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(NL). STOOKER, Dirk Cornelis [NL/NL]; Julianastraat 2, NL-3295 AL 's-gravendeel (NL).

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(74) Agent: GEURTS, Franciscus, Antonius; Octrooibureau Vriesendorp & Gaade B.V., Dr. Kuypersstraat 6, NL-2514 BB Den Haag (NL).

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(71) Applicant (for all designated States except US): SYSTEMATE GROUP B.V. [NL/NL]; Edisonstraat 1-3, NL-3281 NC Numansdorp (NL).

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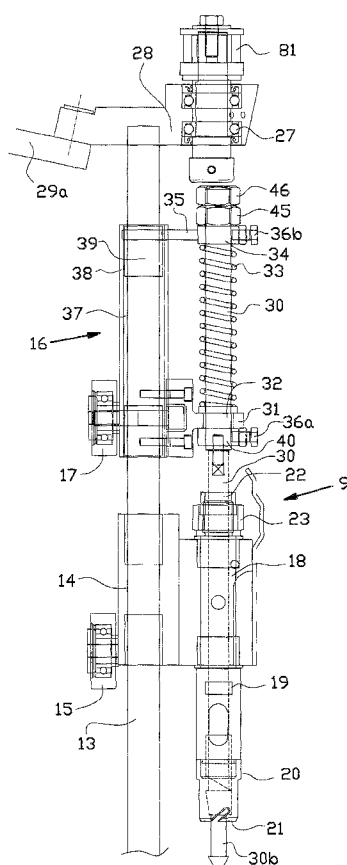
(72) Inventors; and

(75) Inventors/Applicants (for US only): SLAGBOOM, Rijk [NL/NL]; Hekelstraat 102, NL-3295 TG 's-Gravendeel

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(54) Title: DEVICE FOR CUTTING OUT THE VENT OF SLAUGHTERED POULTRY



(57) Abstract: Device for cutting out and removing the vent of a carcass of slaughtered poultry, comprising a holder for the carcass and an assembly that is movable toward and away from the carcass, with a rotationally driven cylinder knife (20) with a cutting edge (21) and a pin (30) extending within the cylinder knife, with a pin body that is provided with a pin end section with an end section that is destined for passage through the vent opening and for engaging behind the orbicular muscle, wherein the pin body has a central axis and the pin end section is movable with respect to the central axis of the pin between a starting position in line with the central axis and an operational position at an angle with it.

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Device for cutting out the vent of slaughtered poultry**BACKGROUND OF THE INVENTION**

The invention relates to a device and a method for removing the vent of a carcass of slaughtered poultry.

5 In the European patent 0,843,971 a so-called vent cutter is shown, comprising a centering pin, that is provided with an external thread, that is inserted in the vent opening of a carcass to center the vent area and lift the orbicular muscle somewhat for tensioning the vent
10 area. The centering pin is surrounded by a cylinder knife, that is moved downward with respect to the centering pin until it is in cutting engagement with the vent area and is rotated to cut the vent area loose. The centering pin with external thread is used after cutting the vent area
15 loose to lift away that area with the connected rectum from the carcass, wherein the orbicular muscle is held between the centering pin and the cylinder knife. By subsequently rotating the centering pin back the vent area and rectum are released, so as to arrive at the exterior
20 of the carcass.

A drawback of this device is that the thread may damage the rectum, because of which its contents may be released and may contaminate or infest the carcass.

25 A device that has been improved in this respect has been described in the European patent application

1.588.622 in which the centering pin has been provided with a ring of deformable material that by forcing toward each other two pin sections which are located at either side of the ring, or by means of compressed air can be
5 radially expanded to force the rectum against the cylinder knife. A drawback of this is that in the long run the body materials of the carcass may affect the material of the ring, because of which the ring has to be replaced.

10 An imperfection of the two above-mentioned known devices is that damage of the vent area may occur when the cylinder knife and the centering pin are directed eccentrically with respect to the vent opening. The damage may result in contamination of the surrounding carcass area.

15 It is an object of the invention to provide a device and method of the type as mentioned in the preamble, with which the vent area and/or adjacent rectum area can be clamped between the centering pin and the cylinder knife in a reliable manner.

20 It is an object of the invention to provide a device and method of the type as mentioned in the preamble, with which the vent area and/or adjacent rectum area can be clamped between the centering pin and the cylinder knife with less risk of damage.

25 It is an object of the invention to provide a device and method of the type as mentioned in the preamble, with which the vent area and/or adjacent rectum area can be clamped between the centering pin and the cylinder knife, and with which that operation can be guaranteed also in
30 the long run.

It is an object of the invention to provide a device and method of the type as mentioned in the preamble, with

which the chance of tearing and damage of the vent area is reduced.

5 SUMMARY OF THE INVENTION

From one aspect the present invention provides, in order to achieve at least one of the above-mentioned objects, a device for cutting out and removing the vent
10 of a carcass of slaughtered poultry, comprising a holder for the carcass and an assembly that is movable toward and away from the carcass, with a rotationally driven cylinder knife with a cutting edge and a pin extending within the cylinder knife, with a pin body that is provided with a
15 pin end section with an end section that is destined for passage through the vent opening and for engaging behind the orbicular muscle, wherein the pin body has a central axis and the pin end section is movable with respect to the central axis of the pin between a starting position in
20 line with the central axis and an operational position at an angle with it.

In this way it is achieved that the pin end section with the end section can be searching when entering the vent opening. If necessary the vent opening then upon
25 further penetration of the centering pin may be gradually moved toward a position that is centered with respect to the cylinder knife, because of which early damage of the vent area is prevented.

Because of this a condition has also been provided
30 for a function that is to be performed later, of clamping the rectum between the cylinder knife and the pin end section, which will be further elucidated hereinafter.

In one embodiment the pin end section is spring-biased toward the starting position, so that the pin end section finally returns to a position that is concentric with the cylinder knife.

5 The pin end section can be pivotally connected to the rest of the pin body, for instance at the location of a pivot line. There the pivot line can be situated eccentrically with respect to the central axis of the pin, because of which moment action for rotation of the pin end
10 section can be enhanced.

The thus movable pin end section can be utilised for the phase of removing the vent area with connected gut section, for which purpose the device is provided with means for forcing the pin end section to the operational
15 position and keeping it there.

In this way a clamping force can be provided with simple means which are also operating well in the long run. Because as a consequence of the mutual inclined position clamping is only local, a clamping force of
20 sufficient magnitude can easily be realised. Here damage of the clamped areas is largely avoided. Furthermore because of the attainable inclined position a clamping action can be realised in several diameter combinations of the centering pin and cylinder knife. A centering pin may
25 thus for instance be combined with cylinder knives of several diameters: the centering pin can be left on the machine (usually a carrousel) and a series of cylinder knives can be replaced by cylinder knives with a larger or smaller diameter, if in a next process cycle carcasses of
30 other sizes have to be processed.

In a further embodiment the device according to the invention is adapted for bringing the pin end section in the operational position by a relative displacement

between the cylinder knife and the pin end section in the direction of the central axis of the cylinder knife. There in a further embodiment means, such as a spacer-abutment ring, can be provided for adjusting the location of the start of the operational condition of the pusher means.

In one embodiment the device according to the invention is provided with means for adjusting the clamping force.

In one embodiment the means for forcing the pin end section to the operational position comprise a first actuator member, carried by the cylinder knife, that is arranged for directly or indirectly exerting on the pin end section a force that forces the pin end section toward the operational position, preferably a pushing force.

There the pin end section can be provided with an abutment that is arranged for direct or indirect engagement by the first actuator member.

When on the pin body then a second actuator member is present that is movable along it, that is arranged for a force transmitting connection between the first actuator member and the abutment, the first actuator member can be positioned axially spaced from the abutment on the movable pin end section.

The second actuator member can form a sleeve that is placed on the pin body in a slidable manner.

In the above-mentioned embodiment with pivotal central axis the abutment can be operational at a side of the central axis of the pin opposite the central axis of the pin.

From a further aspect the invention provides a device for cutting out and removing the vent of a carcass of slaughtered poultry, comprising a holder for the carcass and an assembly that is movable toward and away from the

carcass, with a rotationally driven cylinder knife with a cutting edge, a cylindrical inner surface and a pin extending within the cylinder knife, with a pin body that is provided with a pin end section with an end section
5 that is destined for passage through the vent opening and for engaging behind the orbicular muscle, wherein the pin end section has a rigid, solid clamping surface, furthermore provided with means for moving toward each other, substantially transverse to the cylindrical inner
10 surface, a section of the inner surface of the cylinder knife and the clamping surface to clamp an intestinal section there between.

