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(54) **Stimulation assembly in support of inseminating livestock**

(57) Stimulation assembly in support of inseminating livestock, particularly in inseminating a sow, comprising a bow provided with a first flank part, a second flank part and a back part keeping the flank parts substantially at a fixed distance from each other, wherein the flank parts and the back part define an accommodation space inside of the bow for accommodating livestock inside it, wherein the back part and the flank parts in placed condition of

the stimulation assembly on the livestock are situated opposite the back and flanks, respectively, of the livestock, wherein on the side of the bow facing the accommodation space the stimulation assembly is provided with an air cushion that is adapted for being coupled to an external air source, wherein in a first position the air cushion takes up a first volume inside of the bow and in a second position it takes up a second volume inside of the bow that exceeds the first volume.

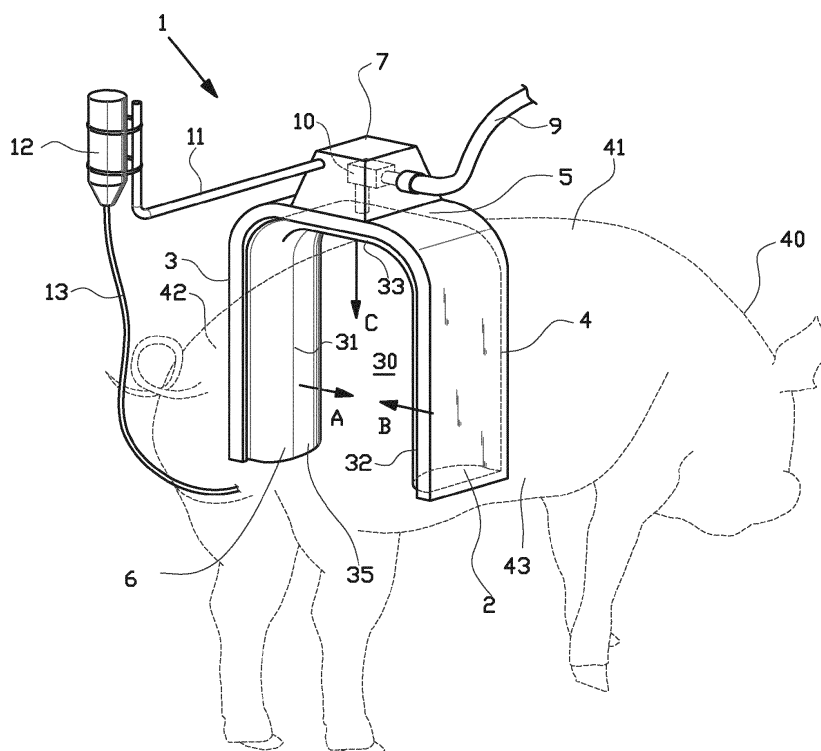


FIG. 1

Description

BACKGROUND OF THE INVENTION

[0001] The invention relates to a stimulation assembly in support of inseminating livestock, particularly a stimulation assembly in support of inseminating sows.

[0002] A stimulation assembly in support of inseminating sows comprising a resilient bow is known. The bow is placed on a sow so as to clamp, after which the bow exerts a constant pressing force on the flanks of the sow. The pressing force stimulates the sow's reflex to stand, which may promote the taking in of semen during insemination.

[0003] Constant pressing force results in a more or less static situation, wherein due to the sow's habituation the reflex to stand could be reduced after a while. A solution to this is an electrically driven stimulation assembly wherein the bow is provided with a back part and flank parts that are coupled to the back part so as to hinge. The flank parts are reciprocally moved from the back part by electrically driven arms in order to vary the pressure force the flank parts exert on the flanks of the sow. Due to the variation in the pressure force a more natural stimulation of the sow can be ensured wherein the reflex to stand is maintained over a longer period of time as well.

[0004] The known electrically driven stimulation assembly, however, is failure prone as a result of conditions in the stable. Dirt may for instance accumulate between the arms and the hinge points of the stimulation assembly, as a result of which the parts are subject to wear more quickly, produce excessive noise or break down. In addition moisture or dirt may enter the electrical components, which may result in the stimulation assembly malfunctioning.

[0005] It is an object of the invention to provide a stimulation assembly, in which hitches of the stimulation assembly as a result of dirt and water can be counteracted.

SUMMARY OF THE INVENTION

[0006] According to a first aspect the invention provides a stimulation assembly in support of inseminating livestock, particularly in inseminating a sow, comprising a bow provided with a first flank part, a second flank part and a back part keeping the flank parts substantially at a fixed distance from each other, wherein the flank parts and the back part define an accommodation space inside of the bow for accommodating livestock inside it, wherein the back part and the flank parts in placed condition of the stimulation assembly on the livestock are situated opposite the back and flanks, respectively, of the livestock, wherein on the side of the bow facing the accommodation space the stimulation assembly is provided with an air cushion that is adapted for being coupled to an external air source, wherein in a first position the air cushion takes up a first volume inside of the bow and in a second position it takes up a second volume inside of

the bow that exceeds the first volume.

