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(54) **Skinner for poultry carcasses**

Verfahren und Vorrichtung zum Enthäuten von Geflügelkarkassen

Procédé et dispositif pour dépouiller des carcasses de volailles

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Description

[0001] The invention relates to a device for processing poultry carcasses or parts thereof, preferably breast parts or breast caps and the like.

[0002] In general such a device comprises a conveyor for conveying the carcasses or parts thereof past various processing installations. To that end the conveyor comprises supports for retaining the carcasses or parts thereof, and means for leading the supports along a supply direction past the processing installations. Additionally such a device may comprise a skinner for skinning the carcasses or parts thereof.

[0003] Generally, such (automated) skinners for poultry are known. These devices are then provided with skin gripping means that are stationary with respect to the carcass.

[0004] For instance, US-A-5.197.917 describes a skinner having two rollers rotating in opposite directions having an engaging toothing, which rollers during skinning are stationary with respect to the leg to be skinned. The carcass parts such as legs are laid on a rotating disc having holes. The disc each time rotates on so that the next hole with carcass part gets in front of the skinner. A drawback of such known stationary skin gripping means is that in general the skin cannot be detached as a whole from the poultry. As a result residues of skin may be left or the entire skin may be left. Membranes situated between the skin and the meat may also be left. In other cases the meat can get damaged during skinning.

[0005] US-A-4.856.143 endeavours to solve these problems by means of a skinner provided with two straight circle cones rotating in opposite directions having engaging teeth as skin gripping means. The skin gripping line of the cones is parallel to the supply direction. By means of a sensor the level of the cones prior to skinning can be adjusted to a certain degree. During skinning the skin gripping line further is stationary with respect to the carcass. Amongst others because of the increasing speed between the cones the skin might be broken, and it may occur that the skin is not pulled off all round as a whole from the carcass. Moreover the back membrane will not be removed.

[0006] An object of the invention is to at least partially improve on this.

[0007] To that end the invention provides a device according to claim 1.

[0008] Because the skinner is provided with means for moving the skin gripping means relatively with respect to the carcass and substantially perpendicular to the supply direction, the possibility is created to remove the skin undamaged and as a whole from the carcass in a quick and reliable manner. As a result the skinner is particularly suitable to be used in industrial processing lines.

[0009] A better and more reliable skinning is achieved when the skin gripping means define a skin gripping line that is transversal to the supply direction. It is preferred here that the conveyor is provided with vertical supports. The support here lies in the plane of symmetry of the carcass.

[0010] In order to grip the skin well and reliably, independent of the shape and size of the carcass, the skinner is provided with pressing means for pressing the skin gripping means on the carcass or a part thereof. This can be done even more easily when the skinner is provided with means for moving the skin gripping means towards the carcass.

[0011] In order to be able to grip carcasses of various sizes, and to be able to pull off the skin from the carcass well, the skinner comprises an arm substantially perpendicular to the supply direction, that is provided with skin gripping means. Preferably the arm at its one end is provided with a rotary shaft about which the arm can rotate, and at the other side is provided with skin gripping means that can be moved along the arm. For pressing the skin gripping means against the carcass well, the arm is extended, preferably past the point of rotation, so that a lever is created. The point of rotation can now lie both underneath and above the carcass. By providing the extended arm with pressing means the arm provided with skin gripping means can be moved towards the carcass. As a result a large flexibility as to types and sizes of carcasses that can be skinned is realised.

[0012] Preferably the skin gripping means comprise two rollers rotating opposite to and, considered from the carcass, towards each other. Because of such rollers the skin can be gripped in a reliable manner. Moreover the distance between the carcass and the point where the skin is gripped can remain small because the skin can be wound around one of either rollers. In this case preferably only one of either roller comprises means for its driving. The other roller can rotate along freely. As a result there is less chance of damage to the skin.

[0013] The rollers have been positioned with respect to each other for gripping the skin and retaining it.

[0014] In order to prevent the skin from slipping out of between the rollers or from not being engaged, the rollers have been provided with a skin gripping surface. Preferably the rollers have been provided with corrugations in the longitudinal direction, preferably a planar toothing. The toothings preferably are staggered half a pitch with respect to each other and then engage a little, though not completely, one into the other. Preferably one of the rollers, preferably a non-driven roller, comprises a middle portion that is provided with a corrugated surface all round, and outsides or ends having a diameter smaller than the middle portion, which preferably is not provided with corrugations or is smooth. As a result damage to the sides if the skin is prevented, which appeared to be very advantageous for skinning all round.

[0015] In order to remove the skin from the skinner after skinning, it preferably is provided with discharge means for the skin. Such discharge means for simple and reliable discharge comprise means for moving one

of either roller past its axis of rotation.

[0016] Such means may comprise an ejection plate, perpendicular to the longitudinal axis of both rollers, in which the first roller is attached to the ejection plate, and the ejection plate is provided with a hole for sliding over the second roller, in which the ejection plate is provided with means for moving the ejection plate to a discharge position from an inactive position to the outside over and perpendicular to the axis of rotation of the second roller. As a result the skin is ejected to the sides so that a reliable discharge is realised and the skin does not end up in the device where the skin may cause pollution or failure.

[0017] Preferably the means for moving the skin gripping means perpendicular to the supply direction are in connection to the means for having the rollers rotate. More preferably the means for moving the skin gripping means perpendicular to the supply direction rotate at least one of the rollers. As a result a simple and reliable structure is created.

[0018] Preferably the device comprises a rail parallel to the supply direction, onto which the skinner is movably attached. As a result the skinner can run along with the supports and the carcass during skinning, because of which there is no delay in the processing line.

[0019] In order to press the skinner against the carcass well and to be able to coordinate the various actions well the device comprises at least one sensor for locating the supports with respect to the skinner. Additionally the skinner comprises at least one sensor for locating the skin gripping means on the skinner, preferably at least one sensor for detecting whether the skin gripping means are situated near the tip of the carcass, where the skin gripping means have to start gripping the skin.

[0020] The invention further relates to a method for skinning poultry carcasses or parts thereof, particularly chicken, in which skin gripping means grip the skin at one side of the carcass, and the skin gripping means are moved past the carcass in a pull-off direction of the skin, in which the skin is pulled substantially perpendicular to the carcass at the location where the skin becomes detached from the carcass. Preferably the skin is pulled in the direction of the breastbone from the lower side of the tip of the breastbone to the upper side of the breastbone.

[0021] Preferably the skin gripping means comprise rollers that are pressed against the carcass, at least one of either roller being rotated so that the skin is gripped between the rollers, after which the rollers are moved past the carcass in the pull-off direction of the skin while the rollers rotate in opposite direction, clamping the skin in between them and winding it around one of the rollers.

[0022] By using the rollers the chance that the skin gets damaged and the carcass is not completely skinned is considerably reduced.

[0023] Preferably after reaching the other side of the carcass the skinner is moved relatively with respect to the carcass opposite to the supply direction, pulling the skin off from the other side of the carcass, after which the skin can be slid from the rollers. The other side is the side that faces away from the skinner when the skinning is started. In that way the carcass can be skinned all round.

[0024] Because the skinner runs on with respect to the carcass the skin at the back side, namely the side opposite the side where the skinning was started, is also pulled off from the carcass.

[0025] The invention also relates to a device for processing poultry carcasses or parts thereof, comprising a conveyor comprising supports for retaining the carcasses or parts thereof, which conveyor is provided with means for leading the supports in a supply direction past processing installations, in which the device comprises a skinner for skinning the carcasses or parts thereof, which skinner is provided with an arm perpendicular to the supply direction provided with skin gripping means for gripping the skin.

