A. I. GUTHRIE.

MASH-RAKE.

No. 193,507. Patented July 24, 1877.

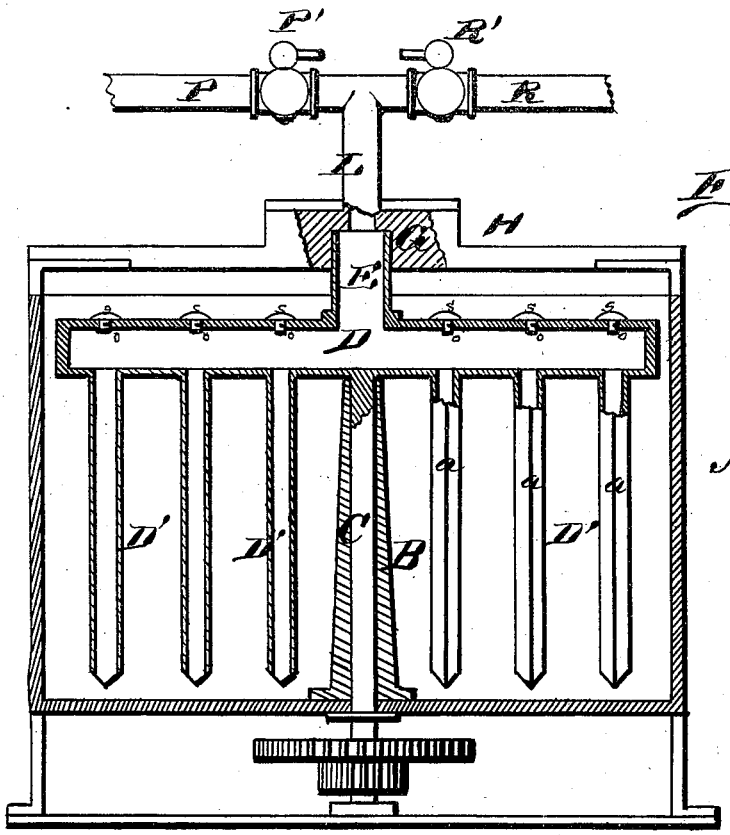

Fig. 1.

Fig. 2.

Fig. 3.

WITNESSES

George E. Upham

Robert Everett

INVENTOR.

Alexander I. Guthrie.

Gilmore, Smith & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ALEXANDER I. GUTHRIE, OF LOUISVILLE, KENTUCKY.

IMPROVEMENT IN MASH-RAKES.

Specification forming part of Letters Patent No. **193,507**, dated July 24, 1877; application filed June 9, 1877.

To all whom it may concern:

Be it known that I, ALEXANDER I. GUTHRIE, of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and valuable Improvement in Mash-Rakes; 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 drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal vertical sectional view of my mash-rake, and Figs. 2 and 3 are details of the same.

The nature of my invention consists in the construction of a mash-rake whereby either steam or cold air can be conducted through the rake while it is in motion stirring the mash in the tub, as will be hereinafter more fully set forth.

The annexed drawings, to which reference is made, fully illustrate my invention.

A represents the mash-tub, provided with a hollow post, B, extending upward from the center of the bottom thereof. Through this post B is passed the center-shaft C of the rake, which latter is composed of the head D and vertical teeth D′ depending therefrom.

The rake may be rotated by means of gearing connecting with the center-shaft C, or in any other suitable manner.

The rake-head D and teeth D′ are made hollow, the head being closed at both ends, and the teeth opening into the head. The front side of each tooth forms a central edge, *a*, and beveled sides *b b*, while the rear of the tooth is round, as shown at *d*. The lower end of the tooth is beveled or inclined, running to a point at the front, as shown at *e*.

By this construction the central edge *a* of each rake-tooth, and the beveled sides *b b*, together, form a wedge, which cuts into and divides the mash in the revolution of the rake, while the inclination of the lower end of each tooth, terminating in a point, allows ample space for the passage of steam, cold air, or water between its lower end and the bottom of the mash-tub.

The upper face of the rake-head is perforated at *o o*, and each perforation is screw-threaded to receive a screw, *s*, and each perforation in the rake-head lies directly opposite the hollow in one of the teeth.

By this construction the rake-head is steam-tight on its upper face, when the screws are inserted in place, and, in cleaning the rake, should any of the mash adhere to the sides of the hollow tooth, it can readily be removed by taking out its screw and forcing a straight stick or other similar implement through the perforation, and thence through the hollow rake-tooth, removing any mash adhering to interior hollow of the tooth.

From the top of the rake-head D, at the center, extends a tube, E, upward into a box, G, formed on or attached to a beam, H, running above and across the center of the tub. Into this box is passed a tube, L, having two branches, P and R, which are provided with suitable stop-cocks P′ R′.

Steam is forced through the pipes P L into the box G, and from thence, through the tube E, into the rake-head D, and down through each rake-tooth D′, discharging at the lower end thereof into the mash while the rake is revolving. After steaming is sufficiently done the steam is shut off by means of the stop-cock P′, and, by connecting a blower with the pipe R, and opening the stop-cock R′, a current of cold air is forced through in the same manner as the steam, the cold air penetrating into and cooling down the mash.

Cold or hot water may be forced through the same channel that the steam and cold air passes through, for the purpose of cleaning out and keeping the rake-teeth sweet and clean inside.

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

1. In a mash-rake, the hollow rake-tooth D′, having the central cutting-edge *a*, beveled sides *b b*, and inclined lower end, terminating in a point, *e*, substantially as and for the purpose set forth.

2. In a mash-rake, the hollow rake-head D, provided with screws *s* and perforations *o*, in line with the axes of the hollow teeth D′, sub-

stantially as described, and for the purpose set forth.

3. In a mash-rake, having branch pipes P R, tube L, box G, and tube E, the hollow rake-head D, having perforations *o* and screws *s*, and the hollow teeth D′, having central cutting-edges *a* and beveled sides *b*, all combined, for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ALEXANDER IVERSON GUTHRIE.

Witnesses:

JAMES G. GUTHRIE,

CHAS. WILSON.