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(54) **AIR DISTRIBUTION SYSTEM FOR INFLATING PNEUMATIC STRUCTURES**

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(76) Inventor: **Jean-Marc Daniel Turcot**, Kelowna (CA)

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Correspondence Address:
ANTONY C. EDWARDS
SUITE 200 - 270 HIGHWAY 33 WEST
KELOWNA, BC V1X 1X7 (CA)

(57) **ABSTRACT**

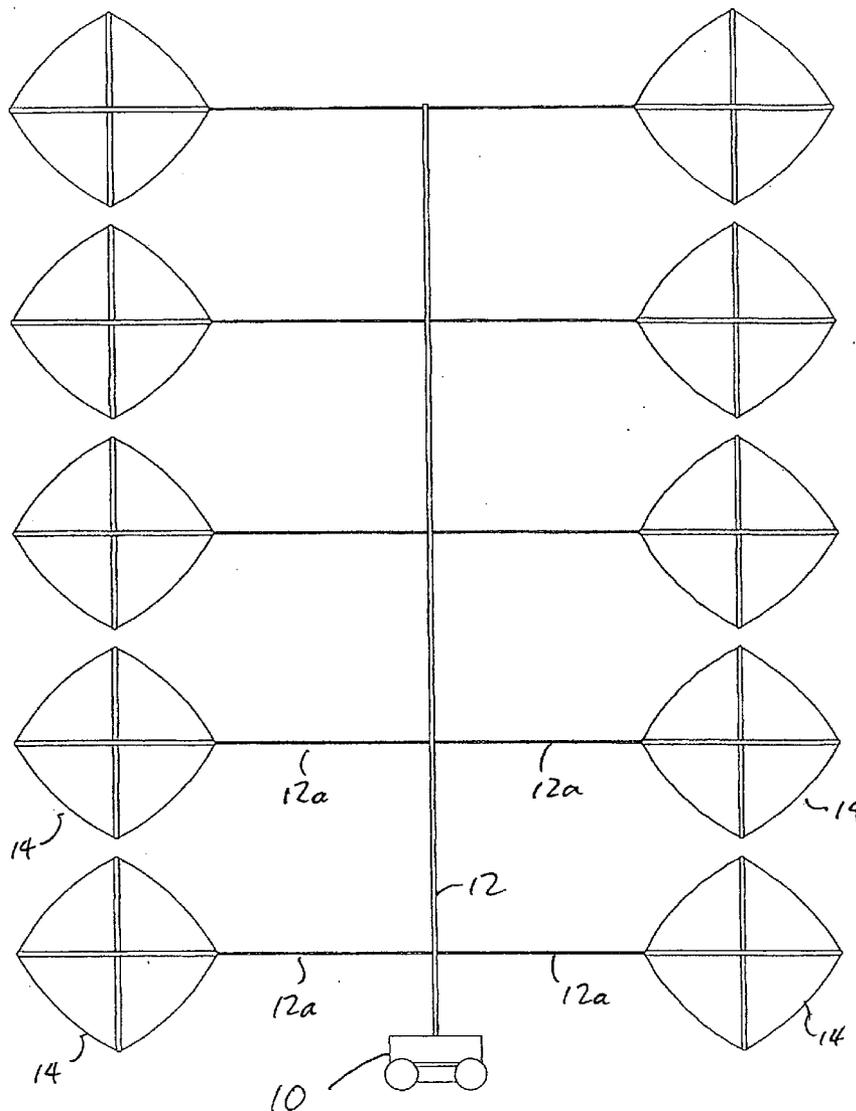
An air distribution system includes a portable air compressor feeding a flexible branched air distribution hose. The hose includes branch air lines branching from a main air line. The branch air lines have multiple exhaust ends on distal ends of corresponding branch air lines, distal from the main air line. The exhaust ends are adapted for mounting to an air inflatable structure in fluid communication therewith. The main air line has an infeed end adapted for mounting to the compressor in fluid communication therewith.

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Related U.S. Application Data

(60) Provisional application No. 60/752,010, filed on Dec. 21, 2005.