[0007] Inflating the air cushion takes place pneumatically by supplying air from the external air source. The fuel-driven or electricity-driven external air source can be placed at a clean external location that is less failure prone. The number of failure-sensitive electrical components in the stimulation assembly can thus be reduced.

[0008] In one embodiment the air cushion is adapted for in the second position abutting and exerting a pressure force on the flanks of the livestock. The pressure force can stimulate the livestock's reflex to stand. In that way the semen introduced into the livestock during insemination will be taken in better by the livestock.

[0009] In one embodiment the air cushion is coupled to the air source via a pressure alternating device, wherein the pressure alternating device allows air from the air source through to the air cushion in a pulsating manner. The pressure alternating device allowing air through in a pulsating manner causes a variation in pressure force that can ensure a further, more natural stimulation of the livestock which may promote taking in semen. The variation in pressure force can continuously stimulate the livestock to maintain the reflex to stand.

[0010] In one embodiment the air cushion comprises a first air cushion section and a second air cushion section that are attached to sides of the first flank part and the second flank part, respectively, which sides face the accommodation space. By means of the first air cushion section and the second air cushion section a pressing force can be exerted on both flanks of the livestock.

[0011] In one embodiment the air cushion comprises a third air cushion section that is attached to the side of the back part that faces the accommodation space. By means of the third air cushion section the bow can comfortably abut the back of the livestock.

[0012] In one embodiment the air cushion sections form individual air chambers. Each air chamber can individually be provided with air from the air source.

[0013] In one embodiment the air cushion sections form a single continuous air chamber. By blowing air into the single air chamber all air chamber sections can simultaneously be provided with air.

[0014] In one embodiment the back part forms a rigid connection between the first flank part and the second flank part. In that way the distance between the first flank part and the second flank part is determined and the air cushion is able to exert pressure force on the livestock from the flank parts without the flank parts moving outward as a result of the reaction force.

[0015] In one embodiment the pressure alternating device is an air control valve or a pulsator. The air control valve or the pulsator is able to allow the air flow from the air source through to the air cushion automatically in a pulsating manner at a predetermined frequency and interrupt it and in between the pulses is able to allow air to flow out of the air cushion that was pressurised by the pulses.

[0016] In one embodiment the air source is a com-

pressed air source. The compressed air source generally is part of standard stable equipment and is able to supply a compressed air flow of sufficient air pressure to the stimulation assembly for inflating the air cushion into the second position.

[0017] According to a second aspect the invention provides a method for inseminating livestock, particularly for inseminating a sow, with the support of a stimulation assembly, wherein the stimulation assembly comprises a bow provided with a first flank part, a second flank part and a back part keeping the flank parts substantially at a distance from each other, wherein the flank parts and the back part define an accommodation space inside of the bow for accommodating livestock inside it, wherein on the side of the bow facing the accommodation space the stimulation assembly is provided with an air cushion that is adapted for being coupled to an external air source, wherein the method comprises the steps of placing the bow of the stimulation assembly on the livestock with the back part and the flank parts opposite the back and flanks, respectively, of the livestock, wherein in a first position the air cushion takes up a first volume inside of the bow, allowing air from the air source through to the air cushion such that with respect to the first position the air cushion increases in volume until in a second position in which the air cushion takes up a second volume inside of the bow that exceeds the first volume.

[0018] Inflating the air cushion takes place pneumatically by supplying air from the external air source. The fuel-driven or electricity-driven external air source can be placed at a clean external location that is less failure prone. The number of failure-sensitive electrical components in the stimulation assembly can thus be reduced.

[0019] In one embodiment in the second position the air cushion is in abutting contact with and exerts a pressure force on the flanks of the livestock. The pressure force can stimulate the livestock's reflex to stand. In that way the semen introduced into the livestock during insemination will be taken in better by the livestock.

[0020] In one embodiment the air cushion is coupled to the air source via a pressure alternating device, wherein the method further comprises the steps of by means of the pressure alternating device allowing the air from the air source through to the air cushion in a pulsating manner and in between the pulses allowing the air to flow out of the air cushion via an outlet. The pressure alternating device allowing air through in a pulsating manner causes a variation in pressure force that can ensure a further, more natural stimulation of the livestock which may promote taking in semen. The variation in pressure force can continuously stimulate the livestock to maintain the reflex to stand.

