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(54) **SEA DRAGON**

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(57) **ABSTRACT**

This invention is simple in design, effective in functionality, cost effective and is vitally important and beneficial to the enviroment in saving our oceans, beaches, marine wildlife and to prevent ecological contamination. This oil spill recovery system is designed to boom, skim and vacuum the oil or hazardous spills from the surface of fresh or salt water in semi rough or calm seas.

The system is designed to be towed through the water by two ships. For the purpose of towing the system, a steel cable

will run through two straps on the front of each unit in the system and attach to each ship.

Each unit will be attached together like a chain with a apron to contain the spill like a dam, to push and build an oil level by drawing the contaminated water and directing the spill at a high rate of flow through each of the five ports on the front of each unit by gravity flow or by the vacuum system to tanks on a ship. The system can be used in shallow water right up to the shore line as well as out in open sea.

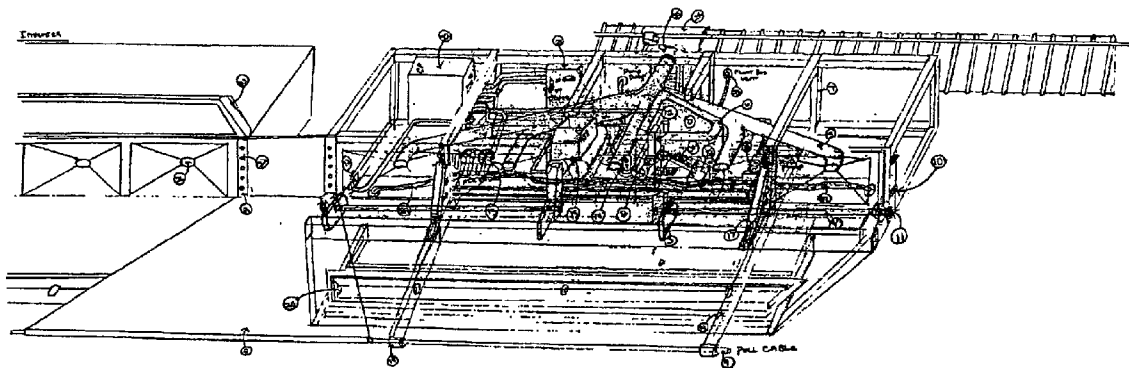
The system is designed to be stored on a ship and can be rapidly deployed in various lengths as needed.

