(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 457 537 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
30.05.2012 Bulletin 2012/22

(51) Int Cl.:
A61D 19/02 *(2006.01)*

(21) Application number: **11189459.8**

(22) Date of filing: **17.11.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **24.11.2010 DK 201070504**

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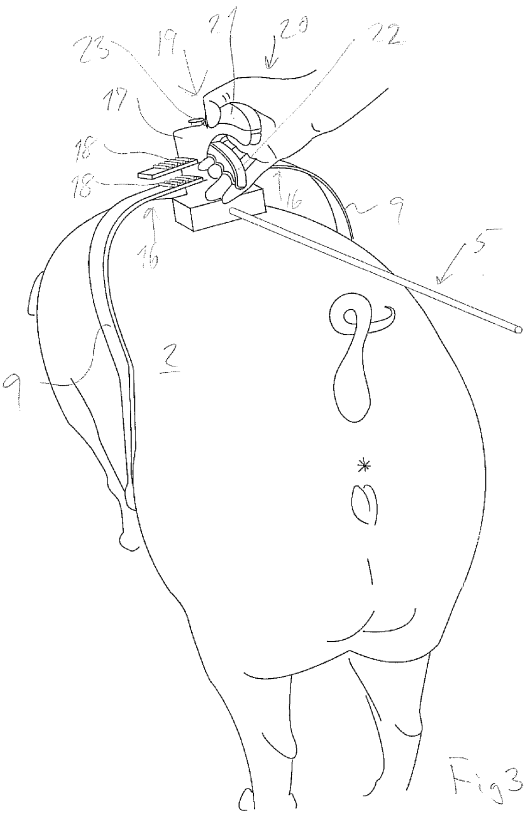
(54) Device for artificial insemination of a domestic animal

(57) There is disclosed a device (1) for use in artificial insemination of a domestic animal, in particular a sow (2). The device has a holder (3) for supporting a sperm container (4). The device includes a longitudinal support means (5) extending across the back of the animal to a point (7) behind the animal. Furthermore, it includes a U-shaped bracket means (8) with two resilient bracket branches (9) which are connected with a connecting means (17). During insemination, the resilient bracket branches (9) will bear on the back and sides of the sow.

In order to adapt the squeezing force to sows of various sizes, the resilient bracket branches are interconnected movably via the connecting means (17). The activation means (21,22) of the connecting means enables by operation displacement of the bracket branches (9) in direction against and away from the sow's sides such that a squeezing force corresponding to the squeezing force from the front legs of a boar is exerted.



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Description

Field of the Invention

[0001] The present invention concerns a device for use in artificial insemination of a domestic animal, in particular a sow, the device including a holder for a sperm container, the holder being secured to an oblong support means adapted to extend across the animal's back to a point behind the animal, and at least one U-shaped bracket means formed by two resilient bracket branches and connected with the support means, and which during insemination can bear on the animal's back and sides.

[0002] The invention is developed for use in inseminating sows in large farms, but a device can also be used for inseminating other domestic animals, for example cows, goats and sheep. However, in the following the invention will be explained in connection with sows.

Background of the Invention

[0003] From DK 171 072 is known a device of the type mentioned in the introduction. This device enables the sperm container to be held by the support means without assistance from a person, and stimulation of the sow in achieved in a way which a boar would actuate the sow with his belly and front legs.

[0004] The prior art device provides a static pressure during the entire insemination. Moreover, the pressure exerted by the elastic bracket branches depends on the size of the sow as a greater pressure is exerted on large sows and a lesser pressure on small sows. The exerted pressure is thus not adapted to the individual sow.

[0005] The prior art also includes examples of devices performing a vibrational action in order to stimulate the sow during insemination. Stimulation is particularly important at the beginning of insemination in order to have the sow release hormones enabling a greater yield in the form of higher fertilisation percentage and more farrowed young per insemination. For example, from US 2009/0030267 is known a device which includes a saddle-shaped part having a horseshoe-like shape with bendable/flexible side sections, each with a lower part. The device also includes a measure which provides a movement of the side sections with lower parts of the device. The movement of the side sections are in relation to each other, both in direction against and away from the animal.

[0006] The prior art device is technically complicated and thus costly to produce compared with the technically simple devices that exert a static pressure. They are also heavier that the simple devices exerting a static pressure.

[0007] In a farm there will often be a larger number of sows to be inseminated at the same time. It will be possible for a person to work with four to five devices at a time. It is thus an appreciable weight to be moved by a person when insemination of a large number of sows is to be performed. It is desirable to use devices that provide high fertilisation percentage and which are technically simple and light at the same time.

Object of the Invention

[0008] It is the object of the present invention to indicate a technically simple device which reduces the physical work for the person performing the insemination, and which at the same time enables individual adaptation of the device to the individual animal, and also enables variation of the pressure of the bracket means during insemination for achieving a high fertilisation percentage.

Description of the Invention

[0009] According to the present invention, this is achieved with a device of the type mentioned in the introduction where the two resilient bracket branches are movingly interconnected via a connecting means with actuating means in a plane transversely of the oblong support means and thus also in direction against and away from the sides of the animal. This device is peculiar in that the connecting means includes a housing with guide grooves for controlling the bracket branches and actuating means that include a handle for setting the individual position of the two bracket branches.

[0010] The device may thus be made with a technically simple and light construction corresponding to the one known from devices with static pressure. Due to the U-shape, the device can easily be placed over the sow's back with the bracket branches disposed with mutual large spacing. After application, the actuation means of the connecting means are actuated, and the bracket branches are displaced against each other for adaptation to the size of the individual sow. By application, there is thus effected individual adjustment of the bracket branches so that the pressure can be established irrespective of the size of the sow.

