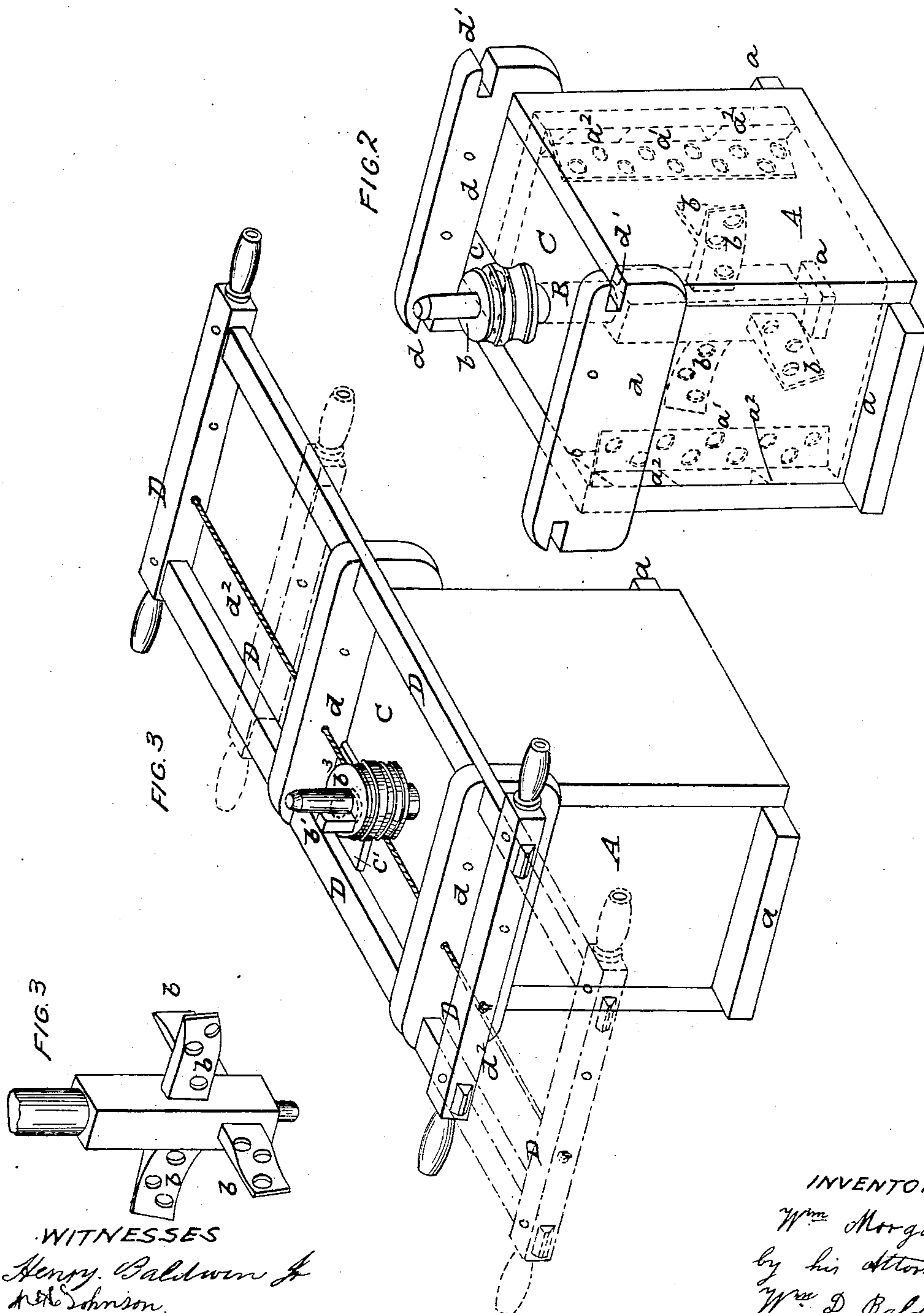


W. MORGAN.

Churn.

No. 27,559.

Patented March 20, 1860.



WITNESSES
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UNITED STATES PATENT OFFICE.

WILLIAM MORGAN, OF MIDDLEBROOK, VIRGINIA.

CHURN.

Specification of Letters Patent No. 27,559, dated March 20, 1860.

To all whom it may concern:

Be it known that I, WILLIAM MORGAN, of Middlebrook, in the county of Augusta and State of Virginia, have invented a new and useful Improvement in Churns, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 represents, in perspective, a churn embracing my improvement. Fig. 2 represents a similar view of the same, with the driving mechanism removed, in order to show more clearly the arrangement of the mechanism within the churn; which mechanism is shown in red lines, and Fig. 3 represents a similar view of the dashers and a portion of the dasher-shaft.

