

1 573 028

(21) Application No. 14017/77 (22) Filed 2 April 1977

(23) Complete Specification filed 21 March 1978

(44) Complete Specification published 13 Aug. 1980

(51) INT. CL.³ A61D 3/00
A01K 15/00(52) Index at acceptance
A1M AS

(54) SUPPORT DEVICE

(71) I, JOHN LESLIE MORRIS, a British subject, of Minhla, Corvedale Road, Craven Arms, Shropshire, do hereby declare the invention for which I pray that a patent may be granted to me and the method by which it is to be performed to be particularly described in and by the following statement:—

This invention relates to a support device and is more particularly concerned with a support device for animals which enables animals to be inverted for performing an operation thereon, e.g. in the case of sheep, tail trimming and feet paring.

A number of such devices are available. One such device comprises first and second spaced side panels, and a pair of support legs to which respective ends of the first side panel are connected through horizontal pivots to permit rotation of the first side panel about a horizontal axis. The second side panel has cranked support arms extending from its lower side edge towards the first panel and connected with the first panel through respective horizontal pivots which are aligned and are disposed below the first panel. At the top edge of the second panel, there is provided a handle for effecting rotation of the assembly and a ratchet device is provided between the first and second panels at the top thereof. In use, an animal is positioned between the first and second panels and the handle is pulled so as to draw the top of the second panel towards the top of the first panel as permitted by the horizontal pivotal connection between the two panels. The ratchet device operates so as to retain the second panel in its pivoted position relative to the first panel. Further movement of the handle causes the assembly of first and second panels with the animal therebetween to pivot about the pivotal connection with the support so that the animal

is inverted. Because of the wedging action produced in the above described device, there is a tendency, as the animal is lifted off its feet and rotation commences, for it to slip down between the panels with a result that (1) the centre of gravity of the animal moves further away from the pivot point making further rotation of the animal difficult, (2) relative movement between the panels results in the animal being incorrectly positioned when inverted and (3) there is a risk that when the animal is being returned to its feet, the legs may strike the floor too early thus resulting in injury to the animal.

It is an object of the present invention to obviate or mitigate the above disadvantages.

According to the present invention, there is provided a support device for inverting an animal, comprising first and second spaced side members between which the animal is, in use, positioned, mounting means supporting the side members clear of the ground, said first side member being pivotally mounted on the mounting means for rotation about a horizontal axis, said second side member being supported by the first side member for pivotal movement relative thereto about a horizontal axis so that one side edge of the second side member is movable towards and away from an adjacent side edge of the first side member, and a clamping member mounted on at least one of the side members and connected by a linkage with the other side member, the arrangement being such that, when the second side member is moved towards the first side member, an end of the clamping member remote from the aforementioned side edges of the side members moves towards the side member to which the associated linkage is connected whereby the animal is located securely in position whilst being inverted by pivotal movement

of the side members and clamping member relative to the mounting means about said horizontal axis.

In one embodiment, only one clamping member is provided and is pivotally mounted on the second side member and connected by the linkage with the first side member.

In a second embodiment, only one clamping member is provided and is pivotally mounted on the first side member and connected by the linkage with the second side member.

In another embodiment, two clamping members are provided, one on each side member and each having a respective linkage connected with the other side member.

Preferably, the or each linkage is adjustable to enable different sizes of animal to be accommodated.

Conveniently, means are provided for limiting the clamping pressure exerted by the or each clamping member. Preferably, said limiting means comprises a spring connection in the or each linkage.

Embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:—

Fig. 1 is a schematic perspective view of one form of support device according to the present invention.

Fig. 2 is a schematic perspective view of another form of support device.

Figs. 3, 4 and 5 are schematic illustrations of the manner in which the support device of Fig. 1 or 2 is inverted.

Fig. 6 is a schematic perspective view of a further form of support device according to the present invention.

Fig. 7 is a view on a larger scale of another form of support device according to the present invention.

Figs. 8 to 13 are diagrammatic illustrations of yet another form of support device according to the present invention showing various stages in the supporting and inverting of an animal.