In one embodiment the pin end section is movable toward and away from the cylinder knife.

15 In one embodiment the device is adapted for moving toward each other, by a relative displacement between the cylinder knife and the pin end section, the inner surface of the cylinder knife and the clamping surface to clamp an intestinal section there between.

20 From a further aspect the invention provides a device for cutting out and removing the vent of a carcass of slaughtered poultry, comprising a holder for the carcass and an assembly that is movable toward and away from the carcass, with a rotationally driven cylinder knife with a
25 cutting edge and a pin, extending within the cylinder knife, with a pin body that is provided with a pin end section with an end section that is destined for passage through the vent opening and for engaging behind the orbicular muscle, wherein the cylinder knife has a
30 cylinder axis and the pin end section is movable with respect to the cylinder axis between a starting position in line with the cylinder axis and an operational position at an angle with it.

In one embodiment thereof the device is adapted for bringing the pin end section in the operational position by a relative displacement between the cylinder knife and the pin end section in the direction of the cylinder axis.

5 From a further aspect the invention provides a device for cutting out and removing the vent of a carcass of slaughtered poultry, comprising a holder for the carcass and an assembly that is movable toward and away from the carcass, with a rotationally driven cylinder knife with a
10 cutting edge and a pin, extending within the cylinder knife, with a pin body that is provided with a pin end section with an end section that is destined for passage through the vent opening and for engaging behind the orbicular muscle, wherein the pin end section has a
15 central axis for the pin end section and the cylinder knife has a cylinder axis, wherein the device furthermore comprises means for mutually rotating the central axis of the pin end section and the cylinder axis between a starting position parallel, and in particular concentric
20 with respect to each other and an intestinal clamping position, at an angle with respect to each other.

In one embodiment the pin end section is movable toward and away from the cylinder knife.

In one embodiment the device is adapted for bringing
25 the pin end section in the operational position by a relative displacement between the cylinder knife and the pin end section in the direction of the cylinder axis.

From a further aspect the invention provides a method for removing the vent of a carcass of slaughtered poultry,
30 wherein a centering pin with a widened end is introduced through the vent opening, a cylinder knife with an end edge transects the vent area and by mutual movement toward each other of the cylinder knife and a pin end section of

the centering pin that extends into the intestinal, the intestinal is locally clamped, after which the cylinder knife and the centering pin are moved away from the carcass to bring the vent area and connected intestinal
5 outside the carcass.

In one embodiment the pin end section is moved for clamping the intestinal. There the pin end section can be placed inclined.

In one embodiment the mutual movement takes place in
10 a direction substantially transverse to the longitudinal direction of the centering pin and/or the cylinder knife.

The aspects and features as described and/or shown in this description can when possible also be applied individually. Those individual aspects and other aspects
15 can be the subject of divisional patent applications directed thereto.

SHORT DESCRIPTION OF THE DRAWINGS

20 The invention will be elucidated on the basis of a number of exemplary embodiments as shown in the attached drawings, in which:

figure 1 is a schematic vertical cross-section through an exemplary embodiment of a device according to
25 the invention;

figures 2, 2A respectively, are a side view of a unit for use in the device of figure 1, and a detail of it;

figures 3, 3A respectively, are a front view and a detail of the unit of figures 2 and 2A;

30 figures 4A and 4B are a side view, a front view respectively, of a centering pin for the embodiment of the unit according to the preceding figures; and

figures 5A-G are consecutive stages of the use of the device according to figure 1.

DETAILED DESCRIPTION OF THE DRAWINGS

5

The device 1 is a device for cutting out and removing the vent and connected rectum section of slaughtered poultry, so that in a next processing station the slaughtered poultry can be subjected to the process of cutting open further and thereupon taking the intestines out.

The device 1 comprises a frame 2 that is placed on a foundation with legs 3. In the frame 2 a vertical shaft 5 has been arranged that is rotated with means which have not been further depicted, and onto which an upper wheel 29a and a lower wheel 29b have been secured, wherein at the wheels 29a, 29b a circumferentially distributed series of vent bore units 6 have been arranged, in order to form a carrousel 100. At the bottom a collection hopper 4 has been arranged on the frame 2.

The frame 2 further supports a guide 10 for trolleys or suspension means 11 of an overhead conveyor that is propelled with means which have not been further depicted. The trolleys 11 comprise a bar 12, at the lower end of which leg braces are provided which are known per se, for the carcass in the upside down position.

On the frame 2 furthermore teeth 81 have been provided, the function of which will be discussed in more detail.

Each unit 6 comprises a carcass support 7 and leg braces 8, as well as a centering/bore unit 9.

The carcass support 7 has been mounted on guide bars 13 in an upward and downward movable manner. The leg brace

8 has been resiliently arranged thereon. As can be seen in figures 2 and 3 the centering/knife unit 9 comprises to components 14, 16 which are slidable upward and downward along the guide bars 13, one of which is intended for
5 actuation of the knife and one is intended for actuation of a centering pin 30.

The holder 14 for the knife 20 is provided with a freely rotatable roller 15, in order to be displaced up and down in that suitable manner during the cycle of the
10 carrousel 100, by means of a curve path that is accommodated in the frame 2. The knife is formed by a right circle cylindrically shaped knife 20, with a cutting edge 21. The cylinder knife 20 is secured onto a hollow bar 19, that extends into the holder 14 through a bore 18,
15 and at its top it is provided with a pinion 23. As can be seen in figure 3 the pinion 23 cooperates with a pinion 24, that has been fixed on a vertical pin that extends through the bore 25 into the holder 14. At the upper end at the location of 27 the bar 26 is bearing supported in
20 the holder 28, that is fixedly secured on the upper plate 29a. On the bar 26, above the bearing 27 a basket 81 is provided that is provided with pins, wherein the pins can engage the above-mentioned fixedly arranged rack 80.

When considered vertically the bar 26 remains in its
25 position. For permanent engagement onto the pinion 24 the bar 26 has a square cross-section, while the pinion has a matching square cross-section for sliding passage of the bar 26 through it, while maintaining the transmission.

The cooperation between the basket 81 and rack 80
30 serves to enable rotation of the cylinder knife 20 when a cutting operation is required.

The holder 16, destined for the centering pin 30 that will be discussed in more detail, is also provided with a

freely travelling roller 17, for cooperation with a curve path that is arranged in a fixed manner in the frame 2, and that has not been depicted, in order to make the centering pin undergo the required vertical displacement.

5 In the center, by means of an adjusting bolt 36a, an abutment block 40 is secured to the centering pin 30 in a fixed though adjustable manner. The abutment block 40 arrives against jib 31, that is formed integrally with the holder 16. The jib 31 is provided with a passage 32 for
10 the upper section of the centering pin 30. The jib 31 forms a support surface of a compression spring 33, that is located around the pin 30. The upper end of the spring 33 supports against the abutment block 34, that is secured on the centering pin 30 by means of adjusting bolt 36b in
15 a fixed manner, but adjustable as regards its position. The abutment block 34 is provided with a pin 35 that extends into a vertical guide slot 39 that is provided in the upper section of the holder 16 to prevent the pin 30 from rotating. At the top of the centering pin 30 an
20 adjusting nut 45 and a lock nut 46 have been provided.

The lower end of the centering pin is being depicted in detail in figures 4A and 4B, while leaving out the cylinder knife 20. It can be noticed that the centering pin 30 is divided, wherein at the lower end of pin section
25 30a at the location of the horizontal hinge pin 52 a pin end section 30b is secured, said end section 30b being provided with a thickened, conical tip 53. At the upper end, facing away from the tip 53, of the end section 30b a collar 51 with a stop edge 55 is formed, in which a
30 vertical bore 54 is provided, that opens in the plane 50a. This bore 57 is in line with a bore 57 in the lower end of the pin section 30a, said bore debouching in the lower plane 50b. In the bore 57 a tension spring 60 is

accommodated, that is secured with end eyes 61, 62 respectively, in the extreme ends of the bores 54 and 57. For this purpose a bolt 58 is used for the eye 61 and for the eye 62 a small block 59 is used that is accommodated
5 in an accommodation space in the pin section 30a in a longitudinally slidable manner. The small block 59 is provided with a small pin 59a around which the eye 62 can be placed. The cube is furthermore provided with a screw hole for a bolt 59b with which the cube 59 can be secured
10 to the end section 30a, after the spring 60 has been tensioned by shifting the cube 59 into the accommodation space away from the lower end.