[0021] In one embodiment during allowing the air to flow out of the air cushion, the air cushion returns in the direction of the first position of the air cushion. Allowing the air to flow out and thus the pressure out of the air cushion causes a variation in pressure force that can ensure a further, more natural stimulation of the livestock

which may promote taking in semen. The variation in pressure force can continuously stimulate the livestock to maintain the reflex to stand.

[0022] In one embodiment, in between the pulses of the pressure alternating device, the air cushion remains in abutting contact with the flanks of the livestock, wherein each pulse provided by the pressure alternating device effects a variation in the pressure force the air cushion exerts on the flanks of the livestock. This variation in pressure force ensures a further more natural stimulation of the sow when taking in the semen. Moreover a pulsating variation in pressure force continuously stimulates the sow to maintain the reflex to stand. 'In between the pulses of the pressure alternating device' means the time in between the pulses when the pressure alternating device is being used to stimulate the livestock, or provides substantially regular pulses. When switching off the stimulation assembly, as a result of prolonged flowing out of air, the air cushion will return to the first position of the air cushion and end the abutting contact with the flanks of the livestock. When the stimulation assembly has returned into the first position the stimulation assembly can subsequently be removed easily.

[0023] In one embodiment the stimulation assembly is provided with one or more of the characterising measures described in the attached description and/or shown in the attached drawings.

[0024] In one embodiment the method is provided with one or more of the characterising measures described in the attached description and/or shown in the attached drawings.

[0025] The aspects and measures described in this description and the claims of the application and/or shown in the drawings of this application may where possible also be used individually. Said individual aspects may be the subject of divisional patent applications relating thereto. This particularly applies to the measures and aspects that are described per se in the sub claims.

SHORT DESCRIPTION OF THE DRAWINGS

[0026] The invention will be elucidated on the basis of a number of exemplary embodiments shown in the attached schematic drawings, in which:

figure 1 shows an isometric view of a stimulation assembly, in the condition in which it is placed on a sow, according to a first embodiment of the invention; figure 2 shows a front view of the stimulation assembly according to figure 1; figure 3 shows a top view in cross-section of the stimulation assembly according to the line III-III in figure 2; and figure 4 shows a front view of an alternative stimulation assembly according to a second embodiment of the invention.

DETAILED DESCRIPTION OF THE DRAWINGS

[0027] Figures 1-3 show a stimulation assembly 1 in support of inseminating livestock, particularly in the insemination of sows 40, according to a first embodiment of the invention.

[0028] As shown in figure 1 the stimulation assembly 1 comprises a plastic or metal bow 2 that is placed like a saddle on the back 41 and on either side of the flanks 42, 43 of a sow 40. On the inside of the bow 2 facing the sow 40, the stimulation assembly 1 is provided with an air cushion 6 for exerting pressure on the flanks 42, 43 and the back 41 of the sow 40. The stimulation assembly 1 further comprises a holder 11 that is upright from the bow 2 and a drip 12 for containing the semen is attached to the holder 11.

[0029] As shown in front view in figure 2 the bow 2 has an inverted U-shape. The bow 2 comprises a first flank part 3, a second flank part 4 that extends substantially parallel to the first flank part 3 and a back part 5 that keeps the first flank part 3 and the second flank part 4 at a distance from each other. The connection between flank parts 3, 4 and the back part 5 preferably is rigid, so that the distance between the flank parts 3, 4 remains substantially constant. The first flank part 3, the second flank part 4 and the back part 5 define an accommodation space 30 inside of the bow in which the sow 40 fits. The distance between the flank parts 3, 4 exceeds the flank width F between the flanks 42, 43 of the sow, so that the bow 2 can easily be placed on the sow 40 with play between the flank parts 3, 4 of the bow 2 and the flanks 42, 43 of the sow 40.

[0030] As shown in figure 3 in this example at the location of the first flank part 3 and the second flank part 4 the bow 2 is provided with a constant C-shaped cross-section that is continued in the back part 5. The bow 2 comprises an outer wall 23 and two side walls 21, 22 that are upright from the outer wall 23 and that jointly form a channel 24 that is open on the inside of the bow 2, which inside faces the accommodation space 30.

