

Ezekiel W Bullard's
Improvement in Oscillating Churns.
No. 120,708. Patented Nov. 7, 1871.

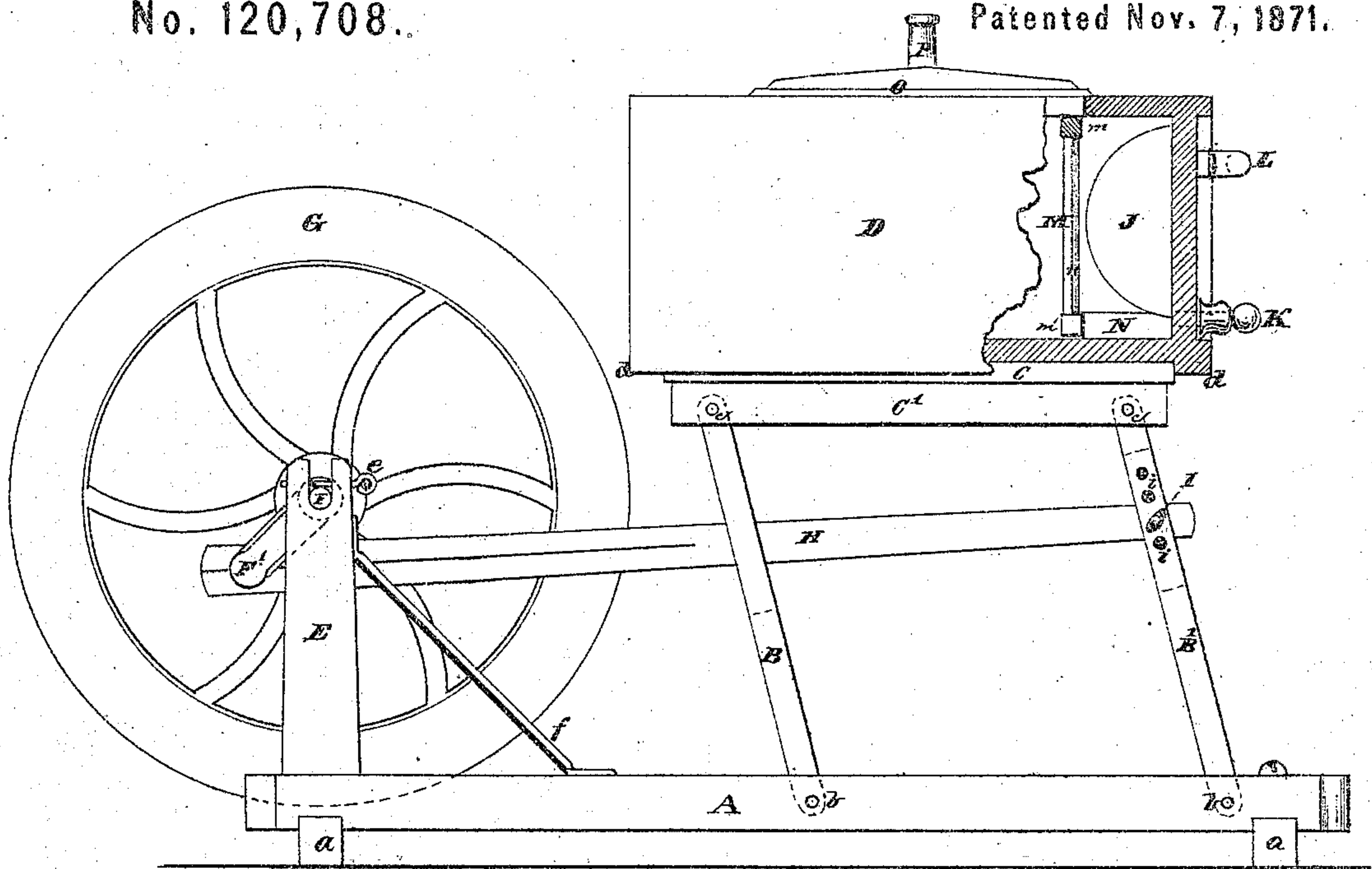


FIG. 1

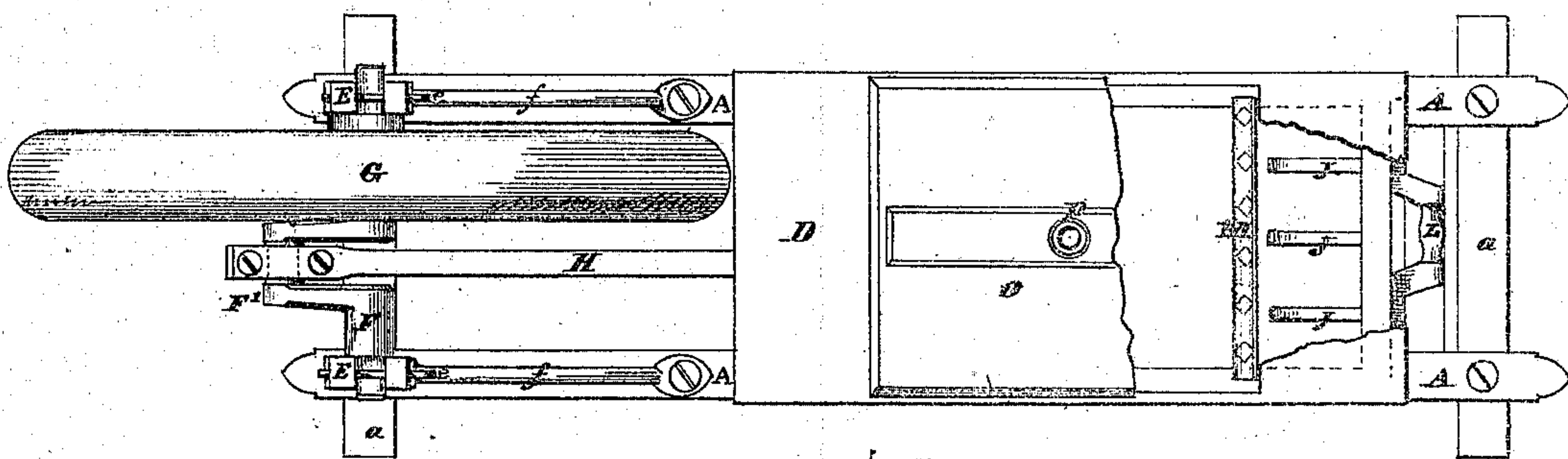


FIG. 2

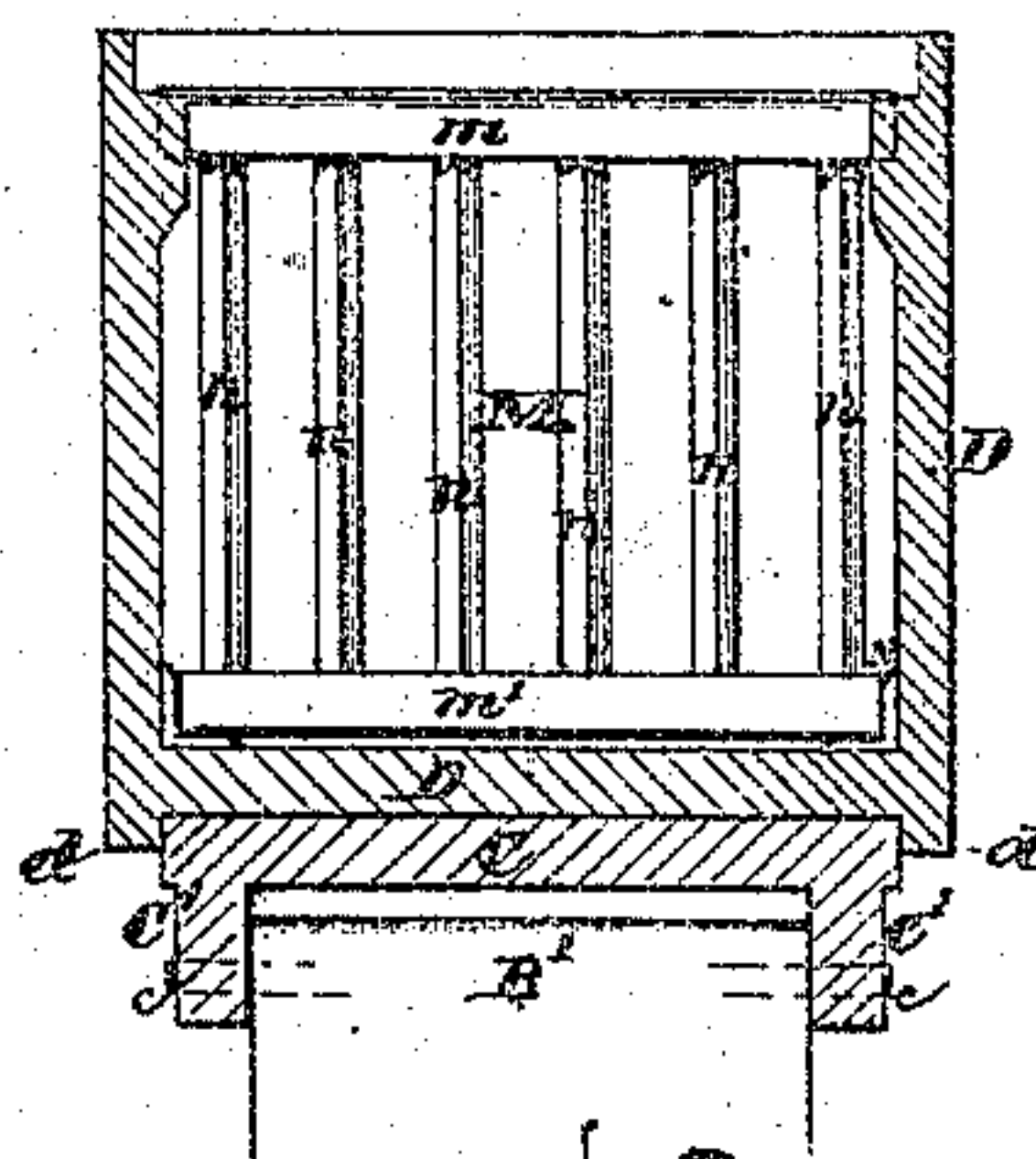


FIG. 3

Witnesses

James M. Jenkins
Harding Wood

Inventor

Ezekiel W. Bullard

UNITED STATES PATENT OFFICE.

EZEKIEL W. BULLARD, OF BARRE, MASSACHUSETTS.

IMPROVEMENT IN OSCILLATING CHURNS.

Specification forming part of Letters Patent No. 120,708, dated November 7, 1871.

To all whom it may concern:

Be it known that I, EZEKIEL W. BULLARD, of Barre, in the county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Churns; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing which forms a part of this specification, and in which—

