

[54] **METHOD OF SECURING PROLAPSED VAGINA IN CATTLE**

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 268, Jan. 2, 1970, Pat. No. 3,598,299.

[52] U.S. Cl. **128/337, 128/316, 128/330, 227/144, 24/153 BP**

[51] Int. Cl. **A61b 17/04, A61b 17/08**

[58] Field of Search **128/334 R, 334 C, 128/335, 337, 325, 326, 303 R, 329, 330, 346, 316; 227/144; 24/153 BP; 40/300, 301**

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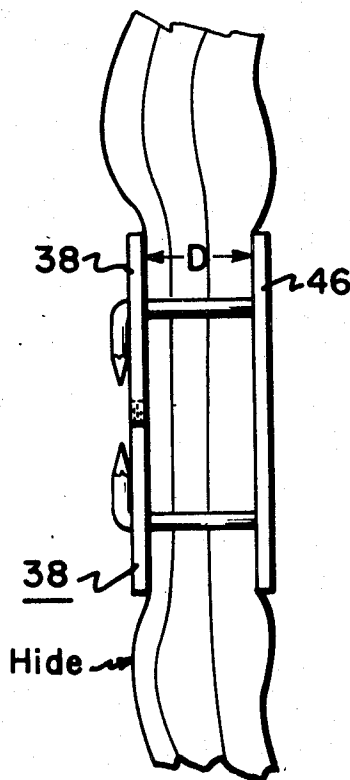
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[57]

ABSTRACT

This is a method of and means for securing a prolapsed vagina in cattle. The means used takes the form of a novel staple which, by means of a pliers-type instrument, can be inserted internally and thrust through affected muscle and tissue to accommodate securement to an accompanying retention plate deposited externally to the animal. Both the staple head and plate are enlarged relative to the prongs used in the design. The method contemplates the use of such means to secure the prolapsed vagina to the interior, proximate muscle area such that a desired condition may be effected and preserved.

1 Claim, 12 Drawing Figures



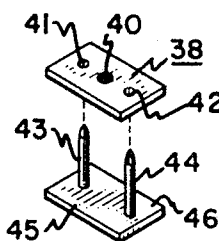
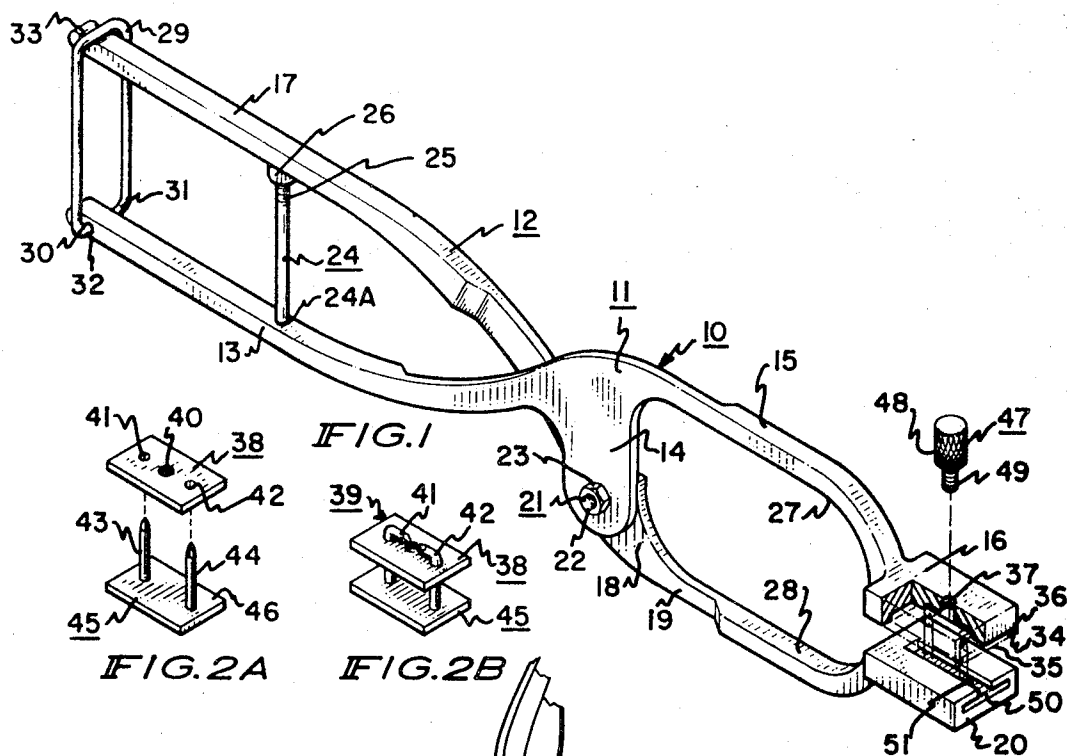


