

J. WALKER.

Mash Tun.

No. 62,101.

Patented Feb. 12, 1867.

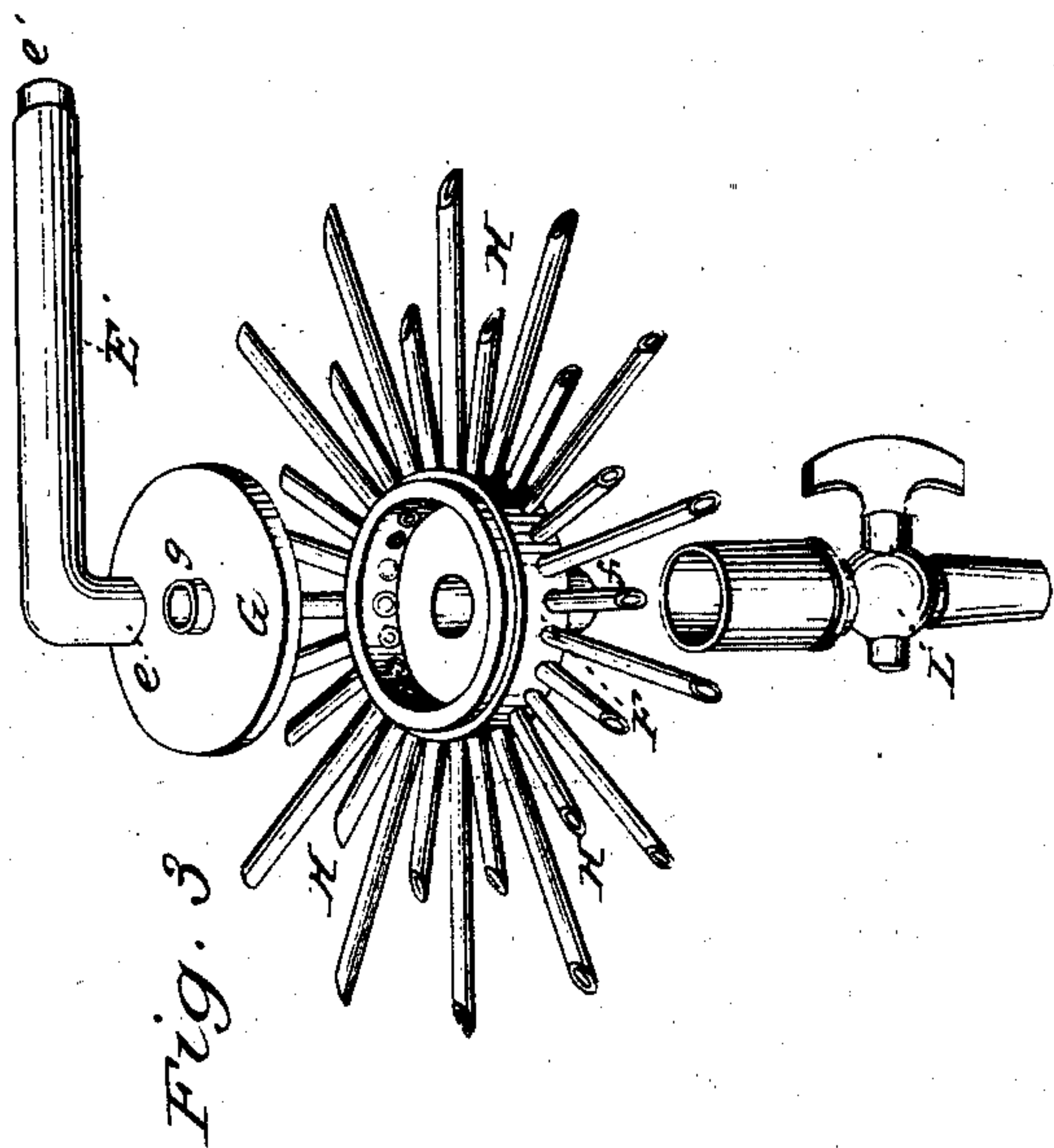


