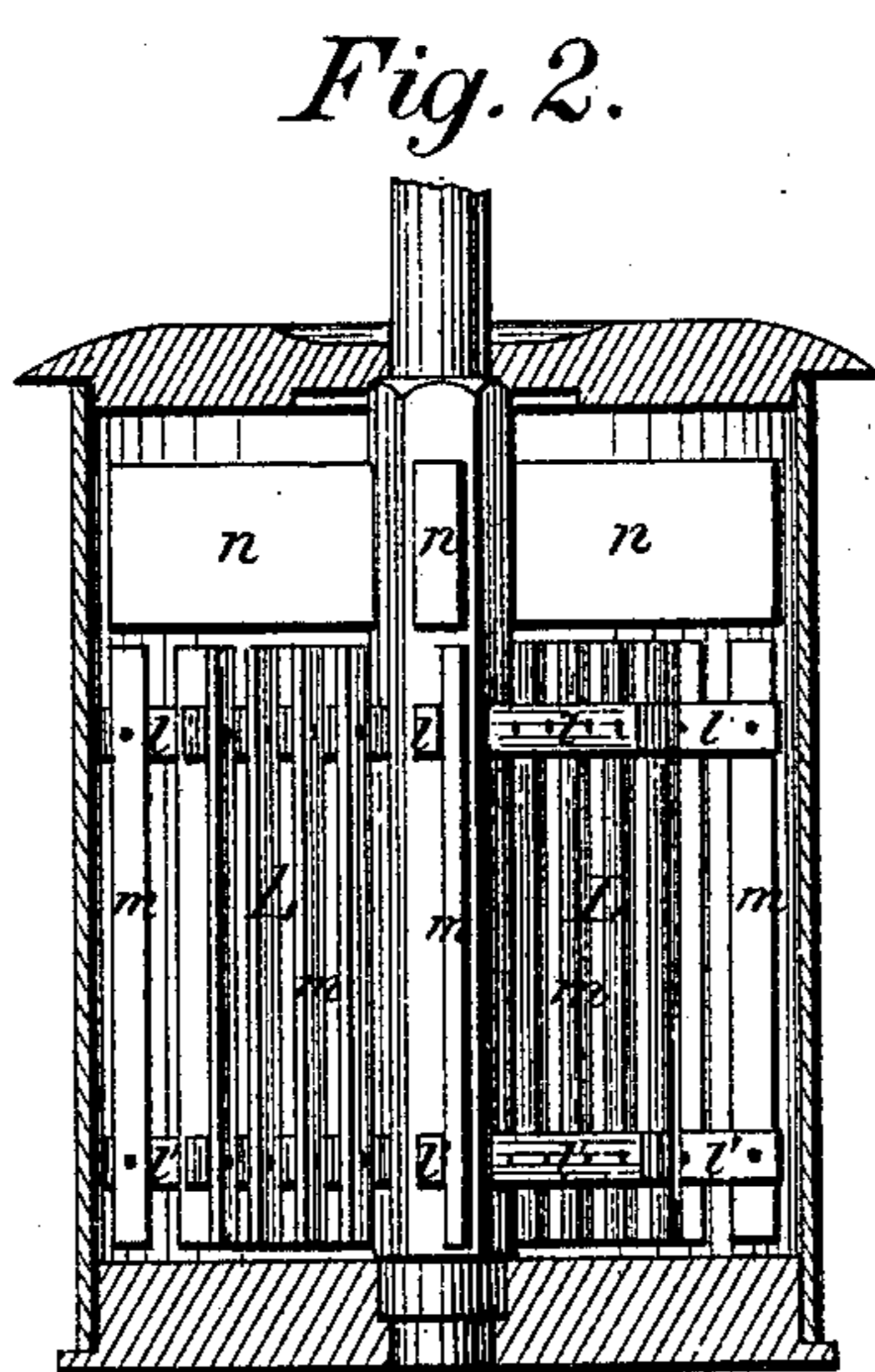
