T. H. CHAPPELEAR.

CHURN.

APPLICATION FILED MAY 13, 1909.

944,014.

Patented Dec. 21, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

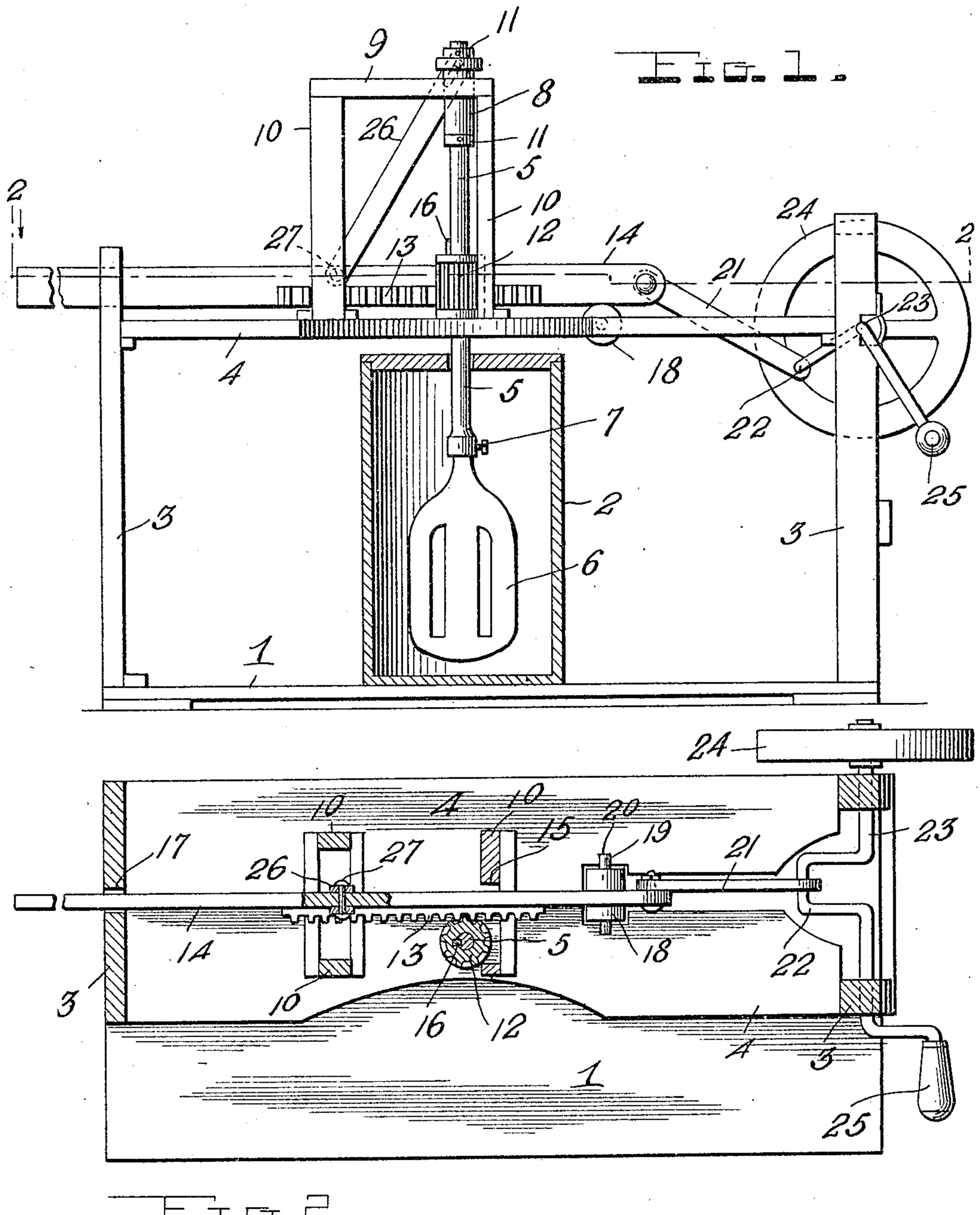

Fig. 2.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

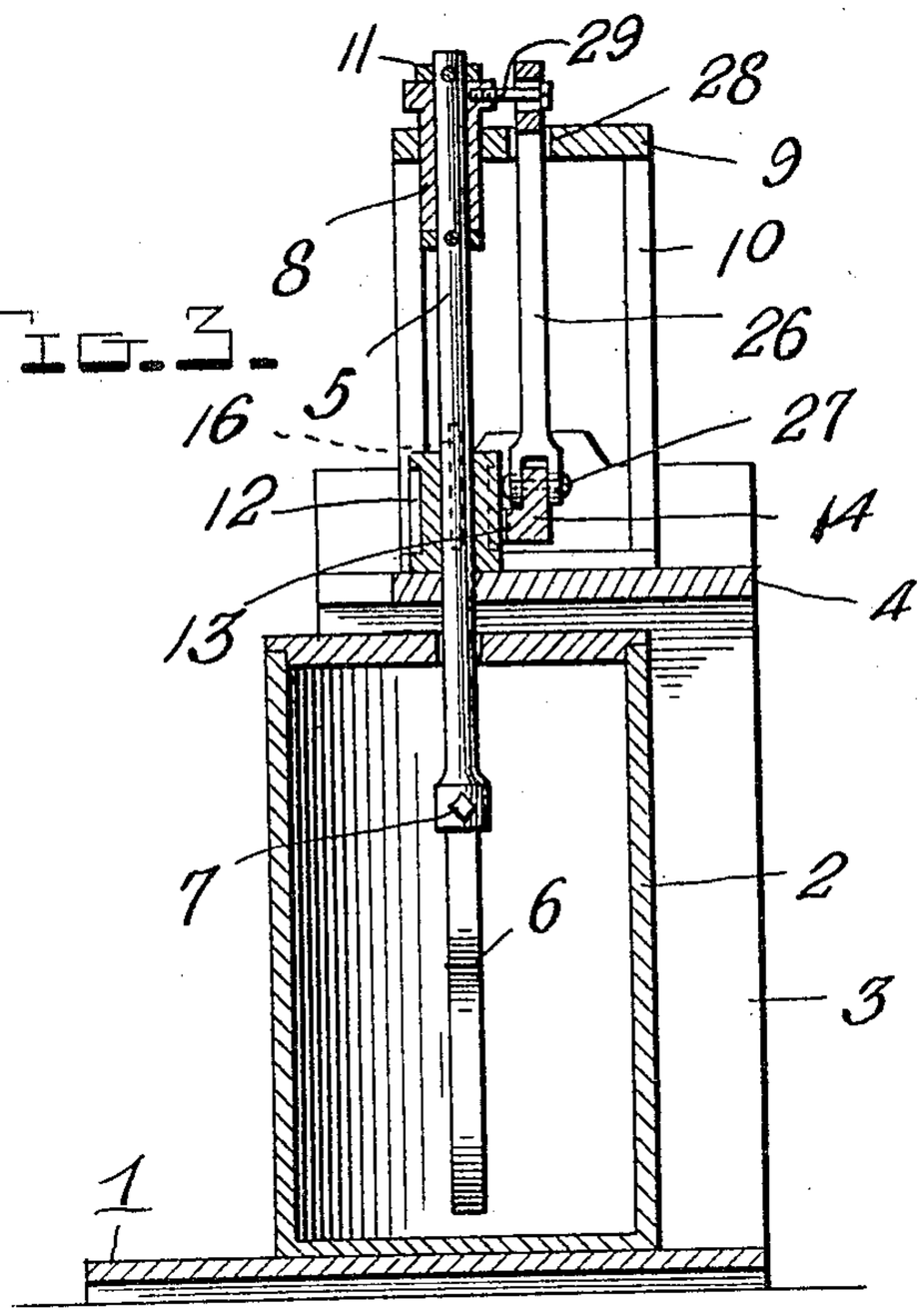


Fig. 4.

