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(54) Benævnelse: **Indretning og fremgangsmåde til fjernelse af bugfedt fra bugskindet på en slagtet fugl ophængt i benene**

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EP-A1- 1 248 524
EP-A1- 2 314 169
WO-A1-2009/020465
US-A- 5 135 431

DESCRIPTION

[0001] The invention relates to a device and method for removing abdominal fat from abdominal skin of a slaughtered bird suspended by the legs, using a scraping tool having a first vertically movable part and a second vertically movable part that is tiltable towards the first part, wherein the first part and the second part are arranged to execute a concerted operation in an abdominal cavity of the slaughtered bird for removal of said abdominal fat from the bird. The first vertically movable part and the second vertically movable part are arranged to clamp the abdominal skin with the abdominal fat in between said parts, and the device is arranged to remove thereafter the first movable part and the second movable part together from the abdominal cavity of the bird to detach the abdominal fat from the abdominal skin.

[0002] Such a method and device are known from EP-A-1 248 524. In the known method and device a scraper and a support that are both vertically movable are inserted into the abdominal cavity of the slaughtered bird. The bird is fixed in position with a pivotable pin which is also introduced in the abdominal cavity of the slaughtered bird. The scraper has a central aperture and is moved, after its insertion into the bird, towards the support in order to catch the abdominal fat in said central aperture, and then the scraper is moved alongside a surface of the support to remove the abdominal fat from the slaughtered bird whilst the support remains stationary in the bird. In an alternative embodiment the scraper and the support can be moved together in the same direction and in unison to leave the poultry's cavity with the abdominal fat. This operation can be carried out serially on a number of birds moving in either a carousel machine or in a straight processing line, which is currently common in poultry processing in order to be able to meet high production rates. Likewise, the device and method of the invention are preferably to be carried out in combination with a carousel machine or in a straight processing line, for which reason the slaughtered bird is suspended by the legs, normally using for this purpose a series of chained carriers that are moved along a conveyor track.

[0003] It is an object of the invention to simplify the known method and device.

[0004] It is another object of the invention to improve the yield in harvesting abdominal fat from the slaughtered poultry.

[0005] It is still another object of the invention to provide an alternative to the known device which more reliably can harvest the abdominal fat from the poultry.

[0006] These and other objects of the invention which will become apparent from the following disclosure are provided by a method and device according to the features of one or more of the appended claims.

[0007] In a first aspect of the invention the first vertically movable part is embodied with a central aperture and the second vertically movable part is dimensioned to loosely fit in said

central aperture of the first part to provide some play between both movable parts. This is a very suitable arrangement to clamp the abdominal skin with the abdominal fat in the play between the first movable part and the second movable part whilst said play secures the possibility that the abdominal skin can move relative to the first and second movable parts when it is pulled at.

[0008] It is found that with the device of the invention and working according to the method of the invention harvesting of the abdominal fat residing on the abdominal skin of the slaughtered poultry can effectively be realized with high yield.

[0009] The device of the invention is embodied with the feature that the first vertically movable part and the second vertically movable part are arranged to clamp the abdominal skin with the abdominal fat in between said parts to a pre-established limited extent, enabling that the abdominal skin still can move relative to the first part and the second part when a pulling force is applied to said skin caused by the skin being held back by the slaughtered bird during removal of the first part and second part from the abdominal cavity of the bird.

[0010] The first movable part is provided with a wall or walls delimiting an area defining a central aperture of the first movable part, and the second vertically movable part has a closed surface substantially matching the area of the central aperture of the first movable part leaving indeed some room of play between the first and second movable parts. This arrangement is further particularly suitable in a method according to the invention wherein the second vertically movable part is tilted towards the first vertically movable part so that the wall or walls of the first movable part and the second vertically movable part together constitute a cup for receipt of abdominal fat when the abdominal skin with the abdominal fat is clamped between the first and second movable parts. Accordingly the device of the invention is preferably constructed with the feature that the wall or walls of the first movable part and the second vertically movable part are dimensioned such that they together constitute a cup (albeit due to the mentioned play not with a watertight bottom) when the second vertically movable part is tilted towards the first vertically movable part for clamping the abdominal skin with the abdominal fat between said parts.

[0011] It is found that optimal results are achieved by arranging that the central aperture of the first vertically movable part has an essentially rectangular shape, and the second vertically movable part has a corresponding rectangular shape that fits into said central aperture.

[0012] Finally it is found beneficial that the device of the invention is provided with a centering and fixing bracket which is vertically movable, however without tilting capability. This provides a very simple solution to secure accuracy in the operation of the device and method of the invention.

[0013] The invention will hereinafter be further elucidated with reference to the drawing of an exemplary embodiment of a device and its method of operation according to the invention that is not limiting as to the appended claims.

[0014] In the drawing:

- figures 1A and 1B show a device according to the invention in isometric and side view respectively, together with a suspended bird wherein the device is shown immediately prior to becoming operational for removal of abdominal fat;
- figures 2A, 2B and 2C show the device of figures 1A and 1B in respectively isometric view, side view and cross-sectional view, wherein parts of the device are introduced into the abdominal cavity of the bird;
- figures 3A, 3B and 3C show the device of figures 1A and 1B in respectively isometric view, side view and cross-sectional view, wherein first and second parts of the device that are introduced into the abdominal cavity of the bird are moved to a clamping position for clamping the abdominal skin with abdominal fat; and
- figures 4A and 4B show the parts of the device of the invention that are earlier introduced into the abdominal cavity of the bird, now being removed therefrom in respectively an isometric view and in a side view.

[0015] Whenever in the figures the same reference numerals are applied, these numerals refer to the same parts.

[0016] Making first reference to figures 1A and 1B the device of the invention is depicted with reference 1. The device 1 is used for removing abdominal fat from abdominal skin of a slaughtered bird 2 suspended by the legs 3. The device 1 comprises for that purpose a scraping tool 4', 4" having a first vertically movable part 4' and a second vertically movable part 4", wherein the vertically movable part 4" is tiltable towards the first movable part 4'. As will become clear from the following discussion with reference to figures 2 - 4 the first part 4' and the second part 4" are arranged to execute a concerted operation in the abdominal cavity of the slaughtered bird 2 for removal of its abdominal fat residing on the abdominal skin of the bird 2.

