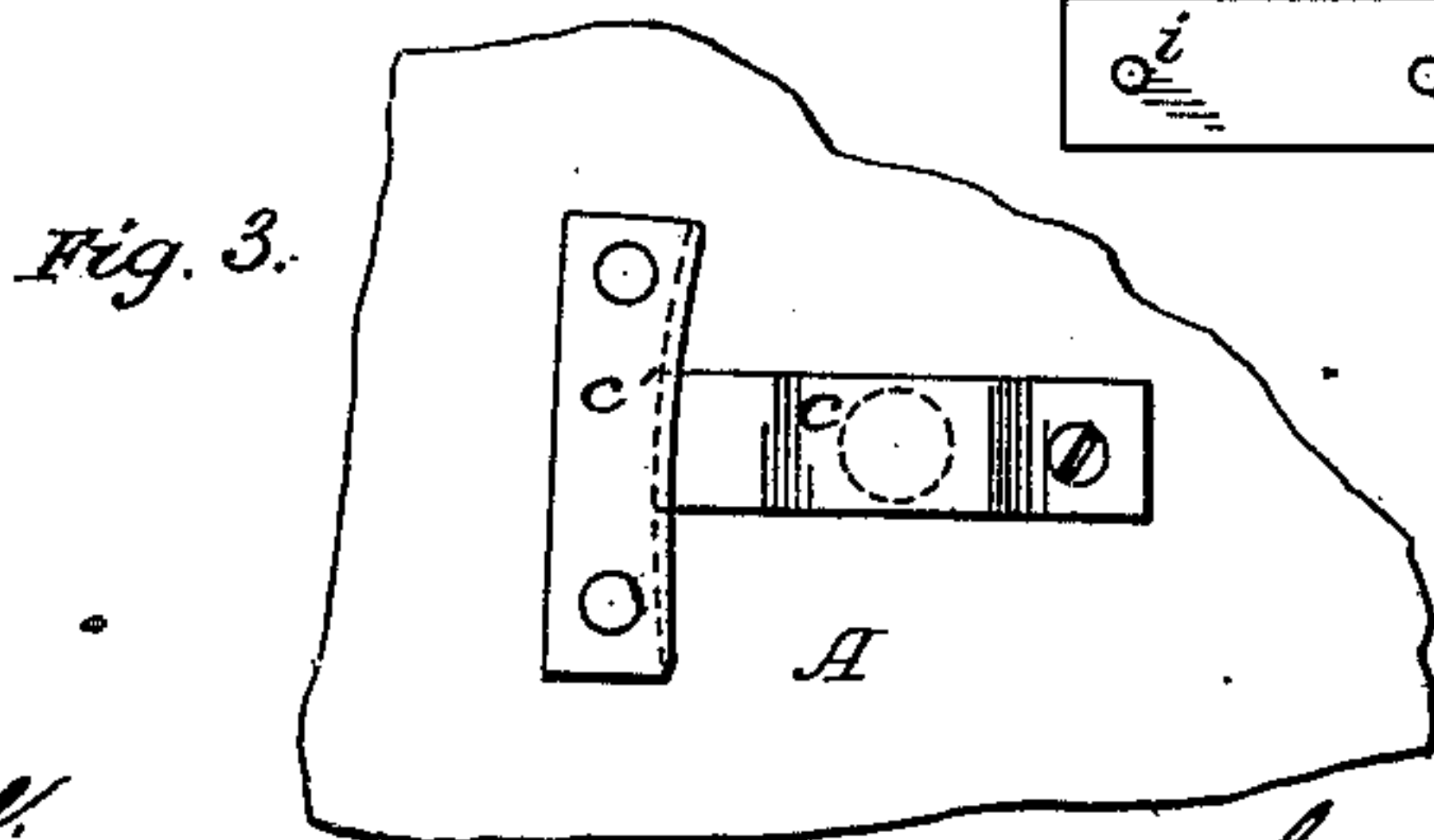
