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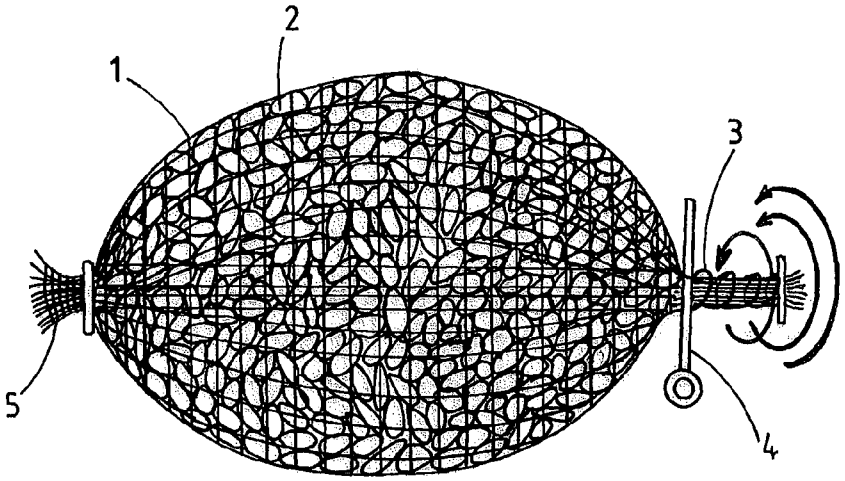


Figure 3

(57) Abstract: The present invention provides a method for preparing shellfish comprising providing a substantially flexible liquid-permeable container having at least one open end; providing a plurality of shellfish in the container; closing the or each open end of the container; and tensioning the container to compact the shellfish and prevent the shellfish from opening. In preferred embodiments the flexible liquid-permeable container comprises a mesh bag which is tensioned by twisting to keep the shellfish closed while enabling the shellfish to be cooked, dried, and/or frozen in the bag. An apparatus adapted to perform the method is also disclosed.

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# SHELLFISH PREPARATION PROCESS

## Field of the Invention

This invention relates to a method for preparing shellfish. More particularly, the invention relates to a method of preparing bivalve shellfish for cooking intended to retain the meat and juice of the shellfish by enclosing and compressing the shellfish within a fluid-permeable bag.

## Background

Live bivalve shellfish, when heated, open their shells and expose the meat and juices inside. The degree to which the shell opens may vary from one shellfish to another, and this may lead to variations in the length of time required to cook each shellfish. This may result in an inconsistent product. The inconsistent opening of the shells may also result in a less desirable appearance of the product, in particular when sold in a pre-packaged frozen state. Retention of fluids inside the shell during cooking may also be desirable for purposes of improved flavour and/or moisture.

Several prior art shellfish processing techniques may help in keeping the shellfish closed during processing.

United States Patent No. 6,010,397 discloses a container in which shellfish are placed and vibrated to compact them together. The shellfish are retained in the packed configuration in the container using a lid, and the shellfish are subsequently cooked in boiling seawater. The rigid basket and lid would require a specific number or volume of shellfish to be placed within in order to keep the shellfish tightly packed. Furthermore, the use of a vibration apparatus, such as a vibrating bed, may increase the complexity and noise of the process.

European Patent Application No. 0 398 667 discloses a wire basket in which mussels are steamed. A weighted plate is placed on top of the mussels. The weight of the plate could make the placing and removal of the plate and moving of the basket awkward and/or dangerous. Furthermore, due to the shellfish being compressed from only one direction, in combination with variations in the size and/or alignment of the shellfish, there is a risk that a number of shellfish may still open at least partially during cooking.

New Zealand Patent Application 286,133 discloses a method of processing shellfish including vacuum sealing the shellfish in a bag before cooking and then freezing the sealed bag of shellfish. Before vacuum sealing, the shellfish must be dried, covered in oil, and dried again to remove moisture which can cause cracking and deterioration in the appearance of the shellfish during freezing. The vacuum within the bag constricts the shellfish to prevent opening during cooking. However, creating the vacuum requires an airtight seal and a vacuum pump, introducing complexity and cost to the process. Furthermore, the vacuum bag prevents the cooking liquid or steam from directly contacting the shellfish during cooking, potentially leading to inconsistent cooking thereof. That is, shellfish towards the outside of the vacuum bag cook faster than those towards the centre of the bag.

**Object of the Invention**

Accordingly, it is an object of the present invention to provide a method of preparation which overcomes or at least ameliorates one of more of the disadvantages of the prior art, or to at least provide the public with a useful choice.

Further objects of the invention will become apparent from the following description.

**Summary of Invention**

Accordingly, in a first aspect the invention may broadly be said to consist in a method for preparing shellfish comprising:

providing a substantially flexible liquid-permeable container having at least one open end;

providing a plurality of shellfish in the container;

closing the or each open end of the container; and

tensioning the container to compact the shellfish and prevent the shellfish from opening.

Preferably the shellfish are compacted to an extent which prevents the shellfish opening.

Preferably the step of tensioning the container comprises twisting the container.

Preferably the step of twisting the container further comprises the step of inserting a substantially rigid elongate object through substantially opposing sides of the container

at or adjacent the end of the container, in order to provide leverage to assist in the twisting.

Alternatively the step of tensioning the container comprises inserting a first end of the container in or through an aperture, and pulling said first end so as to compact the shellfish towards an opposing second end of the container.

Alternatively, the step of tensioning the container comprises displacing opposing ends of the container to stretch the container.

