C. MAITLAND.

Mashing Apparatus.

No. 45,369. Patented Dec. 6, 1864.

Fig. 2

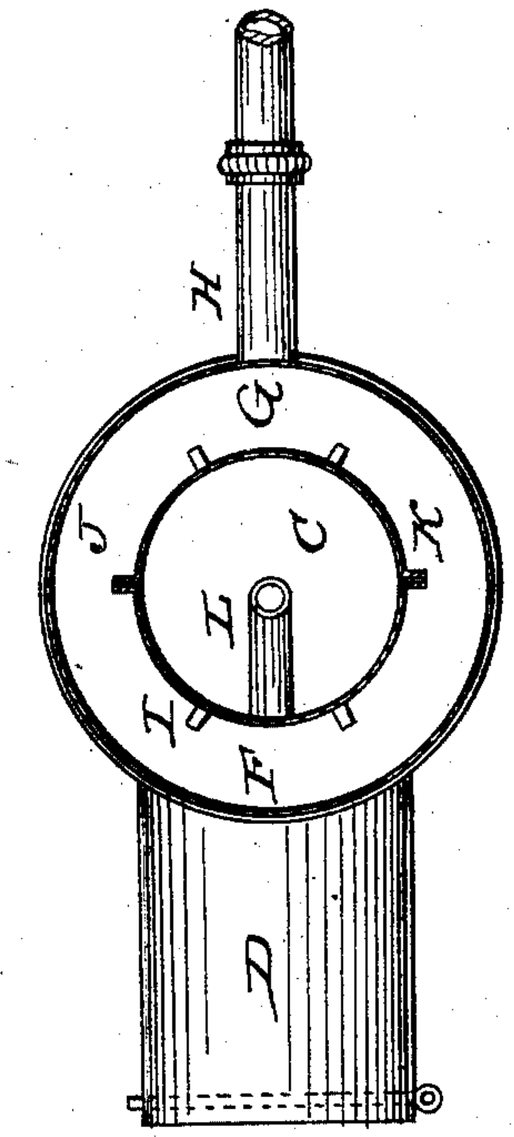
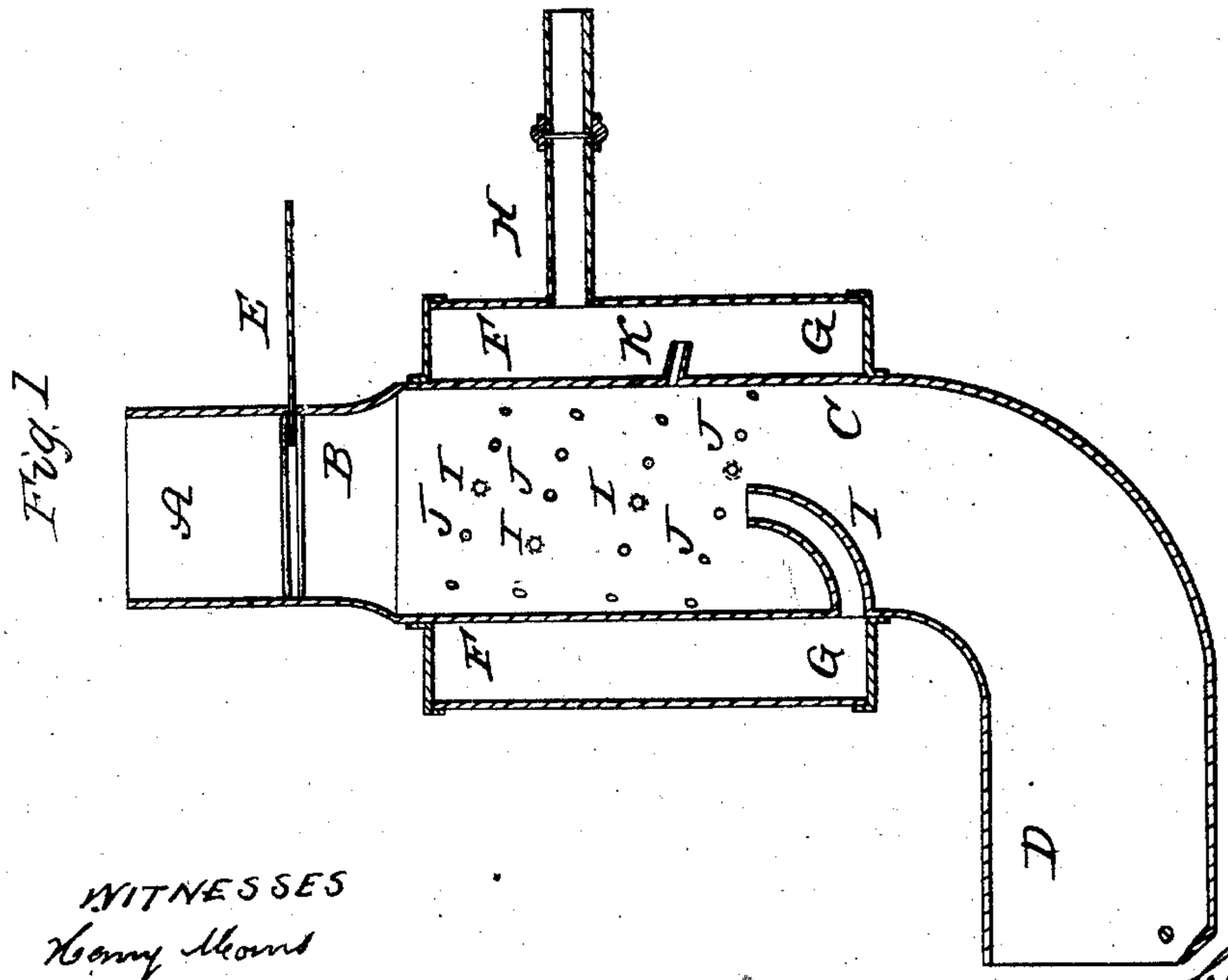