Fig. 14 is a diagrammatic illustration of a still further form of support device, and

Figs. 15a to 15c show diagrammatically the pivotal action which takes place in the support device of Fig. 14.

Referring now to Fig. 1, the support device comprises a side panel 100 supported on a pair of support legs 101 for movement relative thereto about aligned horizontal pivots 102. The device further includes a side frame 103 which is connected with the side panel 100 via a pair of cranked support arms 104 and respective aligned horizontal pivots 105. The support arms 104 and pivots 105 are disposed below the bottom side edges of the panel 100 and side frame 103. At the top of the side

frame 103 there is provided a substantially U-shaped handle 106 which has a ratchet arm 107 pivotally mounted thereon and extending towards the top side edge of the side panel 100 so that the ratcheting thereon engages the top side edge of the panel 100. Mounted on the side frame 103 is a clamping plate 108 which is pivotable relative to the side frame 103 about a horizontal axis. A linkage 109 is connected between the pivotal attachment of the clamping plate 108 to the side frame 103 and the top side edge of the side panel 100. The clamping plate 108 occupies substantially the whole of the area encompassed by the side frame 103.

Referring now to Fig. 2, the support device illustrated therein is almost identical to that illustrated in Fig. 1 and similar parts are accorded the same reference numeral. In this embodiment, however, the clamping plate 108 occupies only a localised area midway along the side frame 103 which is modified to strengthen it by the provision of strengthening members 110 extending between respective support arms 104 and the respective ends of the handle 106. Panels 111 close the otherwise open areas of the side frame 103 outwardly of the strengthening members 110.

The support devices of Figs. 1 and 2 operate as illustrated in Figs. 3 to 5. With the support device in the position illustrated in Fig. 3, an animal to be supported and inverted is led or driven between the side panel 100 and the side frame 103. Then the handle 106 is pulled in the direction of the arrow illustrated in Fig. 4 which pivots the side frame 103 about pivots 105 so that the upper side edge thereof is moved towards the upper side edge of the panel 100. This action serves to locate the animal firmly in position against movement in an upward direction as viewed in Fig. 3 and 4 or in a downward direction when the device is inverted. The ratchet device 107 operating on the top side edge of the side panel 100 serves to prevent, until released, the top edge of the side frame 103 from movement away from the top edge of the side panel 100. Simultaneously with this, the movement of the top edge of the side frame 103 towards the top edge of the side panel 100 causes the linkage 109 to effect pivotal movement of the clamping plate 108 in a clockwise direction as viewed in Figs. 3 and 4 relative to the side frame 103. This moves the clamping plate 108 from the position illustrated in Fig. 3 to the position illustrated in Fig. 4 so that the animal is firmly held against any movement relative to the panel 100 and side frame 103 in a downward direction as viewed in Fig. 4. Further movement of the handle 106 causes the side panel 100, side

frame 103 and clamping plate 108 together with the animal securely held therebetween to be pivoted about the axis of the horizontal pivots 102 so that the whole assembly can be inverted by passing through the position illustrated in Fig. 5.

Due to the provision of the clamping plate 108, there is little or no risk that the animal will slip whilst its weight is being taken by the support device or whilst it is being inverted so that it can be readily inverted with little risk of damage to the animal when support device is orientated back to its original position.

Referring now to Fig. 6 of the drawings, the support device illustrated therein is very similar to that illustrated in Fig. 1. In this embodiment, however, the side panel 100 is replaced by a side frame 112 and clamping plate 113 similar to side frame 103 and clamping plate 108. In a like manner to clamping plate 108, clamping plate 113 is provided with a linkage 114 connected with the side frame 103. The operation of the support device of Fig. 6 is the same as that described with reference to the embodiment of Figs. 1 and 2 except that inward pivotal movement of both of the clamping plates 108 and 113 occurs when the side frame 103 is pivoted towards the side frame 112.

