(No Model.)

# R. J. FORCE.

## CHURN.

No. 573,400. Patented Dec. 15, 1896.

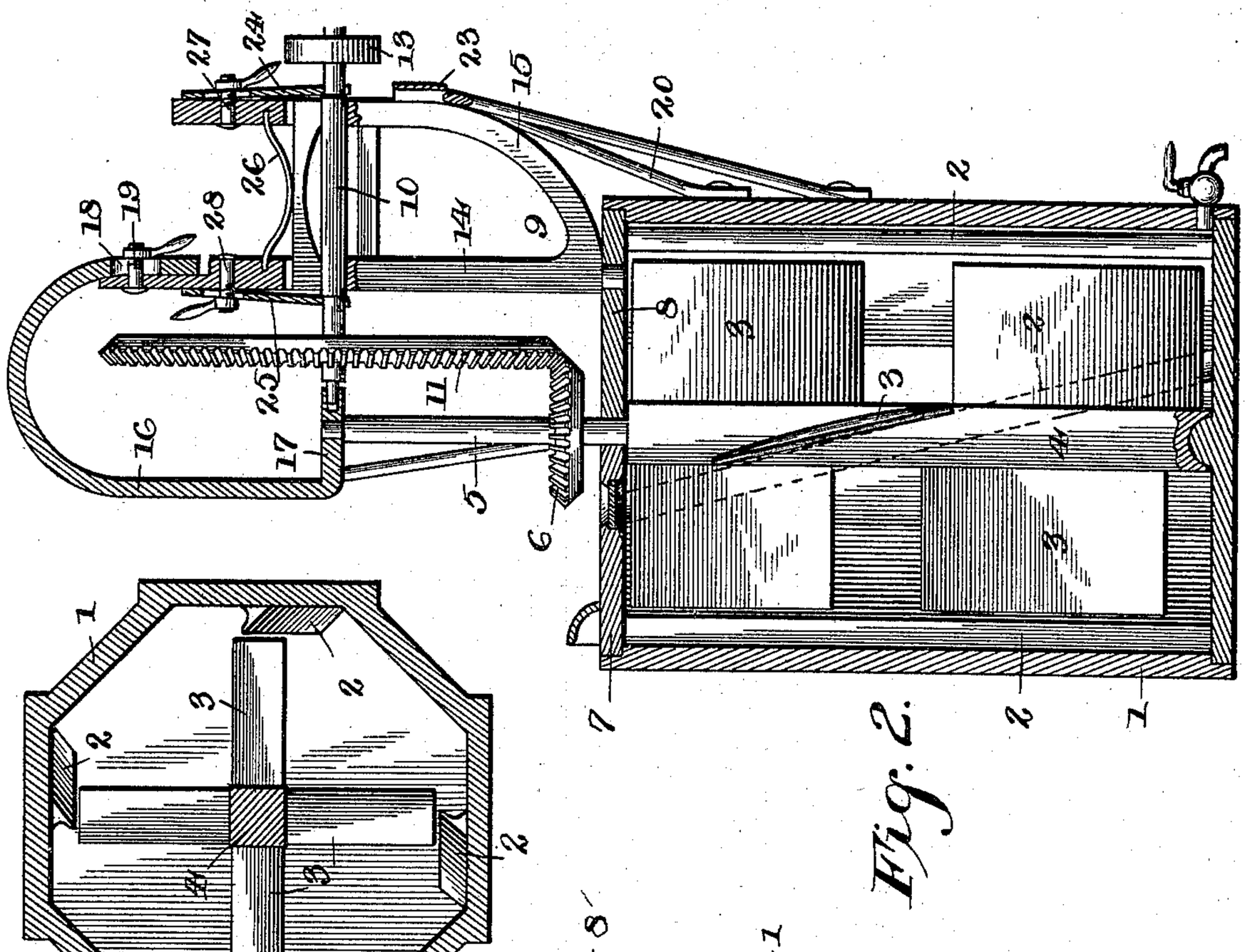


Fig. 2.




Fig. 3.

