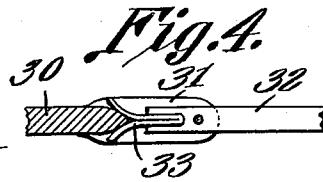
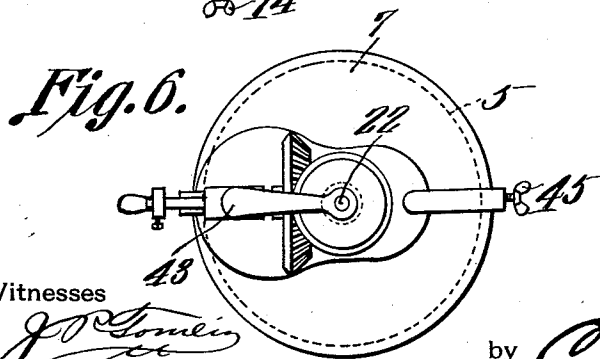
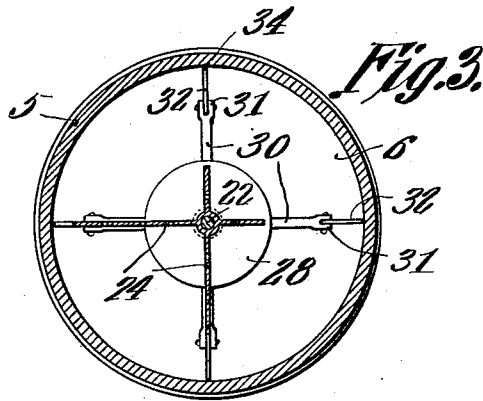
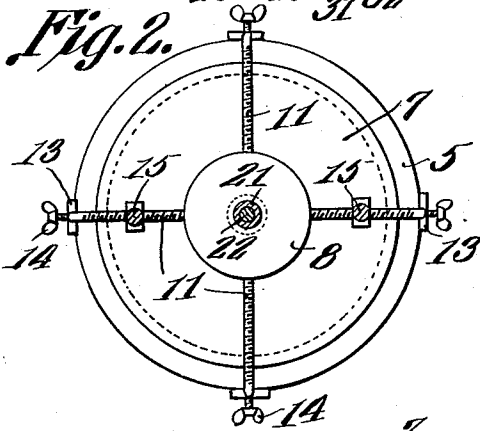
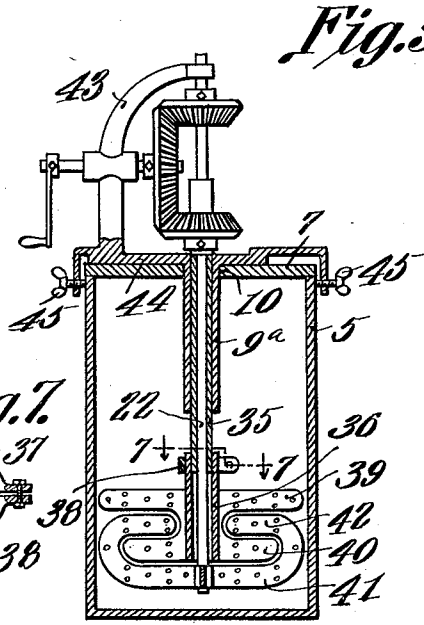
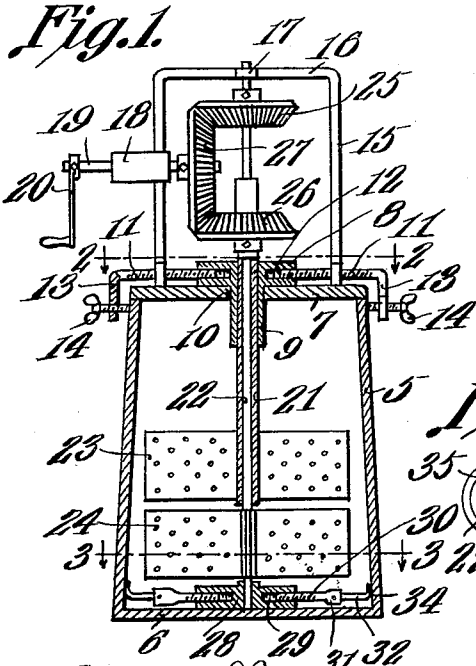


W. B. WOODRUFF.
 CHURN.
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1,007,169.

Patented Oct. 31, 1911.



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UNITED STATES PATENT OFFICE.

WILLIS B. WOODRUFF, OF CADIZ, KENTUCKY.

CHURN.

1,007,169.

Specification of Letters Patent.

Patented Oct. 31, 1911.

