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J. BURGE & S. B. CORNELL.

CHURN.

APPLICATION FILED SEPT. 4, 1902.

NO MODEL.

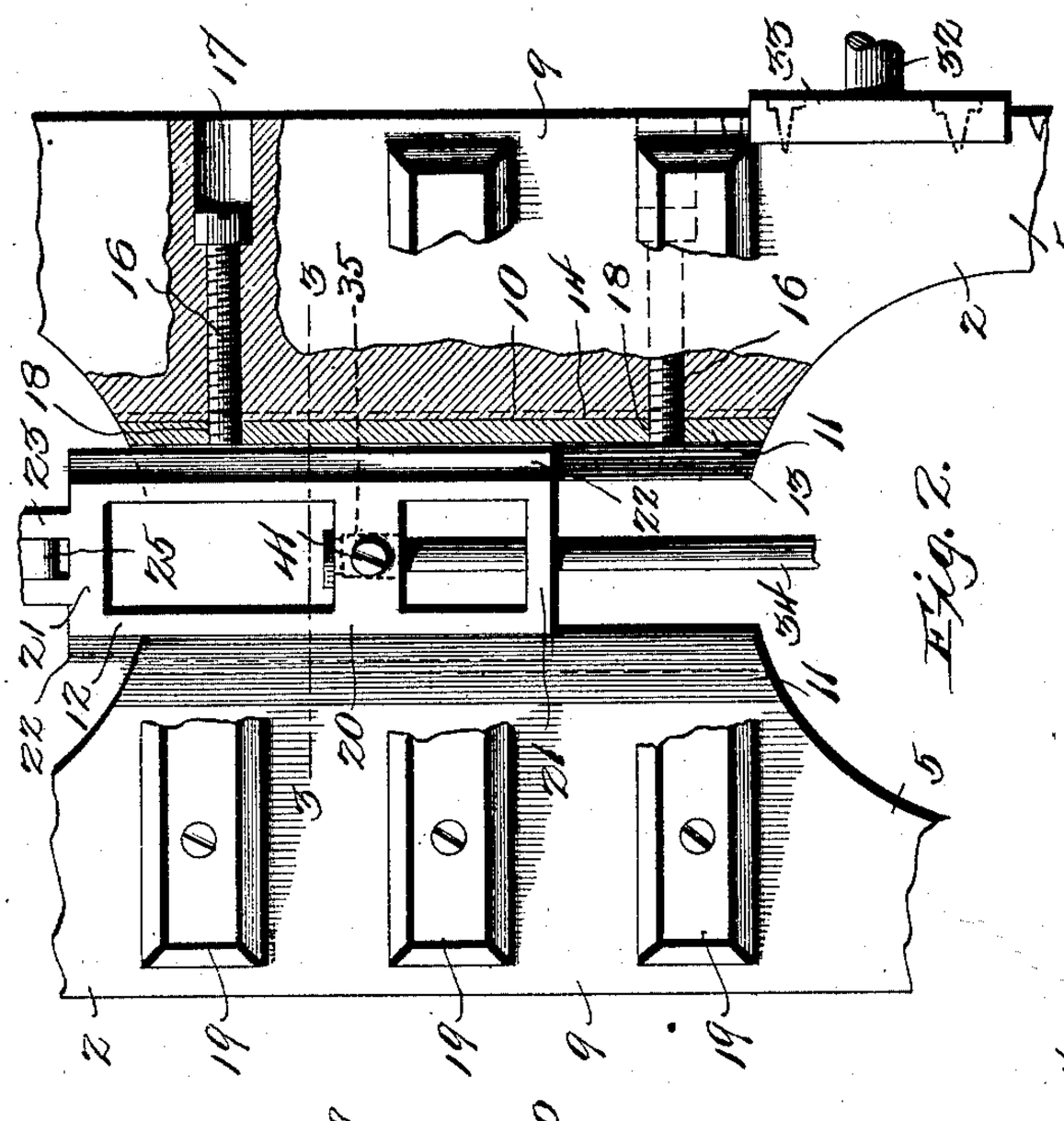

Fig. 2.

