

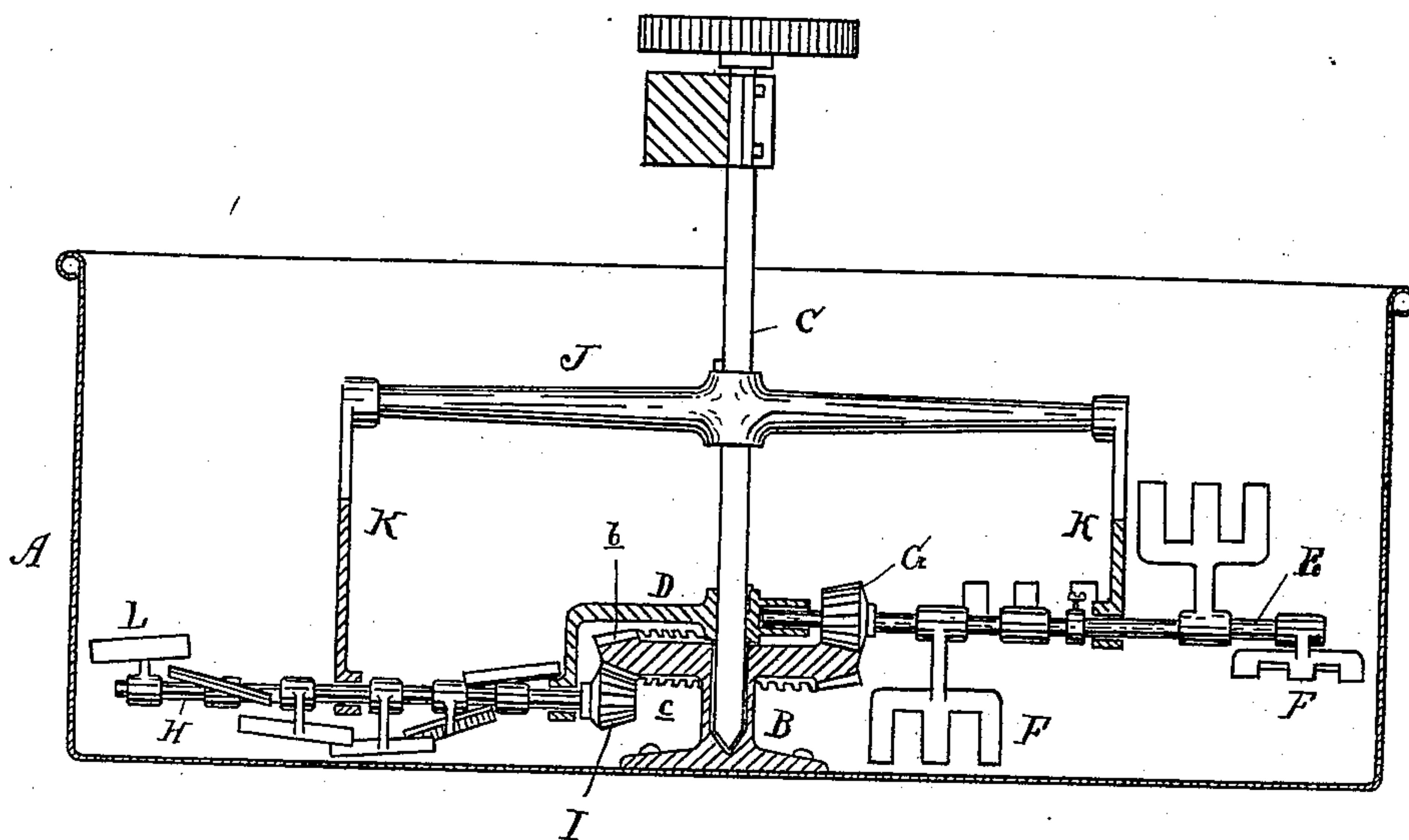
(No Model.)

A. CRAMER.

MASH TUB.

No. 309,931.

