March 11, 1930. O. H. HANSEN 1,750,467

PROCESS OF TREATING KRAUT

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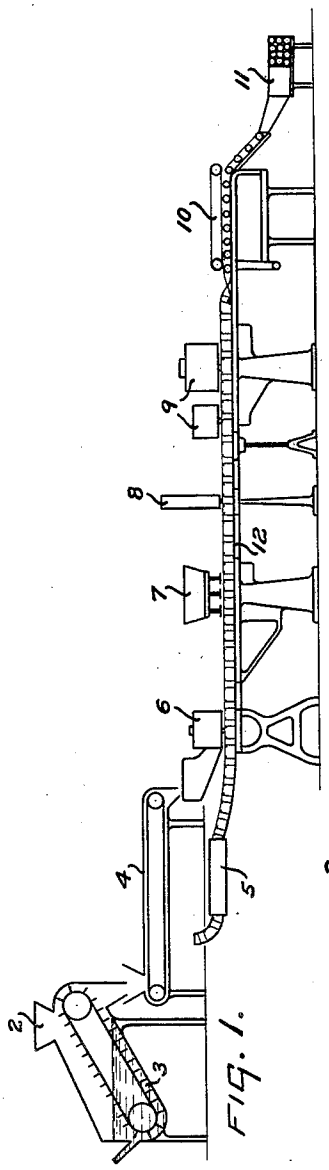


FIG. 1.

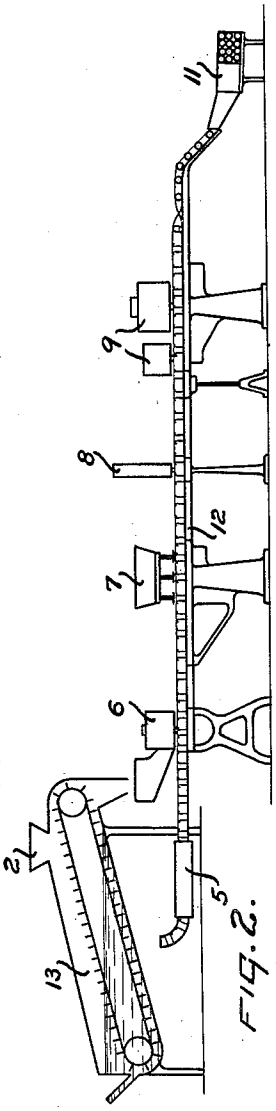


FIG. 2.

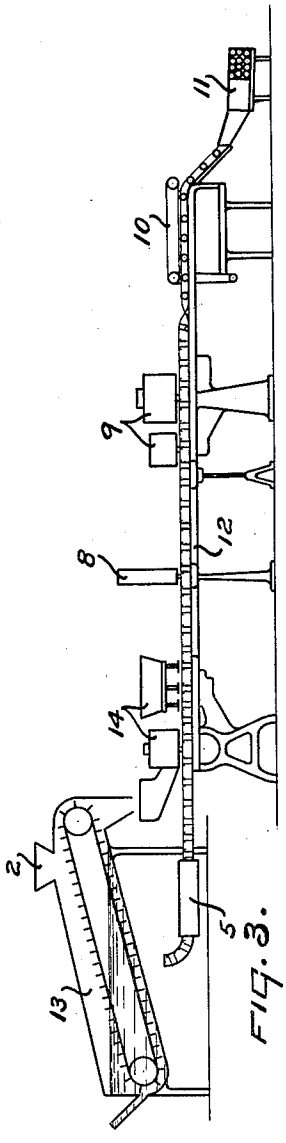


FIG. 3.

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UNITED STATES PATENT OFFICE

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PROCESS OF TREATING KRAUT

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This invention relates in general to improvements in the art of treating edible substances in order to preserve the same, and relates more specifically to an improved process of and means for preserving and packing sauer kraut and substances having similar characteristics.

An object of the invention is to provide an improved process of effectively treating and packing kraut. Another object of the invention is to provide improved means for facilitating commercial exploitation of the improved process.

It has heretofore been common practice in the canning industry, to preserve and pack sauer kraut by first placing batches of the kraut mixed with brine, into the successive cans, and by subsequently subjecting the filled cans to heat treatment in order to sterilize the confined substance. With this prior process, it is practically impossible to effectively and uniformly bleach and sterilize the kraut after it has been compressed in the cans, especially when the substance has been packed in cans of the larger sizes. Besides being ineffective, this prior process is relatively slow, since it requires greater time for sterilization of the packed kraut, than when the kraut fibres are separated.

