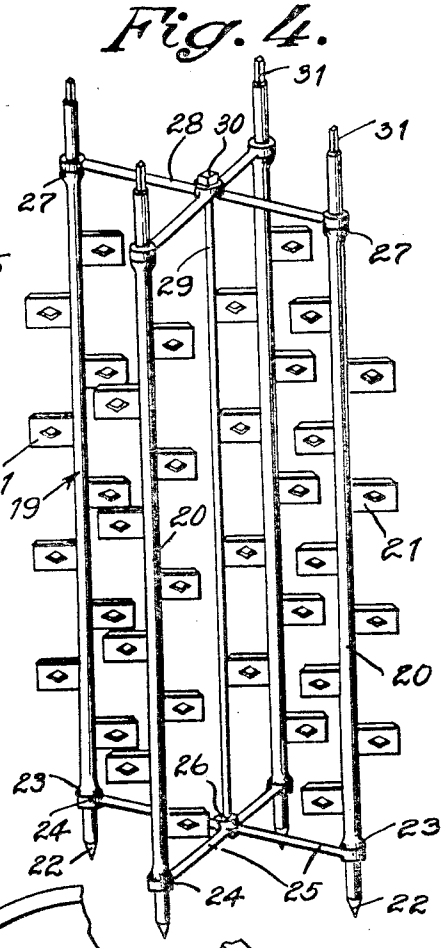


Fig. 4.

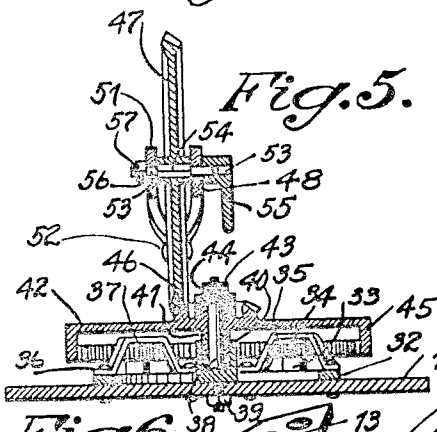


Fig. 5.

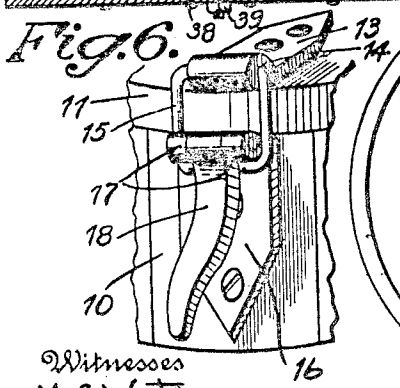


Fig. 6.

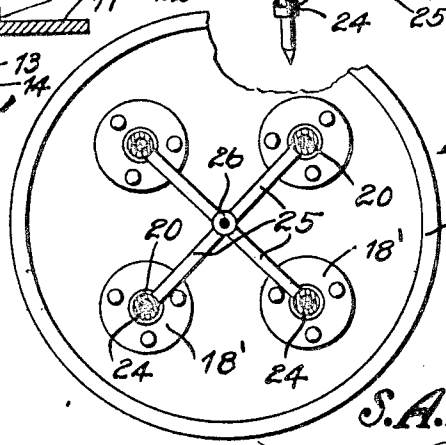


Fig. 8.

Witnesses
M. S. Watson
J. W. Church.

Inventor
S. A. Hyson
By Ryan & Ryan
Attorneys

THE JOHNS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

SAMUEL A. HYSON, OF AKRON, OHIO.

MULTIPLE-DASHER ROTARY Cchurn.

1,108,991. Specification of Letters Patent. Patented Sept. 1, 1914.

Application filed March 6, 1913. Serial No. 752,473.

To all whom it may concern:

Be it known that I, SAMUEL A. HYSON, a citizen of the United States, residing at Akron, in the county of Summit, State of Ohio, have invented certain new and useful Improvements in Multiple-Dasher Rotary Churns; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to novel and useful improvements in churns and more particularly to multiple dasher and rotary churns.