[0011] Furthermore, the pressure during insemination can be changed in that the user activates the actuation means of the connecting means such that the bracket means is displaced for exerting greater or lesser pressure on the sides of the sow. It appears that a high fertilisation percentage is achieved without continually changing the pressure during insemination. There is only need for one or two changes during the minutes in which the insemination is performed.

[0012] Moreover, a simple mechanism is established which is manually adjusted by the handle so that the bracket branches are disposed in a desired mutual position according to the position of the device on the sow. The bracket branches will be positioned and controlled by the guide grooves in the housing which will be located at the sow's back. Thus there is no need for a person to go under the animal or down at the sides of the sow in order to ensure that the bracket branches are correctly positioned.

[0013] According to an embodiment of the invention,

the device is peculiar in that the handle of the actuating means is integrated with an operating handle for applying and removing the device on an animal. Hereby is achieved a particularly simple device which is easy to operate. By one hand the user can hold the device in the operating handle and apply it on the animal and then actuate the handle for ensuring a correct mutual disposition of the bracket branches. The operating handle and the handgrip will preferably be directly connected with the housing or be a part of the housing.

[0014] The movement of the bracket branches may optionally be a mutual oscillation or mutual displacement. It may also be a combination of these two movements. According to a further embodiment of the invention, the device is peculiar in that the actuation means of the connecting means are adapted for establishing a mutual displacement of the bracket branches.

[0015] Alternatively, according to a further embodiment the device is peculiar in that the actuation means of the connecting means are adapted for establishing a mutual oscillation of the bracket branches. The guide grooves in the housing may thus be adapted with a rectilinear closed shape with a cross-section corresponding to the cross-section of the bracket branches, providing for rectilinear displacement of the bracket branches through the grooves. If the grooves are curving instead of rectilinear, a combination of oscillation and displacement can be achieved. Alternatively, the guide grooves can be designed as open grooves allowing oscillation of the bracket branches through the groove.

[0016] According to a further embodiment of the invention, the device is peculiar in that the actuation means of the connecting means include a ratchet mechanism with toothing at the handle interacting with toothing at the bracket branches guided in the guide grooves of the housing. Such a ratchet mechanism is known e.g. from so-called quick-action fasteners. The toothing is typically formed with asymmetric teeth providing for tension in one direction and which are released by displacing the two toothings out of engagement.

[0017] According to a further embodiment of the invention, the device is peculiar in that the handle of the actuating means is adapted with a finger grip which by squeezing displaces the two bracket branches against each other, and a release button which releases the connection between the two toothings for displacement of the two bracket branches away from each other. The finger grip can be spring biased such that after squeezing together, it will return to the original position for a new squeezing together for activating the ratchet mechanism which moves the bracket branches in direction against each other. The release button will ensure that the two toothings are displaced and disengaged such that the bracket branches can be displaced away from each other.

[0018] According to a further embodiment of the invention, the device is peculiar in that the handle of the actuating means is adapted with a finger grip which by rotation displaces the two bracket branches towards or away from each other. Hereby a very simple design is achieved where the handle by rotation in one direction displaces the bracket branches against each other and by rotation in the opposite direction displaces the bracket branches away from each other. This design is also very reliable as there is no need for ratchet mechanisms or spring mechanisms in the device. The rotatable handle is only to have a friction ensuring that the bracket branches cannot be displaced due to the pressure exerted on the sides of the sow.

Description of the Drawing

[0019] The invention will now be explained in further detail with reference to the accompanying schematic drawing, wherein:

Fig. 1 shows a perspective schematic view of a device according to the invention;

Fig. 2 shows the device shown in Fig. 1 during use by artificial insemination of a sow;

Fig. 3 shows a perspective view of a first embodiment of a device according to the invention;

Fig. 4 shows a perspective view of a second embodiment of a device according to the invention;

Fig. 5 shows a partial perspective view of a third embodiment of a device according to the invention;

Fig. 6 shows a perspective view of a fourth embodiment of a device according to the invention;

Fig. 7 shows a partial view of a detail of the device shown in Fig. 6.

Detailed Description of the Invention

[0020] The invention is described on the basis of schematic drawings showing various embodiments. In order to be functional, the actual embodiment will include more elements than shown in the drawing. However, such elements will be within the options of the skilled in the art in the light of the explanation made to the embodiments of the invention.

[0021] In the different Figures, identical or corresponding elements are designated with the same reference numbers.

[0022] In Figs. 1 and 2 appears a device 1 which is intended for artificial insemination of a sow 2. The device has a holder 3 for supporting a sperm container 4. The holder 3 is fastened to an oblong support means 5 extending across the back 6 of the sow to a position 7 behind the sow.

[0023] The device 1 further comprises a U-shaped

bracket means 8. As it is more clearly seen in Fig. 1, the bracket means consists of two elastic bracket branches 9 which are connected with the base part 10 of the support means. The two elastic bracket branches 9 are interconnected via a connecting means 11 to which the support means is connected as well. The connecting means 11 has actuation means (not shown in Figs. 1 and 2), and these actuation means enable a mutual mobility of the two elastic bracket branches 9 in a plane transversely of the longitudinal support means 5. The two elastic bracket branches 9 may thus be moved in direction against and away from the sow's sides. The bracket branches 9 are elastic so that they can be squeezed down around the sow's sides.

