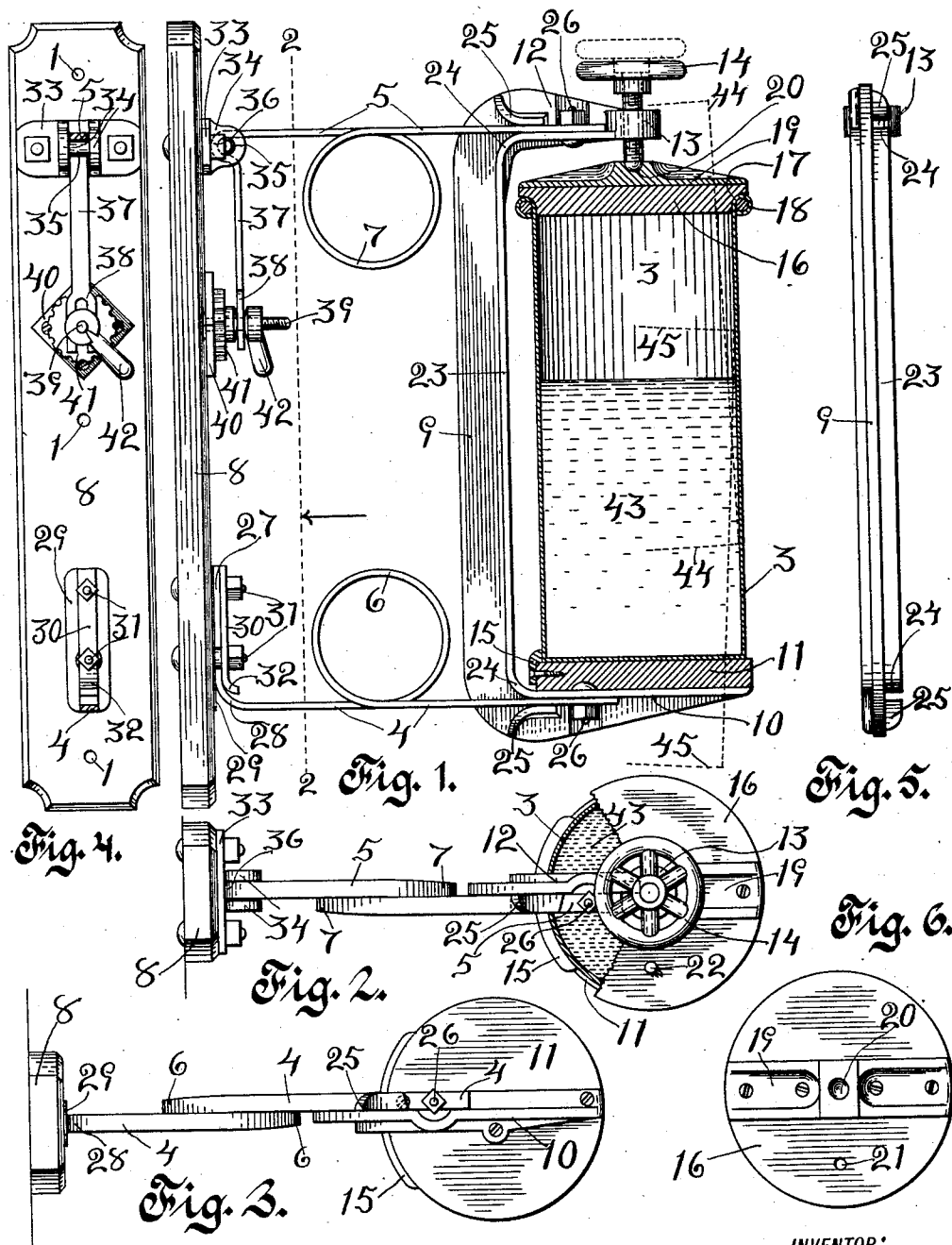


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CHURN.  
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998,023.

Patented July 18, 1911.



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# UNITED STATES PATENT OFFICE.

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## CHURN.

998,023.

Specification of Letters Patent. Patented July 18, 1911.

Application filed April 19, 1911. Serial No. 622,102.

### To all whom it may concern:

Be it known that I, CHARLES A. McCANN, a citizen of the United States of America, residing in Blair township, in the county of Washington and State of Nebraska, have invented certain new and useful Improvements in Churns, of which the following is a specification.

