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WRAPPER FOR FOODSTUFFS

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The invention relates to wrappers for foodstuffs and particularly to coated aluminum foil wrappers for butters and cheeses.

Metallic foils have been used quite generally in the packaging of many articles and substances, and because of its strength, lightness, good appearance and other desirable characteristics aluminum foil has been accorded preference in many wrapping applications. It has been recognized, however, that aluminum foil is not always satisfactory for the wrapping of certain foodstuffs because of the aluminum-corroding ingredients which they contain, such as sodium chloride in the presence of moisture, and lactic acids. This is particularly manifest in the packaging of butters and cheeses, where for general use bare aluminum foil, even in its higher states of commercial purity, cannot be considered satisfactory. Although aluminum foil of the usual commercial standard of purity has proved satisfactory as a wrapper for some of the milder soft cheeses, it invariably fails when used in contact with hard blended cheeses or when exposed for a long period of time to a butter of high salt content.

Various means have been adopted in an attempt to protect the foil wrapper from the aluminum-corroding ingredients in butters and cheeses, but they have met with only indifferent success. Paper liners of various sorts with and without protective coatings have been given a thorough trial and have proved undesirable for various reasons, among which may be mentioned the tendency of paper to absorb moisture from the product and assume a pulp-like consistency, making the wrapper unsightly when removed and affording little or no protection to the foil. Moreover, the paper has some effect as a dialyzing membrane, and instead of protecting, it actually hastens corrosion of the foil. Again, paper or other treated cellulosic material is not desirable in contact with foodstuffs because of its tendency to impart a foreign taste or odor which is particularly objectionable in a wrapper for butters. Varnishes and lacquers have been tested as protective coatings for the foil, including both natural and synthetic resins, but these also have failed to satisfactorily solve the problem of providing a coating which will not only protect the food product from outside odors, but which will not itself impart an odor and which will preserve the product for the requisite length of time.

I have found that if the aluminum foil wrapper is provided with a coating prepared from synthetic resins containing as a principal ingredient polymerized vinyl esters, the difficulties inherent in wrappers heretofore known and used will be largely overcome. I have found further that the preservative life of aluminum foil pro-

vided with this particular type of coating is much greater than that of aluminum foil coated with ordinary lacquers or varnishes. The vinyl ester coatings possess the further advantage of reducing the tendency of the wrapper to stick to the butter or other foodstuffs, so that it can be removed without leaving unsightly lumps of food adhering to the wrapper.

The esters which I have found to be best suited as coatings for foil butter and cheese wrappers are vinyl acetate and vinyl chloride, or a resin containing both vinyl acetate and vinyl chloride. These esters, in their polymerized or associated forms, are combined with a suitable solvent and, if desired, a small quantity of a plasticizer such as dibutyl phthalate is added.

The acetate and the chloride when used in combination may be blended in any desired proportions and the advantages of my invention will be realized to an appreciable extent irrespective of the particular ratio chosen. Furthermore, it will be understood that while the terms vinyl chloride and vinyl acetate are frequently employed throughout the specification, reference to the mono-molecular form of these compounds is not intended per se, but since they are believed to be polymerized, it is the polymerized or associated forms which are indicated in the use of these terms.

As an example by which those skilled in the art may be enabled to readily practice the invention, I have found that a synthetic resin consisting of 80 parts vinyl chloride and 20 parts vinyl acetate gives highly satisfactory results for the purpose of the invention when utilized in the manner now to be described.

To a solution of the polymerized vinyl compound in acetone is added a plasticizer such as dibutyl phthalate and a solvent. A 37.5 per cent solution of the vinyl compound may constitute about 40 per cent by weight of the mixture; dibutyl phthalate about 3 per cent by weight; and the solvent about 57 per cent by weight. A satisfactory solvent consists of about 50 per cent by volume of ethylene dichloride and about 50 per cent by volume of the mono-ethyl ether of ethylene glycol. To this may also be added, if desired, a resin, such as para-coumarone resin, to improve adhesion of the coating to aluminum foil. The coating is brushed or sprayed onto the surface of the foil and allowed to dry in the form of a thin, almost colorless, transparent film, possessing the characteristics of toughness, flexibility and effective resistance to attack by salt water and other aluminum-corroding ingredients of butters and cheeses for considerable periods of time.

Butter wrapped in aluminum foil provided with a coating of the type and composition disclosed hereinabove was found to be in first class

palatable condition at the end of sixteen weeks. Processed cheese, provided with this type of coated wrapper, has been preserved for periods ranging up to six months, and at the end of this
5 period of time the cheese was still in excellent condition.

For dibutyl phthalate may be substituted other plasticizers such as diamyl phthalate and tricresyl-phosphate. For the solvent disclosed
10 hereinabove may be substituted such solvents as xylene, toluene, ethyl acetate or butyl acetate. The essential feature of the invention is the provision of an aluminum foil wrapper having a coating of synthetic resins containing as a principal
15 ingredient polymerized vinyl esters with the addition of suitable plasticizers where required, and applied to the foil with the use of a suitable solvent.