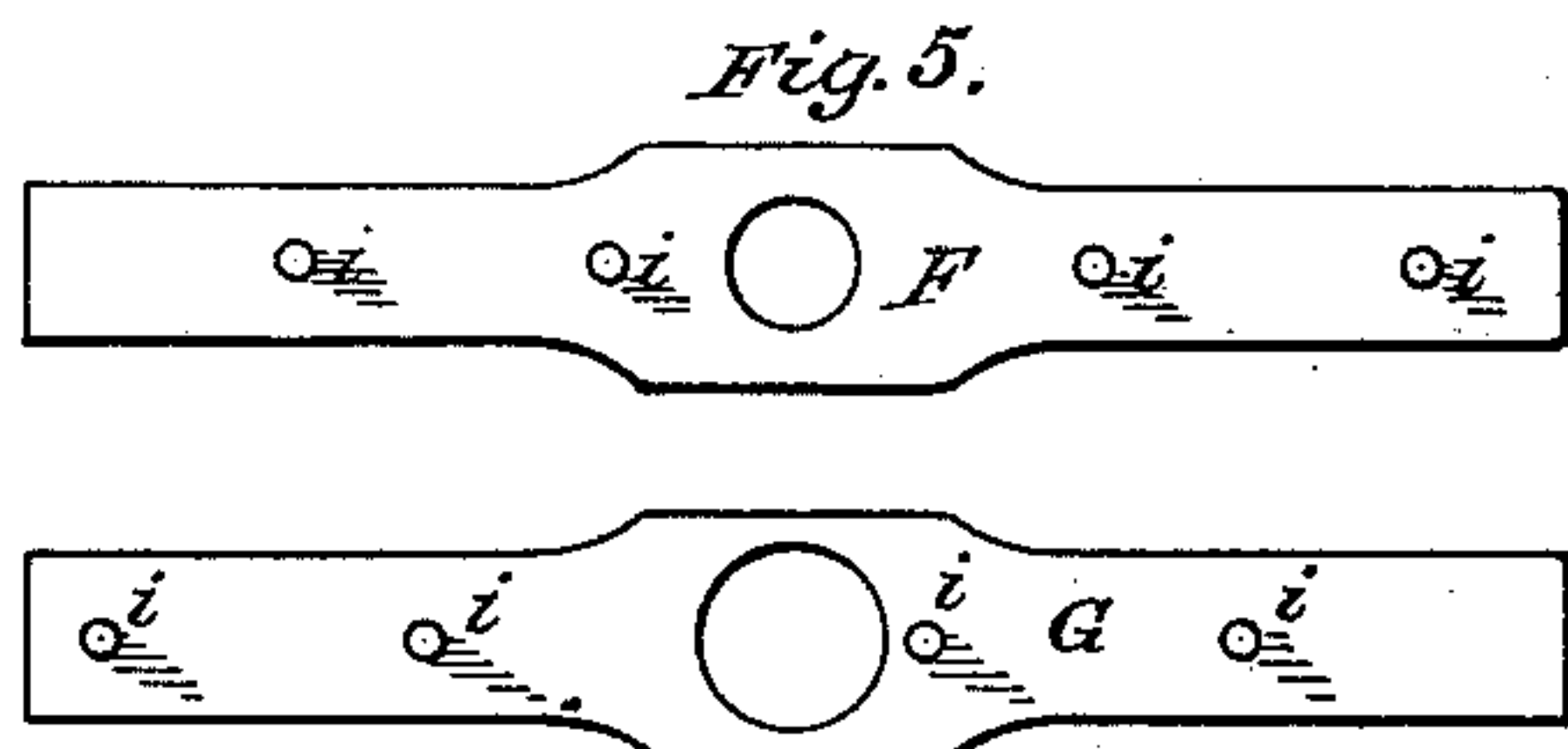
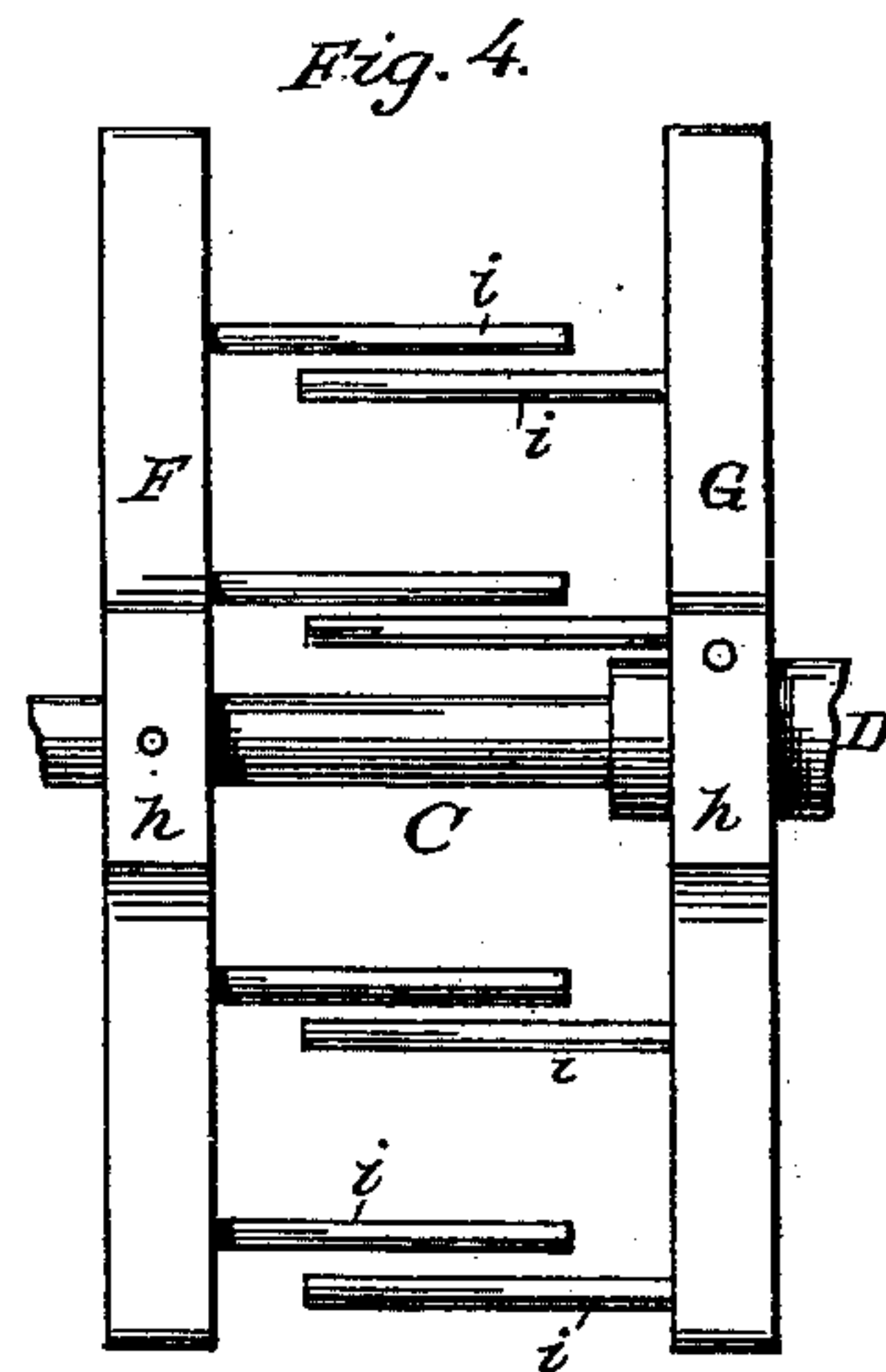