[0024] The holder 3 is shown schematically. Usually it will be provided at an oblique angle relative to the oblong support means 5 and will be disposed so high that the holder 3 can contain a sperm container 4 having its lowermost part 12 disposed at a position above the genital opening 13 of the sow. The sperm container 4 is connected with an insemination tube 14 which is introduced in the genital opening of the sow during insemination.

[0025] The sperm container 4 can be a tube provided in a tubular holder, a bag suspended on a hook on the support means 5, or other possible kinds of sperm containers.

[0026] In Figs. 1 and 2 is seen that the connecting means 11 includes a housing 17. The two upper parts 16 of the bracket means 9 will be connected with the housing in a way so that the movement of the bracket branches 9 is guided by grooves in the housing 17. This will appear more clearly from the subsequent description of actual embodiments.

[0027] By artificial insemination, the U-shaped bracket means 8 shown on Fig. 1 is placed on the sow. Lower parts 15 of the two bracket branches 9 will stimulate the sow in the same way as the front legs of a boar. Upper parts 16 of the two bracket branches 9 will act on the sow like the belly of a boar. The sow will thereby stand quiet with curving back until the sperm has run out of the sperm container 4.

[0028] Fig. 3 shows a first embodiment of the device according to the invention. It appears that the housing 17 is provided with through-going openings acting as grooves, where the upper parts 16 of the bracket branches 9 are passed through.

[0029] Furthermore, it appears that the bracket branches 9 are provided with toothing 18. This toothing cooperates with toothing inside the housing 17 (not visible) in a way which is known from ratchet mechanisms or so-called quick-action fasteners.

[0030] The housing is provided with a handle 19 intended for adjusting the position of the bracket branches 9. The handle 19 is formed as an integrated operating handle for applying and removing the device on the sow. The user will thus grip with his hand 20 around the handle 19 when this is to be placed on the sow.

[0031] The handle has a fixed part 21 which is permanently connected with the housing, and a movable part 22 which is gripped by the user's fingers. By squeezing the two parts 21, 22 of the grip, a ratchet mechanism will displace the two bracket branches in direction against each other. The displacement of the bracket branches occurs rectilinearly as the two upper parts 16 in the shown embodiment are rectilinear, and the grooves through the housing 17 are rectilinear grooves as well.

[0032] When the two bracket branches 9 are to be released and displaced away from each other by removing the device, a press button 23 is actuated on the housing such that the toothing on the bracket branches and the toothing in the housing are disengaged. The bracket branches can hereby be displaced away from each other manually or only due the elastic pressing force exerted from the sides of the sow.

[0033] As it appears from above, a combination of the handle and the operating handle 19 will enable operation of the device by one hand. The user thus only needs to have one hand in the handle 19 when applying and subsequently fastening for establishing correct pressing force from the squeezing movement of the two bracket branches against the sow's side. The two bracket branches 9 can be positioned correctly as they are guided in the grooves in the housing 17.

[0034] Fig. 4 shows a second embodiment of the device according to the invention. The connecting means 17 is here designed in a different way. Here it includes a housing 24 consisting of a lower fixed part 25 and an upper handle part 26. The handle part is provided with a movable grip 27 which is actuated by the fingers by a squeezing force. The movement is transmitted as previously via a ratchet mechanism to the toothing of the bracket means 18 interacting with a toothing in the lower fixed part 25 of the housing. A groove guiding the movement of the bracket branches in direction against and away from each other is also formed in the lower fixed part 25 of the housing.

[0035] It appears that the lower fixed part 25 has a slight curvature. This means that the two bracket branches perform a movement which is a combined rectilinear displacement and an oscillation. Alternatively, the lower fixed part can be rectilinear and have a rectilinear groove such that the two bracket branches are displaced rectilinearly in direction against and away from each other.

[0036] The operating handle 27 can be directly mechanically connected with the toothing 18 of the bracket branches, or alternatively be connected via an electric actuator driving the toothing of the housing for establishing the movement of the bracket branches.

[0037] Fig. 5 shows a partial view of a third embodiment. Here is shown a partial view of the connecting means 17. There is shown a handle 28 which is provided with an actuation button 29 which can be displaced in a groove 30. By displacing the actuation button 29, a movement is transmitted to the bracket branches 9 for displacement towards each other or away from each other, depending on the direction in which the actuation button

29 is displaced.

[0038] In a particular embodiment, the actuation button can be connected with an actuator which electrically performs the displacement of the toothing of the housing instead for a direct mechanical connection to the toothing of the bracket branches 9.

[0039] Fig. 6 shows a fourth embodiment of a device according to the invention. Here, the housing 17 includes a handle 31 which can be turned one way or the other as indicated by a double arrow. By rotating the handle 31 in one direction, the bracket branches 9 are displaced against each other, and by rotation in the opposite direction, the bracket branches 9 are displaced away from each other.

[0040] Fig. 7 shows a schematic partial view of a detail of the design shown in Fig. 6. Here it is seen that the handle 31 is connected with a gear wheel 32 provided with toothing 33 at its periphery. The toothing 33 engages toothings 34 on the upper part 16 of the bracket branches 9. For the sake of clarity, the toothing 34 is only shown on an outer curving part 35 acting as a stop for an extreme position of the two bracket branches 9. A corresponding toothing is provided on a rectilinear part 36 of the bracket branches 9.

[0041] On Fig. 6 is seen that the connecting means 17 includes a housing 37 which is circular and consists of an upper housing part 38 and a lower housing part 39. These two housing parts are interconnected by connecting means (not shown) keeping them spaced apart, and which define guide grooves for the rectilinear movement of the bracket branches 9 against and away from each other. In the upper housing part 39 is provided part circular grooves (not shown) that enable rotation of the handle 31 one way or the other. The extent of these grooves will determine the possible angle of rotation of the handle 31 and thereby the travel for the two bracket branches 9.

