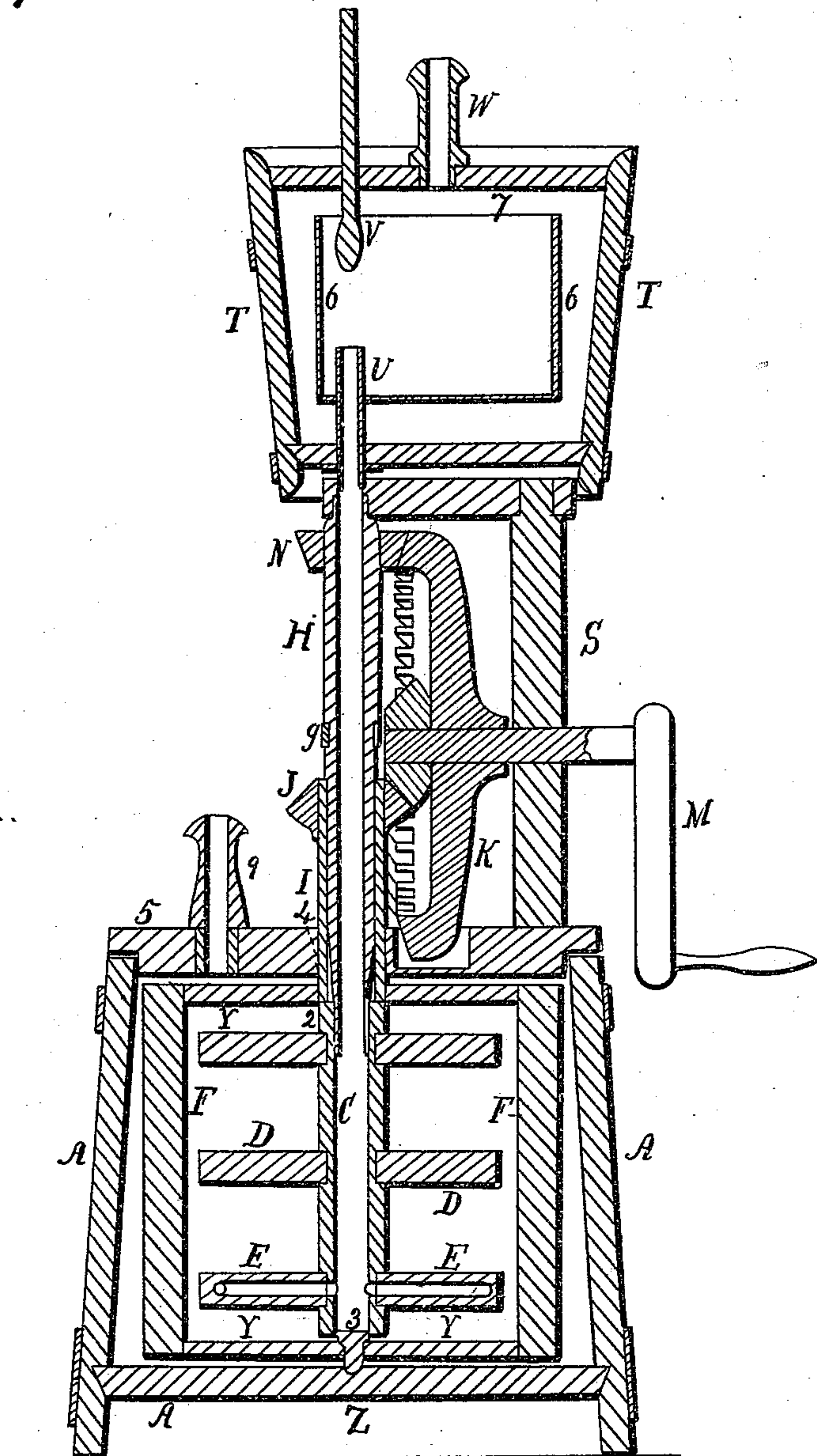


*S. Harper.*  
*Rotary Churn.*  
*N<sup>o</sup> 93,879. Patented Aug. 17, 1869.*



*Witnesses.*

*W. Hadley*  
*N. Hadley*

*Inventor.*

*Samuel Harper*



# UNITED STATES PATENT OFFICE.

SAMUEL HARPER, OF LAWRENCE, KANSAS.