The essential object of the invention is evolved in the provision of a churn of the above character embodying a novel arrangement of dashers adapted to be supported within the churn body or receptacle and simultaneously driven by a novel gearing arrangement, which is supported on the cover of the receptacle whereby a high speed of rotation may be imparted to the dashers with decreased working power to more quickly convert the cream into butter.

With the above and other objects in view, the invention resides more particularly in the peculiar combinations and arrangements of parts, which will be partly illustrated as a preferred embodiment in the accompanying drawings and described in the specification, although the invention is protected for all desirable changes and uses within the scope of the invention as claimed.

Figure 1 is a side elevation of the improved churn. Fig. 2 is a top plan view thereof. Fig. 3 is a vertical sectional view of the churn taken through two diametrically opposed dashers. Fig. 4 is a detail perspective view of the dashers. Fig. 5 is a sectional view of the cover and parts supported thereby, taken at right angles to Fig. 3. Fig. 6 is a detail perspective view of fragmentary portions of the receptacle and cover with a fastener therefor. Fig. 7 is an enlarged sectional view taken on the line 7—7 of Fig. 2, fragmentary portions of the parts being shown. Fig. 8 is a horizontal sectional view taken on the line 8—8 of Fig. 3.

In illustrating the preferred embodiment of the invention, my improved churn is shown as comprising a churn body or receptacle 10, preferably of cylindrical form as shown and consisting of a staved member, although it is desired to be understood that any other preferred form of receptacle or body may be employed. A cover 11 is provided for the receptacle and is removably held on the same through the medium of a plurality of fasteners 12, located at spaced points and preferably three (3) in number. Each of these fasteners comprises a strip of metal 13 secured to a cover radially and having its free end coiled to form an eye 14 which pivotally carries a depending link 15. A strip 16 is secured vertically to the adjacent portion of the receptacle and has its upper end bent outwardly at right angles and terminating in spaced eyes 17 between which a locking lever 18 is pivotally mounted, so that when the cover is in position the levers may be extended through the links so that the latter will engage beneath the angular portions of the strips 16 inwardly of the eyes thereof and when the levers are moved downwardly, the links will be held from disengagement and the cover thereby secured on the receptacle.

Mounted on the bottom of the receptacle at the inside are diametrically opposite pairs of sockets 18′, the same having flanged portions attached to the bottom while the openings of the socket taper toward their lower ends. A plurality of dashers 19 are mounted within the receptacle and each consists of a vertical shaft 20 provided with vertically spaced and oppositely extending apertured blades or paddles 21, four (4) of such dashers being provided and having their blades arranged in staggered relation with respect to the adjacent dashers. The lower extremities of the shafts are tapered as shown at 22 to engage the openings of the sockets to freely rotate therein, while spaced above said tapered extremities, said shafts are provided with enlargements 23 producing shoulders which abut sleeves 24 formed at the extremities of a plurality of arms 25 forming a cross brace and which has a central hub 26. This cross brace thus supports the shafts in spaced relation with the shoulders resting on the sleeves 24 and the top portions of the shafts are provided with enlargements 27 producing shoulders engaged by similar sleeves formed at the extremities of the arms of a similar cross brace 28. The hub portions of these braces are connected by a rod or bolt 29 with nuts or caps 30 mounted on their extremities whereby the

parts are held in assembled position. The upper extremities of the shafts 20 are squared as shown at 31 and the shafts when in position are engaged through openings in the cover so that the squared portions will project above the latter.

A ring-like plate 32 is mounted on the cover 11 concentric to the center of the latter and is formed with equi-distantly spaced bearing sleeves 33 projecting upwardly and preferably formed integral therewith to rotatably receive the upper extremities of the dasher shafts and pinions 34 having squared hub apertures mounted on the squared portions 31 of the shafts whereby the dashers will rotate with said pinions when rotation is imparted to the latter. The pinions are retained on the dasher shafts through the medium of arcuate braces 35, the same having offset apertured ends 36 attached to the ring-like plate 32 and the cover 11 and also having intermediate depending bearing cups 37 rotatably receiving the hubs or the pinions 34 therein while at the same time preventing upward displacement of the shafts.

