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STOCK DEHORNER

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Fig. 1.

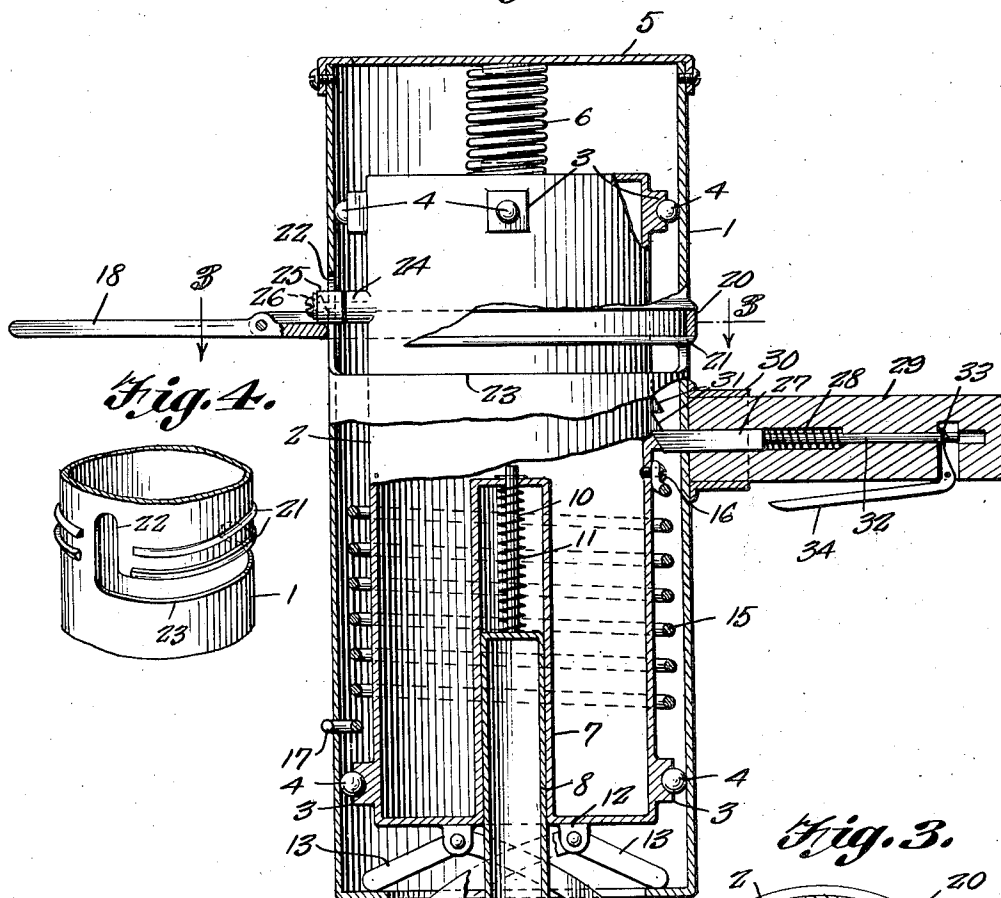


Fig. 4.

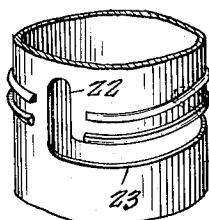


Fig. 2.

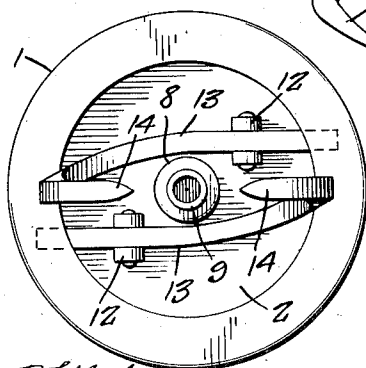
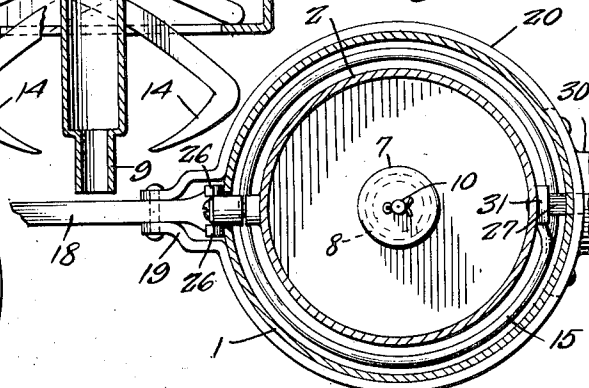


Fig. 3.



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STOCK DEHORNER

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6 Claims. (Cl. 128—308)

This invention relates to dehorners, and its general object is to provide a dehorner that is primarily designed for easily and accurately removing horns from small calves and the like, almost instantly, thereby reducing the pain, if any to a minimum and without material injury to the animal.

A further object of the invention is to provide a dehorner that is capable of performing its intended function with very little effort on the part of the user, is simple in construction, inexpensive to manufacture and extremely efficient in use, operation and service.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claims.