[0031] As shown in figures 1, 2 and 3 the air cushion 6 is attached in the channel 24 in which it is confined between the side walls 21, 22 and the outer wall 23 of the bow 2. The air cushion 6 is made of an airtight, elastic or stretchy material such as rubber, synthetic material or fabric, forming a closed-off air chamber 35. The air cushion 6 comprises a first air cushion section 31, a second air cushion section 32 and a third air cushion section 33 along the inner sides of the first flank part 3, the second flank part 4 and the back part 5, respectively, which inner sides face the accommodation space. The air chamber 35 extends through the first, second and third air cushion section 31-33 through the channel 24 of the bow 2. Via a pneumatically controlled pressure alternator, pulsator or air control valve 10, accommodated in a housing 7 of the back part 5, the air chamber 35 is connected to a compressed air line 9. The compressed air line 9 is connected to an external compressed air source that is not

shown in the stable. The air control valve 10 is adapted for automatically at a predetermined frequency allowing through and interrupting a compressed air flow from the compressed air line 9 to the air chamber 35 and in between pulses allowing air to gradually flow out of the air chamber 35 that was pressurised by the pulses. During a pulse of compressed air from the compressed air line 9 the air chamber 35 is pressurised such that the air cushion 6 expands in directions A, B, C from the channel 24 of the bow 2 to beyond the side walls 21, 22 of the bow 2 as a result of which the accommodation space 30 between the flank parts 3, 4 and the back part 5 is reduced.

[0032] As shown in figure 1 the holder 11 that is upright from the bow 2 extends to above the hindquarters of the sow 40. The drip 12 arranged on the holder 11, is provided with a flexible tube 13 that can be inserted into the genitals of the sow 40 in order to transfer semen from the drip 12 to the sow 40 as a result of gravity.

[0033] The operation of the stimulation assembly 1 is explained below on the basis of figures 1-3.

[0034] In figure 1 the situation is shown in which the bow 2 of the stimulation assembly 1 has been placed on the sow 40. When placing the stimulation assembly 1 on the sow 40 the air control valve 10 stops the compressed air flow from the compressed air line 9 and the air control valve 10 has allowed the air from the air chamber 35 to flow at least partially away. The volume of the air cushion 6 decreases as a result of which the air cushion 6 contracts and comes to sit retracted in the first position 61 in the channel 24 of the bow 2, as shown with broken lines in figure 3. The accommodation space 30 between the first flank part 3, the second flank part 4 and the back part 5 is not further reduced by the air cushion 6 in the first position 61 of the air cushion 6, as a result of which in the first position 61 the accommodation space 30 is larger than the flank width F between the flanks of the sow 40. In the first position 61 of the air cushion 6 the stimulation assembly 1 loosely fits onto the sow 40 and moreover can easily be removed again.

[0035] In figure 2 the situation is shown in which the air control valve 10 has allowed compressed air through to the air chamber 35 of the air cushion 6, as a result of which the volume of the air cushion 6 has increased and the air cushion 6 has expanded from the first flank part 3, the second flank part 4 and the back part 5 in the directions A, B and C, respectively, into a second pressurized position 62. In this second position 62 the air cushion 6 reduces the accommodation space 30 between the first flank part 3, the second flank part 4 and the back part 5, as a result of which the air cushion 6 contacts the flanks 42, 43 and the back 41 of the sow 40. Preferably the air cushion 6 is inflated such that the air cushion 6 not only abuts the flanks 42, 43 of the sow 40, but also exerts powerful pressure at that location. The pressure on the flanks 42, 43 stimulates the sow's 40 reflex to stand, as a result of which semen from the drip 12 is taken in better by the sow 40.

[0036] Figure 3 shows both the first position 61 and

the second position 62 of the air cushion 6. When the stimulation assembly 1 is operational the air cushion 6 moves as a result the pulsating compressed air flow from the air control valve 10, between the first position and the second position 62. Preferably the air cushion 6 does not fully deflate into the first position 61 in between the pulses and the air cushion 6 also remains in abutting contact with the flanks 42, 43 of the sow 40 in between the pulses. Preferably the pressure in the air cushion 6 decreases such that the sow 40 only perceives a variation in the pressure force the air cushion 6 exerts on the flanks 42, 43 of the sow 40. The pulsating variation in pressure force continuously stimulates the sow 40 to maintain the reflex to stand. Moreover the pulsating variation in pressure force ensures a further more natural stimulation of the sow 40 when taking in the semen.

[0037] The air cushion 6 fully returning to the first position 61 as shown with broken lines in figure 3 for instance occurs when the stimulation assembly 1 has to be removed from the sow 40.

[0038] Figure 4 shows an alternative stimulation assembly 101 according to a second embodiment of the invention. The alternative stimulation assembly 101, just like the stimulation assembly 1 shown in figures 1-3, comprises a bow 102 with two flank parts 103, 104 and a back part 105 and an air control valve 110 accommodated in the back part 105. The alternative stimulation assembly 101 differs from the stimulation assembly 1 as shown in figures 1-3 in that the air cushion 106, instead of one single air chamber, comprises two individual air chambers 135, 136 that are closed off airtight. The first air chamber 135 and the second air chamber 136 are formed by a first air cushion section 131 and a second air cushion section 132, respectively, that are attached to either side of the bow 102 and to the sides of the first flank part 103 and the second flank part 104, respectively, which sides face the accommodation space 130. Via compressed air lines 115, 116 the air chambers 135, 136 are both connected to the air control valve 110 situated in the back part 105. The back part 105, contrary to the back part 5 of the stimulation assembly 1 according to figures 1-3 is not provided with an air cushion section. In this embodiment the alternative stimulation assembly is limited to the pulsating stimulation of only the sow's flanks.

