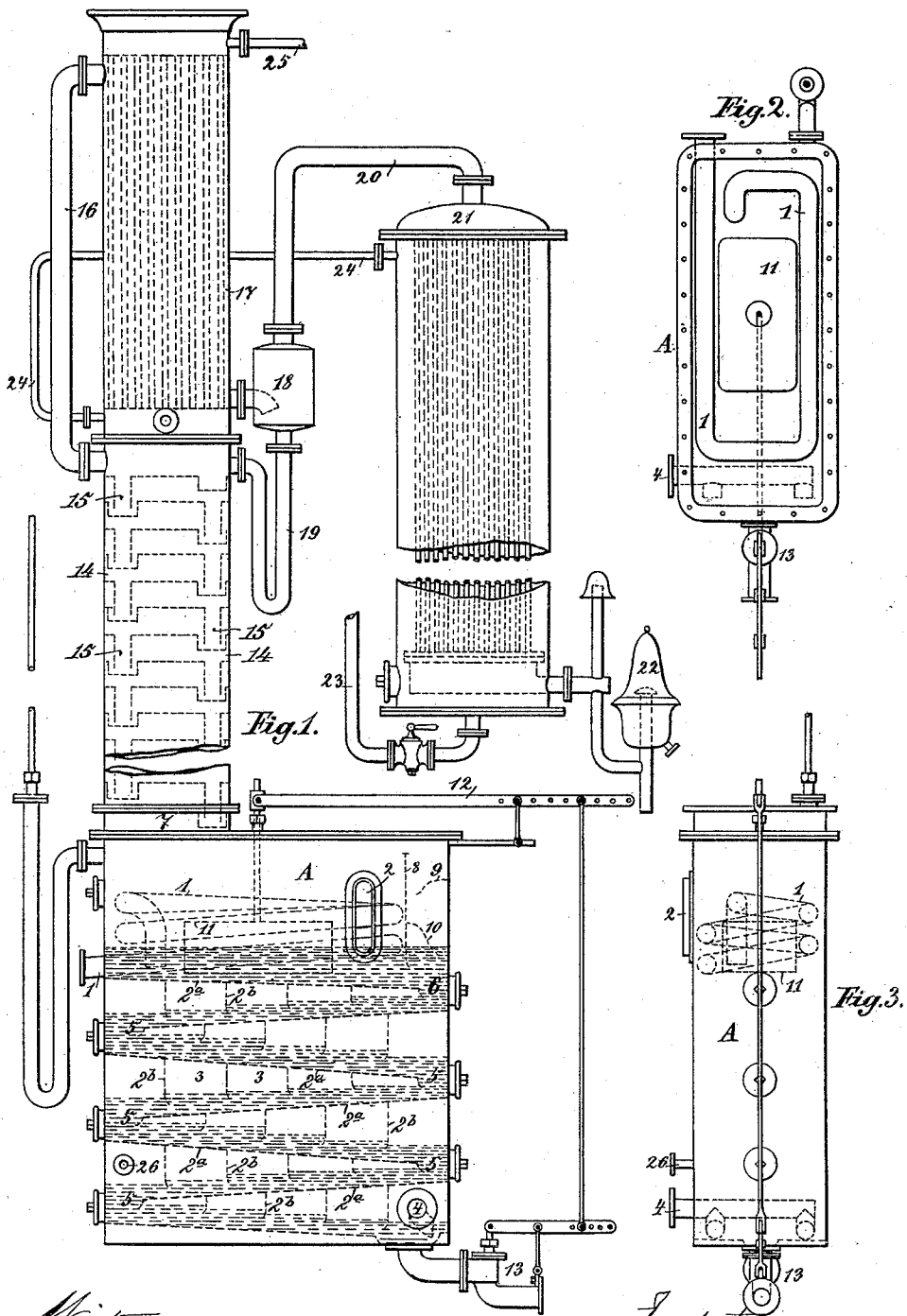


(No Model.)

W. PAALZOW.
MASH DISTILLING APPARATUS.

No. 467,430.

Patented Jan. 19, 1892.



Witnesses:
J. A. Rutherford.
Dennis Sumby.

Inventor:
Wilhelm Paalzow.
By James C. Norris.
Attorney

UNITED STATES PATENT OFFICE.

WILHELM PAALZOW, OF REVEL, RUSSIA.

MASH-DISTILLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 467,430, dated January 19, 1892.

Application filed August 12, 1891. Serial No. 402,460. (No model.)

To all whom it may concern:

Be it known that I, WILHELM PAALZOW, a subject of the King of Prussia, Germany, residing at Revel, Russia, have invented certain new and useful Improvements in Mash-Distilling Apparatus for Continuous Operation; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has for its object to provide a new and improved continuously-operating mash-distilling column; and it consists in the features of construction and the combination or arrangement of parts, hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 represents a complete distilling plant or apparatus provided with my improved mash-distilling column, showing the mode of operation of the said column. Fig. 2 is a plan of the said mash-distilling column, and Fig. 3 is an end view of the same.