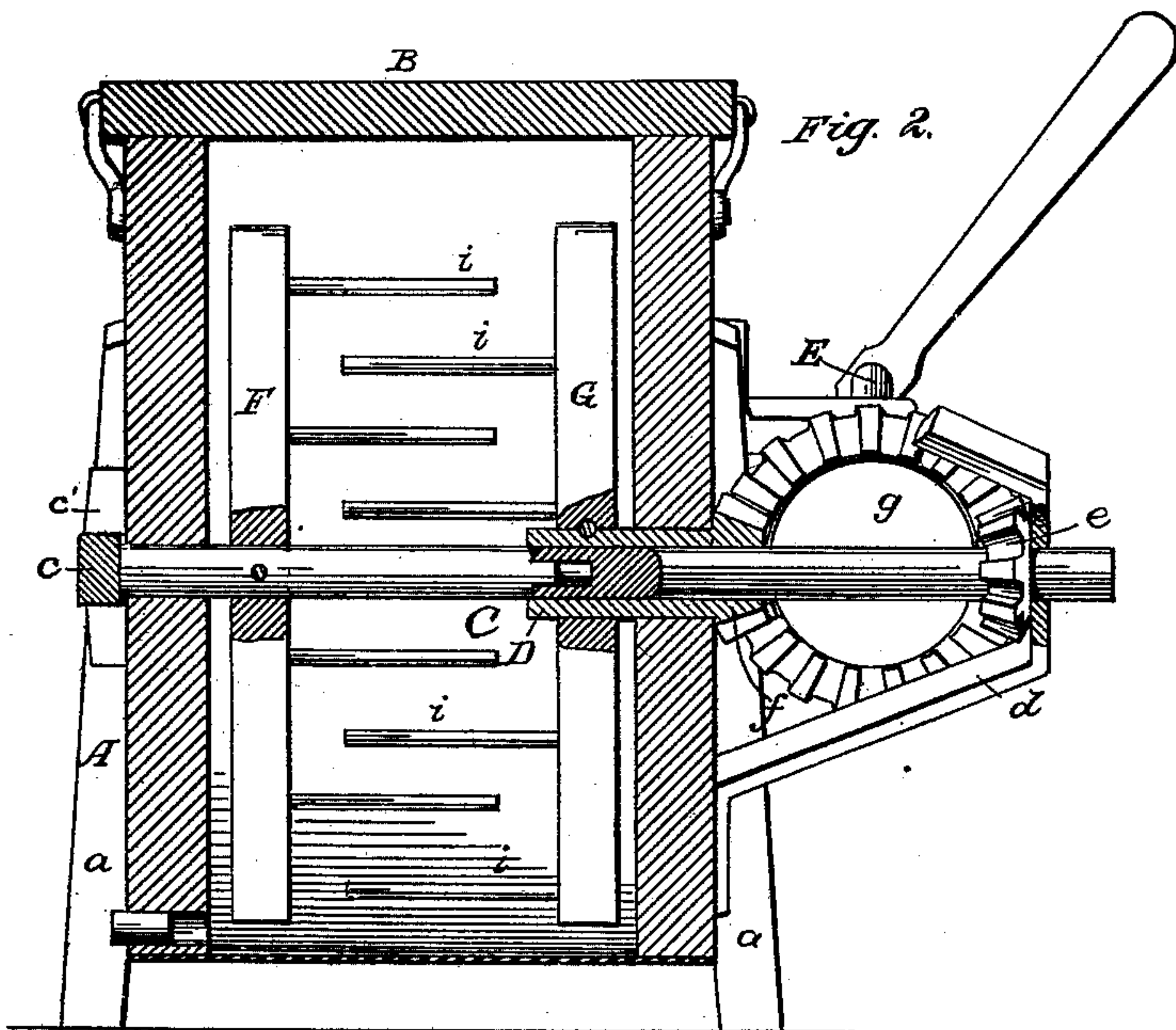