[0017] Figures 2A, 2B and 2C show the device 1, wherein particular parts of the device are introduced into the abdominal cavity of the bird. This applies in particular to the first vertically movable part 4' and the second vertically movable part 4", but also to a centering and fixing bracket 5 which is introduced into the abdominal cavity of the bird 2 together and simultaneously with the introduction of the first and the second parts 4', 4" of the device 1 is said abdominal cavity. To this end the centering and fixing bracket 5 is also vertically movable, yet can be arranged without tilting capability to provide a simple and reliable means of fixing the position of the bird 2 which is particularly important when the concerted operation of the first and the second parts 4', 4" of the device 1 in the abdominal cavity of the bird 2 is carried out.

[0018] An important advantage of the invention relates to the introduction of the first part 4' and the second part 4" of the device 1 into the abdominal cavity of the bird 2, wherein contrary

to prior art solutions this introduction does not notably interfere with the abdominal fat 8 on the abdominal skin of the bird 2. This can in particular be seen in figure 2C wherein the introduction of the second part 4" into the abdominal cavity of the bird 2 makes this second part 4" pass along the abdominal fat 8 without notably touching it. At the same time the first vertically movable part 4' remains completely above said abdominal fat 8. This factual situation contributes to the effective subsequent removal of the abdominal fat 8 from the abdominal skin of the bird 2, wherein a high yield is achieved.

[0019] In figures 3A, 3B and 3C it is shown that after the first and second parts 4', 4" of the device 1 are introduced into the abdominal cavity of the bird 2 the second movable part 4" is moved towards the first vertically movable part 4' to cause that these parts 4', 4" eventually clamp the abdominal skin with the abdominal fat in between said parts. According to what is shown in figures 4A and 4B the first movable part 4' and the second movable part 4" are then arranged to move together and in unison to a position outside of the abdominal cavity of the bird 2, which causes the detachment of the abdominal fat 8 from the abdominal skin of the bird 2.

[0020] The first vertically movable part 4' and the second vertically movable part 4" are arranged to clamp the abdominal skin with the abdominal fat in between said parts 4', 4" to a pre-established limited extent enabling that the abdominal skin of the bird 2 still can move relative to the first part 4' and second part 4" of the device 1 clamping said skin, particularly when a pulling force is applied to said skin caused by the skin being held back by the slaughtered bird 2 during removal of the first part 4' and second part 4" from the abdominal cavity of the bird 2. In connection therewith the first vertically movable part 4' is embodied with a central aperture 6 which can best be seen in figures 1A, 2A and 3A. The second vertically movable part 4" is dimensioned to loosely fit in said central aperture 6 of the first part 4' to provide some play between both movable parts 4', 4" which is sufficient to make the above-mentioned movement of the abdominal skin possible when it is torn at, although it is clamped by the parts 4' and 4". Consistent therewith figures 1A, 2A and 3A also show that the first movable part 4' is provided with a wall or walls delimiting an area defining the central aperture 6 of the first movable part 4', wherein figure 3A shows that the second vertically movable part 4" then preferably has a closed surface substantially matching the area of the central aperture 6 of the first movable part 4'.

[0021] From figure 3A it is also clear that the wall 7 or walls of the first movable part 4' and the second vertically movable part 4" together constitute a cup 9 when the second vertically movable part 4" is tilted towards the first vertically movable part 4' to clamp the abdominal skin with the abdominal fat 8 between said parts 4', 4". This cup constituted by the joint operation of the first movable part 4' and the second vertically movable part 4" is suited to receive the abdominal fat that is present on the abdominal skin as will be clear from figure 3C.

[0022] The respective appended figures also show that the central aperture 6 of the first vertically movable part 4' has an essentially rectangular shape, and that the second vertically movable part 4" has a corresponding rectangular shape that fits into said central aperture 6.

This can be best seen in figure 3A although it may also be apparent from figure 4A.

[0023] All in all the invention provides a device and a method of operation of said device which is obtainable at low cost and which is easy to maintain, wherein the harvesting of abdominal fat from the abdominal skin of a slaughtered bird can be realized in a high production rate and with high yield wherein little if any fat remains behind in the bird.

[0024] Although the invention has been discussed in the foregoing with reference to an exemplary embodiment of the device and method of the invention, the invention is not restricted to this particular embodiment which can be varied in many ways without departing from the invention. The discussed exemplary embodiment shall therefore not be used to construe the appended claims strictly in accordance therewith. On the contrary the embodiment is merely intended to explain the wording of the appended claims without intent to limit the claims to this exemplary embodiment. The scope of protection of the invention shall therefore be construed in accordance with the appended claims only, wherein a possible ambiguity in the wording of the claims shall be resolved using this exemplary embodiment.

Nomenclature:

[0025]

1
: device

2
: bird

3
: legs

4'
: first part

4"
: second part

5
: bracket

6
: aperture

7
: wall

8
: abdominal fat

9
: cup

emplary embodiment.

Nomenclature:

[0026]

1
device
2
bird
3
legs
4'
first part
4"
second part
5
bracket
6
aperture
7
wall
8
abdominal fat
9
cup

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP1248524A [0002]

PATENTKRAV

1. Indretning (1) til fjernelse af bugfedt (8) fra bugskindet på en slagtet fugl (2) ophængt i benene (3), omfattende et skrabeværktøj (4', 4") med en første vertikalt bevægelig del (4') og en anden vertikalt bevægelig del (4"), som kan vippes imod den første del (4'), hvor den første del (4') og den anden del (4") er indrettede til at udføre en samstemmende operation i en bughule i den slagtede fugl (2) for fjernelse af bugfedtet (8) fra fuglen (2), hvor den første vertikalt bevægeligt del (4') og den anden vertikalt bevægelige del (4") er anbragt til at fastklemme bugskindet med bugfedtet (8) imellem de nævnte dele (4', 4") og hvor indretningen (1) er indrettet til derefter at fjerne den første bevægelige del (4') og den anden bevægelige del (4") sammen fra bughulen på fuglen for at frigøre bugfedtet (8) fra bugskindet, hvor den første bevægelige del (4') og den anden bevægelige del (4") er indrettede til at bevæge sig samlet, dvs. med samme hastighed, ud af bughulen på fuglen for at frigøre bugfedtet (8) fra bugskindet, **kendetegnet ved, at** den første vertikalt bevægelige del (4') er udformet med en central åbning (6), og den anden vertikalt bevægelige del (4") er dimensioneret til løst at passe ind i den nævnte centrale åbning (6) i den første del (4') for at tilvejebringe en vis frigang imellem de to bevægelige dele (4', 4").