FIG. 2A

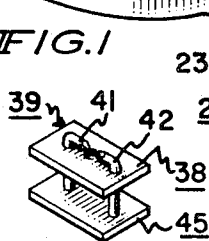


FIG. 2B

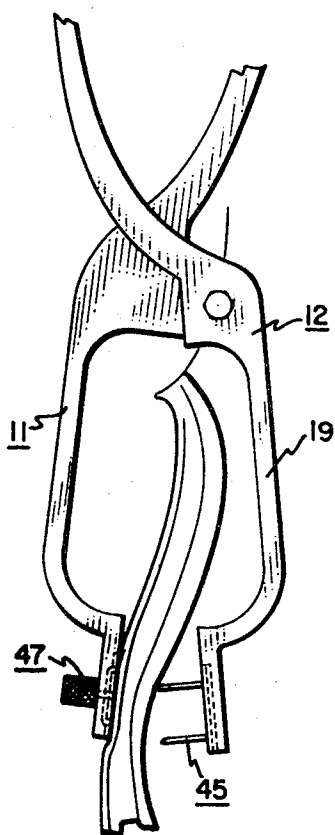


FIG. 3

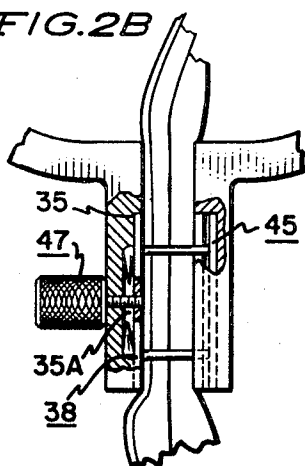


FIG. 4

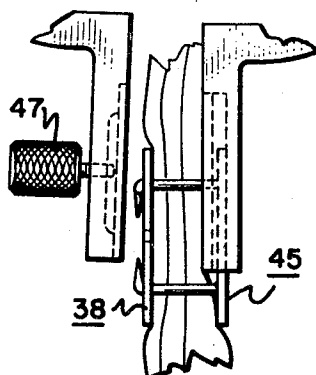


FIG. 5

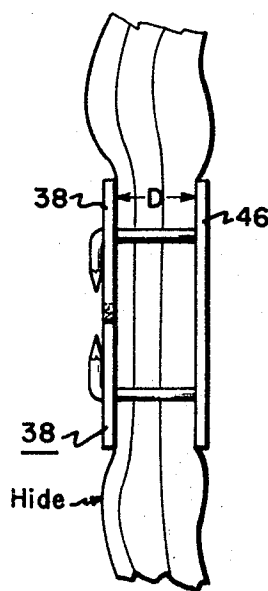


FIG. 6

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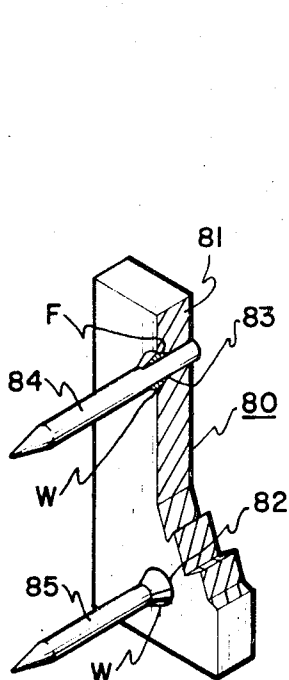