Fig. 3

Fig. 4

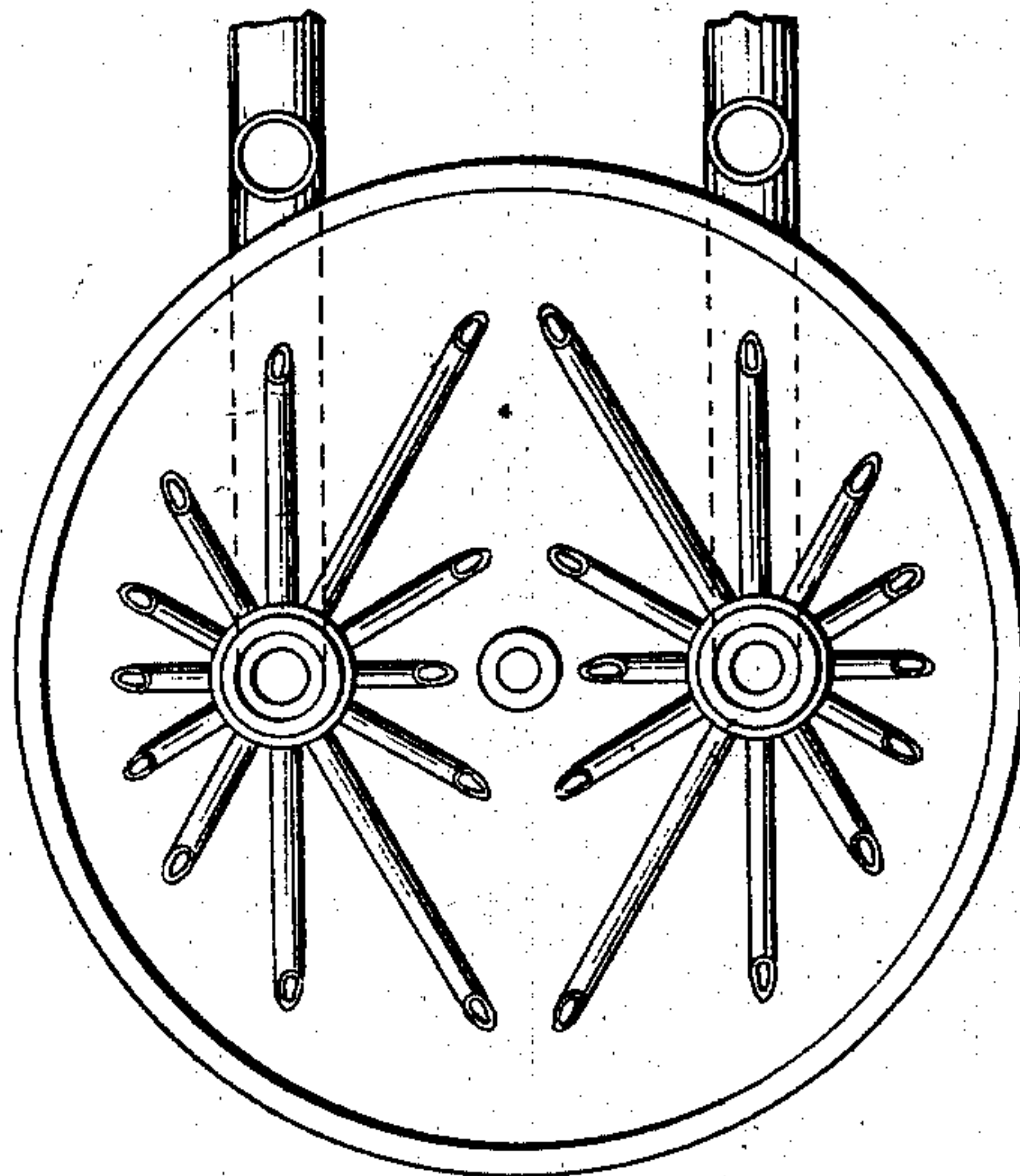


Fig. 1