[0039] The back part 105 according to the alternative embodiment of the stimulation assembly 101 of figure 4 can in a further alternative embodiment that is not shown, be provided with a back cushion that is kept at a constant pressure or filled with a soft material, with which the bow comfortably abuts the sow's back.

[0040] From the above it will be clear that a single pulsating air chamber, but also a multiple of individually pulsating air chambers formed by a multiple of air cushion sections fall under the scope of the present invention.

[0041] 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 spirit and scope of the present invention will be evident to an expert.

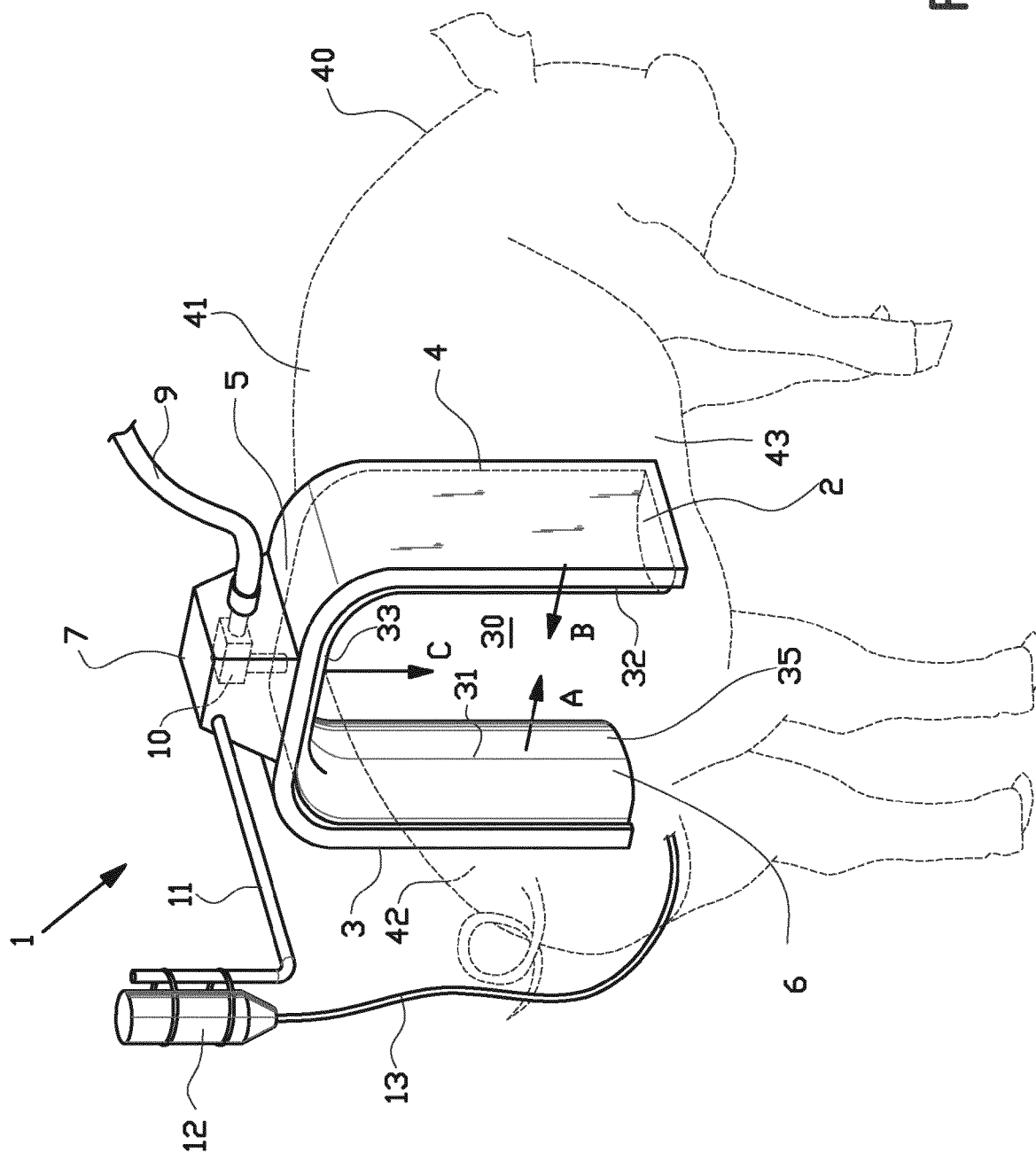
Claims

1. Stimulation assembly in support of inseminating livestock, particularly in inseminating a sow, comprising a bow provided with a first flank part, a second flank part and a back part keeping the flank parts substantially at a fixed distance from each other, wherein the flank parts and the back part define an accommodation space inside of the bow for accommodating livestock inside it, wherein the back part and the flank parts in placed condition of the stimulation assembly on the livestock are situated opposite the back and flanks, respectively, of the livestock, wherein on the side of the bow facing the accommodation space the stimulation assembly is provided with an air cushion that is adapted for being coupled to an external air source, wherein in a first position the air cushion takes up a first volume inside of the bow and in a second position it takes up a second volume inside of the bow that exceeds the first volume.