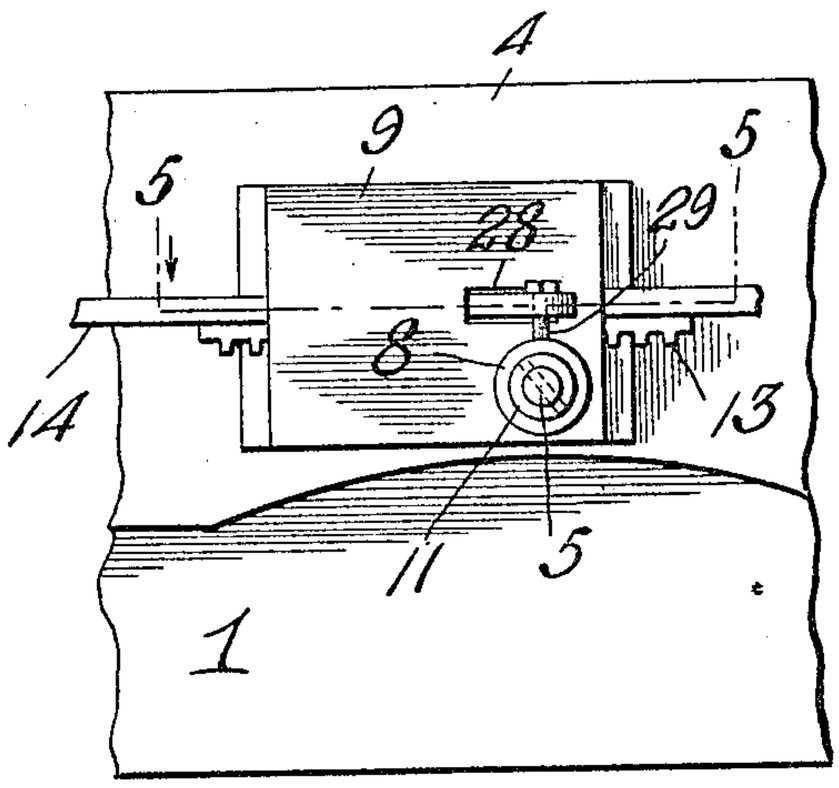
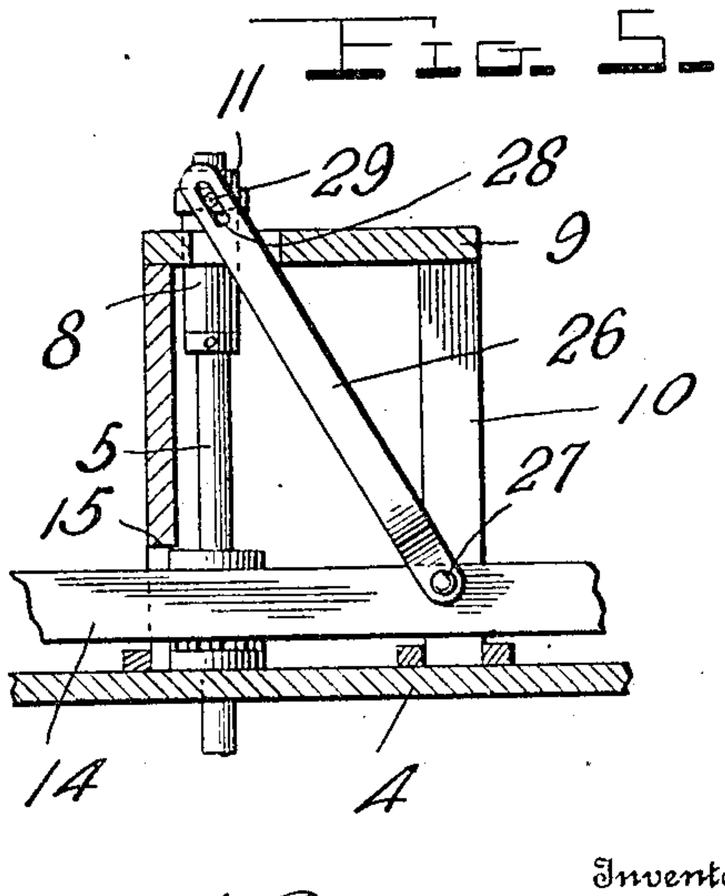


Fig. 5.



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UNITED STATES PATENT OFFICE.

THOMAS H. CHAPPELEAR, OF LAVONIA, GEORGIA.

CHURN.

944,014. Specification of Letters Patent. Patented Dec. 21, 1909.

Application filed May 13, 1909. Serial No. 495,610.

To all whom it may concern:

Be it known that I, THOMAS H. CHAPPELEAR, a citizen of the United States, residing at Lavonia, in the county of Franklin and State of Georgia, have invented certain new and useful Improvements in Churns, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in churns, and more particularly to mechanism for rotating a churn dasher alternately in opposite directions and simultaneously reciprocating the same.

The object of the invention is to provide a simple and practical churning mechanism of this character in connection with which any kind of churn body may be used and by means of which cream may be quickly converted into butter.

With the above and other objects in view, the invention consists of the novel features of construction and the combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation with parts in section of the improved churn; Fig. 2 is a horizontal section; Fig. 3 is a vertical transverse section; Fig. 4 is a detail plan; and Fig. 5 is a detail section taken on the line 5—5 in Fig. 4.

The invention comprises a frame consisting, preferably, of a base 1 on which the body 2 of the churn is supported and from which rise uprights 3 united by a horizontal support 4 for the dasher operating mechanism. The body 2 of the churn may be of any form and construction and extending through its lid is a dasher shaft 5 which is mounted both for rotary or oscillatory movement and also for vertical reciprocatory movement. A dasher 6 of any suitable form and construction is detachably secured, as at 7, to the lower end of the dasher shaft. The dasher shaft extends through and is rotatable in a suitable bearing in the support 4 and its upper end is rotatably mounted in a bearing sleeve 8, which latter is in turn slidably and rotatably mounted in the top piece 9 of an elevated frame or support consisting of said top piece and uprights 10 rising from the horizontal support 4. Stop collars 11 are secured to the shaft 7 above and below the sleeve 8 to permit rotary movement of said shaft within the sleeve but cause the shaft to move vertically with the sleeve when the latter is reciprocated, as presently explained.