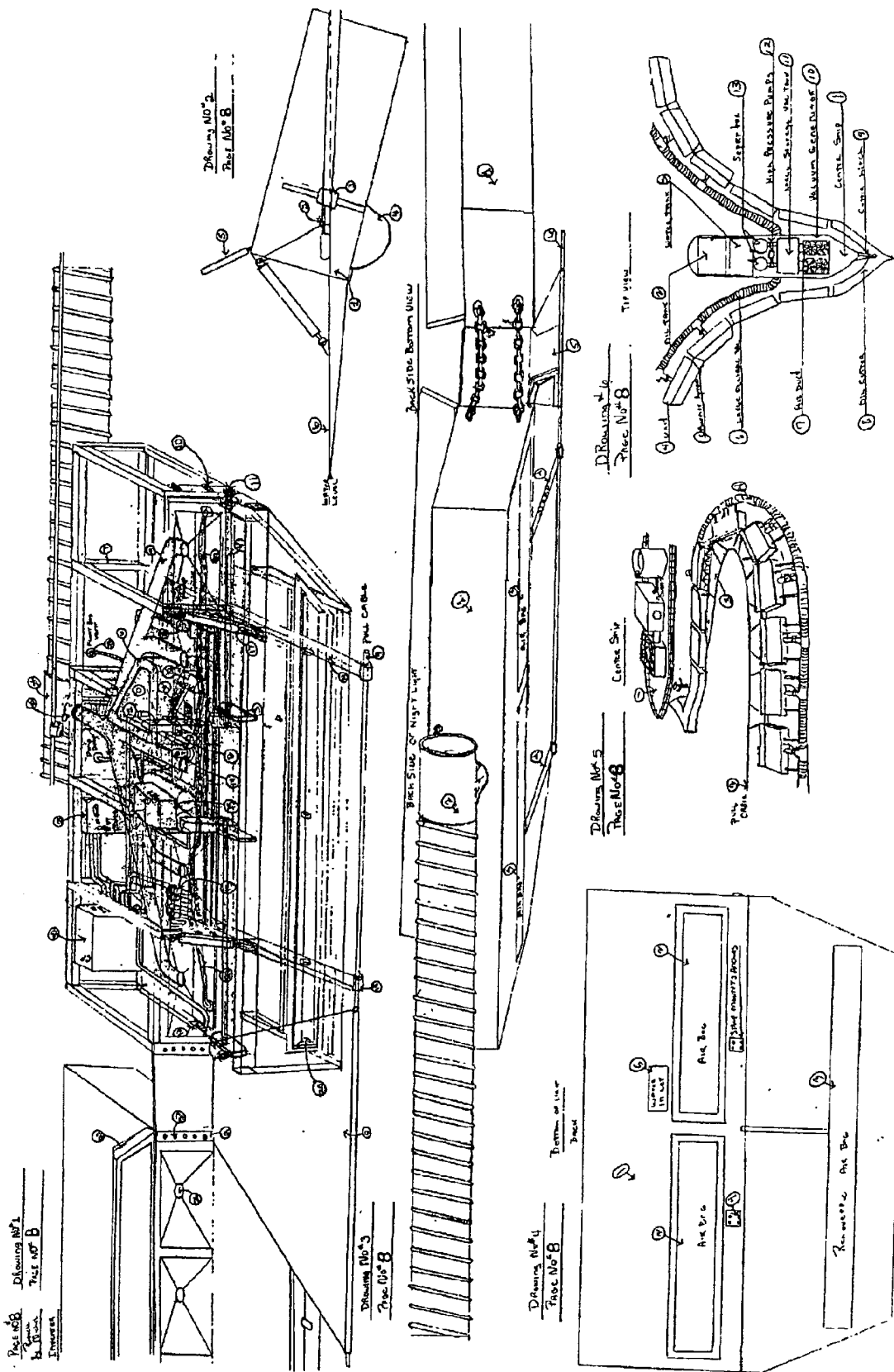
The computer system on the ship will continuously monitor the progress during the clean up operation through various sensors mounted on each unit and can adjust or change the function of any individual unit as well as shut units off and on as needed.

Each unit has built in airbags, an automatic height adjustment, a headboard and toe board each incorporated with built in lights for the system to be fully utilized for day or night use. The system's units are reusable and can be manufactured in a wide variety of sizes from stainless steel and available commerical electrical components.

Each unit will be connected together by steel pin with an attached apron made of nylon corded reinforced rubber. The system's design is that each unit will be connected to a main vacuum hose as well as wiring for the computer on the back of each unit.

All computer operations, wiring, vacuum hose and all connections will be run from a ship to each unit in the chain before system is to be deployed from ship for clean up operation.





