AUSTRALIA

PATENTS ACT 1990

PATENT REQUEST: STANDARD PATENT

I, being the persons identified below as the Applicant, request the grant of a patent to the person identified below as the Nominated Person, for an invention described in the accompanying standard Complete Specification.

Full application details follow.

(71) Applicant
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Address
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Address

(54) Invention Title
"FOLDABLE DECK APPARATUS"

(72) Name of actual inventor
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(74)
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ASSOCIATED PROVISIONAL APPLICATION DETAILS

(60) Application Number PP0735 filed on December 5, 1997

DATED THIS 4TH DAY OF DECEMBER 1998

S.F.M. ENGINEERING PTY LTD
By their Patent Attorneys
LORD & COMPANY
PERTH, WESTERN AUSTRALIA.
AUSTRALIA
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NOTICE OF ENTITLEMENT

We, S.F.M. ENGINEERING PTY LTD of 45 Elgee Road, Bellevue, Western Australia, 6056, AUSTRALIA, being the applicant and nominated person in respect of the attached application state the following:-

The inventor of the invention is as follows:
DOUGLAS ROY M'DONALD

The person nominated for the grant of the patent has entitlement from the actual inventor by virtue of employment

The associated provisional patent application listed on the request form was filed in the name of Cadilla Pty Ltd and assigned to S.F.M. Engineering Pty Ltd.

DATED THIS 4TH DAY OF DECEMBER 1998

S.F.M. ENGINEERING PTY LTD
By their Patent Attorneys
LORD & COMPANY
PERTH, WESTERN AUSTRALIA.
A foldable deck apparatus (10) for a livestock trailer (50) includes a deck (12) which is mounted on pivot means (21, 23) so that the deck (12) can pivot reversibly between a substantially horizontal position and a substantially vertical position. The foldable deck apparatus (10) is useful for carrying of smaller animals such as sheep when the deck (12) is substantially horizontal and larger animals such as cattle when the deck (12) is substantially vertical. Gutters (36) are provided for draining away animal waste.

**claim**

1. A foldable deck apparatus including a deck supported by first and second pivot means, the first pivot means being slidable in a generally horizontal direction and the second pivot means being slidable in a generally vertical direction such that the deck is movable between a first position in which the deck is generally vertical and a second position in which the deck is generally horizontal.
AUSTRALIA

PATENTS ACT 1990

COMPLETE SPECIFICATION

FOR A STANDARD PATENT

(Original)

APPLICATION NO:
LODGED:

COMPLETE SPECIFICATION LODGED:
ACCEPTED:
PUBLISHED:

RELATED ART:

NAME OF APPLICANT: CADILLA PTY LTD
ACTUAL INVENTOR(S): DOUGLAS ROY MCDONALD

ADDRESS FOR SERVICE: LORD & COMPANY,
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INVENTION TITLE: "FOLDABLE DECK APPARATUS"

DETAILS OF ASSOCIATED PROVISIONAL APPLICATION NO'S:
PP0735 filed on December 5, 1997.

The following Statement is a full description of this invention including the best method of performing it known to me/us.
A FOLDABLE DECK APPARATUS

BRIEF DESCRIPTION OF THE INVENTION

The present invention relates to a foldable deck apparatus for livestock trailers.

FIELD OF THE INVENTION

Livestock trailers are used to transport livestock such as cattle and sheep. Due to the relative size difference between cattle and sheep, it is desirable to have one trailer which can be converted to transport either type of animal. There currently exists convertible decks which fold away to provide a cattle configuration and which may also be folded out to provide double the number of decks in a sheep configuration. The current foldable decks have many problems, some of which include difficulties in folding the decks due to the supporting mechanism, and poor waste management due to animal waste not draining effectively. Further, the animal waste currently drains from the livestock trailer into the environment as the livestock trailer is travelling. The present invention seeks to overcome at least some of the abovementioned problems.

SUMMARY OF THE PRESENT INVENTION

In accordance with a first aspect of the present invention there is provided a foldable deck apparatus including a deck supported by first and second pivot means, the first pivot means being slidable in a generally horizontal direction and the second pivot means being slidable in a generally vertical direction such that the deck is movable between a first position in which the deck is generally vertical and a second position...
in which the deck is generally horizontal.

In accordance with a second aspect of the present invention there is provided a livestock trailer including a foldable deck apparatus in accordance with the first aspect of the present invention.

Preferably, the deck includes a gutter along an end of the deck.

More preferably, the gutter drains into a drainage system of a livestock trailer which collects waste in a storage tank.

**BRIEF DESCRIPTION OF THE DRAWINGS**

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

- Figure 1 is a side view of a foldable deck apparatus in accordance with the present invention, in a first position;
- Figure 2 is a side view of the foldable deck apparatus of Figure 1, in a position intermediate first and second positions.
- Figure 3 is a side view of the foldable deck apparatus of Figure 1, in a second position;
- Figure 4 is an upper perspective view of a portion of the foldable deck apparatus of Figure 1 and;
- Figure 5 is an upper perspective view of the foldable deck apparatus of Figure 1, installed in a livestock trailer.

