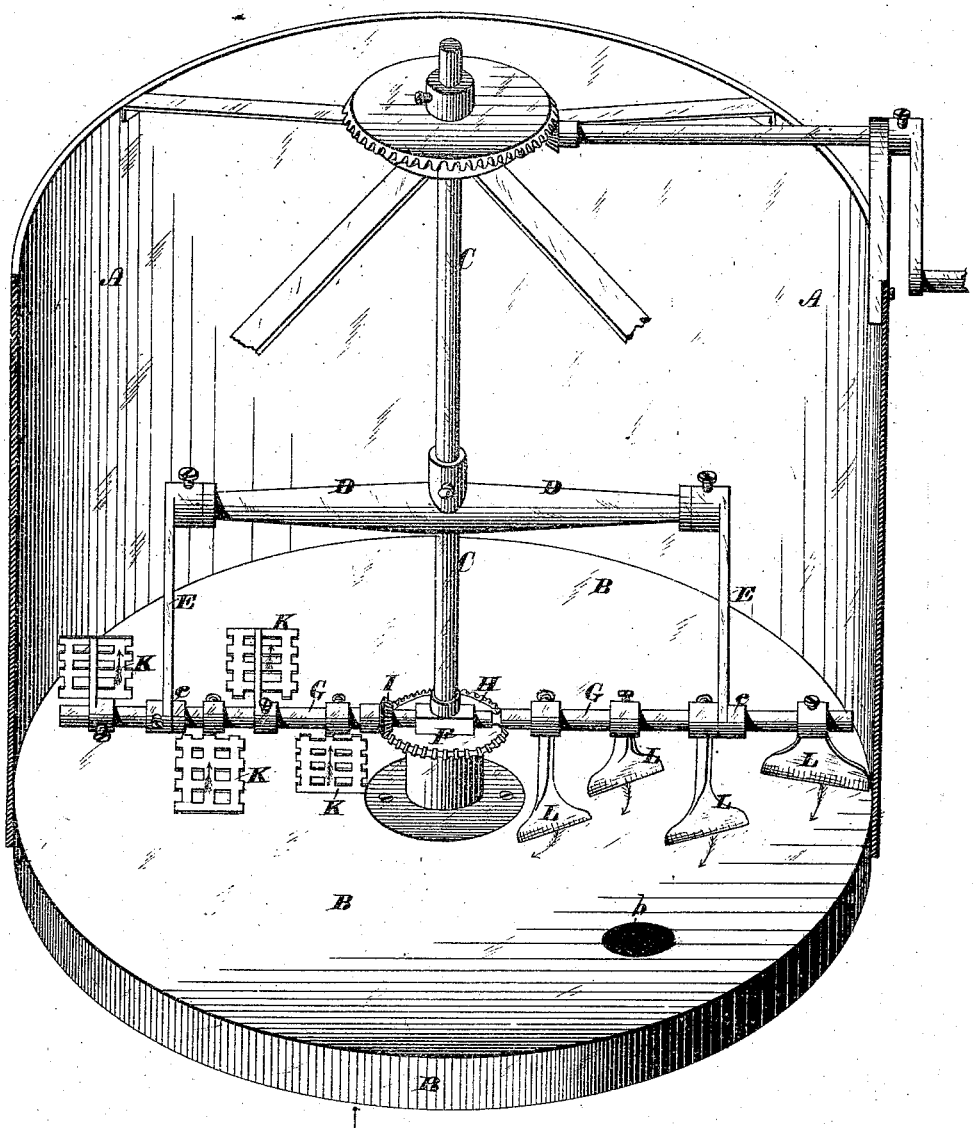
C. KAESTNER.
Mash-Rakes.

No. 207,283. Patented Aug. 20, 1878.



WITNESSES:
Jas. E. Hutchinson
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INVENTOR.
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Prindle & Co. his Attys

UNITED STATES PATENT OFFICE.

CHARLES KAESTNER, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN MASH-RAKES.

Specification forming part of Letters Patent No. **207,283**, dated August 20, 1878; application filed June 24, 1878.

To all whom it may concern:

Be it known that I, CHARLES KAESTNER, of Chicago, in the county of Cook, and in the State of Illinois, have invented certain new and useful Improvements in Mash-Rakes; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which is shown, in perspective, my improved apparatus as arranged within a mash-tub, a portion of the side wall of the latter being removed, so as to show the interior arrangement.