Referring now to Fig. 7 of the drawings, the support device illustrated therein includes an improved form of linkage 109. The linkage 109 comprises a part 115 which is fixed to the plate 108 and which extends on an opposite side of a horizontal pivot 130 by which the plate 108 and part 115 are pivotally mounted on the side frame 103. The upper end of the linkage part 115 is connected with a link 116 via a horizontal pivot 117. The link 116 passes slidably through a guide 118 which is pivotally mounted on the top side edge of the panel 100 through a horizontal pivot 119. A stop 120 is provided on the link 116 outwardly of the guide 118 to prevent complete detachment of the link 116 from the guide 118. A spring 121 is disposed on the link 116 and acts between the guide 118 and an abutment in the form of a clip 122 which can be detachably engaged in any one of three holes 123 provided in the link 116 and spaced apart longitudinally thereof. In use, when an animal has been located between the side panel 100 and the side frame 103, the handle 106 is operated to pivot the side frame 103 about the axis of pivot 105, thus moving the top side edge of the side frame 103 towards the top side edge of the panel 100. Initially, the link 116 slides through the guide 118 until the end of the spring 121 remote from the guide 118 abuts against the clip 122. Further movement of the handle in the

same direction then causes the clamping plate 108 to pivot in a clockwise direction as viewed in Fig. 7 about the axis of pivot 130 until the clamping plate 108 engages the body of the animal. Thereafter, further movement of the top side edge of the side frame 103 towards the side panel 100 causes the spring 121 to be compressed thereby limiting the pressure which is applied to the animal by the support plate 108. This pressure can be adjusted by re-locating the clip 122. If the clip is re-located nearer to the guide 118 then the maximum pressure applied is greater and if the clip 122 is re-located in the hole which is furthest away from the guide 118, then the maximum pressure applied is less. This clip can, of course, be located in a hole appropriate to the size of the animal being inverted.

The various movements of the parts of the support device of Fig. 7 during supporting and inversion of the animal are illustrated in Figs. 8 to 13 which relate to a preferred form of support device in which the support plate 108 is shaped to conform approximately to the shape of that part of the animal which it is intended to engage. Additionally, the side panel 100 and the side frame 103 are also shaped to this end (see Fig. 8 in particular). Furthermore, the side frame 103 has openings therein filled with mesh work 124 and is also provided with a pivotal access gate 125 which can be opened to facilitate access to the animal when inverted.

The support device illustrated in Figs. 8 to 13 is found to be particularly suitable as it holds the animal securely but yet with a minimum of risk of injury at all stages during the support and inversion of the animal.

Referring now to Fig. 14, the support device illustrated therein is similar to that of Figs. 9 to 14 and similar parts are accorded the same reference numerals. For clarity, the mesh work 124 has been omitted from Fig. 14. In this embodiment, the side panel 100 is pivotally mounted on each support leg 101 by a respective cranked pivot member 150 having upper and lower, mutually parallel end portions 151 and 152 which extend in opposite directions and which are interconnected by an intermediate linear portion 153 extending perpendicularly with respect to the end portions. The upper end portion 151 is pivotally engaged with the respective support leg 101 whilst the lower end portion pivotally engages the respective end of the side panel 100. A cranked stop member 154 extends from each intermediate portion 153 to lie behind the respective end of each side panel 100, i.e. on the opposite side thereof to the frame 103. In use, during inversion of an

animal, pivoting first occurs about the axis X-X of the end portion 152 so providing a relatively large lever action with respect to the handle 106. At this point, the centre of gravity of the animal is fairly low, the line of gravity being disposed at a distance D from the axis X-X (Fig. 15a). This arrangement gives a mechanical advantage which assists inversion of the animal. During inversion, the centre of gravity rises and approaches axis Y-Y of the upper end portions 151, the distance between the line of gravity of the animal and the axis Y-Y being shown as d in Fig. 15b. At this time the cranked stop members 154 engage against the side panel to prevent further pivoting about axis X-X. Subsequent pivoting of the animal occurs without difficulty about the axis Y-Y (Fig. 15c). This action also keeps the animal relatively high when inverted. When the support device is inverted, a gate 155 extending laterally from the side panel 100 blocks an entrance to the support device from long race (not shown) along which animals to have operations performed thereon pass. Rubber flaps 156, disposed on opposite sides of the entrance between the entrance to the support device and the exit of the long race, serve to deflect gently a drooping rear leg of the animal during rotation thereof to prevent the leg from risk of injury through trapping of the leg against any rigid non-rotatable parts adjacent the path of movement of the legs.