Alternatively, the step of tensioning the container comprises dividing the plurality of shellfish between two halves of the container, and twisting each half of the container in opposing directions.

Preferably the shellfish are divided in the two halves during the twisting step using a divider placed about a central portion of the container.

Preferably the divider comprises a pair of prongs mounted on a fixed surface.

Preferably the method further comprises the step of maintaining said tension in the container.

Preferably the step of maintaining said tension in the container comprises inserting one end of the elongate object through a side of the container adjacent the shellfish following twisting, to secure the twisted end of the container against untwisting.

Alternatively, the step of maintaining said tension in the container comprises clamping the container closed between said first end and said shellfish compacted towards said second end.

Alternatively the step of maintaining said tension in the container comprises rigidly clamping the opposing ends of the container to maintain said displacement.

Alternatively the step of maintaining said tension in the container comprises applying a stay to hold the container from untwisting.

Preferably the stay is an elastic band.

Preferably the container is a mesh bag.

Preferably the mesh bag is made of plastic.

Preferably, the method further comprises the step of cooking the shellfish by placing the container in a cooker.

Preferably the shellfish are cooked by steaming.

Alternatively, the shellfish may be boiled.

Preferably, the method further comprises the step of drying the shellfish by blow-drying the shellfish within the container by way of heated, unheated or dehydrated air.

Preferably the method further comprises the step of freezing the shellfish.

Preferably, the step of freezing the shellfish comprises freezing the shellfish within the container using a blast freezer.

In a second aspect, the invention may broadly be said to consist in a shellfish processing apparatus, said apparatus comprising:

holding means for releasably holding at least one end of a substantially flexible container; and

tensioning means for moving the holding means to tension said flexible container and compact a plurality of shellfish therein.

Preferably the apparatus further comprises an aperture adapted to receive a first end of said container, wherein the holding means is adapted to releasably hold the first end of the container and the tensioning means adapted to pull said holding means, whereby said aperture engages and compacts said shellfish towards an opposing second end of the container.

Alternatively the tensioning means comprises means for rotating said holding means to tension the container by twisting.

Preferably the apparatus further comprises a divider adapted to receive and constrict a central portion of the container, wherein the holding means is adapted to hold opposite ends of the container and the tensioning means adapted to rotate the opposing ends in opposite directions.

Preferably the divider comprises a pair of prongs mounted on a fixed surface.

Preferably the means for tensioning said flexible container comprises one or more of an electric motor, lever, winch, screw, and/or linear actuator.

Preferably the apparatus further comprises means for securing said flexible container to maintain said tension when said holding means is released.

In a third aspect, the invention may broadly be said to consist in a shellfish processed according to the method of the first aspect of the invention.

In a fourth aspect, the invention may broadly be said to consist in a shellfish processing apparatus adapted to perform the method of the first aspect of the invention.

Further aspects of the invention, which should be considered in all its novel aspects, will become apparent from the following description.

**Drawing Description**

An embodiment of the invention will now be described by way of example with reference to the drawings in which:

**Figure 1** is a diagram of a first embodiment of a mesh bag which may be used to carry out the methods according to the invention;

**Figure 2** is a diagram the mesh bag of Figure 1 with shellfish inserted into the bag and the open ends of the bag both closed;

**Figure 3** is a diagram of the mesh bag of Figure 2 illustrating the step of twisting one end of the bag in accordance with a first embodiment of the inventive method;

**Figure 4** is a diagram of the mesh bag of Figure 3, secured in the twisted position in a subsequent step of the first embodiment of the inventive method;

**Figure 5** is a diagram of a mesh bag, being tensioned through an aperture according to a second embodiment of the inventive method;

**Figure 6** is a diagram of the mesh bag of Figure 2 illustrating the step of dividing the plurality of shellfish in accordance with a third embodiment of the inventive method;

**Figure 7** is the mesh bag of Figure 6 illustrating the step of placing a central portion of the mesh bag onto a divider in accordance with a subsequent step of the third embodiment of the inventive method;

**Figure 8** is a diagram of the mesh bag of Figure 7 illustrating the step of twisting the separated halves of the mesh bag about the divider in opposing directions in accordance with a subsequent step of the third embodiment of the inventive method;

**Figure 9** is a diagram of the mesh bag of Figure 8 illustrating the mesh bag in a compacted state following the twisting step, wherein each half of the bag engages and braces the other half to maintain the tension in the bag; and

**Figure 10** is the mesh bag of Figure 8 illustrating an alternative means for maintaining the tension in the mesh bag using a stay.

**Detailed Description of the Drawings**

The present invention comprises a method of bivalve shellfish processing comprising the use of a fluid- or liquid-permeable flexible bag which is tensioned to compress live shellfish contained therein, thereby substantially preventing the shellfish opening, in particular during cooking.

The method is intended primarily for the processing of cockles (often referred to generally as clams), but can also be applied in processing various other bivalve molluscs including, but not limited to, mussels, oysters, scallops, and other varieties of clams.

Throughout the description like reference numerals will be used to refer to like features in different embodiments.

Referring first to Figure 1, there is illustrated a tubular or sleeve-like length of mesh material of the type commonly used to form Leno, raschel, extruded net bags, or similar. The length of the material may be used to form a substantially flexible container in the form of a mesh bag (1) as shown in Figures 2-4. The bag (1) is substantially flexible, allowing the bag (1) to conform to the shape of inserted articles. The bag is also preferably porous or liquid-permeable, to allow for efficient cooking by either steaming or boiling, for example, and subsequent drying. That is, cooking liquid and/or gases easily pass through the bag to the shellfish, thereby facilitating even cooking of all shellfish within the bag.

