CLAIMS

The invention claimed is:

1. A flexible tank for transporting bulk liquids or semi-liquid materials, comprising:

at least one inner layer made of a flexible water-proof polymeric material, said at least one inner layer having first and second ends, at least said second end of said at least one inner layer having a coupon;

an outer shell made of a flexible polymeric material and forming an interior, said at least one inner layer positioned inside said interior of said outer shell, said outer shell having first and second ends and a seam is formed from said coupon and the second end of said outer shell;

a discharge valve extending through said outer shell and said at least one inner layer, said discharge valve being located near said first end of said at least one inner layer and said first end of said at least one outer shell; and

at least one cape incorporated and sewn into the seam.

2. A flexible tank for transporting bulk liquids or semi-liquid materials, comprising:

at least one inner layer made of a flexible water-proof polymeric material, said at least one inner layer having first and second ends;

an outer shell made of a flexible polymeric material and forming an interior, said at least one inner layer positioned inside said interior of said outer shell, said outer shell having first and second ends;

a discharge valve extending through said outer shell and said at least one inner layer, said discharge valve being located near said first end of said at least one inner layer and said first end of said at least one outer shell; and

one cape that is generally rectangular in shape, centered along the longitudinal center of the outer shell, and has a constant width between 72 to 92 inches.

3. The flexible tank of claim2, wherein said outer shell is slightly greater than 20 feet long and said at least one cape is approximately 28feet long.

4. The flexible tank of claim 1, wherein said at least one cape is constructed of the same flexible material as said outer shell.

5. The flexible tank of claim 1, having only one cape in total that is generally rectangular in shape, centered along the longitudinal center of the outer shell, and has a constant width less than the width of said outer shell.

6. The flexible tank of claim 5, wherein said one cape has a constant width between 72 to 92 inches.

7. The flexible tank of claim 1, wherein said one cape is wider at the end that is attached to said outer shell than it is at the other end.

8. The flexible tank of claim 1, wherein said at least one cape has a length greater than the length of said outer shell.

9. The flexible tank of claim 8, wherein said outer shell is slightly greater than 20 feet long and said at least one cape is approximately 28 feet long.

10. A flexible tank for transporting bulk liquids or semi-liquid materials, comprising:

a multi-ply inner liner, said multi-ply inner liner having at least one inner layer made of a flexible water-proof polymeric material, said multi-ply inner liner having first and second ends;

an outer shell made of a flexible polymeric material and forming an interior, said multi-ply inner liner positioned inside said interior of said outer shell, said outer

shell having first and second sides, first and second ends, a top and a bottom, the first and second sides being at least twice as long as the first and second ends are wide and twice as long as the height of the outer shell from the top to bottom;

a discharge valve extending through said outer shell and said multi-ply inner liner, said discharge valve being located near said first end of said at least one inner layer and said first end of said at least one outer shell; and

at least one cape attached to said outer shell at or near the second end of said outer shell, said at least one cape being longer than said outer shell.

11. The flexible tank of claim 10, wherein said outer shell is slightly greater than 20 feet long and said at least one cape is approximately 28 feet long.

12. The flexible tank of claim 10, wherein at least said second end of said at least one inner layer has a coupon and a seam is formed from said coupon and the second end of said outer shell, and said at least one cape is incorporated and sewn into the seam.

13. The flexible tank of claim 10, having only one cape in total that is generally rectangular in shape, centered along the longitudinal center of the outer shell, and has a constant width between 72 to 92 inches.

14. An apparatus for discharging bulk liquids or semi-liquid materials from a flexible tank having a cape located inside a shipping container, comprising:

a platform with a flat horizontal surface at the approximate height of the floor of said shipping container for an operator to stand upon;

a take-up bar to which said cape of said flexible tank may be attached, the take-up bar being positioned inside the shipping container when the apparatus is positioned at the opening of said shipping container;

a motor to drivably rotate the take-up bar; and

a stripping and positioning bar, the stripping and positioning bar being located below the take-up bar and closer to the opening of the shipping container than said take-up bar,

wherein the cape and the flexible tank are pulled to and wound upon the take-up bar when the cape is attached to the take-up bar and the take-up bar is rotated by operation of said motor.

15. The apparatus of claim 14, wherein the stripping and positioning bar has a low friction surface and, when the flexible tank is pulled to and wound upon the take-up bar, it is pulled over the stripping and positioning bar at an angle causing any residual material inside the flexible tank to be stripped from the inside surfaces of the flexible tank.

16. The apparatus of claim 15, wherein the stripping and positioning bar has a width that is less than the width of the take-up bar, the stripping and positioning bar is U-shaped or D-shaped and, when the cape and flexible tank are pulled to the take-up bar, the stripping and positioning bar horizontally positions and generally centers the cape and the flexible tank.

17. The apparatus of claim 15, wherein the motor driving the take-up bar can be controlled by an operator while standing on the platform outside of the shipping container.

18. The apparatus of claim 15, wherein the take-up bar can be remotely released to fall inside the container by an operator standing on the platform outside of the container.

19. The apparatus of claim 15, wherein the apparatus has a service/access step above the flat horizontal surface of the platform to facilitate accessing to the inside of the container.

20. The apparatus of claim 15, wherein the apparatus can be moved horizontally and has guide elements to assisting in aligning the apparatus with the opening of the shipping container.

21. The apparatus of claim 20, where in the height of the

apparatus or the platform can be adjusted.

22. A method for discharging bulk liquids or semi-liquid materials from a flexible tank inside a shipping container, comprising:

attaching a cape to the rear end of the flexible tank opposite the front end of the flexible tank having a discharge valve at the opening of the shipping container;

positioning a discharge apparatus with a take-up bar and a stripping and positioning bar, both of the take-up bar and stripping and positioning bar being located inside the shipping container above the flexible tank when the apparatus is positioned at the opening of said shipping container;

attaching the cape to the take-up bar such that it goes around a portion of the stripping and positioning bar as it is being pulled towards the take-up bar;

drivably rotating the take-up bar to pull the cape and the flexible tank from the rear end of the shipping container, thereby urging the complete discharge of material out the discharge valve of the flexible tank; and

winding the cape and the depleted flexible tank around the take-up bar.

23. The method of claim 22, wherein the discharge apparatus has a platform with a flat horizontal surface at the approximate height of the floor of said shipping container for an operator to stand upon, and the method can be carried out by the operator while standing on the flat horizontal surface outside of the shipping container.

24. The method of claim 22, wherein the stripping and positioning bar has a width that is less than the width of the take-up bar, the stripping and positioning bar is U-shaped or D-shaped and, when the cape and flexible tank are pulled to the take-up bar, the stripping and positioning bar horizontally positions and generally centers the cape and the flexible tank.

25. The method of claim 22, wherein the stripping and positioning bar has a low friction surface and, when the flexible tank is pulled to and wound upon the take-up bar, it is pulled over the stripping and positioning bar at an angle causing any

residual material inside the flexible tank to be stripped from the inside surfaces of the flexible tank.

26. The method of claim 22, further comprising releasing the take-up bar from the discharge apparatus such that it and the wound up cape and flexible tank fall to the floor of the shipping container.