No. 727,032. PATENTED MAY 5, 1903.

N. J. TUBBS.

CHURN.

APPLICATION FILED AUG. 16, 1902.

NO MODEL.

FIG. 1.

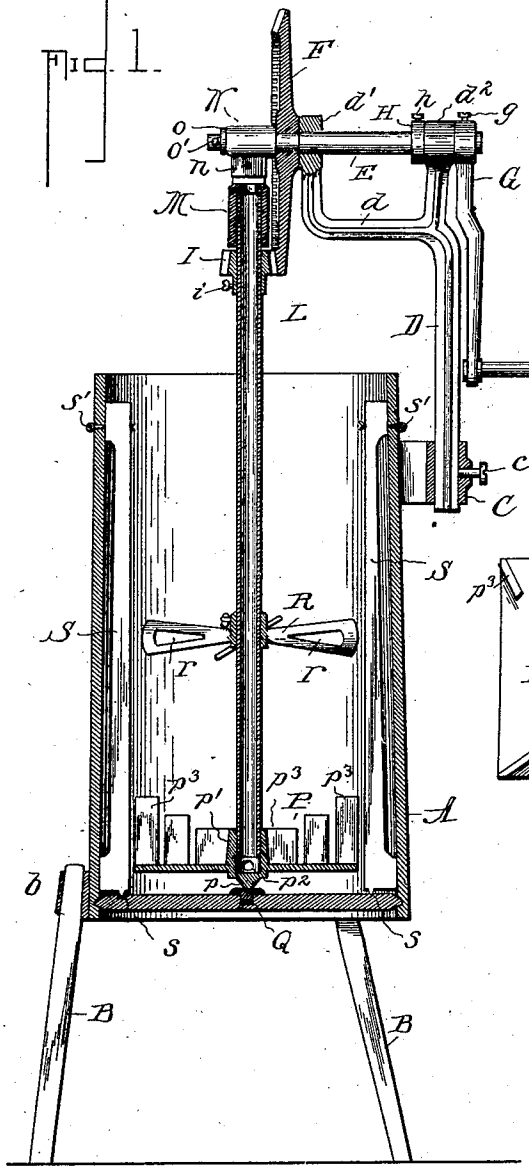


FIG. 2.

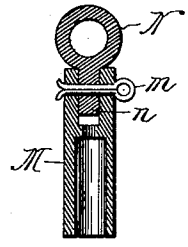


FIG. 3.

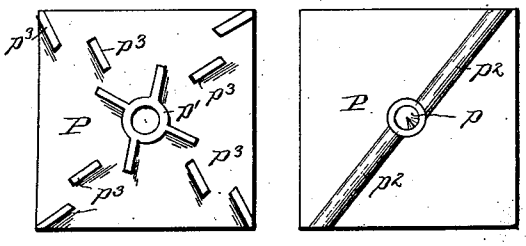
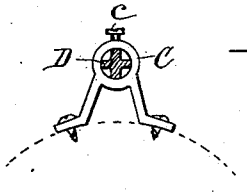


FIG. 4.



WITNESSES:

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No. 727,032. Patented May 5, 1903.

UNITED STATES PATENT OFFICE.

NELSON J. TUBBS, OF LOUISVILLE, KENTUCKY, ASSIGNOR TO TOM J. LANDRUM, OF LOUISVILLE, KENTUCKY.

CHURN.

SPECIFICATION forming part of Letters Patent No. 727,032, dated May 5, 1903.

Application filed August 16, 1902. Serial No. 119,943. (No model.)

To all whom it may concern:

Be it known that I, NELSON J. TUBBS, a citizen of the United States, and a resident of Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Churns, of which the following is a specification.

The primary object of this invention is to provide a churn which shall be simple in construction and effective in operation and in which the operating mechanism for the churn-dasher and the supporting-legs for the churn-body can be readily and conveniently taken apart and stowed within the churn-body for convenience in shipping the churn and to reduce the apparatus to a compact form for storage.

With the above objects in view the invention consists in the particular construction and arrangement of parts and their combination, all as will be hereinafter fully described in the following specification and more specifically set forth in the appended claims.