The bag is preferably made of a plastic such as polyethylene or polypropylene. These materials are particularly advantageous as they are relatively strong, lightweight, flexible, and low in cost. However, other materials such as canvas, rope, or wire could alternatively be used without departing from the scope of the invention.

The mesh material may be provided in a single continuous tubular roll, which can be cut to a required length commensurate with the volume of shellfish to be contained. Alternatively the mesh material may be supplied in one or more predefined lengths, potentially having one end already closed to form a bag.

Referring to Figure 2, there is illustrated the mesh bag (1) with live shellfish (2) inserted into the bag (1). Preferably, the bag (1) illustrated in Figure 1 is first closed at one end, the live shellfish inserted through an opposing open end, and the open end then closed to loosely retain the shellfish (2) within the bag (1). Alternatively, the bag (1) may initially be closed at one end, shellfish inserted through an opposing end, and the open end closed by twisting as described in further detail below. Other variations in these steps, such as closing both ends by twisting, are also possible without departing from the scope of the invention.

The bag (1) may be closed by clamping, applying an adhesive tape, tying a loose or open end of the bag in a knot, tying a length of string about the bag, pulling a drawstring, or by any other suitable method. However, the closing method or means preferably gathers or draws together the sides of the bag to avoid "corners" in the bag after twisting.

Referring to Figure 3, there is illustrated the mesh bag (1) containing the shellfish (2) and having one end (3) of the bag twisted as illustrated by the arrows. The direction of the twisting could be clockwise or anticlockwise, but is preferably about the longitudinal axis of the bag (1) passing through the two opposing ends. During the twisting operation, the bag (1) tightens about the shellfish as more material becomes a part of the twisted end, taking up any slack in the bag enclosing the shellfish and reducing the internal volume of the bag. This increases the tension over the entire bag, compacting the shellfish together. An opposite end (5) of the bag (1) is preferably used as the stable base to which the bottom of the packed shellfish (2) is compressed against, and is therefore held against the twisting. Alternatively, opposing ends of the bag may be simultaneously twisted in opposing directions.

As the shellfish have an irregular shape the mesh material should be sufficiently flexible in order for the bag to tightly conform over the outer surface of the shellfish placed therein. The fibres of the material should also have sufficient tensile strength in order to sufficiently compress the shellfish following the twisting operation to prevent the shellfish from opening during cooking.

An elongate rigid object (4) is preferably used to assist the twisting operation. The object (4) is inserted through gaps in the mesh on opposing sides of the bag (1) at or adjacent one end of the bag, and then rotated substantially about the longitudinal axis of the bag.

Referring to Figure 4, there is illustrated the mesh bag (1) containing the shellfish (2) and having one end (3) twisted. The shellfish (2) are in a tightly packed or compacted configuration.

Following the twisting operation as illustrated in Figure 3, an end of the elongate rigid object is inserted through another opening in the bag (1) substantially adjacent the shellfish, thereby securing the twisted end of the bag against its tendency to untwist, and maintaining the container to compact the shellfish.

An alternative embodiment of the method described above is illustrated in Figure 5. As shown, the flexible container may alternatively be tensioned not by twisting the bag, but by pulling a first end of the bag (1) through an aperture, such as a fixed or stationary aperture (6) in a rigid plate (7), in the direction indicated by the arrow (i.e. towards the first end of the bag). This has the effect of both tensioning at least the longitudinal fibres of the mesh bag and compacting the shellfish (2) towards the opposite end of the bag (1).

The opening in the bag (1) need not necessarily be closed prior to insertion of the bag in the aperture (6), but in this case it would normally be the open end of the bag inserted in the aperture. However, as the aperture is sized not to permit any shellfish to pass therethrough so that the plate abuts the shellfish and compacts them towards the second end, the aperture has the temporary effect of closing the open end of the bag whilst in remains in the aperture.

Once tensioned, the shellfish may be retained in their compacted relationship by clamping or otherwise closing the container by drawing the sides of the container together at or substantially adjacent the aperture, between the shellfish and the first end of the bag. The container may be thus closed by any suitable means as previously described.

According to this alternative embodiment, the first end of the bag (1) may be axially threaded through the aperture (6), or may alternatively be inserted orthogonally into the aperture by way of a slot (8) extending from the aperture to an outer edge of the plate (6).

Referring to Figure 6, an alternative method of twisting the bag (1) and maintaining the tension in the bag (1) is shown. In this alternative method, the shellfish (2) are is divided between two halves (9, 10) of the bag,

Referring to Figure 7, a central portion (11) between the divided halves (9, 10) is placed in a divider (12) to maintain the separation of the shellfish by constricting the bag in that area. The central portion (11) in the bag contains no shellfish, and it can be seen how the division into two halves (9, 10) in the bag (1) begins to compress the shellfish (2).

Referring to Figure 8, the halves (9,10) are then twisted in opposing directions, tensioning the bag (1) and further compacting the halves (9, 10) containing the shellfish (2). The twisting can be carried out manually or using a machine, and can be performed to provide a specific amount of pressure onto the shellfish (2). The pressure should be enough to maintain the shellfish (2) in their closed and compacted state, but not too much as to cause shell breakage.

Referring to Figure 9, there is shown the result of the alternative method of twisting the bag (1), where the halves (9, 10) of the bag (1) containing the shellfish (2) are compacted. In this preferable state, each bulging half (9, 10) engages with and braces with the other half (9, 10) adjacent the central portion to maintain this compacted state, and the bag (1) is ready for cooking.