2. Stimulation assembly according to claim 1 wherein the air cushion is adapted for in the second position abutting and exerting a pressure force on the flanks of the livestock.
3. Stimulation assembly according to claim 1 or 2, wherein the air cushion is coupled to the air source via a pressure alternating device, wherein the pressure alternating device allows air from the air source through to the air cushion in a pulsating manner.
4. Stimulation assembly according to any one of the preceding claims, wherein the air cushion comprises a first air cushion section and a second air cushion section that are attached to sides of the first flank part and the second flank part, respectively, which sides face the accommodation space.
5. Stimulation assembly according to claim 4, wherein the air cushion comprises a third air cushion section that is attached to the side of the back part that faces the accommodation space.
6. Stimulation assembly according to claim 4 or 5, wherein the air cushion sections form individual air chambers.
7. Stimulation assembly according to claim 4 or 5, wherein the air cushion sections form a single continuous air chamber.
8. Stimulation assembly according to any one of the

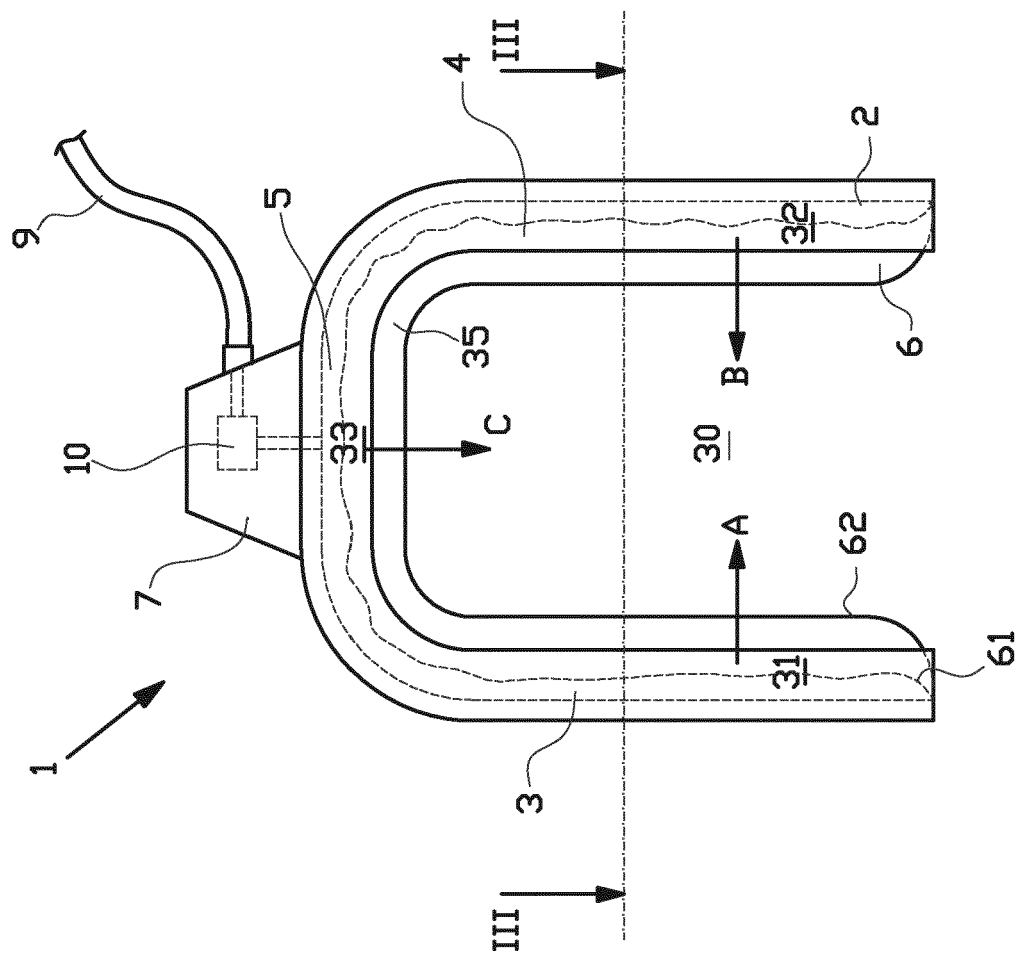
preceding claims, wherein the back part forms a rigid connection between the first flank part and the second flank part.

of the livestock, wherein each pulse provided by the pressure alternating device effects a variation in the pressure force the air cushion exerts on the flanks of the livestock.

