



(11) **EP 1 917 859 B9**

(12) **CORRECTED EUROPEAN PATENT SPECIFICATION**

(15) Correction information:
Corrected version no 1 (W1 B1)
Corrections, see
Drawings 12

(51) Int Cl.:
A22C 21/00 (2006.01)

(48) Corrigendum issued on:
11.04.2012 Bulletin 2012/15

(45) Date of publication and mention
of the grant of the patent:
23.11.2011 Bulletin 2011/47

(21) Application number: **08075117.5**

(22) Date of filing: **12.12.2003**

(54) **Method and device for processing a carcass part of slaughtered poultry**

Verfahren und Vorrichtung zur Verarbeitung von Körperteilen geschlachteten Geflügels

Procédé et dispositif de traitement d'une pièce de carcasse de volaille abattue

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PT RO SE SI SK TR

(30) Priority: **20.12.2002 NL 1022236**
17.01.2003 NL 1022418

(43) Date of publication of application:
07.05.2008 Bulletin 2008/19

(60) Divisional application:
10180284.1 / 2 258 202
10180290.8 / 2 258 203
10180292.4 / 2 258 204
10180296.5 / 2 347 657

(62) Document number(s) of the earlier application(s) in
accordance with Art. 76 EPC:
05077504.8 / 1 627 567
03078943.2 / 1 430 780

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WO-A-00/76323

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EP 1 917 859 B9

Description

[0001] The invention relates to methods and devices for processing a carcass part of slaughtered poultry, which carcass part comprises at least part of the ribs and part of the meat which is naturally present thereon.

[0002] The modern consumer of meat products derived from poultry, in particular from chicken, has become used to a wide range of choices between a large number of high-grade products, such as inner fillets, outer fillets (single, double), drumsticks, legs and wings which have been cut in various ways. To enable consumer demand to be satisfied, processors of slaughtered poultry need a flexible method and device for processing a carcass part of slaughtered poultry which allows consumer demand for high-quality products to be efficiently satisfied.

[0003] For slaughtered poultry to be divided into parts which are attractive to the consumer, it is traditional for the poultry to be supplied to a dividing line. In this line, the poultry is hung by its legs from a suitable hook of a conveyor system which is guided past a number of processing stations.

[0004] A known dividing line generally comprises a station in which the front half of the carcass (comprising the breast and that part of the back which directly adjoins it) and the back half of the carcass (which comprises the legs and that part of the back which connects the legs) are separated from one another. The back half of the carcass is processed further in the dividing line still hanging by its legs, while the front halves are transferred to a separate filleting line to be processed further.

[0005] Traditionally, the neck and the neck skin are separated from the carcass while it is still in the dividing line. Where the wings are removed from the carcass part depends on how the breast meat is harvested. If the breast meat is scraped off the carcass part, the wings are removed in the dividing line. In another method used to harvest breast meat, force is exerted on the wings in order to pull the breast meat off the carcass part. The wings are then cut or pulled off the breast meat. With this method, wings and breast meat are therefore separated from one another in the filleting line.

[0006] With a view to efficiency and flexibility, it is desirable for it to be possible for processing operations such as wing cutting (in its different variants) and the removal of the neck and/or neck skin also to be carried out in the filleting line.

[0007] NL-1014845 describes a device for processing a slaughtered poultry product which comprises product carriers which are secured to an overhead conveyor. This known device for processing a slaughter product comprises a conveyor which can move along a path and to which a first body, which can rotate about a first axis, is connected. A second body, which can rotate about a second axis, is connected to the first body. A first actuating device sets various first angular positions of the first body with respect to the first axis, while a second actuating device sets various second angular positions of the sec-

ond body with respect to the second axis. A locking device fixes the first and/or second angular position. The locking device is actuated by actuating cams situated near the second axis. The actuating cams can be operated in different angular positions of the first body and the second body. A slaughter product fixing device connects a breast portion of the slaughter product to the second body. The description of NL 1014845 is incorporated by reference herein.

[0008] Both front halves and breast caps, with or without wings, parts of wings, the neck, the neck skin and/or the backbone, can be applied to a product carrier of this type. This known product carrier guides the carcass part fixed to it past a number of processing stations, it also being possible for the carcass part to be moved into a position with respect to each of the processing stations as if the carcass part were to be hanging from a hook belonging to a dividing line. This way, the product carrier can be regarded as a prothesis for the back half while the carcass part is transported, as the product carrier of the type of NL-1014845 takes over the function of the back half in traditional dividing lines. This has the advantage that processing devices which could previously only form part of the dividing line can now also be integrated into the filleting line.

[0009] In practice, it has been found that the possibility of carrying out operations which hitherto had to be carried out in the dividing line, or which it was at least greatly preferred to carry out in the dividing line, in the filleting line offers possibilities with a view to optimizing the processing of a carcass part which comprises at least part of the ribs and part of the meat which is naturally present thereon.

[0010] However, not all the optimizations which have been developed require the use of a product carrier as described in NL 1014845. Even simpler product carriers, for example product carriers which can only be pivoted in a single plane, may be adequate. In addition, it is also the case that methods and devices according to the invention can be used without being expressly combined with a product carrier which is moving along a path. In this context, consideration can be given, for example, to their use in a stand-alone machine or a device in which the product which is to be processed is moved past the device by hand. Any optimization which has been developed may be applied as such, possibly in combination with a prior art method or device. It is also envisaged that two or more optimizations are combined.

[0011] The object of the invention is to make use of the possibilities for optimizing the processing of a carcass part of slaughtered poultry. This allows high production speeds, a high yield and a high quality of the products to be achieved. There is also a greater degree of flexibility with regard to the shape, dimensions and weight of the carcass part which is to be processed, as well as more flexibility in terms of the end product which can be achieved.

[0012] In a first aspect of the invention, this object is

achieved by a method for processing a carcass part of slaughtered poultry, which carcass part comprises at least part of a rib cage, meat which is naturally present on said rib cage, a neck opening, and a wing joint, the carcass part having an interior, which method comprises the following steps:

- applying and fixing the carcass part to a product carrier, which product carrier is moveable and which product carrier engages the interior of the carcass part,
- moving a wing-joint positioning member via said neck opening into the interior of the carcass part, the wing-joint positioning member being provided with one or more wing-joint positioning surfaces, which are arranged in such a manner that, in a defined position of the first wishbone blade with respect to the carcass part, the wing-joint positioning surfaces hold said wing joint into a predetermined position, exerting an internal pressure on the carcass part, in such a manner that said one wing joint is supported in the predetermined position by a wing-joint positioning surface of the first wishbone blade,

which steps are carried out in a turret machine.

[0013] The method for positioning the wing joints can successfully be applied to carcass parts without a wishbone. In cases in which the wishbone is present but does not have to be cut loose, the wing-joint positioning member is also suitable for use. In those cases, the wing-joint positioning member functions as a support for the wing-joint positioning surfaces. The use of a wing-joint positioning member positions the wing-joint reliably and reproducibly to enable accurate processing of the wing joint, such as the formation of an incision through the wing-joint without damaging the bones of the joint in the process.

[0014] However, in many cases, a wishbone or part of a wishbone has to be removed or at least cut loose from the carcass part. To cut the fragile wishbone loose from the carcass part, the wing-joint positioning member is in those cases preferably provided with a suitable cutting edge. It has been found that the operation of cutting loose the wishbone (or a part of the wishbone) can be successfully combined with an accurate processing operation of the wing joint, such as the formation of an incision through the wing joint without damaging the bones of the joint in the process when such a wing-joint positioning member with a suitable cutting edge is applied.

[0015] Before being processed, the carcass part which is to be processed is applied and fixed to a product carrier. The product carrier which is known from NL 1014845 is particularly suitable for this purpose. This product carrier moves the carcass part which is to be processed into the correct orientation with respect to a first processing device. Accurate processing of the wing joint is carried out in this first processing device, and if appropriate the wishbone or that part of the wishbone which is present is cut

loose and if appropriate removed from the carcass part.

[0016] The wing-joint positioning member is moved into the carcass part via the neck opening. If products with a neck or neck skin are being processed, it is advantageous first of all to move the neck and/or neck skin away from the neck opening, so that it is successfully cleared and the wing-joint positioning member can be introduced into the interior of the carcass without problems. One or more wing-joint positioning surfaces are arranged on the wing-joint positioning member. When the wing-joint positioning member is being displaced into position with respect to the carcass part, the one or more positioning surfaces act to move the wing-joint substantially into a predetermined position, for example by pushing the wing-joint slightly outwards. In this way, the overall positioning of the wing-joint is realized from interior of the carcass.

[0017] To realize accurate positioning of a wing joint, after the wing joint has been moved into position from the interior of the carcass part, an external pressure is exerted on the carcass part by pressure-exerting means. These pressure-exerting means ensure that the wing joint comes to bear firmly against said wing-joint positioning surface, in such a manner that it reliably comes to lie in the predetermined position.

[0018] The combination of positioning the wing joints from the interior and from the outside of the carcass part has the advantage that the position of the wing joints with respect to the processing device is reliably, accurately and unambiguously defined, and also that the position of the wing joint with respect to the processing device is largely independent of the size, weight and shape of the carcass part to be processed.

[0019] In the case of a relatively small or medium-sized, ideally shaped carcass part, in which each wing joint is located at a relatively short distance from the location of the backbone, each wing joint will be pushed outwards, towards the predetermined position, by a wing-joint positioning surface. In these cases, the wing joint will already bear firmly against a wing-joint positioning surface and will adopt the position which is prescribed by this surface. In these cases, pressing on the carcass part from the outside primarily constitutes an additional guarantee that the wing joint will retain its ideal position with a sufficient accuracy during a processing operation.

[0020] In the case of a relatively large or less ideally shaped carcass part, there is no guarantee that a wing joint will immediately be positioned as intended by acting on it from the inside of the carcass part by a wing-joint positioning surface of the wing-joint positioning member. In such cases, the wing joint will not always immediately bear correctly against the associated wing-joint positioning surface. The wing-joint positioning surface is then merely responsible for overall preliminary positioning of the wing joint. The pressure-exerting means then apply a preferably targeted pressure to the carcass part from the outside, with the result that each wing joint still comes to bear correctly against its associated wing-joint positioning surface, so the wing joints reach the predeter-

mined position with a high degree of accuracy.

[0021] Since the position of the wing joints is thus accurately known and largely independent of the size and shape of the carcass part, it is possible for processing operations on the wing joints to be carried out accurately.

[0022] One example of such a processing operation is that of cutting through some of the connecting tendons between a wing (or wing part) and the other parts of the carcass part, in such a manner that at least one connecting tendon between an outer fillet and a wing or wing part remains intact. The operation of reliably and reproducibly cutting through the wing joint at least largely without damaging the bones of the joint is another example of such a processing operation which is possible on account of accurate positioning of the wing joint.

[0023] These two processing operations can be combined by the use of special wing-cutting blades which are substantially sickle-shaped. These blades are provided with a facet which prevents the tendons from slipping off the wing-cutting blade during the cutting operation.

[0024] To make a wing joint incision of this nature, the sickle-shaped wing-cutting blades are preferably rotated or moved in some other way such that they come to lie around the wing joint. During the rotary motion, the meat and tissue around the wing joint is already being cut into. Then, the wing-cutting blades are moved further, with the result that the wing-cutting blades are pulled further through the joint. During this further movement, each wing-cutting blade at a given moment comes into contact with the tendon located inside of the joint. The continuing movement severs the tendons, with the facet of the wing-cutting blade preventing the tendon from sliding off the wing-cutting blade.

[0025] Control means of the wing-cutting blades are preferably adapted to allow to determine whether or not the wing-cutting blades execute the wing joint incision for each passing product.

[0026] In a preferred embodiment in which the wing cutting is carried out using the special wing-cutting blades mentioned above and a connecting tendon between the outer fillet and wing (part) remains intact, it is possible to harvest both the breast fillet, the eye meat, the second fillet and the inner fillets in an advantageous way.

[0027] It is in this way possible to carry out the method of harvesting second fillets as described in EP 0 695 506.

[0028] The invention also relates to a device for carrying out the method according to the first aspect of the invention. It is preferable for a plurality of these devices to be accommodated in a turret machine. The devices can be positioned either substantially horizontally or substantially vertically in a turret machine of this type.

[0029] The second aspect of the invention relates to an optimization of the processing of a carcass part of slaughtered poultry, which carcass part comprises at least part of a rib cage, meat which is naturally present on said rib cage, a neck opening and part of the wishbone, which method comprises the following steps:

- applying and fixing the carcass part to a product carrier, which product carrier is moveable along a path and which product carrier engages on the inside of the carcass part,
- moving a block into the carcass part through the neck opening of the carcass part, which block has a recess for receiving the wishbone or that part of it which is present, and which block is arranged between the two limbs of the wishbone or between the locations at which these limbs would be located if the entire wishbone were present,
- cutting the wishbone or that part of it which is present loose from the carcass part on the side facing the back side of the carcass part by introducing a first wishbone blade along one side of the block, the first wishbone blade having a cutting edge, the contour of which substantially corresponds to the outer contour of the complete wishbone.

[0030] In an advantageous embodiment of the second aspect of the invention, the method further comprises the following steps:

- introducing two second wishbone blades into the carcass part on either side along the block, preferably substantially perpendicular to the first wishbone blade, the second wishbone blades substantially following the outer contour of the complete wishbone, and cutting the wishbone or that part of it which is present loose from the carcass part, in such a manner that the wishbone or that part of it which is present is enclosed between the block, the first wishbone blade and the second wishbone blades,
- pulling the block, the first wishbone blade and the second wishbone blades back out of the carcass path together, in such a manner that the wishbone or that part of it which is present remains enclosed between the block, the first wishbone blade and the second wishbone blades and is thereby removed from the carcass part.