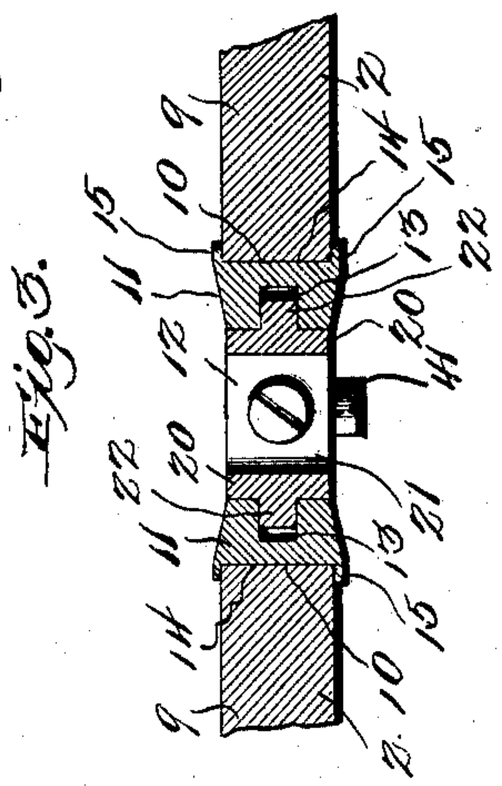

Fig. 3.

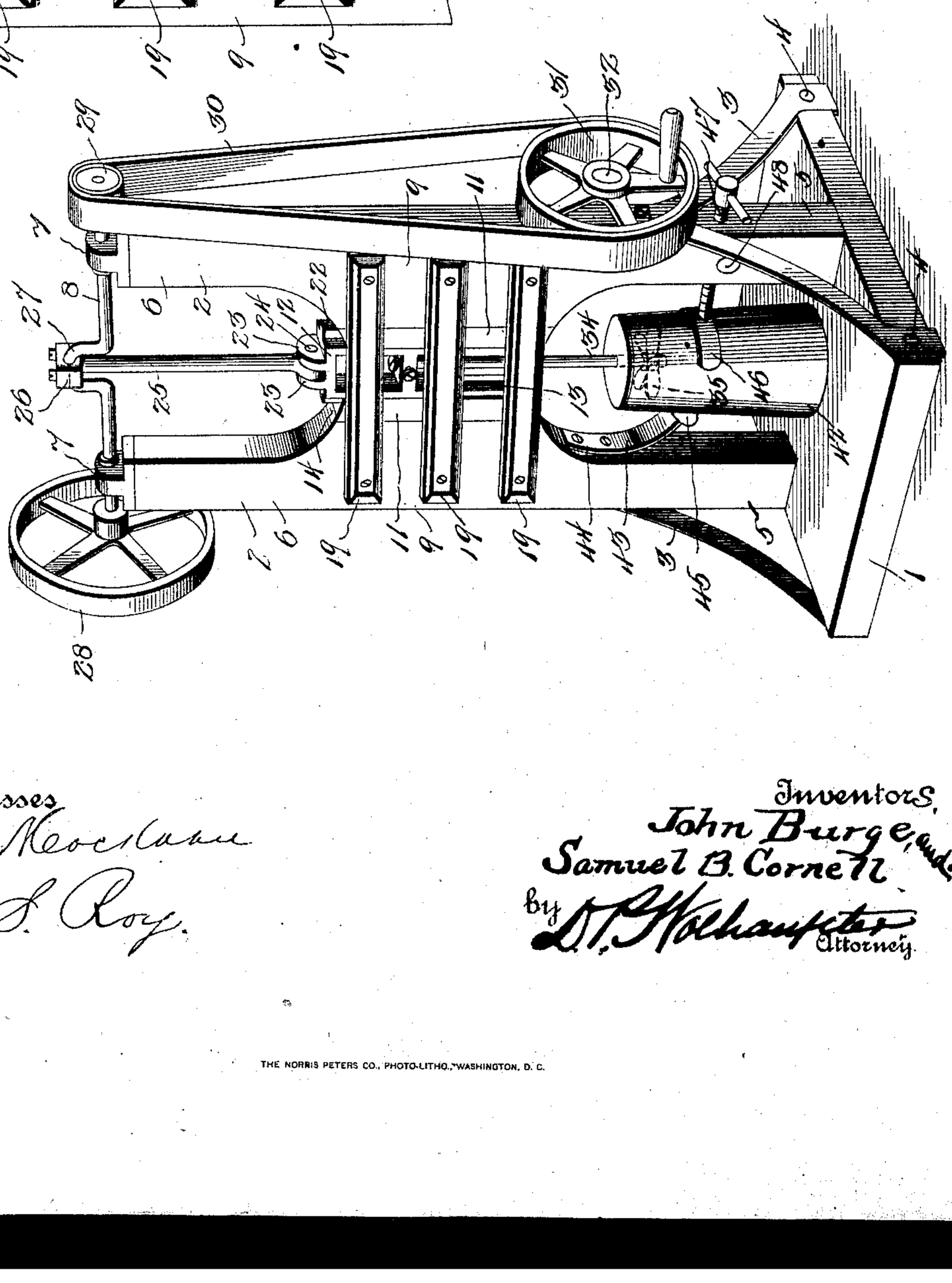

Fig. 1.