2. Indretning (1) ifølge krav 1, **kendetegnet ved, at** den første vertikalt bevægelige del (4') og den anden vertikalt bevægelige del (4") er indrettede til at fastklemme bugskindet med bugfedtet (8) imellem delene (4', 4") i en forudbestemt begrænset udstrækning, som muliggør at bugskindet stadig kan bevæge sig i forhold til den første del (4') og den anden del (4"), når en trækkraft påføres skindet, forårsaget af at skindet holdes tilbage af den slagtede fugl (2) under fjernelse af den første del (4') og den anden del (4") fra bughulen.

3. Indretning (1) ifølge krav 1 eller 2, **kendetegnet ved, at** den første bevægelige del (4') er forsynet med en væg (7) eller vægge, som afgrænser et areal, som definerer en central åbning (6) i den første bevægelige del (4'), og den anden vertikalt bevægelige del (4") har en lukket overflade, som i det væsentlige stemmer overens med arealet af den centrale åbning (6) i den første bevægelige del (4').

4. Indretning (1) ifølge krav 3, **kendetegnet ved, at** væggen (7) eller væggene i den første bevægelige del (4') og den anden vertikalt bevægelige del (4") sammen udgør en skål (9), når den anden vertikalt bevægelige del (4") vippes imod den første vertikalt

bevægelige del (4') for at fastklemme bugskindet med bugfedtet (8) imellem de nævnte dele (4', 4") for derved at modtage bugfedtet (8) i skålen (9).

5. Indretning (1) ifølge ethvert af de foregående krav 1 til 4, **kendetegnet ved, at** den centrale åbning (6) i den første vertikalt bevægelige del (4') har en i det væsentlige rektangulær form og den anden vertikalt bevægelige del (4") har en tilsvarende rektangulær form, som passer ind i den centrale åbning (6).

6. Indretning (1) ifølge ethvert af de foregående krav 1 til 5, **kendetegnet ved, at** den er forsynet med en centrerings- og fikseringsklemme (5), som er vertikalt bevægelig uden vippeevne.

7. Fremgangsmåde til fjernelse af bugfedt (8) fra bugskindet på en slagtet fugl (2), ophængt i benene (3), under anvendelse af et skrabeværktøj (4', 4"), som er forsynet med en første vertikalt bevægelig del (4') og en anden vertikalt bevægelig del (4"), som kan vippes imod den første del (4'), hvor den første del (4') og den anden del (4") udfører en samstemmende operation i en bughule i den slagtede fugl (2) for fjernelse af bugfedtet (8) på bugskindet på fuglen (2), hvor den anden vertikalt bevægeligt del (4") vippes imod den første vertikalt bevægelige del (4') for at fastklemme bugskindet med bugfedtet (8) imellem den første del (4') og den anden del (4"), og at den første bevægelige del (4') og den anden bevægelige del (4") efterfølgende fjernes sammen fra bughulen i fuglen (2) for at frigøre bugfedtet (8) fra bugskindet, hvor den første bevægelige del (4') og den anden bevægelige del (4") fjernes samlet, dvs. med samme hastighed fra bughulen i fuglen (2) for at frigøre bugfedtet (8) fra bugskindet, hvor den første bevægelige del (4') er forsynet med en væg (7) eller vægge, som afgrænser et areal, som definerer en central åbning (6) i den første bevægelige del (4'), og hvor den anden vertikalt bevægelige del (4") har en lukket overflade, som i det væsentlige stemmer overens med arealet af den centrale åbning (6) i den første bevægelige del (4'), hvor den anden vertikalt bevægelige del (4") vippes imod den første vertikalt bevægelige del (4') således, at væggen (7) eller væggene i den første bevægelige del (4') og den anden vertikalt bevægelige del (4") sammen udgør en skål (9) for modtagelse af bugfedtet (8) når bugskindet med bugfedtet (8) fastklemmes imellem den første og anden bevægelige del (4', 4").

8. Fremgangsmåde ifølge krav 7, **kendetegnet ved, at** bugskindet med bugfedtet (8) fastklemmes imellem den første vertikalt bevægelige del (4') og den anden vertikalt

bevægelige del (4") i en forudbestemt begrænset udstrækning, således at det muliggøres at bugskindet bevæger sig i forhold til den første del (4') og den anden del (4"), når en trækkraft påføres skindet, som forårsages af at skindet holdes tilbage af den slagtede fugl (2), under fjernelse af den første del (4') og den anden del (4") fra bughulrummet.