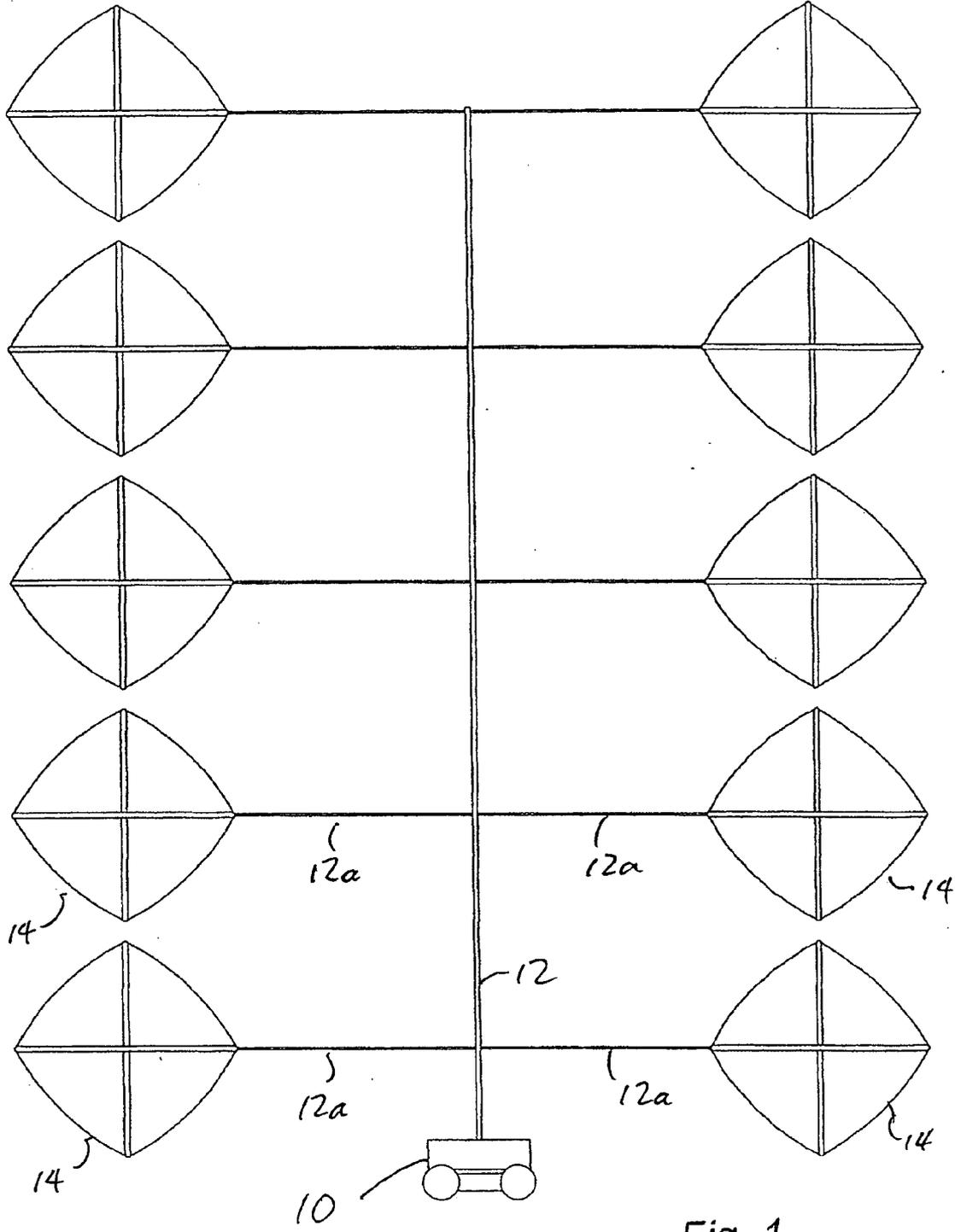


Fig. 1

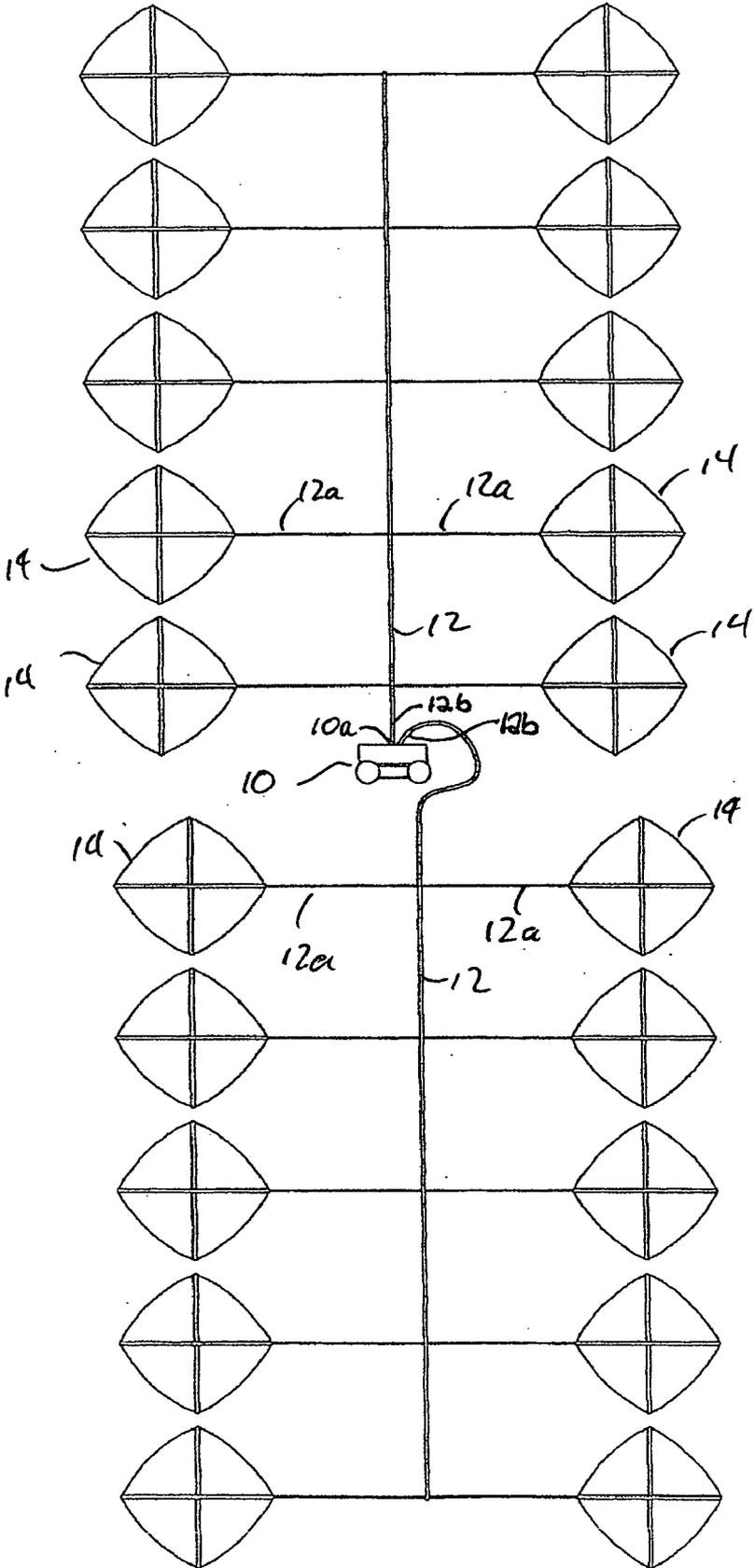


Fig. 2

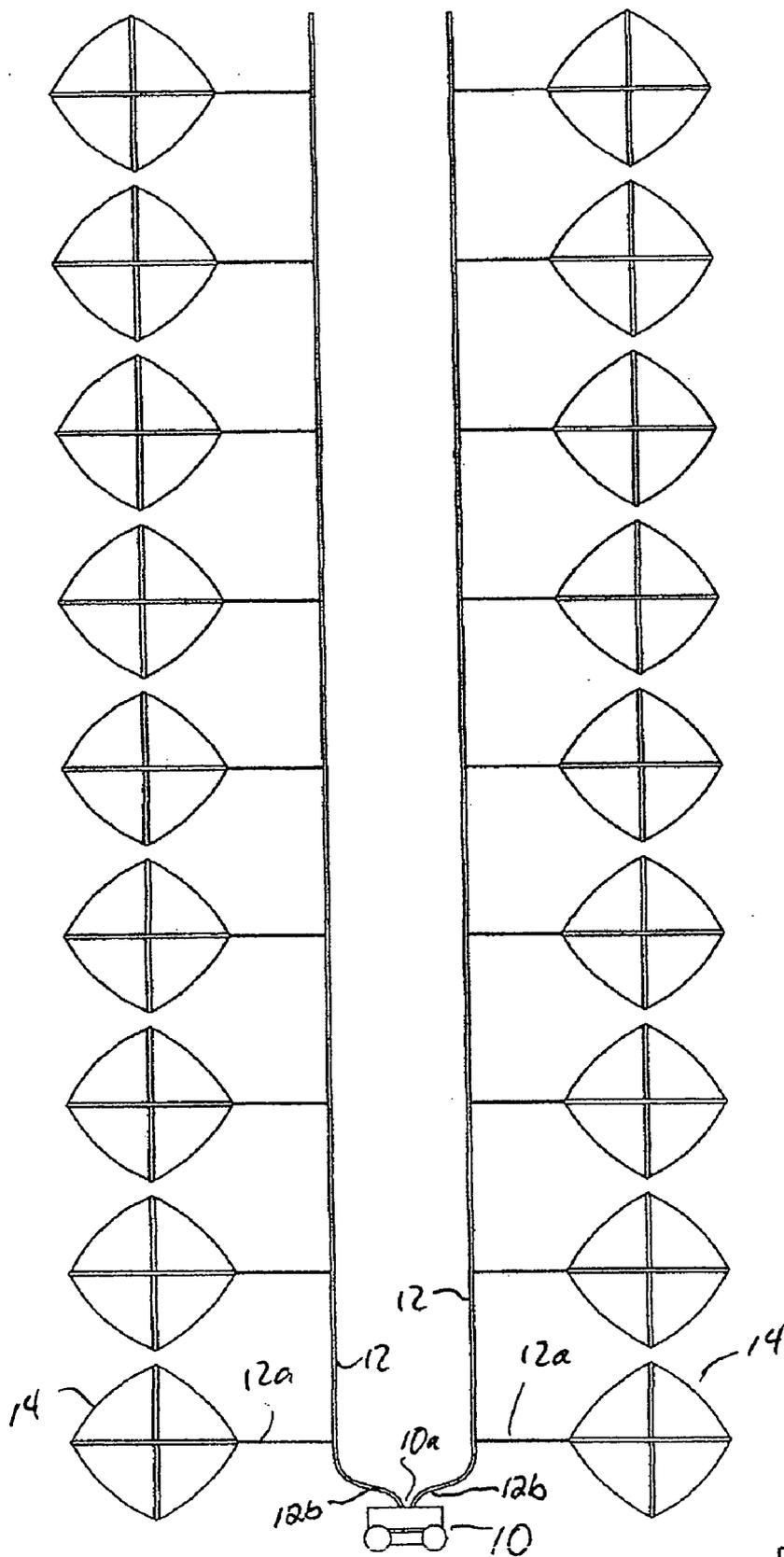


Fig 3

AIR DISTRIBUTION SYSTEM FOR INFLATING PNEUMATIC STRUCTURES

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims priority from Canadian Patent Application filed Dec. 1, 2006 and U.S. Provisional Patent Application No. 60/752,010 filed Dec. 21, 2005 entitled Air Distribution System for Inflating Pneumatic Structures.

FIELD OF THE INVENTION

[0002] This invention relates to the field of inflatable structures such as inflatable tents and in particular to an air distribution system for simultaneously inflating a multiplicity of such structures.

BACKGROUND OF THE INVENTION

[0003] In the prior art it is known to provide pneumatic structures such as the inflatable tents sold by Airzone Recreation Inc. of Kelowna, British Columbia under the product names Goldfinch, Ptarmigan, Osprey and Condor, and as described in their U.S. Pat. No. 6,263,617. It has come to be recognized that pneumatic structures such as inflatable tents and their derivatives have a utility well beyond that of merely recreational and camping, for example, in humanitarian relief wherein a large