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PROCESS FOR PRODUCING FISH PASTE PRODUCT
AND COLORING NOZZLE FOR USE IN THIS PROCESS

The present invention relates to a process for producing a fish paste product, for example, fish paste made to look like crab-meat, and also pertains to a coloring nozzle which is suitable for use in this process.

Fish paste made to look like crab-meat is generally produced by the following process:

A paste material is formed into a sheet through a forming nozzle having a long and narrow slit-shaped outlet. The sheet has cuts made in one surface to divide the material along the surface into fibers or strips extending in the longitudinal direction of the material. The thus cut sheet is wound or rolled into a rod-like shape, and this rod-like shape has a film having a dye coated on the inner surface thereof wound therearound. In this state, the rod-like shape is passed through a heater to transfer the dye to the surface of the rod-like shape. Thereafter, the rod-like shape is cut to a predetermined length and then packaged (for example, see Japanese Patent Public Disclosure (KOKAI) NO. 58-29065).

The above-described conventional process suffers, however, from the following problems:

To color the paste material, the prior art necessitates a complicated operation in which a dye is coated on the inner surface of a film and this film is wound around the rod-shaped material. Accordingly, the device required for this operation becomes complicated.

In this regard, there has been another prior art method in which the rod-shaped material is sprayed with a dye for coloring it (see Japanese Patent Public Disclosure (KOKAI) NO. 55-124476).

However, this method creates a problem in that the sprayed dye splashes about.

It is the object of the present invention to provide a process for producing a fish paste product which is free from the above-described problems of the prior art.

Another object of the present invention is to provide a coloring nozzle which is suitable for use in the process for producing a fish paste product.

To these ends, the present invention provides a process for producing a fish paste product, having the steps of: forming a fish paste material into an elongated sheet having opposite sides; cutting the sheet with parallel cuts in the direction of elongation of said sheet so as to define a plurality of fibers in the sheet between said parallel cuts; winding the cut sheet into a rod-like shape material with the fibers extending in the axial direction of the rod-like shape material; and cutting the rod-like shape material into predetermined lengths; wherein:

prior to said winding step, a dye is applied to one of said opposite sides of said sheet along the length thereof and in a predetermined width to form a dyed portion; and in carrying out the winding of said scored sheet, said dyed portion of the side of the sheet to which the dye has been applied is placed on the outside of the rod-like shape material.

In addition, the present invention provides a coloring nozzle, which is mounted at an outlet of a forming nozzle, for extruding a material to form it into a sheet; the coloring nozzle having an outlet which opens at a position where the material extruded from the forming nozzle passes, such that the surface of the material comes into contact with the outlet; the coloring nozzle being arranged to discharge a dye from the outlet to color at least a part of the width of the material surface.

The above and other objects, features and advantages of the present invention will become more apparent from the following description of the preferred embodiments thereof, taken in conjunction with the accompanying drawings, in which like reference numerals denote like elements, and in which:

Fig. 1 is a plan view of an essential part of an apparatus according to one embodiment of the present invention;

Fig. 2 is a perspective view of a forming nozzle and a coloring nozzle used in the apparatus shown in Fig. 1;

Fig. 3 is a sectional elevation view of the forming nozzle and the coloring nozzle;

Fig. 4 is a perspective view of a forming nozzle and a coloring nozzle according to another embodiment of the present invention;

Fig. 5 is a sectional view of the forming nozzle and the coloring nozzle shown in Fig. 4;

Fig. 6 is a perspective view of a forming nozzle and coloring nozzle according to the third embodiment of the present invention; and,

Fig. 7 is a sectional view of the forming nozzle and coloring nozzle of Fig. 6.

The present invention will be described below in detail by way of embodiments and with reference to the accompanying drawings.

Fig. 1 is a plan view of an essential part of an apparatus for producing a crab-like fish paste product, to which the present invention is applied.

In this apparatus, as disclosed, for example, in Japanese Patent Post-Examination Publication No. 01-45350 (1989), a material for a fish paste product is passed through a forming nozzle 10 to form a sheet-shaped material M, which is then passed through a shredder (not shown) to cut it into fibers extending in the longitudinal direction of the sheet-shaped material M. The fibrous sheet-shaped material M is diagonally wound from one edge (the upper edge as viewed in Fig. 1), and that wound material M' is engaged with a rotating roll 12 which is set at a position sideward (downward as viewed in Fig. 1) off the extension of the sheet-shaped material M. Then, the material M' is pulled in a direction substantially parallel to the sheet-shaped material M, thereby forming the material M' into a rod-like shape. The rod-shaped material M'' is cut by a cutter (not

shown) to a predetermined length and is then packaged as fish paste.

In the prior art, after the fish paste material has been formed in a rod-like shape, the peripheral surface of the rod-shaped material is colored, as has been described above.

In contrast, in the illustrated embodiment of the present invention, the sheet-shaped material M is discharged from the outlet of the forming nozzle 10 and then immediately colored or wated with a dye, as shown by C, at the nozzle outlet, as described below.