Claims

1. A device (1) for use in artificial insemination of a domestic animal, in particular a sow (2), the device including a holder (3) for a sperm container (4), the holder being secured to an oblong support means (5) adapted to extend across the animal's back (6) to a point (7) behind the animal, and at least one U-shaped bracket means (8) formed by two resilient bracket branches (9) and connected with the support means, and which during insemination can bear on the animal's back and sides, wherein the two resilient bracket branches are movingly interconnected via a connecting means (11) with actuating means (21, 22) in a plane transversely of the oblong support means and thus also in direction against and away from the sides of the animal, **characterised in that** the connecting means includes a housing (17) with guide grooves for controlling the bracket branches and actuating means that include a handle (19) for setting the individual position of the two bracket branches.

2. Device according to claim 1, **characterised in that** the handle (19) of the actuating means is integrated with an operating handle for applying and removing the device on an animal.

3. Device according to any preceding claim, **characterised in that** the actuating means (21, 22) of the connecting means are adapted for establishing a mutual displacement of the bracket branches (9).

4. Device according to any of claims 1 and 2, **characterised in that** the actuating means (21, 22) of the connecting means are adapted for establishing a mutual oscillation of the bracket branches (9).

5. Device according to any of claims 1 to 4, **characterised in that** the actuating means (21, 22) of the connecting means include a ratchet mechanism with toothing at the handle (19) interacting with toothing (18) at the bracket branches which are passed through the guide grooves of the housing (17).

6. Device according to claim 5, **characterised in that** the handle (19) of the actuating means is adapted with a finger grip which by squeezing displaces the two bracket branches (9) against each other, and a release button (23) which releases the connection between the two toothings for displacement of the two bracket branches away from each other.

7. Device according to claim 5, **characterised in that** the handle (19) of the actuating means is adapted with a finger grip (31) which by rotation displaces the two bracket branches (9) against or away from each other.