At the lower end of the pin section 30a furthermore a sleeve 70 is arranged, that is slidable within limits
15 along the pin section 30a, and at the lower end it is provided with an inclined edge 71, terminating in an abutment edge 72. At the upper end a circumferential abutment edge 73 is provided. The sleeve 70 is furthermore provided with a slotted hole 74, in which is accommodated
20 a removable finger 75, that is secured statically in the end section 30a of the centering pin 30. The extreme end of the finger 75 engages the small block 59 to lock it in the position as established with the bolt 59b.

It will be understood that when the sleeve 70 is
25 forced downwardly, and performs a displacement, restricted by the slotted hole 74, the abutment edge 72 exerts a downward force on the stop edge 55 of the collar 51. Because of this the end section 30b will rotate about the hinge pin 52, which rotation is not excluded by the spring
30 60 because it can buckle/bend along in the area between the bores 54 and 57, by which the planes 50a and 50b are being moved away from each other. Because of this the center line S2 of the end section 30b may arrive at an

angle of for instance 10° with respect to the center line S1 of the remaining section 30a of the centering pin 30.

Within the hollow bar 19 an abutment edge 41 is provided, against which the upper stop edge 73 of the sleeve 70 can abut. It is possible to use a higher positioned circumferential edge against which an abutment spacer ring that is to be placed in the hollow bar, can be placed, and then the lower edge of said ring forms the stop edge for the sleeve 70. Dependent upon the combination with the knife a more or less high ring can be placed, in order to choose the abutment edge of the sleeve in axial direction.

During operation carcasses of poultry are conveyed with the overhead conveyor, each carcass being suspended from a trolley 11, in order to be synchronically supported by the carcass support 7 and the leg brace 8. When a carcass has been thus positioned, with the back or the chest facing the shaft 5, the centering pin 30 is lowered in vertical direction A toward the vent of a carcass by vertical displacement along the guide bars 13 of the holder 16, by arrival of the jib 31 against the abutment block 40. This is being depicted in figure 5A. In figure 5B is being depicted by way of illustration that the vent 200 with the orbicular muscle 201 is not in line with the central axis S1 van the centering pin 30. Furthermore the surface 202 of the carcass and the rectum 203 that is connected to the vent, are being depicted.

When the head 53 of the centering pin 30 hits the orbicular muscle 201, a lateral force (B) can be exerted on the orbicular muscle 201 because of the conical shape. By the resiliently rotatable suspension of the end section 30b it may however also recede in opposite direction C, having the advantage that the large forces which are

exerted on the orbicular muscle 201 are avoided, and thereby it can be prevented from being damaged. This has been depicted in figure 5B. The free slidability of the sleeve 70 does not obstruct said tilting movement of the end section 30b.

After the head 53 has arrived beyond the orbicular muscle 201, the end section 30b can move back again in the direction D, under the influence of the tensioned spring 60, to a situation in which they are aligned with the rest of the centering pin 30a, depicted in figure 5C.

The orbicular muscle 201 and thereby the vent 200, is now centered with respect to the cylinder knife 20, that is forced downward by displacement of the holder 14, sliding along/about the centering pin 30 in direction E. Here the cylinder knife 20 is driven in rotation in direction F by the above described transmission with pinions 23, 24, bar 26, basket 81 and rack 80. As depicted in figure 5D the area around the orbicular muscle 201 is transected by the knife 20 with cutting edge 21, so that the orbicular muscle 201 and connected area disengages from the carcass body 200 as depicted in figure 5E. The rectum 203 is still fastened to the orbicular muscle 201. Then the tip 53 is laterally surrounded by the wall of the cylinder knife 20.

Then the basket 81 and the rack 80 loose their mutual engagement, so that the knife 20 no longer rotates. The pin 30 does not rotate either. Then the holder 16 is forced upward in direction G, along a short distance, by the action of the curve path on the roller 17, wherein the jib 31 pushes the spring 33 upward and the abutment block 34 is forced upward, and thereby the pin 30. Because of this the abutment edge 73 of the sleeve 70 abuts against the abutment edge 41 in the hollow bar 19. There the

abutment edge 72 exerts a tilting moment H on the collar 51 of the end section 30b. Because of this said end section 30b will be forced from the unit 6 itself to become inclined with the central axis S2 relative to the central axis S1, in an operational position, wherein the tip 53 is forcefully forced toward the wall of the cylinder knife 20, while clamping the rectum 203 there between. The clamping force that is exerted by the tilted end section 30b depends upon the extent up to which the spring 33 is being compressed.

Then the area of the orbicular muscle 201 and the rectum 203 has been securely fixed to the centering pin/cylinder knife, and the assembly of holders 14 and 16 can be lifted via the curve paths, while entraining the orbicular muscle 201 and rectum 203. When the latter have been led above and adjacent the carcass the holder 16 can be moved downward again with respect to the holder 14, wherein under the influence of the spring 60 the end section 30b is being pulled back to the orientation entirely in line with the rest of the centering pin 30, because of which the planes 50a and 50b are again in a position one against the other, tensioned by the spring 60. Then the orbicular muscle 201 and rectum 203 can fall down freely. This falling can take place easily, because of which there is only little chance that the intestines are being drawn around the machine and optionally cause cross-contamination. Then the unit 6 can complete its cycle in order to start a new cycle again.

Because of the ability of the pin end section 30b to rotate about the pin 52 the rectum 203/orbicular muscle 201 can always be clamped well, both at the cylinder knives 20 with a small diameter and at the cylinder knives 20 with a large diameter. When changing to a different

size of slaughtered poultry then usually only the cylinder knife 20, and optionally the above-mentioned ring with abutment edge for the sleeve have to be replaced, which can be performed easily by utilising a screw connection at
5 the lower end of the hollow bar 19.

The above description is included to illustrate the operation of preferred embodiments of the invention and not to limit the scope of the invention. Starting from the above explanation many variations that fall within the
10 spirit and scope of the present invention will be evident to an expert.

CLAIMS

1. Device for cutting out and removing the vent of a carcass of slaughtered poultry, comprising a holder for the carcass and an assembly that is movable toward and away from the carcass, with a rotationally driven cylinder knife with a cutting edge and a pin extending within the cylinder knife, with a pin body that is provided with a pin end section with an end section that is destined for passage through the vent opening and for engaging behind the orbicular muscle, wherein the pin body has a central axis and the pin end section is movable with respect to the central axis of the pin between a starting position in line with the central axis and an operational position at an angle with it.

2. Device according to claim 1, wherein the pin end section is spring-biased toward the starting position.

3. Device according to claim 1 or 2, wherein the pin end section is pivotally connected to the rest of the pin body.

4. Device according to claim 3, wherein the pin end section at the location of a pivot line is pivotally connected to the rest of the pin body.

5. Device according to claim 4, wherein the pivot line is situated eccentrically with respect to the central axis of the pin.

6. Device according to any one of the preceding claims, provided with means for forcing the pin end section to the operational position and keeping it there.

7. Device according to claim 6, adapted for bringing the pin end section in the operational position by a relative displacement between the cylinder knife and the

pin end section in the direction of the central axis of the cylinder knife.

8. Device according to claim 7, wherein means, such as a spacer-abutment ring, have been provided for
5 adjusting the location of the start of the operational condition of the pusher means.

9. Device according to claim 6, 7 of 8, provided with means for adjusting the clamping force.

10. Device according to any one of the claims 6-9,
10 wherein the means for forcing the pin end section to the operational position comprise a first actuator member, carried by the cylinder knife, that is arranged for directly or indirectly exerting on the pin end section a force that forces the pin end section toward the
15 operational position, preferably a pushing force, wherein the pin end section has preferably been provided with an abutment that is arranged for direct or indirect engagement by the first actuator member.

11. Device according to claim 10, wherein on the pin
20 body a second actuator member has been provided, that is movable along the pin body for a force transmitting connection between the first actuator member and the abutment.

12. Device according to claim 11, wherein the second
25 actuator member forms a sleeve that is placed on the pin body in a slidable manner.

13. Device according to claim 5 and any one of the claims 10-12, wherein the abutment is operational at a
30 side of the central axis of the pin opposite the central axis of the pin.