[0031] After the processing operation has been carried out on the wing joints which are present, it is preferable for the wishbone or that part of the wishbone which is still present to be removed from the carcass part. According to a second aspect of the invention, this is achieved by moving a block into the carcass part between the two limbs of the wishbone before the first wishbone blade is introduced. If only part of the wishbone is still present, the block is introduced into the carcass part at a position which is such that if the entire wishbone were still present the block would be located between the two limbs of the wishbone. In the block there is a recess which receives the wishbone or that part of the wishbone which is still present. A block for receiving at least part of the wishbone is known from EP 0 336 162.

[0032] EP 0 336 162 discloses a method for harvesting breast meat of slaughtered poultry. In this known method,

a block is introduced into a carcass part from which the breast meat has to be removed. The block comprises a recess for accommodating the legs of the wishbone. The breast meat is removed from the carcass part by scraping. During the scraping, the legs of the wishbone are in the recess of the block, so the scrapers cannot damage the wishbone.

[0033] The first wishbone blade has a preferably flat cutting part. The shape of the outer contour of this cutting part substantially corresponds to the shape of the outer contour of the wishbone, i.e. the cutting part has a substantially triangular contour. The cutting part is provided with at least one cutting edge.

[0034] In an advantageous embodiment, the cutting part of the first wishbone blade is substantially triangular in shape, with the wide side of the triangle being wider than the wishbone. As a result, not only the wishbone but also the surrounding meat is cut loose from the carcass part. This is not only of benefit to the amount of meat recovered but also ensures that this additional meat is in reality also harvested.

[0035] In a preferred embodiment, the wide side of the triangular shape of the first wishbone blade is so wide that the meat is cut loose from the carcass part as far as the immediate vicinity of the wing joint. As a result, the meat between the wishbone and the wing joint is also harvested, whereas previously it remained attached to the carcass part.

[0036] The first wishbone blade is arranged along one side of the block in the carcass part. As a result, the wishbone (or that part of the wishbone which is still present in the carcass part) is cut loose on the side facing the back side of the carcass part.

[0037] Then, two second wishbone blades are stabbed into the carcass part along the block on either side of it, substantially perpendicular to the first wishbone blade. These second wishbone blades substantially follow the outer contour of the wishbone and cut the wishbone loose from the carcass part.

[0038] When the block, the first wishbone blade and the second wishbone blades have been arranged in the carcass part, the wishbone is enclosed by them. The wishbone is removed from the carcass part by the block, the first wishbone blade and the second wishbone blades being pulled back simultaneously.

[0039] In an advantageous embodiment, when the block and the first and second wishbone blades are moved out of the carcass part, they move apart, and the wishbone is then removed from the block e.g. by the use of compressed air. Water can also be used as an alternative to compressed air, or alternatively mechanical means can be employed.

[0040] If products with a neck or neck skin are being processed, it is advantageous first of all to move the neck and/or neck skin away from the neck opening, so that the neck opening is successfully cleared and the first wishbone blade can be introduced in the carcass part without problems. More generally, preferably the neck

opening is cleared before performing an operation on the wishbone or a part thereof which is present. Under "clearing of the neck opening" a removal of skin and/or crop fat and/or other tissue is to be understood.

[0041] In a further advantageous embodiment, the processing according to the second aspect of the invention is carried out in a turret machine. The production rate can be considerably increased in this way, since a plurality of products are processed simultaneously and continuously. In a traditional system, it is possible to process some 2300 products per hour, whereas with the method according to the invention the production rate is approximately 3000 products per hour or above, and when the method according to the invention is used in a turret machine it is possible to achieve production rates of 5000 products per hour.

[0042] In some areas, there is a demand for products in which the wishbone is still present, albeit partly cut free from the meat. Products of this type can also be produced with the aid of the method and device according to the second aspect. In such a case, the first wishbone blade partly cuts loose the wishbone but the operation of introducing the second wishbone blades is omitted. Also, in this case the wishbone is not removed from the carcass part

[0043] The invention also comprises a device for carrying out the method in accordance with the second aspect of the invention. It is preferable for a plurality of these devices to be accommodated in a turret machine. The devices can be positioned either substantially horizontally or substantially vertically in a turret machine of this type.

[0044] Devices and methods in accordance with various aspects of the invention will be explained in more detail below with reference to the appended drawing, which shows non-limiting exemplary embodiments and in which:

Fig 1 - shows an example of a product carrier which is suitable for use in the invention,

Fig 2 - shows the way in which a carcass part is arranged on the product carrier shown in Fig. 1,

Fig. 3 - shows the stretching of the wings of a carcass part,

Fig 4 - shows part of an example of a device in accordance with the first aspect of the invention,

Fig. 5 - shows wing-cutting blades in accordance with the first aspect of the invention,

Fig. 6 - shows devices in accordance with the first or second aspect of the invention, accommodated in a turret machine,

Fig. 7 - shows devices in accordance with the first or second aspect of the invention, accommodated in an alternative machine,

Fig. 8 - shows an example of part of the device in accordance with the second aspect of the invention,

Fig. 9 - shows an example of part of the device in accordance with the second aspect of the invention,

Fig. 10 - shows a possible embodiment of a device for removing crop fat and/or neck skin,

Fig. 11 - shows a possible embodiment of the way in which parts are cut off the carcass part.

[0045] Fig. 1 shows an example of a product carrier 2 which is suitable for use in all aspects of the invention. This product carrier 2 is designed to support and retain the carcass part 1 which is being processed. The product carrier 2 is designed to move along a path. This is realized, for example, by securing the product carrier 2 to an overhead conveyor.

[0046] The product carrier 2 shown in Fig. 1 is pivotable in a plurality of planes, for example as indicated by arrow A and arrow B. The product carrier 2 can execute these movements either separately or in combination, while it is being conveyed along the path. The product carrier 2 also comprises an engagement surface 4, by means of which the product carrier 2 engages on the interior of the carcass part 1, i.e. on the inside of the rib cage (or that part of it which is present in the carcass part 1). The product carrier 2 also has a fixing means 3 which retains the carcass part 1 on the product carrier 2 irrespective of the position which the latter adopts.

[0047] Fig. 2a and 2b show the way in which a carcass part 1 is applied to the product carrier 2. Fig. 2c shows a front half which has been applied to the product carrier 2, but other types of carcass parts can also be processed. In this context, consideration may be given, for example, to a variation in types of front halves (with complete wings, with wings without their tips, with wings with second-part incision, without wings, with neck, with neck skin, etc), breast caps, carcass parts without backbone, etc. The carcass parts which are to be processed, before being processed, in each case comprise at least part of the ribs and part of the meat which is naturally present thereon.

[0048] As soon as the carcass part 1 has been applied and fixed to the product carrier 2, it can successively undergo various processing operations, which ultimately involve various parts of the carcass part 1 being separated.

[0049] Prior to the processing operations, the product carrier 2 can guide the carcass part 1 which is to be processed through a wing-stretching module. This has the advantage that after having passed this module all the wings or wing parts which are present are hanging in a more or less reproducible position with respect to the carcass part 1. Carcass parts without wing parts are preferably guided around this module.

[0050] Fig. 3 shows an example of a wing-stretching module. This module in this case comprises two rotating elements 11 which are positioned at a certain distance from one another. The carcass part 1 is guided between the rotating elements 11, with resilient elements 12 which are positioned on the rotating elements 11 stretching the wings or wing parts. These resilient elements 12 may, for example, be formed by rubber plucking fingers. Fig.

3b also shows the direction of rotation of the two rotating elements 11; in Fig. 3a, T denotes the conveying direction of the carcass part 1 as it follows the path.

[0051] A carcass part 1 which, in addition to at least part of the rib cage and which is naturally present thereon, also comprises a neck opening and a wing joint, preferably with at least a part of the wing still attached to the wing joint can be processed using a device and a method in accordance with the first aspect of the invention.

[0052] The device in accordance with the first aspect of the invention comprises a wing-joint positioning member 21, which is designed to be introduced into the carcass part 1. This wing-joint positioning member 21 is provided with one or more wing-joint positioning surfaces 22. In the exemplary embodiment shown in Fig. 4, there are two of these surfaces. In the exemplary embodiment of Fig. 4, the wing-joint positioning member 21 is provided with a cutting edge 21' for cutting the wishbone loose from the other parts of the carcass part.

[0053] The wing-joint positioning surfaces 22 are arranged in such a manner that in a defined position of the wing-joint positioning member 21 with respect to the carcass part 1 (for example the lowest position of the wing-joint positioning member 21 with respect to the carcass part 1) they each hold a wing joint at least substantially into a predetermined, reproducible position from the inside of the carcass part 1.

[0054] Furthermore, the device comprises pressure-exerting means 23 for pressing on the carcass part 1 from the outside. In this way, any wing joint which is present is reproducibly supported by the joint-positioning surface 22 of the wing-joint positioning member 21. As a result, the wing joints which are present are accurately held into the predetermined position in a particularly reliable way.

[0055] If the carcass part 1 also comprises at least part of the wishbone, which has to be cut loose from the carcass part it is advantageous if the wing-joint positioning member 21 is also designed to at least partially cut that part of the wishbone which is present loose from the carcass part 1. To this end, the wing-joint positioning member is preferably provided with a suitable cutting edge 21'. Further means may also be present for cutting the wishbone (or that part of the wishbone which is present) loose and removing it from the carcass part 1. In this context, consideration may be given, for example, to a combination of the first aspect of the invention with the second aspect of the invention. In that case, the wing-joint positioning member 21 is used as first wishbone blade, which first wishbone blade is described in relation to the second aspect of the invention.

[0056] Accurate positioning of the wing joints is important if it is desired for accurate processing operations to be carried out on the wing joints.

[0057] Such a situation arises if the carcass part 1 also comprises one or more inner fillets (also known as "second fillets"). In that case, it is desirable for just some of the connecting tendons between a wing part and the oth-

er parts of the carcass part 1 to be cut through, in such a manner that at least one connecting tendon between the outer fillet and a wing part remains intact. As a result, during the harvesting of the outer fillet the inner fillets remain behind on the bone parts of the body of the carcass part 1, and the inner fillets can then be harvested automatically or manually in a known way (preferably as described in EP 0 695 506). One advantage of manual harvesting is that final inspection of the carcass part 1 can then take place at the same time.

[0058] Another example of a processing operation on the wing joint which requires accurate positioning is the cutting through of the wing joint, in which case the wing-cutting blade which is used to make the incision moves substantially between the bone parts of each wing joint, and in which case after the cutting operation a connection remains between the wing part and an other part of the carcass part 1

[0059] According to the first aspect of the invention, these two accurate processing operations are preferably carried out using special sickle-shaped wing-cutting blades 24 which comprise a facet 25 which prevents the tendons which are to be cut through from slipping off the blade during the cutting operation. The blades also act as a wedge which pushes the bone parts of the wing joint apart. Fig. 5 shows the introduction of the wing-cutting blades 24.

[0060] To enable high production rates to be achieved, it is preferable for a number of devices in accordance with the first aspect of the invention to be accommodated in a turret machine, as shown in Fig. 6. Fig. 7 shows an alternative arrangement.

[0061] In the case of processing of products having a neck or neck skin, the neck or neck skin may impede the introduction of the wing-joint positioning member 21. To prevent this, the device according to the invention is preferably provided with means which hold the neck or neck skin away from the neck opening, for example guides.

[0062] It is preferable for the device and method in accordance with the first aspect of the invention to be combined with the device and method in accordance with the second aspect of the invention. In that case, the wing-joint positioning member 21 is provided with a suitable cutting edge, so that the wing-joint positioning member can be used as first wishbone blade.

[0063] The second aspect of the invention relates to a method and device for the processing of a carcass part 1 of slaughtered poultry. The carcass parts which can be processed in accordance with the corresponding method and using the corresponding device comprise at least part of the ribs, part of the meat which is naturally present thereon, a neck opening and part of the wishbone. In the example described below, the entire wishbone is present.

[0064] In the second aspect of the invention too, the carcass part 1 which is to be processed is applied and fixed to a product carrier 2 of the type described above.

[0065] To enable the wishbone to be removed, a block is introduced into the carcass part 1 through the neck

opening. The block has a recess for receiving the wishbone and is arranged between the two limbs of the wishbone.

[0066] Then, a first wishbone blade 21 is introduced into the carcass part 1 via the neck opening, in such a manner that it is positioned next to one side of the block in the carcass part 1.

[0067] The first wishbone blade 21 has a cutting edge, the contour of which substantially corresponds to the outer contour of the complete wishbone, so that as it is introduced it cuts loose that side of the wishbone which faces the back side of the carcass part 1. In this example, the first wishbone blade 21 is substantially in the shape of an arrow.

[0068] Then, two second wishbone blades 31 are moved into the carcass part 1 along either side of the block, substantially perpendicular to the first wishbone blade 21. The second wishbone blades 31 substantially follow the outer contour of the wishbone and cut the wishbone off the carcass part 1. The wishbone which has been cut loose is then enclosed between the block, the first wishbone blade 21 and the second wishbone blades 31.

[0069] To remove the wishbone from the carcass part 1, the block, the first wishbone blade 21 and the second wishbone blades 31 are together pulled back out of the carcass part 1 while the wishbone remains enclosed between the block, the first wishbone blade 21 and the second wishbone blades 31. In this way, the wishbone is removed from the carcass part 1.

[0070] To combine the first and second aspects of the invention, the first wishbone blade 21 is preferably provided with wing-joint positioning surfaces 22.

[0071] Figs. 8 and 9 show additional cutting surfaces 32 which are added to the first wishbone blade 21. The addition of these additional cutting surfaces 32 further widens the first wishbone blade 21 on the wide side of the arrowhead. This makes the first wishbone blade 21 significantly wider on the wide side than the wishbone at that location.

[0072] The local widening of the first wishbone blade 21 allows the meat to be cut loose from the underlying bone parts as far as the immediate vicinity of the wing surface. This ensures that the meat between the wishbone and the wing joint is harvested with the fillet.

[0073] When the wishbone has been removed from the carcass part 1, the first wishbone blade 21 and the second wishbone blades 31 are moved back to a greater distance from the block. In the first instance, the wishbone is then still on the block. It is preferable to use compressed air to remove the wishbone from the block. The device preferably comprises compressed-air means for removing the wishbone or that part of the wishbone which is present from the block.

