

PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Rice Vermicelli and Spaghetti Process

We, ECONOMIC DEVELOPMENT BOARD, of Fullerton Building, P.O. Box 2692, Singapore and UNITED BEEHOON MANUFACTURERS LIMITED, of 47 Beach Road, Singapore 7, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described, in and by the following statement:—

This invention relates to a process for manufacturing rice spaghetti, rice vermicelli and the like from rice grains.

At the present time rice products of the kind referred to are generally prepared by processes employing small machines together with a large amount of manual labour. The rice grains are ground with water to form a paste and after the completion of the process the rice products are dried in the sun. These processes are expensive to run both on account of the manual labour involved and also because some of the steps in the process depend on weather conditions which are unreliable. Previous attempts at mechanizing the production of spaghetti and vermicelli from rice have raised the cost of the process without providing any advantages.

The process described in the present invention can be operated under all weather conditions and eliminates most of the manual labour necessary in previous processes, thus reducing the cost of production while providing a better quality product.

The invention consists in a process for manufacturing rice spaghetti, rice vermicelli and the like from rice grains comprising the steps of dry milling rice grains to form rice flour, mixing the rice flour with water to form a dough, passing the dough into a premixer wherein the dough is mixed and formed into granules, transporting the granules to a

first steaming chamber, conveying the steamed granules into a extruder wherein the dough is mixed, extruded and cut into the required strand form conveying the strands to a second steaming chamber and then conveying the cooked strands into a drying chamber.

In a preferred embodiment of the invention the steamed granules are extruded in a two stage process. In the first stage the pellets are extruded into short sections, such as macaroni or noodles, and in the second stage the short sections are passed into a second extruder where long thin sections, such as spaghetti or vermicelli are formed.

The process is preferably fully automatic, the rice material being mechanically transported from each process chamber to the succeeding process chamber on conveyors.

The process will be further described and illustrated by the following example together with the accompanying drawing.

The drawing is a flowsheet of the steps involved in the process according to the present invention.

Rice grains are dry milled and 10 parts of the resultant rice flour (size 130—180 microns) are mixed with 4 parts of hot water. The dough is fed by mechanical feeding devices into a premixer 1. The premixer comprises a mixer having a sieve fixed to its outlet so as to produce rice granules of approximately 4 cu. mm in size.

When the dough is thoroughly mixed, the granules are transported on a mechanical conveyor 2 to a steaming chamber 3. The steaming chamber comprises a stainless steel gauze conveyor fitted over open steam pipes. The conveyor is covered so that the greater part of the steam is retained around the pipes.

The granules pass slowly through the steam-

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ing chamber for 20 to 30 minutes at a steam pressure of approximately one atmosphere.

5 The steamed dough is then transported on a conveyor 4 to a cooling conveyor 5. The cooling conveyor comprises moving canvas belts and the dough is cooled by means of fans.

10 The cooked dough passes from the cooling conveyor onto a conveyor 6 which transports the granules to an automatic extrusion press 7. This extruder produces short strands in the form of tubes, 2 to 3 inches long, made of high quality homogeneous dough. The production capacity of the press is 500 kg per hour at a pressure of approximately 700 lb/sq. inch.

20 The short strands are carried on a conveyor 8 to a second automatic extrusion press 9. This press extrudes long strands, such as rice vermicelli and spaghetti, which are automatically cut and hung on horizontal rods.

25 The cut strands pass on the rods into a second steaming chamber 10. Here, the product is steamed for 30 minutes at a steam pressure of 1 to 1½ atmospheres.

30 The rods carrying the product then pass into a tunnel dryer 11. The dryer is provided with hot steam pipes and fans and the strands are dried for from 1 to 3 hours.

The dried product is then ready for packaging.

WHAT WE CLAIM IS:—

35 1. A process for manufacturing elongated pasta from rice comprising the steps of dry milling rice grains to form rice flour, mixing the rice flour with water to form a dough passing the dough into a premixed wherein the dough is mixed and formed into granules transporting the granules to a first steaming chamber, conveying the steamed granules to an extruder wherein the dough is mixed, extruded and cut into the required strand form, conveying the strands to a second steaming

chamber and then transporting the cooked strands into a drying chamber.

