

# UNITED STATES PATENT OFFICE

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## CITRUS-CEREAL BREAKFAST FOOD AND METHOD OF MAKING SAME

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This invention relates to a citrus-cereal break-  
fast food, both the product and process of making  
the same.

One of the objects of the invention is the  
utilization of substantially the entire citrus fruit,  
both its solid and liquid content, in conjunction  
with cereal and other nutritive ingredients, in  
the manufacture of a granular breakfast food  
characterized by crunchiness, crispness, low  
hygroscopicity with the palatable flavor of the  
fresh citrus fruit, devoid of bitterness or other  
objectionable taste characteristics.

Another object of the invention is the pro-  
vision of a process for the manufacture of a  
citrus cereal breakfast food of the type described,  
which makes it possible to produce a product  
which is standardized as regards those factors  
such as flavor, hygroscopicity, etc., which ordi-  
narily would be variably affected by seasonal and  
other variations in the chemical or physical  
qualities of the citrus fruit.

Still another object of the invention is the  
provision of a process for making a citrus fruit  
flour substantially free from pectose, pectin, pec-  
tate acid, fruit oil, and the bitter fruit flavor prin-  
ciples, and therefore standardized as regards  
flavor and minimum hygroscopicity.

A further object of the invention is the pro-  
duction of a citrus fruit flour made from the en-  
tire solid constituents of the fruit, substantially  
free from pectin or pectous compounds, fruit oils,  
naringin, hesperidin, or other bitter flavoring and  
therefore of standard composition regardless of  
seasonal variations in the chemical or physical  
constituency of the fruit from which it is made.

Other objects of the invention will appear as  
the following description proceeds.

This application for patent is a continuation-  
in-part of my application Serial No. 154,317, filed  
July 17, 1937.

While the invention contemplates the employ-  
ment of any species or variety of citrus fruits and  
perhaps other fruits, a breakfast food embodying  
oranges as its foundation, and the process of  
manufacturing this orange breakfast food will  
be particularly described herein for the purpose  
of illustrating the invention.

Oranges have a maturing season extending  
over a period of several months and the chemi-  
cal and physical constituency of the orange varies  
greatly during that period, not only due to  
the stage of maturity of the orange, but to  
other factors such as the amount of rainfall,  
sunshine, periods of abnormal heat or cold, etc.,  
and if breakfast food were made employing

oranges just as they are gathered from time to  
time during the maturing season, the product  
would be unstandardized both as to flavor, crisp-  
ness, its affinity for moisture, etc.

In its commercial phases therefore the process  
involves the breaking down of the orange into two  
fractions which can be separately treated so as  
to secure substantially uniform standardization  
of the product. These two fractions are the juice  
and the solid residue of the orange remaining  
after the extraction of the juice.

In carrying out the process, the oranges are  
washed and put whole into a grinder or mill so  
designed as to press and strain the juice from the  
oranges and to crush, grind or otherwise com-  
minute the seeds, rind and pulp.

The juice strained of seeds is collected in suit-  
able containers and can sugar or honey added  
thereto in sufficient quantity to bring the solution  
up to the required Brix test. The amount of  
sugar or honey to be added is determined in ac-  
cordance with the amount of natural sugar  
present in the juice and the degree of sweetness  
desired. The juice is then concentrated to a  
specific gravity of substantially 1.2 by boiling in  
a vacuum pan at a temperature sufficiently low  
to preserve the vitamin C content of the juice.  
In this boiling, the oil of the rind is evaporated  
off almost entirely from the juice and may, if  
desired, be separately condensed and disposed of  
as a by-product. The resulting product because  
of its concentration and sugar content can be  
preserved indefinitely in drums or other suitable  
containers at storage temperatures or from about  
50° to 60°. In the manufacture of the breakfast  
food this supply of juice, which can always be  
prepared to a uniform standard, can be drawn  
upon as required.

The solid residue consisting of the rind, pulp-  
rag and seeds, all in finely comminuted form is  
treated for the removal of the pectin, the orange  
oil and the naringin. With this end in view, it  
is run into suitable vats, water being added in  
an amount sufficient to permit the mass to be  
stirred easily.

Depending upon the maturity of the fruit, pec-  
tin is present largely in the rind in variable de-  
grees of solubility. Immature fruit contains  
water-insoluble pectose which after the fruit ma-  
tures is converted into pectin and in over-ma-  
turity to pectic acid. Of the pectin compounds  
present in the mature fruit used in the break-  
fast food of the present invention, it is safe to  
say that from 10 to 15 percent are pectose and  
pectin, which are insoluble in water. If this ma-