[0074] In the case of processing products with a neck or neck skin, the neck or neck skin may impede the introduction of the block and/or the first wishbone blade 21. To prevent this, the device according to the invention

is preferably provided with means which hold the neck or neck skin away from the opening, for example guides.

[0075] To enable high production rates to be achieved, it is preferable for a number of devices in accordance with the second aspect of the invention to be accommodated in a turret machine, as shown in Figures 6 and 7.

[0076] The devices according to the various aspects of the invention are preferably arranged along the path along which the product carriers move. It is not necessary for all the devices described to be used in combination. It is also possible to provide a feature which allows one or more processing devices to be bypassed

[0077] It is possible for the devices described to be designed as stand-alone machines, i.e. not combined with an overhead conveyor or other type of conveyor which guides the carcass parts past various processing devices.

[0078] It is not necessary for the product carrier to be able to pivot in a plurality of planes with respect to the path for all the processing operations described. It is sometimes sufficient for the product carrier to be able to pivot in one plane, or it may even be possible to use a rigid product carrier.

[0079] There is provision for a processing device which divides the carcass parts through the middle in the longitudinal direction (i.e. substantially in the direction of the backbone and/or breastbone) to be incorporated along the path covered by the carcass parts. It is also possible for the processing devices as described above to carry out the processing operations on halved carcass parts which have been created in this way. It is also possible for the processing devices to be completely designed to process halved carcass parts of this type and therefore to carry out the processing operations on only one side of the product carrier.

[0080] There is provision for a processing device which removes any residues of the neck skin and/or the crop fat to be incorporated along the path covered by the carcass parts. A device of this type is shown in Fig. 10.

[0081] There is provision for a processing device which cuts off parts of the carcass part 1 (such as for example back pieces intended for soup packets) to be incorporated along the path covered by the carcass parts. The shape of the product carrier 2 is preferably adjusted accordingly, so that the blades which cut off the part of the carcass part 1 cannot cause any damage to the product carrier 2. A device of this type is shown in Fig. 11.

[0082] It is preferable for the product carrier 2 to be advanced along its path by a chain conveyor, with the product carrier 2 always located beneath the chain conveyor.

[0083] It is preferable for the product carrier 2 to be pivoted into the optimum orientation with respect to the device which is used to carry out each individual processing step.

[0084] Any previously described method is preferably further characterized in that after the carcass part has been applied and fixed to the product carrier, the wing

parts which are present are stretched

[0085] Any previously described method is preferably further characterized in that any residues of the neck skin and/or the crop fat are removed.

[0086] Any previously described method is preferably further characterized in that the product carrier is advanced along its path by a chain conveyor, with the product carrier always located beneath the chain conveyor.

[0087] Any previously described method is preferably further characterized in that the product carrier is pivoted into the optimum orientation for each processing step with respect to the device with which the processing step is carried out.

Claims

1. Method for processing a carcass part of slaughtered poultry, which carcass part (1) comprises at least part of a rib cage, meat which is naturally present on said rib cage, a neck opening, and a wing joint, the carcass part (1) having an interior which method comprises the following steps:

- applying and fixing the carcass part (1) to a product carrier (2), which product carrier (2) is moveable and which product carrier (2) engages the interior of the carcass part (1),
- moving a wing-joint positioning member (21) via said neck opening into the interior of the carcass part (1), the wing-joint positioning member (21) being provided with one or more wing-joint positioning surfaces (22), which are arranged in such a manner that, in a defined position of the wing-joint positioning member (21) with respect to the carcass part (1), the wing-joint positioning surfaces (22) hold said wing joint into a predetermined position,
- exerting an internal pressure on the carcass part, in such a manner that said wing joint is supported in the predetermined position by a wing-joint positioning surface (22),

which steps are carried out in a turret machine.

2. Method according to claim 1, wherein instead of or in addition to the internal pressure on the carcass part, an external pressure is applied on the carcass part (1).

3. Method according to any of the preceding claims, wherein the carcass part (1) also comprises at least part of a wishbone, characterized in that, the method further comprises the step of cutting the wishbone at least partly loose from other parts of the

carcass part by using a wing-joint positioning member (21) which is provided with suitable cutting edges (21').

4. Method according to any of the preceding claims, wherein the carcass part (1) comprises residue of neck skin, **characterized in that** said residues of neck skin are removed.
5. Method according to any of the preceding claims, wherein the neck opening is cleared before the wing-joint positioning member (21) is introduced.
6. Turret machine comprising a device for processing a carcass part (1) of slaughtered poultry, which carcass part (1) comprises at least part of a rib cage, meat which is naturally present on said rib cage, a neck opening, and a wing joint, the carcass part (1) having an interior, which device comprises:
 - a product carrier (2) for supporting and retaining the carcass part, which product carrier (2) is designed to move along a path, and which product carrier (2) is adapted to engage the interior of the carcass part (1),
 - a wing-joint positioning member (21), which is designed to be introduced into the carcass part (1) via said neck opening,

characterized in that the wing-joint positioning member (21) is provided with one or more wing-joint positioning surfaces (22), which are arranged in such a manner that, in a defined position of the wing-joint positioning member (21) with respect to the carcass part (1), the wing-joint positioning surfaces (22) hold said wing joint into a predetermined position, which wing joint positioning surfaces (22) are adapted for exerting an internal pressure on the carcass part, in such a manner that said wing joint is supported in the predetermined position by a wing-joint positioning surface (22).
7. Turret machine according to claim 6, wherein the device also comprises pressure-exerting means (23) for applying an external pressure on the carcass part (1) in stead of or in addition to the internal pressure of the wing joint positioning surfaces (22), in such a manner that said wing joint is supported by a wing-joint positioning surface (22) of the wing-joint positioning member (21), with the result that said wing joint is moved into the predetermined position.
8. Turret machine according to claim 6 or 7, wherein the carcass part comprises at least part of the wishbone, and the wing-joint positioning member (21) comprises a cutting edge (21') for at least partially cutting of the wishbone loose from another part

of the carcass part (1).

9. Turret machine according to any of the claims 6-8, wherein the device further comprises means for removing residues of neck skin from the carcass part to be processed.
10. Method for processing a carcass part of slaughtered poultry, which carcass part (1) comprises at least part of a rib cage, meat which is naturally present on said rib cage, a neck opening and part of the wishbone, which method comprises the following steps:
 - applying and fixing the carcass part (1) to a product carrier (2), which product carrier (2) is moveable along a path and which product carrier (2) engages on the inside of the carcass part (1),
 - moving a block into the carcass part (1) through the neck opening of the carcass part, (1) which block has a recess for receiving the wishbone or that part of it which is present, and which block is arranged between the two limbs of the wishbone or between the locations at which these limbs would be located if the entire wishbone were present,
 - cutting the wishbone or that part of it which is present loose from the carcass part (1) on the side facing the back side of the carcass part by introducing a first wishbone blade (21) along one side of the block, the first wishbone blade having a cutting edge, the contour of which substantially corresponds to the outer contour of the complete wishbone.
11. Method according to claim 10, which further comprises the following steps:
 - introducing two second wishbone blades (31) into the carcass part (1) on either side along the block, preferably substantially perpendicular to the first wishbone blade (21), the second wishbone blades (31) substantially following the outer contour of the complete wishbone, and cutting the wishbone or that part of it which is present loose from the carcass part (1), in such a manner that the wishbone or that part of it which is present is enclosed between the block, the first wishbone blade (21) and the second wishbone blades (31),
 - pulling the block, the first wishbone blade (21) and the second wishbone blades (31) back out of the carcass path together, in such a manner that the wishbone or that part of it which is present remains enclosed between the block, the first wishbone blade (21) and the second wishbone blades (31) and is thereby removed from the carcass part.

12. Method according to any of the claims 10-11, wherein a first wishbone blade (21) which is provided with wing-joint positioning surfaces (22) is used.

13. Method according to any of the claims 10-12, wherein a first wishbone blade (21) which at least in part is wider than the outer contour of the complete wishbone is used.

14. Method according to any of the claims 10-13, wherein a first wishbone blade (21) which is designed to cut all the way to the immediate vicinity of the wing surface is used.

15. Method according to any of the claims 10-14, wherein after the wishbone or that part of it which is present has been removed from the carcass part (1), compressed air is used to remove the wishbone or that part of it which is present from the block.

16. Method according to any of the claims 10-15, wherein the neck opening is cleared before the first wishbone blade (21) is introduced, or more generally, that the neck opening is cleared before performing an operation on the wishbone or a part thereof which is present.

17. Method according to any of the claims 10-16, wherein the method further comprises a removal of skin and/or crop fat and/or other tissue.

18. Device for processing a carcass part of slaughtered poultry, which carcass part (1) comprises at least part of a rib cage, meat which is naturally present on said rib cage, a neck opening and part of the wishbone, the carcass part (1) having an interior, which device comprises:

- a product carrier (2) for supporting and retaining the carcass part (1), which product carrier (2) is designed to move along a path and is preferably pivotable in a plurality of planes with respect to this path, which product carrier (2) is adapted to engage the interior of the carcass part,
- a block which is designed to be moved through the neck opening into the carcass part until it is located between the two limbs of the wishbone or between the locations at which these limbs would be located if the entire wishbone were present, which block has a recess for receiving the wishbone or that part of the wishbone which is present,

characterized in that the device also comprises:

- a first wishbone blade (21), which has a cutting edge (21') whose contour substantially corre-

sponds to the outer contour of the complete wishbone for cutting the wishbone or that part of the wishbone which is present loose from the carcass part (1) on the side facing the back side of the carcass part (1), which first wishbone blade (21) is designed to be introduced into the carcass part (1) along one side of the block.

19. Device according to claim 18, which device also comprises at least two second wishbone blades (31), which are designed to be introduced into the carcass part (1) along either side of the block, preferably substantially perpendicular to the first wishbone blade (21), the second wishbone blades (31) substantially following the outer contour of the complete wishbone, and being designed to cut the wishbone or that part of the wishbone which is present loose from the carcass part (1), in such a manner that the wishbone or that part of the wishbone which is present is enclosed between the block, the first wishbone blade (21) and the second wishbone blades (31), which device is designed to pull the block, the first wishbone blade (21) and the second wishbone blades (31) out of the carcass part (1) together, in such a manner that the wishbone or that part of the wishbone which is present remains enclosed between the block, the first wishbone blade (21) and the second wishbone blades (31), so that the wishbone or that part of the wishbone that is present is removed from the carcass part (1) together with the block, the first wishbone blade (21) and the second wishbone blades (31).

20. Device according to any of the claims 18-19, wherein the first wishbone blade (21) comprises wing-joint positioning surfaces (22).

21. Device according to any of the claims 18-20, wherein the first wishbone blade (21) is at least in part wider than the outer contour of the complete wishbone.

22. Device according to any of the claims 18-21, wherein the first wishbone blade (21) is designed to cut as far as the immediate vicinity of the wing surface

23. Device according to any of the claims 18-22, wherein the device further comprises compressed-air means for removing the wishbone or that part of the wishbone which is present from the block.

24. Device according to any of the claims 18-23, wherein the device further comprises means for clearing the neck opening before the first wishbone blade (21) is introduced, or more generally, means for clearing the neck opening before performing an

operation on the wishbone or a part thereof which is present.

25. Device according to any of the claims 18-24,
wherein the device further comprises means for re-
moval of skin and/or crop fat and/or other tissue. 5
26. Device according to any of the claims 18-25,
wherein the device is accommodated in a turret ma-
chine. 10
27. Method according to any of the claims 10-17,
wherein after the carcass part (1) has been applied
and fixed to the product carrier (2), any wing parts
which are present are stretched. 15
28. Method according to any of the claims 10-17 and/or
27,
wherein any residues of the neck skin and/or the
crop fat are removed. 20
29. Method according to any of the claims 10-17 and/or
27-28,
wherein the product carrier (2) is advanced along its
path by a chain conveyor, with the product carrier 25
always located beneath the chain conveyor.
30. Method according to any of the claims 10-17 and/or
27-29,
wherein the product carrier (2) is pivoted into the
optimum orientation for each processing step with
respect to the device with which the processing step
is carried out. 30

Patentansprüche

1. Verfahren zur Verarbeitung eines Karkassenteils
von Schlachtgeflügel, welches Karkassenteil (1) zu-
mindest einen Teil eines Brustkorbs, Fleisch, das
natürlich am Brustkorb vorhanden ist, eine Halsöff-
nung und ein Flügelgelenk umfasst, wobei das Kar-
kassenteil (1) einen Innenraum hat und das Verfah-
ren die folgenden Schritte umfasst: 40
 - Anbringen und Fixieren des Karkassenteils (1)
an einem Produktträger (2), der beweglich ist
und am Innenraum des Karkassenteils (1) an-
greift,
 - Bewegen eines Flügelgelenkpositionierungs-
teils (21) durch die Halsöffnung in den Innen-
raum des Karkassenteils (1),
wobei das Flügelgelenkpositionierungsteil (21)
mit einer oder mehreren Flügelgelenkpositionie-
rungsfläche/n (22) versehen ist, die so angeord-
net sind, dass in einer definierten Position des
Flügelgelenkpositionierungsteils (21) in Bezug
auf das Karkassenteil (1) die Flügelgelenkposi- 55

tionierungsflächen (22) das Flügelgelenk in ei-
ner vorbestimmten Position halten,
- Ausüben eines inneren Drucks auf das Kar-
kassenteil in der Art und Weise, dass das Flü-
gelgelenk durch eine Flügelgelenkpositionie-
rungsfläche (22) in der vorbestimmten Position
gehalten ist,

und die Schritte in einer Revolvermaschine ausge-
führt werden.