DRAWINGS

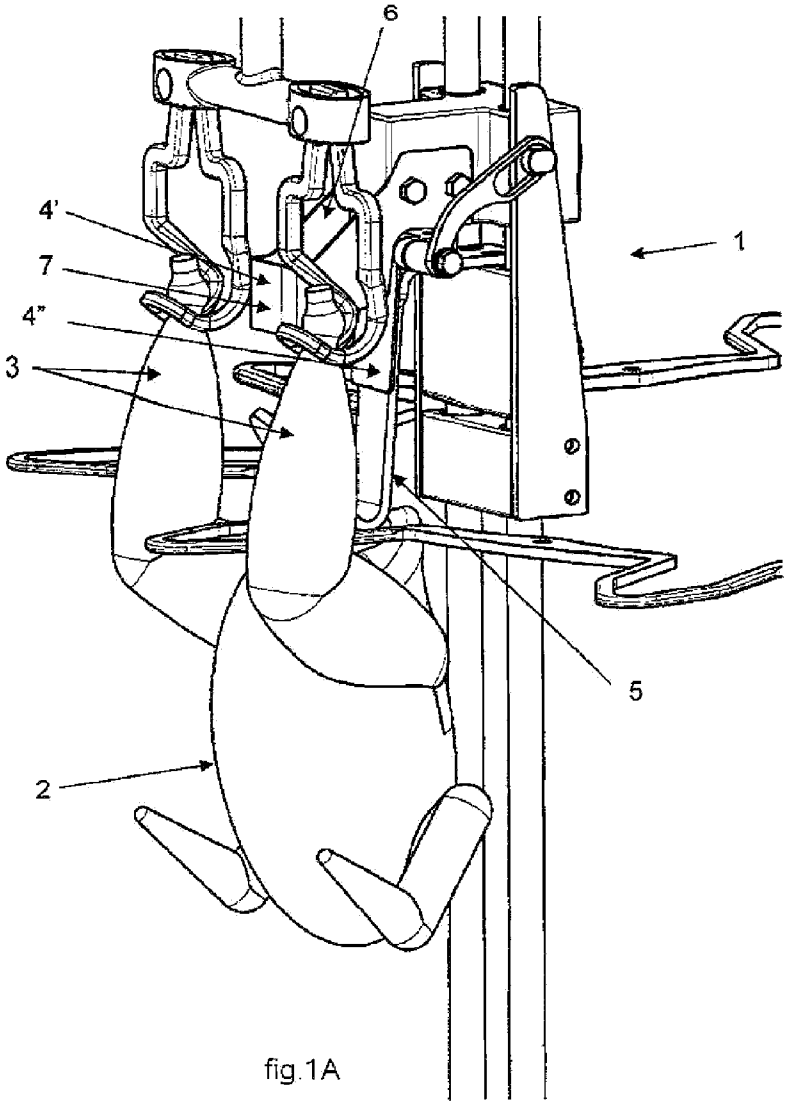

fig.1A

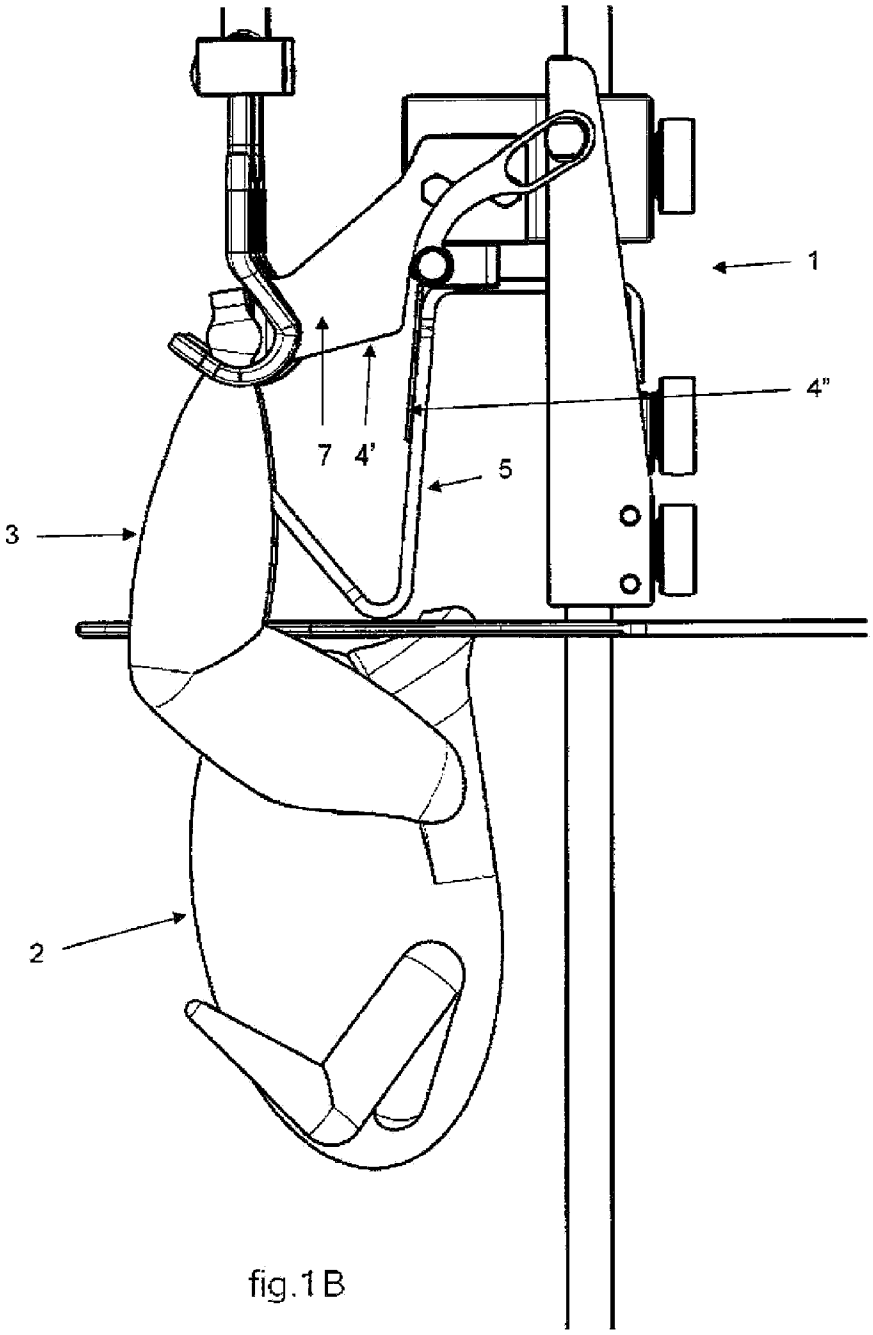