14. Device for cutting out and removing the vent of a carcass of slaughtered poultry, comprising a holder for the carcass and an assembly that is movable toward and

away from the carcass, with a rotationally driven cylinder knife with a cutting edge and a cylindrical inner surface and a pin extending within the cylinder knife, with a pin body that is provided with a pin end section with an end
5 section that is destined for passage through the vent opening and for engaging behind the orbicular muscle, wherein the pin end section has a rigid, solid clamping surface, furthermore provided with means for moving toward each other, substantially transverse to the cylindrical
10 inner surface, a section of the inner surface of the cylinder knife and the clamping surface to clamp an intestinal section there between.

15 15. Device according to claim 14, wherein the pin end section is movable toward and away from the cylinder knife.

16. Device according to claim 14 or 15, adapted for moving toward each other, by a relative displacement between the cylinder knife and the pin end section, the inner surface of the cylinder knife and the clamping
20 surface to clamp an intestinal section there between.

17. Device for cutting out and removing the vent of a carcass of slaughtered poultry, comprising a holder for the carcass and an assembly that is movable toward and away from the carcass, with a rotationally driven cylinder
25 knife with a cutting edge and a pin, extending within the cylinder knife, with a pin body that is provided with a pin end section with an end section that is destined for passage through the vent opening and for engaging behind the orbicular muscle, wherein the cylinder knife has a
30 cylinder axis and the pin end section is movable with respect to the cylinder axis between a starting position in line with the cylinder axis and an operational position at an angle with it.

18. Device according to claim 17, adapted for bringing the pin end section in the operational position by a relative displacement between the cylinder knife and the pin end section in the direction of the cylinder axis.

5 19. Device for cutting out and removing the vent of a carcass of slaughtered poultry, comprising a holder for the carcass and an assembly that is movable toward and away from the carcass, with a rotationally driven cylinder knife with a cutting edge and a pin, extending within the
10 cylinder knife, with a pin body that is provided with a pin end section with an end section that is destined for passage through the vent opening and for engaging behind the orbicular muscle, wherein the pin end section has a central axis for the pin end section and the cylinder
15 knife has a cylinder axis, wherein the device furthermore comprises means for mutually rotating the central axis of the pin end section and the cylinder axis between a starting position parallel, and in particular concentric with respect to each other and an intestinal clamping
20 position, at an angle with respect to each other.

20. Device according to claim 19, wherein the pin end section is movable toward and away from the cylinder knife.

21. Device according to claim 19 of 20, adapted for
25 bringing the pin end section in the operational position by a relative displacement between the cylinder knife and the pin end section in the direction of the cylinder axis.

22. Method for removing the vent of a carcass of slaughtered poultry, wherein a centering pin with a
30 widened end is introduced through the vent opening, a cylinder knife with an end edge transects the vent area and by mutual movement toward each other of the cylinder knife and a pin end section of the centering pin that

extends into the intestinal, the intestinal is locally clamped, after which the cylinder knife and the centering pin are moved away from the carcass to bring the vent area and connected intestinal outside the carcass.

5 23. Method according to claim 22, wherein the pin end section is moved for clamping the intestinal.

 24. Method according to claim 23, wherein the pin end section is placed inclined.

10 25. Method according to any one of the claims 22-24, wherein the mutual movement takes place in a direction substantially transverse to the longitudinal direction of the centering pin and/or the cylinder knife.

15 26. Device comprising one or more characterising features as described in the attached description and/or shown in the attached drawings.

 27. Method comprising one or more characterising steps as described in the attached description and/or shown in the attached drawings.

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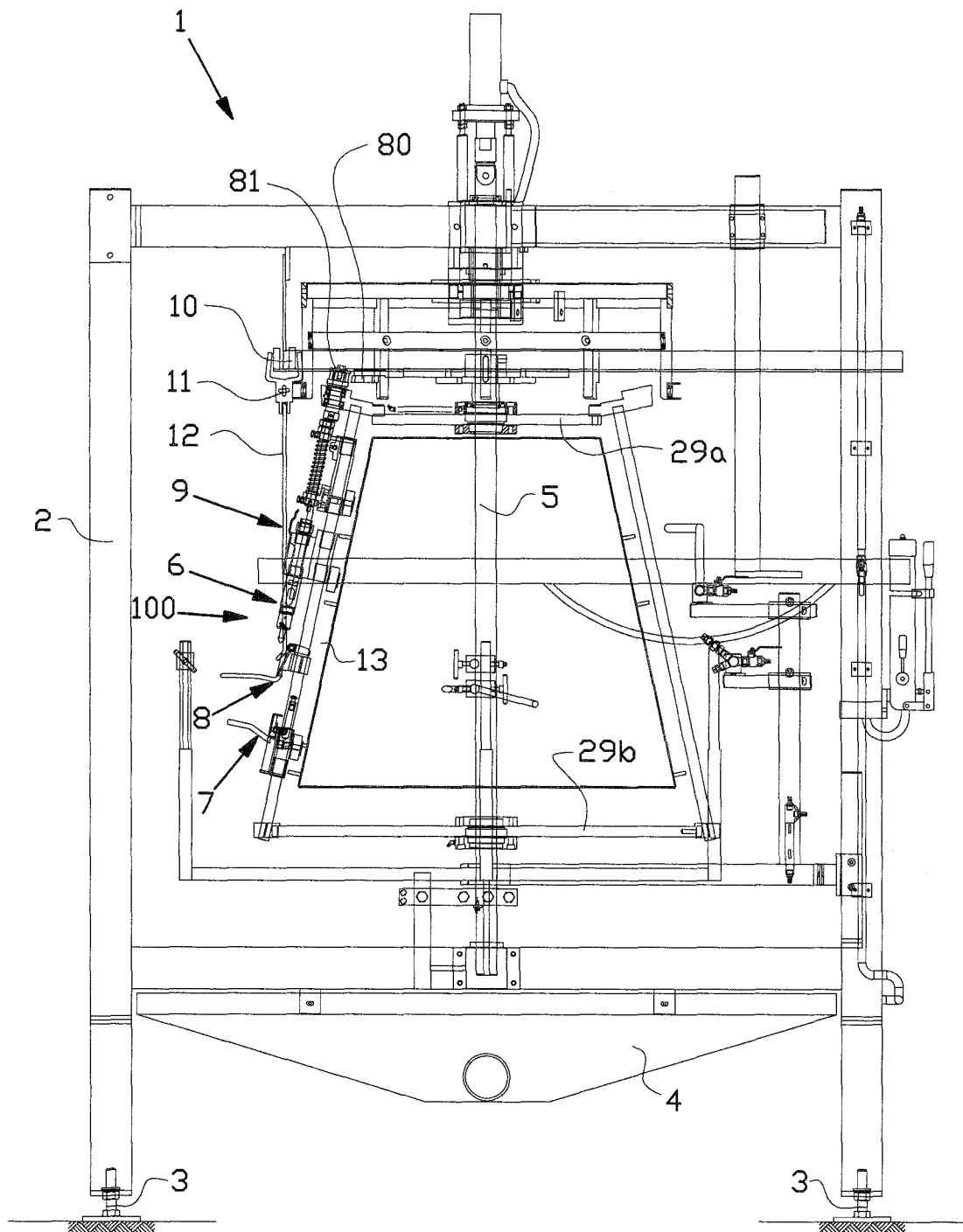
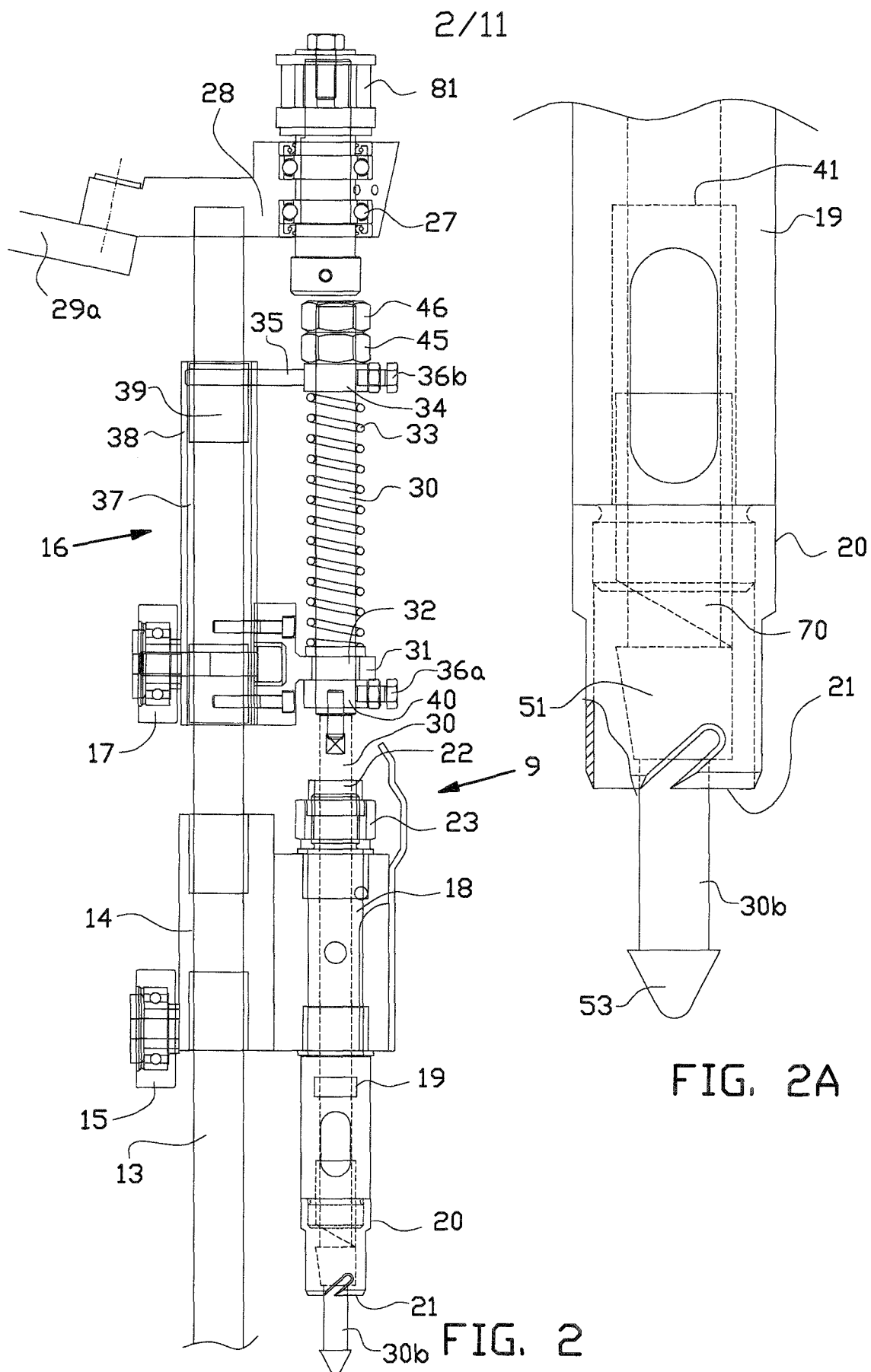