2. Verfahren nach Anspruch 1, wobei anstelle vom oder
zusätzlich zum inneren Druck auf das Karkassenteil
ein äußerer Druck an das Karkassenteil (1) angelegt
wird.
3. Verfahren nach einem der vorhergehenden Ansprü-
che, wobei das Karkassenteil (1) darüber hinaus
auch mindestens einen Teil eines Gabelbeins um-
fasst, **dadurch gekennzeichnet, dass**
das Verfahren darüber hinaus den Schritt umfasst,
das Gabelbein zumindest teilweise von anderen Teil-
en des Karkassenteils unter Verwendung eines Flü-
gelgelenkpositionierungsteils (21) loszuschneiden,
das mit geeigneten Schneidkanten (21') versehen
ist.
4. Verfahren nach einem der vorhergehenden Ansprü-
che, wobei das Karkassenteil (1) Reste von Halshaut
umfasst, **dadurch gekennzeichnet, dass** die Re-
ste von Halshaut entfernt werden.
5. Verfahren nach einem der vorhergehenden Ansprü-
che, wobei die Halsöffnung freigemacht wird, bevor
das Flügelgelenkpositionierungsteil (21) eingeführt
wird. 35
6. Revolvermaschine, die eine Vorrichtung zum Verar-
beiten eines Karkassenteils (1) von Schlachtgeflügel
umfasst,
welches Karkassenteil (1) zumindest einen Teil ei-
nes Brustkorbs, Fleisch, das natürlich am Brustkorb
vorhanden ist, eine Halsöffnung und ein Flügelge-
lenk umfasst, wobei das Karkassenteil (1) einen In-
nenraum hat und die Vorrichtung umfasst: 45
 - einen Produktträger (2) zum Haltern und Fest-
halten des Karkassenteils, der dazu ausgelegt
ist, sich entlang eines Wegs zu bewegen und
dazu angepasst ist, am Innenraum des Karkas-
senteils (1) anzugreifen,
 - ein Flügelgelenkpositionierungsteil (21), das
dazu ausgelegt ist, durch die Halsöffnung in das
Karkassenteil (1) eingeführt zu werden,

dadurch gekennzeichnet, dass das Flügelgelenk-
positionierungsteil (21) mit einer oder mehreren Flü-
gelgelenkpositionierungsfläche/n (22) versehen ist,

die so angeordnet sind, dass in einer festgelegten Position des Flügelgelenkpositionierungsteils (21) in Bezug auf das Karkassenteil (1) die Flügelgelenkpositionierungsflächen (22) das Flügelgelenk in einer vorbestimmten Position halten, welche Flügelgelenkpositionierungsflächen (22) dazu angepasst sind, einen inneren Druck auf das Karkassenteil auszuüben, und zwar so, dass das Flügelgelenk durch einen Flügelgelenkpositionierungsfläche (22) in der vorbestimmten Position gehalten ist.

7. Revolvermaschine nach Anspruch 6, wobei die Vorrichtung auch eine Druckbeaufschlagungseinrichtung (23) umfasst, um anstelle vom oder zusätzlich zum inneren Druck der Flügelgelenkpositionierungsflächen (22) einen äußeren Druck an das Karkassenteil (1) so anzulegen, dass das Flügelgelenk durch eine Flügelgelenkpositionierungsfläche (22) des Flügelgelenkpositionierungsteils (21) gehalten ist, mit dem Ergebnis, dass das Flügelgelenk in die vorbestimmte Position bewegt wird.

8. Revolvermaschine nach Anspruch 6 oder 7, wobei das Karkassenteil zumindest einen Teil des Gabelbeins umfasst, und das Flügelgelenkpositionierungsteil (21) eine Schneidkante (21') umfasst, um das Gabelbein zumindest teilweise von einem anderen Teil des Karkassenteils (1) loszuschneiden.

9. Revolvermaschine nach einem der Ansprüche 6 bis 8, wobei die Vorrichtung darüber hinaus eine Einrichtung umfasst, um Reste von Halshaut von dem zu verarbeitenden Karkassenteil zu entfernen.

10. Verfahren zum Verarbeiten eines Karkassenteils von Schlachtgeflügel, welches Karkassenteil (1) zumindest einen Teil eines Brustkorbs, Fleisch, das natürlich am Brustkorb vorhanden ist, eine Halsöffnung und einen Teil des Gabelbeins umfasst, und das Verfahren die folgenden Schritte umfasst:

- Anbringen und Fixieren eines Karkassenteils (1) an einem Produktträger (2), der entlang eines Wegs beweglich ist und auf der Innenseite des Karkassenteils (1) angreift,
- Bewegen eines Blocks durch die Halsöffnung des Karkassenteils (1) in das Karkassenteil (1), der eine Ausnehmung zur Aufnahme des Gabelbeins oder des Teils von diesem, das vorhanden ist, aufweist, und der zwischen den beiden Gliedern das Gabelbeins oder zwischen den Stellen, an denen sich diese Glieder befinden würden, wenn das ganze Gabelbein vorhanden wäre, angeordnet ist,
- Losschneiden des Gabelbeins oder des Teils von diesem, das vorhanden ist, vom Karkassenteil (1), auf der Seite, die der Rückseite des Karkassenteils zugewandt ist, indem ein erstes Ga-

belbeinmesser (21) entlang einer Seite des Blocks eingeführt wird, wobei das erste Gabelbeinmesser eine Schneidkante hat, deren Kontur im Wesentlichen der Außenkontur des kompletten Gabelbeins entspricht.

11. Verfahren nach Anspruch 10, das darüber hinaus die folgenden Schritte umfasst:

- Einführen von zwei zweiten Gabelbeinmessern (31) in das Karkassenteil (1) auf jeder Seite entlang des Blocks, vorzugsweise im Wesentlichen senkrecht zum ersten Gabelbeinmesser (21), wobei die zweiten Gabelbeinmesser (31) im Wesentlichen der Außenkontur des kompletten Gabelbeins folgen, und Losschneiden des Gabelbeins oder des Teils von diesem, das vorhanden ist, vom Karkassenteil (1), und zwar so, dass das Gabelbein oder das Teil von diesem, das vorhanden ist, zwischen dem Block, dem ersten Gabelbeinmesser (21) und den zweiten Gabelbeinmessern (31) eingeschlossen ist,
- gemeinsames Herausziehen des Blocks, des ersten Gabelbeinmessers (21) und der zweiten Gabelbeinmesser (31) aus dem Karkassenteil, und zwar so, dass das Gabelbein oder das Teil von diesem, das vorhanden ist, zwischen dem Block, dem ersten Gabelbeinmesser (21) und den zweiten Gabelbeinmessern (31) eingeschlossen bleibt und **dadurch** aus dem Karkassenteil entfernt wird.

12. Verfahren nach einem der Ansprüche 10 bis 11, wobei ein erstes Gabelbeinmesser (21) verwendet wird, das mit Flügelgelenkpositionierungsflächen (22) versehen ist.

13. Verfahren nach einem der Ansprüche 10 bis 12, wobei ein erstes Gabelbeinmesser (21) verwendet wird, das zumindest teilweise breiter ist als die Außenkontur des kompletten Gabelbeins.

14. Verfahren nach einem der Ansprüche 10 bis 13, wobei ein erstes Gabelbeinmesser (21) verwendet wird, das dazu ausgelegt ist, die gesamte Strecke bis zur unmittelbaren Nähe der Flügeloberfläche zu schneiden.

15. Verfahren nach einem der Ansprüche 10 bis 14, wobei, nachdem das Gabelbein oder das Teil von diesem, das vorhanden ist, aus dem Karkassenteil (1) entfernt wurde, Druckluft verwendet wird, um das Gabelbein oder das Teil von diesem, das vorhanden ist, aus dem Block zu entfernen.

16. Verfahren nach einem der Ansprüche 10 bis 15, wobei die Halsöffnung freigemacht wird, bevor das erste Gabelbeinmesser (21) eingeführt wird, oder, all-

gemeiner, die Halsöffnung freigemacht wird, bevor ein Arbeitsablauf am Gabelbein oder einem Teil von diesem, das vorhanden ist, durchgeführt wird.

17. Verfahren nach einem der Ansprüche 10 bis 16, wobei das Verfahren darüber hinaus ein Entfernen von Haut und/oder Kropffett und/oder anderem Gewebe umfasst.

18. Vorrichtung zur Verarbeitung eines Karkassenteils von Schlachtgeflügel, welches Karkassenteil (1) zumindest einen Teil eines Brustkorbs, Fleisch, das natürlich am Brustkorb vorhanden ist, eine Halsöffnung und einen Teil des Gabelbeins umfasst, wobei das Karkassenteil (1) einen Innenraum hat und die Vorrichtung umfasst:

- einen Produktträger (2) zum Haltern und Festhalten des Karkassenteils (1), der dazu ausgelegt ist, sich entlang eines Wegs zu bewegen und vorzugsweise im Hinblick auf diesen Weg in mehreren Ebenen schwenkbar und dazu angepasst ist, am Innenraum des Karkassenteils anzugreifen,

- einen Block, der dazu ausgelegt ist, durch die Halsöffnung in das Karkassenteil bewegt zu werden, bis er sich zwischen den beiden Gliedern des Gabelbeins oder zwischen den Stellen befindet, an denen sich diese Glieder befinden würden, wenn das ganze Gabelbein vorhanden wäre, und der eine Ausnehmung zur Aufnahme des Gabelbeins oder des Teils des Gabelbeins hat, das vorhanden ist, **dadurch gekennzeichnet, dass** die Vorrichtung auch umfasst:

- ein erstes Gabelbeinmesser (21), das eine Schneidkante (21') hat, deren Kontur im Wesentlichen der Außenkontur des kompletten Gabelbeins entspricht, um das Gabelbein oder das Teil des Gabelbeins, das vorhanden ist, vom Karkassenteil (1) auf der Seite loszuschneiden, die der Rückseite des Karkassenteils (1) zugewandt ist, welches erste Gabelbeinmesser (21) dazu ausgelegt ist, entlang einer Seite des Blocks in das Karkassenteil (1) eingeführt zu werden.

19. Vorrichtung nach Anspruch 18, die auch mindestens zwei zweite Gabelbeinmesser (31) umfasst, die dazu ausgelegt sind, entlang jeder Seite des Blocks, vorzugsweise im Wesentlichen senkrecht zum ersten Gabelbeinmesser (21), in das Karkassenteil (1) eingeführt zu werden, wobei die zweiten Gabelbeinmesser (31) im Wesentlichen der Außenkontur des kompletten Gabelbeins folgen und dazu ausgelegt sind, das Gabelbein oder das Teil des Gabelbeins, das vorhanden ist, vom Karkassenteil (1) so loszuschneiden, dass das Gabelbein oder das Teil des Gabelbeins, das vorhanden ist, zwischen dem

Block, dem ersten Gabelbeinmesser (21) und den zweiten Gabelbeinmessern (31) eingeschlossen ist, welche Vorrichtung dazu ausgelegt ist, den Block, das erste Gabelbeinmesser (21) und die zweiten Gabelbeinmesser (31) zusammen aus dem Karkassenteil (1) so herauszuziehen, dass das Gabelbein oder das Teil des Gabelbeins, das vorhanden ist, zwischen dem Block, dem ersten Gabelbeinmesser (21) und den zweiten Gabelbeinmessern (31) eingeschlossen bleibt, so dass das Gabelbein oder das Teil des Gabelbeins, das vorhanden ist, zusammen mit dem Block, dem ersten Gabelbeinmesser (21) und den zweiten Gabelbeinmessern (31) aus dem Karkassenteil (1) entfernt wird.

20. Vorrichtung nach einem der Ansprüche 18 bis 19, wobei das erste Gabelbeinmesser (21) Flügelgeleitenpositionierungsflächen (22) umfasst.

21. Vorrichtung nach einem der Ansprüche 18 bis 20, wobei das erste Gabelbeinmesser (21) zumindest teilweise breiter ist als die Außenkontur des kompletten Gabelbeins.

22. Vorrichtung nach einem der Ansprüche 18 bis 21, wobei das erste Gabelbeinmesser (21) dazu ausgelegt ist, bis in die unmittelbare Nähe der Flügeloberfläche zu schneiden.

23. Vorrichtung nach einem der Ansprüche 18 bis 22, wobei die Vorrichtung darüber hinaus eine Drucklufteinrichtung umfasst, um das Gabelbein oder das Teil des Gabelbeins, das vorhanden ist, aus dem Block zu entfernen.

24. Vorrichtung nach einem der Ansprüche 18 bis 23, wobei die Vorrichtung darüber hinaus eine Einrichtung umfasst, um die Halsöffnung freizumachen, bevor das erste Gabelbeinmesser (21) eingeführt wird, oder allgemeiner, eine Einrichtung, um die Halsöffnung freizumachen, bevor ein Arbeitsablauf am Gabelbein oder dem Teil von diesem, das vorhanden ist, durchgeführt wird.

25. Vorrichtung nach einem der Ansprüche 18 bis 24, wobei die Vorrichtung darüber hinaus eine Einrichtung zum Entfernen von Haut und/oder Kropffett und/oder anderem Gewebe umfasst.

26. Vorrichtung nach einem der Ansprüche 18 bis 25, wobei die Vorrichtung in einer Revolvermaschine untergebracht ist.

27. Verfahren nach einem der Ansprüche 10 bis 17, wobei, nachdem das Karkassenteil (1) am Produktträger (2) angebracht und fixiert wurde, alle Flügelteile, die vorhanden sind, gestreckt werden.

28. Verfahren nach einem der Ansprüche 10 bis 17 und/oder 27, wobei sämtliche Reste der Halshaut und/oder des Kropffetts entfernt werden.
29. Verfahren nach einem der Ansprüche 10 bis 17 und/oder 27 bis 28, wobei der Produktträger (2) durch einen Kettenförderer entlang seines Wegs vorgeführt wird, wobei sich der Produktträger immer unter dem Kettenförderer befindet.
30. Verfahren nach einem der Ansprüche 10 bis 17 und/oder 27 bis 29, wobei der Produktträger (2) in die optimale Ausrichtung für jeden Verarbeitungsschritt in Bezug auf die Vorrichtung verschwenkt wird, mit der der Verarbeitungsschritt ausgeführt wird.