A modification of the coatings hereinbefore described which I have found particularly useful in many applications of the present invention may be made by mixing the polymerized vinyl compounds with a nitrocellulose lacquer. An example of this type of resinous coating is one which
20 consists of about 32 per cent by weight of a 35 per cent solution of the vinyl compound in toluene, 5 per cent by weight of wet nitrocellulose of suitable viscosity, preferably of a Saybolt viscosity of 0.5 seconds to 18 seconds, 3 per cent by
25 weight of dibutyl acetate, and about 60 per cent by weight of a solvent such as one having a volume composition of 50 per cent toluene, 40 percent ethyl acetate and 10 per cent butyl acetate. Larger quantities of nitrocellulose lacquer may
30 be used but I consider that coatings containing the vinyl compounds in higher ratios to the nitrocellulose lacquer offer somewhat better protection to the aluminum foil. As before, the polymerized vinyl compounds may consist of
40 vinyl chloride, vinyl acetate, or a mixture of the two.

It will be understood that while it is preferred to apply the vinyl ester coating to the inside of the wrapper, it may, if desired, be applied to the
45 exterior as well. The coating strengthens the foil and in many cases produces a wrapper which is sufficiently strong to make it unnecessary to use cartons. The coated wrapper is both non-porous and opaque and serves to keep the food
50 product fresh during storage and shipment for longer periods of time than do the ordinary paper wrappers, by cutting down evaporation loss and oxidation.

While I have disclosed specific coating compositions in order to enable those skilled in the art to successfully practice my invention, it should be understood that variations may be made in the composition without sacrificing the desirable characteristics of the improved wrapper as defined in the appended claims.

I claim:

1. As a wrapper for foodstuffs which contain aluminum-corroding ingredients, aluminum foil provided with a coating rendering said aluminum
65 foil resistant to said aluminum-corroding ingredients in the foodstuffs, said coating consisting principally of a polymerized vinyl ester and containing a plasticizer.

2. A wrapper for foodstuffs which contain aluminum-corroding ingredients, comprising aluminum foil provided on at least one surface with a coating of polymerized vinyl ester, said coating rendering the aluminum foil resistant to alumi-

num-corroding ingredients in the said foodstuffs.

3. A wrapper for butters and cheeses containing aluminum-corroding ingredients, comprising a sheet of aluminum foil having on at least one surface a coating consisting principally of a polymerization product of vinyl chloride and vinyl acetate, said coating rendering the aluminum foil resistant to attack by aluminum-corroding ingredients of the butter and cheese wrapped therein. *

4. A wrapper for foodstuffs containing aluminum-corroding ingredients, comprising aluminum foil provided with a coating containing polymerized vinyl esters and nitrocellulose lacquer, said coating rendering the aluminum foil resistant to the aluminum-corroding ingredients of foodstuffs enclosed in the wrapper.

5. The method of rendering an aluminum foil wrapper for foodstuffs containing aluminum-corroding ingredients resistant to attack by said ingredients, which comprises providing the wrapper on at least one surface with a thin, transparent coating containing a polymerized vinyl compound as a principal ingredient, said coating being applied to the foil in the form of a solution.

6. As a wrapper for foodstuffs which contain aluminum-corroding ingredients, aluminum foil provided with a coating rendering said aluminum foil resistant to said aluminum-corroding ingredients in the foodstuffs, said coating consisting principally of a polymerized vinyl resin containing vinyl chloride and vinyl acetate, and containing a plasticizer.

7. A wrapper for foodstuffs containing aluminum-corroding ingredients, comprising aluminum foil provided with a coating consisting principally of polymerized vinyl esters, a lesser quantity of nitrocellulose lacquer, and a plasticizer, said coating rendering the aluminum foil resistant to the aluminum-corroding ingredients of the foodstuffs enclosed in the wrapper.

8. The method of rendering an aluminum foil wrapper for foodstuffs containing aluminum-corroding ingredients resistant to attack by said ingredients, which comprises providing the wrapper on at least one surface with a thin, transparent coating containing a polymerized vinyl compound as a principal ingredient, said coating being applied in the form of a solution containing polymerized vinyl ester, a solvent therefor, and a plasticizer.

9. The method of rendering an aluminum foil wrapper for foodstuffs containing aluminum-corroding ingredients resistant to attack by said ingredients, which comprises providing the wrapper on at least one surface with a thin, transparent coating containing a polymerized vinyl compound as a principal ingredient, said coating being applied in the form of a solution containing polymerized vinyl ester, a solvent therefor, and a resin which improves the adhesion of the coating to the foil.

10. The method of rendering an aluminum foil wrapper for foodstuffs containing aluminum-corroding ingredients resistant to attack by said ingredients, which comprises providing the wrapper on at least one surface with a thin, transparent coating containing a polymerized vinyl compound as a principal ingredient, said coating being applied in the form of a solution containing polymerized vinyl ester, a solvent therefor, and a lesser quantity of a nitrocellulose lacquer.

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