FIG. 10

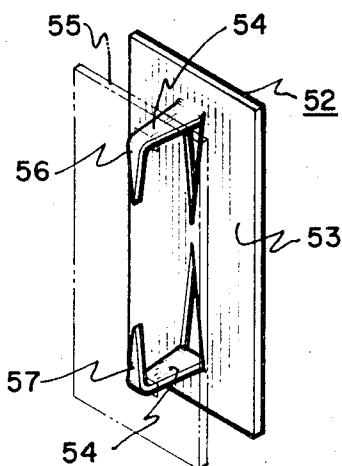


FIG. 7

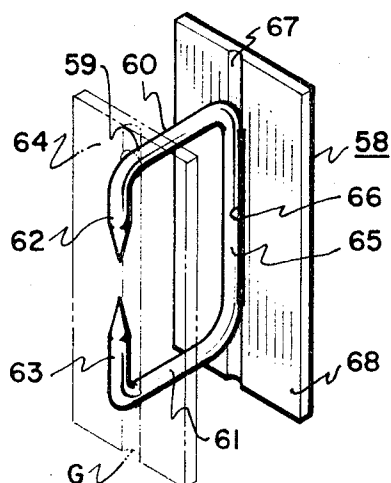


FIG. 8

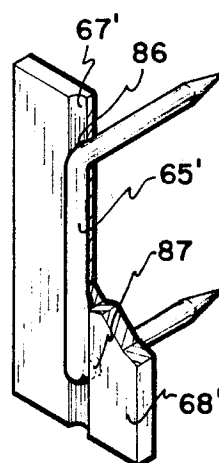


FIG. 11

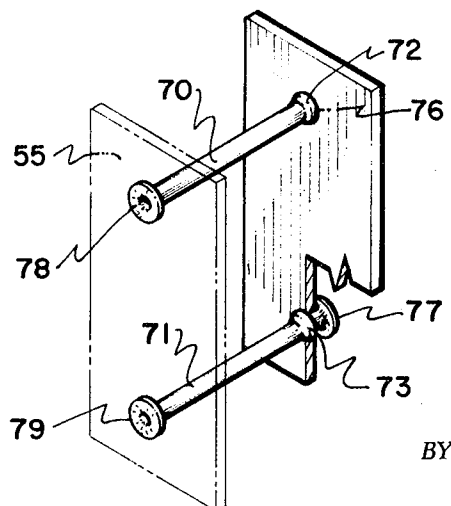


FIG. 9

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METHOD OF SECURING PROLAPSED VAGINA IN CATTLE

This is a continuation-in-part of the inventor's pending application entitled STAPLING TOOL FOR CATTLE, Ser. No. 268324, filed Jan. 2, 1970, now U.S. Pat. No. 3,598,299.

The present invention related to correction of improved vaginal conditions in cattle, and, more particularly, comprises a new and improved method for retaining vagina tissue of cattle in desired place, thus to aid delivery during the birth periods.

In the cattle industry, for example, from 2 to 4 percent of any given herd of cows or heifers will have difficulty at calving time because of physical distortion and, oftentimes, "turning inside out" of the vagina before the calf is born. This condition generally occurs, for heifers so afflicted, at a time approximately 2 to 4 weeks before the calf is due. The normal practice in the field has been to manually place the vagina in normal position and then sew the lips of the vagina together, to await the time the cow starts her labor. At this time, the stitches are cut so that she can deliver her calf. Finally, to be completely safe, the rancher must watch the cow or heifer until after the afterbirth comes, at which time the lips of the vagina are again sewn together. Once a cow has this difficulty, more likely than not she will experience the same difficulty for later pregnancies.