Revendications

1. Procédé pour traiter une partie de carcasse de volaille abattue, laquelle partie de carcasse (1) comprend au moins une partie d'une cage thoracique, dont la viande est naturellement présente sur ladite cage thoracique, une ouverture de cou et une articulation d'aile, la partie de carcasse (1) ayant un intérieur, lequel procédé comprend les étapes suivantes consistant à :
- appliquer et fixer la partie de carcasse (1) sur un support de produit (2), lequel support de produit (2) est mobile et lequel support de produit (2) met en prise l'intérieur de la partie de carcasse (1), déplacer un élément de positionnement d'articulation d'aile (21) via ladite ouverture de cou dans l'intérieur de la partie de carcasse (1), l'élément de positionnement d'articulation d'aile (21) étant prévu avec une ou plusieurs surfaces de positionnement d'articulation d'aile (22) qui sont agencées de sorte que, dans une position définie de l'élément de positionnement d'articulation d'aile (21) par rapport à la partie de carcasse (1), les surfaces de positionnement d'articulation d'aile (22) maintiennent ladite articulation d'aile dans une position prédéterminée, exercer une pression interne sur la partie de carcasse, de sorte que ladite articulation d'aile est supportée dans la position prédéterminée par une surface de positionnement d'articulation d'aile (22), lesquelles étapes sont réalisées dans une tourelle.
2. Procédé selon la revendication 1, dans lequel, à la place de ou en plus de la pression interne sur la partie de carcasse, on applique une pression externe sur la partie de carcasse (1).

3. Procédé selon l'une quelconque des revendications précédentes, dans lequel la partie de carcasse (1) comprend également au moins une partie d'une fourchette, **caractérisé en ce que** :

le procédé comprend en outre l'étape consistant à détacher par découpe la fourchette au moins partiellement des autres parties de la partie de carcasse en utilisant un élément de positionnement d'articulation d'aile (21) qui est prévu avec des bords de coupe (21') appropriés.

4. Procédé selon l'une quelconque des revendications précédentes, dans lequel la partie de carcasse (1) comprend des résidus de peau de cou, **caractérisé en ce que** lesdits résidus de peau de cou sont retirés.

5. Procédé selon l'une quelconque des revendications précédentes, dans lequel l'ouverture de cou est dégagée avant l'introduction de l'élément de positionnement d'articulation d'aile (21).

6. Tourelle comprenant un dispositif pour traiter une partie de carcasse (1) de volaille abattue, laquelle partie de carcasse (1) comprend au moins une partie d'une cage thoracique, dont la viande est naturellement présente sur ladite cage thoracique, une ouverture de cou et une articulation d'aile, la partie de carcasse (1) ayant un intérieur, lequel dispositif comprend :

un support de produit (2) pour supporter et retenir la partie de carcasse, lequel support de produit (2) est conçu pour se déplacer le long d'une trajectoire, et lequel support de produit (2) est adapté pour mettre en prise l'intérieur de la partie de carcasse (1), un élément de positionnement d'articulation d'aile (21) qui est conçu pour être introduit dans la partie de carcasse (1) via ladite ouverture de cou,

caractérisée en ce que l'élément de positionnement d'articulation d'aile (21) est prévu avec une ou plusieurs surfaces de positionnement d'articulation d'aile (22) qui sont agencées de sorte que, dans une position définie de l'élément de positionnement d'articulation d'aile (21) par rapport à la partie de carcasse (1), les surfaces de positionnement d'articulation d'aile (22) maintiennent ladite articulation d'aile dans une position prédéterminée, lesquelles surfaces de positionnement d'articulation d'aile (22) sont adaptées pour exercer une pression interne sur la partie de carcasse, de sorte que ladite articulation d'aile est supportée dans la position prédéterminée par une surface de positionnement d'articulation d'aile (22).

7. Tourelle selon la revendication 6, dans laquelle le dispositif comprend en outre des moyens d'exercice de pression (23) pour appliquer une pression externe sur la partie de carcasse (1) au lieu de ou en plus de la pression interne des surfaces de positionnement d'articulation d'aile (22), de sorte que ladite articulation d'aile est supportée par une surface de positionnement d'articulation d'aile (22) de l'élément de positionnement d'articulation d'aile (21), avec le résultat que ladite articulation d'aile est déplacée dans la position prédéterminée.

8. Tourelle selon la revendication 6 ou 7, dans laquelle la partie de carcasse comprend au moins une partie de la fourchette, et l'élément de positionnement d'articulation d'aile (21) comprend un bord de coupe (21') pour détacher par découpe la fourchette au moins partiellement d'une autre partie de la partie de carcasse (1).

9. Tourelle selon l'une quelconque des revendications 6 à 8, dans laquelle le dispositif comprend en outre des moyens pour retirer les résidus de la peau du cou de la partie de carcasse à traiter.

10. Procédé pour traiter une partie de carcasse de volaille abattue, laquelle partie de carcasse (1) comprend au moins une partie d'une cage thoracique, dont la viande est naturellement présente sur ladite cage thoracique, une ouverture de cou et une partie de la fourchette, lequel procédé comprend les étapes suivantes consistant à :

appliquer et fixer la partie de carcasse (1) sur un support de produit (2), lequel support de produit (2) est mobile le long d'une trajectoire et lequel support de produit (2) se met en prise sur l'intérieur de la partie de carcasse (1), déplacer un bloc dans la partie de carcasse (1) en passant par l'ouverture de cou de la partie de carcasse (1), lequel bloc a un évidement pour recevoir la fourchette ou cette partie de ce dernier qui est présente, et lequel bloc est agencé entre deux membres de la fourchette ou entre les emplacements dans lesquels lesdits membres sont positionnés si tout la fourchette est présent, détacher par découpe la fourchette ou cette partie de ce dernier qui est présente, de la partie de carcasse (1) sur le côté faisant face au côté arrière de la partie de carcasse en introduisant une première lame de fourchette (21) le long d'un côté du bloc, la première lame de fourchette ayant un bord de coupe, dont le contour correspond sensiblement au contour externe de tout la fourchette.

11. Procédé selon la revendication 10, comprenant en outre les étapes suivantes consistant à :

introduire deux deuxièmes lames de fourchette (31) dans la partie de carcasse (1) de chaque côté le long du bloc, de préférence de manière sensiblement perpendiculaire à la première lame de fourchette (21), les deuxièmes lames de fourchette (31) suivant sensiblement le contour externe de tout la fourchette, et détachant par découpe la fourchette ou cette partie de ce dernier qui est présente, de la partie de carcasse (1), de sorte que la fourchette ou cette partie de ce dernier qui est présente, est enfermé(e) entre le bloc, la première lame de fourchette (21) et les deuxièmes lames de fourchette (31), retirer le bloc, la première lame de fourchette (21) et les deuxièmes lames de fourchette (31) ensemble, hors de la trajectoire de carcasse, de sorte que la fourchette ou cette partie de ce dernier qui est présente, reste enfermé(e) entre le bloc, la première lame de fourchette (2) et les deuxièmes lames de fourchette (31) et est ainsi retiré(e) de la partie de carcasse.

12. Procédé selon l'une quelconque des revendications 10 à 11, dans lequel on utilise une première lame de fourchette (21) qui est prévue avec les surfaces de positionnement d'articulation d'aile (22).

13. Procédé selon l'une quelconque des revendications 10 à 12, dans lequel on utilise une première lame de fourchette (21) qui, au moins en partie, est plus large que le contour externe de la fourchette complet.

14. Procédé selon l'une quelconque des revendications 10 à 13, dans lequel on utilise une première lame de fourchette (21) qui est conçue pour couper tout le long jusqu'à proximité immédiate de la surface d'aile.

15. Procédé selon l'une quelconque des revendications 10 à 14, dans lequel, après que la fourchette ou cette partie de ce dernier qui est présente a été retiré(e) de la partie de carcasse (1), on utilise de l'air comprimé pour retirer la fourchette ou cette partie de ce dernier qui est présente, du bloc.

16. Procédé selon l'une quelconque des revendications 10 à 15, dans lequel l'ouverture de cou est dégagée avant l'introduction de la première lame de fourchette (21), ou plus généralement l'ouverture de cou est dégagée avant de réaliser une opération sur la fourchette ou une partie de ce dernier qui est présente.

17. Procédé selon l'une quelconque des revendications 10 à 16, dans lequel le procédé comprend en outre un retrait de peau et/ou de graisse de jabot et/ou d'un autre tissu.

18. Dispositif pour traiter une partie de carcasse de volaille abattue, laquelle partie de carcasse (1) comprend au moins une partie d'une cage thoracique, dont la viande est naturellement présente sur ladite cage thoracique, une ouverture de cou et une partie de la fourchette, la partie de carcasse (1) ayant un intérieur, lequel dispositif comprend :

- un support de produit (2) pour supporter et retenir la partie de carcasse (1), lequel support de produit (2) est conçu pour se déplacer le long d'une trajectoire et peut de préférence pivoter dans une pluralité de plans par rapport à cette trajectoire, lequel support de produit (2) est adapté pour mettre en prise l'intérieur de la partie de carcasse,
- un bloc qui est conçu pour être déplacé à travers l'ouverture de cou dans la partie de carcasse jusqu'à ce qu'il soit positionné entre les deux membres de la fourchette ou entre les emplacements dans lesquels ces membres sont positionnés si tout la fourchette est présent, lequel bloc a un évidement pour recevoir la fourchette ou cette partie de la fourchette qui est présente,

caractérisé en ce que le dispositif comprend en outre :

- une première lame de fourchette (21), qui a un bord de coupe (21') dont le contour correspond sensiblement au contour externe de tout la fourchette pour détacher par découpe la fourchette ou cette partie de la fourchette qui est présente, de la partie de carcasse (1) sur le côté faisant face au côté arrière de la partie de carcasse (1), laquelle première lame de fourchette (21) est conçue pour être introduite dans la partie de carcasse (1) le long d'un côté du bloc.

19. Dispositif selon la revendication 18, lequel dispositif comprend en outre au moins deux deuxièmes lames de fourchette (31) qui sont conçues pour être introduites dans la partie de carcasse (1) le long de chaque côté du bloc, de préférence de manière sensiblement perpendiculaire à la première lame de fourchette (21), les deuxièmes lames de fourchette (31) suivant sensiblement le contour externe de tout la fourchette, et étant conçues pour détacher par découpe la fourchette ou cette partie de la fourchette qui est présente, de la partie de carcasse (1), de sorte que la fourchette ou cette partie de la fourchette qui est présente, est enfermée(e) entre le bloc, la première lame de fourchette (21) et les deuxièmes lames de fourchette (31), lequel dispositif est conçu pour retirer le bloc, la première lame de fourchette (21) et les deuxièmes lames de fourchette (31) ensemble, hors de la partie de carcasse (1) de sorte que la fourchette ou cette

partie de la fourchette qui est présente, reste enfermée(e) entre le bloc, la première lame de fourchette (21) et les deuxièmes lames de fourchette (31), de sorte que la fourchette ou cette partie de la fourchette qui est présente, est retiré(e) de la partie de carcasse (1) conjointement avec le bloc, la première lame de fourchette (21) et les deuxièmes lames de fourchette (31).

20. Dispositif selon l'une quelconque des revendications 18 à 19, dans lequel la première lame de fourchette (21) comprend des surfaces de positionnement d'articulation d'aile (22).
21. Dispositif selon l'une quelconque des revendications 18 à 20, dans lequel la première lame de fourchette (21) est au moins partiellement plus large que le contour externe de tout la fourchette.
22. Dispositif selon l'une quelconque des revendications 18 à 21, dans lequel la première lame de fourchette (21) est conçue pour couper jusqu'à proximité immédiate de la surface d'aile.
23. Dispositif selon l'une quelconque des revendications 18 à 22, dans lequel le dispositif comprend en outre des moyens d'air comprimé pour retirer la fourchette ou cette partie de la fourchette qui est présente, du bloc.
24. Dispositif selon l'une quelconque des revendications 18 à 23, dans lequel le dispositif comprend en outre des moyens pour dégager l'ouverture de cou avant l'introduction de la première lame de fourchette (21), ou plus généralement des moyens pour dégager l'ouverture de cou avant de réaliser une opération sur la fourchette ou une partie de ce dernier qui est présente.
25. Dispositif selon l'une quelconque des revendications 18 à 24, dans lequel le dispositif comprend en outre des moyens pour retirer la peau et/ou la graisse du jabot et/ou un autre tissu.
26. Dispositif selon l'une quelconque des revendications 18 à 25, dans lequel le dispositif est logé dans une tourelle.
27. Procédé selon l'une quelconque des revendications 10 à 17, dans lequel après que la partie de carcasse (1) a été appliquée et fixée sur le support de produit (2), on étire l'une quelconque des parties d'aile qui est présente.
28. Procédé selon l'une quelconque des revendications 10 à 17 et/ou 27, dans lequel tous les résidus de la peau du cou et/ou de la graisse du jabot sont retirés.