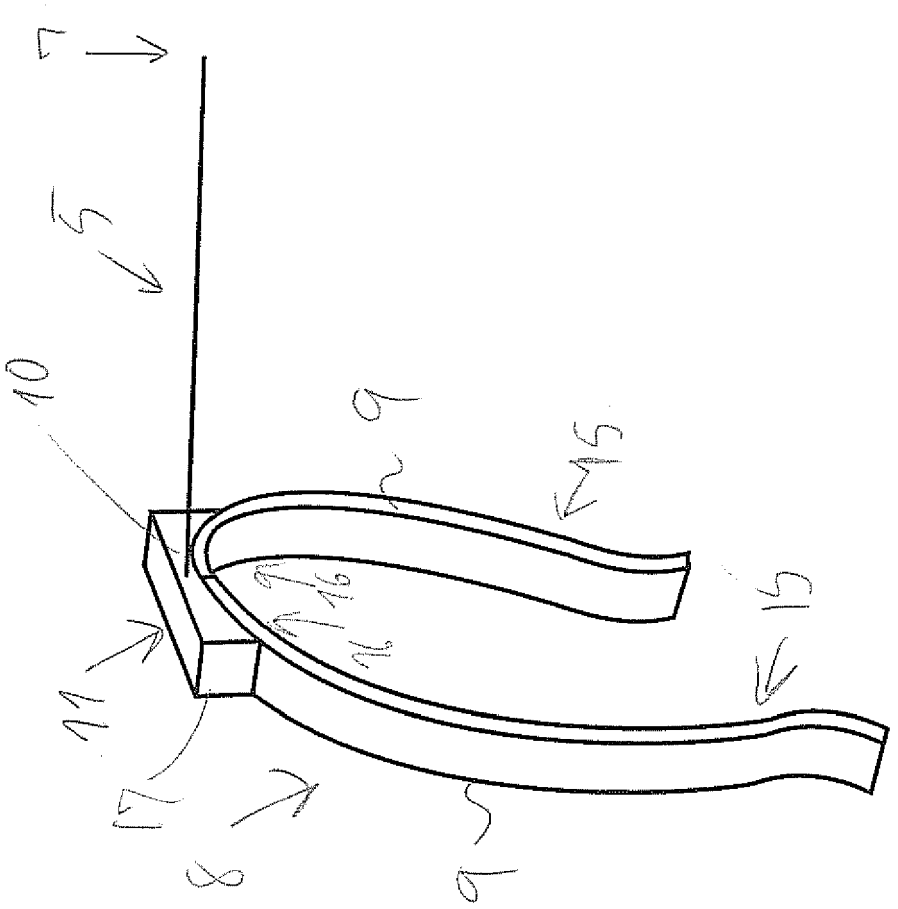


Fig. 1

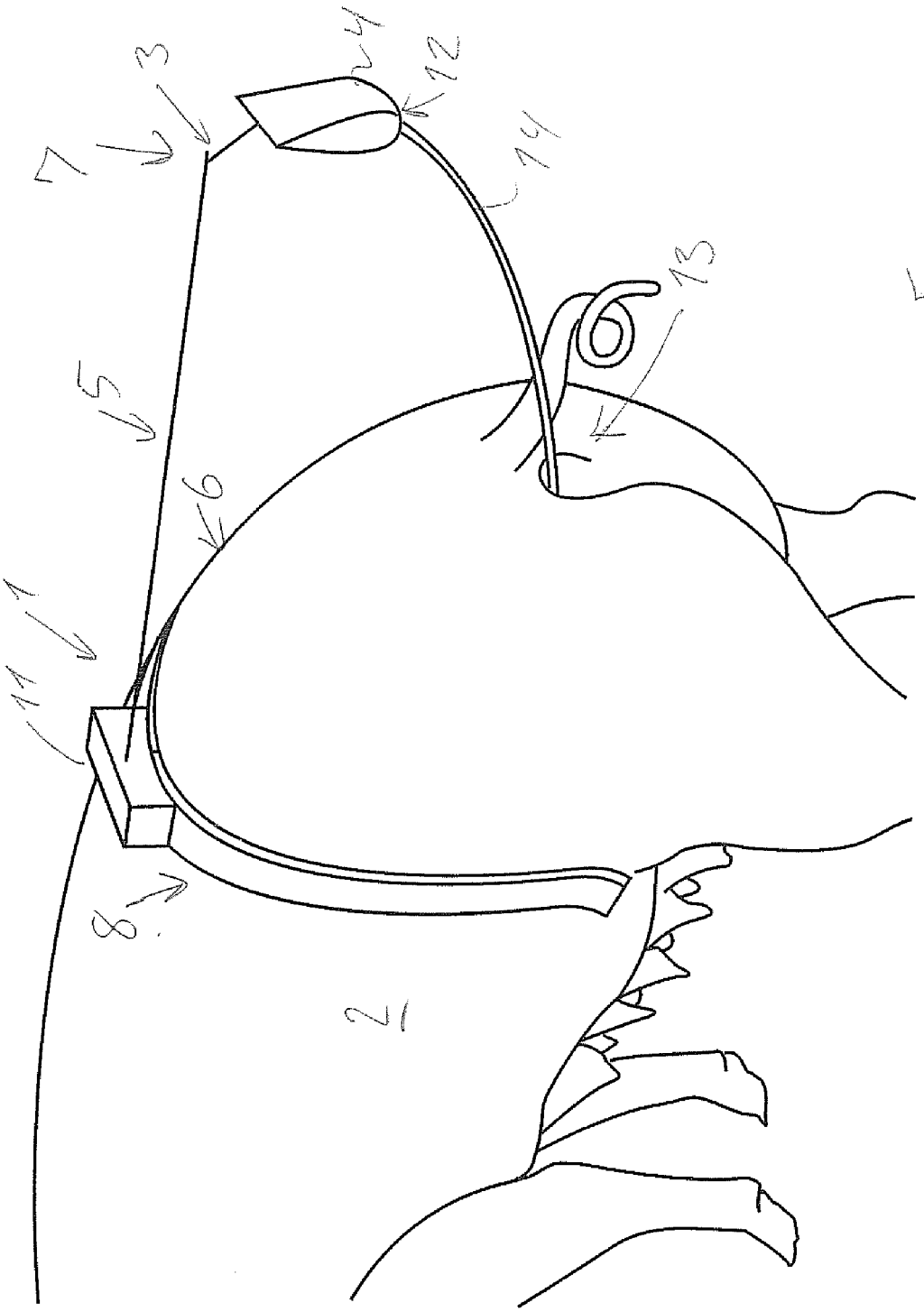


