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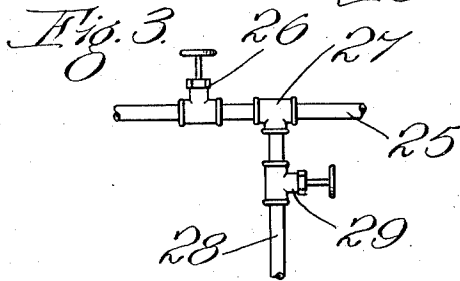
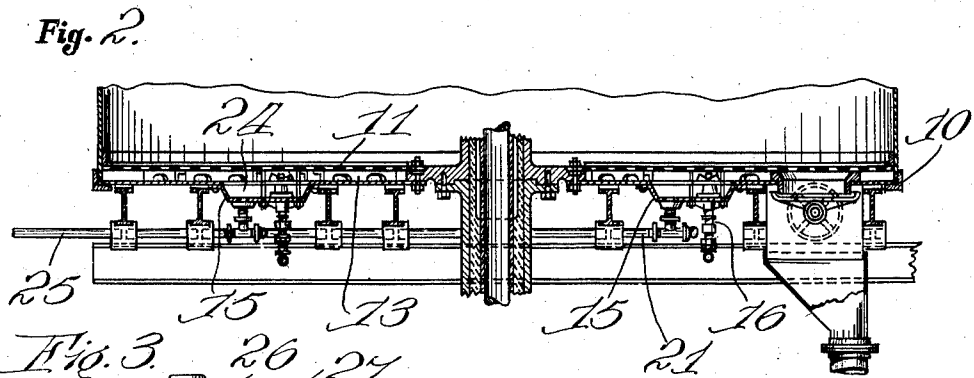
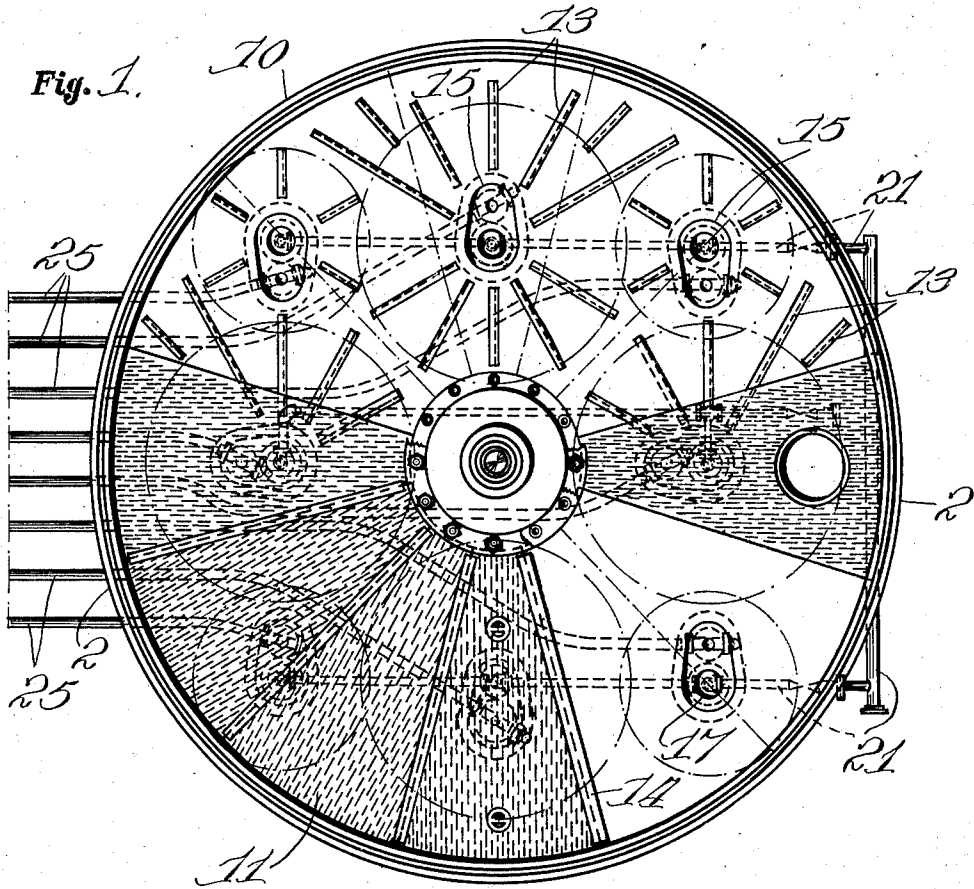
A. R. KELLER

1,983,232

WASHING AND CLEANING APPARATUS FOR MASH AND STRAINER TUBS

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3 Sheets-Sheet 1



INVENTOR.