29. Procédé selon l'une quelconque des revendications 10 à 17 et/ou 27 à 28, dans lequel le support de produit (2) est avancé le long de sa trajectoire grâce à un convoyeur à chaîne, avec le support de produit toujours positionné au-dessous du convoyeur à chaîne. 5

30. Procédé selon l'une quelconque des revendications 10 à 17 et/ou 27 à 29, dans lequel le support de produit (2) est positionné dans l'orientation optimale pour chaque étape de traitement par rapport au dispositif avec lequel l'étape de traitement est réalisée. 10

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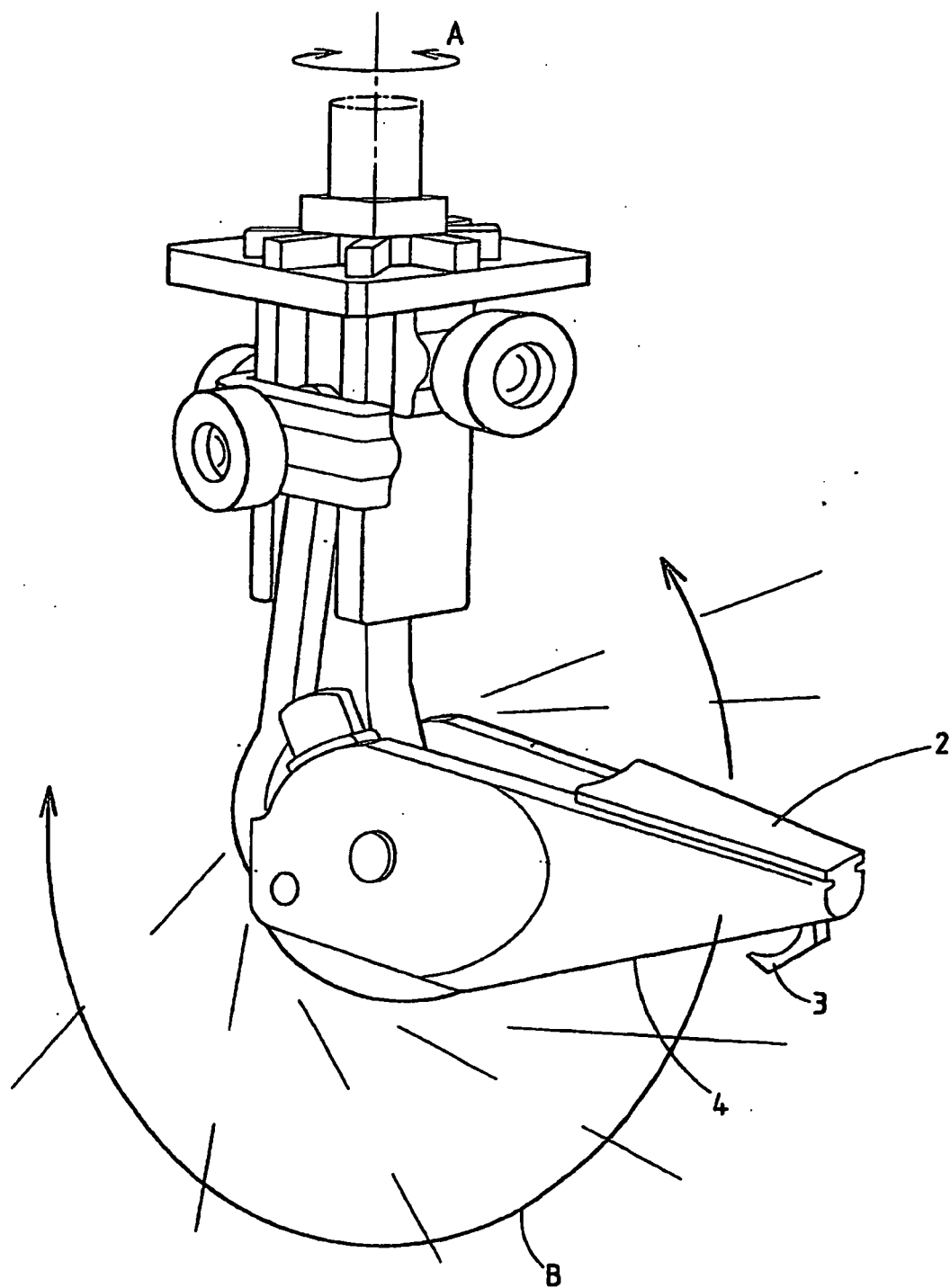
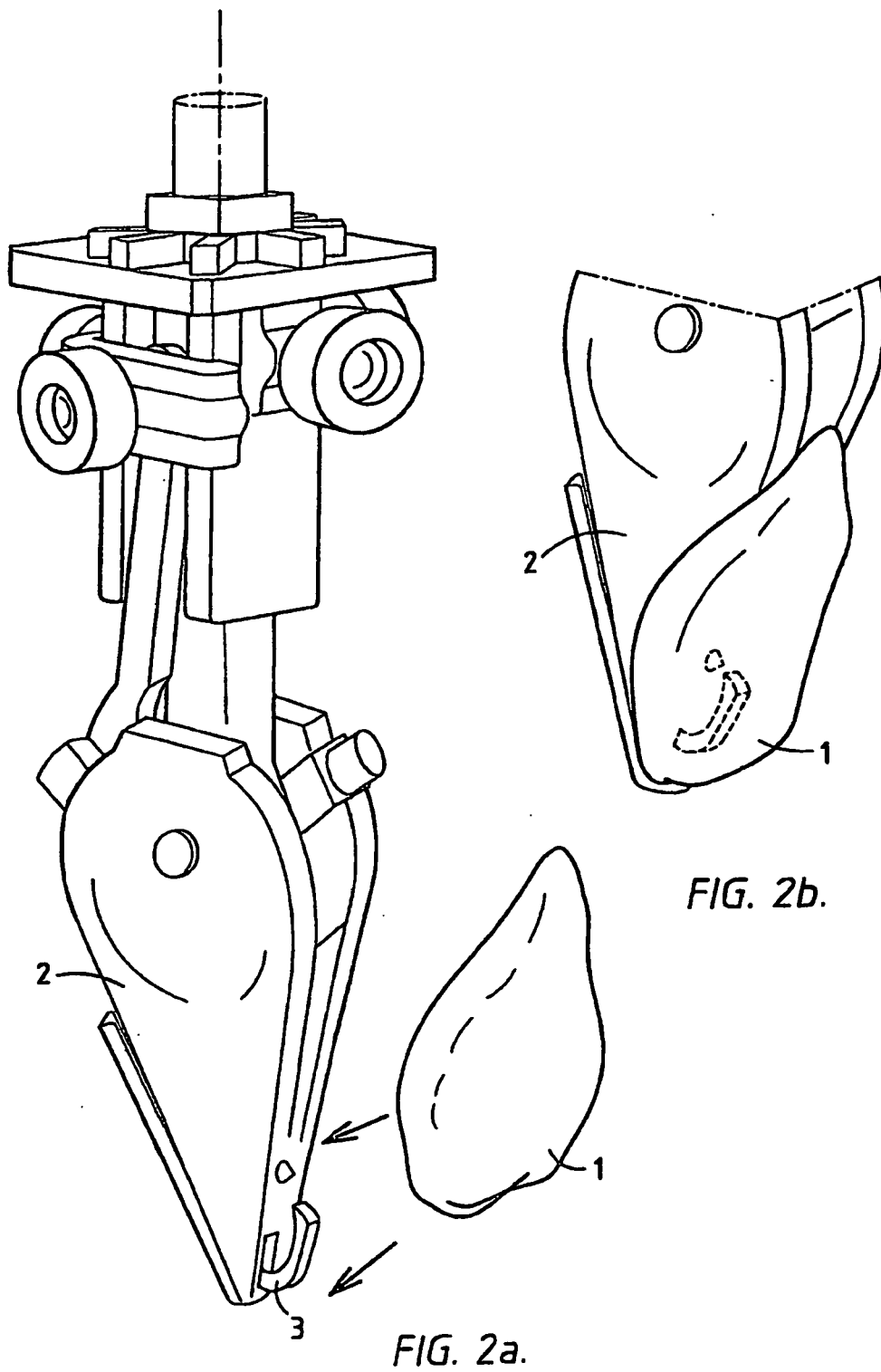


FIG. 1:



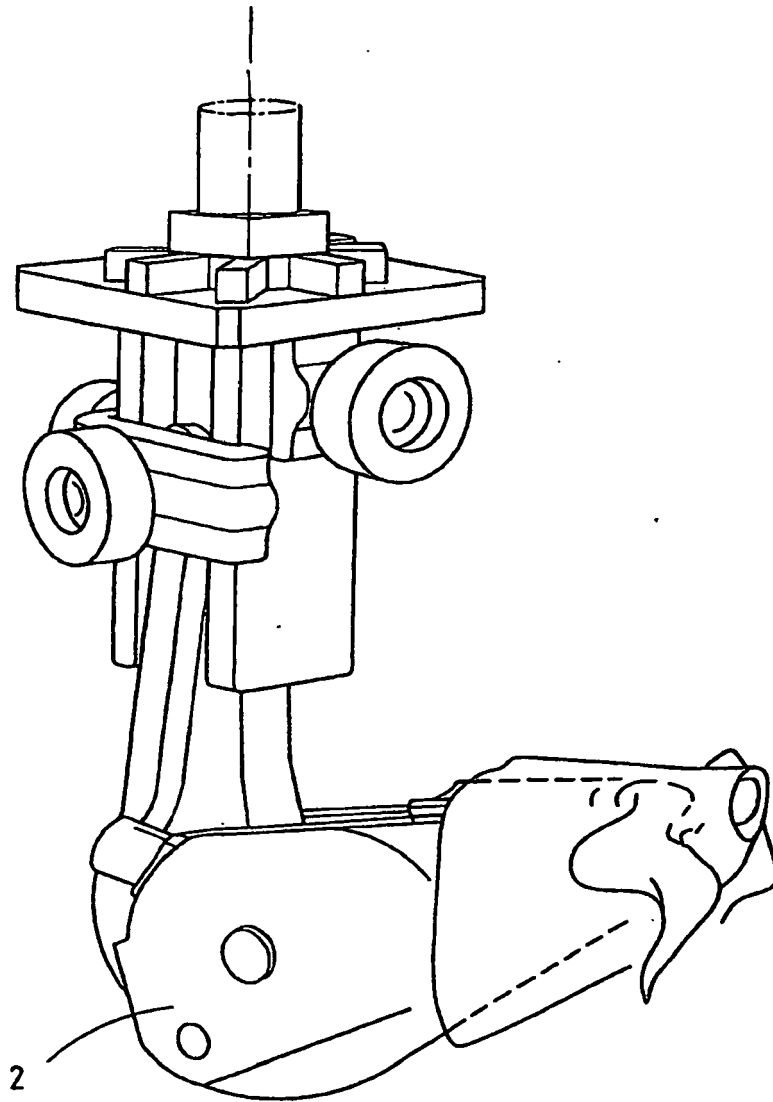


FIG. 2c

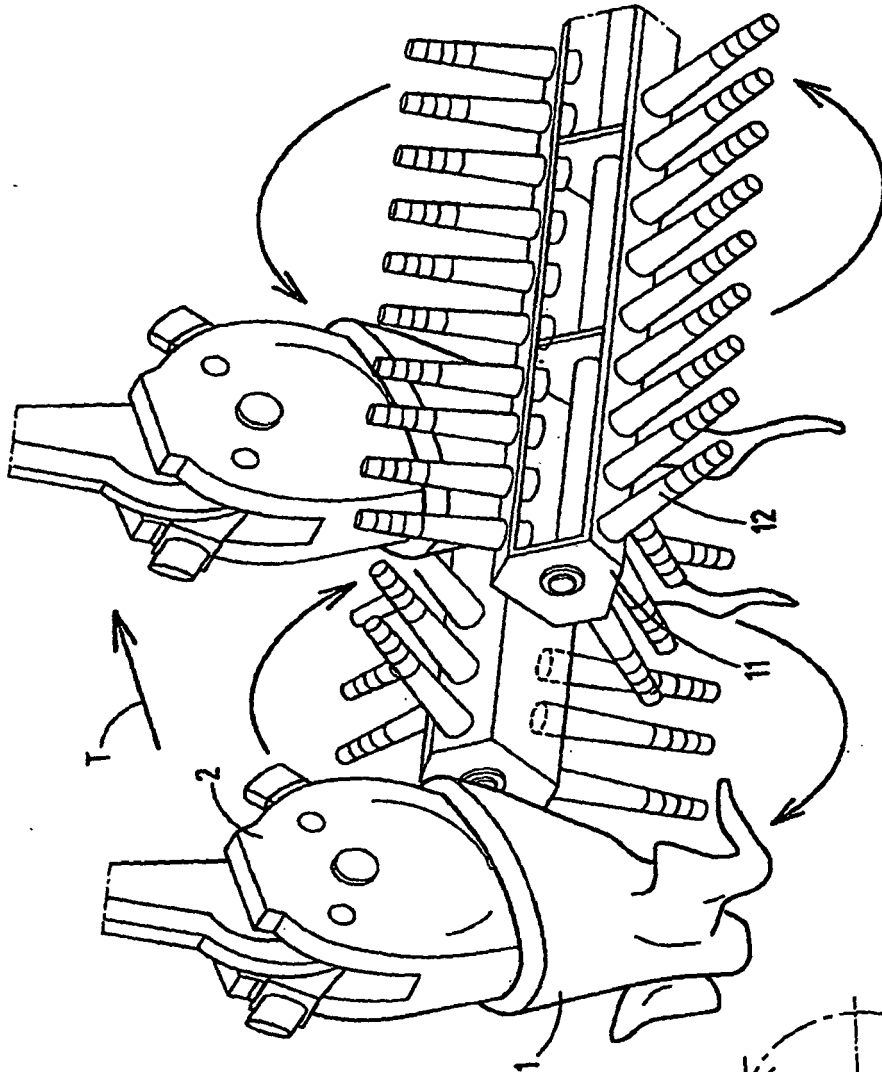


FIG. 3a.

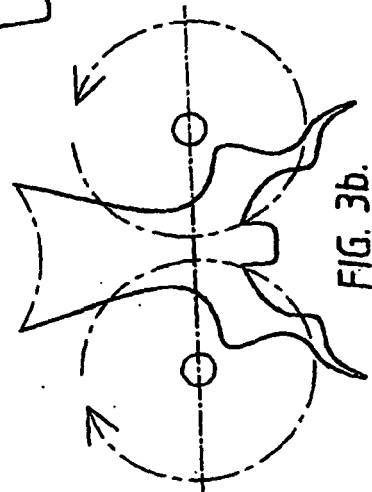


FIG. 3b.