FIG. 1



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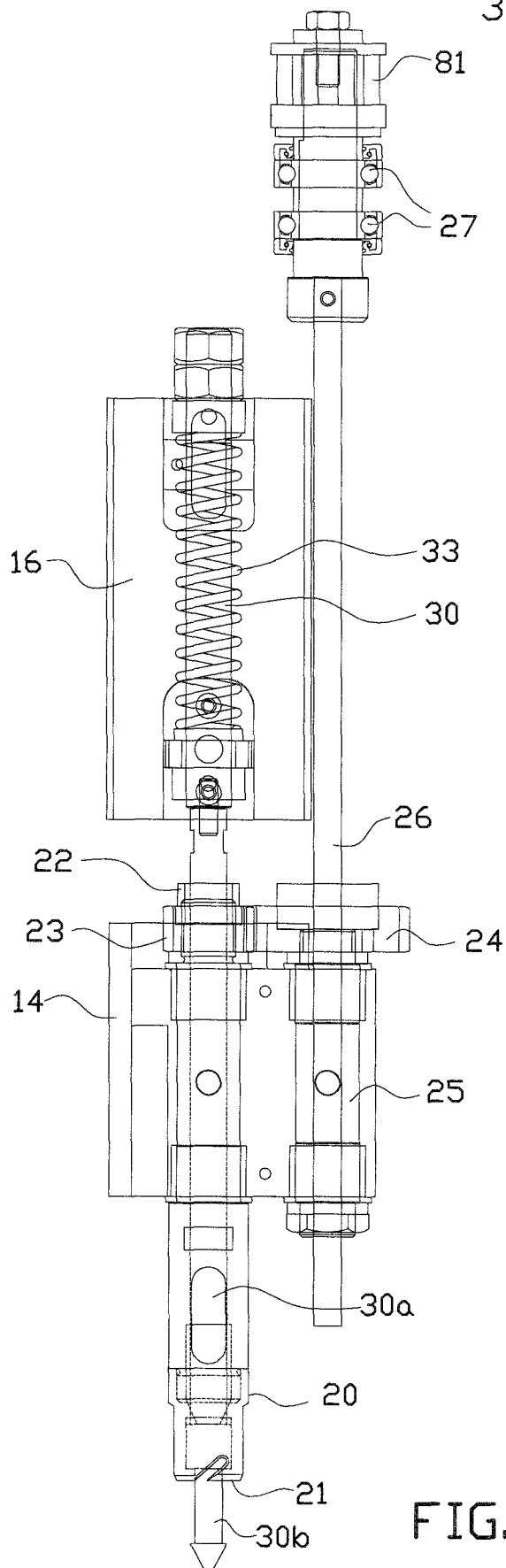


FIG. 3

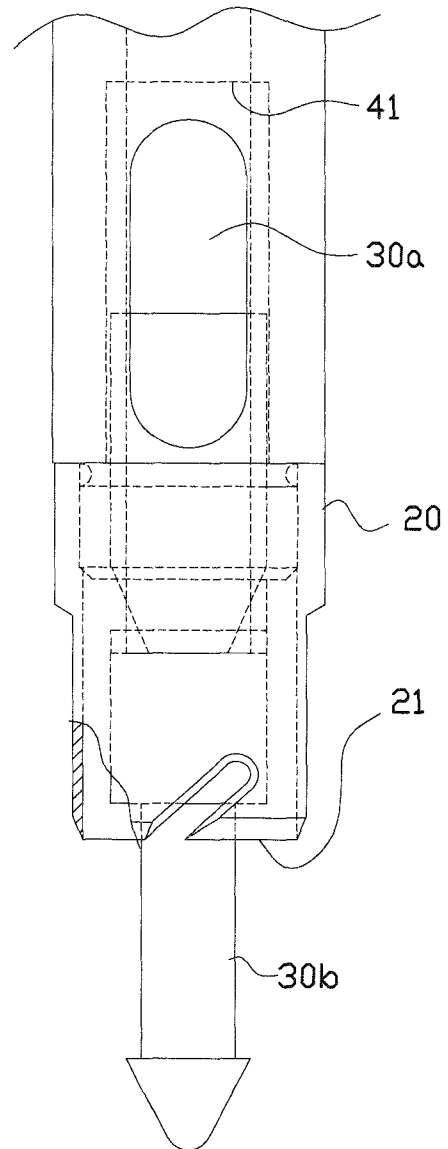


FIG. 3A

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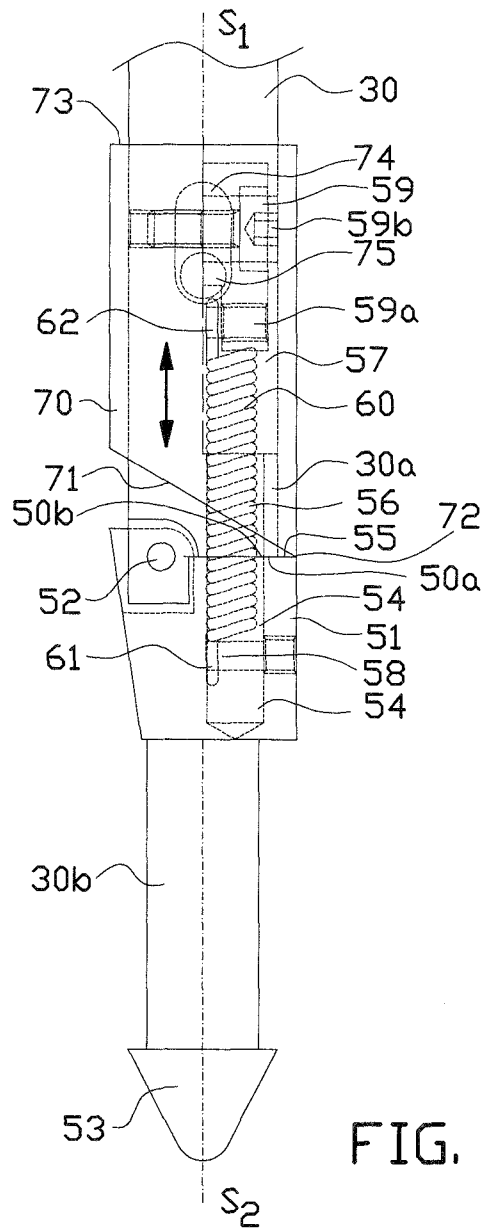