Fig. 2

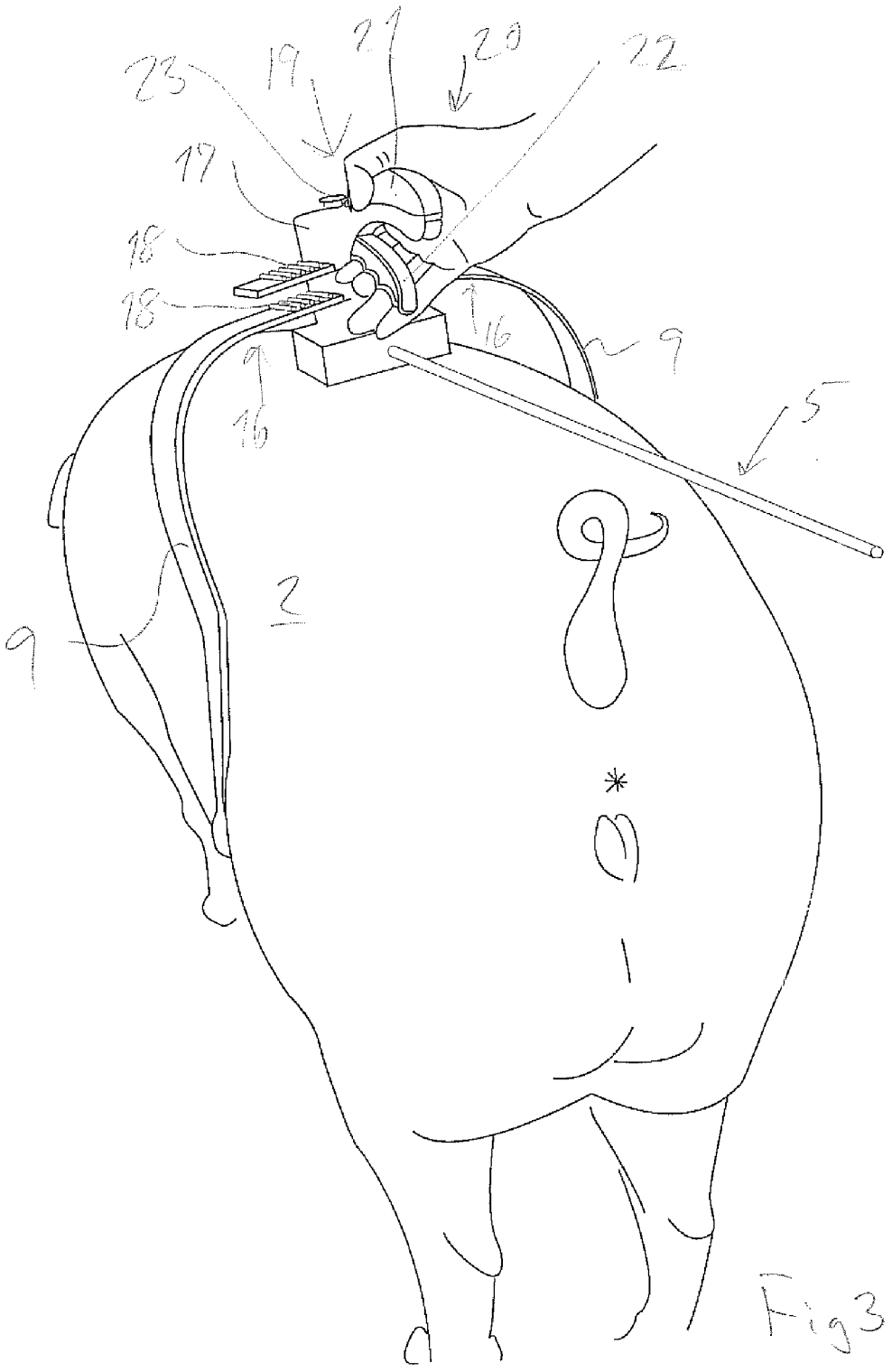


Fig 3