In describing my invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a vertical sectional view taken through the dehorner which forms the subject matter of the present invention and illustrates parts in elevation and the device set in a position to be released, for cutting a horn.

Figure 2 is a bottom plan view thereof.

Figure 3 is a sectional view taken approximately on line 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a perspective view illustrating a portion of the outer cylinder.

Referring to the drawing in detail, it will be noted that my dehorner includes an outer cylinder 1 and an inner cylinder 2, the latter having lugs 3 formed on and extending outwardly therefrom, with concavities therein to receive balls 4 that contact the inner wall of the outer cylinder, so as to provide anti-friction means, thereby assuring positive rotation and movement of the inner cylinder, as will be apparent.

The outer cylinder is provided with a closure 5 for its upper end, and depending from the closure 5, as well as rising from the upper end of the cylinder 2 are bosses receiving the end convolutions of a coil spring 6 for urging the inner cylinder downwardly, for a purpose which will be presently apparent.

The inner cylinder is provided with an opening in its bottom and extending from the opening for vertical disposal within the inner cylinder

is a guide cylinder 7 for a plunger 8 which is of tubular formation and has a restricted open lower end 9 to act for centering the dehorner with respect to a horn, and such is accomplished by placing the open lower end over the top of the horn. The plunger 8 is spring pressed, and for that purpose I provide a rod 10 rising from the upper end of the plunger 8 with a coil spring 11 surrounding the rod and having its end convolutions engaging the top of the plunger and the under surface of the guide cylinder 7. A cotter pin as shown limits the lower movement of the guide cylinder.

Depending from the lower end of the inner cylinder 2 are apertured ears 12 arranged in pairs, and pivotally mounted between the pairs of ears are the bell crank lever members of cutting knives 14 which as best shown in Figure 2 terminate in points to perform the cutting function in a manner which will be presently described. The free ends of the bell crank lever members 13 contact the bottom of the outer cylinder, while the long arms thereof as shown, extend through an opening in the bottom, with the knives arranged at an angle with respect thereto and being inwardly directed for cooperative association, consequently it will be seen that when the inner cylinder is forced downwardly within the outer cylinder, the pointed or penetrating ends of the so-called knives are directed toward each other to perform their intended function.

In the use of my device, it becomes necessary for the inner cylinder to rotate rapidly, and for that purpose I employ a spring 15 which may be termed the main spring and has the end of its upper convolution fixed to the inner cylinder as at 16, and the end of its lower convolution fixed to the outer cylinder as at 17, consequently manual rotation of the inner cylinder in one direction will wind the spring 15, and upon releasing the inner cylinder, the latter will unwind rapidly, for rotating the knives accordingly.

The inner cylinder is manually rotated for winding the spring through the instrumentality of a lever 18 which is pivotally secured to and between bracket arms 19 formed on the ends of a ring member 20, the latter being mounted for circumferential movement about the outer cylinder, but is confined within a groove provided by ribs 21 which of course extend circumferentially about the cylinder 1 with their ends terminating adjacent to the vertical portion 22 of a slot 23 that has its horizontal portion extending

approximately half way around the cylinder 1, as clearly shown in Figure 4.

Extending laterally from the inner cylinder is a lug 24 that has extending therefrom a screw bolt upon which is mounted a roller 25, the latter being received in the slot 23, for movement therein, as will be apparent upon inspection of Figure 1. The lever 13 terminates at its inner end into an upwardly curved fork 26, the tines of which are disposed upon the opposite sides of the roller for the purpose of carrying the inner cylinder, to wind up the coil spring 15, when it is desired to set the device.

The device is held in set position through the instrumentality of ratchet means which includes a trigger actuated spring pressed pawl 27, in the form of a bar, and which is mounted for slidable movement within a bore 28 disposed longitudinally and centrally of a handle 29 that is fixed in a collar 30 secured to the outer cylinder to project laterally therefrom and preferably opposite to the lever 13 as best shown in Figure 1.

The inner end of the pawl 27 is beveled for cooperation with teeth 31 formed or otherwise secured to the inner cylinder, and the pawl has extending therefrom a rod 32 with a coil spring surrounding the same to urge the pawl in cooperative relation with respect to the teeth. The rod 32 has secured to its outer end the right angled bent upwardly directed portion 33 of a trigger 34, the portion 33 being pivotally mounted within a recess in the handle 29 whereas when the free portion of the trigger is pressed or moved toward the handle, the pawl will be moved outwardly and released from the teeth, to release the inner cylinder accordingly.