Andreas R. Keller.

By Dyerforth, Lee, Chilton & Wiles,  
Attys.

Dec. 4, 1934.

A. R. KELLER

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3 Sheets-Sheet 2

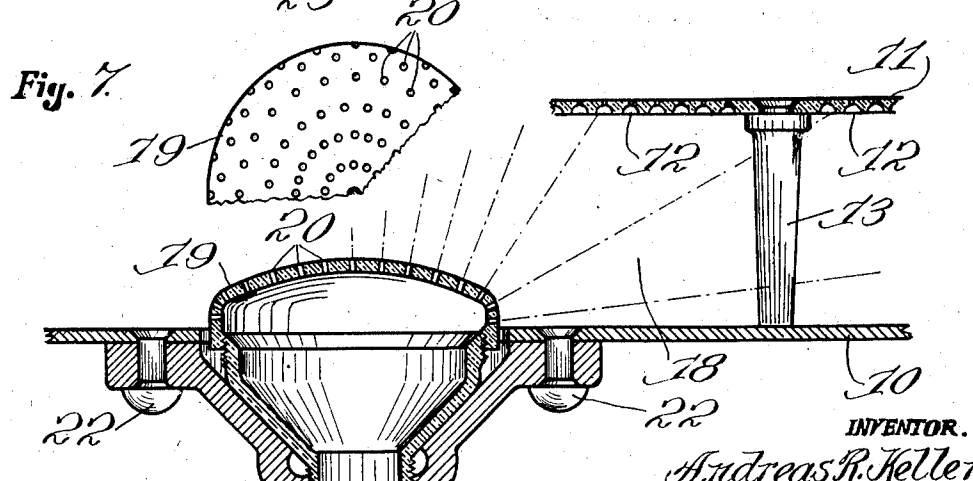
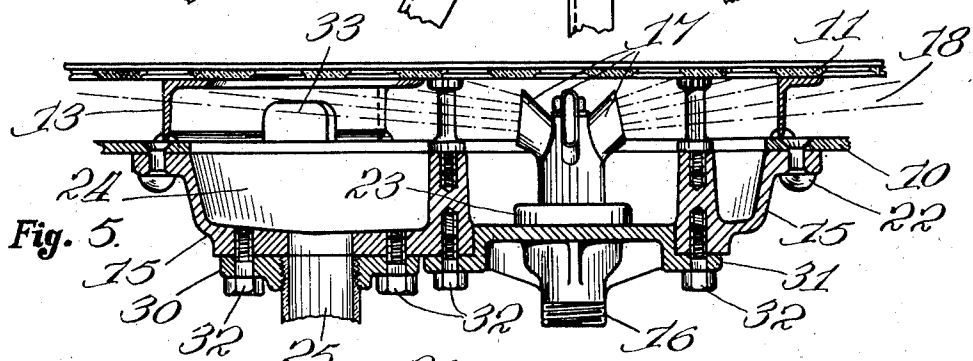
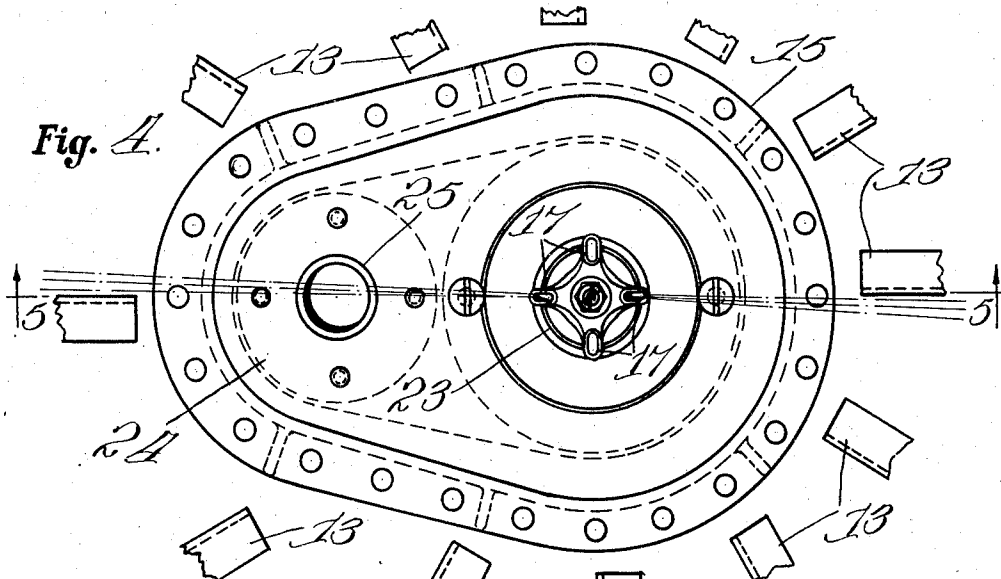