fig.1B

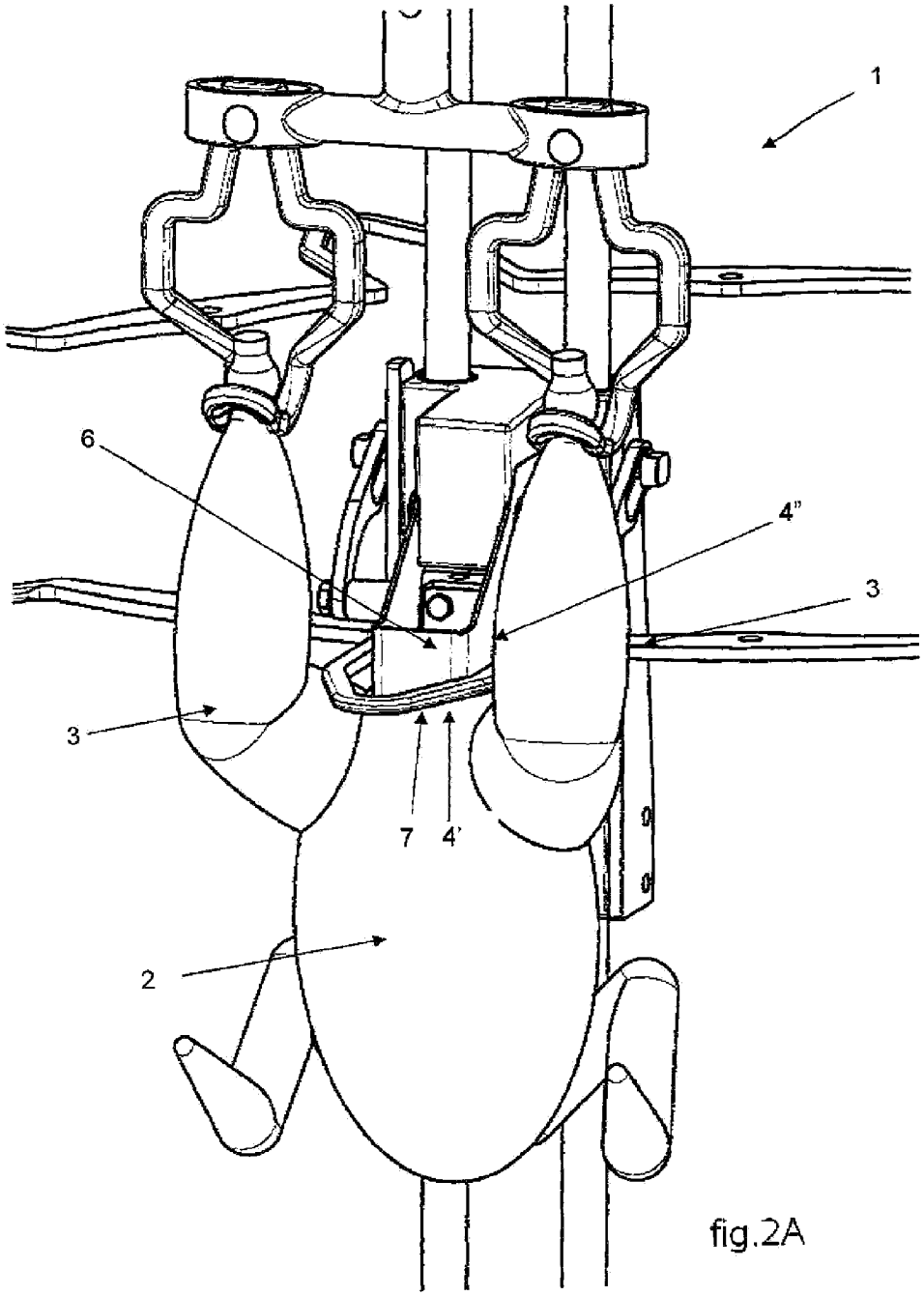

fig.2A

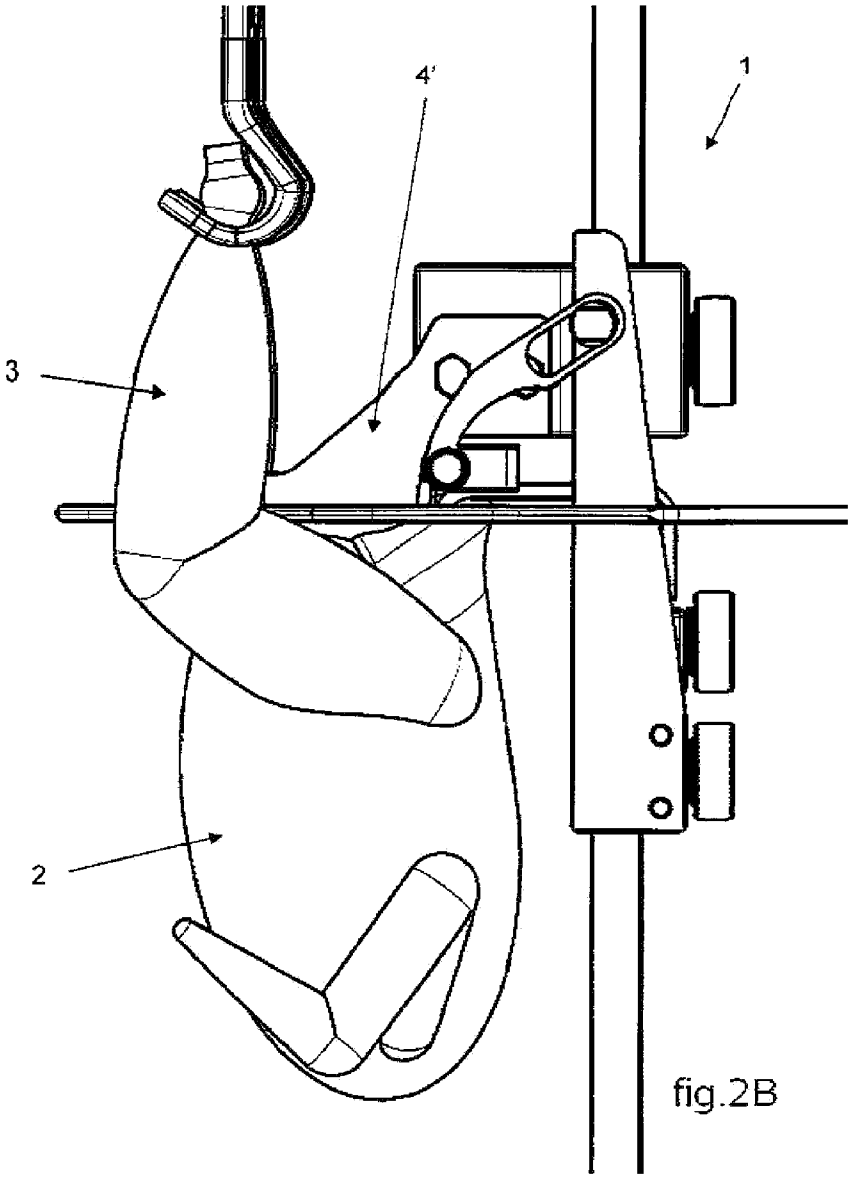