Referring to Figure 10, an alternative for maintaining tension in the halves (9, 10) of the bag (1) is shown, wherein a stay (13) is placed around the entirety of the bag (1) to stop the bag from unwinding.

The stay is preferably an elastic rubber band; however any suitable elastic loop or stay can be used to maintain the tension in the bag. The stay can be used to provide further longitudinal pressure to compact the entirety of the bag, as well as resist the untwisting of each half of the bag during cooking.

The divider is preferably a pair of prongs mounted to a fixed surface; however any permanent or removable dividing apparatus can be used to maintain the separate halves within the bag. The divider should be of sufficient width to accommodate the empty central portion of the mesh bag, in both an untwisted and twisted state. The divider should also be have a width limited to stop shellfish passing between each half of the bag.

In a variation of the embodiment of the method described above, the flexible container may alternatively, or additionally, be tensioned not by twisting the bag or pulling one end through an aperture, but by displacing (i.e. pulling apart) the opposing ends of the bag. This has the effect of lengthening the containing area of the bag somewhat, but significantly reducing its width (with respect to the direction of displacement) and therefore volume, thereby compressing the shellfish contained therein. The bag may be maintained in the tensioned state by rigidly securing the opposing ends of the bag in the displaced relationship by way of rigidly-displaced clamps, clips, or any other suitable means for holding apart the ends of the bag.

The above methods provide for an economical preparation of the shellfish so that the shellfish are tightly packed and unable to open during cooking and subsequent processes which may include drying, blast freezing, and other food preparation processes. Throughout all of these processes, the shellfish will remain closed and hence retain the meat and fluid within.

Preferably the prepared bag of shellfish is placed within a cooker, where the shellfish are cooked using steam or hot water. Once cooking is completed, the shellfish are drained and dried, preferably by means of heated, unheated or dehydrated air blown through the closed and twisted bag. The container or bag is thus most preferably

highly porous and free-draining. The drying is performed in order to remove moisture from the outer surface of the shellfish, as moisture can penetrate the porous surface of the shellfish. This moisture can cause cracking of the shells upon freezing, resulting in an aesthetically inferior product. The cracking can also allow "freezer burn" of the shellfish meat, leading to an inconsistent product.

The step of freezing the shellfish preferably comprises placing the bag in a blast freezer to rapidly freeze the whole shellfish for safe storage.

The flexible bag can be opened and the processed shellfish repackaged for distribution and/or sale, or the shellfish can be distributed or sold packaged in the flexible processing bag of the invention. If the shellfish are repackaged, the flexible processing bag can be emptied and reused, recycled, or disposed of.

The twisting or pulling of the bag is also a simple, safe process that can be carried out using equipment that is inexpensive and relatively simple. The final product of the method of preparation, a tightly packed bag of shellfish, is easily transported and manoeuvred, making the application of processing such as cooking efficient and effective.

In another aspect, the invention comprises a shellfish processing apparatus adapted to tension the flexible container according to any one or more of the methods described above. The apparatus at a minimum preferably comprises means for holding opposing ends of the container, and means for tensioning said flexible container.

The holding means may comprise a clamp, clip, or vice, or any other means for securely holding an end of the container.

The means for tensioning the container may comprise an electric motor adapted to rotate said holding means, thereby twisting the container as described above. Alternatively, or additionally, the tensioning means may comprise means for pulling one end or displacing the opposing ends of the container, such as a lever, winch, screw, or a linear actuator such as a hydraulic or pneumatic cylinder, for example.

In at least one embodiment of the invention, the means for tensioning the flexible container may further comprise an aperture (6) in a fixed plate (7) adapted to receive

an end of the container and abut or brace the shellfish against tension applied to that end of the container by displacing it coaxially from the aperture.

In another embodiment, the apparatus may be adapted to hold both ends of the bag, divide the shellfish into two halves in the bag using a divider (as described above), and twisting the two halves of the bag in opposite directions.

Preferably the apparatus further comprises means for securing said flexible container to maintain said tension when the holding means is released. This may comprise, for example, means for inserting the rigid elongate object previously described, inserted through holes in the container to secure the container against untwisting, or may comprise means for applying an adhesive tape, string, or a pair of rigidly-displaced clamps, clips, or other means for maintaining the displacement of the ends of the container to maintain said tension. However, any such suitable securing means may alternatively be used without departing from the scope of the invention.

From the foregoing it will be seen that a shellfish preparation method and apparatus is provided which is economical, easy to implement, and effective in producing good quality processed shellfish.

The method is economical in that it makes use of netting bags which are widely available and commonly used in other fields such as the distribution and sale of fruit and/or vegetables. The method is flexible in that a broad range of flexible liquid-permeable containers may be used, depending on material availability and/or cost. The method may be performed manually, or automated for performance by a machine for higher throughput and/or lower ongoing costs.

The use of a mesh bag is more effective than the rigid containers and/or weighted plates of the prior art, as the bag conforms to the shape of the shellfish holding each in a tightly packed, compacted configuration. The configuration and number of shellfish is not dependent on the shape of the container used, unlike in the prior art. The size of the bag used can differ depending on the type and number of shellfish to be processed or, if a consistent bag size is to be used, a smaller load of shellfish can nevertheless be effectively processed, as the closure and twisting point can be adjusted to suit.