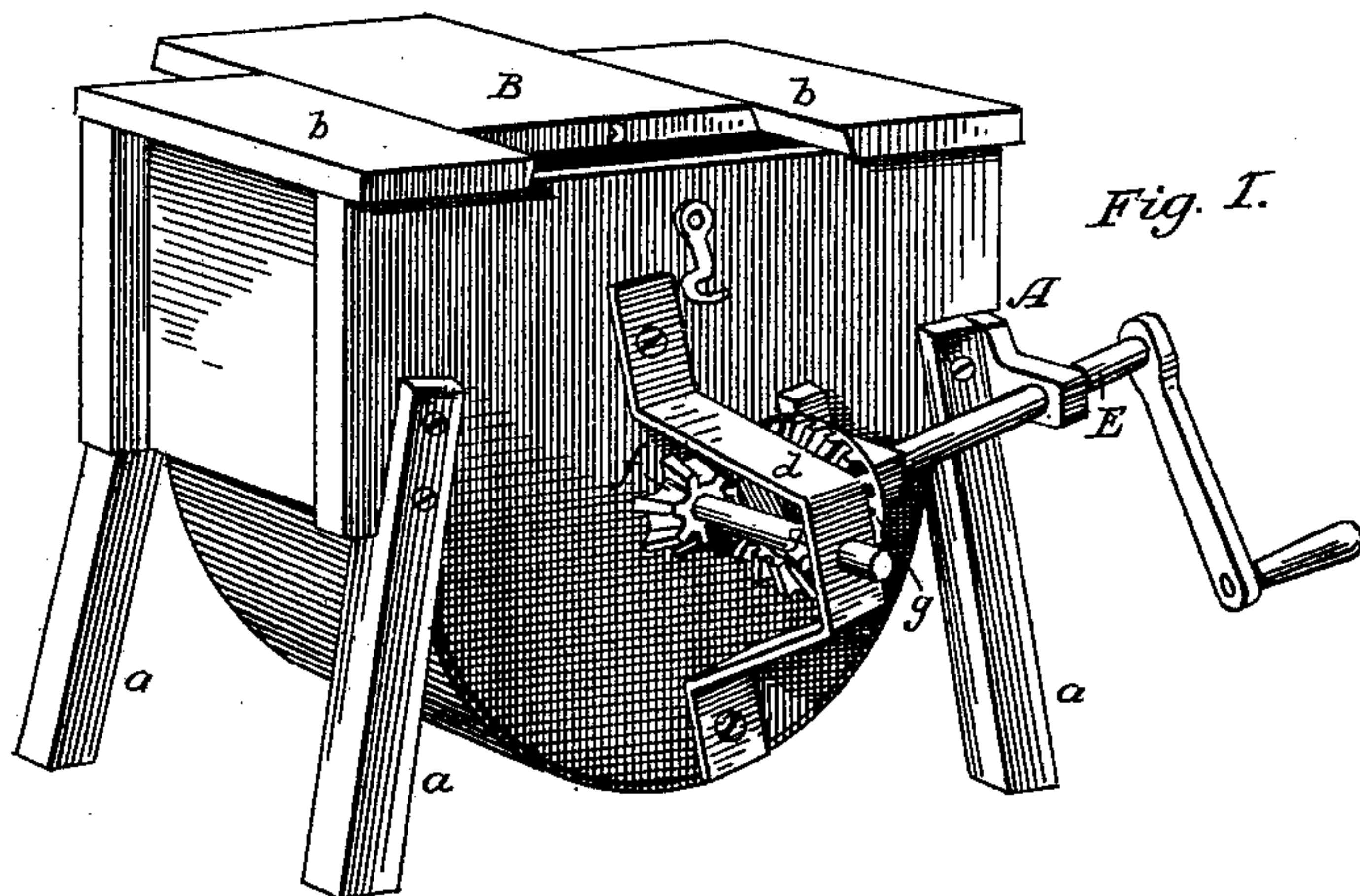


