

(No Model.)

G. SOBOTKA.

APPARATUS FOR AND METHOD OF SEPARATING AND ASSORTING YEAST.

No. 471,689.

Patented Mar. 29, 1892.

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UNITED STATES PATENT OFFICE.

GUSTAVE SOBOTKA, OF NEW YORK, N. Y., ASSIGNOR TO FLEISCHMANN & CO.,
OF SAME PLACE.

APPARATUS FOR AND METHOD OF SEPARATING AND ASSORTING YEAST.

SPECIFICATION forming part of Letters Patent No. 471,689, dated March 29, 1892.

Application filed August 20, 1891. Serial No. 403,204. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVE SOBOTKA, a subject of the Emperor of Austria-Hungary, residing at 234 Fifth avenue, New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Apparatus for and Method of Separating and Assorting Yeast; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in apparatus for and method of separating and assorting yeast; and the object of the invention is to provide means for this purpose by which the yeast may be easily and quickly separated from the beer and simultaneously assorted into different grades for subsequent treatment and use.

The invention will first be described in connection with the accompanying drawings, and then particularly defined in the claims at the end of this specification.

Referring to the drawings, in which like letters of reference are used to denote like parts of the apparatus, Figure 1 represents a vertical sectional elevation of an apparatus embodying my invention, and Fig. 2 is a plan of the lowermost trough or section of the apparatus.

$AA'\Lambda^2$ represent several sections of a trough or chute, which are preferably arranged one above another, as indicated in Fig. 1, each section being formed or provided with a pocket or depression, as at $a\ a'\ a^2$, at the inlet or receiving end thereof and with a similar pocket or depression, as at $b\ b'\ b^2$, at the outlet or delivery end thereof, as shown in said Fig. 1.

$B\ B'\ B^2$ denote suitable pipes, which may connect the delivery ends of the uppermost sections of the trough with the receiving ends of the succeeding sections below the same. Said pipes enter openings in the bottoms of the pockets at the exit ends of the sections of the trough, (which openings may be closed by suitable stoppers,) and their lower or delivery ends extend nearly to the bottom of the pockets in the receiving or inlet ends of the lower sections for the purpose of causing a slow and easy flow of the liquid from the pocket and down the inclined section, and each section is also provided at its inlet end with a parti-

tion or wall a^3 , which extends nearly to the bottom of the pocket and separates the same into two divisions, such partition being located in front of the delivery end of the pipe, so as to interrupt and retard the flow of the liquid and break the force of the current at this point, thereby facilitating the deposit of the yeast as the liquid flows down the slightly-inclined section.

The pockets $b\ b'\ b^2$ are provided with openings which connect by suitable pipes d with a tank or receiver for the assorted yeast, and these openings are adapted to be closed by suitable stoppers d' , as shown. The pocket b^2 of the lowermost section of the apparatus is also provided with a similar opening, from which a pipe E may lead to a suitable tank or vessel to receive the waste water used in washing the apparatus, the latter opening being controlled by a stopper e .

C denotes a receiver or reservoir, which is connected by means of a pipe c with the fermenting-tub from which the fermented wort flows into said receiver, and the latter is provided with a depending pipe f , which extends nearly to the bottom of the pocket a in the first section A and is provided with a regulating cock or valve g , by which the flow of liquid therefrom may be controlled.

For the purpose of cooling the yeast as it runs from section to section of the trough through the pipes B, B' and B^2 , and finally into the receiver for the fermented wort or beer said pipes are incased or surrounded by pipes $D\ D'$, which are provided with suitable nipples d^2 for the attachment of a hose or pipe, by means of which cold water or other cooling medium may be caused to circulate through the several sections of pipe in contact with the pipes connecting the trough-sections, so as to cool the liquid solution as it flows from section to section of the trough, and thereby facilitate the separation and assortment of the yeast, which will settle quickly when cool, and in this state the heavier particles or cells will be precipitated more readily and deposited in the several sections of the trough.