9. Stimulation assembly according to any one of the preceding claims, wherein the pressure alternating device is an air control valve or a pulsator. 5
10. Stimulation assembly according to any one of the preceding claims, wherein the air source is a compressed air source. 10
11. Method for inseminating livestock, particularly for inseminating a sow, with the support of a stimulation assembly, wherein the stimulation assembly comprises a bow provided with a first flank part, a second flank part and a back part keeping the flank parts substantially at a distance from each other, wherein the flank parts and the back part define an accommodation space inside of the bow for accommodating livestock inside it, wherein on the side of the bow facing the accommodation space the stimulation assembly is provided with an air cushion that is adapted for being coupled to an external air source, wherein the method comprises the steps of placing the bow of the stimulation assembly on the livestock with the back part and the flank parts opposite the back and flanks, respectively, of the livestock, wherein in a first position the air cushion takes up a first volume inside of the bow, allowing air from the air source through to the air cushion such that with respect to the first position the air cushion increases in volume until in a second position in which the air cushion takes up a second volume inside of the bow that exceeds the first volume. 15
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12. Method according to claim 11, wherein in the second position the air cushion is in abutting contact with and exerts a pressure force on the flanks of the livestock. 40
13. Method according to claim 11 or 12, wherein the air cushion is coupled to the air source via a pressure alternating device, wherein the method further comprises the steps of by means of the pressure alternating device allowing the air from the air source through to the air cushion in a pulsating manner and in between the pulses allowing the air to flow out of the air cushion via an outlet. 45
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14. Method according to claim 13, wherein during allowing the air to flow out of the air cushion, the air cushion returns in the direction of the first position of the air cushion. 55
15. Method according to claim 14, wherein in between the pulses of the pressure alternating device the air cushion remains in abutting contact with the flanks



