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APPLICATOR FOR LIGATURES
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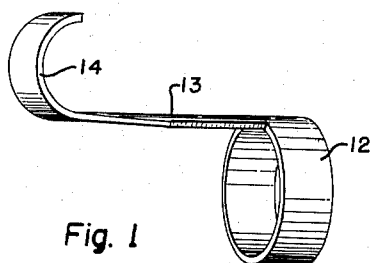


Fig. 1

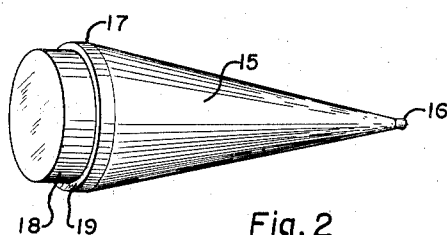


Fig. 2

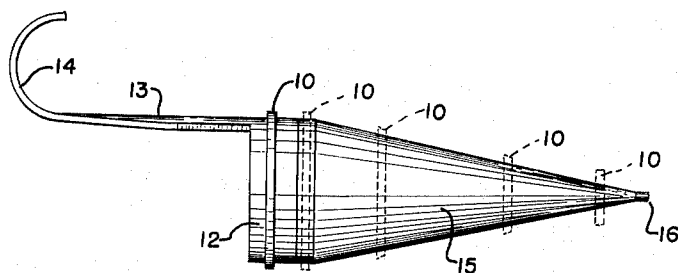


Fig. 4

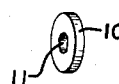


Fig. 3

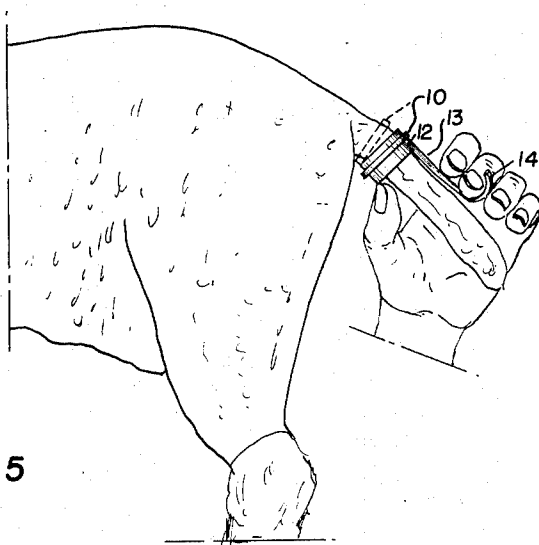


Fig. 5

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APPLICATOR FOR LIGATURES

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1 Claim. (Cl. 128—303)

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This invention relates to the art of applying ligatures to the pendulous organs of animals, and especially to the art of using elastic ligatures for tail docking and castrating domesticated animals such as sheep. It has as an object to provide a new and improved ligator apparatus for such purposes.

Another object of this invention is to provide a new and improved ligator apparatus which is adapted to place a small, strong elastic circular ligature about the tail of an animal in a docking operation.

Another object of this invention is to provide a new and improved ligator apparatus which is adapted to place a small, strong elastic circular ligature about the scrotum above the testicles in a castration operation.

Yet another object of this invention is to provide a new and improved apparatus of the class described which permits the expansion of small strong elastic circular ligatures for subsequent placing in docking, castrating and like operations.

Another object of this invention is to provide a new and improved ligator apparatus adapted to expand small strong elastic circular ligatures for subsequent use in docking, castrating and like operations which may be used and manipulated in an exceedingly simple and easy manner.

Yet another object of this invention is to provide a new and improved ligator apparatus which is exceedingly simple of construction, economical in cost of construction and operation, and rugged and durable over a long period of use.

With these and other objects in view, all of which more fully hereinafter appear, my invention comprises certain novel constructions, arrangements and combinations of parts, and certain novel methods and steps therein as shall now be described, and as defined in the appended claim and illustrated in the accompanying drawings in which:

Figure 1 is an isometric view of the improved ligature applicator forming a part of the apparatus.

Figure 2 is an isometric view of an expansion attachment for use with the applicator illustrated at Fig. 1.

Figure 3 is an isometric view of a small circular ligature, of a type adapted for use with the present invention.

Figure 4 is an elevation view of the ligator illustrated at Fig. 1, with the attachment illustrated at Fig. 2 engaged therewith in operative position, and with the ligature illustrated at Fig. 3 placed thereon, the various positions assumed

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by the ligature during the placing operation being shown in broken lines.