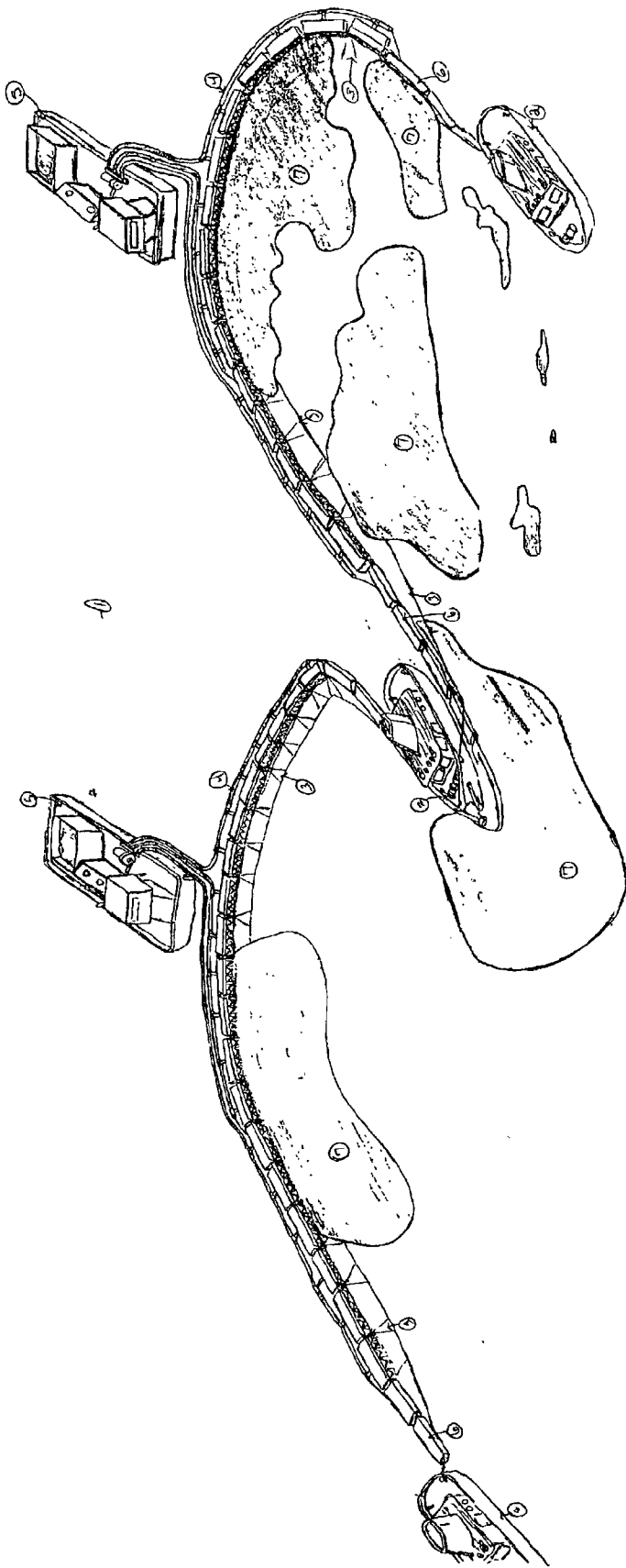


FIG. 10
Perspective View

FIG. 10
DRAWING NO. 9

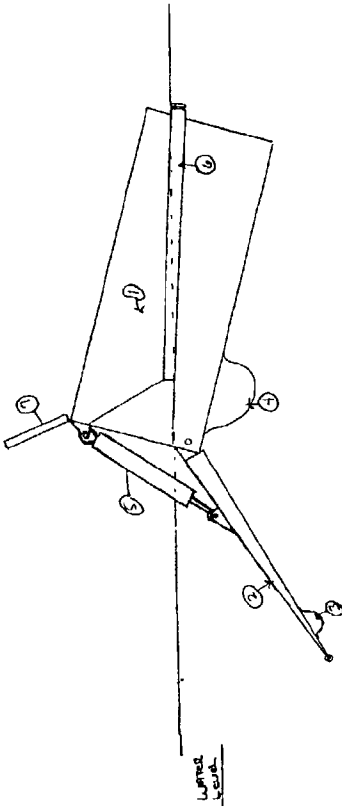


FIG. 10
DRAWING NO. 11

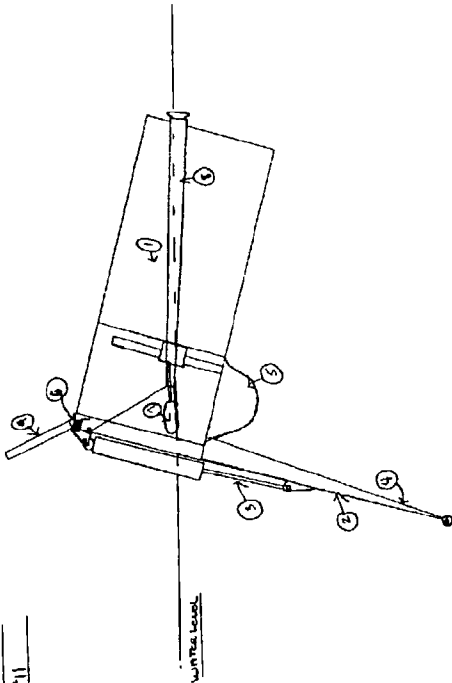


FIG. 10
DRAWING NO. 8

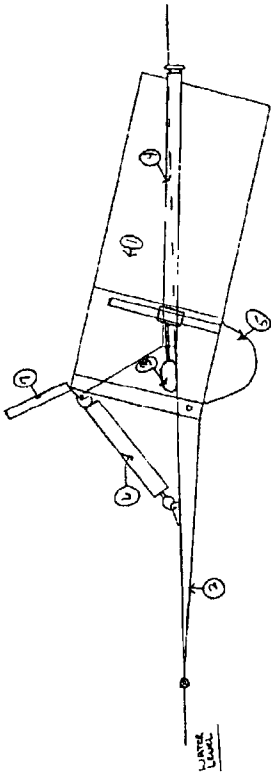
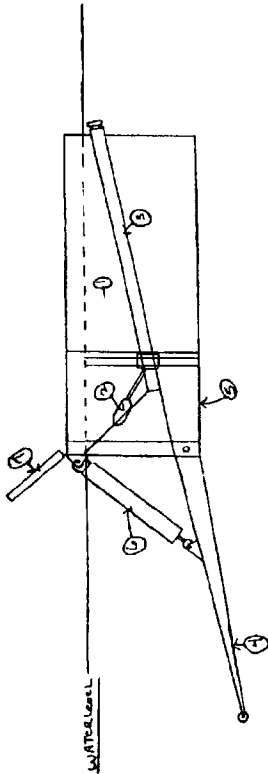


FIG. 10
DRAWING NO. 10



SEA DRAGON**INVENTION FUNCTION**

[0001] The Sea Dragon is a oil recovery apparatus. The concept of the sea dragon is a new devise designed for an oil spill recovery. Numerous individual units makes up the "Sea Dragon" a barrier assembly chain designed system.

CROSS-REFERENCE TO RELATED APPLICATIONS

[0002] Not Applicable

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0003] Not Applicable

REFERENCE TO A MICROFICHE APPENDIX

[0004] Not Applicable

BACKGROUND OF THE INVENTION

[0005] This invention relates generally to oil spill recovery. A new and unique system that is designed for the process of cleaning up spills of toxic or hazardous liquid petroleum products, such as crude oils, fuel oils or gasoline in the oceans, lakes and rivers in fresh or salt waters and provides the ability to react quickly and effectively to any marine spill. This invention can be deployed quickly as needed and will substantially increase the speed and range of deployment. This invention can be used in shallow water right up to the shoreline as well as out in open sea.

[0006] This invention has a steel frame and built from stainless steel with various commercial electrical components and can be manufactured in a wide variety of sizes.

[0007] This invention is simple in design and has a computer system. Each computerized unit is reusable, has integrated lights on headboard and toeboard so the system can be fully utilized for day or night use. Three air bags for flotation with automatic height adjustment for each unit. Air Bags are replaceable.