In the drawings which form a part of this specification, Figure 1 is a vertical sectional view of a churn constructed in accordance with my invention. Fig. 2 is a sectional view showing the connection between the dasher-rod and the supporting-frame for the operating mechanism. Fig. 3 is a detail view of the lower dasher. Fig. 4 is a detail view of the supporting-bracket for the standard.

Referring to said drawings, A designates the churn-body, which is preferably cylindrical in shape and is constructed of wood in order that the fixtures hereinafter described may be secured thereto by ordinary wood-screws; but, if desired, the said churn-body may be made of metal and the fixtures riveted thereto. This churn-body is supported directly upon short legs B, the upper ends of said legs fitting into sockets *b*, secured to the lower end of the churn-body, and the socket-openings are disposed at an angle, so that the supporting-legs will spread, as shown. By providing the sockets and connecting the supporting-legs directly thereto the said legs may be readily removed and stored within the churn-body.

Secured upon one side of the churn-body A, near the upper end thereof, is a casting C, provided with a vertical opening which is adapted to receive the lower end of the standard D of the frame which supports the operating mechanism of the churn. The said casting is provided with a set-screw *c*, so that the supporting-frame can be readily adjusted to any desired height and securely held. The supporting-frame consists of the standard D, a horizontal arm *d*, and vertical members *d'* *d*², extending upwardly from said arm at the ends thereof, the said vertical members providing bearings for the driving-shaft E. Upon the outer end of this driving-shaft is secured a crank-handle G by means of a set-screw *g*, the collar of said crank-shaft bearing against one side of the shaft-bearing *d*², while a collar H on the shaft bears against the other side of said shaft-bearing, the collar H being provided with a set-screw *h*. By this arrangement the shaft may be adjusted longitudinally to locate the dasher-rod in a true vertical position, the said dasher-rod being supported by the frame in the manner hereinafter described.

Mounted upon the shaft E and bearing against the outer side of the shaft-bearing *d'* is a large bevel gear-wheel F, in mesh with a pinion I on the hollow dasher-rod L, which is adapted to revolve within the churn-body and carries the dashers hereinafter particularly described. The upper end of the dasher-rod is supported in a socket M, having a bifurcated upper end, which receives a flat projection *n* on a sleeve N, loosely mounted on the inner end of the driving-shaft E, the said sleeve bearing at one end against the gear-wheel F and at the other end against a washer *o*, held on the shaft by a cotter-pin *o'*. It will be here noted that the flat portion *n* does not project from the center of the collar N, but is located nearer one end thereof than the other, this being provided for to locate the socket M at different distances from the gear-wheel F, so that different-size pinions may be mounted on the dasher-rod to mesh with said gear-wheel. To this end the said pinion I is removably mounted on the dasher-rod, being secured thereon by a set-screw *i*. It will also be noted that the socket M is pivotally connected to the projection *n* of the

sleeve N by the cotter-pin *m*, which passes through them, and that this provides a yielding joint that will obviate any strain on the parts.

The hollow dasher-rod is threaded at its lower end to receive the dasher P, which is screwed thereon, the said dasher being provided centrally with a conical bearing *p*, which is stepped in a hard-wood socket Q, located in the center of the bottom of the churn. This socket Q is driven in a hole formed in the center of the bottom of the churn and when worn can be readily replaced by another. The dasher P consists of a square plate having centrally a threaded hub *p'*, by which it is screwed upon the lower end of the dasher-rod, the lower end of said hub forming the conical bearing hereinbefore referred to. Extending across the under side of the plate or dasher P from the lower end of the hub *p'* are hollow ribs p^2, the dasher-rod terminating above said ribs, so that air may pass from said dasher-rod into said ribs, the latter opening out at the outer end of the plate or dasher, so that when the dasher is revolved rapidly the air will be drawn down the dasher-rod and discharged from the hollow ribs by centrifugal force. The dasher P is provided on its upper side with a number of vertically-projecting paddles p^3 of different lengths and disposed irregularly, as shown, the short paddles at the inner part of the dasher being formed integral with the hub *p'*. The particular arrangement of the paddles on the upper side of the plate and the arrangement of the hollow ribs of the under side thereof provides a suction which will draw the air down the hollow dasher-rod and discharge it into the body of milk or cream, so as to thoroughly aerate the same, the air entering the upper end of the dasher-rod through the opening at the upper end of the socket M.