W. H. LIGHTCAP.
Churn.

No. 215,139.

Patented May 6, 1879



Attest:
Clarence Poole
James A. Payne.

Inventor:
Wm. H. Lightcap
by Geo. W. Dyer & Co.
Attys.

UNITED STATES PATENT OFFICE.

WILLIAM H. LIGHTCAP, OF HAZEL GREEN, WISCONSIN.

IMPROVEMENT IN CHURNS.

Specification forming part of Letters Patent No. **215,139**, dated May 6, 1879; application filed February 5, 1879.

To all whom it may concern:

Be it known that I, WILLIAM HENRY LIGHTCAP, of Hazel Green, in the county of Grant and State of Wisconsin, 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 to produce a horizontal churn with rotating dashers, which will be simple and cheap in construction, and at the same time will be more efficient in operation than churns of this class generally, and will have convenient means for removing the dashers for cleaning; and my invention therein consists in the combination and construction of the oppositely-revolving dashers to more thoroughly agitate the cream, as fully hereinafter explained.

In the drawings, Figure 1 is a perspective view of the churn, with the cover partly removed; Fig. 2, a central vertical section on the line of the horizontal shaft, with the dashers in the first position; Fig. 3, a side view, showing the button which holds the end of the shaft; Fig. 4, a view of the dashers, showing the fingers passing each other in the second position; and Fig. 5, a view of the inner faces of the dashers placed side by side.