To correct this problem, the inventor provides a stapling device with a staple means for animals having such difficulty. The stapling means may remain in place to identify the cow as to later pregnancies and also to permanently correct this condition. In a preferred use of the invention, the staple is disposed on the inside of the vagina and the staple legs are urged through the vagina tissue as well as fine muscle area proximate the Iliacforamen. At this point the staple plate of the assembly disposed on the outside of the animal and next to the hide, will be provided with holes through which the staple legs pass and are crimped. The disclosed implement, being representative, has a suitable nose wherein the forward, nose or lip areas thereof are contoured to releasably retain the stapling means. For cows, the device should be dimensioned such that the staple and plate are carried about 10 inches forwardly, this to make sure that the outside jaw of the stapling implement can be disposed exactly in place; proper pressure on the handles of the implement will force the staple through the vagina tissue and the thin muscle area above identified so that this tissue is permanently secured in place inside the animal without damaging the tissue.

Accordingly, the principle object of this invention is to provide a method to correct an improper vagina condition of animals and, additionally, tag or identify such animals as having such condition.

An additional object is to provide an improved method by which the prolapsed vaginas of cattle are secured in place.

FIG. 1 is a perspective view of a veterinary stapling implement useable with the present invention.

FIG. 2A is an exploded view of one embodiment of staple assembly used with the tool or implement of FIG. 1.

FIG. 2B is a perspective view of the structure of FIG. 2A when the same is secured together.

FIG. 3 illustrates initial placement of the tool or implement, with stapling assembly components being re-

leasably secured to the tool, and this immediately prior to crimping of the tool to set or secure the staple assembly together.

FIG. 4 is an enlarged view of the forward end of the tool shown in FIG. 3 after the handle portions of the tool have been squeezed together.

FIG. 5 illustrates the structure of FIG. 4 after the crimping function has been completed and the plate of the stapling assembly released from the tool so that the remaining portion of the stapling assembly may be disassociated therefrom.

FIG. 6 illustrates a representative area at each of opposite sides of the vagina tissue of the animal after the same has been stapled in a manner and by the means of the present invention.

FIGS 7-11 are perspective views of optional staples forming a part of and useable in the present invention.

In FIG. 1 the tool 10 of the present invention includes an implement half 11 and an implement half 12. Implement half 11 includes elongated handle portion 13 which is contiguously and integrally formed with lateral pivot extension portion 14 and elongate bridge portion 15. The latter terminates in a forward lip 16. Implement half 12, in a somewhat corresponding fashion, includes elongate handle portion 17, a widened pivot portion 18, and an elongate bridge portion 19 terminating in a forward lip base 20. The two implement halves 11 and 12 are pivotally secured together, via respective apertures (not shown), by suitable attachment 21 such as a pivot screw 22 and nut 23. Stop finger 24 is provided and includes threaded portion 25 threaded into boss 26, associated with implement half 12. It is noted that the elongate bridge portions 15 and 19 are relatively thin as to lateral cross-section and define at their interior peripheries 27 and 28 an enlarged, tissue relief area. Ring 29 forms a closure ring and includes opposite ends 30 and 31, for example, which seat into aperture 32. An upturned nub 33 may operate to retain the ring 29 when the same is closed. Stop finger 24 delimits the minimum distance at this point between the opposite elongate handle portions 13 and 17 and, correspondingly, delimits the minimum disposition spacing between forward lip 16 and forward lip base 20, herein after explained.

The details of the forward lip 16 and forward lip base 20 are important. It is seen that the forward lip 16 has provided at its lower surface 34 a rectangular recessed area 36 provided preferably with straight edge areas 36. Likewise, a drilled and tapped aperture 37 is provided as seen in FIG. 1. Recesses area 35 accommodates a plate 38 which forms part of a composite staple attachment 39, as shown in FIG. 2B. Plate 38 is provided with a drilled and tapped aperture 40 as seen in FIG. 2, the same being disposed centrally of provided apertures 41 and 42. The latter two apertures receive the opposite legs 43 and 44 of staple 45, the latter also including staple plate base 46. Staple base 46 is preferably formed to comprise essentially a plate. When the staple 45 engages plate 38 and the staple legs 43 and 44 are bent or crimped over the same, then the configuration shown in FIG. 2B will be obtained. Thumb screw 47 includes knurled thumb-and-finger portion 48 and also threaded end 49 of reduced cross-sectional diameter. It is this threaded portion 49 which is received in aperture 37 to engage the threaded aperture 40, of plate 38 in FIG. 2A.

