

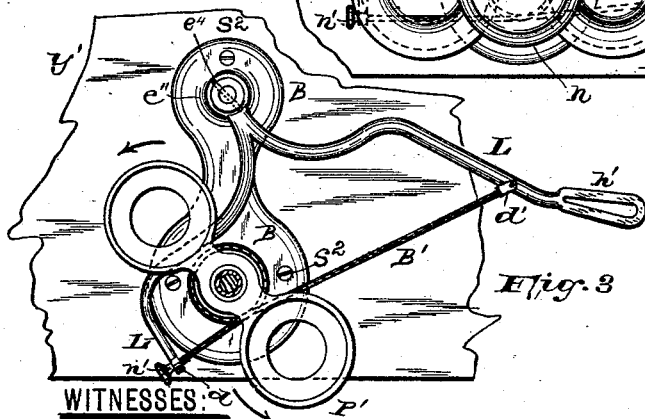
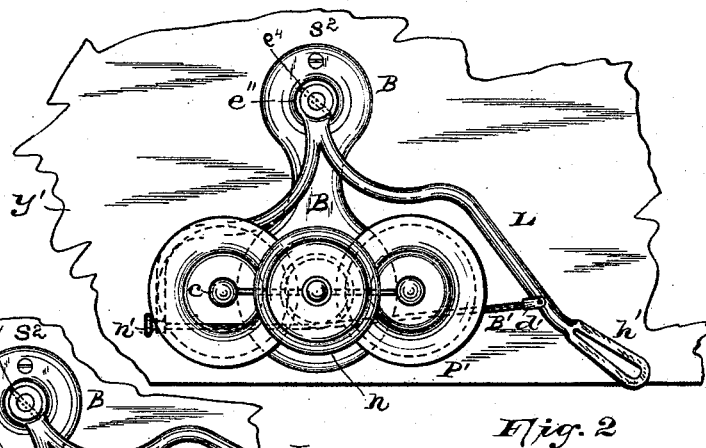
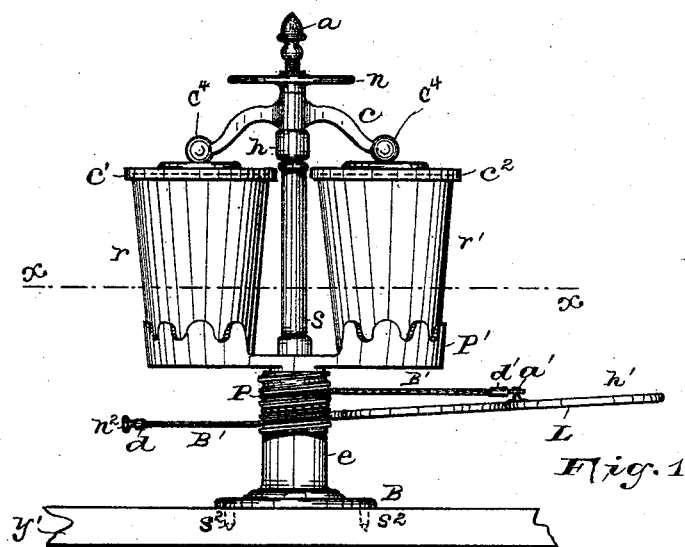
(No Model.)

2 Sheets—Sheet 1.

W. BRUEN & H. C. HUNT.  
MACHINE FOR MIXING LIQUIDS.

No. 455,479.

Patented July 7, 1891.



WITNESSES:

Wm. H. Campfield, Jr.  
F. A. Phelps Jr.

INVENTOR

William Bruen  
and  
Henry C. Hunt.  
by Fred C. Graentzel, Atty.

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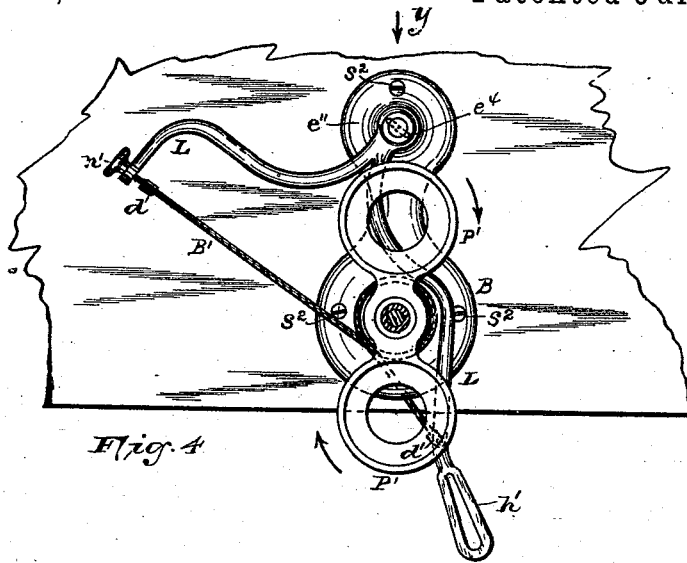