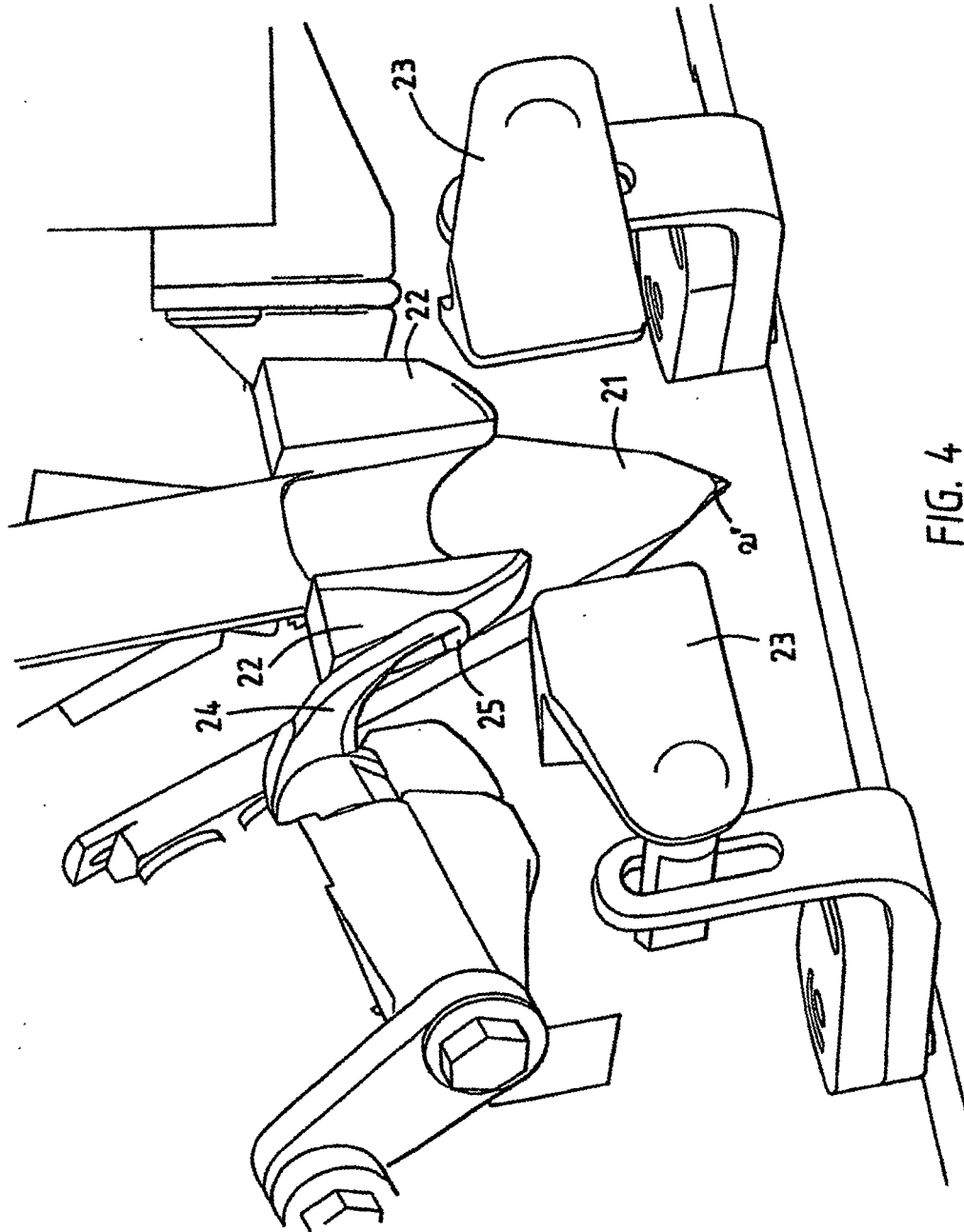
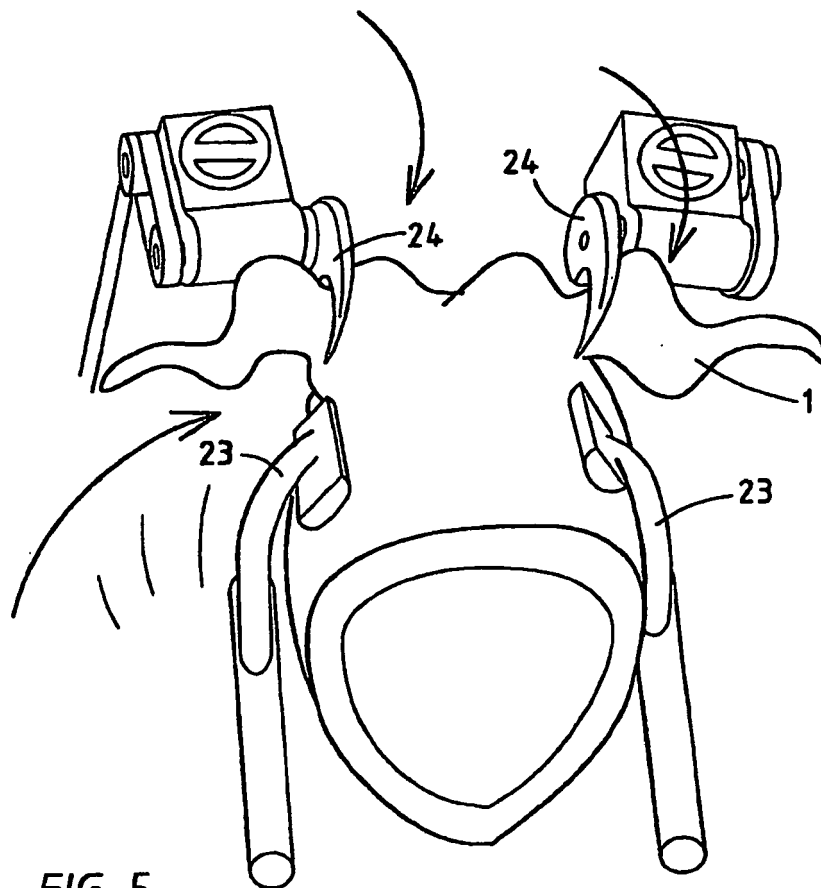
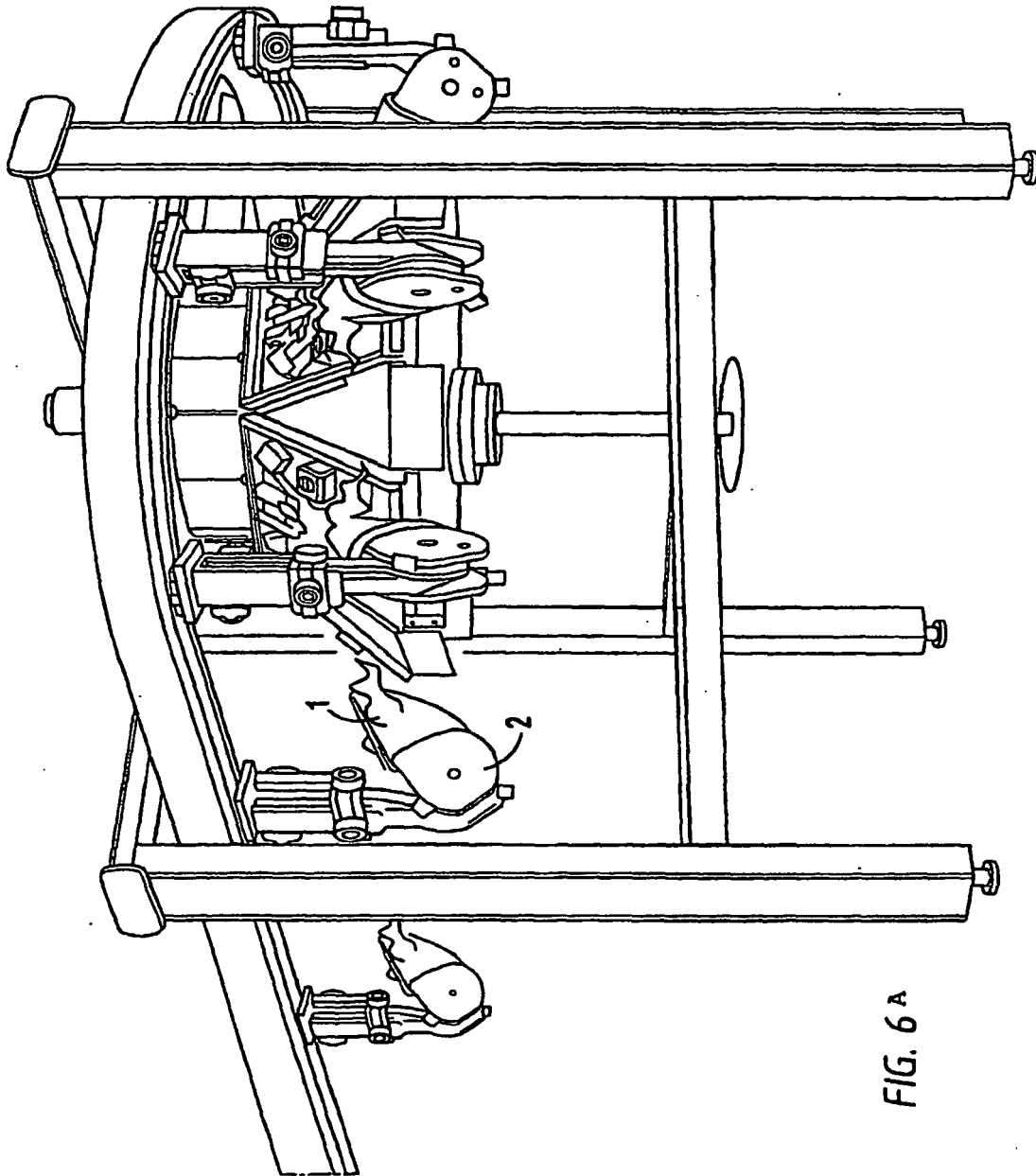