[0026] The invention moreover relates to a device for processing poultry carcasses or parts thereof, comprising a conveyor comprising supports for retaining the carcasses or parts thereof, which conveyor is provided with means for leading the supports past processing installations, in which the device comprises a skinner for skinning the carcasses or parts thereof, which skinner comprises skin gripping means and is provided with means for moving the skin gripping means in a plane of symmetry of the carcass. Preferably the skin gripping means can be moved in the plane of symmetry of the carcass and past the carcass. As a result the tension on the skin during skinning appears to be reduced and the possibility of tearing decreases.

[0027] Additionally the invention relates to a device for processing poultry carcasses or parts thereof, comprising a conveyor comprising supports for retaining the carcasses or parts thereof, which conveyor is provided with means for leading the supports past processing installations, in which the device comprises a skinner for skinning the carcasses or parts thereof, which skinner comprises skin gripping means and discharge means for ejecting the skin from the skin gripping means. As a result the skin can be removed quickly and the skinner is quickly ready again for use, and no blockage occurs.

[0028] The invention further relates to a device for processing poultry carcasses or parts thereof, comprising a conveyor comprising supports for retaining the carcasses or parts thereof, which conveyor is provided with means for leading the supports past processing installations, in which the device comprises a skinner for skinning the carcasses or parts thereof, which skinner comprises skin gripping means, which skin gripping means have a skin gripping line that is perpendicular to the supply direction. Preferably the skin gripping line is substantially perpendicular to the plane of symmetry of the carcass. As a result the skin can be removed well from the carcass.

[0029] The invention also relates to a device for processing poultry carcasses or parts thereof, comprising a conveyor comprising supports for retaining the carcasses or parts thereof, which conveyor is provided with means for leading the supports past processing installations, in which the device comprises a skinner for skinning the carcasses or parts thereof, which skinner comprises skin gripping means, which skin gripping means comprise two clamping rollers rotatable in opposite directions, in which the skinner comprises means for moving the rollers which means are also a means for rotating at least one of the rollers.

[0030] As a result a simple and failure-free structure is possible.

[0031] The skinner is particularly efficient for skinning carcasses and breast cap on an industrial scale of carcasses and parts thereof in which a breast cap is present. The skinner then comprises means for moving the skin gripping means past the breastbone. The measures mentioned can be combined one and the other as a result a skinner is created which very advantageously can be used on an industrial scale, particularly in a processing line such as in a straight slaughtering line, which is operationally reliable and fast.

[0032] Some embodiments of the invention have been shown in the figures as an elucidation thereof, in which:

Figure 1 shows a side view of a part of the device having a skinner,

Figure 2 shows a front view of the skin gripping means,

Figure 2A shows a side view according to line IIA of the rollers,

Figure 3 shows the skin discharge means,

Figure 4A shows a front view during skinning,

Figure 4B shows a rear view during skinning,

Figure 4C shows a front view of the final stage of skinning,

Figure 5 shows an alternative embodiment.

[0033] Figure 1 shows a part of a device 1 according to the invention. Such a device among others comprises a conveyor 2 having supports 3 movably attached thereon. In the figure a vertical upright support 3 is shown. The conveyor 2 is provided with means (not shown) to move the supports 3 along the supply direction A. On the supports 3 means (not shown) are present to retain the carcass 4. Such a support 3 is for instance described in US-A-5.951.393. On the support 3 a breast/back portion of a carcass 4 of for instance a chicken has been secured. In this case 4a is the chest tip, 4b the neck side, 4c the back side and 4d the breast side.

[0034] The skinner 5 is provided with a frame x. The frame x can be moved along a rail 23 in a direction A and a direction opposite to it by means of means that are not shown. To the frame x a movable arm 10b extending downward, has been attached, rotatable about shaft 11, with on arm 10b a holder 8 to which skin gripping means 6 have been attached (in the figure at the hidden side: the skin gripping means have been shown in figures 2-4C). The holder 8 is upwardly and downwardly movable in the direction B by means of pneumatic cylinder 30, and piston rod 31. In the figure the holder 8 slides over slide bars 26.

[0035] The arm 10b is extended by arm 10a. Arm 10b and 10a form a lever with rotary shaft 11, substantially perpendicular to the supply direction A. To frame x a pneumatic cylinder 9a has also been attached with piston rod 9 which presses against arm 10a. The lever 10a, b and pneumatic cylinder 9 with piston rod 9 form means 7 for moving the skin gripping means 6 forward and backward, towards the carcass 4 and against the carcass 4. By maintaining a constant pressure in the pneumatic cylinder a constant pressing force can be maintained. It is of course also possible to reverse the arrangement, that means selecting the point of rotation of the lever underneath the carcass, and arranging the skin gripping means on the upper arm. In connection with possible pollution the arrangement mentioned first is to be preferred.

[0036] Figure 2 shows a front view of the skinner 5. A carcass 4 moves with a support 3 to the skinner in the supply direction A. The skin gripping means are formed here by a first lower roller 12 and a second upper roller 13. The line where the surfaces of the rollers approach each other closest is indicated in the figure as the skin gripping line G. The rollers are circle cylindrical. The (in this case) lower roller 12 is provided with corrugations, along the shaft direction of the roller over the entire length of the roller and the upper roller 13 is only provided with a corrugated portion in a middle area 14, with corrugations in the longitudinal direction of the roller. The ends 13a are smooth and not provided with corrugations. By providing one of the rollers with a corrugated portion in the middle area 14 only, it is prevented that the skin is crushed at the bent portions of the carcass: when the skin is damaged at the edges there is the possibility that the skin is not completely removed from the sides of the carcass.

[0037] In figure 1 and 2 the holder 8, which during skinning can be moved in the direction B perpendicular to the supply direction A, is shown. As the supports 3 have been placed straight up, this means that in this case the skin gripping means move up and down, perpendicular to the supply direction A and parallel to the plane of symmetry S of the carcass. The holder 8 is moved up and down by the pneumatic cylinder 30 and piston rod 31. The entire holder with the skin gripping

means here slides over both slide rods 26 on either side of a rack 15. The lower roller 12 is connected to a toothed wheel (in holder 8, not shown). During moving the holder 8 with skin gripping means 6 up and down, said toothed wheel runs over rack 15 and the toothed wheel and the rack 15 form a pinion rack assembly that drives roller 12 in rotation. As a result, the means for moving the skin gripping means up and down also ensure the rotation of roller 12.

[0038] In figure 2A a side view of the two rollers 12 and 13 can be seen, in which the direction of rotation with respect to the carcass 4 has been indicated. It can clearly be seen that the corrugations have a level toothing and are staggered at half a pitch. The teeth engage into each other, but not entirely so as not to damage or tear the skin. The roller 13 is thus also driven by roller 12.

[0039] In figure 3 the discharge means 16 can be seen in detail, shown in the position in which the skin has been ejected. By means of the discharge means the skin that has been pulled off can be very quickly removed to the side from the skinner 5. In the figure an ejection plate 17 is shown provided with a hole 19, because of which the ejection plate 17 is slidable over the lower roller 12. The ejection plate 17 here is attached to the housing for the driving means 8 by means of bars 18 that are able to slide through the housing.

[0040] Additionally a driving rod 20 is shown because of which the plate 17 can be reciprocally moved between a retracted position and a discharge position. The upper roller 13 provided with the corrugated middle portion 14 can then either be attached to the ejection plate 17 in a manner in which the roller is able to rotate freely. It is also possible that the roller is provided with a guidance as a result of which the roller can slide over the driving rod 20 and in which the roller at the end is provided with retaining means as a result of which the roller 13 in the most extreme position is retained at the end of the driving rod 20. The roller 13 preferably is arranged in a free-rotating manner.