[0008] The system is fast and easy to deploy, cost effective and is effective in functionally. Environmental contamination from oil spills such as the Exxon Valdez spill and the Desert Storm War has taken years for the marine wildlife, oceans and beaches to overcome the devastating damage. It is a frequent occurrence of accidental oil spills in the oceans. This invention was designed with the environment in mind to prevent ecological contamination. The "Sea Dragon" will be very beneficial to the environment in saving our oceans, inland marine wildlife.

SUMMARY OF THE INVENTION

[0009] This invention is a mechanical devise designed to boom skim or vacuum oil or other toxic petroleum spills from the surface of bodies of water either fresh or salt waters.

[0010] The invention will be towed through the water by two vessel's. This invention of the sea dragon is computerized individual units attached elongated with an attached barrier apron that connects between each unit as well as on a toe board to form a barrier assembled chain for removing

oil spills for the surface of bodies of water. Individual units have integrated air bags along the front of each unit and on the bottom side of the toe board that sets the computerized height adjustment, which will set the unit at a certain angle with the water that forms a incline to the water to build oil up on the barrier apron while skimming and pushing water down around the barrier into the five ports on the front of each unit. The system can also be used as a boom to contain an oil slick while preparing units to remove oil spill from the surface of the water. On the back of each unit, computer cables and a vacuum hose are attached with straps and run the length of the system. The vacuum hose will suction the oil from the surface water and run oil into storage tanks on the ship.