Fig. 4

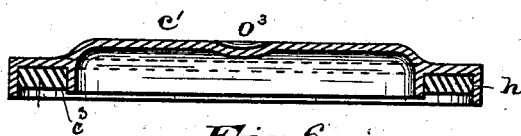


Fig. 6

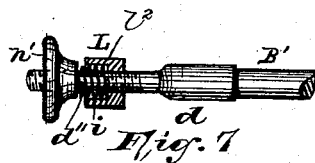


Fig. 7

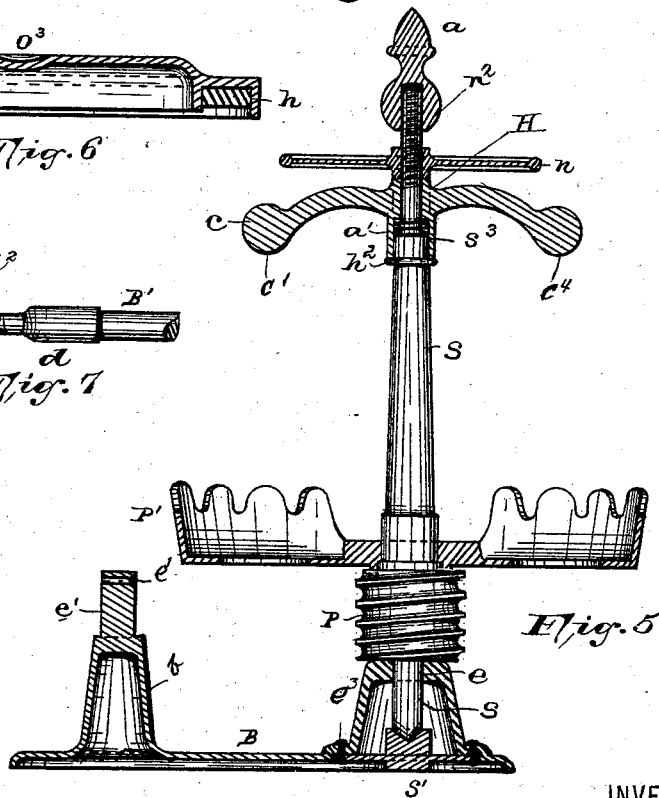


Fig. 5

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# UNITED STATES PATENT OFFICE.

WILLIAM BRUEN AND HENRY C. HUNT, OF NEWARK, NEW JERSEY.

## MACHINE FOR MIXING LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 455,479, dated July 7, 1891.

Application filed September 16, 1890. Serial No. 365,148. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM BRUEN and HENRY C. HUNT, of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Machinery for Stirring, Beating, or Mixing Liquids of Any Kind, for which we desire to secure Letters Patent of the United States of America; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

15 The present invention relates to improvements in churns, and has reference more particularly to that class of churns for mixing drinks, the object being to provide a simple and efficient device for operating the machine which shall be noiseless in its operation as well as ornamental.

The invention consists in certain details of construction and combination, of parts, as will hereinafter be fully described, and finally embodied in the clauses of the claim.

25 In the accompanying two sheets of drawings, in which is illustrated our invention, Figure 1 is a front elevation of our improved machine. Fig. 2 is a top view of the same. Figs. 3 and 4 are horizontal sections, taken on line *x* in Fig. 1, of the device in two different operative positions. Fig. 5 is an enlarged vertical section taken through Fig. 4 on a line through said figure in the direction of arrow *y*. Fig. 6 is a vertical section of a cover adapted to be used on receptacles employed in the machine for mixing or churning a liquid, and Fig. 7 is a detail view of the belt fastener and tightener.

