

The present invention relates to delicatessen products, of the sausage or dried sausage type.

In accordance with the Delicatessen, Curing, and Meat Preserves Regulation, 3rd edition January 1986, published by the Technical Centre for Delicatessen Products, Cured Products, and Meat Preserves, a dry sausage or dry sausages comprise:

- a porous elongate casing, for example a natural or artificial gut, the two ends of which are each linked, for example by a thread
- a meat paste which has undergone a process of maturing/desiccation through the casing or gut, this paste generally being composed of raw meat, for example pork, chopped more or less finely, of hard fat, and various seasonings.

The present invention relates to a worked pig gut, that is to say one which is worked and shaped in order to end up with a casing for a sausage or dry sausage, allowing stuffing under industrial conditions, that is to say with good productivity and relatively homogeneous quality from one sausage to another.

More precisely, the invention relates to a casing comprising a plurality of pieces of substantially rectangular shape and of substantially equal width, located one above the other, of which the two edges of one are continuously linked to the two edges of the other respectively along their length, for example by stitching.

"Continuous linking", or "continuous joining", or "continuously", is understood to mean any link allowing two edges belonging to two pieces respectively to be joined together edge to edge, this being along the length of the casing or of the gut, and under conditions making it possible to contain the meat paste in the said casing, once its two ends have been bound by a link, for example a metal fastener.

Experience shows that a casing made up and obtained in this fashion exhibits all the qualities of natural gut, whilst allowing stuffing under industrial conditions. Thus a casing as previously defined slows

down the drying-out of the sausage, protects it from the external atmosphere, and is sufficiently resistant to tearing and pulling off under the industrial stuffing conditions encountered. Further, this casing behaves
5 exactly like a natural gut, developing the mouldiness which participates in the process of maturing/desiccating the sausage.

A casing as described previously is obtained, in accordance with document FR-A-453,942, according to the
10 method comprising the following steps:

- (a) drying a plurality of sections of gut of very diverse animal origin, each section comprising at least one thickness of gut;
- (b) cutting all of the sections of gut in the dry state,
15 each substantially along one generatrix or the length of the said gut, in order to obtain a plurality of pieces of substantially rectangular shape;
- (c) joining the superimposable pieces together, for example by stitching, and along their edges in order
20 to obtain a longitudinal casing;
- (d) turning the said casing inside out in order to locate the two joined edges on the inside of the said casing.

The subject of the present invention is a method
25 making it possible to turn the casing inside out in a mechanical manner, that is to say by limiting as far as possible the manual intervention of the operator, and according to which the longitudinal casing is obtained, firstly by joining the various pieces, for example by
30 stitching end to end, in order to obtain at least two superimposable strips of substantially equal width, then by joining the two superimposed strips, continuously linking the two edges of one to the two edges of the other, and the turning inside out step (d) is carried out
35 on either side of a hollow cores [sic] with longitudinal extension, exhibiting, at its anterior end, an opening of substantially closed contour, the border of which serves for the fold of the casing being turned inside out to rest against, and the casing which has not been turned

inside out is run along the inside of the hollow core, from its posterior end to its anterior end, and the casing which has been turned inside out is run along the outside of the hollow core, from its anterior end to its posterior end, or vice versa, that is to say with the casing which has not been turned inside out on the outside, and the casing which has been turned inside out on the inside of the hollow core.

The solution proposed according to the invention makes it possible to turn very long lengths of casing inside out.

The present invention is now described with reference to the appended drawings, in which:

- Figure 1 represents a perspective view of a casing manufactured according to the invention
- Figure 2 represents a front view of a sausage manufactured according to the invention, during stuffing, with a casing according to Figure 1
- Figure 3 represents a front view of a sausage manufactured according to the invention
- Figure 4 represents a view in section along the line IV-IV of Figure 3, of the sausage represented in the latter
- Figure 5 represents a view in perspective, with partial cut-away, of a device for cutting the dry gut, which can be used for executing the method according to the invention
- Figure 6 represents an end-on view of the device according to Figure 5
- Figure 7 represents a view in perspective of a device for turning inside out which can be used in the execution of the method according to the invention
- Figure 8 represents an end-on view of the device according to Figure 7, with its traction head
- Figure 9 represents a view in section along the line IX-IX of Figure 8.

In accordance with Figure 3, a sausage manufactured according to the invention comprises an elongate

casing 2 of tubular or cylindrical shape, the two ends 2a and 2b of which are joined together and linked by two fasteners or metal rings 26 respectively. A meat paste 3, composed at least of minced raw meat, fat, and seasoning, is contained inside the casing 2.