[0041] The ejection plate is driven by a gas pressure or pneumatic cylinder 21 that is connected to the driving rod 20, the piston rod of the pneumatic cylinder.

[0042] Figure 4a, 4b and 4c show a front and rear view and consecutive stages of the skinning of the method according to the invention. In the initial position the roller are situated near the point of rotation 11 of figure 1. In the position of figure 2 it could be seen that the rollers 12 and 13 were pressed against the carcass, at the tip side of the carcass. To that end the gripping means were moved downward along the carcass to roughen the skin a little already and possibly loosening it from the carcass. During these movements, and even during the entire skinning procedure the supports on the conveyor run on regularly. A sensor detects when the holder has reached the lower side of the arm 10b. Relatively the skinner first approaches the supports and to that end moves for instance counter to the supply direction and, when the skin gripping means have reached the carcass, assumes the speed and direction of movement of the carcass.

[0043] After the sensor has detected that the skinner has reached the lower side of the arm 10b, the skin gripping means are moved towards the carcass by means of means for moving the skin gripping means 6 forward and backward and are pressed against the carcass 4: the pneumatic cylinder 9 is pressurised because of which the arm 10a moves into the supply direction and arm 10b moves counter to the supply direction. The skin gripping means grip the skin at the lower side of the carcass, at the tip, while the skinner 5 as a whole moves along with the support 3.

[0044] One (12) of the rollers is then brought immediately in rotation by moving the holder 8 upward, as a result of which the skin is gripped between the two rollers of the skin gripping means 6. The roller 13 is driven via the tooth engagement with roller 12. The rollers here rotate in opposite directions with respect to each other, but towards the gripping line G: the rollers therefore are squeezing. Subsequently the rollers are moved upward to the position as shown in figure 4a, while the rollers rotate in opposite directions with respect to each other and as a result grip the skin between the corrugated portions. Also because the upper roller 13 is somewhat resilient in rotation the skin will not tear when passing between the toothings. When going upward into the position as shown in figure 4a the skin, together with the various membranes, is pulled off from the meat so that the bare meat is left. As a result of simultaneous rotation of the rollers and the upward movement, the skin is always approximately perpendicularly pulled off or lifted from the meat. Also the distance between the point where the skin becomes detached from the meat and the point where the skin is clamped is approximately equal to the radius of the rollers. As a result the chance of tearing the skin is reduced.

[0045] Arrived at the top in the position of figure 4a the along-going movement of the skinner stops and the support 3 runs on regularly. As a result the skin is pulled over the top side of the carcass portion as shown in figure 4b. The skin gripping means formed by the rollers here firmly hold the skin and because the support now moves away from the skinner, the skin is pulled off from the carcass. This is shown in figure 4c, where the support with carcass has passed the skinner and the skinner keeps holding the skin between the rollers so that skin together with the breast membrane is also pulled off from the back side of the carcass. As a result a completely skinned carcass is left without skin residues. Moreover, the meat is not damaged. Because of the movement of the rollers combined with the rotation of the rollers the skin is pulled off from the meat almost perpendicularly as a result of which the skinning takes place in a reliable manner.

[0046] When the carcass has been moved a certain distance from the skinner and the skin has therefore become entirely detached from the carcass, the discharge

means, shown in detail in figure 3 that has already been discussed, are activated. The gas cylinder 21 will eject the plate 17 over the lower roller and the upper roller will move along with the ejection plate. As a result the skin is slid from the lower roller and the skin is ejected sideward. After ejection the plate 17 will return to the original position and the two rollers will be positioned above and against each other again.

[0047] Figure 5 shows a device provided with a skinner in which 3 skinners as described above have been coupled to each other. As a result 3 carcasses can be simultaneously skinned after which the whole is moved counter to the direction of the carcasses, to the next 3 carcasses. As a result a very quick processing is possible. In the figure it can clearly be seen that the skinner has been mounted on a rail 23 as a result of which the entire skinner can be moved with respect to the conveyor 2. As a result the skinner will first move towards the carcass, subsequently be pressed against the carcass by the pressing means 9, while the skinner moves along with the carcasses, subsequently the skin gripping means will be moved upwards and at the top of the carcass as a result of which the skin is pulled off from the front of the carcass. Subsequently the skinner will stand still with respect to the carcasses or not move along less quickly with the carcasses as a result of which the skin is pulled off from the entire carcass. Subsequently the skin is ejected and the skinner starts moving back and takes the next 3 carcasses for treatment.

Claims

1. Device (1) for processing poultry carcasses (4) or parts thereof, comprising a conveyor (2) comprising supports (3) for retaining the carcasses or parts thereof, which conveyor is provided with means for leading the supports in a supply direction (A) past at least one processing installation, in which the device comprises a skinner (5) for skinning the carcasses or parts thereof, which skinner comprises skin gripping means (6) **characterised in that** said skinner is provided with means for moving the skin gripping means in a plane of symmetry (5) of the carcass, and **in that** said skin gripping means define a skin gripping line (G) which is substantially perpendicular to the plane of symetry of the carcass during skinning.

2. Device according to claim 1, in which the skin gripping line is transversal to the supply direction (A).

3. Device according to claim 1 or 2, in which the conveyor is provided with vertical supports.

4. Device according to one or more of the preceding claims, in which the skinner is provided with pressing means (7) for pressing the skin gripping means on the carcass or a part thereof.

5. Device according to one or more of the preceding claims, in which the skinner is provided with means (7) for moving the skin gripping means towards the carcass.

6. Device according to one or more of the preceding claims, in which the skinner comprises an arm (10a, 10b) substantially perpendicular to the supply direction, that is provided with skin gripping means.

7. Device according to one or more of the preceding claims, in which the skin gripping means comprise two rollers (12,13) rotating opposite to and considered from the carcass towards each other, which rollers have preferably been provided with a skin gripping surface.

8. Device according to claim 7, in which only one of either roller comprises means for its driving, in which preferably said roller drives the other roller.

9. Device according to claim 7 or 8, in which the rollers have been positioned with respect to each other for gripping the skin and retaining it.

10. Device according to any one of the claims 7-9, in which the rollers have been provided with corrugations in the longitudinal direction, preferably a planar toothing, in which the toothing preferably is staggered and engages a little, though not completely, one into the other.

11. Device according to claim 10, in which one of the rollers, preferably a non-driven roller, comprises a middle portion which is provided with a corrugated surface all round, and outsides having a diameter smaller than the middle portion.

12. Device according to any one of the claims 7-11, in which the supports are adapted for retaining the carcasses upright, and in which the rollers are horizontally oriented.

13. Device according to one or more of the preceding claims, provided with discharge means (16) for the skin, which preferably comprise means for moving one of either roller past its axis of rotation.

14. Device according to claim 13, in which the means comprise an ejection plate, perpendicular to the longitudinal axis of both rollers, in which the first roller is attached to the ejection plate (17), and the ejection plate is provided with a hole (19) for sliding over the second roller, in which the ejection plate is provided with means (8,18,20) for moving the ejection plate to a discharge position from an inactive posi-

tion to the outside over and perpendicular to the axis of rotation of the second roller.

15. Device according to claim 13 or 14, in which the means for moving the skin gripping means perpendicular to the supply direction are in connection to the means for rotating the rollers.

16. Device according to any one of the preceding claims, comprising a rail (23) parallel to the supply direction, onto which the skinner is movably attached.