35 Similar letters of reference are employed to indicate corresponding parts in each of the several views.

In said views, *y'* represents any suitable base, such as a counter, to which is secured by means of suitable pins or screws *s*<sup>2</sup> the base or bed plate B of the machine, preferably of cast metal, being provided at the one end thereof with a hollow upright or standard *e*, which is preferably secured to the bed-plate B by means of screws or rivets *e*<sup>3</sup>, as shown more especially in Fig. 5. Within this hollow upright and formed upon the bed-

plate is a pedestal-bearing *s'*, upon which rotates the lower end of a vertical shaft *s*, said shaft being held in its vertical position by passing through a perforation in the top of the hollow upright or standard, within which perforation it is free to rotate. Resting directly upon the upper surface *e*<sup>2</sup> of the upright *e* is a spirally-grooved pulley P, firmly secured to the shaft *s*, as shown, and secured upon its upper end is a receptacle-receiving platform P', as clearly illustrated in Figs. 1 and 5. This platform is preferably cast separate from the spirally-grooved pulley and is secured thereto in any convenient manner, so that it will rotate with said pulley and shaft. At the opposite end of the bed-plate B is formed a second upright or standard *b*, provided with an upwardly-projecting pin or pivot *e'*, on which is pivotally arranged a hand-lever L, secured thereon by means of a short pin *e*<sup>4</sup>, passing through a hole *e*<sup>5</sup> in the pin *e'*, which prevents any displacement of the lever while operating the machine. Said lever is bifurcated, comprising the two arms *l* and *l'*, which extend on opposite sides of the shaft *s*, and an ordinary belt B', which is passed in two or three coils around the spiral pulley P, is secured to the arms *l* and *l'* of the lever L by means of the fastening devices *d* and *d'*, respectively. As will be seen from the several figures, said platform P' is provided with any desirable number of receiving-compartments P<sup>2</sup>, in which can be placed the fluid-receptacles *r* and *r'*, which may be the ordinary glass tumbler when used for mixing drinks, or they may be of any suitable construction and size when the device is used as a churn. Upon each of said liquid-receptacles are placed suitable covers *c'* and *c*<sup>2</sup>, which are provided with packing-rings *c*<sup>3</sup>, as clearly shown in Fig. 6, which rings are arranged in an annular recessed portion *h* of the cover, as will be evident from said figure.

When the receptacles or glasses *r* and *r'* have been placed in position upon the platform P', the covers *c'* and *c*<sup>2</sup> are arranged upon the receptacles so that the packing-ring *c*<sup>3</sup> comes in contact with the surrounding edge of the open part of the receptacle.

Upon the upper end *s*<sup>3</sup> of the shaft *s* and sliding upon the part *s*<sup>4</sup>, which is of smaller diameter than the part *s*<sup>3</sup>, we have arranged

a cross-bar *c*, provided with a hub *H*, which is fitted upon and freely slides on the part *s*<sup>1</sup> of the shaft *s*, whereby said cross-bar is capable of a vertical as well as a rotary movement upon the shaft *s*. On the lower side of the cross-bar the hub *H* is enlarged, providing a chamber *h*<sup>2</sup>, within which has been placed an ordinary coil-spring *a'*, as will be seen from Fig. 5. When the covers *c'* and *c*<sup>2</sup> have been placed on the receptacles *r* and *r'* in position upon the platform *P'*, the ball ends *c*<sup>1</sup> of the cross-bar *c* are placed within a corresponding depression *o* in the center of each cover *c'* and *c*<sup>2</sup>, and the cross-bar is then firmly tightened down upon the covers by means of a screw *n*, which can be made to move up and down upon the threaded portion *n*<sup>2</sup> on the part *s*<sup>3</sup> of the shaft *s*. This threaded portion of the shaft is also provided with a nut *a*, which limits the upward movement of the screw *n*, as will be evident. Thus by means of this screw and the cross-bar *c* the flexible packing-rings in the covers are tightly secured down upon the upper edges of the liquid-receptacles, thereby securely holding them in position on the platform *P'* and preventing any leakage from the liquid-receptacles when they oscillate about the shaft *s*.

From Figs. 1, 2, *et seq.*, it will be seen that the arm *l'* of the lever *L* is provided with a handle *h'*. The belt *B'*, as has been stated in the above, is fastened to the arms *l* and *l'* by means of the fastening devices *d* and *d'*, respectively, the fastener *d'* being simply a small loop which hooks over a catch cast on the arm *l'*, as shown at *a'* in Fig. 1. The fastener *d* at the other end of the belt is provided with a metallic end piece *d*<sup>2</sup>, having a screw-thread *d''* passing through a chambered portion *p*<sup>2</sup> on the end of arm *l*. Within this chamber is placed a tension-spring *i*, and upon the projecting and threaded end of the metallic piece *d*<sup>2</sup> rotates an ordinary thumb-screw *n'*. Thus it will be evident that when the belt is in place around the spiral pulley on the shaft, and the end *d*<sup>2</sup> has been inserted through the perforated and chambered end of the arm *l*, the nut is screwed up, thereby bringing the proper tension on the belt *B'*. Now when the power is applied to the handle *h'* on the lever *L* said lever swings upon the pivotal post *e'* and thereby receives an oscillating and a horizontal movement. At the same time the belt operates the pulley *P*, and with it the shaft and platform *P'*, causing an oscillatory movement of the several parts.