Fig. 6.

Fig. 7.

INVENTOR.  
Andreas R. Keller.  
By Dymenforth, Lee, Chittton & Wiles.  
Attys.

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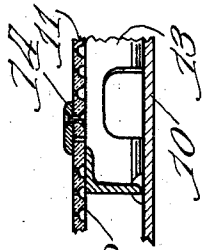


Fig. 10.

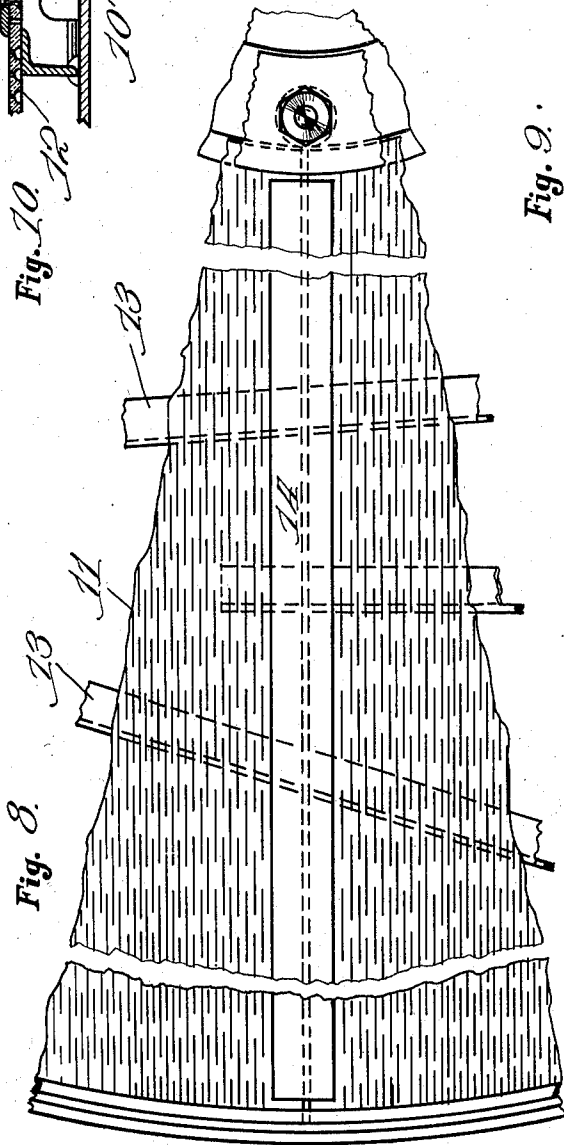
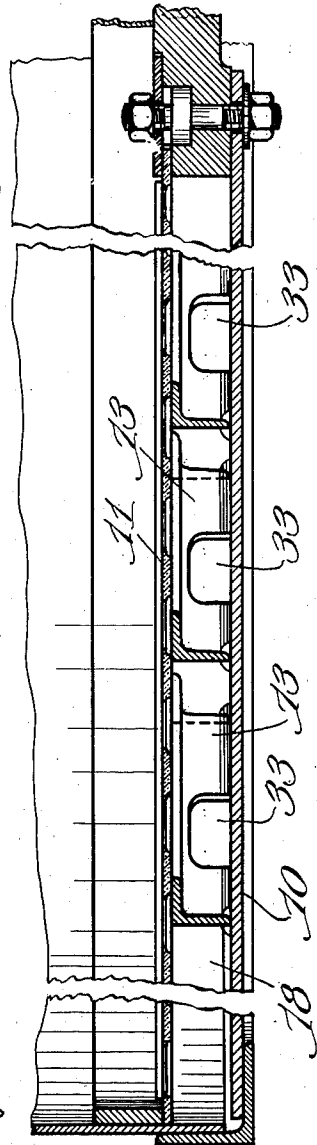


Fig. 8.