The present invention has for its object the provision of a method of conditioning and packing sauer kraut, whereby the substance is more effectively and rapidly treated and whereby subsequent spoilage is positively eliminated. Primarily, the invention contemplates sterilization of the kraut prior to placing the substance into the cans. Secondarily, the invention contemplates bleaching of the kraut either before or during sterilization, sterilization of the brine, and sterilization of the cans and covers which are used to pack and seal the previously conditioned substances. These and other objects and advantages contemplated by the present improvement and the manner of attaining them will be apparent in the course of the accompanying description.

A clear conception of the various steps of the improved process and of several of the numerous possible arrangements of apparatus for commercially exploiting the process, may be had by referring to the drawing accompanying and forming part of this specification in which like reference characters designate the same or similar parts in the various views.

Fig. 1 is a diagram of a line of machines for effecting commercial exploitation of the improved process of conditioning and packing sauer kraut.

Fig. 2 is a diagram of another line of machines for effecting commercial exploitation of the improved process.

Fig. 3 is a diagram of still another line of machines for effecting commercial exploitation of the improved process.

While only three diagrams of lines of machines for effecting commercial exploitation of the improved process have been illustrated in the drawing, it will be understood that none of these arrangements takes preference over another and that various other arrangements of equal efficiency are possible. This specific disclosure should not therefore be considered as an intent to limit the scope of the invention.

Referring specifically to Fig. 1, the line of machines for effecting commercial exploitation of the improved process comprises in general, an automatic kraut bleaching machine 3; an automatic kraut sterilizer 4; an automatic can washer and sterilizer 5; an automatic combined kraut measurer and filler 6; an automatic combined brine sterilizer, measurer and filler 7; an automatic can cover sterilizer and feeder 8; an automatic can closing machine 9; an automatic can labeling machine 10; and an automatic can boxing machine 11. The kraut bleaching machine 3 is provided with a supply hopper 2, and the cans are transportable in series to and from the successive machines by means of an automatic can conveyor 12.

During normal operation of the conditioning and packing apparatus disclosed in Fig. 1, to carry on commercial exploitation of the improved process, the sauer kraut is delivered in bulk and in relatively compressed condition from vats or any other source, to the bleaching machine 3 through the supply hop-

per 2. In the bleaching machine 3, the kraut fibres are immersed in liquid and subjected to the raking and separating action of a plurality of power driven fingers the speed of movement of which is variable to control the bleaching period. The degree of bleaching is also controllable by varying the level of the liquid or by varying the length of the finger conveyor. The properly bleached kraut is delivered to the sterilizer 4 wherein the loosened and separated kraut fibres are effectively sterilized by being subjected to heat. The degree of heat applied and the period of sterilization are obviously readily controllable by varying the temperature of the heating medium and the speed of operation of the sterilizing machine. The bleached and properly sterilized kraut is delivered to the combined kraut measurer and filler 6 wherein uniform batches of the conditioned kraut are measured and delivered to the successive cans which are previously internally sterilized in the washer and sterilizer 5, and are automatically delivered as required to the filler 6. The kraut laden cans are next presented to the combined brine sterilizer, measurer and filler 7, wherein previously sterilized and definite quantities of brine are delivered to the successive cans thus substantially filling the sterilized cans with previously sterilized kraut and brine. The filled cans are presented to the combined can cover sterilizer and feeder 8 which places a thoroughly sterilized cap or cover on each can, whereupon the cans are successively presented to the closing machine 9 which automatically attaches the covers and seals the cans. The conveyor 12 transports the sealed cans through the labeling machine 10 wherein suitable labels are automatically applied, after which the labeled cans are automatically packed in boxes in suitable numbers, by the automatic boxing machine 11. It will thus be noted that the line of machines of Fig. 1 automatically conditions and packs the kraut in cans and boxes ready for final storage or shipment.

Referring specifically to Fig. 2, the line of machines for effecting commercial exploitation of the improved process comprises in general a combined automatic kraut bleaching and sterilizing machine 13; an automatic can washer and sterilizer 5; an automatic combined kraut measurer and filler 6; an automatic combined brine sterilizer, measurer and filler 7; an automatic can cover sterilizer and feeder 8; an automatic can closing machine 9; and an automatic can boxing machine 11. The kraut bleaching and sterilizing machine 13 is provided with a kraut supply hopper 2, and the successive cans are transportable to and from the successive machines by means of an automatic can conveyor 12.