A gate 157 is provided at an exit to the support device. The gate 157 is pivoted at 158 on one side thereof, and provided with a counterbalance weight 159 which urges the other side of the gate 157 under a stop (not shown). Thus, the gate 157 can pivot downwardly against the weight 159. This is provided as a safety factor to prevent injury to the animal in case its chin engages against the top of the gate 157 when being returned to its feet. A rail 160 extending across the support device is pivotally secured to the side panel 100 and slidably engaged in a hook 161 on the frame 103. The rail 160 prevents an animal from jumping over the gate 157.

WHAT I CLAIM IS:—

1. A support device for inverting an animal, comprising first and second spaced side members between which the animal is, in use, positioned, mounting means supporting the side members clear of the ground, said first side member being pivotally mounted on the mounting means for rotation about a horizontal axis, said second side member being supported by the first side member for pivotal movement relative thereto about a horizontal axis so that one side edge of the second side member is movable towards and away from an ad-

jacent side edge of the first side member, and a clamping member mounted on at least one of the side members and connected by a linkage with the other side member, the arrangement being such that, when the second side member is moved towards the first side member, an end of the clamping member remote from the aforementioned side edges of the side members moves towards the side member to which the associated linkage is connected whereby the animal is located securely in position whilst being inverted by pivotal movement of the side members and clamping member relative to the mounting means about said horizontal axis.

2. A device as claimed in claim 1, wherein only one clamping member is provided, and is pivotally mounted on the second side member and connected by the linkage with the first side member.

3. A device as claimed in claim 1, wherein only one clamping member is provided and is pivotally mounted on the first side member and connected by the linkage with the second side member.

4. A device as claimed in claim 1, wherein two clamping members are provided, one on each side member and each having a respective linkage connected with the other side member.

5. A device as claimed in any preceding claim, wherein the or each linkage is adjustable to enable different sizes of animal to be accommodated.

6. A device as claimed in any preceding claim, wherein means are provided for limiting the clamping pressure exerted by the or each clamping member.

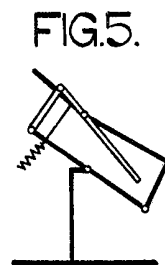
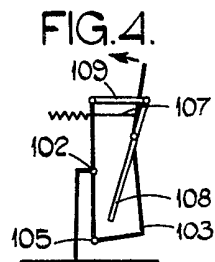
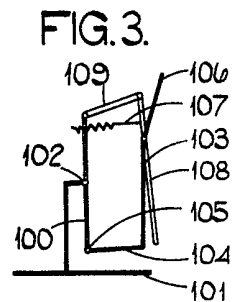
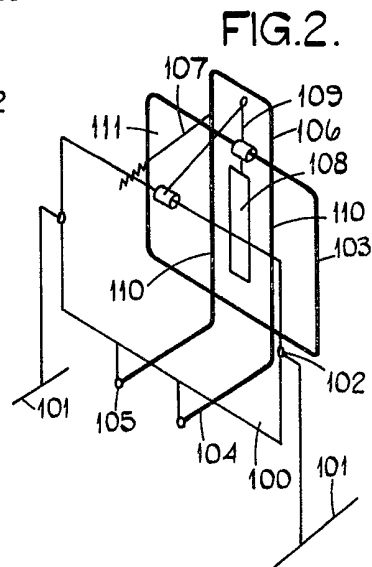
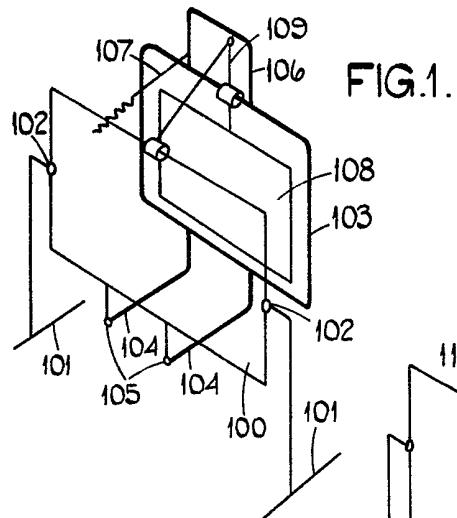
7. A device as claimed in claim 6, wherein said limiting means comprises a spring connection in the or each linkage.