17. Device according to any one of the preceding claims, comprising a sensor for locating the supports with respect to the skinner.

18. Device according to any one of the Claims 1 - 17, **characterized in that** said skin gripping means have a skin gripping line that is perpendicular to the supply direction.

19. Device according to any one of the Claims 1 - 18, **characterised in that** said skin gripping means comprise two squeezing rollers rotatable in opposite directions, in which the skinner comprises means for moving the rollers which means are also a means for rotating at least one of the rollers.

20. Device according to any one of the preceding claims, **characterised in that** said skinner is provided with means for moving the skin gripping means relatively with respect to the carcass and substantially perpendicular to the supply direction during skinning.

21. Method for skinning poultry carcasses, or parts thereof, particularly chicken in a device according to any one of the preceding claims, **characterised in that** said skin gripping means grip the skin at one side of the carcass, and the skin gripping means are moved past the carcass in a pull-off direction of the skin, in which the skin is pulled substantially perpendicular to the carcass at the location where the skin becomes detached from the carcass.

22. Method according to claim 21, in which the skin gripping means comprise rollers that are pressed against the carcass, at least one of either roller being rotated so that the skin is gripped between the rollers, after which the rollers are moved past the carcass in the pull-off direction of the skin while the rollers rotate in opposite direction, clamping the skin in between them and winding it around one of the rollers.

23. Method according to claim 22, in which after reaching the other side of the carcass the skinner moves relatively with respect to the carcass opposite to the supply direction, pulling the skin off from the other side of the carcass, after which the skin is slid from the rollers.

24. Method according to any one of the claims 21-23, in which the skin gripping means grip the skin at the chest tip (4a) of the carcass, and the skin gripping means move along the back side (4d) of the carcass to the neck side (4b).

25. Method according to any one of the claims 21-24, in which the skin is ejected from the skin gripping means after the skin has become detached from the carcass.

Patentansprüche

1. Vorrichtung (1) zum Verarbeiten von Geflügelkarkassen (4) oder deren Teilen, umfassend einen Förderer (2) mit Stützen (3) zum Halten der Karkassen oder deren Teile, welcher Förderer mit Mitteln zum Führen der Stützen in einer Zufuhrrichtung (A) entlang zumindest einer Verarbeitungsvorrichtung versehen ist, wobei die Vorrichtung einen Enthäuter (5) zum Enthäuten der Karkassen oder deren Teile umfaßt, welcher Enthäuter Hautgreifmittel (6) umfaßt, **dadurch gekennzeichnet, daß** der Enthäuter mit Mitteln zum Bewegen der Hautgreifmittel in einer Symmetriefläche (5) der Karkasse versehen ist, und daß die Hautgreifmittel eine Hautgreiflinie (G) bestimmen, die während dem Enthäuten hauptsächlich senkrecht auf der Symmetriefläche der Karkasse ist.

2. Vorrichtung nach Anspruch 1, wobei die Hautgreiflinie quer zu der Zufuhrrichtung (A) ist.

3. Vorrichtung nach Anspruch 1 oder 2, wobei der Förderer mit Vertikalstützen versehen ist.

4. Vorrichtung nach einem oder mehreren der vorhergehenden Ansprüche, wobei der Enthäuter mit Druckmitteln (7) zum Drücken der Hautgreifmittel auf der Karkasse oder einem Teil davon versehen ist.

5. Vorrichtung nach einem oder mehreren der vorhergehenden Ansprüche, wobei der Enthäuter mit Mitteln (7) zum zu der Karkasse Bewegen der Hautgreifmittel versehen ist.

6. Vorrichtung nach einem oder mehreren der vorhergehenden Ansprüche, wobei der Enthäuter einen Arm (10a, 10b), hauptsächlich senkrecht auf der Zufuhrrichtung, umfaßt, welcher mit Hautgreifmitteln versehen ist.

7. Vorrichtung nach einem oder mehreren der vorhergehenden Ansprüche, wobei die Hautgreifmittel zwei entgegengesetzt und von der Karkasse aus betrachtet zueinander drehende Rollen (12, 13) umfaßt, welche Rollen vorzugsweise mit einer Hautgreiffläche versehen sind.

8. Vorrichtung nach Anspruch 7, wobei nur eine der beiden Rollen Mittel zum Treiben davon umfaßt, wobei vorzugsweise diese Rolle die andere Rolle treibt.

9. Vorrichtung nach Anspruch 7 oder 8, wobei die Rollen bezüglich einander aufgestellt sind um die Haut zu greifen und zu halten.

10. Vorrichtung nach einem der Ansprüche 7-9, wobei die Rollen mit Riffeln in der Längsrichtung versehen sind, vorzugsweise einer flachen Verzahnung, wobei die Verzahnung vorzugsweise gestaffelt ist und einigermaßen, jedoch nicht völlig, ineinandergreift.

11. Vorrichtung nach Anspruch 10, wobei eine der Rollen, vorzugsweise eine nicht-getriebene Rolle, einen Mittelteil umfaßt, der rundum mit einer geriffelten Fläche versehen ist, und mit Außenseiten mit einem Diameter kleiner als der Mittelteil.

12. Vorrichtung nach einem der Ansprüche 7-11, wobei die Stützen angepasst sind, um die Karkassen aufrecht zu halten, und wobei die Rollen horizontal gerichtet sind.

13. Vorrichtung nach einem oder mehreren der vorhergehenden Ansprüche, mit Abgabemitteln (16) für die Haut versehen, die vorzugsweise Mittel zum entlang ihrer Drehachse Bewegen von einer der beiden Rollen umfassen.

14. Vorrichtung nach Anspruch 13, wobei die Mittel eine Auswerfplatte umfassen, senkrecht auf der Längsachse der beiden Rollen, wobei die erste Rolle auf der Auswerfplatte (17) befestigt ist, und die Auswerfplatte mit einem Loch (19) zum über die zweite Rolle Schieben versehen ist, wobei die Auswerfplatte mit Mitteln (8, 18, 20) zum aus einem Ruhestand nach außen über und senkrecht auf der Drehachse der zweiten Rolle zu einem Abgabestand Bewegen der Auswerfplatte versehen ist.

15. Vorrichtung nach Anspruch 13 oder 14, wobei die Mittel zum Bewegen der Hautgreifmittel senkrecht auf der Zufuhrrichtung mit Mitteln zum Drehen der Rollen in Verbindung stehen.

16. Vorrichtung nach einem der vorhergehenden Ansprüche, umfassend eine Schiene (23) parallel zu der Zufuhrrichtung, worauf der Enthäuter verschiebbar befestigt ist.

17. Vorrichtung nach einem der vorhergehenden Ansprüche, umfassend einen Sensor zum Lokalisieren der Stützen bezüglich des Enthäuters.

18. Vorrichtung nach einem der Ansprüche 1-17, **dadurch gekennzeichnet, daß** die Hautgreifmittel eine Hautgreiflinie senkrecht auf der Zufuhrrichtung haben.

19. Vorrichtung nach einem der Ansprüche 1-18, **dadurch gekennzeichnet, daß** die Hautgreifmittel zwei in entgegengesetzten Richtungen drehbare Preßrollen umfassen, wobei der Enthäuter Mittel zum Bewegen der Rollen umfaßt, welche Mittel zugleich ein Mittel zum Drehen von zumindest einer der Rollen sind.

20. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** der Enthäuter mit Mitteln zum relativ bezüglich der Karkasse und hauptsächlich senkrecht auf der Zufuhrrichtung Bewegen der Hautgreifmittel während dem Enthäuten, versehen ist.