number of portable structures may have to be transported and erected quickly and efficiently, and other such applications requiring a multiplicity of portable structures which may be efficiently carried and easily erected on a large scale, such as for use by the military.

[0004] Although it is very useful for individual consumers to provide a small compressor or a small bottle of compressed gas to inflate a single inflatable tent for their personal use, for use on a large scale where a plurality of pneumatic structures such as inflatable tents need to be inflated simultaneously or at least in quick succession, the system of the present invention incorporates a portable compressor such as driven by a small normally aspirated, gasoline fuelled, engine so as to drive a large volume of relatively low pressure air, and it is an object of the present invention to provide a branched air distribution hose mountable in fluid communication with such a portable compressor.

SUMMARY OF THE INVENTION

[0005] An air distribution system includes a portable air compressor feeding a flexible branched air distribution hose. The hose includes branch air lines branching from a main air line. The branch air lines have multiple exhaust ends on distal ends of corresponding branch air lines, distal from the main air line. The exhaust ends are adapted for mounting to an air inflatable structure in fluid communication therewith. The main air line has an infeed end adapted for mounting to the compressor in fluid communication therewith.

[0006] The main air line has a first internal diameter and the branch air lines have a second internal diameter. The second internal diameter is smaller than the first internal diameter whereby the main air line acts as a ballast feeding the branch air lines. The main air line may be substantially linear when inflated and the branch air lines may branch

from the main air line at substantially right angles to the main air line. The branch air lines may branch in oppositely disposed pairs from the main air line, and the pairs are spaced apart along the main air line. The branch air lines may be substantially linear when inflated.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] With reference to the drawings, wherein similar characters of reference denote corresponding parts in each view, three figures are provided, and in particular:

[0008] FIG. 1 is a diagrammatic plan view of the present invention.