My invention relates to that class of churns in which a vertical dasher-shaft is alternately rotated in opposite directions; and has for its object the construction of a simple, cheap, and durable churn which shall be effective in producing the results sought to be attained, and not liable to get out of order; but which can readily be repaired when broken or deranged; and which admits of a ready removal of its parts for the purposes of cleaning the churn, removing the butter, &c. These desiderata I attain by constructing a simple rectangular box, which forms the body of the churn, and in the center of which a step is provided in which to rest the foot of the dasher-shaft, the upper end of which passes through a hole in the lid of the box. Two cross-pieces extend through the lower end of the dasher-shaft, at right angles thereto, and project on each side in such manner as to form beaters. These beaters I construct of a depth two or three times greater than their width, and set them at an angle of from five to ten degrees to the perpendicular of the dasher-shaft, and so that they all incline one way. They are also perforated with a series of holes to effect a more minute subdivision of the particles of the milk. In each corner of the box an upright perforated breaker is set in such manner that its edge is presented to the dasher-shaft from which it is removed a distance sufficient to permit the free reciprocating rotation of the beaters. A grooved pulley is keyed on the upper end of the dasher-shaft which is rotated by means of a rectangular frame which slides horizontally in guides on the upper part of

the churn-box. A cord is passed around this pulley and its ends are secured to the rectangular frame in such manner that the reciprocation of the frame imparts a rapid reciprocating rotation to the dasher.

In the accompanying drawings the body (A) of the churn is represented as constructed of a rectangular form, and provided with a ledge (a) at bottom, to increase its stability, and, if the churn be of such size as to require two persons to work it, to afford a brace against which to set their feet and thus enable them to exert their strength to greater advantage. The breakers (a') are inserted into slots in triangular strips or blocks (a²) in each corner of the box in such manner that their edges are presented to the dasher-shaft which turns in a step (a³) in the center of the bottom of the churn. The upper end of this shaft turns in a hole in the lid (C) and has a sliding pinion (b³), by which it is rotated, keyed upon it. This pinion can readily be removed from the shaft by taking out the key (b'). A shoulder may be turned upon the shaft, just below the lid in order to prevent the former from rising out of its bearings. The beaters (b) project from the lower end of the shaft (B) at a right angle thereto, and are perforated and inclined in the manner shown in the drawings. Projecting ledges (d) are secured to the top of the sides of the box, in which ledges slots (d') are cut. The rectangular sliding-frame (D) plays backward in these slots which serve as guides. The parts of this are united by pins at the corners, in the manner of an embroidery frame, and can readily be taken apart. The ends of a cord (d²) are secured to the cross-bars of the frame so as to be in line with the groove of the pulley (b³), and is passed around the pulley as often as may be requisite to produce sufficient friction to insure the rotation of the dasher.

The operation of the machine is as follows: The parts being properly arranged (as shown in Fig. 1), the churn may be filled through an opening left for that purpose, which opening may then be closed by a plug (e). The operator then seizes the handles of the sliding-frame D, and, by alternately pulling and pushing, imparts a horizontal reciprocating motion to the frame, which gives a rapid motion to the dasher-shaft causing it to rotate first in one direction and then in the other. The combined

action of the inclined, perforated beaters and the perforated breakers is such as to cause a violent agitation and thorough division of the particles of the milk, which
5 rapidly breaks up the oil globules and produces butter in a very short space of time.

If the churn be of large size it may be operated to great advantage by two persons, one standing on each side of the churn. It
10 is a fact well known that a person can exert a much greater force and continue his exertions much longer by applying his strength in the manner herein shown, than in any other known way; and this mode of opera-
15 tion, in combination with the peculiar construction of the dashers or beaters, whereby the churn can be driven with a comparatively small expenditure of power, constitutes one of the chief merits of my improve-
20 ment.

The construction of my improved churn is so simple that it can readily be built or repaired by any mechanic of ordinary intel-
ligence. The breakers, as well as the beaters
25 may be made of some hard wood, such as oak, ash, hickory &c.; and it will be seen that I can thus avoid the use of any metal whatever in the construction of my churn.

By dispensing with toothed gearing the churn can be operated with a much smaller
30 expenditure of power than if such gearing were employed.

I am aware that the dashers of churns have been alternately rotated in opposite direc-
35 tions, both by toothed and frictional gearing driven by a rotating shaft or a reciprocating lever. I am also aware that various forms of dashers and breakers have been proposed. I do not therefore, claim broadly any of the
40 above parts, but

Having thus fully described the construction and operation of my improved churn, what I claim therein as new, and desire to
secure by Letters Patent, is—

The combination of the inclined, perfo-
45 rated, dashers or beaters (*b*) and the removable, perforated breakers (*a'*) with the sliding-frame (*D*), when arranged for joint operation as described, for the purpose set
forth. 50

In testimony whereof I have hereunto subscribed my name.

WILLIAM MORGAN.

Witnesses:

C. W. McGUFFIN,
JOHN WILSON.