21. Verfahren zum Enthäuten von Geflügelkarkassen oder deren Teilen, insbesondere Hühner, in einer Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** die Hautgreifmittel die Haut an einer Seite der Karkasse greifen, und die Hautgreifmittel entlang der Karkasse in einer Abziehrichtung der Haut bewogen werden, wobei die Haut hauptsächlich senkrecht auf der Karkasse an einer Trennstelle von der Karkasse gezogen wird.

22. Vorrichtung nach Anspruch 21, wobei die Hautgreifmittel gegen die Karkasse gedruckte Rollen umfassen, wobei zumindest eine der beiden Rollen derartig gedreht wird, daß die Haut zwischen den Rollen gegriffen wird, worauf die Rollen in der Abziehrichtung der Haut entlang der Karkasse bewogen werden, während die Rollen in entgegengesetzte Richtung drehen, wobei die Haut dazwischen geklemmt wird und um eine der Rollen gewickelt wird.

23. Verfahren nach Anspruch 22, wobei nach dem Erreichen der anderen Seite der Karkasse der Enthäuter relativ bezüglich der Karkasse gegenüber der Zufuhrrichtung bewegt, wobei die Haut von der anderen Seite der Karkasse abgezogen wird, worauf die Haut von den Rollen abgeschoben wird.

24. Verfahren nach einem der Ansprüche 21-23, wobei die Hautgreifmittel die Haut an dem Brustende (4a) der Karkasse greifen, und die Hautgreifmittel entlang der Hinterseite (4d) der Karkasse zu der Hals-

seite (4b) bewegen.

25. Verfahren nach einem der Ansprüche 21-24, wobei die Haut von den Hautgreifmitteln entfernt wird, nachdem die Haut von der Karkasse getrennt ist.

Revendications

1. Dispositif (1) pour traiter des carcasses de volaille (4) ou des parties de celles-ci, comportant un convoyeur (2) ayant des supports (3) pour retenir les carcasses ou les parties de celles-ci, lequel convoyeur est muni de moyens pour conduire les supports dans une direction d'alimentation (A), le long d'au moins une installation de traitement, le dispositif comportant un dispositif de dépouillement (5) pour dépouiller les carcasses ou les parties de celles-ci, lequel dispositif de dépouillement comporte des moyens de saisie de la peau (6), **caractérisé en ce que** ledit dispositif de dépouillement est muni de moyens pour déplacer les moyens de saisie de peau dans un plan de symétrie (S) de la carcasse, et **en ce que** lesdits moyens de saisie de peau définissent une ligne de saisie de la peau (G) qui est sensiblement perpendiculaire au plan de symétrie de la carcasse pendant qu'elle est dépouillée.

2. Dispositif selon la revendication 1, dans lequel la ligne de saisie de peau est transversale à la direction d'alimentation (A).

3. Dispositif selon la revendication 1 ou 2, dans lequel le convoyeur est muni de supports verticaux.

4. Dispositif selon une ou plusieurs des revendications précédentes, dans lequel le dispositif de dépouillement est muni de moyens de serrage (7) pour serrer les moyens de saisie de peau sur la carcasse ou une partie de celle-ci.

5. Dispositif selon une ou plusieurs des revendications précédentes, dans lequel le dispositif de dépouillement est muni de moyens (7) pour déplacer les moyens de saisie de peau vers la carcasse.

6. Dispositif selon une ou plusieurs des revendications précédentes, dans lequel le dispositif de dépouillement comporte un bras (10a, 10b) sensiblement perpendiculaire à la direction d'alimentation, qui est muni de moyens de saisie de peau.

7. Dispositif selon une ou plusieurs des revendications précédentes, dans lequel les moyens de saisie de peau comportent deux rouleaux (12, 13) tournant en sens opposés l'un par rapport à l'autre, et l'un vers l'autre du point de vue de la carcasse, lesquels rouleaux ont au préalable été munis d'une surface de saisie de la peau.

8. Dispositif selon la revendication 7, dans lequel un seul quelconque des deux rouleaux comporte des moyens pour son entraînement, dans lequel ledit rouleau entraîne de préférence l'autre rouleau.

9. Dispositif selon la revendication 7 ou 8, dans lequel les rouleaux ont été positionnés l'un par rapport à l'autre pour saisir la peau et la retenir.

10. Dispositif selon l'une quelconque des revendications 7 à 9, dans lequel les rouleaux ont été munis d'ondulations dans la direction longitudinale, de préférence une denture plane, les dentures étant de préférence étagées et pénétrant un peu, bien que pas complètement, l'une dans l'autre.

11. Dispositif selon la revendication 10, dans lequel l'un des rouleaux, de préférence un rouleau non entraîné, comporte une partie centrale qui est munie tout autour d'une surface ondulée et, à l'extérieur, possédant un diamètre plus petit que celui de la partie centrale.

12. Dispositif selon l'une quelconque des revendications 7 à 11, dans lequel les supports sont adaptés pour retenir les carcasses verticalement, et dans lequel les rouleaux sont orientés horizontalement.

13. Dispositif selon une ou plusieurs des revendications précédentes, muni de moyens (16) d'expulsion de la peau, qui comporte de préférence des moyens pour déplacer l'un ou l'autre des rouleaux en dehors de son axe de rotation.

14. Dispositif selon la revendication 13, dans lequel les moyens comportent une plaque d'éjection, perpendiculaire à l'axe longitudinal des deux rouleaux, dans lequel le premier rouleau est solidaire de la plaque d'éjection (17), et la plaque d'éjection est munie d'un trou (19) pour coulisser sur le second rouleau, la plaque d'éjection étant munie de moyens (8, 18, 20) pour déplacer la plaque d'éjection vers une position d'expulsion à partir d'une position inactive située à l'extérieur par-dessus l'axe de rotation du second rouleau et perpendiculairement à celui-ci.

15. Dispositif selon les revendications 13 ou 14, dans lequel les moyens pour déplacer les moyens de saisie de peau perpendiculairement à la direction d'alimentation sont en relation avec les moyens de mise en rotation des rouleaux.

16. Dispositif selon l'une quelconque des revendications précédentes, comportant un rail (23) parallèle à la direction d'alimentation, auquel l'organe de dé-

pouillement est solidarisé de manière amovible.

17. Dispositif selon l'une quelconque des revendications précédentes, comportant un capteur pour la localisation des supports par rapport au dispositif de dépouillement.

18. Dispositif selon l'une quelconque des revendications 1 à 17, **caractérisé en ce que** les moyens de saisie de peau ont une ligne de saisie de la peau qui est perpendiculaire à la direction d'alimentation.

19. Dispositif selon l'une quelconque des revendications 1 à 18, **caractérisé en ce que** les moyens de saisie de peau comportent deux rouleaux de compression rotatifs en sens opposés, le dispositif de dépouillement comportant des moyens pour déplacer les rouleaux, lesquels moyens sont également des moyens de mise en rotation d'au moins un des rouleaux.

20. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le dispositif de dépouillement est muni de moyens pour déplacer les moyens de saisie de peau de manière relative par rapport à la carcasse et sensiblement perpendiculairement à la direction d'alimentation pendant le dépouillement.

21. Procédé pour dépouiller des carcasses de volaille, ou des parties de celles-ci, en particuliers des poulets dans un dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdits moyens de saisie de peau saisissent la peau au niveau d'un coté de la carcasse, et les moyens de saisie de peau sont déplacés au-delà de la carcasse, dans une direction d'enlèvement de la peau, la peau étant tirée sensiblement perpendiculairement à la carcasse à l'endroit où la peau se détache de la carcasse.

