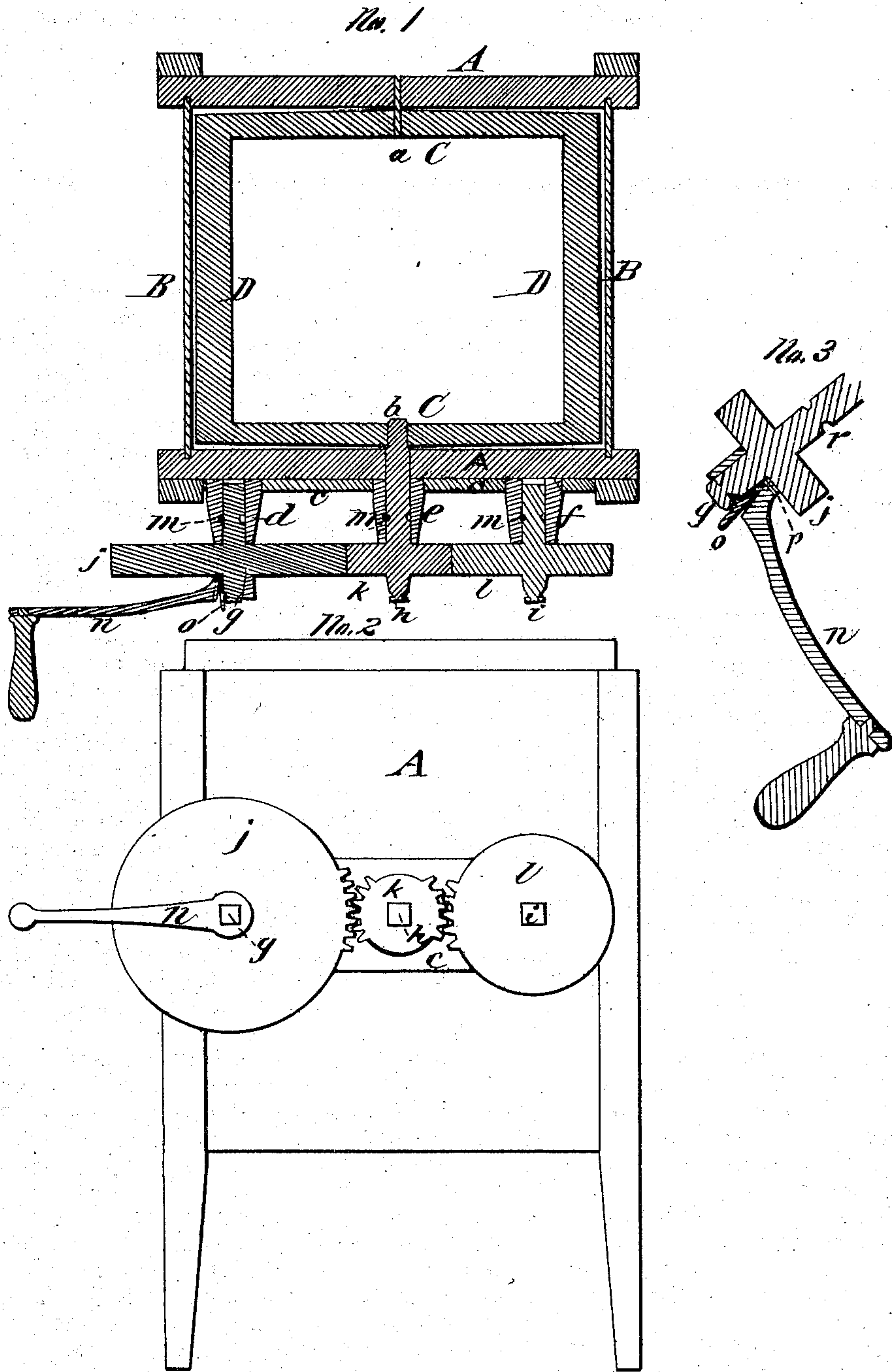


J. W. STRANGE.
Churns.

No. 156,444.