8. A device as claimed in any preceding claim, wherein the first side member is pivotally mounted on the mounting means by a pivot member which allows pivotal movement of the first side member about upper and lower mutually parallel axes, and a stop is provided for preventing movement about the lower axis at a predetermined pivotal position of the first side member relative to the mounting means.

9. A device as claimed in claim 8, wherein the pivot member carries the stop.

10. A support device for inverting an animal substantially as hereinbefore described with reference to Fig. 1, Fig. 2, Fig. 6, Fig. 7, Figs. 8 to 13 or Figs. 14 and 15 of the accompanying drawings.

MARKS & CLERK,
Alpha Tower,
ATV Centre,
Birmingham B1 1TT.
Agents for the Applicant.



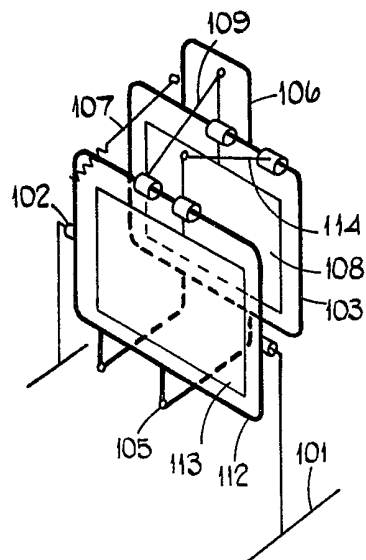


FIG. 6.

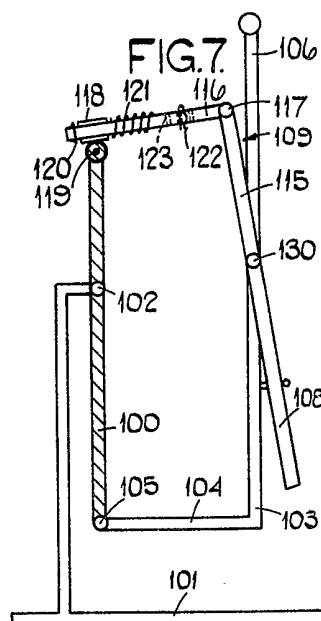
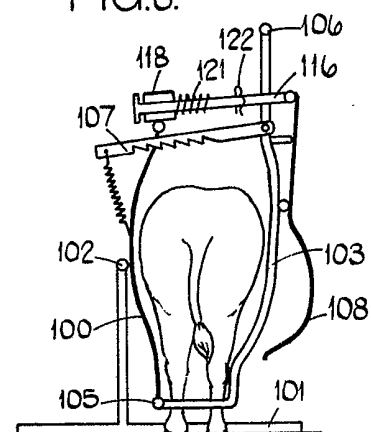


FIG.8.



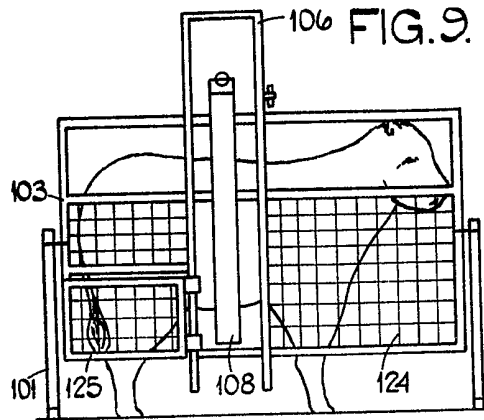


FIG. 10.