My invention relates to improvements in churns in which an upright cylindrical receptacle or can is mounted on springs and vertically reciprocated to agitate, beat and intermix the contents thereof; and the objects of my improvement are, first, to provide an elastic vertically-vibratory support to carry a churn body or cream can whereby the contained cream may be agitated and beaten to break the milk-fat globules and separate the butter-fat from the serous parts; second, to provide a base-seat for the body or can in rigid connection with a cover-clamp to also fasten the can in the vibrative end of the support; third, to provide means to alternately draw the top and bottom of the vertically reciprocating can toward the fixed anchorage of its vibratory support, whereby the forward end of the contents of the can, in both directions of its movement, are thrown inwardly, against its centrifugal tendency, to agitate and completely and continuously intermix said contents; fourth, to afford facilities for varying and adjusting the flexibility of the elastic support according to the quantity or weight of the content of the can; and, fifth, to facilitate the easy connection of the ends of the horizontally disposed bar-springs with the can-carriage or clamp and with the fixed support and conserve them against breakage or set at these points. These and other minor objects more particularly hereinafter set forth, I attain by the mechanism illustrated in the accompanying drawing, in which—

Figure 1 is a side elevation of the churn, the can-seat, can and cover shown in vertical section; Fig. 2, a top view, parts of the cover and top of the can cut away; Fig. 3, an underside view; Fig. 4, a vertical section on the broken line 2 of Fig. 1, giving a front elevation of the stationary attaching support and spring adjusting contrivance; Fig. 5, a rear elevation of the U-shaped body of the can-clamp or carriage disconnected from the other parts; and Fig. 6, a top view of the cover alone. In all of which views similar reference numerals refer to like parts.

The vertically-vibratory support by means of which the cylindrical receptacle or can 3 is longitudinally and vertically reciprocated, comprises the horizontally disposed elastic bars or springs 4 and 5, having the intermediate spiral coils 6 and 7. These springs are fastened at their rear ends to the stationary attaching support 8 and their front or vibrative ends rigidly fastened to the can-carriage and clamp. The stationary support consists of the worked and finished plank having beside its other connections the perforations 1, 1 and 1 by which it is lag-screwed or bolted to any vertical wall or post. The clamping can-carriage consists of a U-shaped body having a long base 9 disposed vertically, a lower horizontally-disposed leg 10 of length to underlie and support the disk 11 attached thereon to form a seat for the can; and a shorter top leg 12 terminated in the knob 13 having a vertical threaded perforation to take the wheel-screw 14 disposed centrally above the seated can. And a curved guide and stop 15 is fastened to the back edge of the disk-shaped can-seat to stop the inserted can centrally on the seat beneath the screw-wheel.

The cover 16 has the annular groove 17 to receive the beaded rim 18 of the can 3 into which it closely fits. The cleat 19 on the top of the cover has the central socket 20 to receive the point of the wheel-screw when it is turned down to press the cover tightly on the can and fasten the can seated in the carriage. The cover also has the vertical perforation 21 through which the contents of the can are aerated, examined or tested and is provided with the stopple 22 as shown in Fig. 2.

The lateral flange 23 of the U-shaped clamping body is of width equal to the width of the spring-bars and has curved bends 24 and 24 at the junctions of the horizontal leg portions with the vertical base of the U. The oppositely curved lugs 25 and 25 are spaced away from the legs of the flange to closely receive the spring-bars therebetween and the interposed forward ends of the springs are fastened to the flange by the bolts 26 and 26 disposed vertically through both. By this means the front ends of the springs are rigidly fastened to the can carriage and must flex at this connection when the carriage is vertically reciprocated; but the flexure being around the curved lips at the mouths of the recesses in which the

springs are seated said springs are preserved against set or breakage at these points. The rear end of the lower spring 4 is similarly fastened to the stationary supporting plank; the upturned vertical end portion 27 is connected with the horizontal part by a long curve 28 and interposed between the thin straight chafe-plate 29 and the cap-plate 30 with through bolts 31 and 31 to fasten them to the support; and the cap-plate has the more shortly curved end 32 overlapping the angle bend in the spring as shown.

To attach the top spring to the stationary support a horizontal cleat 33 is bolted across the front of the support; this cleat has the spaced ears 34 and 34 and the pin 35 disposed horizontally through the ears and across the space between. The rear end of the spring has a U-shaped bend 36 to engage the pin between the ears and form a hinged connection therearound, as shown by dotted lines in Fig. 1. An integral end portion of the spring is bent downwardly to form a vertical arm 37 having the forked terminal 38. The threaded rod 39 is attached to the face of the stationary support by the base-plate 40 and is disposed horizontally through the forked terminal of the arm. A wheel-nut 41 is mounted on the threaded rod back of the fork and the tail-nut 42 is mounted on the rod forward of the interposed forked end. By turning these nuts to flex the forked end of the arm forward the elastic force of the spring is increased to level up the springs and balance their flexibility against a heavier content 43 in the can, or to increase the working elastic force of the springs in any case as may be desired. By attaching these springs rigidly at both ends, whereby each must simultaneously flex oppositely at opposite ends, much lighter springs serve to supply the required elastic force than would be required if the vibrative ends were hinge jointed to the carriage; further they act more positively, more smoothly and with less noise.

When the can is charged and fastened in the carriage, and if necessary the springs properly adjusted, the elastic support is highly sensitive to vertical vibration. By a touch of the hand in alternate pressure and release on top of the can cover or carriage they are excited into rapid strong vertical reciprocation. By this movement the content, which as shown should never entirely fill the can, is thrown up and down with great force alternately against the relatively unyielding cover and bottom. There is a further movement of the carriage and contained can, which renders my contrivance most useful in mixing compounded solutions, such as spraying mixtures for vegetation and the preparation of beverages; it being obvious that the size of the contrivance may be varied as required and different

cans for different purposes readily seated in and removed from the carriage:—The intermediate spirally coiled portions of the springs are disposed as nearly as possible in the plane of vibration and are coiled oppositely in opposite springs.