BRIEF DESCRIPTION OF SEVERAL VIEWS OF THE DRAWING

[0011] Drawing: 1

[0012] Two Units attached end to end showing vacuum inlet ports and a detailed inside view of the unit. 1. Float adjustment rod. 2. Float adjustment block. 3. Toe board pivot hinge welded to the unit frame. 4. Toe Board Pin. 5. Ported vacuum tubing 6. Water Box. 7. Unit Steel Frame 8. Barrier Apron 9. Pull cable 10. Chain Mounts 11. Pin Cap 12. Toe Board Positioning Sensor 13. Air Control Valves 14. Bilge Pump 15. Air Compressor 16. Hydraulic Pump 17. Hydraulic Rams 18. Strape Mount 19. Strape 20. Night Oil Light 21. Apron Plate 22. Apron Plate Bolts 23. Night Work Light 24. Vacuum Tubing Connector. 25. Vacuum Shut Off Control 26. Five Vacuum inlet Ports 27. Air Bag Hose 28. Float Box Vent 29. Power Supply Box 30. Computer 31. Mercury Switch 32. Float

[0013] Drawing: 2

[0014] 1. Side view of the unit showing the water level and the angle of the float. 2. The mercury switch 3. Automatic adjustment block. 4. Air bag 5. Integrated work light in headboard. 6. Integrated work light in toeboard to find oil when recovering oil at night.

[0015] Drawing: 3

[0016] 1. Back view of two units attaching two units together end to end by two chains 2. Vacuum hose running along the back of the unit 3. Bottom of unit showing position of two airbags. 4. Bottom of unit showing position of a strape 5. Barrier apron 6. Pull cable.

[0017] Drawing: 4

[0018] 1. Bottom view of the unit 2. Position of two air bags on the bottom of unit 3. Position of one air bag on the bottom side of the toeboard. 4. Position of strap mount anchor. 5. Position of water inlet.

[0019] Drawing: 5

[0020] 1. Position of a center ship attached to numerous units attached together in a chain design. 2. pull cable running through the barrier apron along the length of the units to attach to the ship. 3. Nylon corded reinforced rubber barrier apron. 4. Vacuum hose running the length of the barrier chained units to the ship.

[0021] Drawing: 6

[0022] 1. Top View of a Center ship. 2. Location of oil storage tanks. 3. Location of water storage tanks. 4. Chain of units. 5. barrier apron. 6. Large flexible Vacuum tubing. 7. Air ducts. 8. oil cutter. 9. cutter hitch. 10. Vacuum generator. 11. Large storage vac tank. 12. High pressure pumps. 13. Separator

[0023] Drawing: 7

[0024] 1. Top view of the Sea Dragon system fully deployed. Towed by three ships through the water. 2. A ship attached on either side to numerous units that are connected together end to end to form a chain. 3. Barrier apron. 4. Vacuum Hose, electric and computer wiring running from the back of each unit to a ship. 5. Oil recovery equipment barge. 6. Floats 7. Oil Slick

[0025] Drawing: 8

[0026] 1. Side view of a unit sitting on the surface of the water deployed ready for oil recovery. 2. Toe Board sitting just benneth the surface of the water. 3. Float sitting in netural position. 4. Vacuum tubing 5. Air Bag inflated and adjusted for water level. 6. Hydraulic ram is in upper position for skimming oil. 7. Head board night light.

[0027] Drawing: 9

[0028] 1. Side view of a unit sitting in the water. 2. Inclined angle of the toe baord while unit is sitting still in the water to prevent oil sipage. 3. Inflated toe board air bag to assit unit for pulling 4. Air bags inflated and adjusted for water level. 5. Extended hydraulic ram to stop oil from sipping behind apron while unit is in a stopped position. 6. Vacuum tubing 7. Head board work light.

[0029] Drawing: 10

[0030] 1. Side view of unit sitting submerged in water. 2. Position of float up. 3. Position of vacuum tubing. 4. Toe board 5. Toe board air bag deflated. 6. Hydraulic ram 7. Headboard work light.

[0031] Drawing: 11

[0032] 1. Side view of unit sitting in the water. 2. Fully extended toe board in down position 3. Fully extended hydraulic ram 4. Toe board air bag deflated. 5. Bottom of unit air bags inflated. 6. Ram sensor for toe board weight. 7. Float with unit in running position. 8. Vacuum tubing 9. Head board work light.