In the present invention, a coloring nozzle 14 is set at the outlet of the forming nozzle 10. The coloring nozzle 14 is adapted to color only a predetermined width of the surface of the sheet-shaped material M (i.e., only the portion which forms the outer surface of the rod-shaped material M" when the material M is formed into a rod-like shape). When the sheet-shaped material M is diagonally wound, each fibrous portion is wound in a spiral form, but when the wound material M' is pulled in the form of a rod through the roll 12, the fibrous texture becomes a straight-line form. Accordingly, if the straight-line fiber portion that is to appear on the surface of the rod-shaped material M" is colored, color is eventually given to the entire outer surface of the resulting rod-shaped material M".

Figs. 2 and 3 show the forming nozzle 10 and the coloring nozzle 14 in the above-described apparatus.

The forming nozzle 10 has a configuration that diverges from a material inlet 16 toward a slit-shaped outlet 18.

The coloring nozzle 14 is set below the outlet 18 of the forming nozzle 10. As shown in Fig. 3, the coloring nozzle 14 comprises two, front and rear, plate-shaped members 19 and 19' which are superposed to define a nozzle bore 14'

5 therebetween. A hose H for supplying a dye is attached by insertion into an opening that is formed in the nozzle 14 at the end thereof which is closer to the bottom of a plate-shaped member 18. Preferably, the coloring nozzle 14 is removably set by use of proper fasteners, for example,

10 bolts. As to the dye, it is preferable from the viewpoint of the adhesion to the sheet-shaped material to employ a mixture of a dye and minced fish meat, which is formed by stirring a necessary dye into minced fish meat formed very loosely.

15 Figs. 4 and 5 show a forming nozzle and a coloring nozzle according to another embodiment of the present invention.

In this embodiment, a coloring nozzle 14' is formed inside a lower portion 22 of a member 20 that defines the outlet 18 of the forming nozzle 10. As will be clear from the figures, the bottom of the lower portion 22 is formed with an opening 24 for setting the dye supply hose H. In addition, the lower portion 22 is formed with a dye storage chamber 26 that is communicated with the opening 24, and a
20 plurality of nozzle bores 28 extend from the storage chamber 26 to the top of the wall of the chamber 26. Further, a dye spreading plate 30 is attached to the front surface of the lower portion 22 of the outlet defining member 20 to spread
25 the dye sprayed on the lower surface of the sheet-shaped

material M individually from the plurality of nozzle bores 28.

Figs. 6 and 7 show a forming nozzle and coloring nozzle according to the third embodiment of the present invention.

5 The forming nozzle and coloring nozzle of this embodiment is, in construction, the same as that of the second embodiment shown in Figs. 4 and 5 except that the nozzle bore 28' is formed as a slit and the spreading plate 30 required in the second embodiment is therefore not provided.

10 According to the present invention, to color the surface of a product which is finally formed into a rod-like shape, the material is colored in a state where it is in a sheet-like shape, in contrast to the prior art wherein the material is colored after being formed into a rod-like
15 shape. Therefore, the coloring operation is facilitated, so that the device for the coloring operation can be simplified.

Although in the foregoing embodiments the sheet-shaped material is wound from one side to the other to
20 form a rod-shaped material, it will be apparent that the present invention is also applicable to a process wherein the sheet-shaped material is wound from both sides to form a rod-shaped material as a whole, for example.

CLAIMS

1. A nozzle for forming a sheet of fish paste material having a dye applied to one side thereof, comprising a nozzle body having a long narrow discharge outlet, and a dye application nozzle at a side of said long narrow discharge outlet for directing dye against a side of a paste material being extruded through said long narrow discharge opening and the surface of which sheet side is shaped by said side of said long narrow discharge opening.

2. A nozzle as claimed in Claim 1 in which said dye application nozzle is mounted on said nozzle body just outside said long narrow discharge opening.

3. A nozzle as claimed in Claim 1 in which said dye application nozzle is incorporated in a portion of said nozzle body along a side of said long narrow discharge opening.

4. A process for producing a fish paste product having the steps of: forming a fish paste material into an elongated sheet having opposite sides; cutting the sheet with parallel cuts in the direction of elongation of said sheet so as to define a plurality of fibers in the sheet between said parallel cuts; winding the cut sheet into a rod-like shape material with the fibers extending in the axial direction of the rod-like shape material; and cutting the rod-like shape material into predetermined lengths; wherein:

prior to said winding step, a dye is applied to one of said opposite sides of said sheet along the length thereof and in a predetermined width to form a dyed portion; and



in carrying out the winding of said scored sheet, said dyed portion of the side of the sheet to which the dye has been applied is placed on the outside of the rod-like shape material.

5. The process of Claim 4 in which the step of forming the fish paste material into a sheet comprises providing a nozzle having a long narrow discharge outlet and extruding the fish paste material through said discharge outlet, said process further comprising, for carrying out the step of applying a dye, providing a dye application nozzle along a side of said long narrow discharge outlet and forcing a dye through said dye application nozzle against one side of the fish paste material being extruded through said discharge outlet.

6. A process for producing a fish paste product substantially as described herein with reference to and as illustrated in Figure 1 of the accompanying drawings.

7. A forming and coloring nozzle for producing a fish paste product substantially as described herein with reference to and as illustrated in Figures 2 and 3 of the accompanying drawings.

8. A forming and coloring nozzle for producing a fish paste product substantially as described herein with reference to and as illustrated in Figures 4 and 5 of the accompanying drawings.

9. A forming and coloring nozzle for producing a fish paste product substantially as described herein with reference to and as illustrated in Figures 6 and 7 of the accompanying drawings.