

# UNITED STATES PATENT OFFICE

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## PROCESS OF IMPROVING THE BAKING STRENGTH OF FLOUR

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My invention relates to the improvement of the baking strength of flour or the production of a flour the baking strength of which has been improved, as compared with untreated flour, or ordinary flour. The invention also includes the production of a dough for bread-making which dough is equivalent to a dough produced by means of flour, the baking strength of which has been improved. Further my invention relates also to the flour, the baking strength of which has been improved by the method that constitutes one subject matter of my invention and to bread produced from such flour or from the dough the production of which constitutes one subject matter of my invention.

It has been known for many years that the baking strength of flour may often be considerably improved by the addition of small quantities of certain chemicals. Among these chemicals the oxydants play a prominent part. Thus ammonium persulphate, potassium bromate, sodium perborate and the like substances have particularly been proposed for that purpose (cf. for example British Patents Nos. 2778 of 1911 and 1685 of 1915 and German Patent No. 431,749).

Against the employment of these chemicals the improving influence of which on the baking strength is often very marked, objections have been raised from time to time on a hygienic base, the substances mentioned being considered outside the scope of what can be termed "normal physiological constituents of food".

Undoubtedly it would be important if a substance could be found constituting such a "normal physiological constituent of food" and possessing at the same time the property of influencing the baking strength of flour in a similarly favorable manner as the oxydants mentioned above.

One object of my present invention is to find such a substance adapted to improve the baking strength of flour by its mere presence in such flour and constituting at the same time a "normal physiological constituent of food".

Another object of my present invention consists in the method of producing flour the baking strength of which has been improved by adding to normal flour a suitable quantity of such a substance in such a manner as to intermix intimately the flour and the said substance. The term "normal flour" designates here and in the following specification and claims a flour to which no content of said substance has been added.

Still another object of my present invention

consists in the method of producing a dough equivalent with the dough that can be produced by means of flour the baking strength of which has been improved according to my invention which method comprises imparting during the production of the dough from normal flour a suitable content of a substance having the properties described above and mixing this substance intimately with the other constituents of the dough.

A further object of my present invention consists in flour to which a suitable content of a substance, having the properties in question, has been imparted and a still further object of my invention consists in bread made by means of flour to which an appropriate content of such a substance has been imparted or by means of a dough during the production of which from normal flour there has been added an appropriate quantity of a substance having the properties in question which has been intermixed intimately with the other constituents of the dough.

The substance that I have found capable of improving the baking strength of flour similarly to the oxydants previously used for this purpose and constituting at the same time a "normal physiological constituent of food" is ascorbic acid,  $C_6H_8O_6$ , in place of which, however, substances that contain ascorbic acid but no substances that contain ascorbic acid but no substances the addition of which to flour or dough or the presence of which in flour or dough or bread in the quantities in question will be injurious to said materials, may be used.

The ascorbic acid which forms now a product of regular commerce, manufactured on a considerable scale, has been demonstrated by the investigations of Szent-Györgyi, Tilmans and King to be identical with the vitamin C (the antiscorbatic vitamin) and consequently it can safely be held a "normal physiological constituent of food". By imparting a suitable content of ascorbic acid to flour or dough and baking said flour or dough to loaves under normalized conditions, the loaves will prove being of a greater volume than loaves made from the same flour or dough to which no content of ascorbic acid has been imparted provided of course that no other means for improving the baking strength have been used in this case.

With these general statements of the objects and purposes of my invention I will now proceed to describe the embodiment thereof and the manner in which my invention is carried out, and it will be understood that while I have described