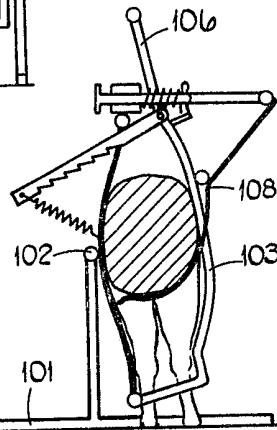


FIG. 11.

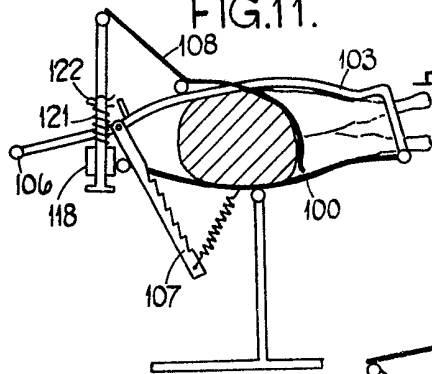
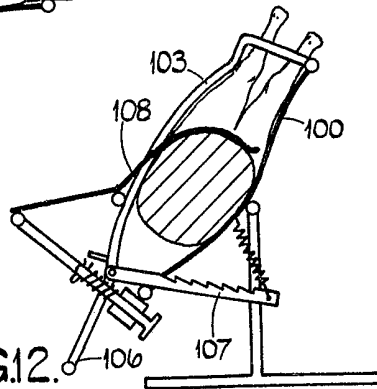


FIG. 12.



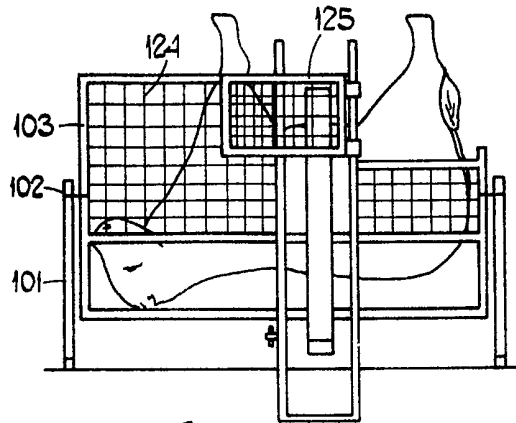


FIG. 13.

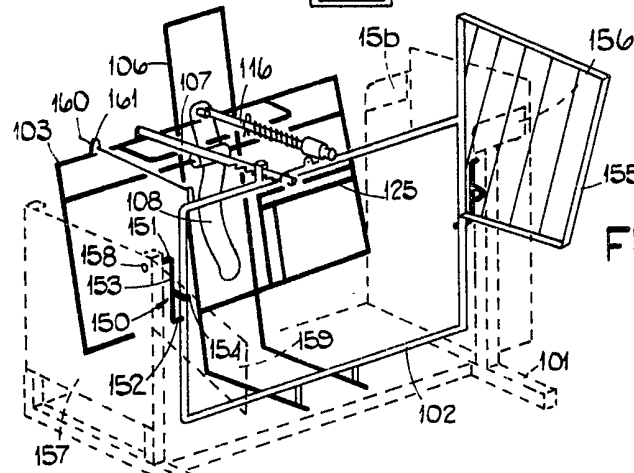


FIG. 14.

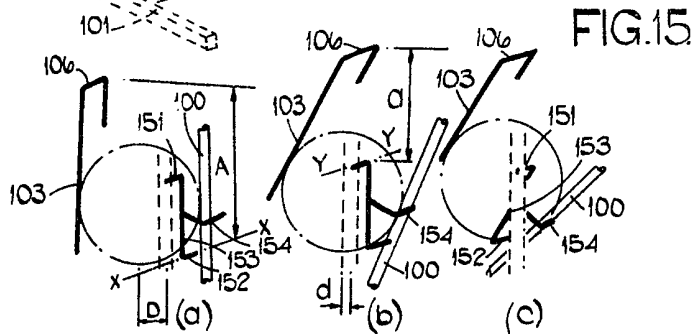


FIG. 15.