The casing 2 comprises two strips 21 and 22 of substantially equal width, located one above the other, the two edges 21a and 21b of one of which are continuously linked, for example by stitching, to the two edges 22a and 22b of the other, respectively. As Figure 4 shows, the aforementioned edges are folded over in pairs, inside the casing 2, with the longitudinal seams described previously.

Each strip 21 is made up by joining continuously, in a direction transverse (perpendicular) to the casing 2, by stitching 25, two pieces 211 and 212 thus placed end to end. The same goes for the strip 22, made up by stitching the two pieces 221 and 222 end to end.

As Figure 4 shows, each strip 21 or 22 comprises, in a superimposed manner, possibly naturally bonded to each other, on the one hand, a thin sheet 24 made of pig small intestine, located on the side inside the casing 2 and, on the other hand, a thin sheet 23 of pig large intestine, located on the side outside this same casing. Moreover, referring to pig intestine, which morphologically exhibits an inside side and an outside side, that is to say before it is cut up and worked in order to end up with the strips 21 and 22 described previously, the superposition of the thin sheets 23 and 24 is ridge [sic] such that the side of the small intestine originally on the outside is located against the side of the large intestine which was originally on the outside.

In accordance with Figures 5 and 6, the cutting device represented comprises:

- a gutter section 50 making it possible to support and to immobilize a straight support 51, for example a tube made of food-grade plastic, on and around which a dry gut is stretched,
- and a cutting means 52 including a support 53 which

can move in terms of translation along the gutter section 50, by means of rollers 54 interacting with two rails 55; on the support, in relation with the inside of the gutter section, there is located, so that it can rotate, a cutting blade 56; opposite the cutting blade 56 there is located a handle 57 allowing the cutting means 52 to be manipulated in terms of translation.

In accordance with Figures 7 to 9, the device for turning inside out comprises:

- a hollow core 58 of longitudinal extension, for example a metal tube located on a support 64 in a horizontal manner; this hollow core includes two openings 58a and 58b, respectively at its anterior end and at its posterior end; the edge of the opening 58a, not visible in Figure 7, serves for the circular fold of the casing 2 being turned inside out to rest against, and the posterior opening serves for the insertion of the casing which has not been turned inside out; the hollow core 58 is provided with a longitudinal slot 58c, allowing the insertion of the casing which has not been turned inside out, at the beginning of the turning inside out step
- a means 59 for introducing a fluid, for example compressed air, located in relation with the posterior end 58b of the core 58 in order to cause a flow to circulate inside the tube 58, and establish a fluid gap between the anterior edge of the latter and the fold of the casing 2 being turned inside out
- a head 60 for the traction of the casing 2 which has been turned inside out, which casing runs along the outside of the hollow core 58, from its anterior end 58a to its posterior end 58b; this traction head is located in relation with the anterior opening 58a and includes two lateral rollers 61 for frictionally entraining the wall of the casing 2, between the core 58 and the said rollers; as represented in Figure 7, this traction head is provided with its

own means 62 for entraining the roller 61, and it can be retraced with respect to the anterior opening 58a so as to allow the casing 2 which has been turned inside out to be extracted

- 5 - an external limit stop 63 on the side of the posterior end 58b of the hollow core 58 allowing the casing 2 which has been turned inside out and is running along the outside of the core 8 towards the posterior end 58b to be halted.

10 With the devices and equipment described previously, a casing 2 as represented in Figure 2 may be obtained, but in the bunched-up state, at the exit from the various manufacturing steps now described.

One starts off first of all with a multiplicity
15 of sections of animal gut, for example of cattle or pig, each section being chosen as a function of its shape and dimensions, as well as the quality of the said gut. The sections thus selected are in the moist state, possibly in the bunched-up state, for example removed from a brine
20 in which the gut was initially preserved.

First of all, use is made of straight supports, for example tubes made of food-grade polyvinyl chloride, such as those represented under the numerical reference 51 in Figure 5. One or several successive sections of
25 superimposed gut are slipped over each of these straight supports, depending on the desired final quality and the specific characteristics of the sections previously selected. For example, a first relatively fine section of cattle or pig gut is slipped on, then this first section
30 is covered with a second relatively thick section of cattle or pig gut.

All of the straight supports, each covered with one or several thicknesses of gut, are then located vertically on one and the same support, and all the
35 sections of gut are dried together in this arrangement by any suitable means, for example in an oven, or in an atmosphere of controlled hygrometry and temperature.

Once dried, each straight support 51, coated with one or several thicknesses of dry gut, which by bonding

together constitute one and the same natural wall, is located in the gutter section 50 of the device represented in Figure 5. By moving the cutting means 52 in terms of translation the dried wall is slit along a generatrix of the tube 51. Each straight support 51, which has been used as a support for drying and cutting, is recovered and a plurality or multiplicity of pieces or plates of substantially rectangular shape are thus obtained, each one being made up of gut in a single thickness, or at least two thicknesses which are perfectly bonded to one another.