22. Procédé selon la revendication 21, dans lequel les moyens de saisie de peau comportent des rouleaux qui sont serrés contre la carcasse, au moins l'un des deux rouleaux étant mis en rotation de sorte que la peau est saisie entre les rouleaux, après quoi les rouleaux sont déplacés au-delà de la carcasse dans une direction d'enlèvement de la peau pendant que les rouleaux tournent en sens opposés, en serrant la peau entre eux et en l'enroulant autour de l'un des rouleaux.

23. Procédé selon la revendication 22, dans lequel après avoir atteint l'autre coté de la carcasse, le dispositif de dépouillement se déplace de manière relative par rapport à la carcasse, dans le sens opposé à la direction d'alimentation, ce qui tire la peau à partir de l'autre coté de la carcasse, après quoi la peau est glissée hors des rouleaux.

24. Procédé selon l'une quelconque des revendications 21 à 23, dans lequel les moyens de saisie de peau saisissent la peau au niveau du bout de la poitrine (4A) de la carcasse, et les moyens de saisie de peau se déplacent le long du côté arrière (4D) de la carcasse jusqu'au côté cou (4B).

25. Procédé selon l'une quelconque des revendications 21 à 24, dans lequel la peau est expulsée des moyens de saisie de peau après que la peau a été séparée de la carcasse.