fig.2B

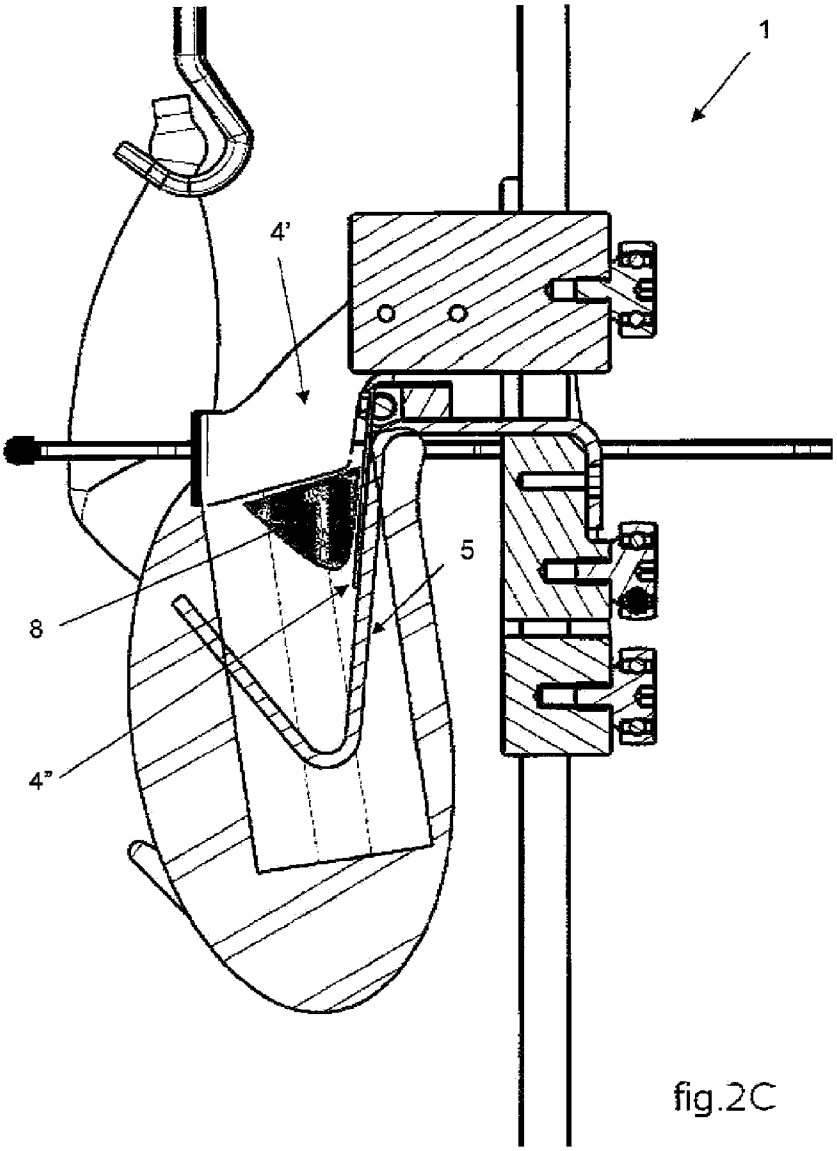

fig.2C

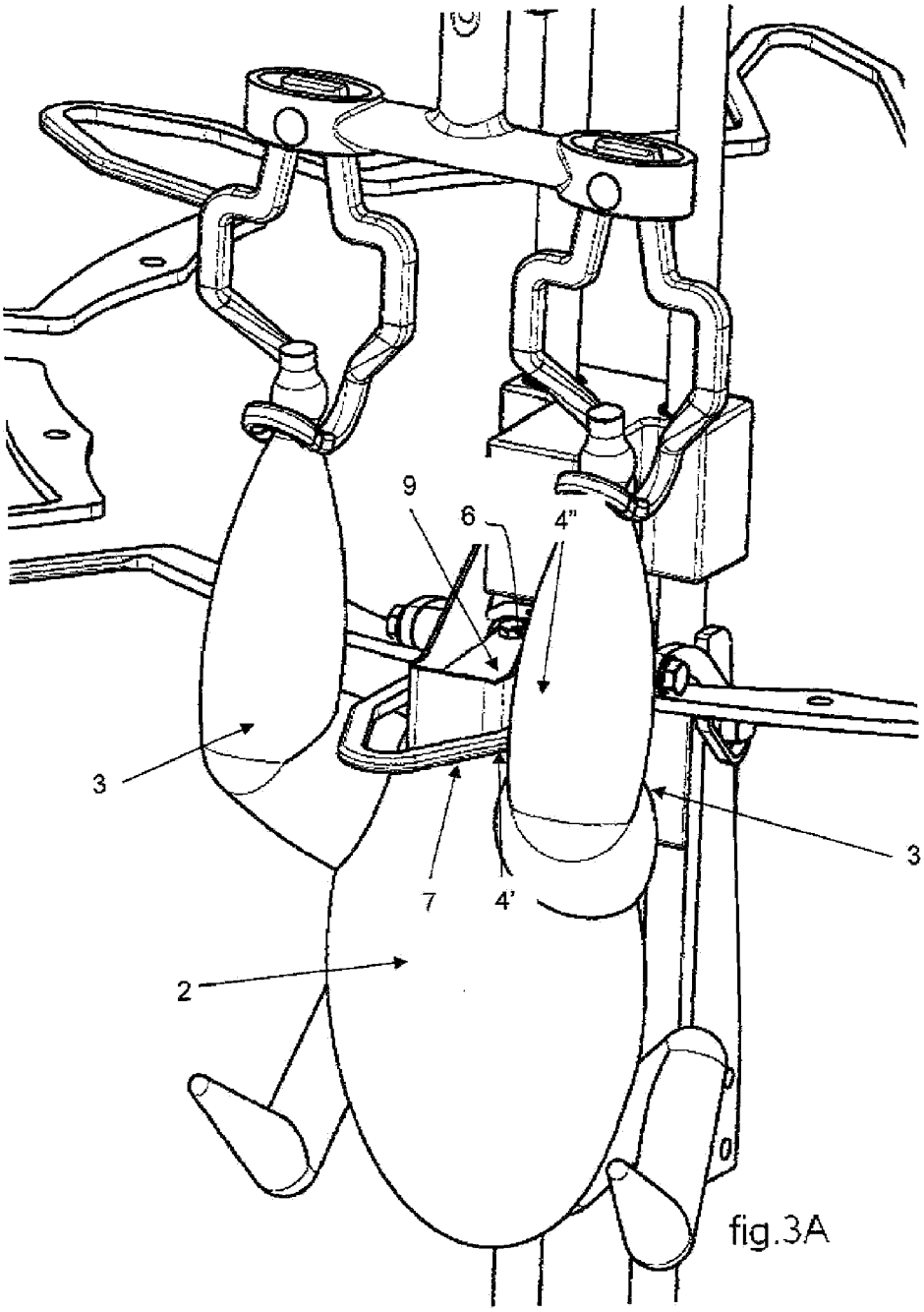