Figure 5 is a diagrammatic sketch illustrating the hind quarters of an animal, with the apparatus placed over the tail as for a docking operation, the position of the ligature when placed on the animal being shown in broken lines.

The method of removing the pendulous organs from an animal by applying continuous pressure above the organ to waste away the tissue by pinching off the blood vessels and other ducts which feed the organ, is a well known art, and in many aspects has definite advantages over operations wherein the tissue is bruised or cut away. One advantage is that where the blood vessels are cut off by continuous pressure they have an opportunity to readjust their course of circulation above the ligature or binding, and the final removal or sloughing off of the organ is accomplished with little or no shock to the physical system of the animal. The method of tying or binding is herein called ligation, the band or ring which is placed about the organ is called the ligature, and the apparatus used in the application of the ligature is called the ligator in accordance with medical terminology.

Perhaps the most desirable ligature for docking and castration operations on domesticated animals is formed as an elastic disk 10 of sufficient thickness to give it considerable strength, having therein a small orifice 11 to permit it to be expanded and placed about a pendulous organ. Such a ligature will effectively cause a constriction at the point of application and starve and eventually cause the sloughing off of the organ. At the same time there will be a minimum necessary circulation in the organ during its decadence to prevent the occurrence of gangrene which is a present danger in the use of non-elastic ligatures.

One of the principal factors which has prevented this type of ligature from becoming more popular is the difficulty of its application. Considerable force is required to expand the strong elastic ligature sufficiently to permit it to be placed in position around the tail of an animal or on the scrotum above the testicles, and the presently used ligator apparatuses are of complicated construction, expensive and difficult to operate. This invention was conceived to meet the need for improved and simplified apparatus and methods for the application of the elastic ligatures such as described.

In the present invention the ligature applicator

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comprises a ring 12 formed as a short cylindrical section with the outer periphery having a flat surface adapted to retain thereabout an expanded ligature 10. This ring may be formed by various means, such as from tubular material, and the diameter may be selected to permit its use on given types of animals, a larger instrument being necessary for stock such as horses than would be necessary for animals such as sheep. A handle 13 is suitably attached to one side of the ring 12, which extends therefrom along cylindrical elements of the ring in spaced parallelism with the polar axis of the ring. This handle terminates as a hook 14, outwardly turned from the ring, to facilitate gripping of the instrument in a manner hereinafter described.

A conical guide 15 is provided to place the ligatures about the ring 12. This guide may have a blunted cylindrical tip 16 to facilitate the threading of ligatures 10 thereon without danger of injury to the operator, as by inadvertently pressing his hand against the point. The base of this conical section may desirably terminate as a short cylindrical band 17 having a diameter the same as or slightly larger than the outside diameter of the ring 12 to facilitate the movement of ligatures from the guide to the ring 12. At the base of this guide there is a cylindrical stub 18, spaced concentrically with the cone axis, adapted to be slidably inserted in the ring 12 to permit a shoulder 19 at the juncture of the stub 18 and cone 15 to seat firmly against the edge of the ring 12 as clearly illustrated at Fig. 4. It follows that the ring and guide being thus joined, the ligature 10 may be rolled or slid up the conical guide and onto the ring 12 in the manner indicated by the broken lines at Fig. 4.

The slope of the conical guide is desirably flat enough to facilitate the rolling of the ligature along it from tip to base, and it is also desirable that the cone slope be flat enough that the ligature will tend to remain at any position thereon and not slide or roll out of place when released. This involves the frictional properties of the cone and ligature material, and a suitable cone angle may be determined by those skilled in the art.

In the performance of the operations herein stated, it is desirable that the operator have one

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hand free to hold the animal or to guide the organs through the ring, and thus it is desirable that the ligation be accomplished as a one-handed operation. Such is easily possible with the present invention, because the operator has merely to hold the handle 13 in his hand with the hook 14 between his fingers to secure the instrument even when he opens his hand. After the instrument is placed over a member, as the tail, he may then slip the ligature from the ring to the proper position on the tail by movement of his thumb, all as illustrated at Fig. 5.

I have illustrated and described many details in the construction and steps in the operation of my invention, but my protection is not to be limited to such details, as modifications, alternatives and equivalents will occur to those skilled in the art within the expected skill of their calling, all within the scope and spirit of the foregoing description and the appended claim.

I claim:

An expander and applicator for elastic ligatures including, in combination, a conical expander member having an element projecting from its base, an applicator member including a ring adapted to removably comate with said projecting element and the cone base and having a cylindrical outer surface of diameter not greater than that of the cone base and which outer surface, when the applicator is comated with said element and cone base, forms a substantial but cylindrical continuation of the cone base, said applicator including means for engaging a finger of a human hand.

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