[0009] FIG. 2 is a diagrammatic plan view of a second embodiment of the present invention.

[0010] FIG. 3 is a diagrammatic plan view of a third embodiment of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0011] The system according to the present invention includes a portable compressor **10** demountably coupled to a branched air conduit having a main trunk air line **12**, the smaller inside diameter branched ends **12a** of which are mountable to a corresponding plurality of inflatable structures **14**. In one embodiment, the branched main trunk line **12** is a flexible air hose having a diameter of approximately ½ inch inside diameter and branched lines **12a** branching in fluid communication from the main trunk so that the ends of which may be mounted to the corresponding inflatable structures **14**.

[0012] Thus with the base end **12b** of the main trunk **12** mounted to the compressed air outflow port **10a** of compressor **10**, and with the air conduit spread out, for example fully unfurled from a furled storage and transportation mode, the ends of the branches **12a** are coupled for example with the inlet valves of the corresponding inflatable tents or other pneumatic structures. With the compressor engine started, so that the compressor supplies for example 12 CFM with the pressure of approximately 18 PSI, or at least in the range of 15 to 20 PSI, the plurality of inflatable tents may be simultaneously inflated via the branched air conduit.

[0013] There is a substantial reduction in airflow from the main trunk air line **12** (½") inside diameter to the smaller lines connecting to the tent that acts somewhat like a "ballast" allowing even flow of air to each and every tent. The line quickly pressurizes and flows through evenly to all the smaller branch lines **12a** allowing a seamless and even inflating procedure.

[0014] As will be apparent to those skilled in the art in the light of the foregoing disclosure, many alterations and modifications are possible in the practice of this invention without departing from the spirit or scope thereof. Accordingly, the scope of the invention is to be construed in accordance with the substance defined by the following claims.

What is claimed is:

- 1. An air distribution system comprising:
 - a portable air compressor,
 - a flexible branched air distribution hose having branch air lines branching from a main air line, said branch air lines having multiple exhaust ends on distal ends of corresponding said branch air lines, distal from said main air line,
 - said exhaust ends adapted for mounting to an air inflatable structure in fluid communication therewith,
 - said main air line having an infeed end adapted for mounting to said compressor in fluid communication therewith.
- 2. The system of claim 1 wherein said main air line has a first internal diameter and wherein said branch air lines have a second internal diameter and wherein said second internal diameter is smaller than said first internal diameter whereby said main air line acts as a ballast feeding said branch air lines.
- 3. The system of claim 2 wherein said main air line is substantially linear when inflated and wherein said branch air lines branch from said main air line at substantially right angles to said main air line.
- 4. The system of claim 3 wherein said branch air lines branch in oppositely disposed pairs from said main air line, and wherein said pairs are spaced apart along said main air line.
- 5. The system of claim 4 wherein said branch air lines are substantially linear when inflated.
- 6. The system of claim 2 wherein said first internal diameter is substantially 1/2 inch and said second internal diameter is substantially less than 1/2 inch.
- 7. The system of claim 6 wherein said compressor supplies pressurized air into said main air line in the range of 15 to 20 pounds per square inch.

- 8. The system of claim 7 wherein said compressor supplies pressurized air into said main air line at a rate of substantially 12 CFM.
- 9. The system of claim 8 wherein said pressurized air is pressurized to substantially 18 PSI.
- 10. The system of claim 1 further comprising a plurality of air inflatable structures mountable to said exhaust ends in fluid communication with said air distribution hose.
- 11. The system of claim 2 further comprising a plurality of air inflatable structures mountable to said exhaust ends in fluid communication with said air distribution hose.
- 12. The system of claim 3 further comprising a plurality of air inflatable structures mountable to said exhaust ends in fluid communication with said air distribution hose.
- 13. The system of claim 4 further comprising a plurality of air inflatable structures mountable to said exhaust ends in fluid communication with said air distribution hose.
- 14. The system of claim 5 further comprising a plurality of air inflatable structures mountable to said exhaust ends in fluid communication with said air distribution hose.
- 15. The system of claim 6 further comprising a plurality of air inflatable structures mountable to said exhaust ends in fluid communication with said air distribution hose.
- 16. The system of claim 7 further comprising a plurality of air inflatable structures mountable to said exhaust ends in fluid communication with said air distribution hose.
- 17. The system of claim 8 further comprising a plurality of air inflatable structures mountable to said exhaust ends in fluid communication with said air distribution hose.
- 18. The system of claim 9 further comprising a plurality of air inflatable structures mountable to said exhaust ends in fluid communication with said air distribution hose.

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