fig.3A

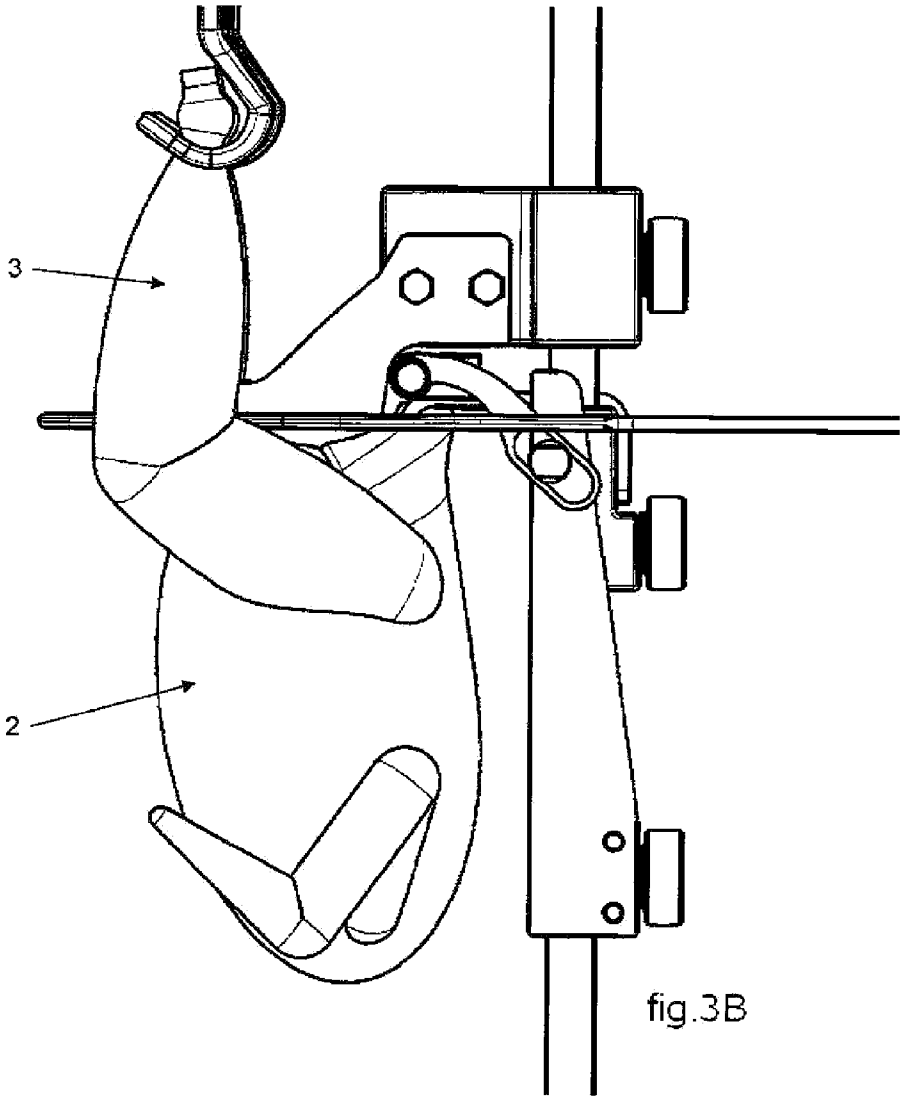

fig.3B

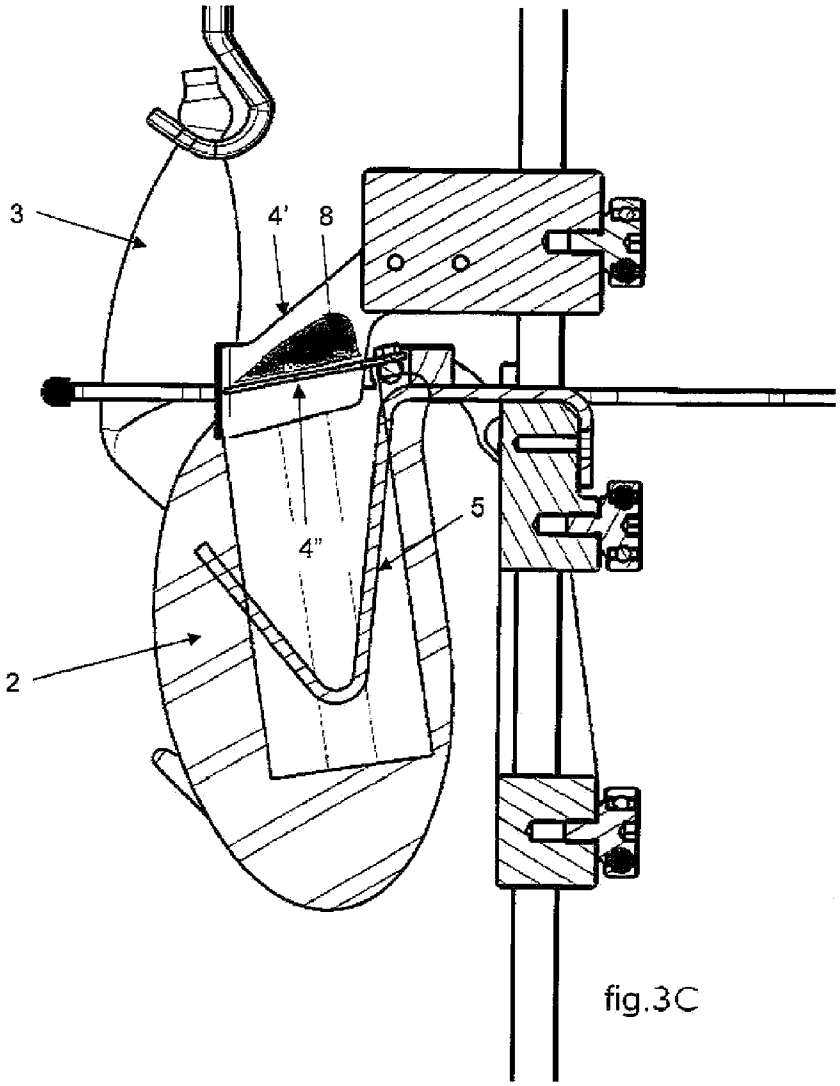

fig.3C

