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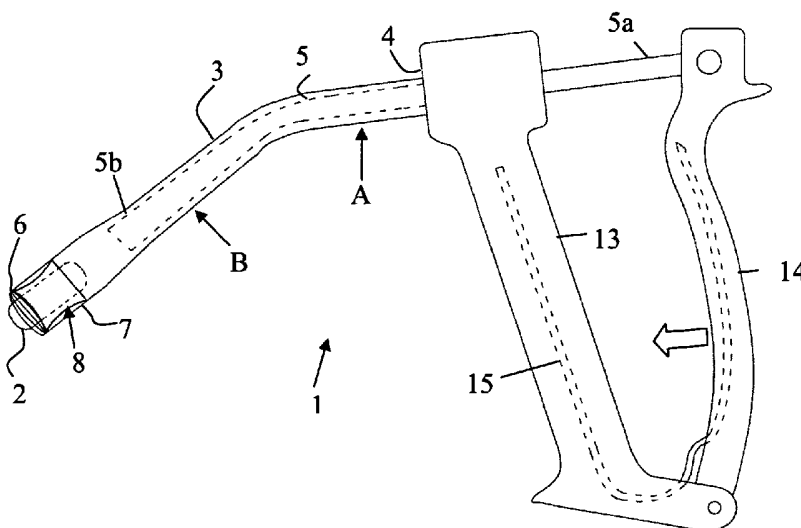
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(54) **Title:** DEVICE DESIGNED FOR THE ADMINISTRATION OF A RUMINANT BOLUS TO AN ANIMAL



(57) **Abstract:** Device designed for the administration of a ruminant bolus to an animal, which comprises a hollow tubular body, on one of the ends whereof a movable shank is introduced that is adapted to propel the bolus, which has been previously introduced, in manual form, into the tubular body through the snout at the opposite end thereof, and eject it outward, with the tubular body comprising two essentially straight sections, one internal and the other external, the internal section being a short section, designed to lean against the corner of the animal's mouth, whilst the external section is long, and its free, external end is designed to reach the area of the animal's pharynx when the hollow tubular body is introduced into the animal's mouth, with both sections being joined without interruption and forming an obtuse angle of between 155° and 145°.

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## **DESCRIPTION**

### **“Device designed for the administration of a ruminant bolus to an animal”**

#### **5           Technical field of the invention**

The present invention relates to a device to be used for the administration of a ruminant bolus to an animal, which is designed, more specifically, but not exclusively, for ruminants living in a farm environment (bovine, buffalo, ovine and caprine), as well as in industrial and hunting exploitations or in the wild (reindeer and  
10 deer and ruminants in general).

#### **Background of the invention**

A classical ruminant bolus is made up of a body which encapsulates an electronic data storage and exchange device, designed to be lodged in one of the  
15 stomachs or pre-stomachs of a ruminant animal in order to ensure the follow-up thereof. Currently, ruminant boluses are used in the identification of animals, production control (fattening, milk production, control of reproduction and health conditions...) or in the automation of the common management operations for these animals, such as feeding, access control to restricted areas or to classification  
20 corridor doors, etc.

In order to facilitate the introduction of the ruminant bolus into an animal's body, bolus applicators are used. These facilitate introduction of the bolus through the animal's mouth in such a way that said bolus is lodged in the stomach thereof.

Usually, known bolus applicators are adapted in such a way that the bolus is  
25 directly placed in the ruminant animal's oesophagus, wherefrom the bolus is naturally transferred to the stomach, without external intervention, as if it were food. These bolus applicators exhibit a tubular body which is endowed, at one end, with a snout designed to be introduced in the animal's mouth, with the tubular body having, in the area close to the snout, retention means designed to retain the previously  
30 introduced bolus, at least partially, in said tubular body. Inside the tubular body, said applicators have a pushing element, lodged along the length thereof, which is adapted to move inside and release the bolus from said retention means; as well as, at the other end of the tubular body, driving means designed to guide the pushing element so that it may release the retained bolus.

35           Specifically, patent document NZ248754 discloses a bolus applicator which

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characteristically comprises a tubular body with two straight sections: a first long, internal section; and a second short, free-end external section, which ends at the above-mentioned snout. The long section is designed to reach, when the tubular body is introduced into the animal's mouth, the epiglottis area, and the short section is designed to reach, from the epiglottis, the animal's oesophagus and place the applicator snout in said oesophagus in order to release the bolus therein. To this end, the short section of the tubular body is joined to the long section, forming a 165-degree obtuse angle, which makes it possible to overcome the change in direction followed by the oesophagus with respect to the animal's mouth.