Figure 1 represents a side view of my combined churn and washing-machine. Fig. 2 represents a plan view of the same; a portion of the casing is removed in each view to show the internal parts of the churn-box. Fig. 3 represents a transverse section of the churn-box, showing one of the swinging grates.

To enable others skilled in the art to which my invention belongs to fully understand the construction and operation thereof, I will proceed to describe the same in detail.

The nature of my invention consists—First, of an organized mechanism for imparting oscillatory movement to the churn, in which the swinging levers that support the churn have their leverage made adjustable, substantially in the manner hereinafter described. Second, in the combination with the oscillating table of the peculiarly-constructed churn-box or cream-receptacle, as hereafter described. Third, in the combination with the churn-box of swinging grates, as and for the purpose hereafter set forth.

In the drawing, the parts marked A represent the frame, which consists of two parallel bars supported in a horizontal position upon transom pieces *a a* near their ends. Two upright table-supporting pieces B B' are loosely pivoted between the two horizontal bars of the frame at *b b*, and upon their upper ends is arranged a table, C, on which the churn-box or cream-receptacle D is supported, the ends of the upright pieces B B' being loosely pivoted at *c c* between the downward projecting side pieces C' of the table, in such a manner that the table can be oscillated to and fro, while its upper surface will always remain in a horizontal position. At the opposite end of the frame A there are two upright standards E E, which support the journals of a transverse shaft, F, provided with a crank, F', and a balance-wheel, G. The standards E are braced by means of metallic rods *f* or otherwise, so as to