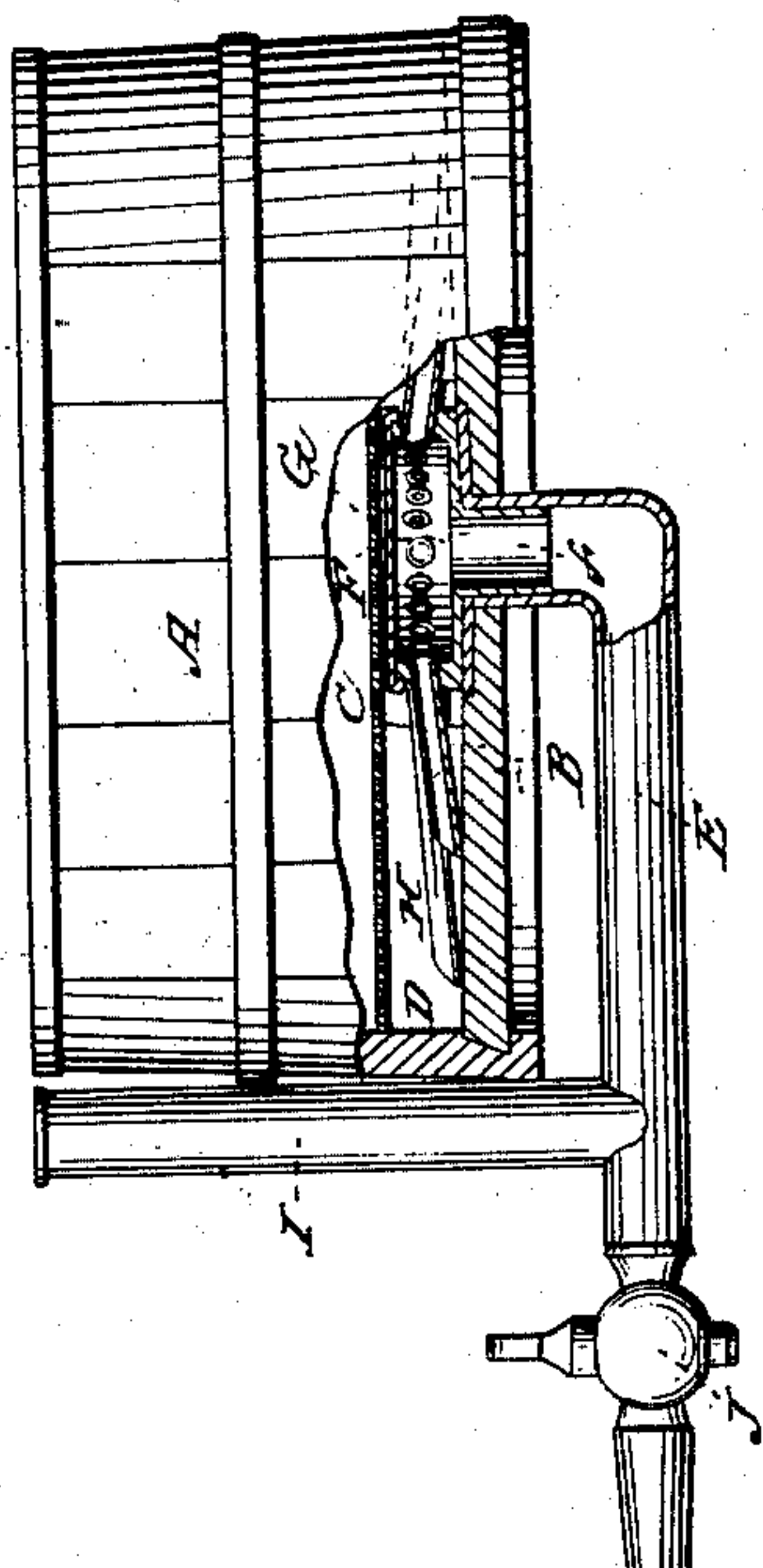
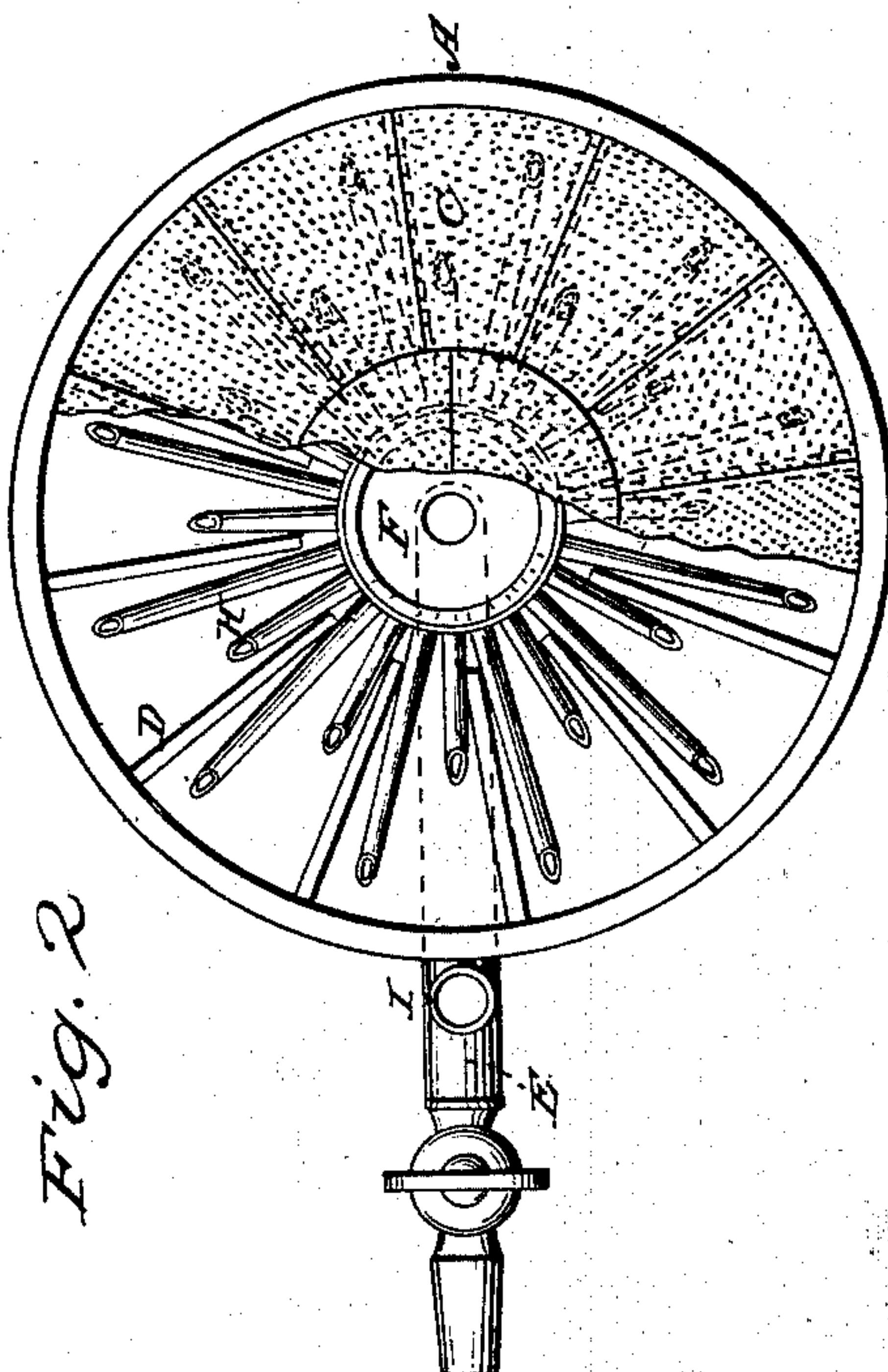


Fig. 2



Witnesses:

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JAMES WALKER, OF CINCINNATI, OHIO.