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To all whom it may concern:

Be it known that I, WILLIS B. WOODRUFF, a citizen of the United States, residing at Cadiz, in the county of Trigg and State of Kentucky, have invented a new and useful Churn, of which the following is a specification.

It is the object of the present invention to provide an improved churn of that type embodying a rotary dasher and one aim of the invention is to provide a dasher and operating means which will be applicable to any ordinary churn body without alteration of the body.

A further aim of the invention is to so construct the mechanism embodying the present invention that it may be applied to a relatively shallow or relatively deep churn body or may have its dashers adjusted vertically as desired.

In the accompanying drawings: Figure 1 is a vertical sectional view through a portion of the mechanism embodying the present invention and mounted in the body. Fig. 2 is a horizontal section on the line 2—2 of Fig. 1. Fig. 3 is a similar view on the line 3—3 of Fig. 1. Fig. 4 is a detail view partly in elevation and partly in section illustrating a portion of one of the members for centering the lower bearing of the churn dasher operating mechanism in the body of the churn. Fig. 5 is a view similar to Fig. 1 illustrating a slight modification of the invention. Fig. 6 is a plan view of the mechanism shown in Fig. 5. Fig. 7 is a sectional view on the line 7—7 of Fig. 5.

In the drawings, the churn body is indicated by the numeral 5, the bottom thereof being indicated by the numeral 6 and the top by the numeral 7, this top being removable and being the ordinary top provided in connection with the body. The body 5 may be of any ordinary form and of any ordinary material and consequently it need not be further described.

One of the bearings of the churn dasher operating mechanism is illustrated as embodying a head 8 having a depending sleeve 9 which fits through the opening 10 usually found in churn body tops similar to the one shown in the drawings. Arms 11 are adjustably threaded into bores 12 formed radially in the head 8 and at their outer ends these arms are turned downwardly substan-

tially at right angles as at 13 and have threaded through them clamping screws 14 which may be brought into clamping engagement with the upper end of the churn body 5 for the purpose of holding the top 7 in proper position thereon and against displacement. In Fig. 2 of the drawings these arms are illustrated as four in number although a less number may be employed if found desirable. In any event, it is preferable that two of the arms be diametrically oppositely located and that these arms extend loosely through the ends of the spaced portions 15 of an inverted U-shaped bracket 16 having in its connecting portion a bearing 17 for the upper end of one of the dasher shafts to be presently specifically described. One of the portions 15 of the bracket is formed with a bearing indicated by the numeral 18 and in this bearing is journaled a shaft 19 operated by means of a crank handle 20. This shaft is the operating shaft of the mechanism and will be presently more specifically referred to.

One of the dasher shafts is indicated by the numeral 21 and is hollow and rotatably receives the other dasher shaft indicated by the numeral 22. Shaft 21 at its lower end carries radial dasher blades 23 and the shaft 22 at its lower end carries similar blades. It is desirable that the two shafts be driven in opposite directions and for this purpose a bevel gear 25 is secured upon the shaft 22 near the upper end thereof and a similar gear 26 is secured upon the sleeve shaft 21 near its upper end and these two gears are in mesh with a bevel gear 27 upon the inner end of the operating shaft 19. It will now be readily understood that rotation of the shaft 19 will serve to rotate the two shafts 21 and 22 in opposite directions.

In churn structures in which the dasher mechanism is built into the body or the body is placed upon the market together with the dashers and operating mechanism therefor, a bearing is formed or provided in the bottom of the body to receive the lower end of the dasher shaft corresponding to the shaft 22 above referred to. However, inasmuch as the present invention does not contemplate the employment of any special form of body and the dashers and their operating mechanism are to be placed upon the market for application within any ordinary churn body, it is expedient that some means

be provided for holding the lower end of the shaft 22 centered with relation to the body. The means just referred to includes a head which is indicated by the numeral 28 and is formed with radial bores 29 which are threaded and adjustably receive arms 30 which of course project radially from the head. One of these arms is clearly illustrated in Fig. 4 of the drawings, and at its outer end is bifurcated as at 31 and has pivoted in its bifurcation the inner end of a finger 32 carrying a V-shaped leaf spring 33 the diverging portions of which straddle the end of the arm between the bifurcations 31. The end of each finger 32 is preferably curved upwardly as at 34 and the fingers are designed to frictionally engage with the inner surface of the wall 5 of the churn body when the bearing is lowered into position in the body. This construction is particularly well adapted for application to a churn body which is of less diameter at its top than at its bottom, the springs 33 permitting the fingers to yield with an upward or downward swing when the bearing is inserted into or removed from the body but tending normally to hold them in substantially horizontal position in which position they will be in alinement with the respective arms 30 and will engage with the wall of the churn body and hold the head 28 axially centered with respect to the body, and also with respect to the sleeve 9 in which is journaled the shaft 21 and the shaft 22.