The placement or release of the bolus directly in the animal's oesophagus entails the following disadvantages. In the first place, due to lack of practise and poor handling of the applicator, the bolus can be mistakenly introduced in the animal's larynx, prior to closure of the epiglottis, thus preventing correct respiration by the animal and leading to asphyxia. On the other hand, if the snout rests on the oesophagus walls, when the capsule is pushed for the release thereof, it may perforate the animal's oesophagus due to excessive pressure on the walls, inevitably causing death of the animal.

In order to avoid and overcome the above-mentioned drawbacks the present invention is described below.

#### **Explanation of the invention**

The device designed for the administration of a ruminant bolus to an animal, which is the object of the invention, overcomes said drawbacks. Said device comprises a hollow tubular body, by one of the ends whereof is introduced a movable shank that, acting as a pushing piston, is adapted to push the bolus which has been previously introduced, in manual form, into the tubular body through the snout at the opposite end, and eject it outward.

In essence, the device is characterised in that the tubular body comprises two essentially straight sections, one internal and the other external, with the internal section being a short section, designed to lean against the corner of the animal's mouth, whilst the external section is long, and its external free snout is designed to reach the area of the animal's pharynx, with both sections being joined without interruption and forming an obtuse angle of between 155° and 145°.

According to another characteristic of the invention, the hollow tubular body is endowed, at the open end of the external section, with an elastic retention piece which is adapted so as to remain tightly lodged in the interior of said end of the

external section of the tubular body, and to retain the bolus to be administered, which, in turn, remains lodged inside said piece.

According to another characteristic of the invention, the retention piece is essentially prismatic and is formed by two flexible, elastic annular supports, joined  
5 by at least two longitudinal strips, also flexible and elastic, which are closer to each other at the central area than at the ends.

According to another characteristic of the invention, the longitudinal strips, at the central points thereof, create a polygonal cross-section that is substantially smaller than the cross-section of the annular supports.

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#### **Brief description of the drawings**

The attached drawings illustrate, as an example but not limited thereto, a preferred embodiment of the device designed for the administration of a ruminant bolus to an animal in accordance with the invention. In said drawings:

15 Fig. 1 is a representation of the device designed for the administration of a ruminant bolus; and

Fig. 2 is a representation of the retention piece which the device designed for the administration of a ruminant bolus shown in Fig. 1 is endowed with.

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#### **Detailed description of the drawings**

Device 1 for the administration of a ruminant bolus 2 to an animal, represented as an example in Fig. 1, comprises, in a manner that is already well-known, a hollow tubular body 3, in one of the ends 4 whereof a movable shank 5 is introduced. This shank 5, acting as a pushing piston, is adapted so as to propel the  
25 bolus 2, which has previously been manually introduced into the tubular body through snout 6 at the opposite end 7, and eject it outward. To this end, the handle 13 of the device 1 has a lever arm 14 whereof the end 5a of the shank 5 is coupled. When the lever arm 14 moves from the position represented in Fig. 1 in the direction shown by the arrow in said figure, the shank 5 is displaced inside the tubular body 3  
30 in such a way that the opposite end 5b thereof pushes the bolus 2, ejecting it outside the tubular body. When the pressure on the lever arm 14 ceases, the latter returns to the initial position shown in Fig. 1 as a result of the action of a spring 15 which, having been compressed upon displacement of the lever arm 14, tends to recover its original shape.

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In characteristic fashion, tubular body 3 of the shown device 1 comprises two straight sections A and B; internal section A, one of the ends whereof is coupled to

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the handle 13, unlike known devices, is a short section designed to lean against the corner of the animal's mouth, whilst external section B is a long section, the snout 6 whereof is designed to reach the area of the animal's pharynx, without being introduced into the oesophagus, when, in turn, the hollow tubular body 3 of device 1 is introduced into the animal's mouth. Both straight sections A and B are joined without interruption, forming a 150° obtuse angle, which facilitates, as explained below, the release or ejection of the bolus 2 at the suitable place.

The epiglottis is located in the pharynx area and is a sort of valve with cartilaginous structure which moves upwards and downwards in order to momentarily cover the entrance to the larynx, thus preventing food or other solid elements from entering the trachea upon swallowing. When the bolus 2 is released in the pharynx area, near the epiglottis, a peristaltic action is generated in the constrictor muscles of the animal's pharynx musculature which displaces bolus 2 through the pharynx towards the oesophagus, wherefrom it will be naturally displaced to the animal's stomach. In other words, the animal involuntarily and inevitably swallows the bolus 2.