**DESCRIPTION OF THE INVENTION**

Referring to Figures 1 to 3, there is shown a foldable deck apparatus 10 which includes a deck 12 having a first edge 14, a second edge 16, an upper surface 18, a
lower surface 20, a first end 15 and a second end 17. The first end 15 and second end 17 may be seen in Figure 5.

The deck 12 includes on each end 15 and 17 a first pivot means 21 and a second pivot means 23. Each first pivot means 21 is located adjacent the second edge 16 of the deck 12. Each second pivot means is located at a point intermediate the first and second edges 14 and 16 of the deck 12.

Each first pivot means 21 is mounted on a respective first slide member 22 and each second pivot point 23 is mounted on a respective second slide member 24. Each first slide member 22 is held within a vertical slide rail 26. Each second slide member 24 is held within a horizontal slide rail 28.

The slide members 22 and 24 are arranged to slide within their respective slide rails 26 and 28 such that the deck 12 is moveable between a first position and a second position. In the first position, as seen in Figure 1, the first slide member 22 is located toward the lower end of the vertical slide rail 26 and the second slide member 24 is located in the horizontal slide rail 28 adjacent the vertical slide rail 26. In the first position the deck 12 is generally vertical. In the second position, as seen in Figure 3, the first slide member 22 is located toward the upper end of the vertical slide rail 26 and the second slide member 24 is located at an end of the horizontal slide rail 28 remote from the vertical slide rail 26. In the second position that the deck is generally horizontal.

Each vertical slide rail 26 is arranged to be fixed to a frame section 35 of a livestock trailer. Each horizontal slide rail 28 includes a first portion 30 and a second portion 32. Each first portion 30 of the slide rail 28 extends horizontally across a respective door 34 of the livestock trailer. Each first portion 30 of the slide rail 28 is located
approximately half way down the respective door 34. Each second portion 32 of the horizontal slide rail 28 is fixed to the respective frame section 35, such that each second portion 32 intersects with the vertical slide rail 26. Each vertical slide rail 26 is arranged to have a majority of its length below the horizontal slide rail 28.

Each first portion 30 and each second portion 32 of each horizontal slide rail 28 may be separated by a gap 40 to allow the movement of the door 34 with respect to the frame section 35.

Further, each door 34 may include a first sheep door 50 and a second sheep door 52. Each first sheep door 50 is spaced above the respective second sheep door 52. Each horizontal slide rail 28 is positioned between each respective first sheep door 50 and second sheep door 52.

The deck 12 further includes a gutter 36 located under the first edge 14 of the deck 12 when the deck 12 is in the second position. Preferably, the first edge 14 of the deck 12 is lower than the second edge 16 to allow waste to drain from the deck 12 into the gutter 38. The gutter 36 drains waste into an inlet 44 of a drain 42 of a drainage system of the livestock trailer. The gutter 36 may include a sloping base so that waste will drain to one end of the gutter 36 and into the drain 42 through the inlet 44. The gutter 36 may rest on a lip 38 of the inlet 44.

Referring to Figure 4, the intersection of each horizontal slide rail 28 and vertical slide rail 26 forms a second gap 41. Each of the slide members 22 and 24 are of a length such that the first gap 40 and the second gap 42 will not interrupt the sliding operation of the slide members 22 and 24 within the respective slide rails 26 and 28.

Each of the slide members 22 and 24 may be fixed and locked into position by a locking means (not shown) to restrain the deck 12 in either the first position or the
second position. The locking means may be in the form of a locking pin or locking pins.

Referring to figure 5, there is shown a plurality of foldable deck apparatus 10 and 10' within a livestock trailer 50. The foldable deck apparatus 10 is arranged to fold out from a side of the livestock trailer 50 towards the centre of the livestock trailer 50. The other foldable deck apparatus 10' is arranged to fold out from an opposite side towards the centre of the livestock trailer 50. Both foldable deck apparatus 10 and 10', feed waste from respective gutters 36 into the drain 42 of the drainage system. The gutters 36 may be in communication with the drain 42 through a common inlet 44 or through an inlet each.

The drainage system includes one or more vertical drains 42 which are in communication with a storage tank (not shown) underneath the livestock trailer 50. Many foldable deck systems in accordance with the present invention may be installed in the one livestock trailer 50. For example, six deck systems in a three long by two wide configuration, may make a first level of a livestock trailer 50. A further six deck systems in the same configuration may make a further level above the first. Both levels may use the drains 42 of the drainage system so that both levels feed into the storage tank.

The method of operation and use of the present invention will now be described.

A livestock trailer 50 will have a plurality of foldable deck apparatus 10. Each would be used in a similar manner in order to convert the livestock trailer 50 from a cattle mode to a sheep mode and back again.