In the form of the invention shown in Figs. 5, 6 and 7 of the drawings, the lower bearing of the mechanism is dispensed with and in order to hold the dasher shafts properly centered in the churn body, the sleeve 9, indicated in the said Figs. 5, 6 and 7 by the numeral 9^a, is considerably lengthened so that it will embrace the shaft 21 throughout a greater portion of its length than in Fig. 1 of the drawings. Also, in this latter form of the invention, the sleeve shaft 21 is made up of a section 35 and a section 36, the latter being fitted upon the former at the lower end thereof and being split as at 37. A clamp collar 38 is fitted upon the upper end of the section 36 of the sleeve shaft and is to be tightened around the same whereby to clamp the upper end of this section of the shaft to the lower end of the section 35 thereof. One of the sets of dasher blades, in this form of the invention, is carried by the section 36 of the sleeve shaft and each of the blades of this set comprises vertically spaced arms the lower one of which is indicated by the numeral 39 and the upper one by the numeral 40. At the lower end of the shaft 22, there is another set of dasher blades each of which is in the form of a flat arm 41 which at its inner end extends beneath the arm 39 or in other words beneath the horizontal plane in which the

lower edges of the said arms 39 are located, and is bent upwardly and around the ends of these arms 39 and to project between these arms and the arms 40 as clearly shown in Fig. 5 of the drawings, and as indicated by the numeral 42. From the above it will be readily understood that the section 36 of the sleeve shaft may be adjusted upon the section 35 whereby to elevate the dasher blades comprising the arms 39 and 40 and that also, the shaft 22 is vertically adjustable whereby to correspondingly adjust the dasher blades 41. In this form of the invention the bearing 16 is replaced by a single bearing arm 43 in which the upper end of the shaft 22 and the operating shaft 19 are journaled, this arm upstanding from a base plate 44 secured by suitable clamp screws 45 upon the upper end of the churn body and the top therefor.

What is claimed is:—

1. In a churn, a body, a bearing comprising a head, arms adjustably carried by the head, fingers pivoted to the ends of the arms and engaging at their extremities with the wall of the body, a shaft journaled at its lower end in the head of the bearing, a dasher upon the shaft, and means for rotating the shaft.

2. In a churn, a body, a bearing comprising a head, arms carried by the head, spring pressed fingers pivoted to the ends of the arms and engaging at their extremities with the wall of the body, a shaft journaled at its lower end in the head of the bearing, a dasher upon the shaft, and means for rotating the shaft.

3. In a churn, a body, a bearing comprising a head, arms adjustably carried by the head, fingers pivoted to the ends of the arms for vertical swinging movement and engaging at their extremities with the wall of the body, a shaft journaled at its lower end in the head of the bearing, a dasher upon the shaft, and means for rotating the shaft.

4. In a churn, a body, a bearing comprising a head, arms adjustably carried by the head, fingers pivoted to the ends of the arms and engaging at their extremities with the wall of the body, springs normally holding the fingers in position for such engagement, a shaft journaled at its lower end in the head of the bearing, a dasher upon the shaft, and means for rotating the shaft.

5. In a churn, a body, a bearing comprising a head held upon the top of the body and having a depending sleeve extending into the body through the said top thereof, a bracket arm upstanding from the head and formed at its upper end with a bearing, a sleeve shaft journaled in the sleeve of the bearing head, a gear at the upper end of the sleeve shaft, a shaft journaled in the sleeve shaft and at its upper end in the bearing at the upper end of the bracket arm, the bracket

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arm being formed with a bearing below the first mentioned bearing thereon, a shaft journaled in the last mentioned bearing, a gear carried by the second mentioned shaft, a gear carried by the last mentioned shaft and meshing with the first mentioned gear, cooperating dashers carried at the lower ends of the two first mentioned shafts, and means for rotating the last mentioned shaft.

6. In a churn, a sleeve shaft, a shaft journaled within the sleeve shaft, means for rotating the two shafts in opposite directions, a dasher carried by the sleeve shaft and having vertically spaced arms, and a dasher carried by the other shaft at the lower end thereof and having a single arm extending beneath the lower one of the spaced arms of the first mentioned dasher and curved upwardly and then inwardly to extend between

the said spaced arms of the first mentioned dasher.

7. In a churn, a sleeve shaft comprising a relatively fixed section arranged for rotation and a section vertically adjustable thereon, a shaft journaled in the sections of the sleeve shaft, means for rotating the shafts in opposite directions, and cooperating dashers carried at corresponding ends of the two shafts, the last mentioned shaft being also vertically adjustable.

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

WILLIS B. WOODRUFF.

Witnesses:

HENRY R. LAURENCE,
A. C. BURNETT.

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