Fig. 1



WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES MAITLAND, OF ALLOA, COUNTY OF CLACKMANNANSHIRE, SCOTLAND.

IMPROVED MASHING APPARATUS.

Specification forming part of Letters Patent No. **45,369,** dated December 6, 1864.

To all whom it may concern:

Be it known that I, CHARLES MAITLAND, of Alloa, in Clackmannanshire, Scotland, have invented a new and useful Improvement in Mashing Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a vertical central section of my invention. Fig. 2 is a horizontal section of the same.

Similar letters of reference indicate like parts.

This invention consists in an apparatus for mashing whereby the mash, grain, or grist in descending to the mash-tun is met by a series of transverse and of vertical jets of water sparge forced in by liquid pressure or by any other competent power, and by these means the agglomeration of the mash, grist, or grain is effectually prevented, and the mash-water or sparge is caused to penetrate each single grain.

My apparatus consists of a simple pipe or passage, A B C D, formed of copper or other suitable material, into the top part, A B, of which the malt, grain, or grist is admitted from a hopper, duct, or rhone, a slide-valve, E, being applied to shut off or regulate the feed as required. The middle portion, B C, is by preference cylindrical, and there is formed round it an external annular chamber, F G, which receives the mashing or sparge water by the inlet-pipe H, and from which the water enters the middle space, B C, by a number of jets. The jet-orifices may be arranged in a variety of ways; but in the examples shown in the drawings they are disposed regularly in spiral lines round the passage.

Those of the jet-orifices marked I are made larger than those marked J, and the former are fitted with directing-tubes, as shown at K, to impart more solidity or concentration to these jets, with the view of giving them power to penetrate agglomeration among the descending malt, grain, or grist. And with the view of breaking up any larger masses or agglomerations, and so as to insure the mash-water or sparge penetrating to every single grain, a large jet is thrown from the central spout, L, directly upward, so as to meet the descending matters. This spout ought to be made in such a shape that it will not impede the descending matters. The larger jets I are by preference made with a slight upward inclination and with more or less of a tangential direction, and the smaller jet-orifices may also be similarly disposed. There may be two or more internal jets, similar to the jet L, and in some cases one or more internal jets directed downward may be introduced at the upper part.

The malt, grain, or grist, in passing down through the middle space, B C, becomes effectually saturated by and mixed with the mash-water or sparge, and the mixture or mash passes on by the curved part C D of the passage into the mash-tun, the mouth of the pipe being inserted through the side of the tun or otherwise connected therewith, as may be most convenient.

I prefer to place this apparatus in a vertical position, as shown in the drawings, but it might work in a more or less inclined position, the jets being modified as regards their positions and directions, if necessary.

I find it sufficient for the mash-water or sparge to have a head of about six feet, but a greater head is not disadvantageous.

The apparatus may be made in various sizes.

In another modification a paddle or screw is fitted in the mash-vessel so as to rotate freely on a vertical axis, and the mash-water or sparge is made to enter the vessel by a single spout, which directs it against the paddle or screw, and the latter is thereby made to rotate and mix the malt, grain, or grist and water together. In either modification there may be two or more sets of the appliances, which may be arranged to give rotation in opposite directions, and, while a vertical axis is preferted, it may be inclined or even horizontal. These arrangements are self-acting, but driving-power may be applied if found desirable.

I claim as new and desire to secure Letters Patent—

An apparatus for mashing substantially such as herein described, whereby the mash, grain, or grist, in descending to the mash-tun, is met by a series of transverse and of vertical jets of water or sparge forced in by liquid pressure or by any other competent power, and by these means the agglomeration of the mash, grist, or grain is effectually prevented, and the mash-water or sparge is caused to penetrate each single grain.

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Witnesses:

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