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PROCESS OF TREATING AN IRISH POTATO
HAVING THE SKIN REMOVED WITH
FUMES OF BURNING SULPHUR TO
BLEACH, PRESERVE, AND TO PREVENT
DISCOLORATIONCharles D. Draper, Seattle, Wash., assignor to
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2 Claims. (Cl. 99—11)

My invention relates to the process of treating an Irish potato, (*Solanum tuberosum*) having the skin previously removed, with fumes of burning sulphur to bleach, preserve and prevent discoloration.

The present methods of manually or mechanically grinding or removing the skin are extremely wasteful, and this waste becomes a very high percentage, even, according to some authorities, as much as 30%. Such loss in connection with large users of potatoes such as hotels, caterers and restaurants is a serious matter. An associate, Samuel Allan Patterson, has a co-pending application, Serial Number 556,033 for the Loosening of the corky layer of the Irish potato (*Solanum tuberosum*) by momentarily subjecting the same to high heat, while another associate, Newman T. Brown, has co-pending applications, Serial Number 564,698 for a Furnace, and Serial Number 562,907 for Skin removing device, both being applicable for carrying out the said process of Samuel Allan Patterson. The said Patterson application is for a process for subjecting the vegetable, Irish potato (*Solanum tuberosum*) to a shock of high heat and then quickly cooling the same, whereby the outside corky layer of the potato is caused to be separated from the cortex layer which is of a proteinous character. The sudden shock of heat causes moisture to be collected immediately beneath the corky layer and loosens said corky layer and is separated from the said cortex layer. The heat is sufficient to dehydrate and coagulate the cortex layer to form a relatively thin protective coating. Immediately after said shock of heat the potato is cooled so that the heat effect is not permitted to continue its action and cook the starch portion of the potato which lies immediately beneath the cortex layer. In this wise a protective coating is provided which has all the natural markings of the potato, and which serves to preserve the potato in the raw condition and prevent dehydration, so that the same may be kept for a relatively long period of time before cooking. Upon cooking, the cortex layer disappears and is undistinguishable from the remaining portion of the potato. This avoids extensive waste. The furnace of Brown is a particular device for carrying out the process of said Patterson. It provides a U shaped heating chamber for pocketing the gases of a furnace, while undergoing combustion. Through the heating chamber the articles to be treated are carried on an endless conveyor in cage buckets. The skinning device of said Brown is an

apparatus for rubbing off the loosened particles of skin after being subjected to the high heat of the furnace. It has buckets of a form and spray means for retaining the articles in the pocket while they are rubbed against a friction bottom, which serves in the case of the potato to remove only the corky part without disturbing the newly formed protective coating developed from the cortex layer by the action of the heat.

My process is particularly designed to treat the coating formed on the potato during the removal of the corky layer or skin, as set forth in these said applications, so as to (a) bleach the coating, (b) impart to the coating a preserving effect and (c) particularly prevent subsequent discoloration of the article so that the same may be used after a relatively long period of time, of the order of weeks. The latter named purpose is the primary object of my invention.

As a means of carrying out my invention in practical operation, my said associate, Newman T. Brown has invented a device which is set forth in a co-pending application, Serial Number 564,699 for a Fumigating device. This device comprises a closed chamber in which the fumes of burning sulphur may be confined to a density desired. An endless chain is provided having cage buckets thereon for a feed mechanism, which permits only a charge of the number of potatoes which may be accommodated by each cage bucket. My invention, together with the other inventions referred to are designed to make it possible to remove the skins of Irish potatoes on a large scale and provide a protective coating of a character that will render the article suitable for use weeks afterwards. In this connection, I have found, by experiment, that potatoes treated by my process will keep for longer periods of time when treated in the fall, winter and spring, than when treated in the summer. However, even if the potatoes are treated in the summer by my process, a commercially salable product is obtained. Thus it will be possible to treat Irish potatoes and have the same stored and ready for distribution at a subsequent time to large users of said product, whereby all of the wastage and annoyance of preparing potatoes will be avoided by the individual users, namely, said hotels, caterers, restaurants, etc.

After the corky layer is removed and the cortex layer dehydrated and altered by means of the heat, as set forth in said co-pending applications, it has been found necessary in order to avoid discoloration, that further treatment be given to the potato. The treatment of the potato

to prevent discoloration must not in any wise leave a deposit rendering the potato unsuited for eating. Also, such treatment must not affect the natural taste of the potato. Further, the amount of the treatment must be so limited in extent that it will not alter the taste of the potato but will be at the same time sufficient to be effective in achieving the end desired. It is well known that potatoes are rapidly discolored, that is, darkened, in a very short period of time, of the order of minutes, after the removal of the skin by ordinary peeling. Such discoloration would render the potato entirely unsalable if prepared by methods heretofore in use.

10 If a potato, deprived of its corky layer part of its skin, is to be provided for distribution as set forth above, at a subsequent period after the removal of the skin, it is essential that the natural light color of the potato be preserved and darkening prevented. A further requisite is that the potato must be rendered more resistant to the growth of fungi or mold. Again, while the process of treating the potato to prevent discoloration must meet the above requisites, nevertheless, after the potato has been cooked by usual methods the potato must not be altered and there must be no evidence of the treatment of the invention set forth herein and in the said co-pending applications. I have found by experiment that processes may be used in the treatment of potatoes which would result in preventing discoloration, but at the same time have other objectionable results, such as, for example, they will render the protective coating of a rubbery or tough character, which are obviously unsuited in connection with providing an article of the character in question. All the various methods of serving potatoes must be taken into consideration in determining the properties necessary to the treated potatoes, for example, when the potato is served in mashed form, there must result no hardened surfaces from the treatment, which will not be mashed and thereby cause a lumpy condition in the mashed potatoes.

In treating potatoes peeled by ordinary proc-

esses, a sour, acid taste is usually noticeable after treating the potatoes with sulphur fumes. This is apparently caused by the fumes entering the porous surface of the potato and forming acidic substances therein. On the other hand, treating potatoes, which have been subjected to the treatment of removing the outer skin, i. e., the corky part of the skin as set forth in the hereinbefore mentioned co-pending applications, with sulphur fumes, the fumes do not produce a sour or acid condition even if the potatoes are wet when so treated, as the protective coating tends to prevent the entrance of sulphur fumes into the potato and any moisture on the surface will tend to evaporate in the treatment. However, I prefer to first dry the potatoes as a better color obtains if dried potatoes are treated by my process. Obviously, a commercially salable potato must not have any foreign tastes such as those present acidic substances, when served for human consumption.

The density of the sulphur fumes used in my process may be varied with the time of exposure of the potato to the gas, however, I have determined that a workable density is obtained if one-fourth to one-half ounce of sulphur is burned completely in a closed cabinet per one cubic yard capacity and the potatoes are exposed to such a density of gas for a period of time of approximately fifteen to twenty minutes.

I claim:

1. The process of treating an Irish potato which has its corky layer removed by being subjected momentarily to high heat comprising exposing the resulting proteinous cortex layer to the fumes of burning sulphur.

2. The process of treating an Irish potato which has its corky layer removed by being subjected momentarily to high heat comprising exposing the resulting proteinous cortex layer, for a period of fifteen to twenty minutes in a sealed chamber, where one-fourth to one-half ounce of sulphur has been burned per one cubic yard capacity.

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