In the cattle mode, each foldable deck apparatus 10 starts in the first position with the deck 12 in a substantially vertical orientation. To change from the cattle mode to the
sheep mode the locking means, for restraining the slide members 22 and 24, would be released and the deck 12 folded from the first position to second position. In folding the deck 12, each second slide member 24 slides along the respective horizontal slide rail 28 towards the centre of the livestock trailer 50 and across the respective gaps 40 and 41. Each first slide member 22 slides up the respective vertical slide rail 26 and across the respective gap 41. The deck 12 pivots around each first pivot means 21 and each second pivot means 23 relative to each slide member 22 and 24. The locking means would then be engaged holding the slide members 22 and 24. When each foldable deck apparatus 10 is in the second position, the livestock trailer 50 is then in sheep mode.

Waste material from the sheep may drain across each deck 12 which may be declined slightly towards the centre of the livestock trailer 50 so that the waste travels into the gutter 36. Waste then travels down the sloping base of the gutter 36 to the inlet 44 in the drain 36. Waste may then be collected in the storage tank underneath the livestock trailer 50.

To convert the livestock trailer 50 back into the cattle mode, the locking means of the slide members 22 and 24 of each foldable deck apparatus 10 will be disengaged thus allowing the slide members 22 and 24 to freely slide along the slide rails 26 and 28. Each deck 12 is lifted and pushed towards the outside of the livestock trailer 50 thus causing the deck 12 to pivot about the pivot means 21 and 23. The slide members 22 and 24 slide along their respective slide rails 26 and 28. Each second slide member 24 slides toward the outside of the livestock trailer 50 across the respective gaps 40, 41 of each horizontal slide rail 28. Each first slide member 22 slides across the respective second gap 21 and down the respective vertical slide rail 26. When the
foldable deck apparatus 10 is returned to the first position the locking members of the slide members 22 and 24 are reinstated thus locking the deck 12 in the first position. Once all the foldable deck apparatus 10 are folded up, the livestock trailer is in cattle mode.

Modifications and variations as would be apparent to a skilled addressee deemed to be within the scope of the present invention.
The claims defining the invention are as follows:

1. A foldable deck apparatus including a deck supported by first and second pivot means, the first pivot means being slidable in a generally horizontal direction and the second pivot means being slidable in a generally vertical direction such that the deck is movable between a first position in which the deck is generally vertical and a second position in which the deck is generally horizontal.

2. A foldable deck apparatus in accordance with claim 1, wherein the pivot means is a pivot pin mounted on a slide member, the slide member of the first pivot means being arranged to slide longitudinally within a generally vertical slide rail and the slide member of the second pivot means being arranged to slide longitudinally within a generally horizontal slide rail.

3. A foldable deck apparatus according to claim 2 in which the generally horizontal slide rail has a gap therein to enable a hinged door, on which the rail is arranged to be mounted, to be opened and closed.

4. A foldable deck apparatus in accordance with any one of the preceding claims wherein a locking means is provided to secure the deck in either the first or second position.
5. A foldable deck apparatus in accordance with any one of the preceding claims, wherein, when the deck is in the second position thereof, an edge of the deck is located adjacent a gutter so that waste can drain away from the deck into the gutter.

6. A foldable deck apparatus according to claim 5, in which the gutter is built into the edge of the deck.

7. A foldable deck apparatus according to claim 5 or 6, wherein the gutter is connected to a storage tank so that waste can drain from the gutter to the storage tank.

8. A foldable deck apparatus according to any one of claims 5 to 7, in which the deck in the second position thereof has the edge thereof adjacent the gutter lower than an opposed edge thereof.

9. A foldable deck apparatus according to any one of claims 5 to 7, in which the gutter has a base sloping downwardly towards a drain member connected to the storage tank.

10. A foldable deck apparatus according to any one of the preceding claims, in which the deck has opposed first and second ends, each end being connected to respective first and second pivot means.
11. A foldable deck apparatus substantially as hereinbefore described with reference to the accompanying drawings

12. A livestock trailer including a foldable deck apparatus according to any one of the preceding claims.

13. A livestock trailer according to claim 12, in which the or each vertical slide rail is mounted on a frame section of the trailer and the or each horizontal slide rail is mounted on a door of the trailer.

14. A livestock trailer substantially as hereinbefore described with reference to the accompanying drawings

DATED THIS 27TH DAY OF NOVEMBER 1998.

S.F.M. ENGINEERING PTY LTD
By their Patent Attorneys
LORD & COMPANY
PERTH, WESTERN AUSTRALIA
ABSTRACT

A foldable deck apparatus (10) for a livestock trailer (50) includes a deck (12) which is mounted on pivot means (21, 23) so that the deck (12) can pivot reversibly between a substantially horizontal position and a substantially vertical position. The foldable deck apparatus (10) is useful for carrying of smaller animals such as sheep when the deck (12) is substantially horizontal and larger animals such as cattle when the deck (12) is substantially vertical. Gutters (36) are provided for draining away animal waste.