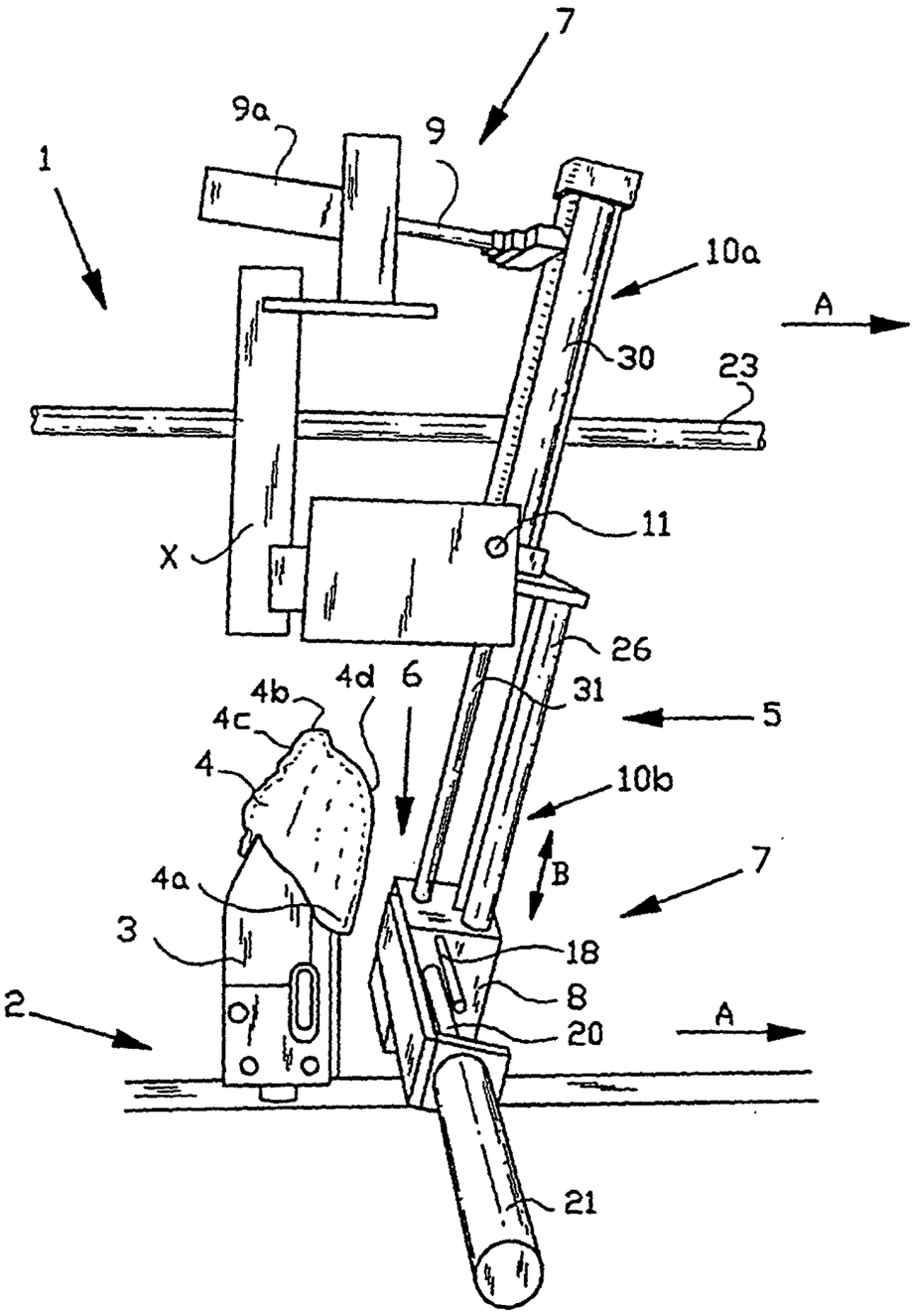


FIG. 1

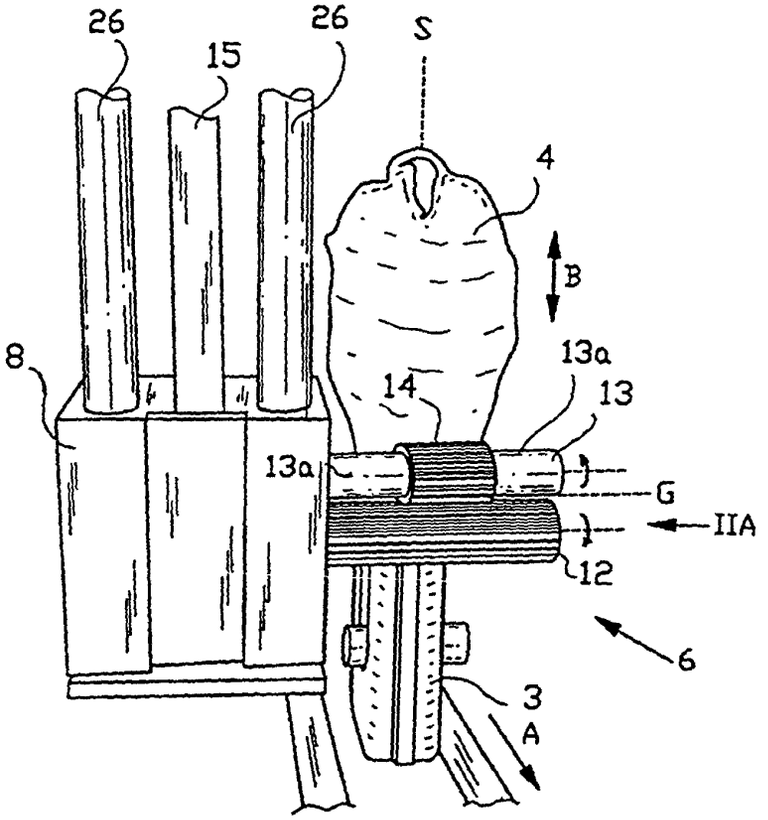


FIG. 2

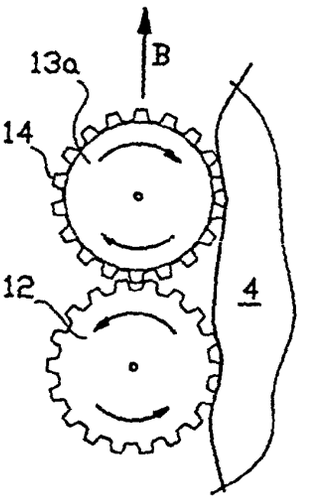


FIG. 2A

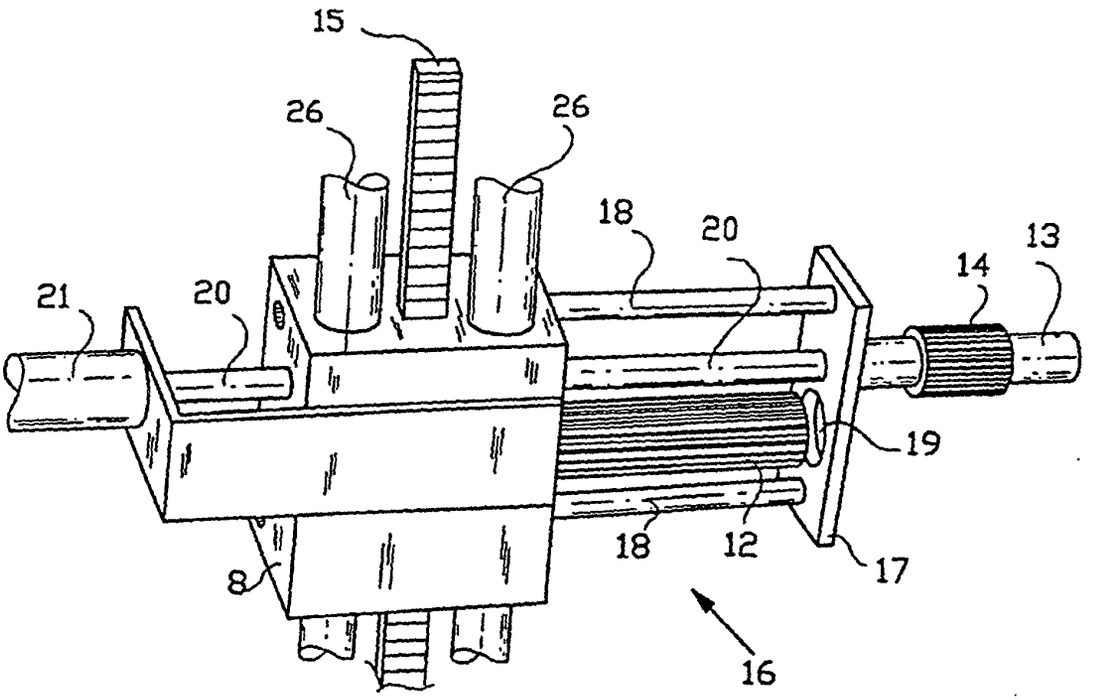


FIG. 3