Witnesses
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UNITED STATES PATENT OFFICE.

JOHN BURGE AND SAMUEL B. CORNELL, OF SMITHFIELD, WEST VIRGINIA.

CHURN.

SPECIFICATION forming part of Letters Patent No. 719,739, dated February 3, 1903.

Application filed September 4, 1902. Serial No. 122,058. (No model.)

To all whom it may concern:

Be it known that we, JOHN BURGE and SAMUEL B. CORNELL, citizens of the United States, residing at Smithfield, in the county of Wetzel and State of West Virginia, have invented certain new and useful Improvements in Churns, of which the following is a specification.

This invention relates to churns, and has special reference to that type of churns involving a vertically-reciprocating single dasher.

To this end the invention contemplates certain novel improvements in the mounting and assembling of the different instrumentalities whereby an exceptionally strong and rigid churn structure is provided.

It is important in this class of churns to provide not only an extended slide-bearing for the reciprocating elements, but also to assemble and brace the various parts, so as to insure a steady and uniform movement of the churn-dasher, and also to provide a construction wherein the different parts of the churn are readily removable and replaceable for purposes of adjustment and repair.

Another object of the invention relates particularly to the construction and arrangement of parts providing for the guiding support of the main slide-head of the churn, whereby looseness of coöperating elements can be readily compensated for, while at the same time making provision for a firm reciprocation of the slide-head.

With these and many other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts, which will be hereinafter more fully described, illustrated, and claimed.

The essential features of the invention are necessarily susceptible to some modification without departing from the spirit or scope thereof; but a preferred embodiment of the improvements is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a churn constructed in accordance with this invention. Fig. 2 is an enlarged elevation, partly in section, of the centrally-arranged guide-supports and the elements of the churning mechanism coöperating directly therewith. Fig. 3 is a transverse sectional view on the line 3 3 of Fig. 2.

Like reference-numerals designate corresponding parts throughout the several figures of the drawings.

In carrying out the invention the churning mechanism may be associated with frame structures of slightly-modified form without departing from the essential features claimed; but it has been found that the most effective results have been accomplished by the employment of a frame of the construction shown in the drawings.

Referring particularly to the drawings, the supporting-framework for the churning mechanism includes a main stationary base 1 and the oppositely-arranged parallel upright frame-standards 2, arising from the said base and rigidly connected therewith in any suitable manner. It is also preferable to provide at opposite side edges of the base the upwardly-convergent side braces 3, rigidly fastened at their lower ends, as at 4, to the base and similarly secured to the adjacent frame-standards 2 to provide for rigidly bracing them in their upright positions. The oppositely-arranged upright frame-standards 2 constitute a frame-support for the entire churning mechanism, and said standards are constructed to provide at their lower ends the main supporting-legs 5 and at their upper ends the bearing-arms 6, upon which are mounted the upper horizontally-alined bearing-boxes 7 for the horizontal driving crank-shaft 8, which will be presently referred to in connection with the driving means for the churning mechanism. At a point intermediate the leg and arm portions thereof the upright frame-standards 2 are further provided with the intermediate inwardly-projecting widened members 9, having the parallel edges 10 and constituting guide-supports for the adjustable and detachable guides 11. These guides 11 are in the form of straight bars arranged in parallel relation, respectively, upon the edges 10 of the opposite guide-supports 9 and are designed to provide means for guiding the reciprocatory slide-head to movement in a fixed vertical plane. The construction and mounting of the adjustable and detachable guides 11 are important