The introduction of the mash into the mash-distilling column A is effected through the coil-pipe 1 in any suitable manner—as, for instance, by a pump—which, however, I do not deem it essential to illustrate, as it constitutes no part of the invention. The column is filled to such an extent that the mash reaches the gage-glass 2. When the mash is poured in, it flows downward over the inclined partitions 2^a, and gradually rises in the column. On the under side of the inclined partitions are arranged downwardly-extending vertical cross-pieces 2^b of varying length, in such a manner that pockets 3 are formed. In these pockets, as the column is filling, air collects, which, in each case, cannot escape after the mash has reached the under edges of the partitions or sides forming each pocket, as clearly shown in Fig. 1. As soon as the mash-column is filled to the right height—that is to say, to the top division—steam is admitted into the column through the inlet-pipe 4. This steam rises at first into the pocket above the inlet-pipe, and as soon as a sufficient pressure is reached the mash in this pocket which has swelled or risen above the pocket is forced downward until the steam passes over the rounded edge of the pocket or partition into the next pocket.

It is practicable to construct about five of these pockets; but a greater or less number can be used under every inclined partition, and as every succeeding pocket or cavity is lower than the one preceding, the steam is forced to flow through the mash into the next following pocket. By reason of this the mash is not only thoroughly boiled and freed from alcohol, but at the same time the pockets, being filled with steam, heat the mash which is resting upon the inclined bottom above the said pockets. After the steam has passed through a number of pockets situated one behind the other under an inclined bottom it passes through the cross-opening 5 into the first or largest pocket of the next succeeding row above, and so on until all pockets have been passed through, whereupon the steam, through the opening 6, situated by the side of the top inclined partition, reaches the top part of the mash-column, and from thence it passes through the opening 7 into the sifting-column. The wall 8 and the baffle-plates 9 and 10 are only provided for the purpose of causing the steam passing into the top division of the column to maintain a less disturbed surface of the mash. The mash flows toward the steam and passes from one division to another through the longitudinal openings 5 and 6.

In the mash on the top inclined partition is arranged a float 11, which, by means of the lever 12, operates on the outlet-valve 13 in such a manner that the mash-slime passes away as fast as it is admitted. The column is therefore self-acting, and an overfilling of the column is by these means rendered impossible. By opening the valve 13 the mash can be discharged at any time. As the steam permeates the mash in consequence of the arrangement of the pockets, situated at any number of places—for instance, thirty or more, according to the size of the column—the said mash is thoroughly and completely boiled and freed from alcohol, and thus the desired object is attained much more quickly than by the apparatus or appliances heretofore in use. On account of several pockets being arranged side by side, my improved column occupies so little space that a comparatively low building suffices for the erection of the whole apparatus. Stoppages or disturbances in the working are not likely to occur, as the passages for

the malt are constructed of such dimensions that an obstruction caused by the mash is impossible. These separate divisions or partitions are rendered accessible by means of suitably-
5 arranged man-holes for purposes of cleansing. At 26 is arranged a valve for drawing off steam for the purpose of testing whether the same contains spirit.

The mash column or apparatus, even if
10 constructed of copper is cheaper than apparatus heretofore in use. It may, however, be made of cast-iron enameled or other suitable material. In any case it is preferable not to stamp any of the parts, but all parts should
15 be turned. Thus all the said parts coming in contact with the steam are of even thickness, and the apparatus is therefore much more durable. The steam escaping through the mash-column passes onward through the
20 sifting-column 14, Fig. 1, which contains from twelve to twenty sifting-chambers. The deposits flow from top to bottom through the pipe-nozzles 15 from one partition to another. By the time they reach the mash-column again the
25 said deposits are quite free from spirit, while the dephlegmated vapor passes through the pipe 16 into the dephlegmator or condenser, from which the deposited singlings (spent wash) pass with the alcohol-vapor into the
30 separator 18. From this separator the spent wash passes through the pipe 19 back again into the sifting-column in order to be again boiled. The vapors rise from the separator through the pipe 20, projecting above the
35 same into the refrigerator or cooler 21, from which the spirit can flow away by means of the valve 22. The cooling-water passes from a receptacle under pressure through the pipe 23 into the said refrigerator or cooler 21 and
40 flows out of the same through the pipe 24 into the dephlegmator or condenser 17, and from this it is discharged by means of the pipe 25.

What I claim is—

1. In a mash-distilling apparatus, the column A, having a series of partitions alternately inclined in reverse directions, one
45 above the other, and each having on its under side a series of pendent cross-pieces of varying length to form a gang of air-collecting pockets, in combination with a steam-in-
50 let pipe connected with the column, and an outlet-valve at the lower portion of the column, substantially as described.

2. In a mash-distilling apparatus, the distilling-column having a series of partitions
55 alternately inclined in reverse directions, one above the other, and each having at its under side a gang of air-collecting pockets of gradually-increasing capacity, in combination with a steam-inlet pipe connected with the distill-
60 ing-column, an outlet-valve at the lower portion of the latter, and a sifting-column connected with the upper portion of the distilling-column, substantially as described.

3. In a mash-distilling apparatus, the combination of the distilling-column having a
65 series of partitions alternately inclined in reverse directions, one above the other, and each having at its under side a series of air-collecting pockets of varying capacity, a
70 steam-inlet pipe connected with the distilling-column, an outlet-valve at the lower portion of the distilling-column, a float arranged in the distilling-column above the uppermost
75 partition, and a connection between the float and the outlet-valve for automatically operating the latter for the continuous distillation of the mash, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

WILHELM PAALZOW.

Witnesses:

EDUARD JOHANNSON,
JOHS. KRUGER.