When in operation the can moves upward the coil of the top spring partially unwinds and expands in size to in effect shorten the distance between the opposite ends of the spring; simultaneously the coil of the lower spring is wound closer decreasing its diameter and lengthening the distance between the connected ends of this spring. By this means the top of the can is drawn backwardly as it arises, while its bottom is held outwardly until at the end of the upward movement the can is in the position indicated by the broken line 44 of Fig. 1. By the reverse or downward movement the lower end of the can is drawn backwardly and a reverse position attained as indicated by the broken line 45. This sudden tilting of the can in opposite directions in connection with the simultaneous forceful vertical reciprocation thereof continually and rapidly intermixes and beats together the contents. This action being so thorough and efficient that in churning butter from cream the most rapid service is performed requiring no other dasher or agitator than the plain containing receptacle or can which is easily filled emptied and cleaned.

I claim:

1. The combination of a stationary support, a pair of spring-bars having each an end rigidly fastened to said support and disposed apart at an angle thereto to vibrate in the same plane, and a carriage rigidly connected with the opposite ends of said spring-bars to engage and reciprocally carry a removable receptacle or can.

2. The combination of a stationary support, a pair of elastic bars each having one end rigidly attached to said support and disposed apart at an angle thereto to vibrate in the same plane, a carriage rigidly connected to the opposite ends of said elastic bars to receive and reciprocally carry a churn body, and an intermediate portion of each elastic bar coiled in the plane of vibration.

3. The combination of a stationary support, a pair of elastic bars having an end of each rigidly fastened to said support and disposed apart at an angle thereto to vibrate in the same plane, intermediate portions of said elastic bars coiled in opposite directions in opposite bars and in the plane of vibration, and a carriage rigidly attached to the ends of said elastic bars opposite to said stationary support to reciprocally carry a removable receptacle.

4. In a churn, the combination of a stationary support, a pair of spring bars rig-

idly fastened at one end to said support and disposed apart at an angle thereto to vibrate in the same plane, a carriage rigidly fastened to the vibratory ends of said spring bars and having means to fasten a churn receptacle thereon, and a churn receptacle adapted to be removably seated and fastened on said carriage.

5. A churn having in combination a stationary support, a receptacle carriage spaced away from said support and having a receptacle seat and an opposed clamping screw, a pair of spring bars disposed apart across the space between the support and carriage and each having one end rigidly fastened to said support and its opposite end rigidly fastened to said carriage, and a receptacle adapted to be removably placed on the seat of said carriage and having a cover to receive the pressure of said clamping screw.

6. A churn, having in combination an anchorage plank adapted to be fastened to a stationary sub-support, a receptacle carriage disposed parallel with and spaced away from said plank and having a receptacle seat and an opposed clamping screw, a pair of elastic bars disposed apart and across between said plank and carriage and rigidly fastened to both to bend and vibrate in the same plane, central portions of said elastic bars coiled in the plane of vibration and in opposite directions in opposite bars, and a receptacle adapted to be seated in said carriage and having a cover to take the pressure of said clamping screw.

7. A churn having in combination a vertically reciprocable carriage consisting of a U-shaped frame the base of the frame disposed vertically a can seat mounted on the lower horizontal leg and an opposed clamping screw disposed vertically through a terminal knob on the upper horizontal leg, a

can adapted to be removably placed on said seat and having a beaded rim and a cover having an annular groove to receive said beaded rim and a socket to take the point of said clamping screw, and a vertically vibratory support connected to said carriage.

8. In a vertically reciprocating churn, an elastically-adjustable and vertically-vibratory support, comprising a vertically disposed elastic arm fastened rigidly at one end to said base to vibrate in a vertical plane, an elastic bar bent intermediately to dispose its adjacent end portions at right angles and hinged at its bend to said base and one arm disposed horizontally therefrom to vibrate in the same vertical plane as the first mentioned elastic arm and its opposite angularly disposed arm having a terminal slot or fork, a threaded rod fastened to said base and disposed horizontally through said terminal fork placed between nuts mounted on said rod, and a receptacle carriage fastened to the vibrative ends of said horizontally disposed elastic arms.

9. A churn, having in combination a stationary support, a pair of elastic bars each having a bent end rigidly fastened to said support and the bars disposed apart thereon to vibrate in the same plane, an adjustable fastening to change the angle of attachment of the bent end of one of said elastic bars to said support to modify the elastic force of said bar, a clamping carriage fastened to the vibrative ends of said elastic bars, and a receptacle adapted to be removably clamped in said carriage.

In testimony whereof I have affixed my signature in presence of two witnesses.

CHARLES A. McCANN.

Witnesses:

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F. M. CARTETTER.