(No Model.)

J. K. HAMMERLE.

MASHING APPARATUS.

No. 317,769. Patented May 12, 1885.

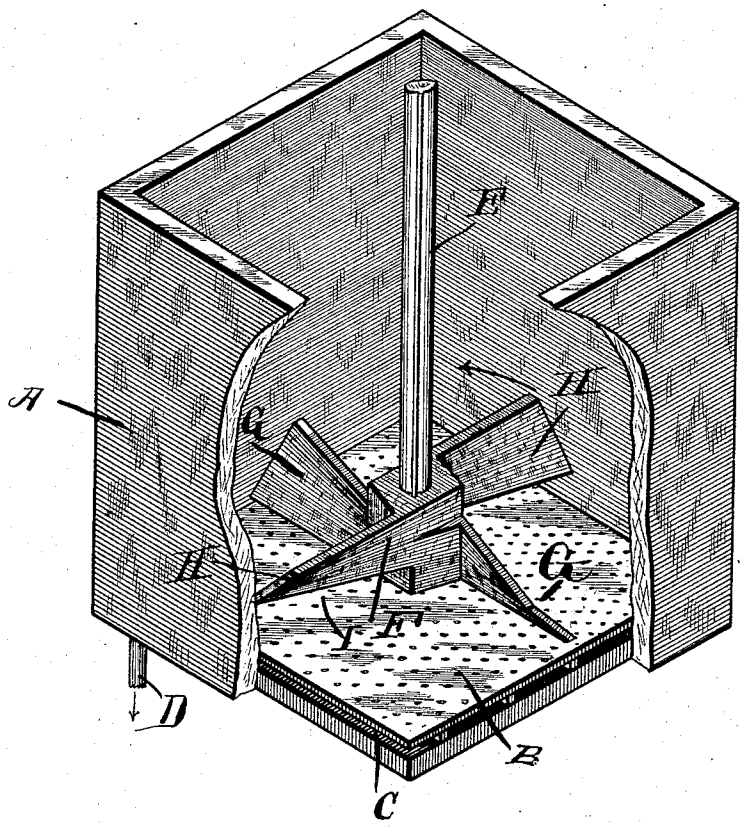


Fig 1

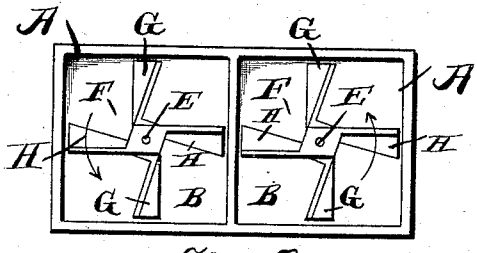


Fig 2

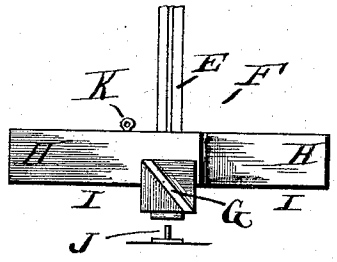


Fig 3

Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN K. HAMMERLE, OF HAMILTON, OHIO.

MASHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 317,769, dated May 12, 1885.

Application filed January 17, 1885. (No model.)

To all whom it may concern:

Be it known that I, JOHN K. HAMMERLE, of Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Mashing Apparatus, of which the following is a specification.

This invention relates to mashing apparatus for the use of the brewer, distiller, &c.; and it will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a perspective view, with a portion broken away, of a mash-tub and rotator illustrating my improvement; Fig. 2, a plan, upon a smaller scale, of a double-tub arrangement; and Fig. 3, a side elevation of the rotator.