DETAILED DESCRIPTION OF THE INVENTION

[0033] This invention is a oil spill recovery device or system that connects individual units side by side holding units together with a rod and two chains. Units running length wise in a straight row to form a barrier chain. The sea dragon system will be housed on board a ship, and units will be deployed one by one off of a roller conveyer system into the water assembled as in links of a chain. The invention has a barrier apron made of nylon corded reinforced rubber that connects between each unit. The toeboard will slip into a pocket in the barrier apron to form a solid barrier running length wise of the invention to trapping the toxic spill on the top of the toeboard. A steel cable running through two straps attached to the front of each unit running lenght wise

through the edge of the barrier apron and attached to two vessel's and pulled through the water like a damn skimming to build a height of oil on the barrier apron and toeboard running just benneth the surface of the water. The oil will be drawn up and directed into the five ports on the front of each unit by gravity flow or by the invention's vacuum system. the oil will flow through the main vacuum hose to a ship through extended lenghts of hose attached to the back of each unit in the chain and stored in tanks onboard the ship.

[0034] The bottom of each unit has two integrated air bags along the front of each unit with a toeboard running just benneth the water which forms an incline to the water. The toe board has a integrated air bag on the bottom side. Approximately seventy five percent of each unit will be submerged in water. Each unit has a automatic height adjustment which sets the unit at a certain angle with the water thus skimming the oil while pushing water to build a layer of oil on the barrier apron.

[0035] On the back of the unit behind the barrier side of the apron, a vacuum hose running the length of the barrier will removes the oil from the water. The oil will flow into a storage tank on the ship. The vacuum hose will have an integrated floatation devise. The vaccum hose will attached to the back of each unit with a strap. The vacuum hose will use quick coupling connectors for fast connections.

[0036] This invention will consist of numerous individual units as needed according to the size of the oil spill to be cleaned up.

[0037] Each unit will be have a headboard and toeboard both with integrated lights for night time use. Three air bags for floatation. Automatic height adjustment for air bags. The movement of a mercury float contained in a water box in each unit allows the air bags to inflate or deflated as needed. The air bag operation of each unit, as the air bags inflate or deflate the unit will rise or submerge in the water to keep the unit level.

[0038] Each unit can be built in a wide variety of sizes. Weights for each unit will be attached to each unit as needed.

[0039] Each unit can be controlled by manual or computer operation to adjust individual units or to cut individual units off and on as needed. The sea dragon is designed to have a computer system on board a ship. All computer fittings will be water tight. Each unit will have computer sensors for operation of the lighted toeboard, lighted headboard, airbag floatation device and vacuum system. All cables for computer operation will run length wise of the system and attached to the back of each unit. The computer will also operate the two hydraulic rams on each unit that are attached to both the unit and toeboard. The hydraulic rams are designed to adjust the incline of the toeboard.

1. Unit Design: The elongated form of each unit is unique in design and can be manufactured in a wide variety of sizes. The unit is designed to sit in the water and drag on the rear of the unit. Easy fast unit connections and cut through the water.

2. Toe Board: The the toe board is one of the major designs of the unit. The unit can not work without the toe board. The toe board slices through the water to skim and build an oil height to vacuum and recover. The toeboard is also used to boom an oil drift. The toe board has a integrated light that shines from benneth the surface of the water to tell

where the oil is located on the surface of the water. The light allows for continuous twenty four hour oil spill recovery.

3. Toe Board Air Bag. The toe Board is designed with an integrated airbag on the bottom of the toe board that works in conjunction with the hydraulic system to lift the weight of the oil and water on the toe board.

4. The Head Board: The head board has an integrated light for a continuous twenty four hour oil spill recovery. The head board light shines down on the surface of the water to show where the oil is located on the surface of the water. The head board is a splash board for large waves.

5. Mercury Switch: The mercury switch communicates with the computer as to the level of water surrounding the unit.

6. Water Box: The water box is designed to allow water inside of the unit with out leakage. The water box keeps the front of the unit at a certain depth in the water.

7. Hydraulic System: The hydraulic system is designed to operate the height of the toe board when unit is pulled through the water.

8. Barrier Apron: The custom fit design of the barrier apron keeps all the units attached together and has a pull cable ran through the apron for towing the unit. The apron will helps to contain oil leakage during an oil recovery operation or to boom an oil drift.

9. Air Bags: The air bags are for lift to give height of the front of each unit for maximum oil recovery

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