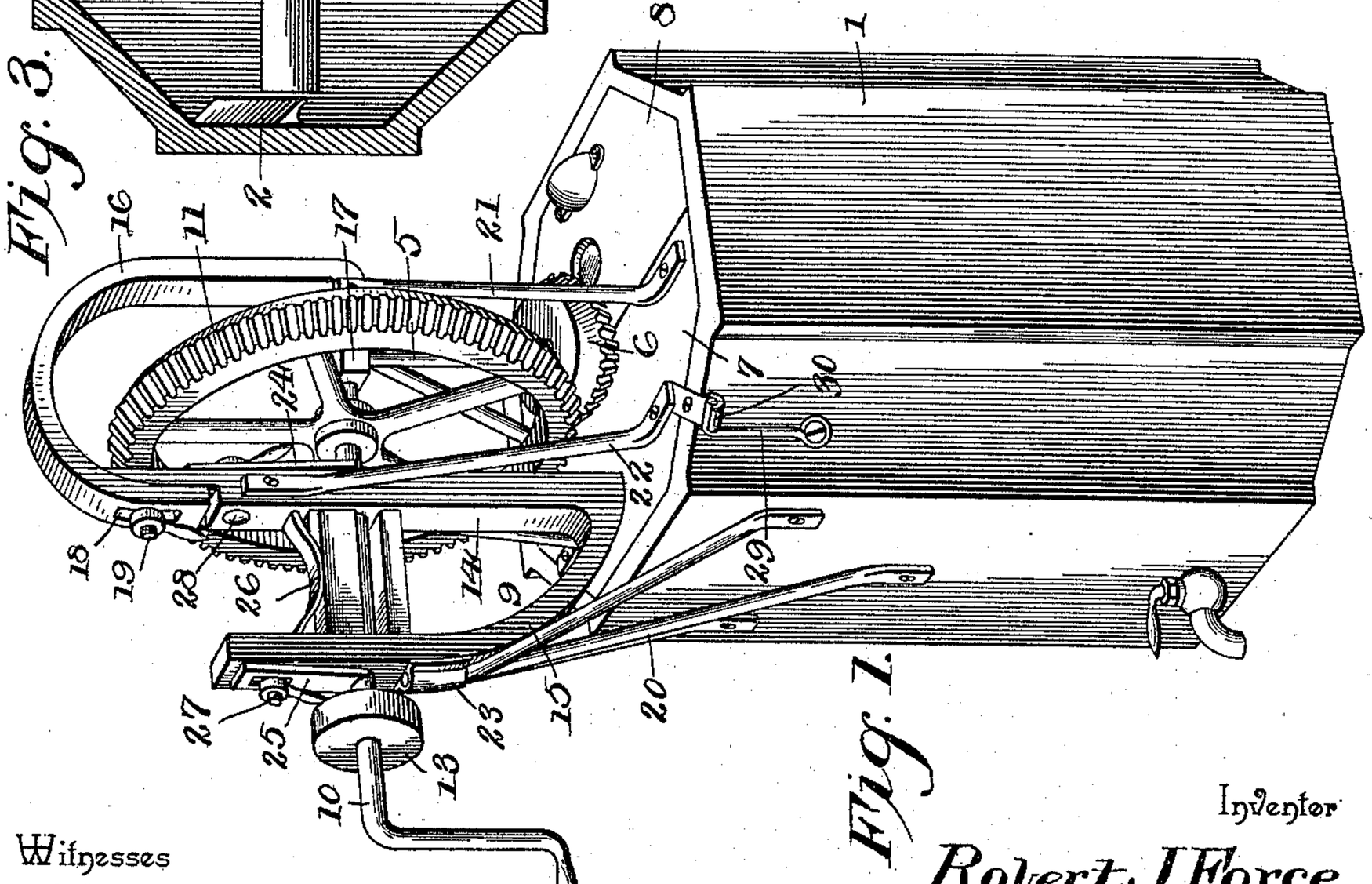


Fig. 1.

Witnesses
Chas. A. Ford.
T. J. Riley

By his Attorneys,
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Inventor
Robert J. Force,

# UNITED STATES PATENT OFFICE.

ROBERT JAMES FORCE, OF JAMISON CITY, PENNSYLVANIA.

## CHURN.

SPECIFICATION forming part of Letters Patent No. 573,400, dated December 15, 1896.

Application field November 19, 1895. Serial No. 569,414. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT JAMES FORCE, a citizen of the United States, residing at Jamison City, in the county of Columbia and State of Pennsylvania, have invented a new and useful Churn, of which the following is a specification.

The invention relates to improvements in churns.

The object of the present invention is to improve the construction of churns and to provide a simple, inexpensive, and efficient one capable of effecting a rapid production of butter and adapted to be readily handled in carrying it from one place to another.

A further object of the invention is to provide a churn in which either frictional or spur gearing may be employed and to enable the parts to be adjusted to provide the proper frictional contact of gear-wheels.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a perspective view of a churn constructed in accordance with this invention. Fig. 2 is a central vertical sectional view. Fig. 3 is a horizontal sectional view.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a churn-body, which may be constructed of any suitable material, and which may be either curved or polygonal in cross-section, and it is provided on its inner face with stationary bars or blades 2, which coöperate with blades 3 of a rotary dasher 4. The stationary blades or bars 2, which are secured to the inner faces of the sides of the churn-body, have smooth angularly-disposed faces at one side and are recessed at the other side, as shown clearly in Fig. 3 of the accompanying drawings, and they are preferably disposed at an inclination. The blades 3 of the rotary dasher are inclined, as shown, and are secured to a suitable stem, which is stepped on the bottom of the churn-body, and which is connected to or formed integral with a vertical dasher-shaft 5. The rotation of the dasher agitates the contents of the churn-body sufficiently to produce butter in a very short time, and the churn will effectively operate on a large or small quantity of cream. The dasher-shaft extends through the cover of the churn-body and carries a horizontal beveled pinion 6.