## IMPROVEMENT IN CHURNS.

Specification forming part of Letters Patent No. 93,879, dated August 17, 1869.

*To all whom it may concern:*

Be it known that I, SAMUEL HARPER, of Lawrence, in the county of Douglas and State of Kansas, have invented a new and useful Machine for Separating Butter from Cream or Milk, to be known as the Centrifugal Aerated Churn; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, in which—

Figure 1 is a transverse section, showing all the parts, in which—

A is the vessel that holds the cream; B, the faucet through which the buttermilk is drawn from the churn; C, a hollow shaft or tube, which holds the pins D, and the centrifugal branch-tubes E E, and receives the shaft-tube H, which gives it motion by means of slots in the direction of the arrows. The centrifugal branch-tubes E E have their openings on opposite sides from each other and opposite to the line of motion. F F are outside dashes, framed into Y Y at the top and bottom of the churn, thereby centered on the pin 3, which works in the step Z while at 4. It is fitted by means of stops to the short tube I, which join it to the pinion J, which is made fast to the tube I by the thumb-screw i, while the pinion itself plays on the tube H as a journal, and thus gives motion to this outside dash in an opposite direction to the centrifugal E E with dash that bears. The tube-shaft H supports the pinion N, and is itself supported by the forked brace (one only of which shows) R with its box Q together with the connecting-tube O, which is the terminus of the brace P. Both pinions, J and N, play on the face of the driving-wheel K, each in a separate set of teeth, the pinions revolving at the relative rates suited to the machine, usually from one to four. X is a hinge, to which half of the lid G is attached, and thence to the churn, and to which all of the gearing is fastened, and on opening turns it back out of the way. S S are upright supports, receiving the refrigerator; T T, the outer vessel, to be partly filled with ice, hot water, &c., as the case may require; 6 6, the inner vessel, supplied with air through the short tube or opening W, in the lid 7. The bottom of this vessel may have animal charcoal or other chemical agent laid

over it to purify the air, and through it chemical gases may be introduced to increase the yield of the cream itself. V is a thermometer, passing through the lid of the refrigerator, to determine the temperature of the air within, which will be found, when the churn is in motion, to control the temperature of the cream below. The use of a gum-tube, connecting with the churn at O, and to the family refrigerator, or an extemporized one on the floor, may supplant the one described. 8 8 are legs on which the churn is supported the proper height.

To gather the butter, the outside dash should be stopped by lowering the pinion J out of gear, by means of the thumb-screw i; now

My invention and great improvement consists of two entire revolving dashes, the main shaft of the inner and its lower arms being tubular, and so arranged that by the centrifugal force of this inner dash, and the partial vacuum created by the joint action of the two dashes, a continuous stream of air, or rapid succession of bubbles are supplied to the cream, and distributed by its levity and the motion of the dashes through the entire mass, which, rising with its load of foreign matter, escapes from the churn at 9, both quantity and temperature being completely under the control of the operator; the quantity of air by a faucet, either at U or 2, and temperature by the refrigerator T T. Nor is this all, for while these and many other chemical advantages are derived, the mechanical are no less complete, as it secures a uniform constant agitation throughout the entire mass of the liquid.

These dashes may be used either vertical or horizontal, with almost equal advantage, and with greatly superior results to any other dash now in use. The butter obtained is vastly superior in quality, one-fourth greater in quantity, and obtained in from five to ten minutes.

This contrivance or dash combination is also adapted to many other aerating or oxidating processes—as, for instance, the quick conversion, without loss, of apple-cider into vinegar, &c., &c.

It may be constructed in whole or in part, of either wood or metal, to be run by belt or cog-gearing, and adapted to vessels of every dimension, whether for power or hand use.

Another great advantage to be derived from

this contrivance over many others is, that every part which comes in contact with the cream or butter may be made of wood without impairing its durability.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The vessels T and 6, or equivalent means described, in combination with the hollow

shafts C and H and connecting-pipe U, constructed and arranged as specified.

2. In combination with the above, the pipes E E and beaters F F, arranged and operating as described.

Witnesses: SAMUEL HARPER.

W. HADLEY,

N. HADLEY.