The belt may be wound several times around the spirally-grooved pulley, thereby increasing the traction of the belt, the same working without chafing, and at the same time preventing the slipping during the sudden reversed movement of the lever *L*. The spring *i* within the chamber *p*<sup>2</sup> on the arm *l* also helps to reduce the tension on the belt *B'* while the same is suddenly reversed. Thus it will be seen that the fastening device *d* serves the double purpose of reducing the

tension while reversing the rotary motion of the machine, and also to take up any slack of the belt.

The advantages of the present form of construction are evident. By imparting an oscillatory movement to the actuating-lever the liquid-receptacles are rapidly rotated in opposite directions, which has the effect of causing the liquid in each receptacle to be whirled around first in one direction and then suddenly in the opposite direction, causing the contents to be thoroughly mixed, and when used for churning milk the globules of milk sufficiently and effectually grind against each other and liberate the cream, producing butter in a very short space of time.

Having thus described our invention, what we claim is—

1. The combination, with a bed-plate provided with a vertical shaft and a liquid-receptacle-bearing platform, of an oscillating and horizontally-moving lever arranged on a support on said bed-plate and provided with a belt which is wrapped around the shaft for causing the same and the liquid-receptacle platform to oscillate about the vertical axis of said shaft, for the purposes set forth.

2. The combination, with a bed-plate provided with a vertical shaft and a spirally-grooved pulley on said shaft and a liquid-receptacle-bearing platform, of an oscillating and horizontally-moving lever arranged on a support on said bed-plate and provided with a belt passing around said spirally-grooved pulley for causing said shaft and liquid-receptacle platform to oscillate about the vertical axis of said shaft, for the purposes set forth.

3. The combination, with a bed-plate provided with a vertical shaft and a liquid-receptacle-bearing platform, of an oscillating lever arranged on a support on said bed-plate and provided with a belt secured between arms on said lever and wrapped around the shaft, and a tension device on one end of said belt, as set forth, whereby said shaft and liquid-receptacle platform are caused to oscillate about the vertical axis of the shaft, for the purposes set forth.

4. The combination, with a bed-plate provided with a vertical shaft and a liquid-receptacle-bearing platform, of an oscillating lever arranged on a support on said bed-plate and provided with a belt secured between arms *l* and *l'* on said lever and wrapped around the shaft, said arms extending out on opposite sides of the shaft, one end of said belt being provided with a fastener *d'*, having a loop to catch over a catch on the arm *l'*, and the other end of said belt being provided with a fastener *d*, having a screw-threaded end piece *d*<sup>2</sup>, passing through a chambered portion *p*<sup>2</sup> on said arm *l*, and being provided with a tension-spring, whereby said shaft and liquid-receptacle platform are caused to oscillate about the vertical axis of the shaft, as and for the purposes set forth.

5. In a device for mixing liquids, the herein-described means for holding the covers on the liquid-receptacles in place, consisting of a cross-bar provided with ball ends adapted to be forced into indentations in the covers, said cross-bar being loosely arranged on the shaft of the device and being provided with a chambered hub having a spring  $h^2$  therein, and a screw  $n$  and nut  $a$  on said shaft, as and for the purposes set forth.

6. The combination, with shaft  $s$ , rotating in a hollow standard on a bearing  $s'$ , said shaft provided with a liquid receptacle-bearing platform and a spirally-grooved pulley, of a pivoted lever on standard  $b$ , comprising two arms  $l$  and  $l'$ , extending on opposite sides of said shaft, and a belt encircling said pulley, having its ends secured by fastening devices  $d$  and  $d'$  to said arms  $l$  and  $l'$ , as and for the purposes set forth.

7. The combination, with the shaft and liquid-receptacle platform  $P'$ , provided with liquid-receptacles having removable covers, of a cross-bar  $c$ , provided with a chambered hub having a spring therein, said parts being arranged on said vertical shaft, and a screw working on a threaded portion on the shaft, all of said parts being arranged as and for the purposes set forth.

In testimony that we claim the invention set forth above we have hereunto set our hands this 11th day of September, 1890.

WILLIAM BRUEN.  
HENRY C. HUNT.

Witnesses:

FREDK. C. FRAENTZEL,  
WM. H. CAMFIELD.