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COMPRESSED CEREAL

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This invention relates to the compression of foods. It is directed particularly to the preparation of compressed cereals and other foods adapted to be merchandised in the form of cubes, cakes or blocks appropriately wrapped and ready to be crushed or disintegrated for use, or eaten as such.

The principal objective of this invention has been to provide self-sustaining unitary food masses which are sufficiently firm to withstand the handling that is incidental to the wrapping and packaging of the product yet also sufficiently friable to be broken down easily and conveniently for use; that is, crushed easily through the pressure of fingers or with a suitable utensil such as a spoon, so as to be free from lumps or caked masses.

The foods adapted to be compressed in accordance with this invention may be individual foods in the form of granules, powder or flakes such as rolled oats, puffed wheat, rice, farina, skim milk or the like, or the foods may be of the so-called "premixed" type containing, for instance, nonfat milk solids, shortening, sugar, salt and other ingredients. In the case of premixed cereals the shortening, sugar and salt usually constitute somewhat less than 50% of the composition while the basic components are wheat, rice, corn, oats, etc., usually treated with malt and sugar to improve their palatability.

Foods of these types either dehydrated or naturally dry are of an impalpable nature and do not compress satisfactorily in and of themselves. The problem, for instance, is appreciated most readily in the case of rolled oats which, even though subjected to extremely high pressure, fall apart as they are taken from the compression cavity, especially if the compressed units are in the form of discs. The presence of fat and other components, as of some assistance in improving stability of the cake form but causes difficulty in the separation of the compressed mass from the die through sticking, and even so does not enable the production of a unitary mass which is both firm and friable.

I have discovered, briefly, that both the desired firmness and the desired friability of compressed cereal and other food masses may be obtained by incorporation, prior to compressing, of a small quantity of glycerine or its equivalent. Not more than about one-half to about three percent by weight is required to obtain the desired results, the amount usually employed being approximately 1%. This small quantity of glycerine in each instance has a remarkably pronounced effect

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upon the ability of the food particles to adhere to one another and yet be separated when being prepared for use. The quantity is so small that no physiological problem is encountered through the addition, and the effect is equally pronounced whether the food be in the form of a cereal, a premixed composition, a powder such as skim milk or chocolate beverage or the like.

In a copending patent application, Serial No. 492,417, filed June 26, 1943, and now abandoned, I have disclosed the use of small quantities of sugary syrups as an aid in the solution of the problems to which the present invention is addressed. These syrups operate suitably with a wide variety of food products such as impalpable skim milk powder and the like. In the case of certain other foods, however, the presence of a sugary syrup may have the tendency of causing the compressed masses to leave adherent films upon the compression dies which requires that the dies be cleaned at periodic intervals. The incorporation of glycerine as distinguished from an equally small amount of a sugary syrup does not involve these difficulties; compression takes place rapidly and conveniently, and the compressed masses are stripped readily from the dies without sticking, and the addition component is incorporated into the food product to be compressed with equal ease and convenience.

Glycerine has been disclosed herein as a desirable addition agent for the purpose but it is not the only substance adapted to be used for the effect. Propylene glycol, ethylene glycol and other glycols may be used for the same purpose to equal advantage. All are physiologically inert particularly in the small quantities in which they are employed. It may be noted that more of the addition agent than the amount just given may be incorporated without adverse effect but also without substantial improvement in results. The upper limits which have been disclosed herein, therefore, are limits beyond which it is not either necessary or particularly desirable to exceed, for commercial reasons rather than because of function.

While glycerine or the glycols used in accordance with this invention produce some of the effects of a typical gum type binding agent they have none of the stickiness which is characteristic of the usual binders and an explanation for their pronounced behavior cannot be advanced upon this basis. It is believed that the desired action is brought about by virtue of their effect upon the moisture which is present in the food. Whether the addition agent used in accordance