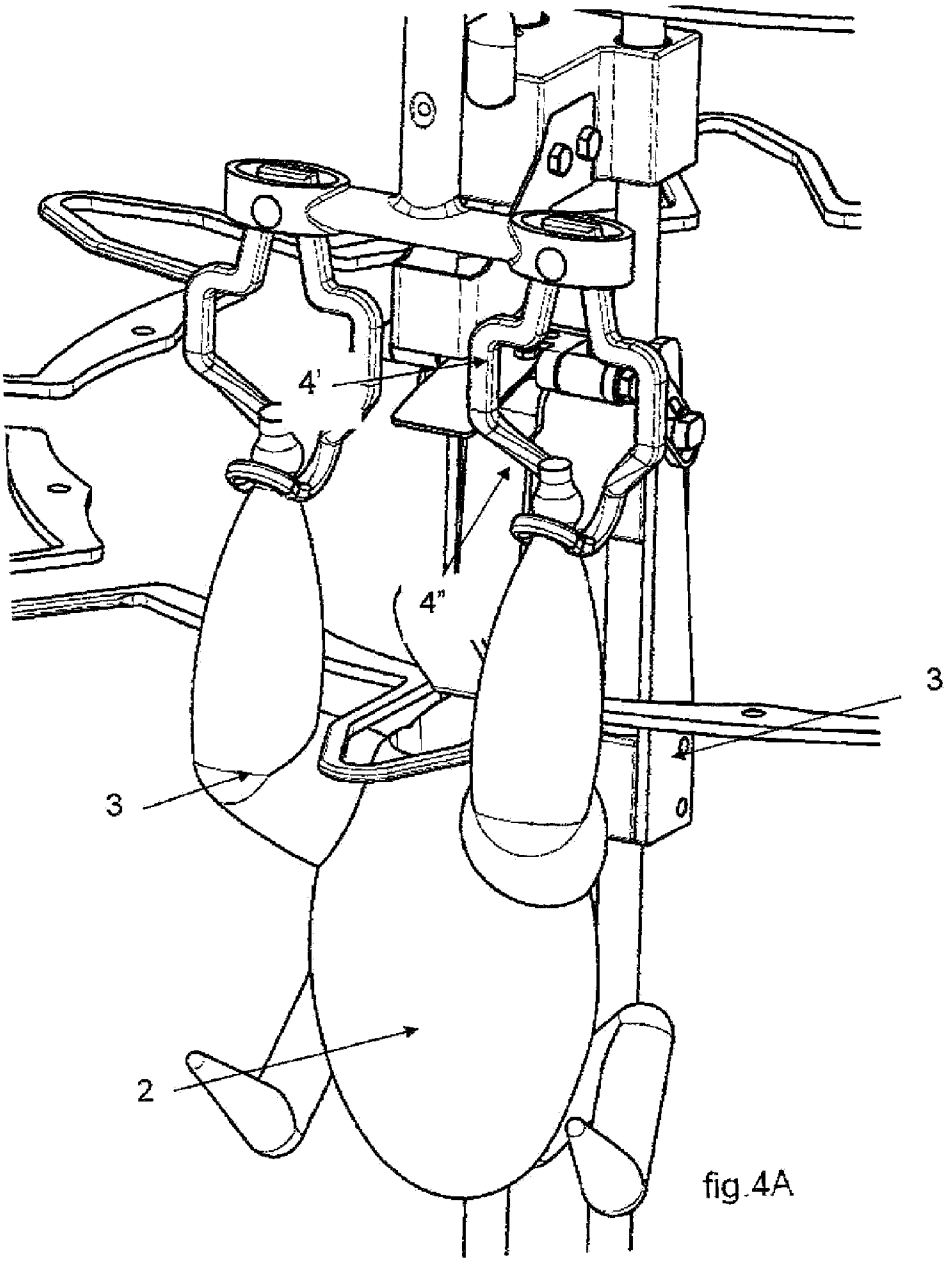

fig.4A

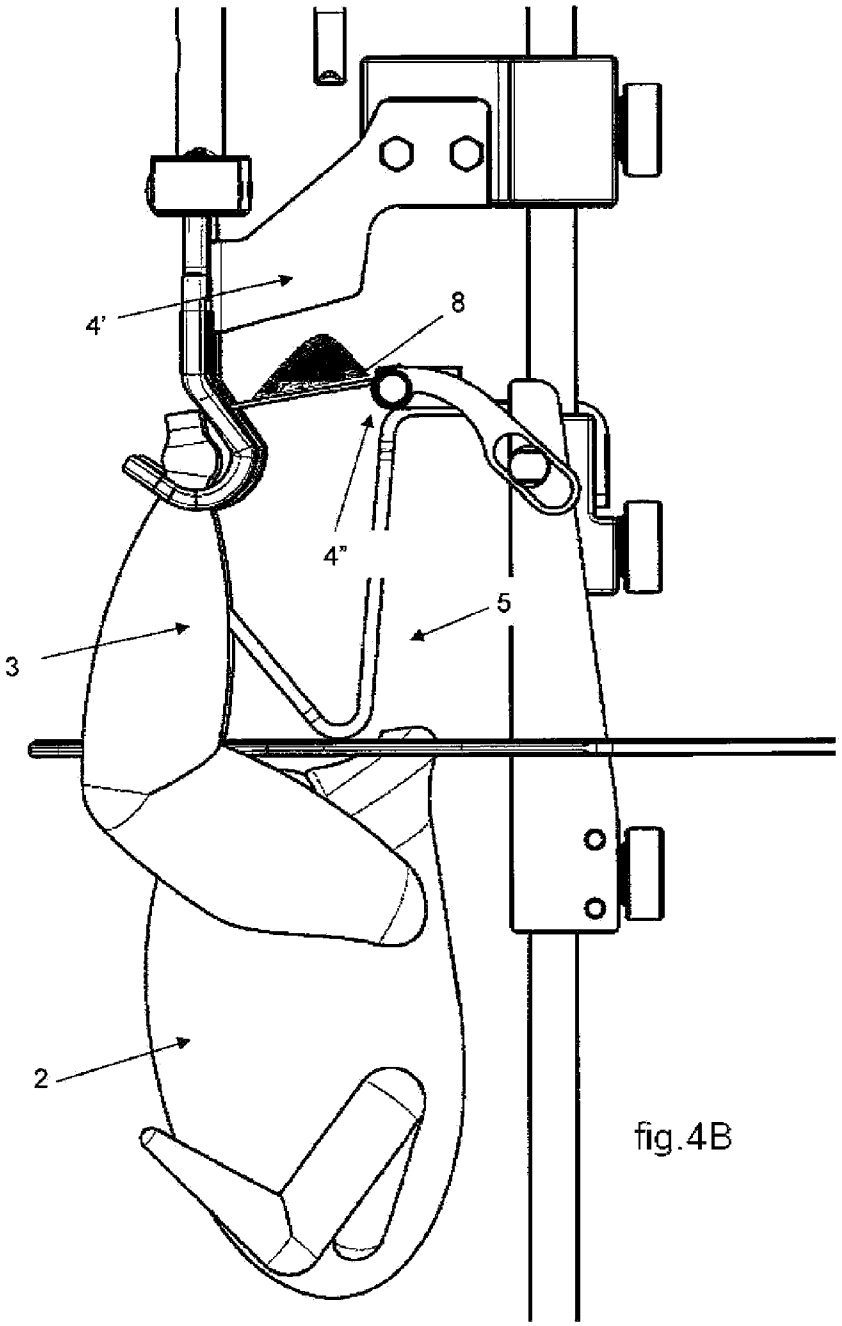

fig.4B