The device as previously set forth is shown in set position in Figure 1, and when in normal position, the roller 25 is disposed on the right hand side of the slot 23, and of course is moved to the position of Figure 1 by the lever 13, the lever being arranged at an inclination when the roller is in the horizontal portion 22, due to the fact that the horizontal portion is below the ring member 29. When the left hand side of the horizontal portion of the slot 23 is reached, the lever is moved for disposing the roller in the vertical portion 22 of the slot, as shown in Figure 1. When in that position, the spring 15 has been wound up and the pawl 27 is received by one of the teeth 31, with the knife members arranged to open position. The plunger 8 is then placed over the horn of the animal to center the device with respect thereto, thence the device is lowered for disposing the plunger out of the path of the knives 14. The trigger is then actuated to release the inner cylinder, with the result the coil spring 15 will push the same downwardly and cause the knives to contact the horn. That action likewise causes the inner cylinder to rotate, consequently each knife will provide a semi-circular cut about the horn and thereby sever the same. That action is done almost instantly, with the result the pain if any is reduced to a minimum, therefore the device removes the horn in a humane manner.

By employing a number of teeth 31, as shown, for the ratchet means, it will be obvious that the throw of the bell crank lever members 13 can be varied, so that the knives are adjustable to fit and cut horns of different diameters with uniform efficiency. When the pawl 27 is in the lower notch of the teeth, the throw will be greater than when in the upper notch, consequently the space between the cutting edges can be varied in accord-

ance with horns of different diameters. In other words, the adjustment changes the diameter of the circular path taken by the cutting edges of the knives.

It is thought from the foregoing description that the advantages and novel features of my invention will be readily apparent.

I desire it to be understood that I may make changes in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:

1. A dehorner comprising opposed cutting elements and a horn centering plunger, rotatably mounted spring wound mounting means for pivotally mounting the said cutting elements and resiliently mounting the said plunger in a normally extended position between the cutting elements, means for placing the said mounting means under tension with the cutting elements spread on each side of the plunger, actuating means to release the tension on the mounting means, to cause the latter to rotate the cutting elements, means to cause the cutting elements to approach each other for cutting action upon releasing the mounting means, and the resilient mounting of the plunger permitting its retraction from between the cutting elements.

2. A dehorner comprising inner and outer cylinders, means rotatably mounting the inner cylinder with respect to the outer cylinder, cutting means carried by the inner cylinder and extending through the outer cylinder, means for putting the inner cylinder under tension, means for holding the inner cylinder accordingly and being releasable to allow the inner cylinder to rotate, said inner cylinder being mounted for vertical movement, said cutting means being normally inactive and engageable with the outer cylinder for disposing them into cutting action simultaneously with the rotation thereof to sever a horn.

3. A dehorner comprising inner and outer cylinders, means rotatably mounting the inner cylinder with respect to the outer cylinder and the inner cylinder being mounted for vertical movement, means for urging the inner cylinder downwardly, cutting means carried by the inner cylinder for disposal through the outer cylinder, a coil spring for putting the inner cylinder under tension, means for releasing the tension to cause the inner cylinder to rotate, and said cutting means being normally inactive and engageable with the outer cylinder for disposal into cutting action.

4. A dehorner comprising inner and outer cylinders, means rotatably mounting the inner cylinder with respect to the outer cylinder, and said inner cylinder being vertically movable, means for urging the inner cylinder downwardly, a coil spring secured to the inner cylinder and outer cylinder respectively, means for manually rotating the inner cylinder to wind the coil spring to put the inner cylinder under tension, means for holding the inner cylinder accordingly, cutting means carried by the inner cylinder and extending through the outer cylinder, and engageable with the latter for disposal into cutting position, trigger means for the holding means to release the latter to cause the cutting means to rotate and to be urged into cutting action simultaneously with the rotation thereof to sever a horn, and means for centering the cutting means with respect to the horn.

5. A dehorner comprising inner and outer cyl-

inders, anti-friction means between the cylinders to allow rotation of the inner cylinder with respect to the outer cylinder, means for urging the inner cylinder downwardly, said outer cylinder 5 having a slot arranged circumferentially therein and including an upwardly directed portion, means carried by the inner cylinder and guided in the slot, spring means for placing the inner cylinder under tension, manual means engageable 10 with the means mounted in the slot for rotating the inner cylinder to wind the spring means, ratchet means for holding the inner cylinder under tension, cutting means secured to the inner cylinder and extending through the outer cylinder, said cutting means being pivotally mounted 15 and engageable with the outer cylinder for disposal into cutting position, means for releasing the latching means to rotate and move the inner cylinder downwardly to urge the cutting means into cutting action for severing a horn, and means 20 for centering the cutting means with respect to the horn.

6. A dehorner comprising inner and outer cylinders, anti-friction means between the cylinders and the inner cylinder being rotatable and slidably mounted for vertical movement, means for urging the inner cylinder downwardly, cutting 5 means pivotally secured to the lower end of the inner cylinder and including bell crank levers each having one of the arms thereof engageable with the outer cylinder for actuating the cutting 10 means into operative position, the other arm of each lever extending through the outer cylinder, penetrating cutting knives formed on the last mentioned arms and being directed toward each other, means for rotating the inner cylinder 15 simultaneously with the downward movement thereof to cause each of the cutting knives to provide a semi-circular cut in a horn to sever the same, and means for centering the knives with respect to the horn prior to the cutting action. 20

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