Although the invention has been described by way of example and with reference to possible embodiments thereof, it is to be understood that modifications or improvements may be made thereto without departing from the scope of the invention. The invention may also be said broadly to consist in the parts, elements and features referred to or indicated in the specification of the application, individually or collectively, in any or all combinations of two or more of said parts, elements or features. Furthermore, where reference has been made to specific components or integers of the invention having known equivalents, then such equivalents are herein incorporated as if individually set forth.

Unless the context clearly requires otherwise, throughout the description, the words "comprise", "comprising", and the like, are to be construed in an inclusive sense as opposed to an exclusive or exhaustive sense, that is to say, in the sense of "including, but not limited to".

Any discussion of the prior art throughout the specification should in no way be considered as an admission that such prior art is widely known or forms part of common general knowledge in the field.

**Claims**

1. A method for preparing shellfish comprising:

providing a substantially flexible liquid-permeable container having at least one open end;

providing a plurality of shellfish in the container;

closing the or each open end of the container; and

tensioning the container to compact the shellfish and prevent the shellfish from opening.

2. The method as claimed in claim 1, wherein the step of tensioning the container comprises twisting the container.

3. The method as claimed in claim 2, wherein the step of twisting the container further comprises the step of inserting a substantially rigid elongate object through substantially opposing sides of the container at or adjacent end of the container, in order to provide leverage to assist in the twisting.

4. The method as claimed in claim 1, wherein the step of tensioning the container comprises inserting a first end of the container in or through an aperture, and pulling said first end so as to compact the shellfish towards an opposing second end of the container.

5. The method as claimed in claim 1, wherein the step of tensioning the container comprises dividing the plurality of shellfish between two halves of the container, and twisting each half of the container in opposing directions.

6. The method as claimed in claim 6, wherein the shellfish are divided during the twisting step using a divider placed about a central portion of the container.

7. The method as claimed in any one of claims 1 to 6, wherein the method further comprises the step of maintaining said tension in the container.

8. The method as claimed in claim 7 when dependent from claim 2 or claim 3, wherein the step of maintaining said tension in the container comprises inserting one end of the elongate object through a side of the container adjacent

the shellfish following twisting, to secure the twisted end of the container against untwisting.

9. The method as claimed in claim 7 when dependent from claim 4, wherein the step of maintaining said tension in the container comprises clamping the container closed between said first end and said shellfish compacted towards said second end.

10. The method as claimed in claim 7 when dependent from claim 5, wherein the step of maintaining said tension in the container comprises applying a stay to hold the container from untwisting.

11. The method as claimed in any one of claims 1 to 10, wherein the container comprises a plastic mesh bag.

12. The method as claimed in any one of claims 1 to 11, wherein the method further comprises the step of cooking the shellfish by steaming or boiling the shellfish in the container.

13. The method as claimed in any one of claims 1 to 12, wherein the method further comprises the step of drying the shellfish by blow-drying the shellfish within the container by way of heated, unheated or dehydrated air.

14. The method as claimed in any one of claims 1 to 13, wherein the method further comprises the step of freezing the shellfish.

15. The method as claimed in claim 14, wherein the step of freezing the shellfish comprises freezing the shellfish within the container using a blast freezer.

16. A shellfish processing apparatus, said apparatus comprising:

holding means for releasably holding at least one end of a substantially flexible container; and

tensioning means for moving the holding means to tension said flexible container and compact a plurality of shellfish therein.

17. The apparatus as claimed in claim 16, further comprising an aperture adapted to receive a first end of said container, wherein the holding means is adapted to releasably hold the first end of the container and the tensioning means adapted to pull said holding means, whereby said aperture engages and compacts said shellfish towards an opposing second end of the container.

18. The apparatus as claimed in claim 16, wherein the tensioning means comprises means for rotating said holding means to tension the container by twisting.

19. The apparatus as claimed in claim 16, further comprising a divider adapted to receive and constrict a central portion of the container, wherein the holding means is adapted to hold opposite ends of the container and rotate in opposite directions.

20. The apparatus as claimed in any one of claims 16 to 19, wherein the tensioning means comprises one or more of an electric motor, lever, winch, screw, and/or linear actuator.

21. The apparatus as claimed in any one of claims 16 to 20, wherein the apparatus further comprises securing means for securing said flexible container and maintaining said tension when said holding means is released.