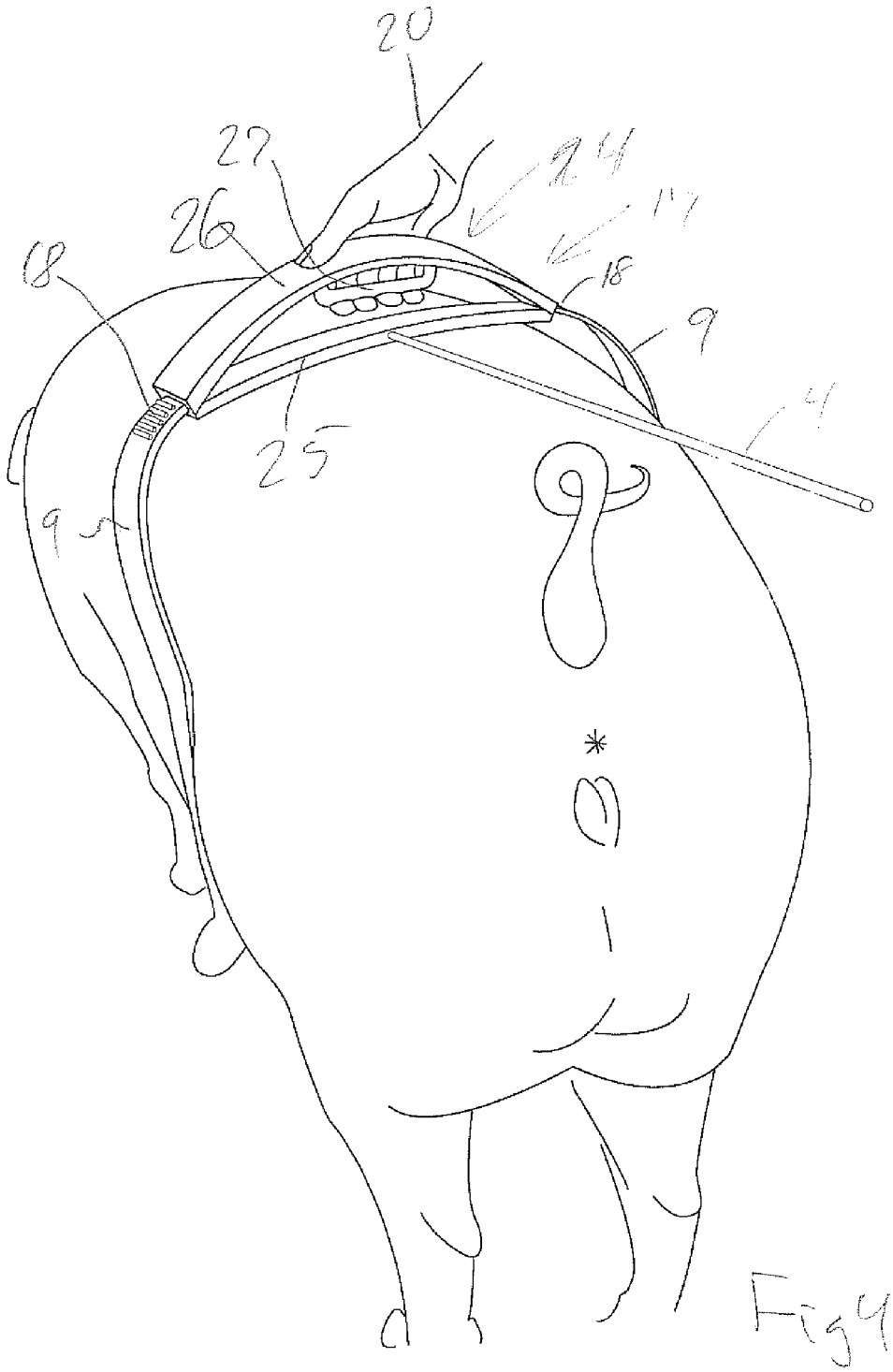
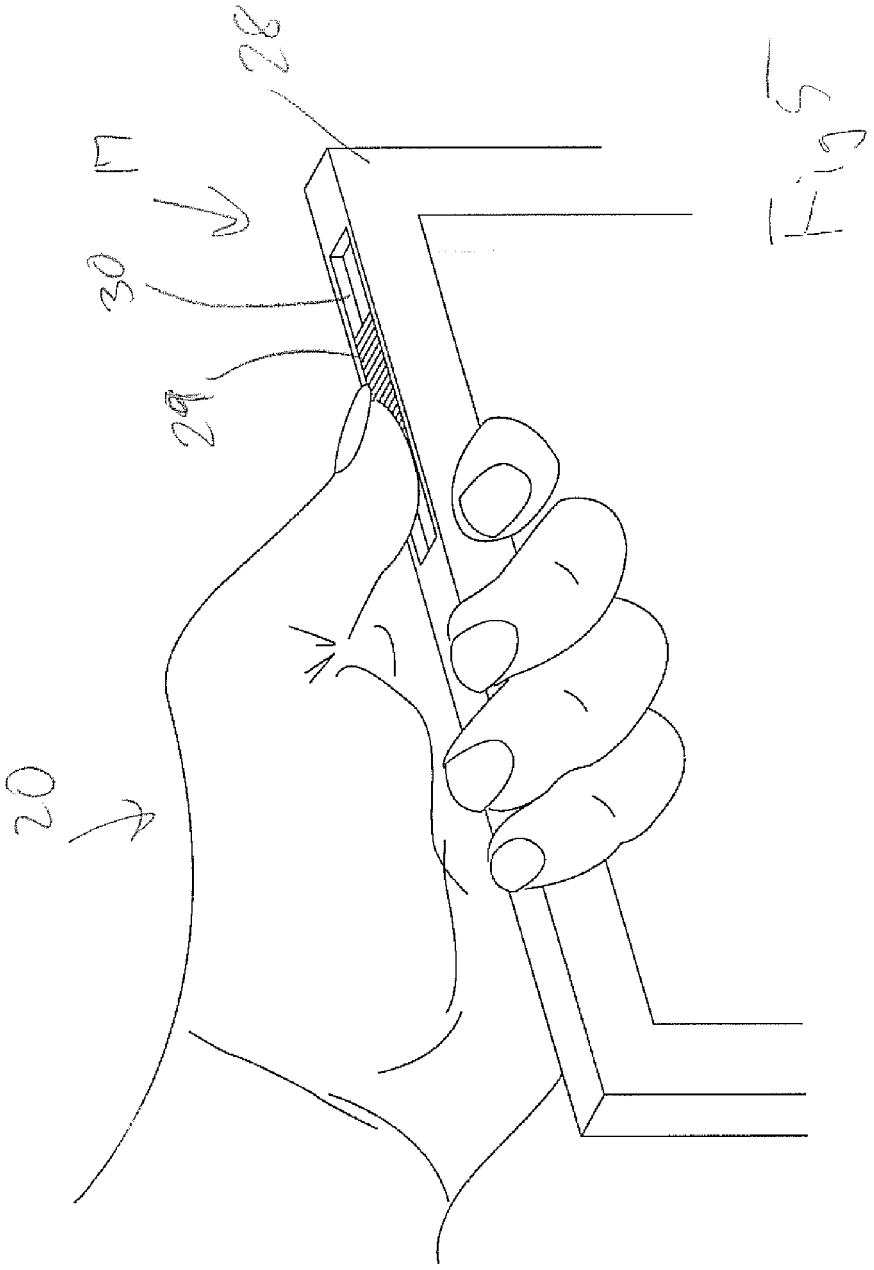