Forward lip base 20 is seen to include a longitudinal, under-cut slot 50 having open area 51 which provides relief for legs 43 and 44 of staple 45.

The structure as thus far described operates as follows. The implement shown in FIG. 1 is initially supplied and is provided with the staple components of FIG. 2A, namely, the staple plate 38 and the staple itself, staple 45. Plate 38 will be disposed in the recessed area 35 of forward lip 16 and will be releasably secured in place by the knurled thumb screw 47. The latter, as heretofore explained, threadedly engages the threaded aperture 40 by a threaded stud 49; by the same the plate 38 is secured in place.

In a corresponding, though slightly different manner, the staple 45 of FIG. 2A is inserted, in a direction front-to-rear, into under-cut slot 50 of forward lip base 20; the slot 50 is disposed longitudinally, as illustrated in FIG. 1, wherein the staple legs 43 and 44 are disposed centrally in upstanding fashion and in alignment with apertures 41 and 42. It is to be noted that the recessed area 35 and under-cut slot 50 will be so dimensioned that the staple plate 38 and staple 45 may be easily dissociated from the respective forward lip (or forward lip base) of the implement.

At this point, the user will enlarge with one hand the vagina opening of the animal being treated and, by his other hand, will grasp the tool and manipulate the same such that the elongated bridge portion 19 of the tool is inserted through the vagina opening, with staple secured, whereas the elongate bridge portion 50 will be advanced forwardly on the outside of the animal and next to its hide.

When the tool is properly placed, then the user will grip the two elongate handle portions 13 and 17 together such that the staple legs will penetrate into the vagina and muscle area above-identified, at which point the staple legs 43 and 44 will enter into apertures 41 and 42 of plate 38.

On close examination of forward lip 16 of the tool it will be seen that a second recessed area 35A is provided. This recessed area may simply take the form of a longitudinal groove or guide along which the ends of the staple legs are advanced as the staple is being crimped, through the squeezing together of the implement's handles. The tool and staple assembly will be dimensioned such that when complete crimping of the staple has been accomplished the ends will be mutually advanced together as shown in FIG. 4, with the space therebetween clearing the threaded aperture receiving thumb screw 47. See FIG. 4.

The prior discussion relates specifically to the subject matter of FIG. 3, wherein advancement of the tool is indicated such that the staple associated with forward lip base 20 is appropriately positioned inside the animal immediately prior to closure of the implement at the lip area.

FIG. 4 illustrates the condition of the tool after the elongate handle portions have been squeezed together such that edge 24A of stop finger 24 engages elongate handle portion 23. At this point, the thumb screw 47 is backed off, so that the same disengages from the staple plate 38. Hence, when the elongate handle portions 13 and 17 are manually spread apart, the plate 38 will lift out of recessed area 35. The withdrawing of the implement will be accompanied by a sliding out of staple 45 from under-cut slot 50 in the manner shown in FIG. 5. The completed function, with the tool having been

completely withdrawn from the staple assembly, will leave a condition of the vagina tissue being secured to the side of the animal by the staple assembly, the plate 38 thereof being disposed on the outside of the animal and next to its hide. Undue restriction of the distance D between the staple base 46 and the staple plate 38, and consequent tissue damage, is avoided as, in fact, this distance is controlled through the appropriate adjustment of stop finger 24, via its threads.

Of course, when the tool is not in use, the same may be stored with the closure ring 29 being snapped in place in the manner indicated.

One type of staple means which may be used has been shown and described as staple 45, see FIGS. 3 and 5 by way of example.