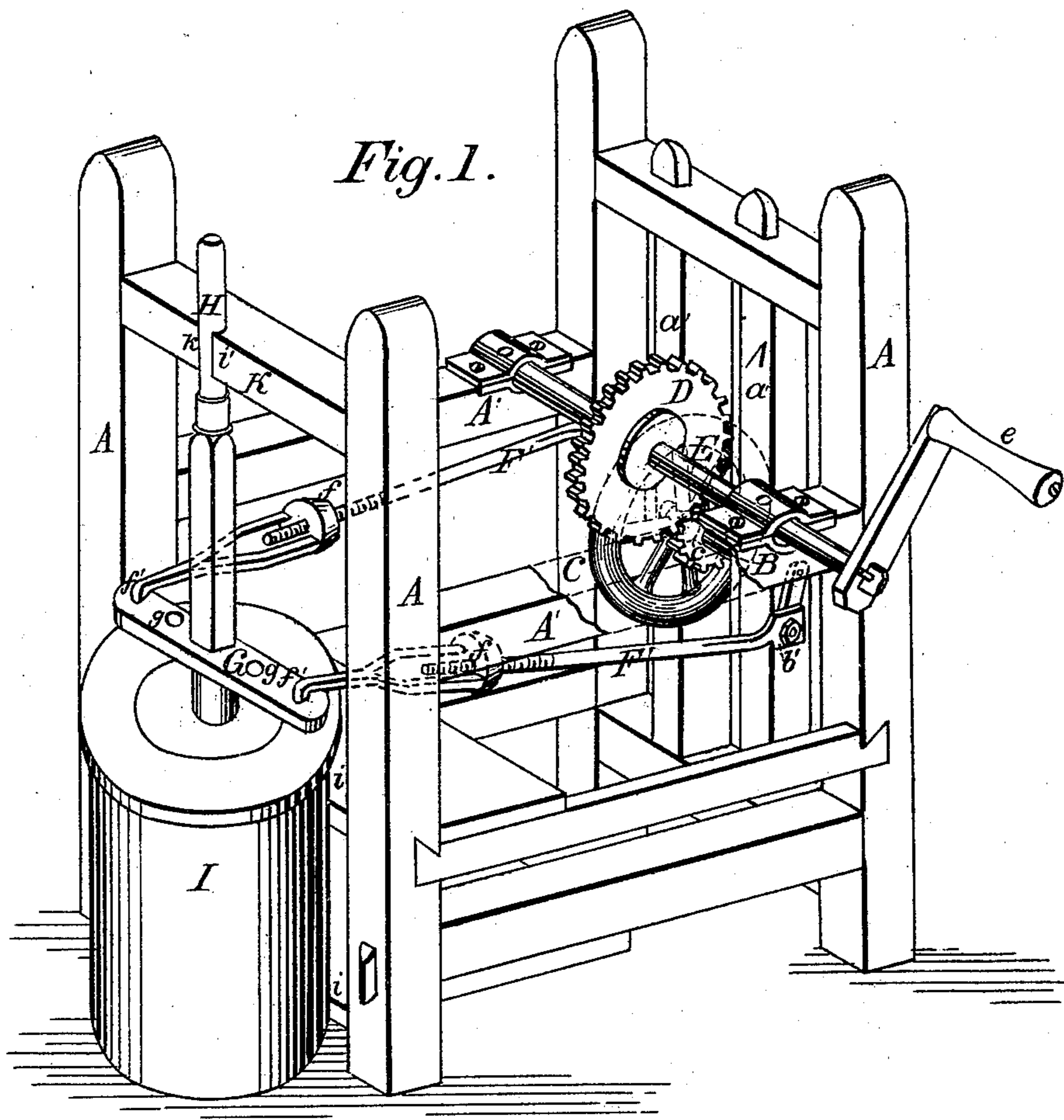