FIG. 4A

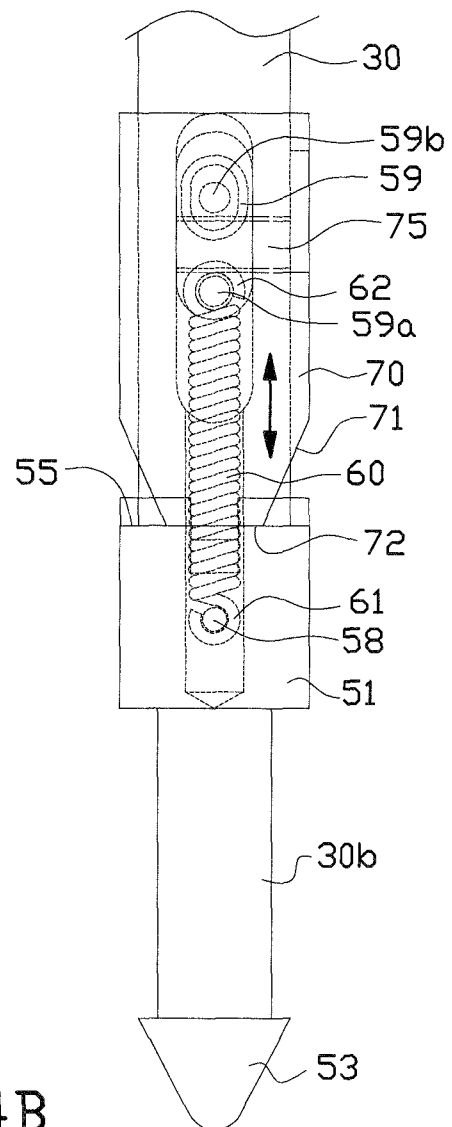


FIG. 4B

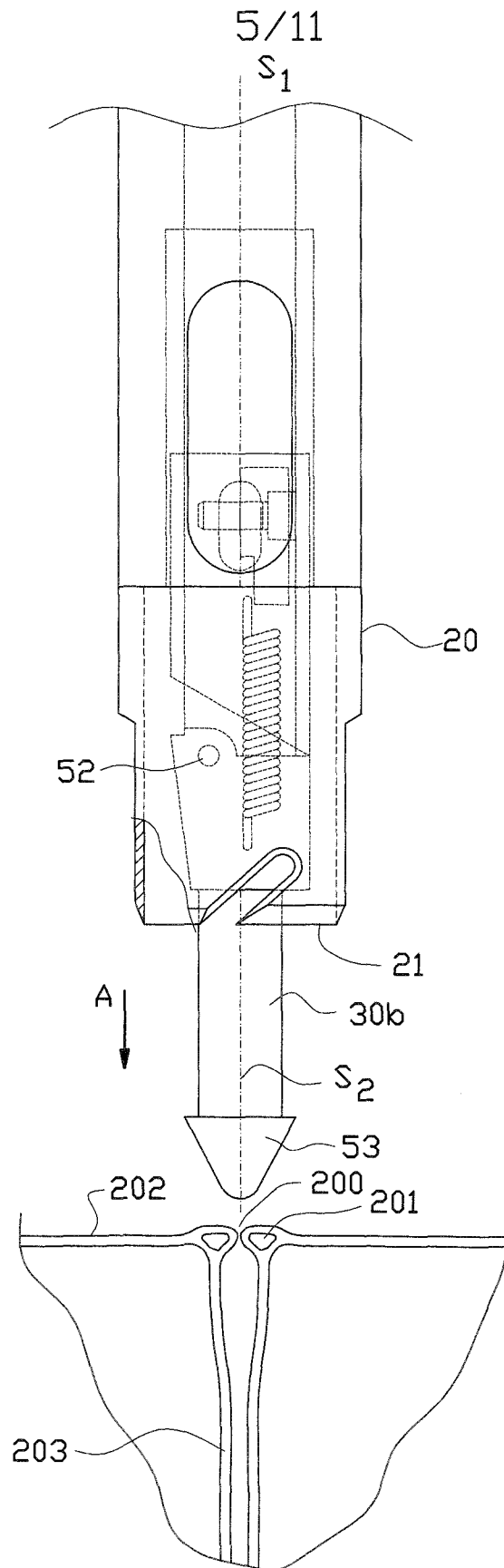


FIG. 5A

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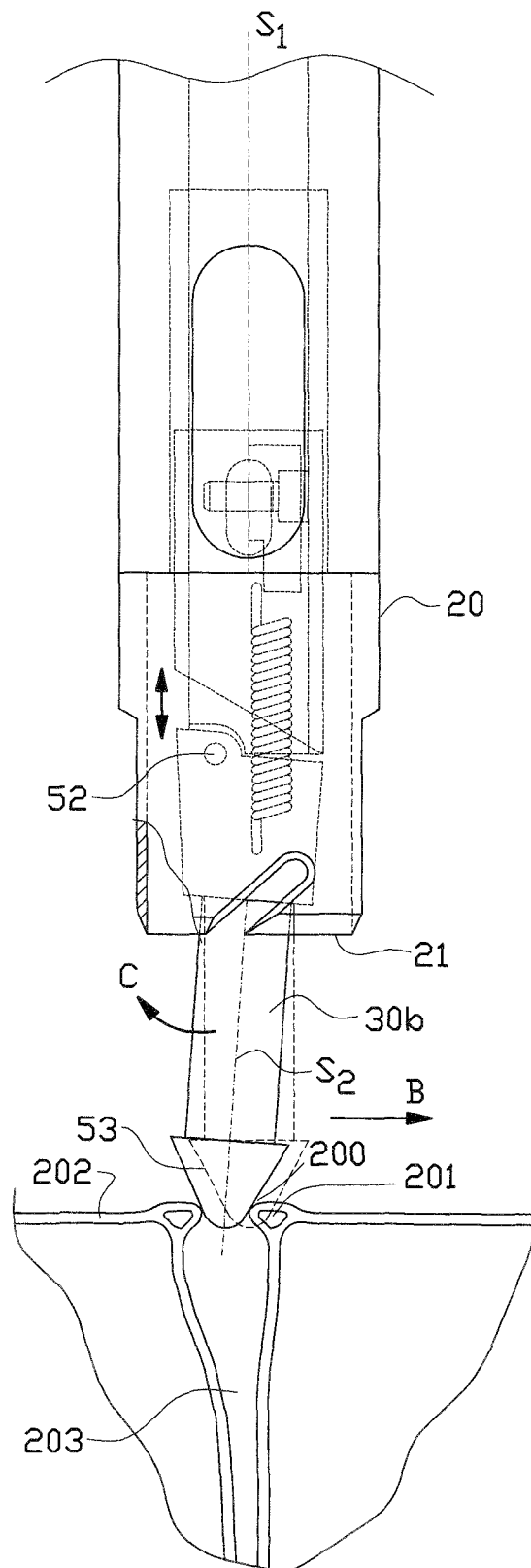