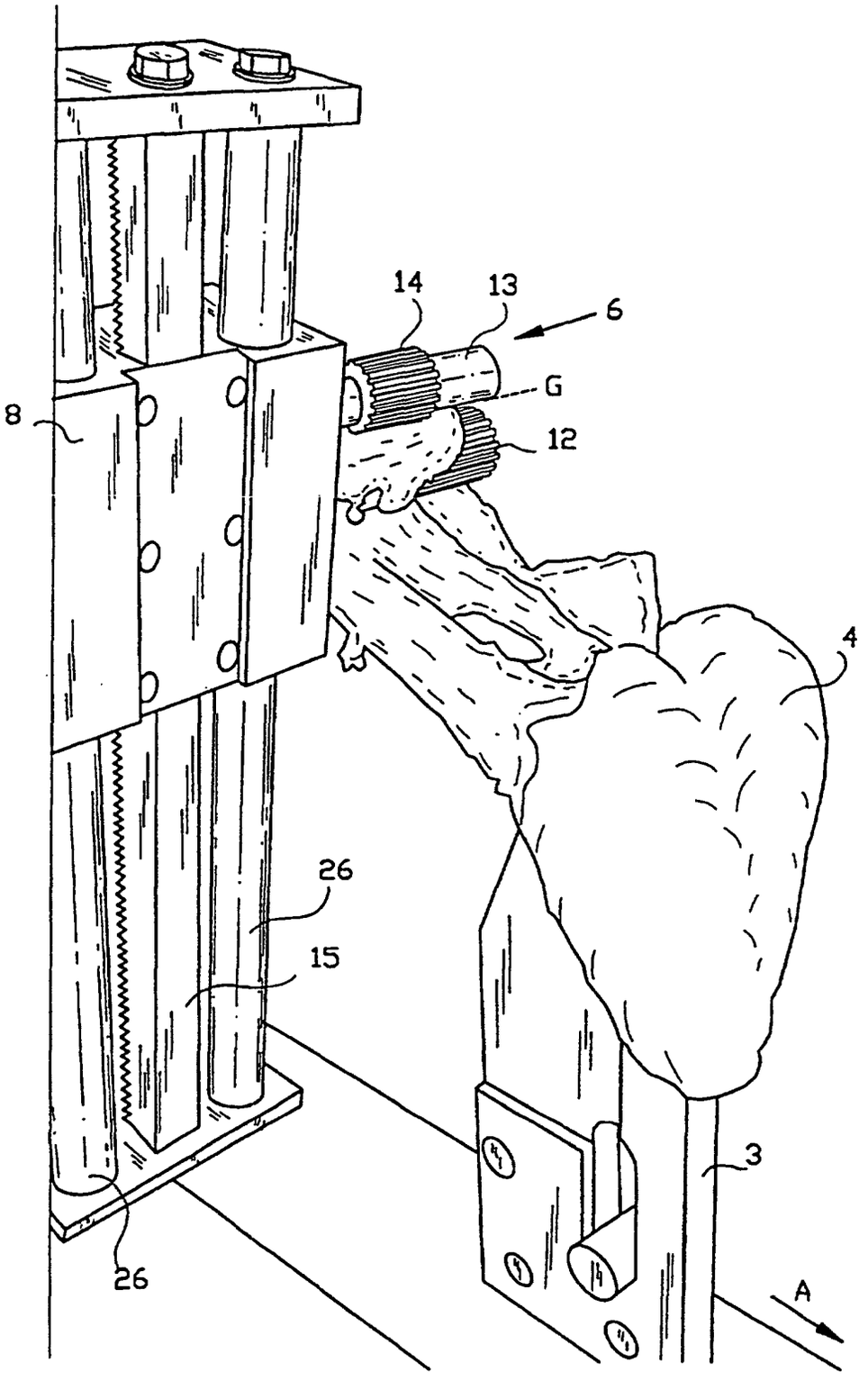


FIG. 4C

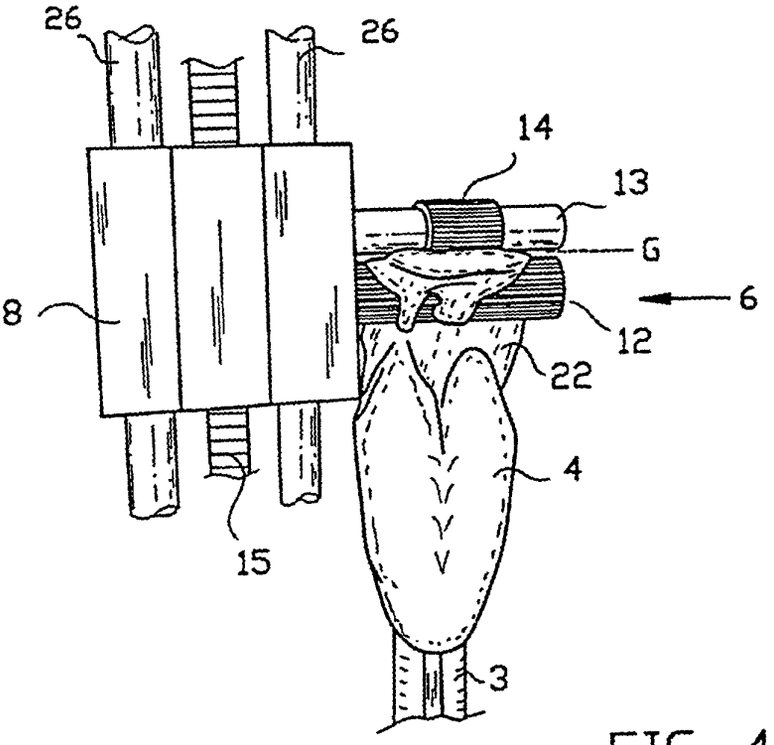


FIG. 4A

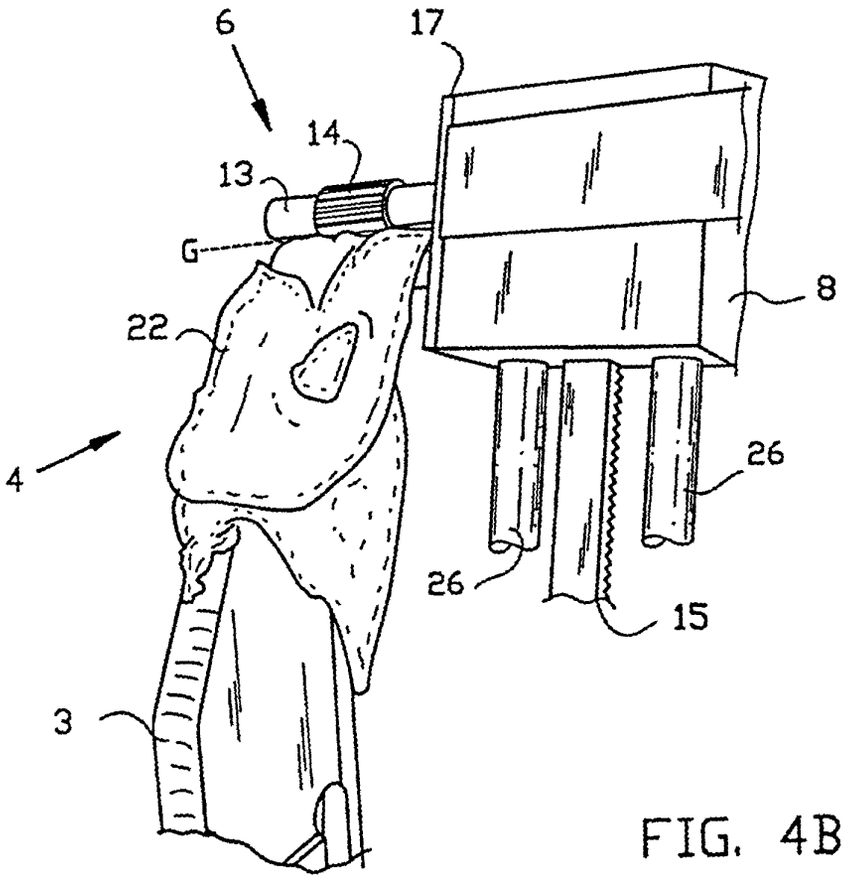


FIG. 4B

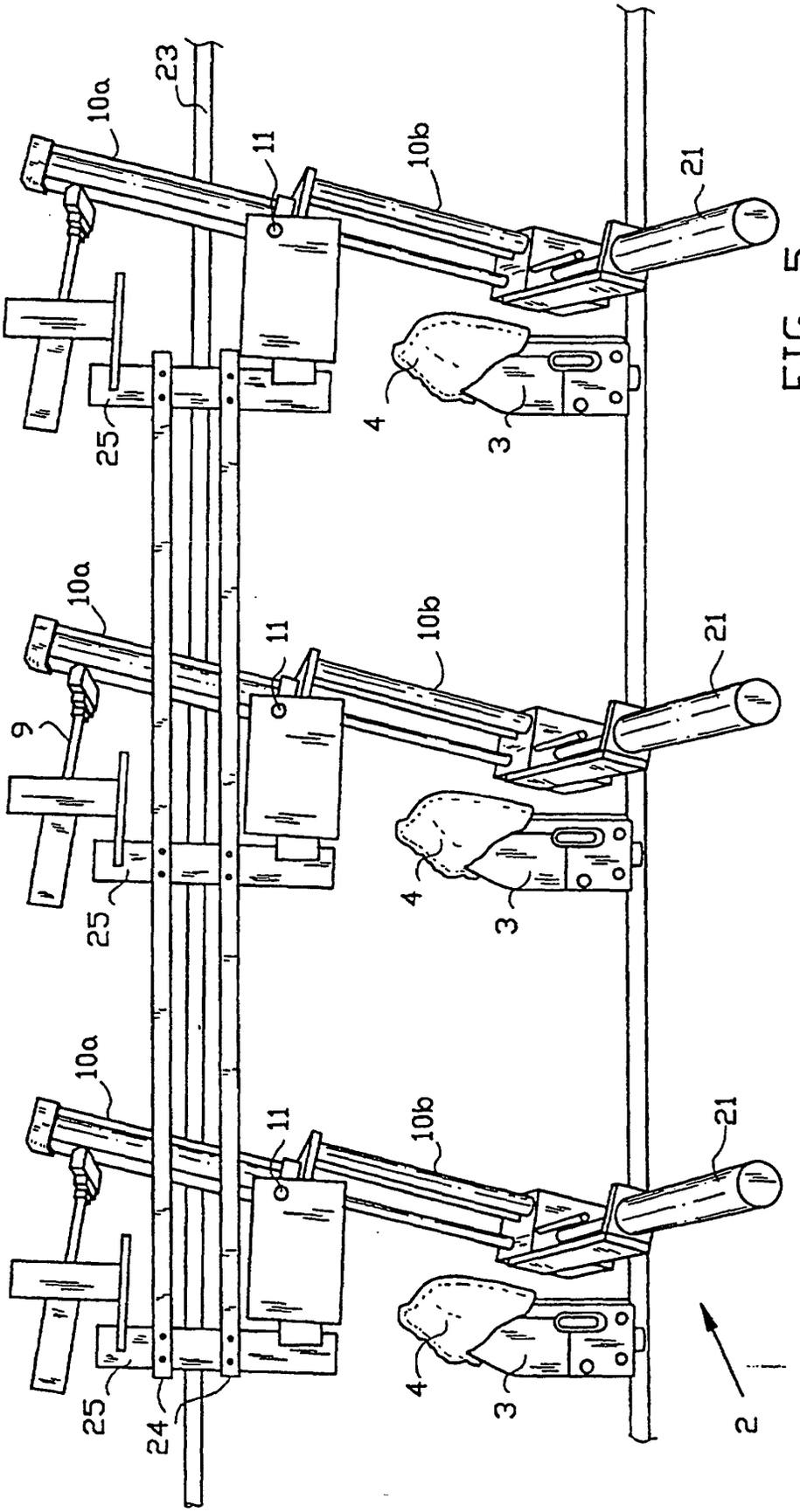


FIG. 5