FIG. 4





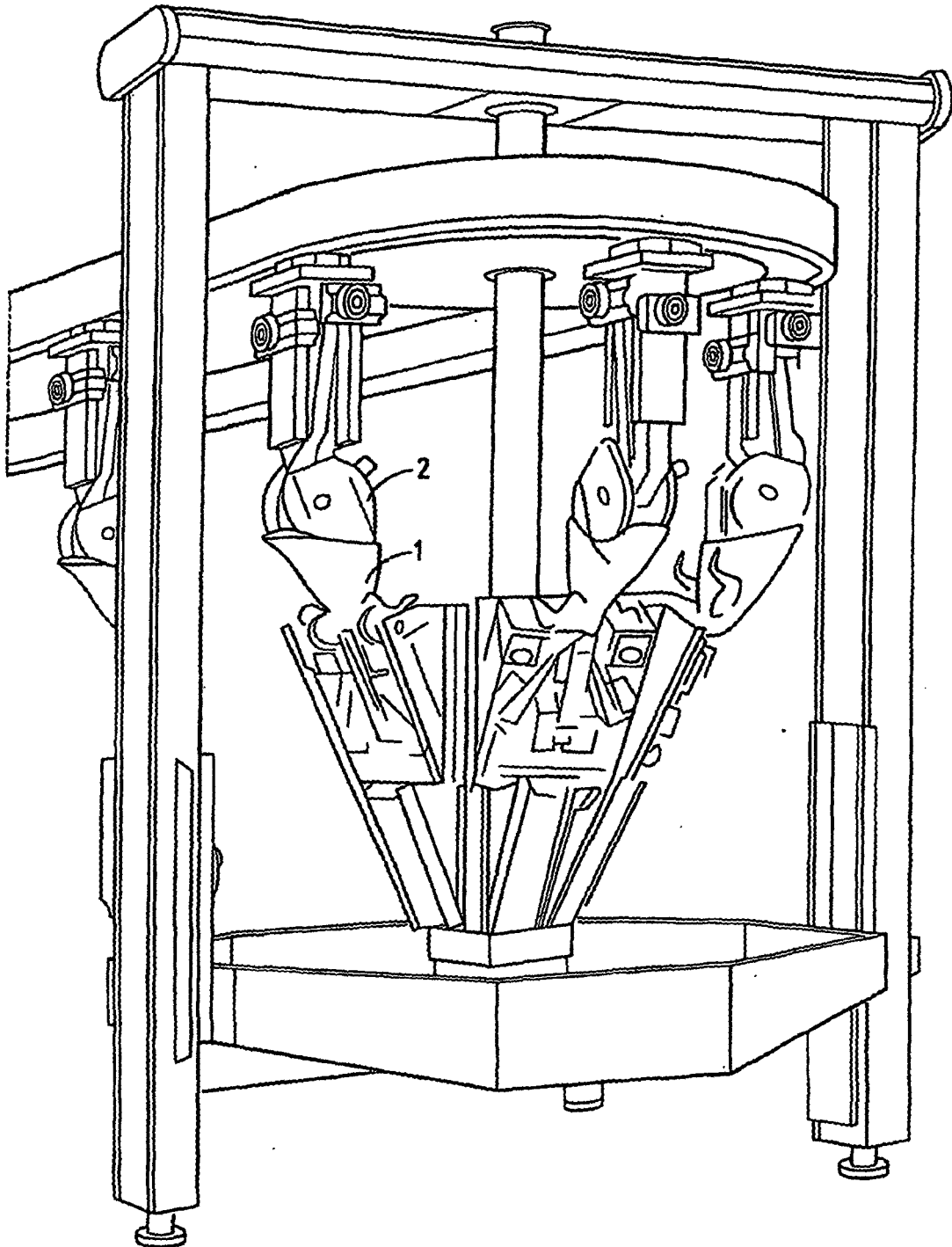


FIG. 6B

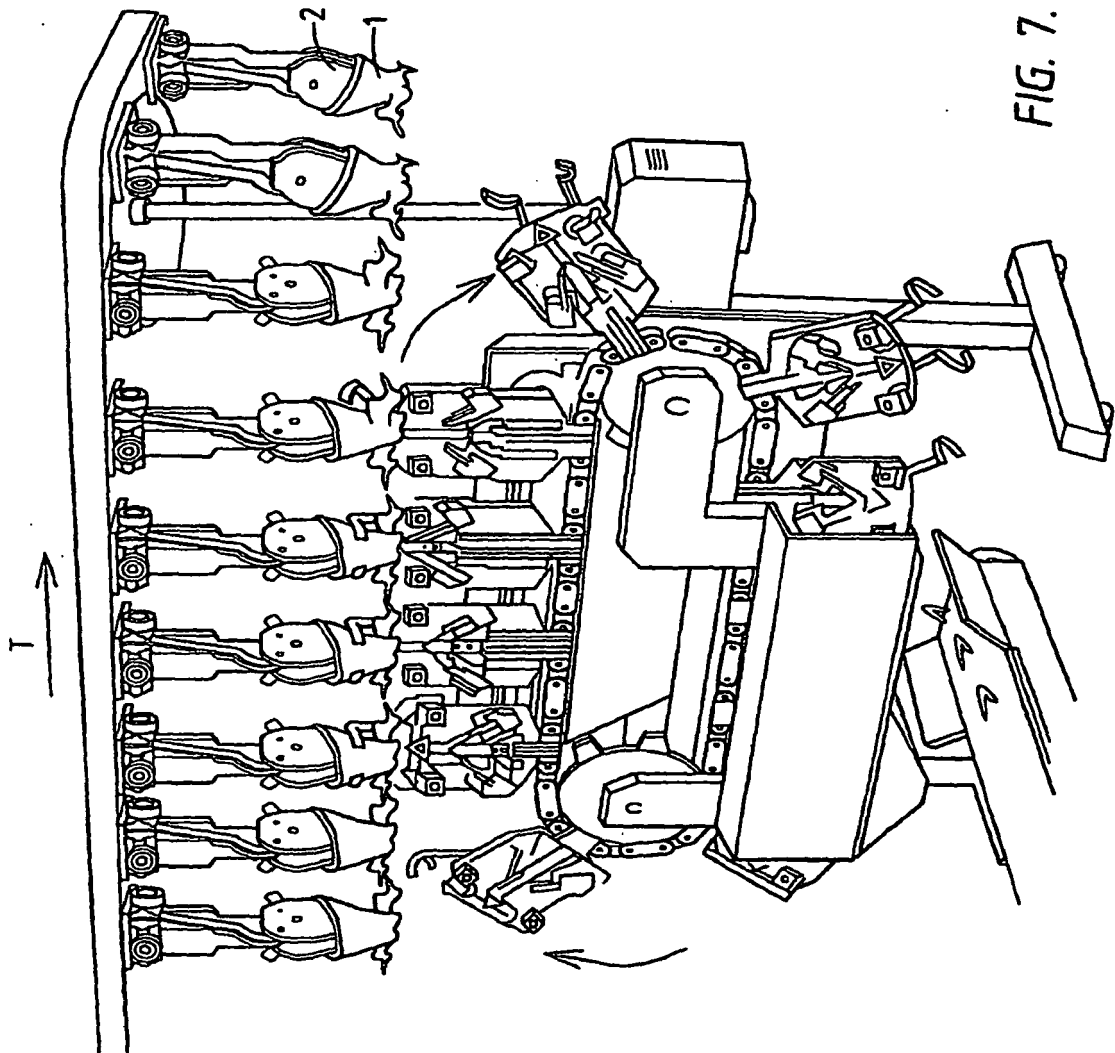


FIG. 7.

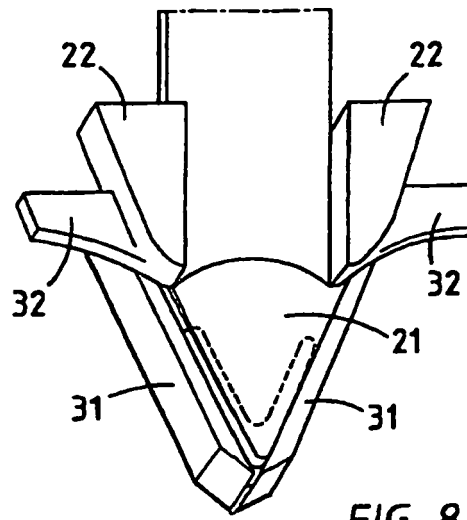


FIG. 8

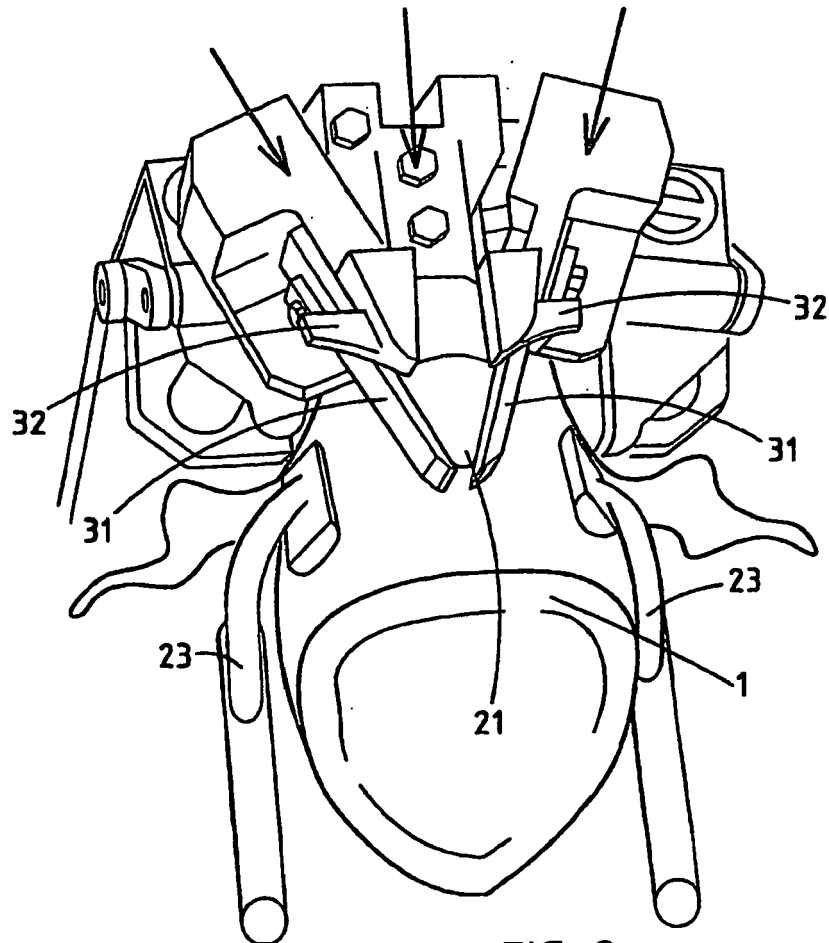


FIG. 9

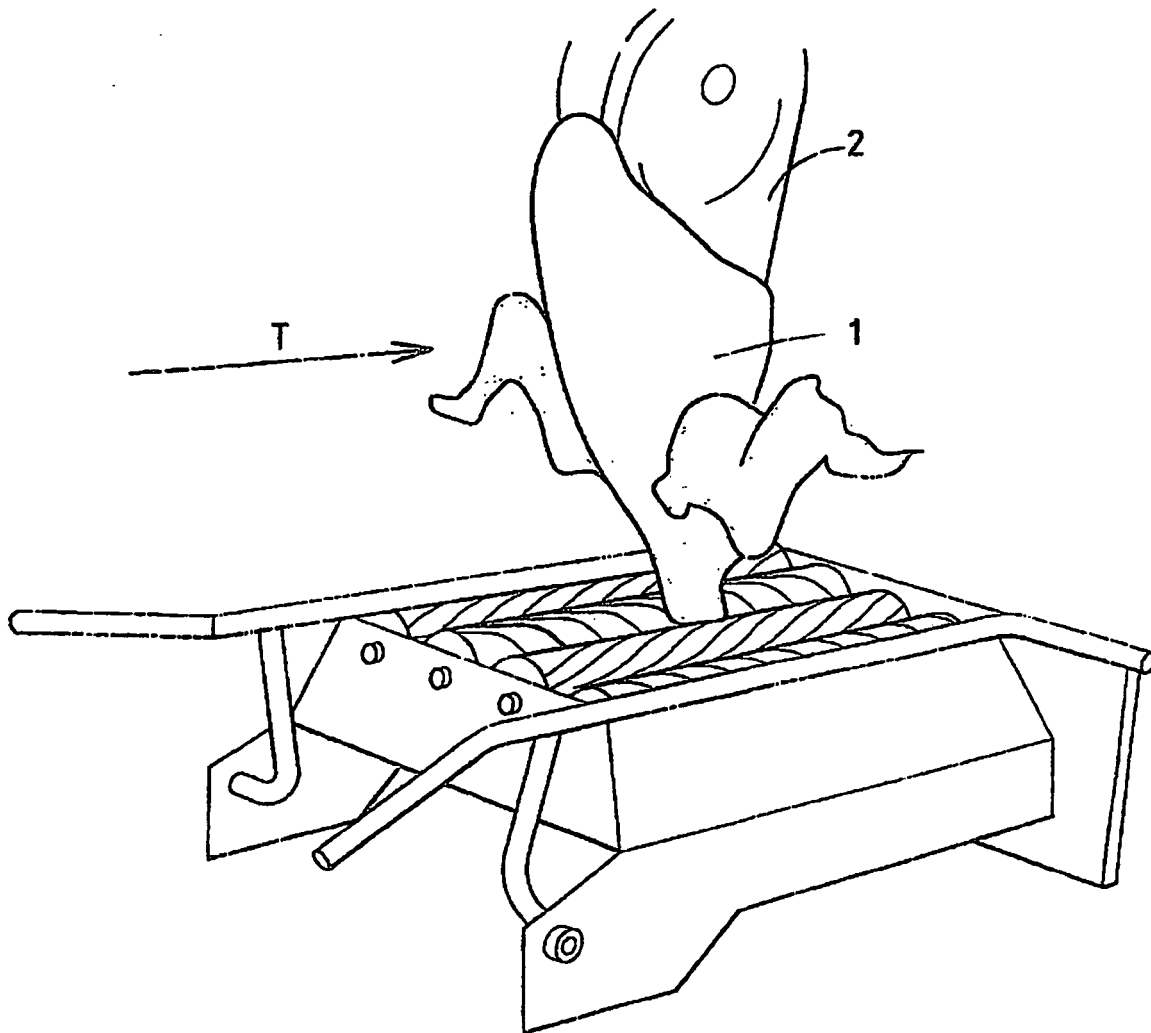


FIG. 10

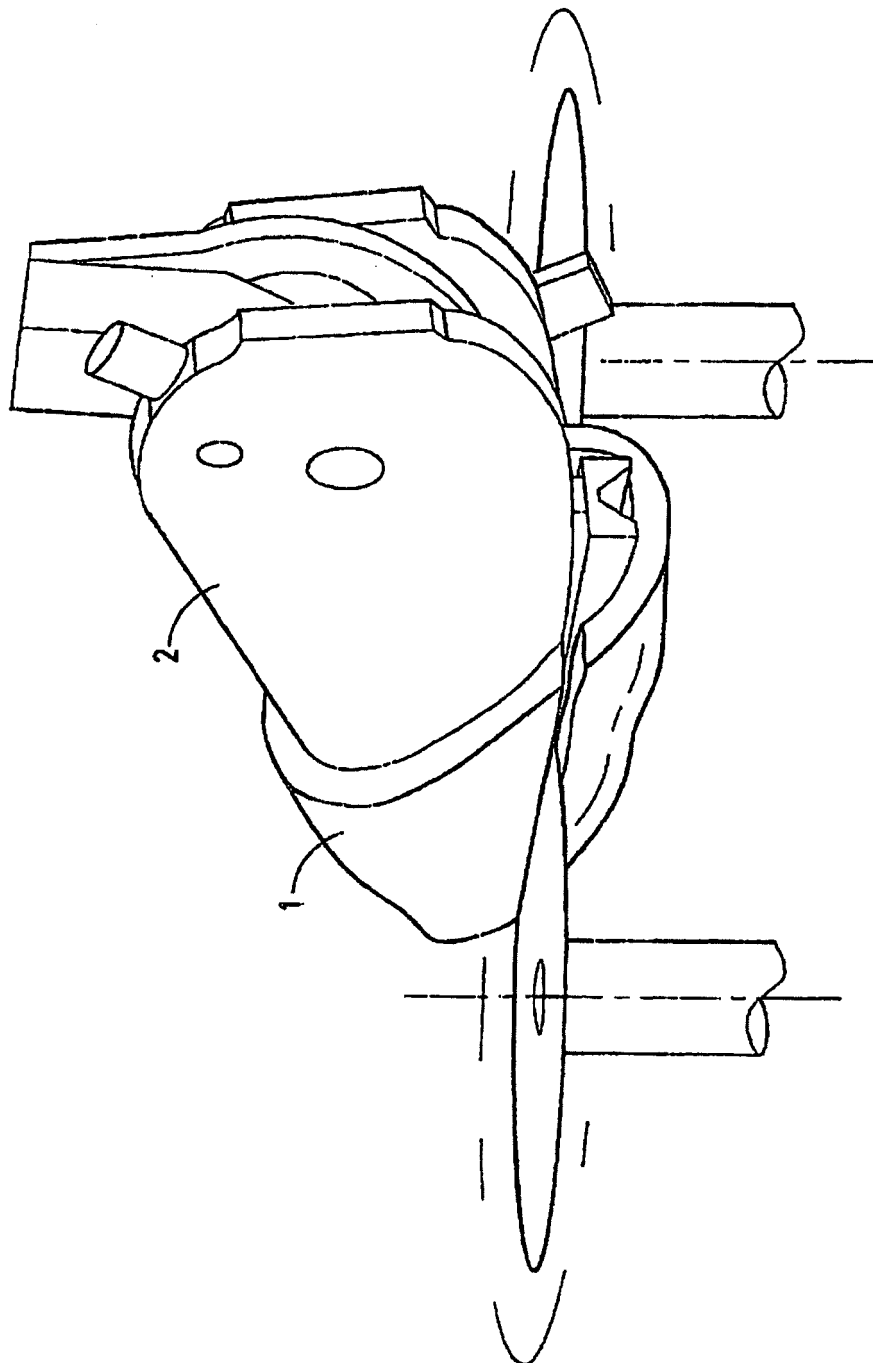


FIG. 14

REFERENCES CITED IN THE DESCRIPTION

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