In the drawings, A represents a mash-tub, square in plan; B, the perforated superfloor of the same; C, the drainage-spaces between the superfloor and the floor proper; D, the outlet-pipe in connection with the space C; E, the rotator-shaft, vertically disposed centrally in the tub; F, the rotator, secured upon the shaft near to the superfloor of the tub; G, rotator-blades reaching to near the sides of the tub, sweeping close to the superfloor, and presenting inclined faces having a direction of inclination tending to elevate the material being mashed; H, rotator-blades, generally similar to the blades G, but set higher and presenting inclined faces having a direction of inclination tending to depress the material being mashed; I, the space between the blades H and the superfloor; J, a foot-step bearing fixed in the tub-bottom, and adapted to engage a bearing-aperture in the bottom of the rotator-shaft; and K, an eyebolt by which a lifting-rig may be attached to the rotator.

The perforated superfloor shown is a common draining device of the brewer's mash-tub. In many of the mash-tubs used by the distiller no such superfloor is used, the entire mash being taken from the tub in its mixed state, while the brewer allows the liquor to drain from the mash into the space below the perforated floor, and then outward through the pipe D, which is to be provided with a stop-cock; hence I desire it understood that the perforated superfloor is not an essential element in a structure embodying my improvements.

The rotator-shaft is to be driven by any of the usual devices, and should be provided with the usual devices for stopping and starting the same.

The rotator should be arranged to be lifted upward for cleaning, &c. This lifting may be effected by a lifting-rope attached to the eyebolt K, or by any other suitable means. When the rotator is in normal position at the bottom of the tub, it should so engage the shaft as to revolve with it; but when the rotator is lifted for cleaning, &c., it need not be so engaged with the shaft. I show the shaft as provided with a feather, which permits the rotator to be slid up the shaft without being deprived of its driving engagement; but this feather is, as stated, not essential.

The rotator may be locked to this shaft by a set-screw instead of the feather, and in some situations the rotator may be permanently fixed to the shaft, and shaft and all be lifted out of the tub. The rotator presents at first glance a striking resemblance to an ordinary screw-propeller; but a further view shows that the similarity is more apparent than real, for two of the blades are set at one direction of angularity and the other two with an opposite direction. The upward and downward thrusts of the rotator are therefore neutralized, and so also are the upward and downward tendencies of the material being mashed.

The rotator is very shallow, as compared with other mashing devices, and occupies a very small portion of the depth of the tub. The rotator is very light, and its shallowness permits its being conveniently elevated out of the material being mashed without the necessity for removing the tub-cover in cases where the tub is provided with a cover.

The blades G inaugurate upward currents of the material, and the blades H inaugurate downward counter-currents. The mashing is effected in the most thorough and rapid manner, with very slight tendency to be thrown from the tub, the currents commingling violently and perfectly without there being present any violent surface splashings.

The periphery of the rotator approaches close to the sides of the tub, leaving unreached spaces in the tub-corners, in which corners the currents meet, reflect, commingle, &c. The corners thus serve as brakes to prevent the rotation

of the entire mass of mash. The square form of tub permits the maximum of contents combined with the minimum amount of floor-space, and where two or more tubs are used, as indicated in Fig. 2, a considerable saving in cost is effected by reason of one partition serving as a wall for two tubs.

The rotator operates close to the bottom of the tub, and allows no unmashed material to lie dead upon the floor. The blades H are set upon a higher plane than the blades G, which seems to render the action more thorough and perfect; but such elevation of the blades is not essential. I show the rotator as provided with four blades; but any number greater than one may be used.

This apparatus operates with remarkable ease, it appearing that the power consumed in elevating the mash is, to a large degree, returned by the reaction of the mash upon the blades opposite to the elevation.

In apparatus of large size the rotator-blades may be strengthened, if needed, by braces, after the manner of ordinary paddle-wheels of large size.

I claim as my invention—

In a mashing apparatus, the combination of rectangular tub A, shaft E, and the rotator F, formed with a hub having blades G, whose faces slope, and whose lower edges sweep near the tub-floor, and blades H, whose faces slope in a direction opposite to that of the blades G, and whose lower edges are set above the level of the lower edges of blades G, the extremities of the sloping blades sweeping near the flat walls of the tub, substantially as and for the purpose set forth.

JOHN K. HAMMERLE.

Witnesses:
W. A. SEWARD,
J. W. SEE.