Above the dasher P is located a dasher R, having inclined blades projecting from a hub, and in order that a dasher of this character may be made more effective in operation I provide the blades with openings *r*. These openings serve to form additional currents, and consequently agitate the cream to a greater extent than a solid blade.

At opposite sides of the body of the churn are arranged vertical plates or breakers S, the lower ends of which are provided with points or pins *s*, which enter the bottom of the churn, while the upper ends are provided with holes which register with holes in the sides of the churn and receive cotter-pins *s'*, by which the said breakers are held in place. The inner edge of these breakers are cut away, as shown, to form a vertical opening adjoining the sides of the churn.

The operation of the churn will be readily understood, and in practical use I have found that a revolving dasher-rod provided with dashers constructed as herein shown and described produces a churn in which the churning of the milk and cream is greatly facilitated. The changeable gear is provided so that a more rapid motion may be imparted to the dasher-rod in churning sweet cream and milk, while a slower speed may be provided for in churning sour cream and milk, it being understood that one required a faster motion than the other.

By constructing the different parts of the churn as herein shown and described the legs can be removed and placed in the churn-body and the parts of the operating mechanism all separated and placed in the churn-body also. It will also be observed that the churn-body or barrel is firmly supported at the required height and that the frame which supports the driving mechanism is connected to the upper part of the barrel, whereby the construction of the churn is considerably cheapened.

Having thus described my invention, I claim—

1. In a churn, the combination with the barrel and vertical dasher-rod, of a socket secured to the upper end of the barrel, a frame having a standard secured in said socket and providing bearings for a horizontal shaft, a gear-wheel on the inner end of said shaft in mesh with a pinion on the dasher-rod, a sleeve on the shaft having a depending flat portion, and a socket having a bifurcated upper end pivotally connected to the projecting portion of the sleeve, substantially as shown and described.

2. In a churn, the combination with the barrel and dasher-rod, of a horizontal driving-shaft supported in a suitable frame and carrying a gear-wheel in mesh with a pinion on the dasher-rod, a sleeve on the end of the drive-shaft having a projecting portion, and a socket pivotally connected to said depending portion of the sleeve, the said socket receiving the upper end of the dasher-rod, substantially as shown and described.

3. In a churn, the combination with the barrel and dasher-rod, of a supporting-frame providing vertical bearings, a drive-shaft mounted in said bearings, a crank-handle adjustably secured to the shaft on one side of a bearing, and a collar adjustably secured to the shaft on the other side of said bearing; together with a sleeve having a projecting portion nearer one end than the other, a socket pivotally connected to said projecting portion, a removable pinion on the dasher-rod, and a gear-wheel on the drive-shaft adapted to mesh with the pinion, substantially as shown and for the purpose set forth.

4. In a churn, the combination with the barrel and dasher-rod, of sockets secured to the lower end of the barrel and to one side of the upper end thereof, supporting-legs adapted to engage the lower sockets, and a supporting-frame for the driving mechanism removably connected to the upper socket; together with the drive-shaft supported in the frame, a sleeve on the inner end of the shaft, and a

socket pivotally connected to said sleeve, the said socket receiving the upper end of the dasher-rod, substantially as shown and described.

5. In a churn, the combination with the barrel and hollow dasher-rod, of a dasher mounted on the lower end of the dasher-rod and consisting of a plate having a hollow hub in which the dasher-rod is stepped, a series of vertical plates or paddles arranged around the hub, a series of vertical plates or paddles at the outer ends of the plate, and an intermediate series of vertical plates or paddles, the latter being disposed out of line with the others to leave spaces between the said plates or paddles; together with hollow ribs or tubes extending across the under side of the plate from the hollow hub.

6. In a churn, the combination with the hollow dasher-rod of a dasher consisting of a plate having a hollow hub receiving the lower end of the dasher-rod, a conical bearing at the lower end of the hub, vertical plates or paddles arranged around the hub, a second series of vertical plates or paddles at the outer ends of the plate, and an intermediate series of vertical plates or paddles disposed out of line with the aforesaid plates or paddles, the several series of plates being of different heights, and hollow ribs extending across the under side of the plate, said ribs communicating with the hollow dasher-rod, substantially as shown and described.

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

NELSON J. TUBBS.

Witnesses:
C. A. RODMAN,
GEO. F. STAPLES.