Patented Nov. 3, 1874.



Witnesses.
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UNITED STATES PATENT OFFICE.

JOSEPH W. STRANGE, OF BANGOR, MAINE.

IMPROVEMENT IN CHURNS.

Specification forming part of Letters Patent No. 156,444, dated November 3, 1874; application filed March 6, 1874.

To all whom it may concern:

Be it known that I, JOSEPH W. STRANGE, of Bangor, in the county of Penobscot and State of Maine, have invented new and useful Improvements in Train of Gearing for Churns and other purposes, of which the following is a specification:

This invention is primarily intended to be applied to the class or kind of churns known as rotary; and the invention consists in a train of varying-sized gear-wheels connected with the central shaft, and driven through the medium of a crank, which is interchangeable upon the studs of the several wheels, all being so arranged that a higher rotary velocity of the shaft may be attained, say, in churns, during the earlier part of the process of churning, than would be practical were the dash driven direct by the crank, while, as the butter gathers, and offers greater resistance, speed is partially sacrificed to power, or the dash may be driven direct by the crank.

Figure 1 is a horizontal section of a churn and the attachment, taken through the axis of the gear-wheels and the pivot of the dash. Fig. 2 is a side elevation of a churn and attachment, a part of the teeth on the gear-wheels being omitted in the drawings. Fig. 3 is an enlarged detached section, showing the device attaching the crank to the studs.

A A are the ends, and B B the sides, of the hull. C C are a pair of the arms, and D D two of the floats of the dash. The dash at one end revolves upon the pivot *a*, while the other end is supported and revolved by the stud *b*, as will be more fully described. *c* is a plate, detachably secured to end A. The hollow sleeves *d e f* are formed upon or secured to plate *c*, at suitable distances from each other. The studs or short arms *g h i* are fitted and revolve, respectively, in the sleeves, as shown in Fig. 1, and the gear-wheels *j k l* are, respectively, formed or secured upon the studs, as shown. The studs are secured from end play by means of an annular groove, *r*, shown in Fig. 3, and a vertical hole in the sleeve, and coincident with the groove *r*, whereby a small pin inserted in the hole and groove not only secures the stud in place, but allows free

rotation of the studs, and ready means for their removal, whenever desirable. The studs *g i* need only pass through plate *c*; but stud *h* passes through and actuates the dash-shaft or other shaft, as before stated.

Gear *k* is but about half the diameter of gear *l*, and but little more than one-third of that of gear *j*.

Crank *n* is applied with equal facility to either of the studs, and is secured thereto by the spring-catch *o*, secured in the angle of the socket by pin *p*, and fitting into the recess *s* in the corner of the right-angled ends of the studs, and it is released by actuating the projecting end of the spring.

It will be apparent that, when the crank is applied to stud *g*, the rotations of the dash relatively to the crank will be in the ratio of gears *j k*, and that, while the dash is thus driven, gear *l* serves only the part of an idler; but when the gathering butter, or other retarding influence, commences to resist the revolution, the crank can be instantly changed to stud *i*, when *j* becomes the idler, and *l* transmits the power. Then, when the resistance renders it necessary, the crank is transferred to stud *h*, and the dash is driven direct, leaving both *j* and *l* to play the part of idlers.

I do not claim, broadly, in combination with a rotary dash, a train of multiplying-gears, for the purpose of varying the speed of the dash; nor do I claim, broadly, such train of gears with an interchangeable crank, either for the purpose of such varying speed, or to prevent the reversal of the movement of the dash by changing the position of such crank.

I claim as my invention—

In combination with the central pinion *k*, connecting with the shaft by its stud *b*, the multiplying-gears *j l* and crank *n*, formed to interchange upon arbors *g h i*, the whole mounted and contained upon detachable plate *c*, substantially as described and shown.

JOSEPH W. STRANGE.

Witnesses:

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