insure the required rigidity and strength, and pins *e* are arranged through the upper ends of the standards above the journals of the crank-shaft F to hold the latter down upon its bearings. A connecting-rod, H, extends from the crank F' to the outer table-supporting piece B', and connect said parts for operation, a suitable opening being formed through the piece B for the passage of the rod, and an opening in the piece B' fitted for its reception. The end of the connecting-rod H is secured to the piece B' by means of a pivot-pin or bolt, I, and a number of holes, *i*, are formed in said piece, so that the end of the rod H can be adjusted up or down by changing the pin I to the different holes *i*, thereby varying the distance of oscillation to which the table C is subjected. And this adjustment, owing to the peculiar construction and arrangement of the parts, can be made by the operator without leaving his position at the front of the machine. This is quite an important feature in a practical point of view, since it enables the operator to change the extent of the oscillation of the churn-box to suit the condition of the cream at different stages of the churning operation. The churn-box or cream-receptacle D consists, in this instance, of a rectangular box, the bottom of which is made of the proper size to fit the top of the table C, and provided with a downward projecting flange, *d*, entirely around its outer edge, which flange *d* extends below the upper corner of the table top, and prevents the churn-box D from slipping out of place. A series of semicircular flanges, J, project from the ends of the churn-box into the interior thereof, which serve to break up and mingle the cream, and a nozzle and plug, K, are provided at one end of the churn-box for drawing off the milk. A handle, L, is attached to one end of the churn-box D, by means of which the churn can be operated. Two swinging grates M are arranged within the churn-box D, one at each end at the positions indicated, to facilitate the operation of churning butter directly from milk without previously separating the cream. The form of the grate M is shown in Fig. 3 of the drawing. It consists of top and bottom pieces *m* and *m'* connected to each other by a series of square vertical bars, *n*, arranged with their sides diagonal to the plane of the grate. The grates M are made of such size as to nearly fill the interior section of the churn-box, and are supported

therein by the ends of their top pieces *m*, which rest in notches formed in the sides of the churn-box, in such a manner that their lower part can swing freely back and forth, as the churn-box is oscillated. Stop pieces *N* are fixed in the lower corners of the churn-box, against which the grates strike and are thereby prevented from swinging back against the semi-circular flanges *J*. The churn-box *D* is provided with a suitable opening in the top through which to put in the cream and remove the butter, and it is furnished with a cover, *o*, in the center of which is arranged a vent-tube, *P*, for supplying air to the interior of the churn during its operation.

The operation is as follows: The cream or milk is placed within the receptacle *D*, and the operator, by taking hold of the handle *L*, moves the churn-box *D* back and forth, thereby oscillating the supporting table *C*, and the cream or milk is by such movement thrown from one end of the box to the other with a violent motion, impinging and breaking upon the grates *M* and flanges *J*, and causing an agitation which separates and condenses the butter in a very rapid and perfect manner. The revolving balance-wheel *G* equalizes the motion of the oscillating table *C*, and by means of the connecting-rod *H*, throws it past all of the hard positions, so that the operation can be carried on with a very slight expenditure of muscular power. It will be observed that the operation of the churn is such as to cause the cream or milk to wash the sides and top of the receptacle *D*, and thus prevent the cream from

adhering and collecting thereon, while at the same time the motion tends to keep up a constant and free circulation of air through the cream during the process of churning. The cream-receptacle *D* can be removed from the oscillating-table *C* whenever desired. In lieu of the cream-receptacle being constructed as shown in the drawing, a plain box may be used if preferred. To facilitate the operation of transferring the machine from one position to another, the frame *A* may be raised up so that the balance-wheel *G* will rest upon the floor, when the machine can be trundled around in the manner of a wheel-barrow.

Having described my improvements in churns, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. In an organized mechanism for imparting oscillatory movement to a churn, substantially as described, the swinging levers *B B'* supporting the churn, and having their leverage made adjustable, in the manner shown and set forth.

2. The combination, with the oscillating-table *C B B'*, of the cream-receptacle or churn-box *D* provided with semicircular flanges *J*, handle *L*, and downward flange *d*, substantially as shown and described.

3. The combination, with the churn-box *D*, of the swinging grates *M*, substantially as and for the purposes set forth.

EZEKIEL W. BULLARD.

Witnesses:

JAMES W. JENKINS,
HARDING WOODS.

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