Like letters denote corresponding parts.

A is the body of the churn, supported on legs *a*, and having a bottom of semicircular shape, covered with sheet metal. The top of the churn is closed by a piece, *b*, at each end, permanently secured, and leaving a rectangular opening into the center of the churn. The edges of the pieces *b* next to this opening are beveled inwardly, and the rectangular cover B, which closes this opening, has outwardly-beveled sides, which slide under the overhanging edges of the pieces *b*, and form a dovetail joint therewith to keep the cover in place. The cover may be held from moving endwise by buttons or hooks on the churn.

C is a horizontal shaft, passing centrally through the sides of the churn. This shaft is made in two parts, coupled together by a clutch-joint within the body of the churn, and near one side thereof. The other end of the removable part of the shaft projects through

and is journaled in the side of the churn-body, and is covered by a button, *c*, pivoted at one end, and held by a beveled block, *c'*, at the other end when over the shaft. This button *c* is made so that the cream cannot work through the opening around the shaft, and by swinging the button on its pivot this section of the shaft can be easily removed endwise from the churn.

The other portion of the shaft is extended out through and beyond the side of the churn, and has its end supported by and journaled in a brace, *d*. The shaft is provided with a beveled gear-wheel, *e*, just inside of this brace. On the fixed portion of the shaft C is a sleeve, D, projecting through the side of the churn into the interior of the same, and having a beveled wheel, *f*, on its end, just outside of the churn.

E is an inclined crank-shaft, journaled in brackets on the side of the churn, at right angles to the dasher-shaft C. It has a beveled wheel, *g*, on its lower end, which meshes with the wheels *e f*, and turns them in opposite directions.

The crank-shaft is inclined upwardly from the dasher-shaft, so as to bring its crank within convenient reach of the operator; and by arranging the crank-shaft, as shown, at right angles to the dasher-shaft, and having the crank at the end of the churn, the movement of the crank will tend to counteract the jar of the churn caused by the vertically-revolving dashers. The operator, being at the end of the churn, can better steady it, which is an advantage in horizontal churns, there being less loss of power, and a more effective agitation of the cream.

The dashers F G are secured, respectively, to the removable portion of the shaft and to the sleeve D on opposite sides of the churn, the first by passing a removable pin through the head of the dasher and the shaft, and the second by a pin passing through the head of the dasher and into a notch in the side of the sleeve. Set-screws may be used in place of the pins; but the pins are preferred.

Each dasher is composed of a head, *h*, which revolves close to the side of the churn, and fingers *i* projecting inwardly from the head. The two heads *h* are of the same length, and

the fingers *i* are preferably round. These fingers are arranged as shown, so as to move past each other without striking. Each head has a number of fingers, one being placed quite close to one end of the head, while the other end of the head is left blank and without fingers.

By this arrangement of the fingers upon the heads of the dashers, each dasher will have a finger to stir the cream at the outer edge, thereby effecting a better stirring of the cream than if these two fingers were at the opposite ends of either dash-head. The fingers being placed at different distances from the axis of revolution of the dashers, they will all describe different circles in their revolution, (which circles are equidistant and occupy nearly all the space included in the movement of the dashers,) and thereby more thoroughly agitate the cream.

It will also be seen that the fingers first pass each other about midway, Fig. 2, and the next time come quite close to each other, Fig. 4, thus more thoroughly beating and agitat-

ing the cream. By turning the crank the dashers will be revolved in opposite directions and the cream churned.

To remove the dashers for cleaning, the pins which hold them are pulled out, the button *c* is turned, the shaft removed endwise through the side of the churn, and the dashers are then taken out through the opening closed by the cover.

On one side, at its bottom, the churn is provided with an opening and plug, or with a faucet, to draw off the buttermilk.

The curved metal bottom of the churn may be covered by a hot-water jacket, if desired.

What I claim as my invention is—

In a rotary churn, the oppositely-revolving dashers having fingers, arranged substantially as and for the purposes set forth.

This specification signed and witnessed this 8th day of January, A. D. 1879.

WILLIAM H. LIGHTCAP.

Witnesses:

WILLIAM GRAHAM,
R. N. DYER.