to the successful carrying out of the invention, and it is to be observed that each of these guides consists of a straight bar provided at its inner side with a longitudinally-open guiding-groove 13, extending from end to end thereof, while the outer side of the said bar is formed with a longitudinally-channeled seat 14, producing the side lips or flanges 15, which overlap the side edges of the frame members 9, upon which the guides or guide-bars are to be mounted. By reason of this formation of the guides the same are held in interlocked engagement with the frame-standards and maintain such interlocked engagement even though it may be necessary to tighten or loosen the guides with reference to the slide-head 12 to provide for the properly-guided movement thereof. This adjustment, as well as the holding of the guides or guide-bars 11, is accomplished through the medium of the combined holding and adjusting screws 16. A pair of these screws are preferably associated with each of the opposite guides 11 and are countersunk and concealed entirely within the screw-holes 17 within the widened frame member 9. The threaded extremities of each pair of screws associated with each of the guides 11 are arranged to engage the threaded openings 18, formed in the body of the guide or guide-bar, respectively adjacent to the opposite ends thereof, whereby the guide or guide-bar will be uniformly supported throughout its entire length. From the construction described it will be obvious that by the adjustment in or out of the screw 16 the guides 11 may be tightened more or less to compensate for loosening, and thus insuring an adjustment of the guiding elements for the slide-head 12, whereby the latter may at all times be maintained perfectly steady in its reciprocation. To secure a further thorough bracing of the oppositely-arranged guides, as well as the frame structure itself, there is preferably arranged at the opposite sides of the widened members 9 of the frame-uprights 2 a plurality of cross braces or rails 19, screwed or otherwise suitably fastened to the frame-uprights and certain of which are held directly against the side edges of the guides or guide-bars 11, which overlap the edges of the frame-uprights to which they are fitted.

The reciprocating slide-head 12 is preferably of an open or skeleton formation and usually consists of a single casting or block, essentially comprising the side rails 20 and a plurality of cross-bars 21, integral with and connecting the side rails. The side rails 20 of the block or casting constituting the slide-head 12 have formed upon their outer sides guide-rails 22, slidably engaging the guiding-grooves 13 of the guides 11, and at its upper end the body of the slide-head 12 is formed with the bolt-ears 23, which receive the pivot-bolt 24, pivotally connecting thereto the lower end of an operating-pitman 25. The upper end of this pitman has suitable connection, as at 26, with the crank 27 of the horizontal driving crank-shaft 8, previously referred to.

The driving crank-shaft 8 carries at one end the balance or fly wheel 28 and at its other end a pulley 29, receiving the drive-belt 30, deriving its motion from a crank-wheel 31. This crank-wheel 31 is journaled upon a stub-shaft 32, carried by a wheel-carrying plate 33, which is mounted upon one of the frame-standards 2.

The reciprocatory slide-head 12 constitutes the carrying element or member for the reciprocatory dasher-stem 34. This dasher-stem 34 carries at its lower end a bladed dasher 35. While different connections may be utilized to fasten the dasher-stem, the preferable construction is shown in the drawings and consists in providing one of the cross-bars 21, preferably the central one, with a stem-socket 35, receiving the upper extremity of the dasher-stem 34. This upper extremity of the dasher-stem 34, which extends into the socket 35, is detachably held fast to the slide-head by a retaining-screw 41, mounted in one side of the said cross-bar, receiving the end of the dasher-stem.

A preferred means for holding the churn-receptacle 42 in position on the base 1 is shown in the drawings and consists in the employment of a bowed holding-spring 43, secured fast at its upper end, as at 44, to the leg 5 of one of the standards 2 and carrying at its lower end a curved rest 45, against which one side of the receptacle or vessel is held by the curved clamp 46. The curved clamp 46 is swiveled to the inner end of a fastening-screw 47, mounted in a threaded opening or nut 48, provided in the leg 5 of one of the frame-standards.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described churn will be readily apparent to those familiar with the art without further description, and it will also be understood that changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a churn, the oppositely-arranged frame-uprights having intermediate parallel members, adjustable and detachable guides mounted upon the parallel frame members and each consisting of a bar having a longitudinal guiding-groove at its inner side and a longitudinally-channeled seat at its outer side, the longitudinally-channeled seat producing side lips or flanges overlapping the edges of the frame member to which the bar is fitted, combined holding and adjusting means for each of said guides, and a reciprocatory dasher carrying a slide-head working between and engaging said guides.

2. In a churn, the combination with the frame-uprights having intermediate parallel members, adjustable and detachable guides mounted upon the parallel frame members and each consisting of a bar having at its inner side a guiding-groove and at its outer side a longitudinally-channeled seat interlocking with the frame member, a pair of combined holding and adjusting screws associated with each guide, the screws for each guide being mounted in a frame-standard and having the inner ends adjustably engaging the guide respectively adjacent to its opposite ends, a reciprocatory slide-head arranged between the guides and having ribs working in the grooves thereof, a dasher-stem carried by the slide-head, and driving mechanism including a crank-wheel, and a pitman having an operative connection with the slide-head.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN BURGE.
SAMUEL B. CORNELL.

Witnesses:
W. N. LOAR,
S. D. SMALLEY.