In the brewing of beer and other like fermented liquids, much difficulty has been experienced in stirring the grain within the mash-tub, that portion near the bottom of the tub being liable to be passed over by the revolving rakes usually employed for such purpose.

To obviate this difficulty is the design of my invention, which consists, principally, in combining with vertically revolving or oscillating rakes or agitators, which are arranged to rotate around the axis of a mash-tub, vertically-stationary scrapers, which also rotate around the axis of said tub and are arranged to raise the grain from its bottom, substantially as and for the purpose hereinafter specified.

It consists, further, in the relative angles of said scrapers, whereby the grain may be caused to move toward the discharge-opening when it is necessary to empty the tub, substantially as is hereinafter shown.

It consists, finally, in arranging the scrapers in a "dodged" form, so as to afford more clearance to the grain, substantially as is hereinafter set forth.

In the annexed drawing, A represents the side wall, and B the bottom, of a mash-tub of the usual form, within which, at its axial center, is journaled a vertical shaft, C, that is rotated, when desired, by any suitable means.

At a point between the upper and lower ends of the shaft C is secured a bar, D, which projects horizontally outward to equal distance, and at each end is provided with an arm, E, that extends downward, and at its lower end has a horizontal sleeve, *e*, within which and within a bearing, F, that is secured to the lower end of said shaft C, rests a shaft, G, which extends radially outward nearly to the wall A of the tub.

One of the shafts G is confined in place within its bearings, while the opposite shaft G is capable of rotation and is caused to revolve, when the shaft C is rotated, by means of a bevel-gear, H, which is secured to or upon a suitable support at the lower end of said shaft C and meshes with a bevel-pinion, I, that is attached to the inner end of said shaft G.

At suitable points upon the rotary shaft G are secured radial rakes or agitators K, which have such length as to cause each to nearly touch the tub bottom B at each revolution of said shaft. Said rakes are, preferably, arranged upon a spiral line along said shaft.

Secured to or upon the fixed shaft G are a number of scrapers, L, which extend downward nearly to the bottom B of the mash-tub, and at their lower ends have such length, radially, as to cause the whole of said tub-bottom to be passed over at each rotation of the shaft C.

The forward face of each scraper L has an upward and a rearward inclination, so that, when grain is placed within the tub and the shaft C is caused to rotate, said scrapers will lift said grain from the bottom of said tub as they pass beneath it.

The scrapers L are alternately extended forward and rearward from the shaft G, so as to allow clearance, while their forward edges are set at such angles with relation to an opening, *b*, which is made in the bottom B for the discharge of grain, as to cause said grain to move toward said opening from all points.

The operation of the mechanism is as follows: The crushed or ground grain being placed within the tub, and water added, the shaft C is set in motion and the mash thoroughly mixed by the combined action of the revolving rakes K and horizontally-moving scrapers L. After the process is complete the wort is drawn off from the tub and the grain then discharged through the opening *b*, as before described.

While the revolving rakes perform an important office in stirring up the mash, it is found that they do not agitate all of the grain that rests upon the bottom of the tub, and that, if said rakes alone were employed, a portion of

said grain would not be properly acted upon, and might operate to clog the tub; but by use of the scrapers each portion of said grain which rests upon the bottom of said tub is moved, and the whole mass so thoroughly agitated as to insure a maximum production of wort from a given amount of grain.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. In a mash-tub, the combination of vertically and horizontally revolving rakes or agitators K and horizontally-rotating scrapers L, substantially as and for the purpose specified.

2. In combination with a mash-tub, scrapers L, which are secured upon a fixed arm that revolves around the axis of said tub, and have their faces inclined rearward and toward the circle upon which is located the discharge-opening *b*, whereby the solid contents of said mash-tub may be moved to and caused to pass through said opening, substantially as and for the purpose shown.

3. In combination with a mash-tub, a series of horizontally-rotating scrapers, L, which are alternately set forward and in rear of their support, with their lower ends near the bottom of said tub, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 11th day of June, 1878.

CHARLES KAESTNER.

Witnesses:

GEO. S. PRINDLE,

JACOB SCHOENEWALD.