Contrary to known applicators, the tubular body 3 of device 1 of the invention is designed to be introduced into the animal's mouth in such a way that said tubular body 3 is inscribed in an approximate imaginary plane determined by the corner of the animal's mouth and its pharynx. The application mode of known applicators consists of introducing the tubular body into the animal's mouth in such a way that the short, external section and the long section thereof are basically inscribed in an imaginary vertical plane, which divides the animal's head into two equal parts, since the inclination of the final section with respect to the long section is designed in such a way that the external snout of the tubular body is directly introduced into the animal's oesophagus, overcoming the change in direction followed by the oesophagus with respect to the animal's mouth.

Device 1 of the invention prevents, for example, that the snout may be mistakenly introduced into the animal's larynx, which could happen if the tubular body is abruptly introduced into the animal's mouth without allowing time for closure of the epiglottis, which leads to asphyxia in the animal by blocking the respiratory tract thereof.

When we describe herein internal section A as being short, it is understood to be so by comparison with external section B, the length whereof is always greater than that of internal section A. The length of external section B must be adapted to the type of animal whereto the bolus 2 is to be administered, and may vary from 8

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cm to 25 cm, approximately, whilst the length of internal section A may remain constant or not vary significantly on the basis of the type of animal. In the example shown in Fig. 1, the length of internal section A is 4 cm, whilst the length of external section B is about 8 cm; these dimensions are considered to be adequate for the administration of a ruminant bolus 2 to a sheep, goat or similar.

In order to ensure the release or ejection of the bolus 2 at the right moment and prevent the latter from being accidentally released before snout 6 of external section B is placed in the suitable position, the hollow tubular body 3 of device 1 is endowed, at the open end 7 of external section B, with a retention piece 8, which has elastic properties and is adapted in such a way that it remains lodged, with a fitting, inside said end 7. Said retention piece 8 is designed to lodge inside it, under pressure, the bolus 2 to be administered.

Fig. 2 shows an embodiment of retention piece 6. In said figure one may observe that said piece is essentially hollow and prismatic, and consists of two annular supports 10 and 11 joined by six flexible, elastic longitudinal strips 12, which are regularly distributed along the contour of supports 10 and 11 and are closer to each other at the central area 9 than at the ends. At said central area 9, longitudinal strips 12 determine a cross-section that is substantially smaller than the cross-section of annular supports 10 and 11, and therefore of the tubular body 3.

In the example shown, the annular supports exhibit a hexagonal contour, which favours retention, under pressure, of the retention piece 8 inside external section 7 of the tubular body 3.

It is understood that, for correct retention of the bolus 2, the cross-section of the latter must be slightly greater than the cross-section determined by the strips 12 at the central area 9.

**CLAIMS**

1.- Device (1) designed for the administration of a ruminant bolus (2) to an animal, of the type which comprises a hollow tubular body (3) endowed, on one of the ends thereof (4), with a movable shank (5) which, acting as a pushing piston, is adapted to push the bolus which has previously been manually introduced into the tubular body through the snout (6) at the opposite end (7) thereof, and eject it outward, **characterised** in that the tubular body comprises two essentially straight sections (A, B), one internal and the other external, the internal section (A) being a short section, designed to lean against the corner of the animal's mouth, whilst the external section (B) is long, and its free external snout is designed to reach the area of the animal's pharynx when the hollow tubular body is introduced into the animal's mouth, both sections being joined without interruption and forming an obtuse angle of between 155° and 145°.

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2.- Device (1), as claimed in claim 1, **characterised** in that the hollow tubular body (3) is endowed, at the open end (7) of the external section thereof (B), with an elastic retention piece (8) that is adapted in such a way that it remains tightly lodged inside said end of the long external section of the tubular body, and retains the bolus (2) to be administered, which, in turn, remains lodged inside said piece.