Using an industrial sewing machine, and with a food-grade cotton thread, the various pieces obtained, of homogeneous shape and sizes, are joined end to end in order to obtain at least two strips, such as 21 and 22 represented in Figure 1, which are superimposable, for example outer face of one against outer face of the other. As many pieces as required are assembled in order to obtain the desired final length for each of the strips to be superimposed. Next, still by stitching, the two superimposed strips 21 and 22 are joined in order to obtain a tubular casing 2 of defined bore. More precisely, the stitching is carried out in the direction of the length of the strips, and joins the two edges of the two opposite strips on either side of the casing. It is the separation of the longitudinal seams between the aforementioned edges which determines the bore of the tubular casing.

At the end of this stitching process, the longitudinal seams joining the edges of the two strips are situated on the outside of the casing obtained.

With the equipment described by reference to Figures 7 to 9, one then proceeds with turning the casing inside out, whilst bunching up the casing which has been turned inside out, for purposes of intermediate storage, with a view to using it subsequently. This turning inside out is carried out on either side of the hollow core 58, the edge of the anterior opening 58a of which serves for the circular fold of the casing 2 being turned inside out

to rest against. The casing which has not been turned inside out is run along the inside of the hollow core 58, from its posterior end 58b to its anterior end 58a, and the casing which has been turned inside out is run along the outside of the hollow core 58 from its anterior end 58a to its posterior end 58b. A flow of compressed air is introduced inside the hollow core by the means 59 so that a gas gap becomes established or is interposed between the edge of the anterior opening 58a and the circular fold of the casing 2 being turned inside out. The casing which has been turned inside out runs along the outside of the hollow core 58, under the effect of the entrainment by the traction head 60, but the front end of the casing which has been turned inside out becomes blocked longitudinally against the external limit stop 63, by means of which the envelope which has been turned inside out is progressively bunched up perpendicularly to the direction of the hollow core 58 in order to end up with a configuration of the casing 2 where it is gathered up and folded back on itself, allowing it to be stored. By retracting the traction head 60, it is possible to extract the casing which has been turned inside out, in the bunched-up form, and to transfer it to any other suitable support, flexible or rigid, perforated or not, allowing it to be held and preventing it from deforming while it is being stored.

By suitable wrapping of the bunched-up casing 2 thus obtained on a support, for example in a brine, under vacuum, or in a controlled atmosphere, the essential qualities of the casing thus obtained can be preserved until it is used, that is to say until it is stuffed for manufacturing sausages.



CLAIMS

1. Method of manufacturing a casing (2) intended to obtain delicatessen products of the sausage or dried sausage type, by being stuffed, comprising the following steps:
- 5 (a) drying a plurality of sections of gut or animal intestine, each section comprising at least one thickness of gut;
- 10 (b) cutting the plurality of sections of gut in the dry state, each substantially along one generatrix of the said gut, in order to obtain a plurality of pieces (211, 212, 221, 222) of substantially rectangular shape;
- 15 (c) joining the superimposable pieces together, for example by stitching, and along their edges in order to obtain a longitudinal casing (2);
- (d) turning the said casing inside out in order to locate the two joined edges (21a, 21b, 22a, 22b) on the inside of the said casing
- 20 characterized in that the longitudinal casing (2) is obtained, firstly by joining the various pieces, for example by stitching, in order to obtain at least two superimposable strips (21, 22) of substantially equal width, then by joining the two superimposed strips (21,
- 25 22), continuously linking the two edges of one to the two edges of the other, and the turning inside out step (d) is carried out on either side of a hollow core (58) with longitudinal extension, exhibiting, at its anterior end (58a), an opening of substantially closed contour, the
- 30 border of which serves for the fold of the casing being turned inside out to rest against, and the casing which has not been turned inside out is run along the inside of the hollow core, from its posterior end (58b) to its anterior end (58a), and the casing which has been turned
- 35 inside out is run along the outside of the hollow core, from its anterior end to its posterior end, or vice versa, that is to say with the casing which has not been turned inside out on the outside, and the casing which has been turned inside out on the inside of the hollow



core (58)..

2. Method according to Claim 1, characterized in that the drying step (a) is carried out by locating each section of gut on and around a straight support (51), the shape and dimensions of which are suited to the gut to be dried, and the step (b) is carried by cutting the dry gut on the said straight support.

3. Method according to Claim 2, characterized in that each straight support (51), together with its dry gut, is supported and immobilized in a gutter section (50), and a cutting means (52) is moved over the gutter section, with a cutting blade (56) along one gut generatrix.