A bearing bolt 38 is secured centrally through a cover, being held by a nut 39 and having an upwardly flanged bearing plate 40 outwardly of the cover to receive the lower portion or flange of the hub 41 of a gear wheel 42, the top flange of said hub 41 being held in a flanged nut 43 so that the hub 41 is rotatably mounted on the unthreaded portion of the bolt 38. The nut 43 is mounted on the reduced threaded upper extremity of the bolt 38 and is provided with opposed openings adapted to register with an opening in said threaded portion for receiving a key 44, thus preventing the nut from jamming against or loosing from the hub of the gear 42. The teeth of the gear 42 are located on the inside of a depending flange 45 forming its rim so that said gear will be disposed in mesh with all of the pinions 34 for simultaneously driving said pinions and attach shafts in the same direction, thus driving the dashers at a high speed of rotation.

The gear wheel 42 is formed with an upwardly extending pinion 46 which is spaced from the hub and is adapted to be rotated through an intermeshed vertical gear 47. This gear 47 is supported between the spaced offset portions 48 of an arched support 49 having attaching feet 50 secured to the cover and a brace 51 which has its extremities secured to the support 49 beyond its offset portion as shown at 52. Both of the offset portions 48 are provided with opposed circular apertures intermediate their ends for receiving the circular extremities 53 of a squared bolt 54 on which the drive axle 47 is keyed between the offset portions 48 while a hand crank 55 is secured to one circular portion of the squared shaft to rotate the gear 47. The other extremity of the squared shaft has a ridged nut 56 secured thereto for engagement by a key 57 to prevent jamming or loosing of the nut with respect to the support or bearing.

Thus it will be seen that when it is desired to assemble the parts for the churning operation, the connected dashers are placed within the receptacle and their shafts engaged in the respective sockets for rotation in the sleeves 24 and after the cream has been emptied into the receptacle, the cover is placed thereon and held by the fasteners or locking means described. The upper extremities of the dasher shafts will engage through the apertures of the cover and the squared portions thereof will engage the squared apertures of the pinions 34, whereupon rotation being imparted to the drive gear 47, such motion will be transmitted through the pinion 46 to the gear wheel 42 and by driving the pinions 34 rapidly rotate the dashers. By reason of the great speed of rotation which can be imparted to the dashers, the number of the dashers and also the constructions and arrangement of the blades or paddles thereof, the globules of cream will be thoroughly agitated and broken up and the churning operation expedited.

I claim:

1. In a churn, a receptacle, a cover for the receptacle, means detachably securing the cover to the receptacle, opposed pairs of dashers mounted in the receptacle and having tapered lower end forming shoulders, sockets mounted on the bottom of the receptacle and rotatably receiving said tapered ends, cross braces having sleeves through which the dashers are rotatable, a connection between said cross braces, said dashers being formed with shoulders near their upper ends whereby the sleeves will be held against the shoulders, a drive wheel mounted on the cover and drive connections between said wheel and the shafts, said shafts projecting through the cover when the latter is in position.

2. In a churn, a receptacle, a cover for the receptacle, means detachably securing the cover to the receptacle, vertical dashers rotatably supported in the receptacle and rotatably extending through the cover, said dashers having squared upper ends, a ring-like plate mounted on the cover and having a plurality of sleeves receiving the dashers therethrough, pinions engaged on the squared portions of the dashers, braces secured to said plate and contacting with the hubs of the pinions to hold the latter in position, a bearing bolt secured centrally to the cover and having an upwardly flanged plate, an internal gear having a hub rotatable on the bolt and engages within the flange, a flanged nut on the upper end

of the bolt and also inclosing the hub, a pinion carried by the last named gear, an arched support mounted on the cover and a drive gear carried by the support and in mesh with the pinion last mentioned for imparting rotation to the rotatable parts aforesaid.

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

SAMUEL A. HYSON.

Witnesses:
RICHARD HEMINGER,
M. C. HEMINGER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."