

UNITED STATES PATENT OFFICE.

FRITZ GÖSSEL, OF STOCKHEIM, GERMANY.

PROCESS OF MANUFACTURING ALIMENTARY PRODUCTS FROM SOY-BEANS.

1,082,118.

Specification of Letters Patent. Patented Dec. 23, 1913.

No Drawing.

Application filed November 7, 1912. Serial No. 729,985.

To all whom it may concern:

Be it known that I, FRITZ GÖSSEL, a subject of the Emperor of Germany, and resident at Stockheim, Hesse, Germany, have
5 invented certain new and useful Improvements in Processes of Manufacturing Alimentary Products from Soy-Beans or Similar Vegetable Seeds.

This invention relates to an improved
10 process of producing a new alimentary substance, the composition and nature of which are similar to milk, from vegetable materials, such as soy-beans or other similar
15 seeds, pistachio-nuts, teel-seeds and the like, or mixtures of such seeds. It is well known that these seeds contain large proportions of albumin, fat and carbohydrates, and that soy-beans are particularly rich in albumin
20 similar to the casein contained in milk. Soy-beans not only contain casein-like albumin but also albumin-like compounds of albumin. These alimentary substances and particularly the albuminous materials are
25 extracted and utilized for alimentary purposes by the present process, which provides furthermore means for improving the taste of the substances produced.

It is well known that soy-beans as well as other similar seeds are uneatable in a
30 raw state, and the taste thereof, particularly of soy-beans, is not improved by boiling them in water for a long time. Long boiling of soy-beans with water alone renders insoluble the albumin-like proteid
35 combinations, which would otherwise be soluble and which, particularly in the case of soy-beans, are important for the production of the new nutrient of the present invention. On the other hand if the seeds referred to
40 are treated with water in a suitable way for the extraction of their nutritive components, a milky appearing liquor can be produced, but the composition of such liquor is not at all similar to the composition of milk, as it
45 does not contain similar relative proportions of nutritive substances—albumin, fat and carbohydrates. And it is necessary for the present purposes that the different substances shall be contained in certain
50 proportions in the alimentary product to be made and particularly for the purpose of enabling the albumin to be easily digested. It is well known that the finer the subdivision of albumin when coagulated in the
55 stomach, the easier it will be digested, and the coarser the coagulum, the less com-

pletely and the more slowly it will be digested. Now albumin can only be finely coagulated, if it be subdivided by a sufficient quantity of fat. Moreover in order to enable a lactic fermentation of the product similar to that peculiar to cow milk within the digestive tract, it is necessary to directly add milk-sugar or similar carbohydrate to the material which does not itself
65 contain a sufficient quantity of carbohydrates. And in order to enable the new product to be used with coffee, tea and the like tannic acid-containing substances without the albumin being coagulated by the latter, the new product remaining in a state like that of cow milk, it is necessary to add
70 small quantities of carbonate of sodium or bicarbonate of sodium or the like to the said product.

The present process of producing an alimentary product of the nature and composition of cow milk, comprises previously cleaning the seeds (soy-beans, pistachio nuts, teel seeds and the like), grinding the
80 same, mixing the same with water, adding a small quantity of phosphate of sodium or the like, and heating the mixture as quickly as possible to a boiling temperature and continuing the heating for some time,
85 whereupon the boiled mass is suitably strained and pressed after such mass has been somewhat cooled. I then dissolve in the milky liquor so obtained determinate quantities of carbohydrates, such as milk-sugar, and furthermore salts, such as chlorid
90 of sodium, carbonate or bicarbonate of sodium or the like. Thereupon the liquor is emulsified in a suitable manner with determinate quantities of fatty material as, for
95 instance, cocoanut oil, sesame oil, pistachio nut oil or the like; that is, with fat or mixtures of fats or oils which are suitable for human alimentation. Emulsification is continued until the oil is finely divided in
100 the liquor.

The process herein described enables an alimentary product to be produced, whose properties, composition and alimentary qualities will be approximately the same as
105 those of cow milk or other milk and which may be used in the same manner as cow milk, viz., for drinking purposes, for cooking and for baking purposes, for making butter, custards, etc., condensed and dry
110 milk, cheese curd and the like.

For the production of 100 liters of ali-