Fig 4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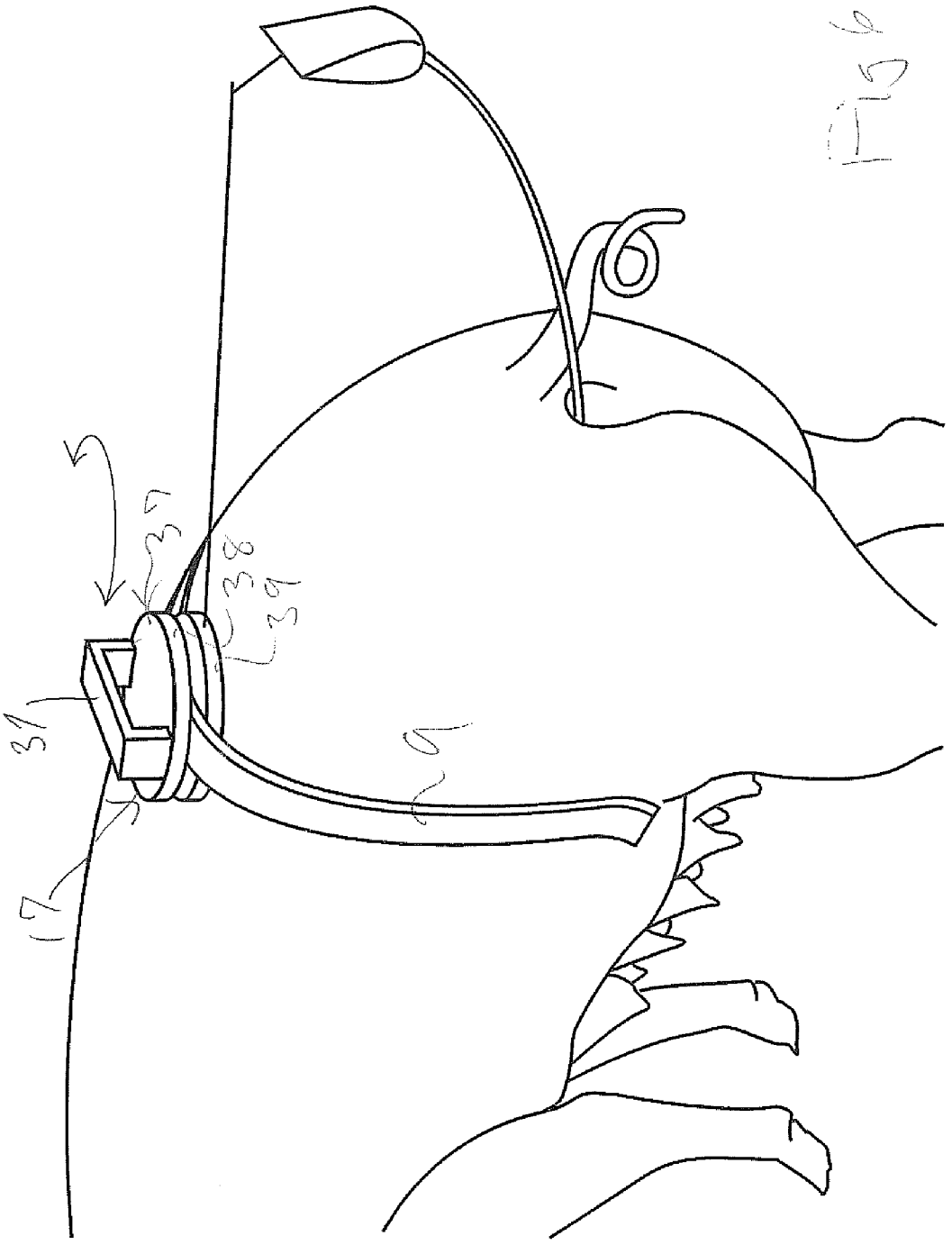
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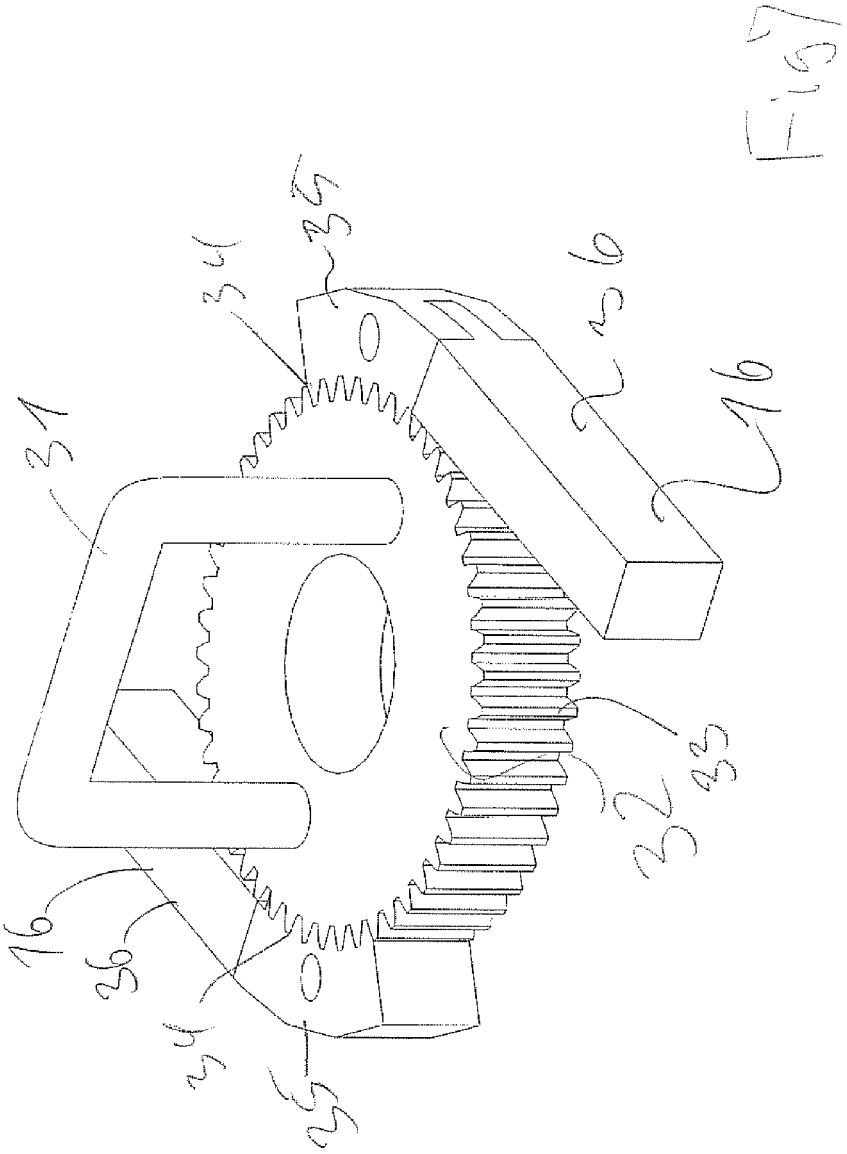
Fig 1
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EUROPEAN SEARCH REPORT

Application Number
EP 11 18 9459

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	23 March 2012	Chabus, Hervé

CATEGORY OF CITED DOCUMENTS

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