15.1



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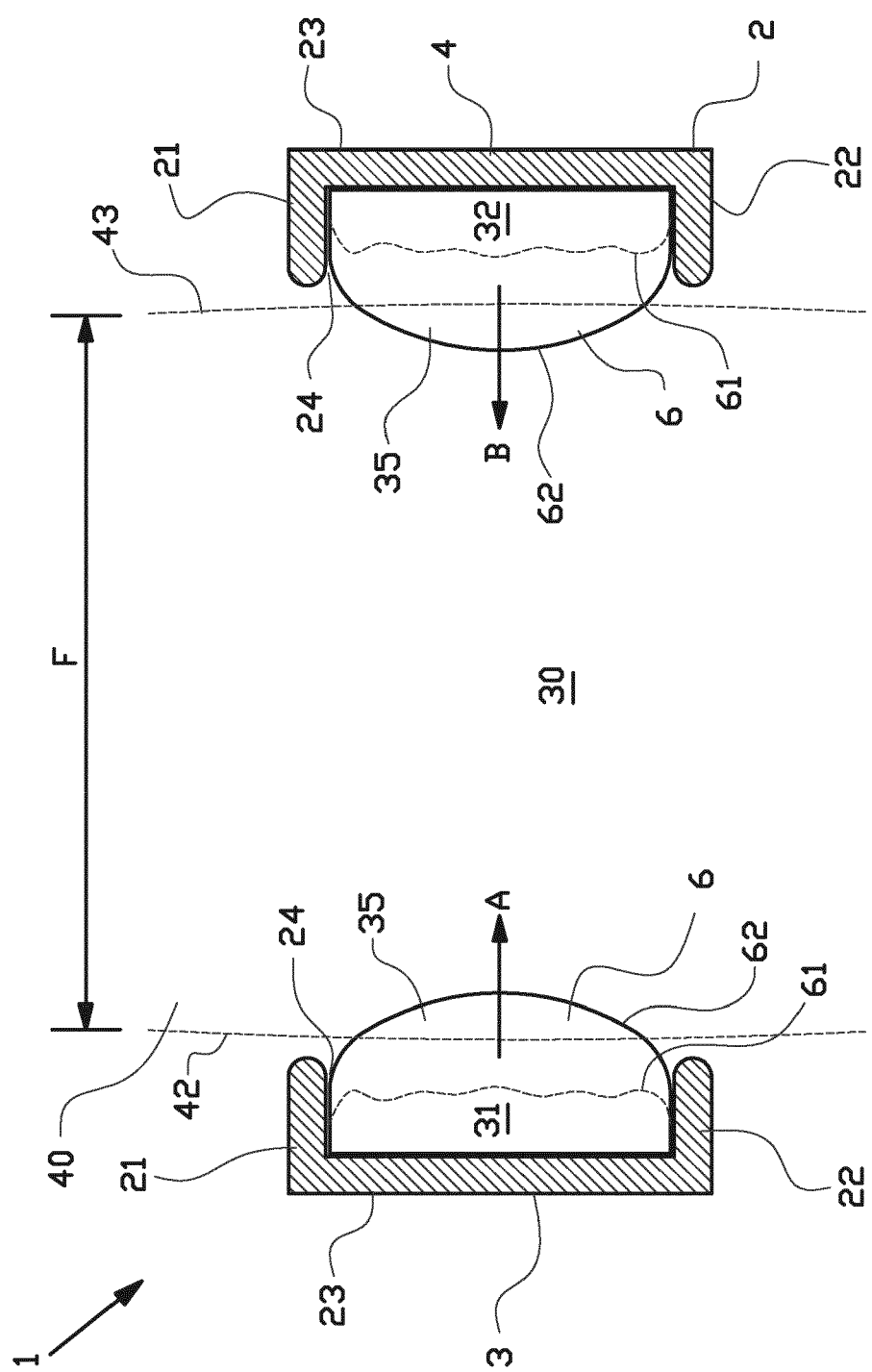
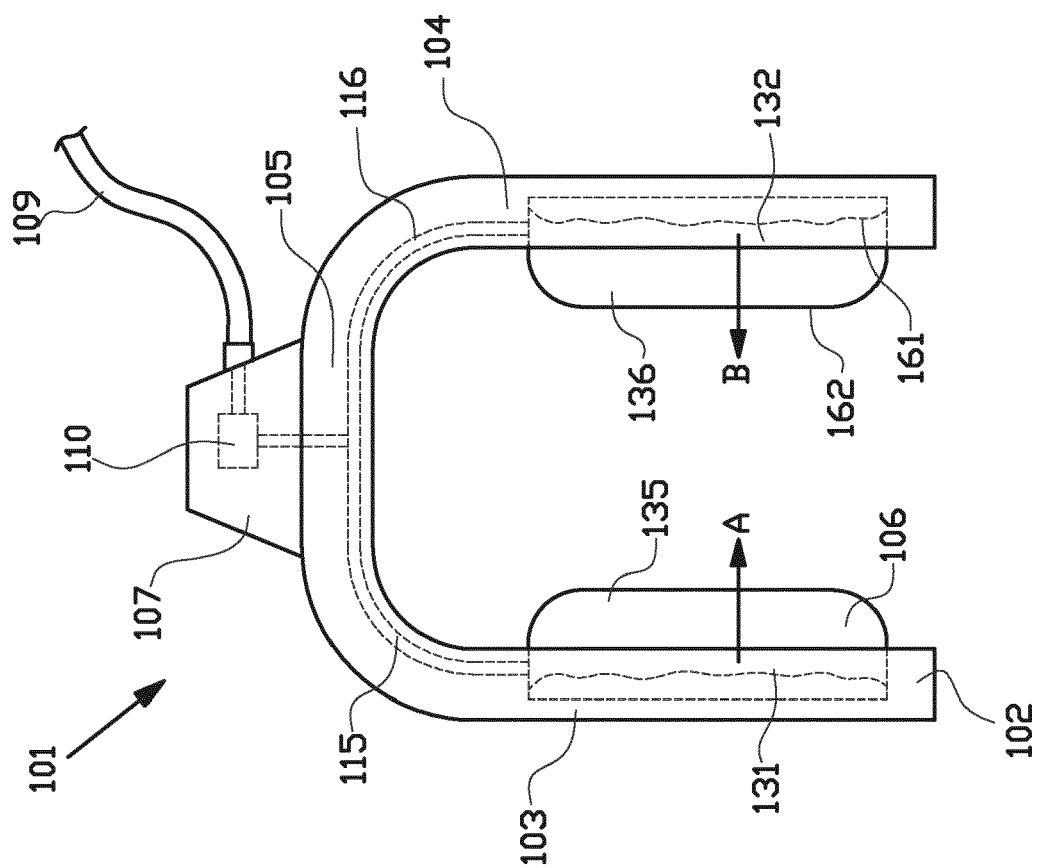


FIG. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 12 19 3242

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 13 February 2013	Examiner Chabus, Hervé
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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