



# ALIEN PROPERTY CUSTODIAN

## PROCESS FOR THE TREATMENT OF WORTS OBTAINED FROM AMYLACEOUS MATERIALS

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This invention relates to a process for the treatment of worts obtained from amylaceous materials.

It is known that the worts obtained by conversion and fermentation of amylaceous materials contain solid materials in suspension which are separated under the name of draff from the spent wash forming the residue from the distillation.

In ordinary practice these spent washes are filtered by means of filter presses, the functioning of which is well known; this operation allows the solid matters in suspension in the spent wash to be recovered in the form of more or less aqueous cakes; these cakes form what is known as pressed draff and are used as fodder for animals.

The presence in the worts from amylaceous materials of these solid particles in suspension frequently produces stoppage of the distillation columns and consequently causes serious disturbances in their functioning.

Furthermore, anyone who has had to carry out the filtration of liquid draff knows how complicated and costly this operation is, and at times it is also very difficult as a result of the presence of starch or incompletely transformed dextrines. In all cases a considerable amount of labour is necessary and at the same time there is a heavy consumption of filter tissues.

One object of the present invention is to provide a process of treating worts from amylaceous materials whereby the above disadvantages are avoided.

Another object of the present invention is to provide an improved process for the preparation of draff cake.

A further object of the present invention is to provide an improved draff cake of high nutritive value (by reason, *inter alia*, of high vitamin content) and, in the case of draff from acid-conversion worts, of an acid-free character.

With these and other objects in view the process of treating the worts from amylaceous materials, according to the present invention, comprises essentially the step of separating the draff from the worts before subjecting these latter to distillation. This separation is preferably carried out by filtering the worts through metallic strainers.

It has been found that it is much more advantageous to separate the draff in the manner just indicated, and not from the spent washes forming the residue of the distillation, even though the wort, at the time of separation, still contains alcohol. It has furthermore been found that by proceeding in accordance with the present inven-

tion, the presence in the worts of a little starch or untransformed dextrine is not objectionable in any way.

In industrial practice it is highly desirable to carry out the process of the present invention as a continuous process, and one way of effecting this is to carry out a series of successive operations as follows:—

(1) The fermented worts are filtered on rotating or reciprocating strainers provided with metal gauzes sufficiently fine to retain the particles of the draff while letting the liquid pass through.

(2) The draff obtained from 1 and still impregnated with alcoholic liquid is made to undergo several systematic washings by a current of water, for example in an apparatus formed by several diffusion elements called "Collette elements."

(3) The draff leaving the washing system and exhausted of its alcohol, but carrying too much water to be handled in this condition and delivered as it is, is pressed for example in a continuous press such as a Colin press.

All these operations can succeed each other without interruption in a continuous manner and without any supplementary operation, as will be understood from the following description and the accompanying drawing. In this drawing, the figure shows, in a diagrammatic manner, the arrangement of the various units of apparatus preferred for carrying out the present invention in a continuous manner.

Worth from amylaceous materials is introduced at A on to the strainer D. The liquid free from draff is removed at D and sent on for distillation.

At B the exhausted draff impregnated with alcohol, emerges; it traverses the washing apparatus C which is of the Cellotte type; in this apparatus it is exhausted, owing to the washing effected by the water arriving at E and circulated by the pump *p*.

The draff free from alcohol and acid, coming from the apparatus C is pressed in the press P where it gives up part of its water. This fraction of water is collected and led back in a closed circuit to the washing apparatus C by means of the pump *p*. The alcoholic liquid extracted from the head of the apparatus C by the pipe S, is sent for distillation after being mixed with the principal alcoholic liquid flowing away at D.

The principal advantages of the process according to the present invention are:—

(a) Total suppression of the operation and the cost of filtering tissues, which the known processes for obtaining pressed draff previously demanded.

(b) Sending for distillation alcoholic liquids free from solid substances, the presence of which produces the danger of blocking the distillation columns or of causing disturbances in the functioning of these columns, as is often the case for example with the alcoholic worts called "amyl worts."

(c) Obtaining draff of a higher nutritive value than the draff obtained after distillation by reason of the fact that the vitamin-containing elements of the fermenting yeasts, for example, have not been destroyed by excessive heating in the distillation columns.

(d) The possibility of rendering suitable for animal consumption the draff provided by working upon amylaceous materials in a distillery with the employment of mineral acids as conversion agents. The systematic washing to which the draff is submitted according to the present invention in fact removes the acid from it in a complete manner so that there is no reason to fear the least noxious action from these acids.

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