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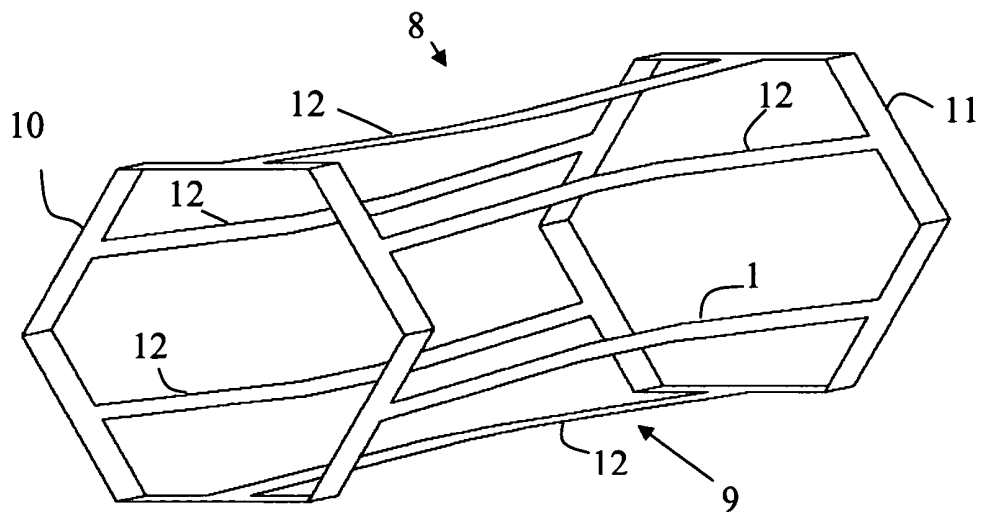
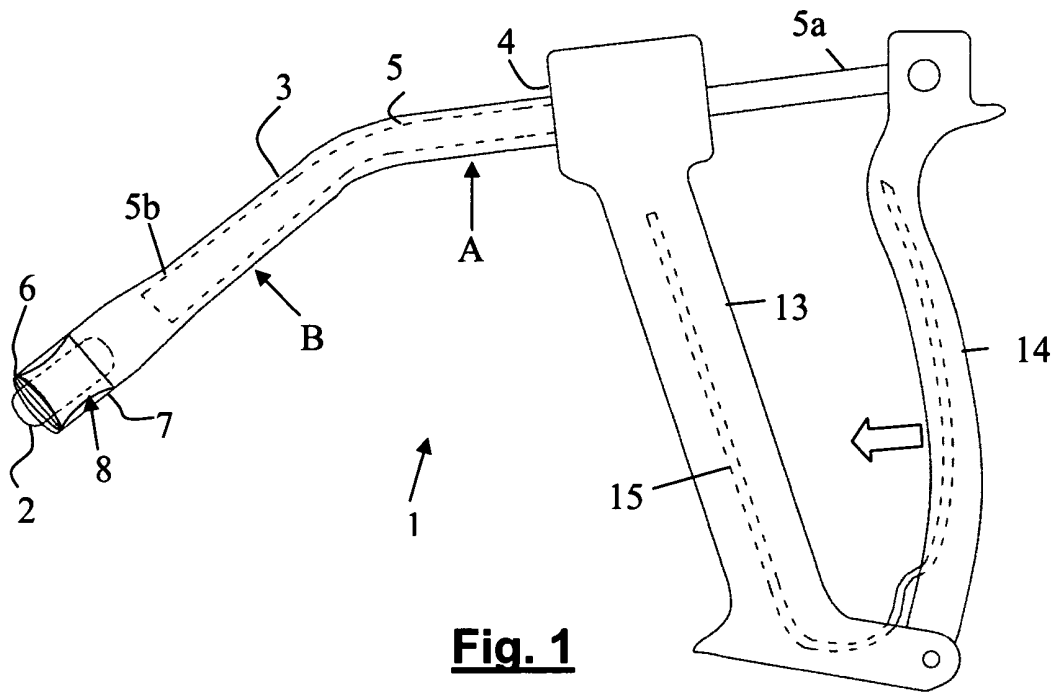
3.- Device, as claimed in claim 2, **characterised** in that the retention piece (8) is essentially prismatic and is composed of two flexible, elastic annular supports (10, 11), joined by at least two longitudinal strips (12), which are also flexible and elastic, and are closer to each other at the central area than at the ends.

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4.- Device, as claimed in claim 3, **characterised** in that the longitudinal strips (12), at the central points, determine a polygonal cross-section that is substantially smaller than the cross-section of the annular supports (10, 11).

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## INTERNATIONAL SEARCH REPORT

International application No PCT/EP2006/004659
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<b>A. CLASSIFICATION OF SUBJECT MATTER</b> INV. A01K11/00      A61D7/00      A61M31/00		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) A01K A61D A61M		
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, PAJ		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	US 2004/111055 A1 (DAELLENBACH KEITH K) 10 June 2004 (2004-06-10) page 3, paragraphs 34,35; figures 2-4 -----	1
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
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*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. *&* document member of the same patent family	
Date of the actual completion of the international search	Date of mailing of the international search report	
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# INTERNATIONAL SEARCH REPORT

Information on patent family members

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