With an apparatus constructed as shown and described the fermented wort which flows from a fermenter into the receiver C may be permitted to enter the first section A by opening the valve g , and the liquid will pass from

the pipe *f* near the bottom of the pocket under the partition *a*³ and out of the pocket onto the slightly-inclined bottom of the trough-section, along which the liquid will flow slowly and smoothly until it reaches the pocket *b*, at which point the flow will be retarded and the current broken. From the pocket *b* the liquid will flow down the inclined pipe *B* into the pocket *a'* of section *A'*, its movement through the pipe being slightly accelerated, and the pipe *B*, being in contact with the cooling medium circulating in the pipe *D*, will cool the liquid in its passage through said pipe. From this point the above operation will be repeated at each successive section of the trough, and the clear beer will run off into a suitable receiver from the pipe connecting with the pocket in the lower end of the last section of the apparatus. By this means the yeast will be caused to settle in the several sections and pockets of the trough in different grades, the heaviest spores or cells being precipitated in the first section and the cells of less specific gravity being deposited in the succeeding pockets and sections according to their grades. When this operation is completed, the yeast which has settled in the several sections in different grades may be collected according to the several grades by placing suitable stoppers in the small openings leading to the pipes *B* *B'* *B''* and removing the stoppers from the larger openings connecting with the pipes *d*, so as to permit the thick liquid yeast to be run off into suitable receptacles therefor. By replacing the stopper *d'* and removing the stopper *e* clear water may be run through the entire apparatus and out of the pipe *E* for the purpose of washing and preparing the apparatus for further operations.

It will be observed that the several sections of the trough or chute form in effect a slightly-inclined surface or series of inclined surfaces connected by suitable conduits, along which the fermented wort or beer flows gently and smoothly, thereby causing the yeast-cells to be deposited in different grades in successive sections or divisions, the liquid being cooled in its passage through the pipes or conduits from one section or division of the surface to the next succeeding section, whereby the deposit of the yeast-cells is facilitated and the clear beer is run off from the yeast, which is assorted into different grades in the several sections or divisions of the surface, from which it may be collected according to the several grades.

It will be understood, of course, that the several sections of the trough need not necessarily be placed one above another, but that they may be arranged side by side or in line with each other, and the general arrangement of parts may be varied in a number of ways, which will readily suggest themselves to persons skilled in the art, without departing from the spirit of my invention, and hence I do not desire to be limited to the exact con-

struction and arrangement described and shown.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An apparatus for separating and assorting yeast, comprising a trough or chute formed in sections or divisions which are connected by suitable pipes for conveying the fermented wort from section to section and an apparatus by which a cooling medium may be circulated in contact with the pipes connecting the sections of the trough, substantially as described.

2. An apparatus for separating and assorting yeast, comprising a trough or chute formed in sections or divisions arranged one above another and connected by a pipe or pipes adapted to receive the liquid from an upper section and conduct the same to the next succeeding or lower section, said pipes being provided with a cooling apparatus whereby water or other cooling medium may be caused to circulate in contact with the pipe or pipes connecting the sections of the trough, substantially as described.

3. In an apparatus for separating and assorting yeast, the combination, with the trough or chute composed of sections or divisions separated from each other and having the pockets at the ends of the sections, of the pipe or pipes connecting the outlet end or pocket of the first section with the inlet end or pocket of the next succeeding section and the cooling apparatus connected to said pipes, substantially as described.

4. In combination with the trough or chute composed of sections or divisions provided with pockets at the ends thereof, the inclined pipes connecting the several sections, the fluid-circulating pipes or casings inclosing the pipes connecting such sections, and the pipes connecting with suitable openings in the delivery ends of the sections of the trough, whereby the assorted yeast may be collected from the several sections of the trough according to the several grades, substantially as described.

5. The process of separating and assorting yeast, which consists in running the fermented wort or liquid slowly and smoothly along a slightly-inclined surface or surfaces, so as to cause the yeast-cells to be deposited in different grades in successive sections or divisions, cooling the liquid at intervals in its passage, running off the clear beer from the yeast, and finally collecting the assorted yeast from the several sections of the surface according to their grades, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

GUSTAVE SOBOTKA.

Witnesses:

HENRY J. KALTENBACH,
JOHN HAMOCK.

It is hereby certified that in Letters Patent No. 471,689, granted March 29, 1892, upon the application of Gustave Sobotka, of New York, N. Y., for an improvement in "Apparatus for and Method of Separating and Assorting Yeast," errors appear in the printed specification requiring correction, as follows: In lines 75-76, page 1, the compound word "fermenting-tube" should read *fermenting-tub*; and in line 82, same page, the clause "returned thereto for the continuation of the" should be stricken out; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 5th day of April, A. D. 1892.

[SEAL.]

Countersigned:

W. E. SIMONDS,
Commissioner of Patents.

CYRUS BUSSEY,
Assistant Secretary of the Interior.