The cover of the churn-body is composed of two sections 7 and 8, which fit snugly within the upper edge of the churn-body, and which are recessed to form a central bearing-opening for the dasher-shaft.

The section 8 of the cover of the churn-body has mounted on it a bearing-bracket 9, receiving a horizontal shaft 10, which carries a beveled gear-wheel 11, adapted to mesh with the horizontal pinion of the dasher-shaft. The outer end of the horizontal shaft is provided with a crank-handle and is adapted to carry a pulley 13, and the churn may be operated either by hand or by any other suitable power. The pinion and the gear-wheel are oppositely beveled, as shown, and are provided at one side with cogs and are smooth at the other side, and they are adapted to be arranged to form either frictional or spur gearing.

The bracket is composed of inner and outer bars 14 and 15 and suitable connecting-pieces. The inner bar is straight and vertical, and the outer bar has its upper portion parallel with the inner bar and its lower portion curved inward and connected with the same at the bottom thereof. The bracket has adjustably secured to it at its inner side a supporting-bar 16, which is adapted to serve as a handle to enable the churn to be readily carried, and which is provided with an arched or curved top portion and substantially parallel sides, the outer side being provided with a horizontal arm 17, forming a bearing for the upper end of the dasher-shaft and the inner end of the horizontal shaft. The inner side of the supporting-bar 16 is slotted at 18 and receives an adjusting-screw 19, provided with a suitable thumb-nut for fastening the bar at the desired adjustment. The bar 16 may be raised or lowered to arrange the gear-wheels in proper relation to each other.

The bearing-bracket is supported by an outer brace 20 and inner braces 21 and 22. The outer brace is secured to the churn-body at one side thereof and is provided at its upper end with a tenon or projection which fits

in a suitable socket 23 of the bearing-bracket. This brace is preferably provided with three shanks or rods, forming a broad base or support. The other braces 21 and 22 are mounted on the section 8 of the cover of the churn-body and are secured, respectively, to the inner bar of the bearing-bracket and to the bottom 17 of the supporting-bar 16.

The gearing is held at the proper tension by vertical springs 24 and 25 and a substantially horizontal spring 26. The vertical springs are located at opposite sides of the bearing-bracket and are operated by adjusting-screws 27 and 28, and their lower ends engage the horizontal shaft, which is provided with suitable shoulders or grooves. The horizontal spring is suitably mounted in the bracket and exerts a downward pressure on the horizontal shaft.

One of the sections of the churn-body is provided with a transparent portion, preferably consisting of a piece of glass set into the cover and adapted to enable the operator to ascertain the condition of the contents of the churn-body without removing the cover. The section 8 of the cover of the churn is locked in position on the said body by any suitable construction of fastening devices, such as hooks 29 and eyes 30, as illustrated in the accompanying drawings; but any other form of fastening device may be used.

It will be seen that the churn is simple and comparatively inexpensive in construction, that it is capable of effecting a thorough agitation of its contents, and that it will produce butter in a very short time. It will also be apparent that it is adapted to operate effectively on a large or small quantity of cream without adjusting the dasher to suit the same.

Changes in the form, proportion, and minor details of construction may be resorted to without departing from the principle or sacrificing any advantages of the invention.

What I claim is—

1. In a churn, the combination of a churn-body, a bearing-bracket mounted thereon, a substantially U-shaped supporting-arm adjustably secured at one end to the bearing-bracket to raise and lower it and provided at its other end with a horizontal portion 17 having a vertical and a horizontal bearing, a vertical dasher-shaft having its upper end journaled in the vertical bearing, a horizontal shaft mounted on the bearing-bracket and having its inner end journaled in the horizontal bearing, and the combined spur and frictional gear-wheels reversibly mounted upon said shafts, substantially as described.

2. In a churn, the combination of a body, a dasher having a shaft, a pinion mounted on the shaft, a bearing-bracket, a horizontal shaft carrying a gear-wheel meshing with the pinion, the vertically-disposed springs mounted on the bearing-bracket and engaging the horizontal shaft and provided with adjusting devices for regulating their tension, substantially as described.

3. In a churn, the combination of a churn-body provided with a cover, a bearing-bracket mounted on the cover of the churn-body and provided at one side with a socket, a brace secured to the churn-body and projecting above the same and having a projection or tenon fitting in the socket, a substantially U-shaped supporting-arm adjustably secured at one end to the bearing-bracket capable of vertical movement thereon and provided at its other end with a horizontal portion 17, having a vertical and a horizontal bearing, a vertical dasher-shaft having its upper end journaled in the vertical bearing, a horizontal shaft mounted on the bearing-bracket and having its inner end journaled on the horizontal bearing, and gearing mounted in the shafts, substantially as described.

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

ROBERT JAMES FORCE.

Witnesses:

FREEZE QUICK,

J. B. CASEY.