

1

2

3,489,575

**FREEZE-VACUUM-DEHYDRATED FRIED
POTATO CAKES**

Karl R. Johnson and Thomas R. Schmidt, Holliston, Mass., and Gerald M. Cooper, Chicago, Ill., assignors to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Jan. 6, 1967, Ser. No. 607,849
Int. Cl. A23i 1/12; A23b 7/02

U.S. Cl. 99—207

6 Claims

ABSTRACT OF THE DISCLOSURE

A freeze-vacuum-dehydrated fried potato cake capable of rapid rehydration prepared by mixing precooked potato particles with an aqueous suspension of pregelatinized corn meal to form a mixture having a total water content of from 75 to 80%, forming cakes of the mixture, frying the cakes and freeze vacuum dehydrating the fried cakes to a water content of 3% or less.

The invention described herein may be manufactured, used, and licensed by or for the Government for governmental purposes without the payment to us of any royalty thereon.

This invention relates to the production of freeze-vacuum-dehydrated fried potato cakes which are capable of instantaneous rehydration to provide a food product having the appearance, taste and flavor of freshly prepared fried potato cakes without need for additional heat processing.

The freeze-vacuum-dehydrated fried potato cakes in accordance with the present invention are precooked freeze-vacuum-dehydrated fried potato cakes which can be rehydrated with hot water, or even with cold water, for immediate consumption. When rehydrated with hot water, they will instantly furnish a potato cake dish having the appearance, taste and flavor of a freshly prepared fried potato cake, without need for additional heat processing.

Insofar as we are aware there are not now on the market or otherwise available to military and civilian consumers, dehydrated potato cakes capable of instantaneous rehydration and immediate consumption. The present invention enables the provision of dehydrated fried potato cakes which can be rehydrated in a field mess or by the individual soldier simply by the addition of hot water, and within a few (say about 30-60) seconds can be reconstituted to an appetizing, tasty and nourishing dish. This is obviously very important, particularly for the Armed Forces, in that a dehydrated food product that is lacking in quick reconstitution properties and/or that falls short of the appearance and flavor of an ordinary freshly prepared popular food dish, will not be accepted by the soldier in the field, and will in all probability be discarded by the soldier. Such a result would be wasteful from the logistical standpoint, as the production cost of the item and its transportation to a forward area in some distant part of the world would be unproductive, and the soldier would suffer nutritionally for lack of an important part of his ration.

Similar advantages of an acceptable dehydrated food item, and corresponding disadvantages of a dehydrate food item which falls short of complete acceptability, exist in the civilian food marketing system.

Accordingly, it is a principal object of our invention to provide freeze-vacuum-dehydrated precooked potato cake products which will closely resemble the original cooked products after rehydration, particularly in taste and texture.

Another object of our invention is to provide freeze-vacuum-dehydrate precooked potato cake products which will rehydrate instantaneously or nearly instantaneously in hot water.

A further object is the provision of freeze-vacuum-dehydrated precooked potato cake products with the characteristic crust of fried products maintained after rehydration.

Still another object is the production of freeze-vacuum-dehydrated precooked potato cake products which, when properly protected from oxygen and moisture in storage, will maintain their consumer acceptability under adverse storage conditions.

An advantage of our invention is that our freeze-vacuum-dehydrated precooked potato cake products can be produced from commonly available raw materials and with conventional food machinery, without need for special retraining of operators.

A further military advantage of our invention, which is also of applicability in the civilian field (e.g., camping and scouting), is that the freeze-vacuum-dehydrated precooked potato cake products of our invention can be rehydrated with cold water or even eaten dry, although such a mode of consumption is, of course, less palatable than in the case of rehydration with hot water.

Other objects and advantages of our invention will be readily apparent from the following description taken in conjunction with the appended claims.

The potato cakes of the present invention are produced by washing, peeling, and cutting raw potatoes into particles, such as strips or other subdivisions, then cooking the potatoes in hot water (about 200 to 210° F.) for approximately five minutes, then thoroughly mixing the potato particles with an aqueous suspension of cooked comminuted corn, such as corn meal, containing seasonings, salt and any other flavoring or flavor enhancing materials desired. The aqueous suspension of corn meal is prepared by mixing water with corn meal in the ratio of from about 2.5 parts of water to 1 part of corn meal to about 3.5 parts of water to 1 part of corn meal, and heating the mixture until the corn meal is gelatinized. Larger amounts of water can be used, but in these cases the cooking must be prolonged sufficiently to evaporate the excess moisture and produce a suspension of gelatinized corn meal having the required water content to provide for the proper water content in the final mixture of potatoes and gelatinized corn meal.

The total unbound water content of the mixture of potatoes and gelatinized corn meal is critical and must not be less than about 75% and not more than about 80% of the final mixture to be molded into potato cakes prior to frying thereof. This includes the water in the potatoes as well as that added thereto in the form of the suspension of gelatinized corn meal. If the mixture contains more than about 80% water, it tends to puff up unduly during frying. If it contains less than about 75% water, it tends to crumple during frying and the final product will crumble to an even greater extent and, therefore, will be unsatisfactory as a potato cake.

The unbound water content of the mixture of potatoes and gelatinized corn meal may be determined empirically by examination of the product after frying with regard to its tendency to crumble or significant puffing. The water content may also be determined by measuring the weight loss of the mixture during drying for sixteen hours in a vacuum oven at a pressure not exceeding 100 mm. of mercury at 70° C. This latter method is equally applicable to determine moisture content of the corn meal suspension or any of the ingredients or other intermediate