During normal operation of the conditioning and packing apparatus disclosed in Fig. 2, to carry on commercial exploitation of the improved process, the sauer kraut is delivered in bulk and in relatively compressed condition to the combined bleaching and sterilizing machine 13 through the supply hopper 2. In the bleaching and sterilizing machine, the kraut fibres are separated and simultaneously bleached and sterilized. The degree of bleaching and of sterilization is controllable in various ways, some of which have been referred to in connection with the diagram of Fig. 1. The properly bleached and sterilized kraut is delivered to the combined kraut measurer and filler 6 wherein equal batches of the conditioned kraut are measured and delivered to the successive cans which have been previously internally sterilized in the washer and sterilizer 5, and are automatically delivered as required to the filler 6. The kraut laden cans are next presented to the combined brine sterilizer, measurer and filler 7, wherein previously sterilized equal quantities of brine are delivered to the successive cans thus substantially filling the sterilized cans with previously sterilized kraut and brine. The filled cans are presented to the combined can cover sterilizer and feeder 8 which places thoroughly sterilized caps or covers on the cans, whereupon they are successively presented to the closing machine 9 which automatically seals the cans. The conveyor 12 transports the sealed cans direct to the automatic boxing machine 11 wherein the unlabeled cans are packed in suitable numbers. It will thus be noted that the line of machines of Fig. 2 automatically conditions and packs the kraut in the cans which are boxed in unlabeled condition for certain trade.

Referring specifically to Fig. 3, the line of machines for effecting commercial exploitation of the improved process, comprises in general a combined automatic kraut bleaching and sterilizing machine 13; an automatic can washer and sterilizer 5; a combined automatic brine sterilizer and brine and kraut measurer and filler 14; an automatic can cover sterilizer and feeder 8; an automatic can closing machine 9; an automatic can labeling machine 10; and an automatic can boxing machine 11. The kraut bleaching and sterilizing machine 13 is provided with a kraut supply hopper 2, and the successive cans are transportable to and from the successive machines by means of an automatic can conveyor 12.

During normal operation of the conditioning and packing apparatus disclosed in Fig. 3, to carry on commercial exploitation of the improved process, the sauer kraut is delivered in bulk and in relatively compressed condition to the combined bleaching and sterilizing machine 13 through the supply hopper 2. In the bleaching and sterilizing machine 13 the kraut fibres are thoroughly segregated

and simultaneously bleached and sterilized. The degree of bleaching and sterilizing is controllable in any suitable manner such as referred to in connection with the diagram of Fig. 1. The properly bleached and sterilized kraut is delivered together with previously sterilized brine, to the combined brine and kraut measuring and filling machine 14 wherein equal batches of mixture of conditioned brine and kraut are delivered to the successive cans which have previously been internally sterilized in the washer and sterilizer 5 and are delivered to the machine 14 as required by the conveyor 12. The filled cans are then presented to the combined can cover sterilizer and feeder 8 which places properly sterilized covers on the loaded cans, whereupon they are presented in succession to the closing machine 9 which automatically attaches the covers. The conveyor 12 transports the sealed cans through the labeling machine 10 which automatically applies suitable labels, after which the cans are automatically packed in boxes by the automatic boxing machine 11. It will thus be noted that the line of machines of Fig. 3, automatically conditions and packs the kraut in cans which are boxed ready for final disposition.

While only three arrangements of apparatus for carrying on commercial exploitation of the improved process, have been illustrated in the drawing, it will be obvious that many other equally efficient arrangements may be employed. The combined measuring and filling machine 14 of Fig. 3 may obviously be used in conjunction with the independent bleacher 3 and sterilizer 4 of Fig. 1, and a suitable kraut cooler may be applied wherever desired. The can covers may also be sterilized independently of the cover feeding mechanism, although sterilization of the covers would logically be effected when the covers are delivered to the cans. The labeling and boxing steps of the process may also be omitted, the important feature of the invention being the sterilization of the commodity prior to packing.

It should be understood that it is not desired to limit the invention to the exact steps of the process or to the details of construction of the specific apparatus disclosed, for various modifications within the scope of the claims may occur to persons skilled in the art.

It is claimed and desired to secure by Letters Patent:—

1. The process of preserving kraut, which comprises, introducing kraut in bulk into a bath of hot liquid in order to separate the individual fibres and to simultaneously bleach nad sterilize the kraut, and subsequently packing batches of the finally treated kraut in sealed receptacles.

2. The process of preserving kraut, which comprises, introducing kraut in bulk into a bath of hot liquid in order to separate the individual fibres and to simultaneously bleach and sterilize the kraut, removing the treated kraut from the bath, and subsequently packing batches of the finally treated kraut in sealed receptacles.

3. The process of preserving kraut, which comprises, introducing kraut in bulk into a bath of hot liquid in order to separate the individual fibres and to simultaneously bleach and sterilize the kraut, removing the treated kraut from the bath and placing measured batches thereof in receptacles, and subsequently adding a definite quantity of brine to each batch prior to sealing of the receptacles.

In testimony whereof, the signature of the inventor is affixed hereto.

OSWALD H. HANSEN.