Letters Patent No. 62,101, dated February 12, 1867.

IMPROVEMENT IN BREWERS' MASH-TUNS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JAMES WALKER, of Cincinnati, in the county of Hamilton, and State of Ohio, have invented a new and useful improvement in Mash-Tun Draining Apparatus; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification.

My invention relates to an arrangement of pipes for draining and attemperating brewers' "mashes," which, while accessible in every part, and therefore easily and thoroughly cleansed, is also adapted to conduct off the worts in numerous small streams, so as to prevent the escape along with the worts of the dregs or feculencies mechanically suspended in the mash or "goods," which, when allowed to enter the brew-kettle or "copper," are liable to adhere to the sides and bottom of the same, and to become burned so as to injure the flavor of the beer or ale, largely impairing the quality and quantity both of the beer and of the "stock" yeast, causing fretful fermentations, preventing the beer fining, and injuring its keeping qualities. As an attemperator, to those brewers who prefer first mixing the malt with the liquor at a low temperature, and afterwards raising the heat of the mash to the desired temperature for extracting the saccharine, by letting liquor of a higher temperature underneath the false bottom, my invention affords a sure and effective means of introducing the hotter liquor with certainty at so many different places as to bring the whole to the desired temperature in less time and with less mashing than anything that has heretofore been introduced for that purpose, and with far less danger of scalding the malt.

Figure 1 is a side elevation of a mash-tun, provided with my improved pipe, a portion being broken away.

Figure 2 is a plan thereof, the cap and a portion of the strainer or false bottom being omitted.

Figure 3 is a perspective view of a form of my drain pipe, adapted for hand-mashing, or wherever an ascending pipe is practicable.

Figure 4 is a plan, showing a duplicated drain pipe for use in connection with a mechanical agitator.

A represents a brewer's mash-tun of the ordinary construction, and having its floor B slightly sunk at the centre. C is a strainer or false bottom, consisting of a number of stout perforated copper plates, upheld a short distance above the bottom proper, B, on a series of strips, D, of wood, which rest upon without being attached to said bottom B. E is the main portion of the drain pipe, through which the worts are conveyed from the mash to the copper or "under back," (where an under back is used,) and it also serves, along with the upright pipe I, for introducing underneath the false bottom all the liquor required for making the mash. The drain pipe has a customary discharge-cock or "tap," J. The drain pipe E, which enters the bottom at the centre of the tun, couples to a neck, f, depending from a chamber, F, which is covered by a removable cap, G. From the chamber radiate to all parts of the tun a number of open-ended branches, H. I have selected for illustration the forms successfully applied by me, but reserve the right of varying the same as circumstances or the different arrangements of the mash-tuns may render advisable. For example, where a rotary agitator or mashing machine is used, requiring a bearing in the centre of the tun, two or more groups of branches may be used, (see fig. 4;) while for one in which hand-mashing is employed, and wherever practicable, the main drain pipe or stem may ascend from the chamber, (see fig. 3.) The advantages of my form of drain pipe over that customarily employed are of a very decided character, and may be stated as follows: Being detachable, it can be taken out after every mashing, and its passages being all straight and open at both ends, it can be well and thoroughly cleansed. Another advantage is, by having a large number of small pipes in the tun on the principle of my invention, the drain pipe can be made large enough, so that it can be thoroughly cleaned after every run, and a much finer wort can be run off in a much shorter time. I am aware that drain pipes have been tried having four and even eight branches, all entering and attached to the mash-tun bottom, and all running underneath the mash-tun, and bent and twisted in order to avoid the supports of the mash-tun, and at the same time to all discharge at one place, but such pipes, from their convoluted form, are almost impossible to be kept clean. Where "sparging" is preferred to making a second mash, my arrangement will be found of great benefit, for, in washing out the saccharine matter by sparging, there is great danger of washing out also those very fine particles of the malt which do damage in the boiling, unless the drainage be much slower and more gentle than has been attained in large mashes heretofore. Where second mashing is preferred to sparging, my invention will also be of great benefit as an attemperator, by introducing the liquor for the second mash