22. A shellfish processed according to the method of any one of claims 1 to 15.

23. A shellfish processing apparatus adapted to perform the method of any one of claims 1 to 15.

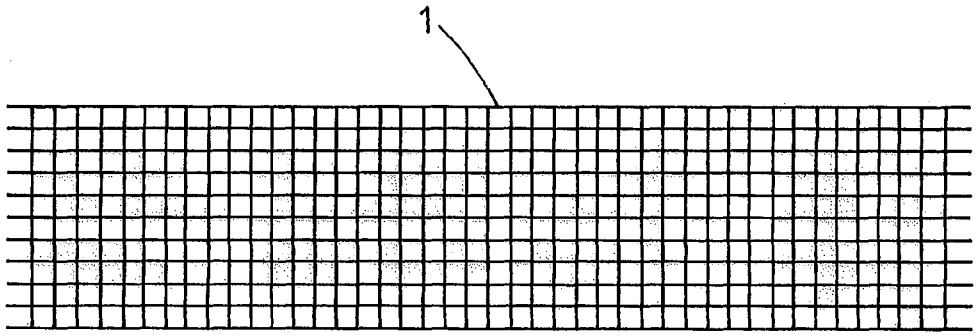


Figure 1

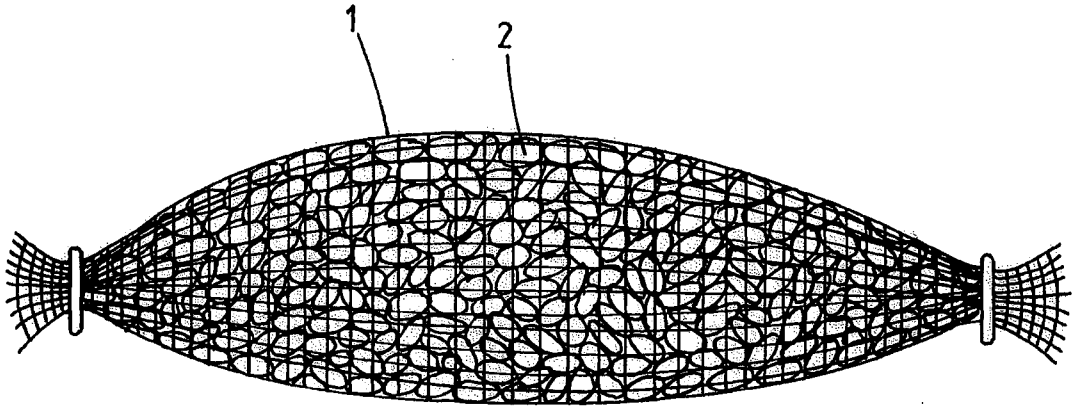


Figure 2

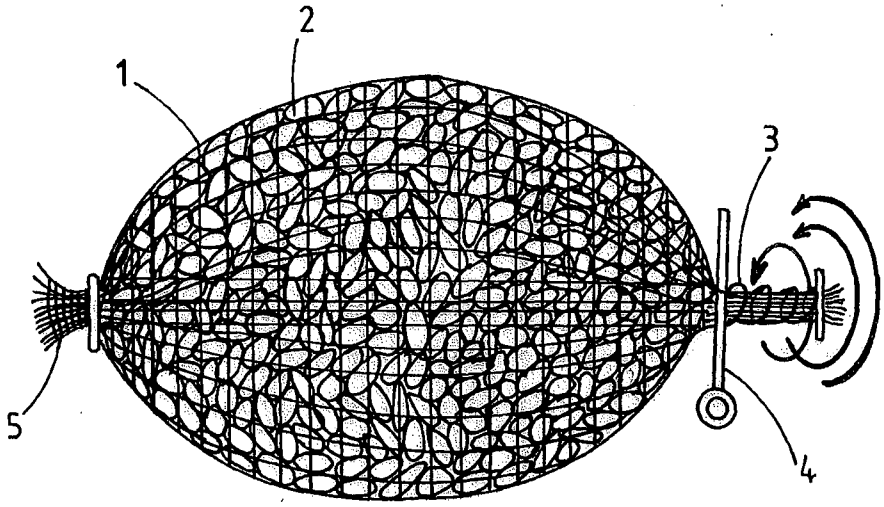


Figure 3

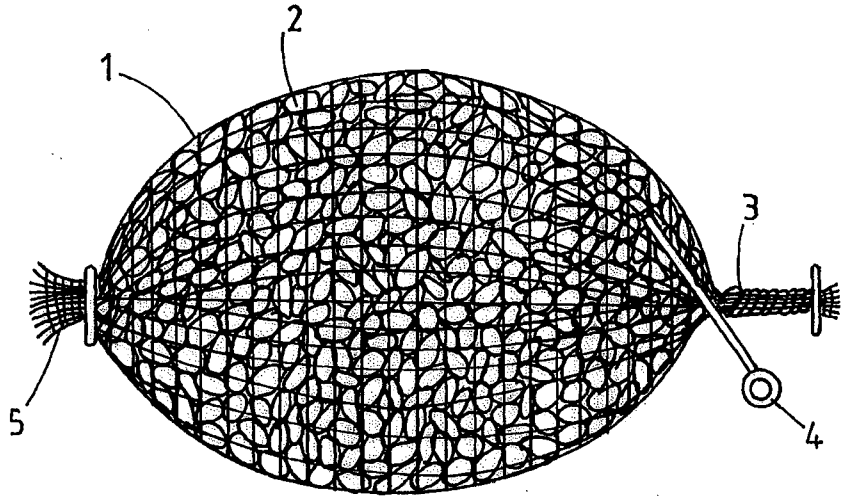


Figure 4

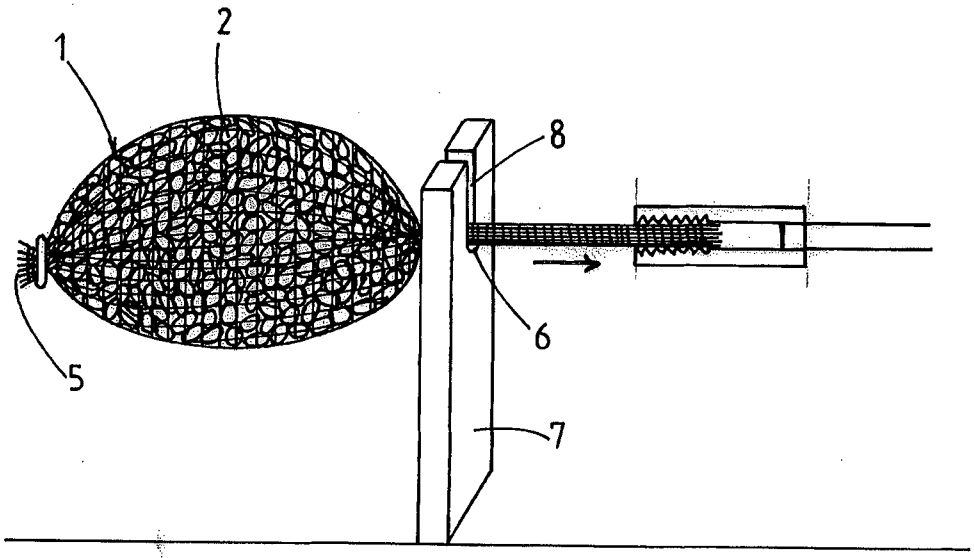


Figure 5

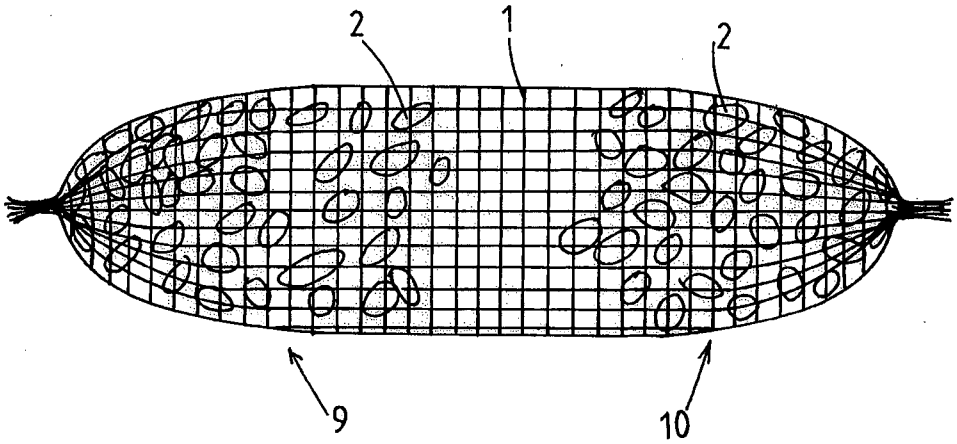


Figure 6

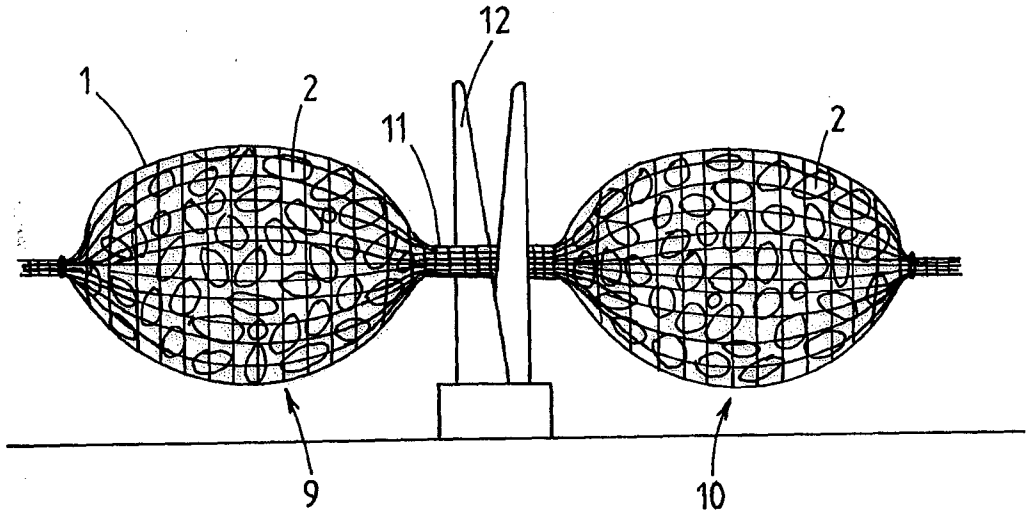


Figure 7

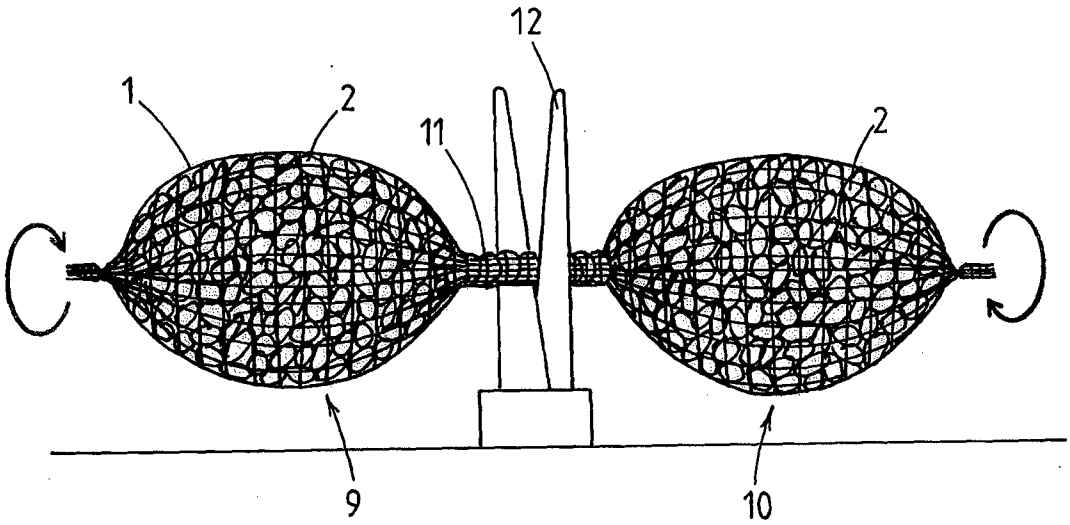


Figure 8

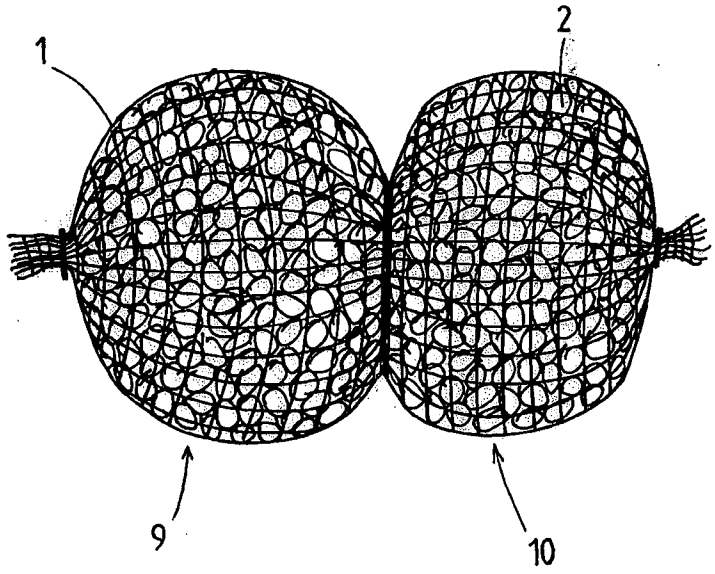


Figure 9

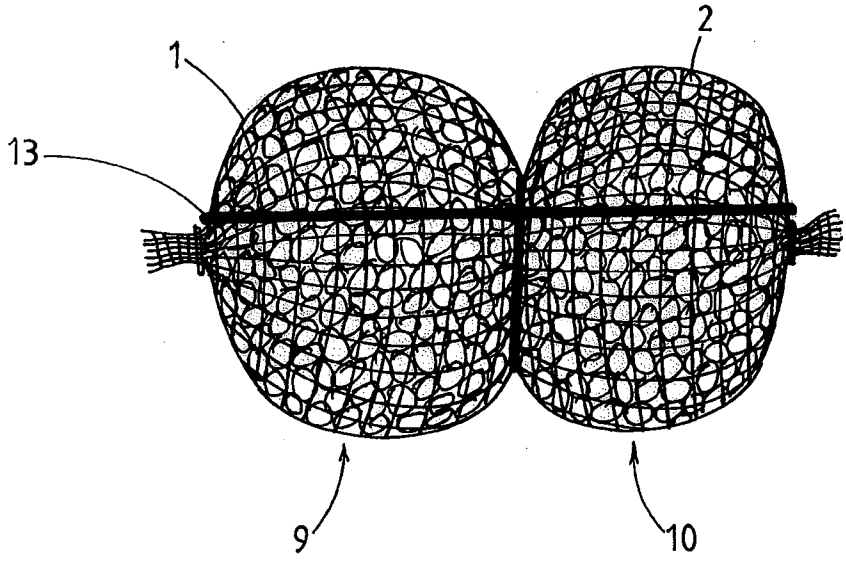


Figure 10

**INTERNATIONAL SEARCH REPORT**

International application No.
**PCT/NZ2012/000193**

A. CLASSIFICATION OF SUBJECT MATTER