W. McKINLEY.  
RECIPROCATING CHURN.

No. 170,877.

Patented Dec. 7, 1875.



Attest:  
Charles Thurman.  
R. N. Sger.

Inventor:  
William McKinley  
by Geo. W. Dzerole  
Atty

# UNITED STATES PATENT OFFICE

WILLIAM MCKINLEY, OF BELLAIRE, OHIO.

## IMPROVEMENT IN RECIPROCATING CHURNS.

Specification forming part of Letters Patent No. **170,877**, dated December 7, 1875; application filed April 30, 1875.

*To all whom it may concern:*

Be it known that I, WILLIAM MCKINLEY, of Bellaire, in the county of Belmont and State of Ohio, have invented a new and useful Improvement in Churns; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The object I have in view is an improvement in churns, whereby the same may be more convenient in use and more effective in result; and my invention therein consists in the peculiar construction of the churn-dashers and gathering-arms; and, further, in the means of connecting the churn-spindle to the gearing, so that the position of the churn will be outside of, and disconnected with, the gear-frame, as more fully hereinafter explained.

To enable others skilled in the art to make and use my invention, I proceed to describe the same in connection with the drawings, in which—

Figure 1 represents a perspective view with a part of the frame broken away; and Fig. 2, a section of the churn, showing the dashers and gatherers.

In the drawings, A represents a suitable frame of wood or metal, in the upper part of one end of which a small shaft, B, is journaled transversely, having bearings in the uprights *a a'*. Between these uprights a balance-wheel, C, and a pinion, *c*, are rigidly fixed to the shaft B. The pinion *c* meshes with a large cog-wheel, D, rigidly secured on a shaft, E, which is journaled in the upper longitudinal string-pieces A'. The shaft E is provided with a crank and handle, *e*, by means of which a rotating motion is given to the cog-wheel and the pinion before named. The shaft B is fitted with cranks *b b'* at each end, said cranks being set opposite to each other. Two pitmen, consisting of two parts, F and F', are each pivoted at one end to the crank-pins *b b'*, respectively, and at the other end to the end of a cross-head, G, rigidly secured to the vertical spindle H of a churn, T. The pitmen before mentioned consist of a rod, F, threaded at one end to screw into a yoke-socket, *f*, on the end of a rod, F', said rod having its end turned at *f'*, to engage in one of a series of holes, *g*, in the

cross-head G, before mentioned. This screw-socket joint between the rods F and F' enables each pitman to be lengthened or shortened, at the will of the operator. The cross-head G extends equally distant from each side of the spindle, and the holes *g* before mentioned are equally distant from said spindle upon each side thereof. The pitmen F F' being fixed to the cross-piece, as already described, and the crank *e* being set in motion, it will be seen the spindle H will receive a reciprocatory rotary motion, and that it will be moved a greater or smaller arc, according to the distance of the point of connection of the pitmen from the spindle. The barrel of the churn I is placed in a recess in the frame *i* on the side opposite to the position of the rotating mechanism. When the churn is finished the pitmen can be lifted out of the cross-head, and the churn removed from the frame, and manipulated as desired. A vertical score, *k*, is cut in a transverse string-piece, K, to serve as a guide for the spindle H, while it presents no obstacle to its removal when it is desired to take the churn from the frame. The dashers L, attached to the lower end of the churn, consist of small horizontal arms *l l'*, to which are attached vertical strips *m*, so placed that the spaces between said strips are about equal in width to the width of the strips. Above the arms *l* are wide arms *n*, placed at greater distance apart on the circumference of the spindle, and, consequently, revolving in the liquid less rapidly than the smaller arms. The office of these arms *n* is to gather and mass the butter which rises from the action of the rapidly-revolving wings below.

In the operation of this churn, the rotation back and forth of the dashers serves to break the globules of butter by the impact of the vertical strips, and by the passage of the milk or cream between the strips, which globules, naturally arising to the surface, are beaten and gathered together by the impact of the gathering-arms. In the further process of churning, by a partial rotation back and forth of the crank-handle, the butter so gathered is more and more compressed together, so that it can be conveniently removed.

When the churning is over the churn is detached from the operating mechanism, as be-

fore described, by simply raising the ends of the pitmen out of the cross-head.

Having thus described my invention and its manner of operation, and some of its advantages, what I claim as new therein, and desire to secure by Letters Patent, is—

1. The churn-dasher consisting of the spindle H, the horizontal arms *l* *l'* and strips *m*, and the gathering-arms *n*, substantially as described and shown.

2. The combination of the spindle H, with

its cross-head, and the pitmen F F', journaled upon the shaft E, for the purpose of permitting the location of the churn outside of, and disconnected from, the gear-frame, substantially as described and shown.

This specification signed and witnessed this 20th day of April, 1875.

WILLIAM MCKINLEY.

Witnesses:

CHAS. C. CRATTY,  
E. F. CASH.