Fig. 9.



INVENTOR.

Andreas R. Keller.

By Dymforth, Lee, Chittam and Wiles.

Attys.

# UNITED STATES PATENT OFFICE

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## WASHING AND CLEANING APPARATUS FOR MASH AND STRAINER TUBS

Andreas R. Keller, Lombard, Ill.

Application January 2, 1934, Serial No. 705,024

6 Claims. (Cl. 210—152)

This invention relates to new and useful improvements in mash and strainer tanks, and is designed to increase the efficiency of such tanks by providing a new support for the false bottom, and new and improved means for washing out the false bottom and the space under the false bottom without removing the false bottom or strainer, thereby overcoming the obvious disadvantages of the machines now in use, in which the removal of the false bottom at frequent intervals for cleaning and washing is necessary.

With the above and other objects in view, as will be hereinafter apparent, this invention consists in the construction, combination, and arrangement of parts, all as hereinafter more fully described, claimed and illustrated in the accompanying drawings, wherein—

Figure 1 is a top plan view of the equipment forming the subject-matter of the present invention; Fig. 2 is a vertical section through the line 2—2 of Fig. 1, illustrating the relation of the nozzle and outlet housings to the bottom of the tank and to the false or strainer bottom and its supporting angle irons; Fig. 3 is a fragmentary side elevation of one of the wort pipes, illustrating the valve arrangement in connection with the waste pipe; Fig. 4 is a plan view of one of the nozzle and outlet housings, with fragmentary views of the false bottom supports, or angle irons, radiating from said housing; Fig. 5 is a vertical section of the nozzle and outlet housing, taken along the line 5—5 of Fig. 4, illustrating in more detail the outlet pipe and cleaning jet; Fig. 6 is a vertical sectional view of an alternative form of nozzle or cleaning jet; Fig. 7 is a fragmentary top view of the nozzle shown in Fig. 6; Fig. 8 is a fragmentary plan view of the false bottom, showing the relation of the supporting angle irons to it and to the lap; Fig. 9 is a fragmentary vertical section illustrating the ports or openings in the angle irons, and their relation to the false bottom; and Fig. 10 is a fragmentary vertical section showing one port and angle iron in greater detail.

In order to understand the present invention, it is necessary to consider the operation of a mash and strainer tub as used in the brewing industry, so that the disadvantages which have been overcome by my device may be appreciated. The mash or grain in the tub is stirred through the wort by means of mechanical agitators until a homogeneous mixture is obtained, then the wort is allowed to drain off through a slotted false bottom, or strainer, into outlets in the real bottom of the tub, and thence through pipes to the

grant and the brewing kettle. The movement of the mechanical agitators and their operative gearing compresses and grinds the grain to a certain extent, forcing therefrom small glutinous particles. Some of these glutinous parts filter through the false bottom and lodge in the drainage space thereunder, where they adhere and form a mass known to the trade by the name of "underdough", which mass prevents the proper draining of the wort from the tub. The formation of this mass, or "underdough", not only slows up the drainage rate of the wort, but also necessitates frequent removal of the false bottom for the purpose of cleaning out this drainage space. This obviously reduces the efficiency of the mash tub, and it is this disadvantage which my invention has been designed to overcome.

In my device, the real bottom of the tub, indicated in the attached drawings by the reference numeral 10, is separated from the false bottom 11, having strainer slots 12, by the angle iron supports 13. The sections of the false bottom 11 are held in position on the supports 13 by the laps 14. At various points in the bottom of the tub are located housings 15, each housing supporting an inlet pipe 16 having thereon a jet or sprayer nozzle 17 so positioned as to throw a stream of water or other cleaning fluid radially into the drainage space 18. This washer nozzle may have a series of radially arranged independent jets, as jets 17 in Figs. 4 and 5, or some other alternate means for projecting the water radially, as for example, the spray nozzle 19 illustrated in Figs. 7 and 8, having a multiplicity of perforations 20 through which the water is projected. Either of these nozzles may have in connection therewith a circumferential slot 23 through which water may be projected radially. The inlet pipes 16 are connected through other pipes 21 to some source of water or other fluid under pressure, which I do not describe because there are many such in common usage, nor does such source form an integral part of my invention.