Patented Dec. 30, 1884.



Attest:
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UNITED STATES PATENT OFFICE.

ANTHONY CRAMER, OF DETROIT, MICHIGAN.

MASH-TUB.

SPECIFICATION forming part of Letters Patent No. 309,931, dated December 30, 1884.

Application filed September 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, ANTHONY CRAMER, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Mash-Tubs; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, which forms a part of this specification.

This invention relates to an improvement in that class of mash-tubs which are provided with scrapers and stirrers revolving in opposite directions; and the invention consists in the peculiar combinations and the construction and arrangement of parts, all as more fully hereinafter set forth and claimed.

The accompanying drawing forms a part of this specification, and shows my improved mash-tub in vertical central section.

A is the mash-tub.

C is the perpendicular driving-shaft, by which the whole system of stirrers and scrapers is revolved in a horizontal plane. This shaft is supported upon its lower end by the step B, to which the double bevel-gear *b c* is secured on top.

H and E are two horizontal shafts, provided upon their inner ends with bevel-pinions I and G, which mesh with the stationary center gear-wheels, *c b*, respectively.

D and J are double-armed horizontal sweeps, keyed upon the driving-shaft C, one above the other. The lower sweep terminates in suitable bearings for the inner ends of the shafts H and E, while the upper sweep carries bearings, which support these shafts near their outer ends. The shaft E has secured upon it a series of stirrers, F, of any of the usual constructions, and the shaft H carries the scrapers L, which have scraper-blades, which are set at an angle to the axis of their shaft. In practice the driving-shaft C revolves the whole system of stirrers and scrapers in a horizontal plane, and during such travel the shafts H and E are also revolved upon their axis. The blades of the scrapers L are placed at such angles to the line of the axis of their carrying-shaft that they are enabled to quickly and thoroughly scrape the solid contents of the

mash toward the periphery of the tub and expel them through a door in the side of the tub after the operation of mashing is finished; but while the operation of mashing is being carried on the scrapers perform the action of stirrers, supplementing the action of the other stirrers F. As the horizontal translation of these latter stirrers is greater at the periphery than at the center, they create a tendency in the solid contents to gravitate toward the center; but this tendency is counteracted by the action of the scrapers, which act in an inverse manner.

The use of stationary scrapers with a horizontal translation alone does not prevent the accumulation of the solid contents at the bottom of the tub. Neither does the use of a spiral having both axial rotation and horizontal translation, as shown in Schimper and Immens's mash-machine, overcome this objection entirely, as in the latter case the vertical circulation of the solid contents of the tub is principally local—that is, at the outer and inner ends of the spiral.

In my arrangements each of the scrapers, during the operation of mashing, acts individually to produce a vertical circulation, which is rendered still more effective by having the scrapers revolve upon their horizontal axis in a direction opposite to the one of the stirrers F, so that the solid particles thrown toward the bottom of the tub by the action of the stirrers are scraped up by the scrapers and thrown upward again, such vertical circulation taking place all along from the center to the circumference.

By meshing the pinion G at its lower side and the pinion I at its upper side I get the desired motion and give great stability to the device.

It is preferable to so construct the pinions I G that the number of their cogs are not exact multiples of the cogs of the bevel-wheels *b c*.

I am aware of the Patent No. 267,225, and make no claim to the construction shown therein as forming part of my invention.

What I claim as my invention is—

In a mash-tub, the combination, with the step B, having the double bevel-gear *b c* fix-

edly secured thereto, the driving-shaft C, the sweep J, carrying bearings for the outer ends of the shafts E H, and the sweep D, of the shafts E H, their inner ends journaled in
5 bearings in said sweep D, the pinion G, carried by the shaft E, and meshing with the top of the fixed double gear *b c*, and the pinion I,

carried by the shaft H, and meshing with the under side of said fixed double gear *b c*, substantially as and for the purpose specified.

ANTHONY CRAMER.

Witnesses:

H. S. SPRAGUE,
E. SCULLY.