2. A process as claimed in claim 1 wherein the steamed granules are extruded in a two stage process, the granules being formed into short strands in a first extruder, conveyed to a second extruder and then extruded as elongated strands from this second extruder.

3. A process as claimed in any preceding claim wherein the rice material is mechanically transported from each process chamber to the succeeding process chamber on conveyors.

4. A process as claimed in any preceding claim wherein the granules are steamed for 20 to 30 minutes in the first steaming chamber.

5. A process as claimed in any preceding claim wherein the steam pressure in the first steaming chamber is approximately one atmosphere.

6. A process as claimed in any preceding claim wherein the first steaming chamber comprises a covered, stainless steel gauze conveyor fitted over open steam pipes.

7. A process as claimed in any of claims 3 to 6 in their appendancy to claim 2, wherein the steamed granules are cooled before entering the first extruder.

8. A process as claimed in any preceding claim wherein the strands are treated for approximately 30 minutes in the second steaming chamber.

9. A process as claimed in any preceding claim wherein the strands are dried for from 1 to 3 hours.

10. A process for manufacturing elongated pasta from rice grains substantially as hereinbefore described with reference to the accompanying drawing.

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ing chamber for 20 to 30 minutes at a steam pressure of approximately one atmosphere.

5 The steamed dough is then transported on a conveyor 4 to a cooling conveyor 5. The cooling conveyor comprises moving canvas belts and the dough is cooled by means of fans.

10 The cooked dough passes from the cooling conveyor onto a conveyor 6 which transports the granules to an automatic extrusion press 7. This extruder produces short strands in the form of tubes, 2 to 3 inches long, made of high quality homogeneous dough. The production capacity of the press is 500 kg per hour at a pressure of approximately 700 lb/sq. inch.

20 The short strands are carried on a conveyor 8 to a second automatic extrusion press 9. This press extrudes long strands, such as rice vermicelli and spaghetti, which are automatically cut and hung on horizontal rods.

25 The cut strands pass on the rods into a second steaming chamber 10. Here, the product is steamed for 30 minutes at a steam pressure of 1 to 1½ atmospheres.

The rods carrying the product then pass into a tunnel dryer 11. The dryer is provided with hot steam pipes and fans and the strands are dried for from 1 to 3 hours.

30 The dried product is then ready for packaging.

WHAT WE CLAIM IS:—

35 1. A process for manufacturing elongated pasta from rice comprising the steps of dry milling rice grains to form rice flour, mixing the rice flour with water to form a dough passing the dough into a premixed wherein the dough is mixed and formed into granules transporting the granules to a first steaming chamber, conveying the steamed granules to an extruder wherein the dough is mixed, extruded and cut into the required strand form, conveying the strands to a second steaming

chamber and then transporting the cooked strands into a drying chamber.

2. A process as claimed in claim 1 wherein the steamed granules are extruded in a two stage process, the granules being formed into short strands in a first extruder, conveyed to a second extruder and then extruded as elongated strands from this second extruder.

3. A process as claimed in any preceding claim wherein the rice material is mechanically transported from each process chamber to the succeeding process chamber on conveyors.

4. A process as claimed in any preceding claim wherein the granules are steamed for 20 to 30 minutes in the first steaming chamber.

5. A process as claimed in any preceding claim wherein the steam pressure in the first steaming chamber is approximately one atmosphere.

6. A process as claimed in any preceding claim wherein the first steaming chamber comprises a covered, stainless steel gauze conveyor fitted over open steam pipes.

7. A process as claimed in any of claims 3 to 6 in their appendancy to claim 2, wherein the steamed granules are cooled before entering the first extruder.

8. A process as claimed in any preceding claim wherein the strands are treated for approximately 30 minutes in the second steaming chamber.

9. A process as claimed in any preceding claim wherein the strands are dried for from 1 to 3 hours.

10. A process for manufacturing elongated pasta from rice grains substantially as hereinbefore described with reference to the accompanying drawing.

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