Each housing also contains a drain pit or sump 24, from which leads a wort pipe 25. Each wort pipe has in its line a shut-off valve 26, and immediately in front of said shut-off valve a junction 27 with a waste lead-off pipe 28, said waste pipe having a shut-off valve 29 adjacent to said junction 27.

Each housing is fastened to the bottom of the mash tub by any common means, as by the rivets 22, as illustrated. It may also have removable plates 30 and 31 to facilitate removal of the wort

pipes and nozzle pipes if repairs should be necessary, said plates being held in position by any convenient method, as bolts 32.

The supports 13 which hold up the false bottom 11 are most conveniently made as angle irons, as shown. The supports are arranged radially with respect to their nearest washer nozzle 17, in order to permit the nozzle to throw an uninterrupted stream as far as possible in every direction. The angle irons, moreover, have openings or ports 33 at frequent intervals throughout their length, thus permitting free circulation of fluid in all directions.

The operation of my device is as follows. During the draining of the wort the washer nozzles remain inoperative, the valves 29 on the waste pipes 28 are shut, and the valves 26 on the wort pipes 25 are open, thus permitting the wort to flow into the grant and thence into the brewing kettle, in accordance with normal brewing sequence. After the wort has drained off, and the tub has been emptied of the mash by any of the conventional methods with which the trade is familiar, the valves 26 are shut, and the valves 29 opened. Water or other cleaning fluid is then forced through the nozzles under pressure, causing a number of streams to impinge on the various surfaces in the drainage space under the false bottom. These streams loosen up and wash away the glutinous particles forming the "underdough", and this waste liquid then flows into the drainage sumps 24, through the wort pipes 25, and through the waste pipes 28 to some point of disposal. The supply of fluid to the nozzles then shut off, valves 29 closed, valves 26 opened, and the mash tub is again in operative condition for brewing.

While I have shown and described certain embodiments of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims, in which it is my intention to claim all novelty inherent in my invention as broadly as permissible, in view of the prior art.

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

1. In a device of the type described, a tub, a false bottom therein, and supports for said false

bottom in combination with sprayer nozzles, said supports being arranged radially with respect to said sprayer nozzles.

2. In a device of the type described, a tub having a false bottom, supports for said false bottom, having openings in said supports, and being arranged radially with respect to sprayer jets issuing through the real bottom of the mash tank at various locations.

3. In a device of the type described, a tub having a false bottom, washer nozzles arranged to issue into the space immediately under said false bottom, housings supporting said washer nozzles, outlet pipes in said housings in such a position as to afford drains for the mash tank, and supports for said false bottom arranged radially with respect to each of said washer nozzles.

4. In combination with a tub of the type described, a false bottom, washer nozzles issuing into the space between said false bottom and the actual bottom of said tub, housings supporting said washer nozzles, outlet pipes also supported by said housings, supports for said false bottom radiating from said housings, and openings or ports in said supports so located as to afford the greatest possible circulation of fluid.

5. In combination with a tank of the type described, a false bottom, washer nozzles issuing into the space below said false bottom, means to force water or other cleaning fluid through said washer nozzles, housings supporting said washer nozzles, outlet pipes supported in proper relation to said tank by said housings, means whereby said outlet pipes can be caused to drain either into the grant or into a waste tank, angle iron supports for said false bottom arranged radially with respect to said washer nozzles, and openings or ports in said supports.

6. A device of the type described, including; a tub with a hole in the real bottom; a plate fastened over said hole and having a discharge outlet; a strainer bottom spaced above the real bottom; a nozzle carried by said plate and adapted to discharge cleansing fluid into the space between said bottoms; and supports for said strainer bottom arranged radially with respect to said nozzle, said supports having openings there-through whereby the circulation of cleansing fluid is facilitated.

ANDREAS R. KELLER.

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