directly and with certainty at so many different places of the mash at once, thereby avoiding overheating at any one place, and bringing the whole mash to a uniform heat in a very short time, and with as little mashing as possible, which is always desirable in a second mash. All mash-tun bottoms are necessarily made with a fall to the drain pipe or pipes, so that, in cleaning, the cleansing water may run off easily. By this form of bottom, in the ordinary mash-tun, the malt dreg which falls through the false bottom is injuriously facilitated in its passage with the worts to the copper. With my improvement, this is not the case, for the currents being, to a very great extent, in the opposite directions, or from the centre outward to reach the pipe inlets, rather retard the escape of the dreg than otherwise. By the ordinary form of pipes, with one, or four, or even eight, (which number many brewers have found it to their advantage to adopt within the last two years,) the currents of the worts through the mash or goods are so strong in a large mash as to carry with them a large portion of the dreg or feculent matter into the copper.

By my invention the operator may have as many currents through the mash as he desires, and the more the better; every pipe makes a current, and every additional current reduces the force of the others, and enables the worts to pass off quietly without disturbing the sediment, or that insoluble portion of the malt which, during the process of mashing, falls through the false bottom, and which is found after each run thickly deposited upon the bottom of the tun and between the branches, thus enabling a large mash to be drained as fine as a small one. Previous attempts to avoid the evils arising from getting the worts in a too gross condition into the copper have been abortive or imperfect; and especially has this been the case when the brewer, from the increase of his business, has found it necessary to enlarge the size of his mash; the evil arising partly from the convoluted form of the small pipes he had to use in order to get by the supports, which, by becoming clogged with the sediment and fouling, injured the succeeding run of worts, and partly from the exposure of the worts in several small pipes outside of the tun to too rapid cooling in very cold weather, before boiling with the hops. In most cases, especially where hand-mashing is resorted to, I prefer to conduct off the worts by an elevated main drain pipe within the tun. (See E', fig. 3.) For this purpose the said main drain pipe may have a descending elbow, *e*, which may enclose a neck or rim, *g*, that rises from the cap G, so as to form a slip-joint and have a similar connection, *e'*, with the tap; or it may be secured by screw couplings to the cap and tap respectively. By so arranging the agitator or machine masher as to run clear of the elevated main pipe such an apparatus may be employed in connection with the form shown in fig. 3. In this arrangement a blow-off cock, L, is provided, which enables the emptying of the tun when the drain pipes are removed. Such an arrangement of main drain pipe is beneficial, by obliging the escaping wort to ascend throughout its entire course, so as to enable the dregs to completely precipitate, and thus to afford a clear run of wort. By drawing wholly from the extreme bottom of the tun the coldest liquor is discharged first, and by wholly enclosing the drain pipe within the tun injurious cooling is avoided. In a mash-tub containing one hundred and fifty bushels of malt, and provided with, say, twenty-four branches, the draining duty of each inlet is but six and a quarter bushels, which is less than that of an ordinary home brewing. It will be perceived that every portion of my arrangement is susceptible of being thoroughly washed or swabbed out; that even where the main drain pipe is outside the tun the small pipes are well protected from radiation or cooling while performing their part of the operation; by being enclosed within the body of the tun, and before the worts leave the tun, they are brought together in the chamber in such a large body as to successfully resist the cooling effect of the atmosphere in their passage to the copper.

I claim herein as new, and of my invention—

1. The provision in a mash-tun of the radiating inlets to the drain pipe or pipes, substantially as and for the purposes set forth.

2. The elevated drain pipe proper within the mash-tun, substantially as set forth.

In testimony of which invention I hereunto set my hand.

JAMES WALKER.

Witnesses:

GEO. H. KNIGHT,

JAMES H. LAYMAN.