Arranged on the shaft 7 is a pinion 12 which meshes with a horizontal rack 13 carried by a reciprocatory member or bar 14. Said pinion 12 is of cylindrical form and arranged partly in the recess 15 in one of the uprights 10 so that it cannot move vertically with the shaft 7, but in order to cause said shaft to rotate with the pinion, a longitudinal key 16 is provided in the shaft to slide in a groove or key-way of the pinion. The reciprocatory bar 14 has one of its ends slidably arranged in a guide opening 17 in one of the uprights and its intermediate portion is guided in a similar opening in one of the uprights 10. The other end of the bar 14 is also guided and supported by an anti-friction roller 18 journaled, as shown at 19, in a slotted portion 20 of the horizontal support 4. Said slot 20 is disposed at the end of the support 4 nearest the spaced uprights 3 and it is provided for a pitman 21 which has one end pivotally connected to the last mentioned end of the reciprocatory bar 14 and its other end connected to a crank 22 on a transverse shaft 23 journaled in bearings in said spaced uprights 3. On one end of the shaft 23 is a fly wheel 24 and on its other end a crank handle 25, the latter being the preferred means for operating the churn.

26 denotes a link having its lower end pivotally connected at 27 to the reciprocatory bar or member 4 and its upper end projecting through and movable in an opening in the top piece 9. Said projecting upper end of the link is formed with a vertical slot 28 to loosely receive a pin 29 projecting from the sleeve 8. It will be seen that when the bar 14 is reciprocated, the link 26 will be raised and lowered to impart vertical reciprocatory movement to the dasher shaft 7.

In operation, the churn body is placed in position beneath the shaft 7 and the parts adjusted, as shown in the drawings. The crank handle 25 is then turned to cause the pitman 21 to reciprocate the bar or member 14. The rack 13 on the latter rotates the pinion 12 and hence the dasher shaft first in one direction and then in the opposite direction and said reciprocatory movement of the bar 14 causes the link 26 to simultaneously reciprocate the dasher shaft through the pinion 12, thereby imparting both an

alternating rotary movement and reciprocatory movement to the dasher in the churn.

From the foregoing it will be seen that the invention provides an exceedingly simple and practical dasher operating mechanism in connection with which any kind of churn and dasher may be used and owing to the peculiar motion given to the dasher the cream will be quickly converted into butter.

Having thus described the invention what is claimed is:

1. The combination of a support, a shaft slidably and rotatably mounted, a pinion rotatably mounted on the support and in which the shaft is longitudinally slidable but non-rotatably arranged, a reciprocatory slide bar disposed at right angles to the shaft and carrying a rack to mesh with said pinion, means for reciprocating said slide bar and a link pivoted to said slide bar and having an operative connection with said shaft, whereby the latter will be reciprocated longitudinally as it is rotated alternately in opposite directions by the rack on said slide bar.

2. The combination of a support, a shaft slidably and rotatably mounted, a pinion rotatably mounted on the support and in which the shaft is longitudinally slidable but non-rotatably arranged, guides, a rack bar slidable in said guides and disposed in a plane at right angles to said shaft, said rack being in mesh with the pinion, whereby the latter and the shaft will be reciprocated alternately in opposite directions by said rack bar, means for reciprocating said rack bar, a sleeve slidably and rotatably mounted and in which the shaft is rotatably mounted, a link pivoted at one end to said rack bar and having a slot and pin connection at its other end with said sleeve and means for guiding said link.

3. A churn comprising a support, a dasher shaft slidably and rotatably mounted, a pinion rotatably mounted on the support and in which the dasher shaft is longitudinally slidable but non-rotatably arranged, a reciprocatory rack in mesh with the pinion, means for operating said rack, a sleeve slidably and rotatably mounted and in which the shaft is rotatably mounted, a link connected at one end to the rack and having a slot and pin connection with said sleeve and means for guiding said link.

4. A churn comprising a frame having a base, uprights rising therefrom and a horizontal support uniting said uprights, an elevated frame on said support, a slidably and rotatably mounted sleeve in said elevated frame, a vertical dasher shaft rotatably but non-slidably mounted in said sleeve, a rotatable pinion in which the shaft is slidably but non-rotatably arranged, a reciprocatory bar, means for supporting and guiding said bar, a rack upon said bar to coact with said pinion, a crank shaft, a pitman connecting the crank of said shaft to said bar, means for rotating the crank shaft, a link pivotally connected at its lower end to said bar and mounted for sliding and swinging movement in said elevated frame, the upper end of said link having a slot and pin connection with said sleeve, a churn body upon the base and a dasher in said body and fixed to said dasher shaft.

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

T. H. CHAPPELEAR.

Witnesses:

A. L. MINYARD,

L. E. FISHER.