FIG. 5B

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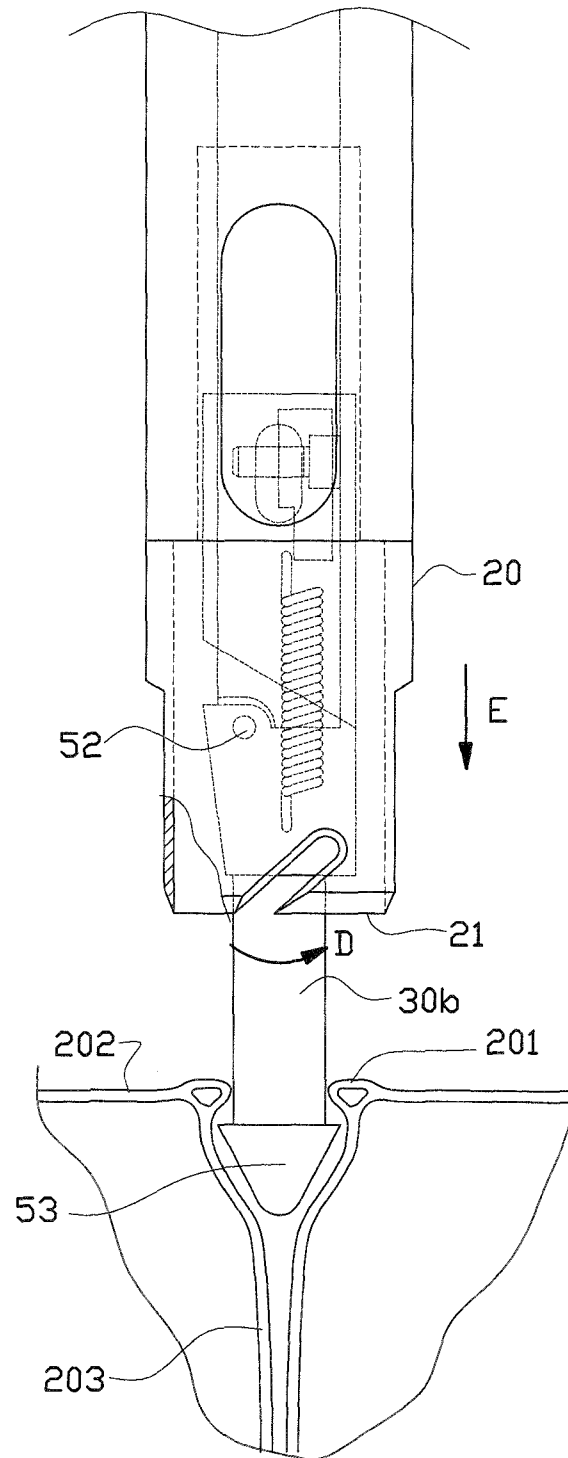


FIG. 5C

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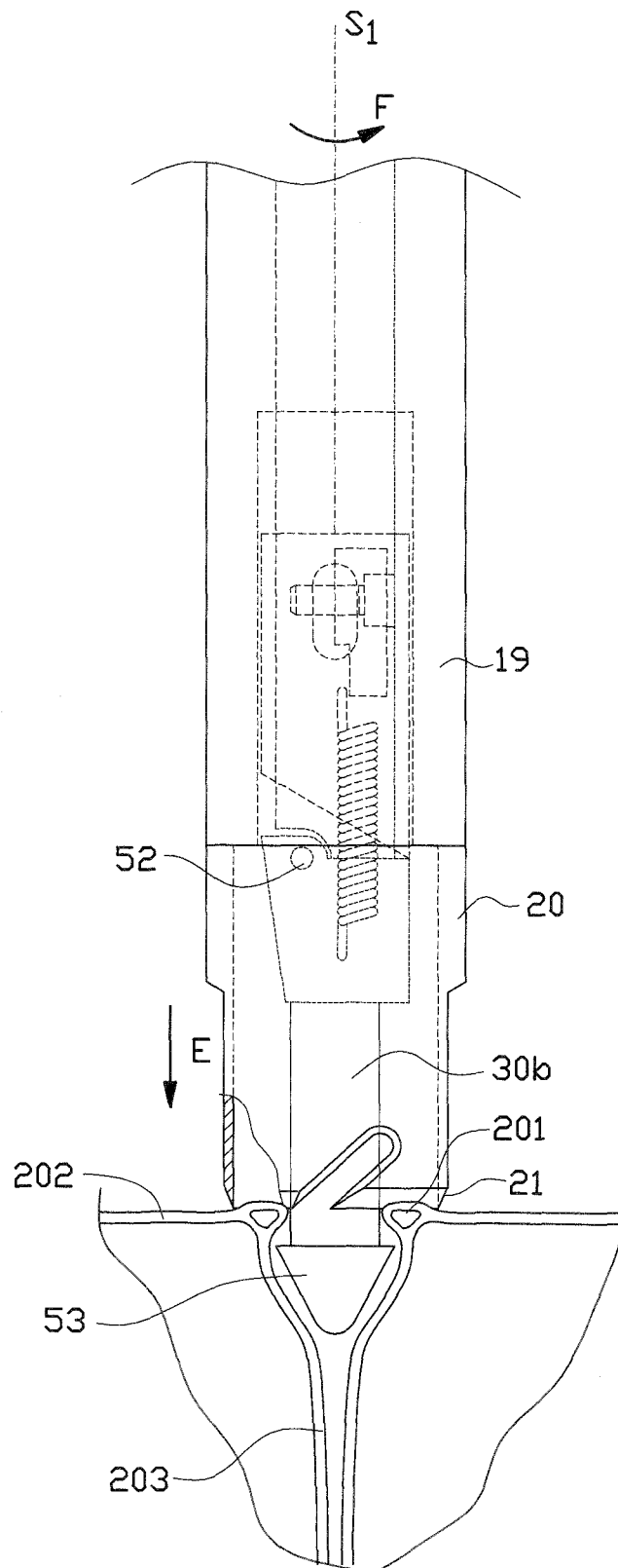


FIG. 5D

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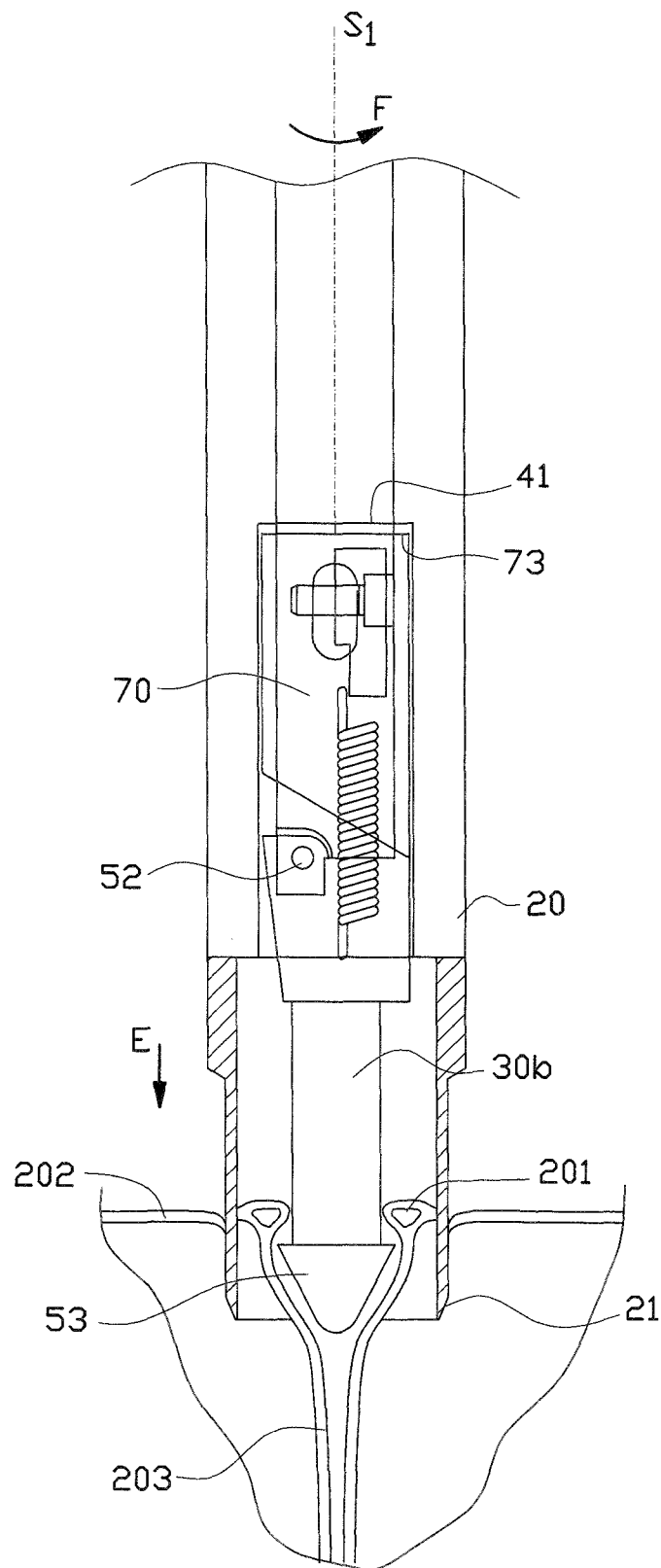