Other types of staples may be employed and fall within the context of the present invention. Essential in all embodiments of the staple is that the staple head be very much larger in width relative to the legs or prongs thereof. This is for the retaining function that is particularly necessary in the connection of securing in place muscle and tissue of an affected animal. Accordingly, it is a special type of device such as shown in FIGS. 3, 5, 7-9 which is needed.

In FIG. 7 the staple means 52, useable in the same manner as seen in FIGS. 4 and 6, includes an enlarged staple head 53. Stamped from such head are a pair of prongs or legs 54 which are bent over a staple-retainer plate 55 corresponding to element 38. Accordingly, the leg extremities are delineated at 56 and 57.

The unique staple illustrated in FIGS. 7 may be quickly formed through a stamping operation so that the staple head 53 is very much wider than the legs, this for proper tissue securement for the use intended as above described.

In FIG. 8 the staple means 58 includes a conventional staple 59 having legs 60 and 61 which are bent at 62 and 63 over the staple-retainer plate 64. The latter, again, corresponds with the plate 38 FIG. 6. Staple member 59 includes a spanning portion as 65 which is soldered, welded or otherwise secured at 66 to and within the grooves 67 found on the underside of staple head 68. Accordingly, in the embodiment shown in FIG. 8 the staple may comprise a conventional staple but be provided with a separate head member, as at 58, which can be secured to the staple in the manner indicated.

In FIG. 9 tubular rivets 70 and 71 in effect comprise staple legs and may, but way of example, have protruberances 72 and 73 to serve as stop abutments, thereby aiding the placement of staple head 74. The latter is secured in place by the enlargement or flaring of the ends at 76 and 77, so that a firm securement of the tubular rivets to the staple head is achieved. The diameters of the staple legs can be made small enough so as to be easily pierceable through the tissue and hide of the cattle. Thus, the opening of the staple may be but a few thousandths of an inch. In any event, once the staple-retainer plate 55 is installed, in a manner corresponding to staple plate 38 in FIG. 6, then the ends at 78 and 79 may be flared or otherwise enlarged so that the staple-retainer plate is securely held in position.

In FIG. 10, staple means 80 includes a top plate 81 apertured at 82 and 83 for receiving prong legs 84 and 85. The apertures at 82 and 83 are flared at F to receive solder or weld material W.

In FIG. 11 the structure of FIG. 8 is modified such that groove 67' is disposed on the back of plate 68', with the staple provided nestling in such groove and protruding through apertures 86 and 87 as shown.

In all of the embodiments, the retainer plate such as plate 64 in FIG. 8 may include a groove G for recessing the pointed ends of the staple so that the same will not catch upon external objects.

In all of the embodiments shown it is seen that the head of the staple is very much larger than the legs thereof, this to serve the purposes intended.

From the above disclosure the method of practicing the invention becomes apparent wherein the subject method of replacing and securing a prolapsed vagina within female cattle comprises the steps of: introducing vagina-retention staple means, pointed outwardly, within a restored vagina, introducing a staple plate over the hide in registry with said staple means, and crimping such staple means outwardly through said vagina and hide thereat and through and across said staple plate.

What is provided, therefore, is a veterinary implement or tool and also staple assembly associated therewith, wherein an implement and staple means are pro-

vided for correctly positioning the vagina, inside of an animal, such that the vagina opening is sufficient for delivery. A stapling function will be accomplished on opposite sides of the vagina to ensure that the opening will be sufficient. Furthermore, there is no harm in leaving the stapling means in place after birth. Rather, a useful function is performed in permanently marking or tagging the animal, identifying the same as one that may have had previous labor difficulty.

While particularly embodiments of the present invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from this invention in its broader aspects.

I claim:

1. A method of replacing and securing a prolapsed vagina within female cattle, comprising the steps of introducing vagina-retention staple means, pointed outwardly, within a restored vagina, introducing a staple plate over the hide in registry with said staple means, and crimping said staple means outwardly through said vagina and hide thereat and through and across said staple plate.

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