***A22C 29/00 (2006.01) A23L 1/33 (2006.01)***

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, WPI: /IC/EC A22C29/00/LOW, A23L1/33, A23L1/333, B65D81/20, B65D85/50; Keywords: mesh, bag, twist (with similar keywords);
Google patents, Esp@cenet, Patent Lens: keywords: shellfish, mesh, bag, twist (with similar keywords)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| | Documents are listed in the continuation of Box C | |

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 2 January 2013 | 02 January 2013 |


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(ISO 9001 Quality Certified Service)
Telephone No. 0262223659

| INTERNATIONAL SEARCH REPORT<br>C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT | | International application No.<br>**PCT/NZ2012/000193** |
|---|---|---|
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| X | EP 0720954 A1 (BARBE B.V.) 10 July 1996<br>abstract, figures 1, 1A, 4, col 1 line 1-col 4 line 16, col 5 line 17-line 37 | 1-23 |
| X | EP 1524200 A1 (FRANCE AGRO INDUSTRIES) 20 April 2005<br>figures 1, 2 paragraphs 0002, 0011-0045 from machine English translation | 1, 4, 7, 9, 11-17, 20-23 |

| INTERNATIONAL SEARCH REPORT<br>Information on patent family members | International application No.<br>**PCT/NZ2012/000193** |
|---|---|

This Annex lists known patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

| **Patent Document/s Cited in Search Report** | | **Patent Family Member/s** | |
|---|---|---|---|
| **Publication Number** | **Publication Date** | **Publication Number** | **Publication Date** |
| EP 0720954 A1 | 10 Jul 1996 | EP 0720954 A1 | 10 Jul 1996 |
| | | EP 0720954 B1 | 12 Jul 2000 |
| | | NL 9500027 A | 01 Aug 1996 |
| EP 1524200 A1 | 20 Apr 2005 | EP 1524200 A1 | 20 Apr 2005 |
| | | FR 2861056 A1 | 22 Apr 2005 |

**End of Annex**

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.