FIG. 5E

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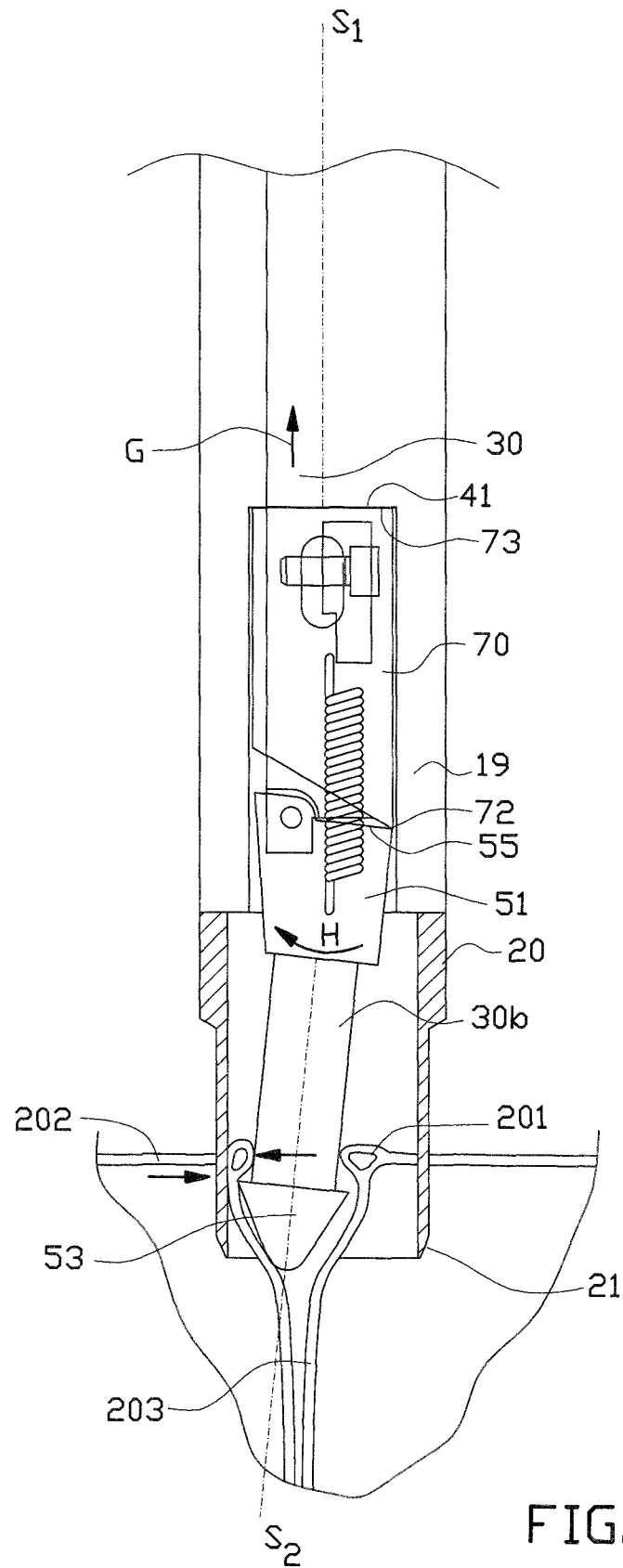


FIG. 5F

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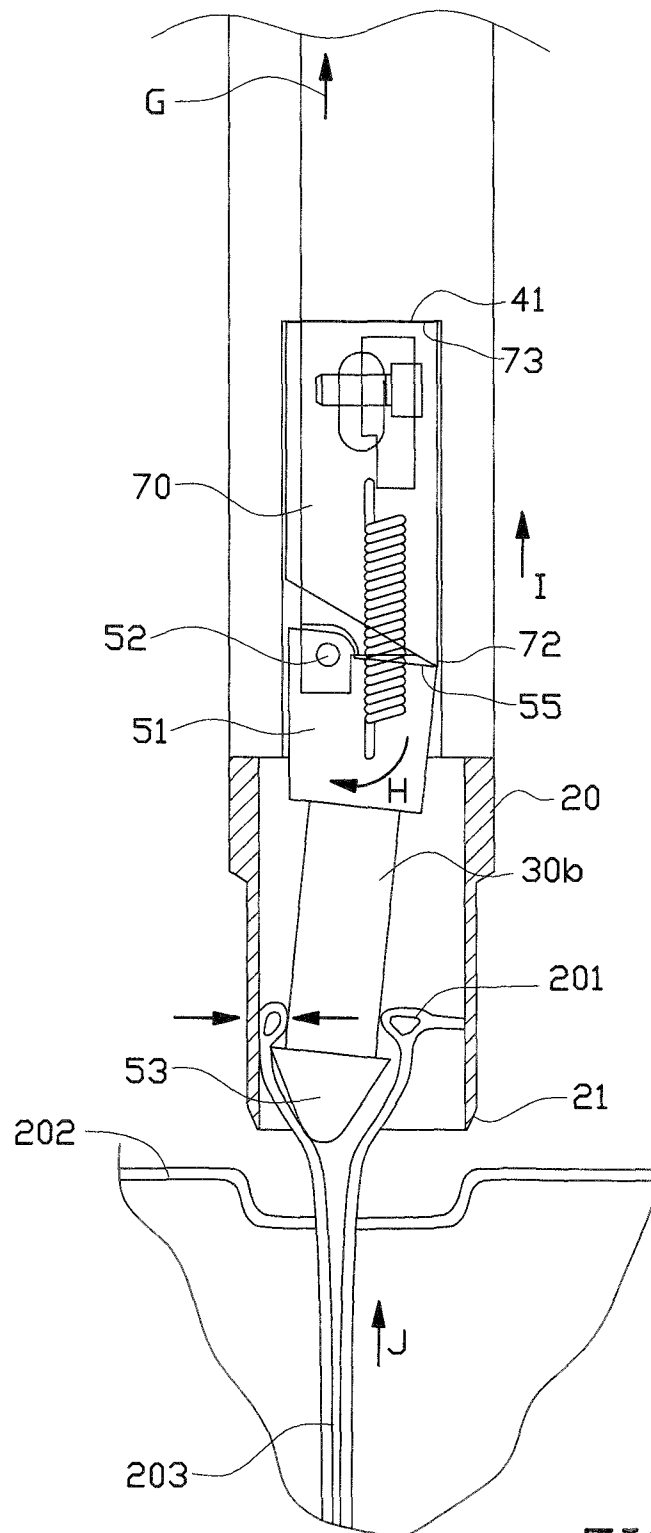


FIG. 5G

INTERNATIONAL SEARCH REPORT

International application No
PCT/NL2008/050019

A. CLASSIFICATION OF SUBJECT MATTER
INV. A22B5/00 A22C21/06

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A22B A22C

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

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

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	GB 2 147 190 A (SIMON-JOHNSON INC) 9 May 1985 (1985-05-09) page 2, line 104 - page 3, line 22; figures 6-11	14,15, 22,23 1,19
X A	EP 0 460 740 A (STORK PMT B.V.) 11 December 1991 (1991-12-11) column 4, line 51 - column 5, line 46; figures 6-9	14,15, 22,23 1,19
A	EP 1 588 622 A (SYSTEMATE GROUP B.V.) 26 October 2005 (2005-10-26) cited in the application claims 1-3,12,13; figures 1-9	1,14,17, 19,22
A	WO 96/09770 A (COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION) 4 April 1996 (1996-04-04)	
	-/--	

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

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

E earlier document but published on or after the International filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

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

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

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

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

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

G document member of the same patent family

Date of the actual completion of the international search

22 April 2008

Date of mailing of the international search report

29/04/2008

Name and mailing address of the ISA/

European Patent Office, P.B. 5618 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

von Arx, Vik

INTERNATIONAL SEARCH REPORT

International application No

PCT/NL2008/050019

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 843 971 A (SYSTEMATE HOLLAND B.V.) 27 May 1998 (1998-05-27): cited in the application	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NL2008/050019

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 26, 27
because they relate to subject matter not required to be searched by this Authority, namely:
Claims 26 and 27 contain references to the description and the drawings.
Claims should not contain such references except where absolutely necessary,
which is not the case here, Rule 6.2(a) PCT.
2. ☒ Claims Nos.: 26, 27
because they relate to parts of the international application that do not comply with the prescribed requirements to such
an extent that no meaningful international search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International search report covers allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International search reportcovers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Claims Nos.: 26, 27

Claims 26 and 27 contain references to the description and the drawings. Claims should not contain such references except where absolutely necessary, which is not the case here, Rule 6.2(a) PCT.

Continuation of Box II.2

Claims Nos.: 26, 27

Claims 26 and 27 contain references to the description and the drawings. Claims should not contain such references except where absolutely necessary, which is not the case here, Rule 6.2(a) PCT.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.2), should the problems which led to the Article 17(2)PCT declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/NL2008/050019

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