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(12) **EX PARTE REEXAMINATION CERTIFICATE (9998th)**

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Giff et al.

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(54) **VALVE ENCLOSURE ASSEMBLY**

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(56) **References Cited**

To view the complete listing of prior art documents cited during the proceeding for Reexamination Control Number 90/012,456, please refer to the USPTO's public Patent Application Information Retrieval (PAIR) system under the Display References tab.

Primary Examiner — Joseph A. Kaufman

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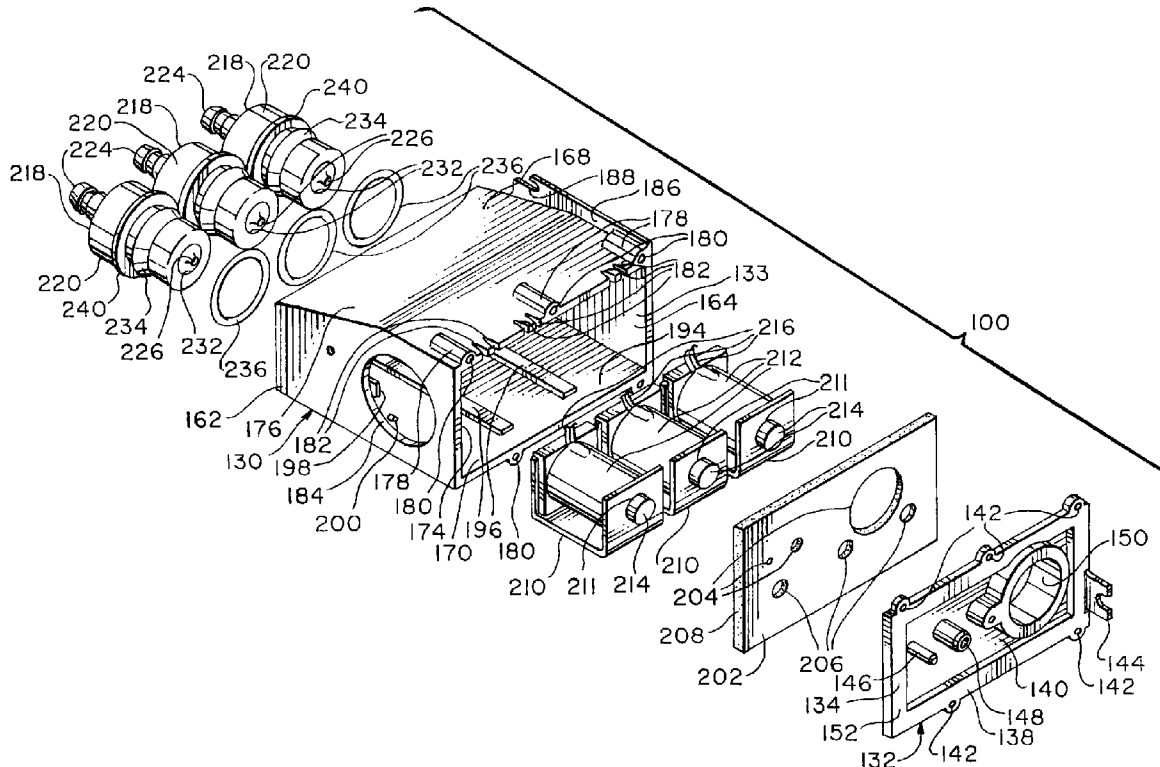
(57) **ABSTRACT**

An improved valve enclosure assembly for use with an air inflatable mattress includes at least one air bladder, a pump fluidly coupled to the at least one air bladder for providing compressed air thereto, and a processor for providing commands to the improved valve enclosure assembly during an inflate/deflate cycle. The improved valve enclosure assembly is fluidly coupled intermediate the pump and the at least one air bladder for controlling the inflation of the at least one air bladder. An enclosure defines a substantially fluidly sealed air chamber and has at least one air inlet to the air chamber being fluidly coupled to the pump. A pressure monitor is operably coupled to the processor and is in fluid communication with the at least one bladder for continuously monitoring the pressure in the at least one bladder. A method of effecting a desired pressure in a bladder of an air inflatable mattress is also disclosed.

(51) **Int. Cl.**
A47C 27/08 (2006.01)

(52) **U.S. Cl.**
USPC ... **137/224; 137/271; 137/596.16; 137/596.2; 5/710; 5/713**

(58) **Field of Classification Search**
None
See application file for complete search history.



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EX PARTE
REEXAMINATION CERTIFICATE
ISSUED UNDER 35 U.S.C. 307

THE PATENT IS HEREBY AMENDED AS
INDICATED BELOW.

Matter enclosed in heavy brackets [] appeared in the patent, but has been deleted and is no longer a part of the patent; matter printed in italics indicates additions made to the patent.

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2, 4-6, 11, 12** and **14-18** is confirmed.

Claims **1** and **10** are cancelled.

Claim **9** is determined to be patentable as amended.

New claims **19-25** are added and determined to be patentable.

Claims **3, 7, 8** and **13** were not reexamined.

9. A method of effecting a desired pressure in a bladder of an air inflatable mattress, comprising the steps of:

providing a commanded desired pressure of the bladder; opening a valve [fluid] fluidly coupled to the bladder, wherein the valve is one of a plurality of valves at least partially contained within, or formed integral to, a substantially fluidly sealed air chamber of a valve enclosure assembly;

continuously monitoring the existing pressure in the bladder at a tap on [a] the valve enclosure assembly, the tap defining an opening through the valve enclosure assembly and into an interior of the air chamber;

determining the differential between the existing pressure in the bladder and the desired pressure in the bladder; exhausting air from the bladder through the valve when the differential indicates that the existing pressure in the bladder is greater than the desired pressure;

energizing a pump fluidly coupled to the valve for providing compressed air to the bladder when the differential indicates that the desired pressure in the bladder is greater than the existing pressure in the bladder to inflate the bladder; and

closing said valve when the existing pressure in the bladder substantially equals the desired pressure in the bladder.

19. An improved valve enclosure assembly for use with an air inflatable mattress having at least one air bladder inflated by compressed air, a pump fluidly coupled to the at least one air bladder for providing compressed air thereto, and a processor for providing commands to the improved valve enclosure assembly during an inflate/deflate cycle, the improved valve enclosure assembly being fluidly coupled intermediate the pump and the at least one air bladder for controlling the inflation of the at least one air bladder, comprising:

an enclosure defining a substantially fluidly sealed air chamber and having at least one air inlet to the air chamber being fluidly coupled to the pump;

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pressure monitor means including a sensor being operably coupled to the processor and being in fluid communication with the at least one bladder through a pressure monitoring port defining an opening through the enclosure and into an interior of the air chamber, the sensor configured for continuously monitoring the pressure in the at least one bladder during an inflate/deflate cycle by monitoring the pressure in the air chamber, and

two or more valves being fluidly sealingly disposed in respective valve apertures defined in the enclosure by a snap-fit engagement therewith and being in fluid communication with both the exterior of the enclosure and with the air chamber.

20. An improved valve enclosure assembly for use with an air inflatable mattress having at least one air bladder inflated by compressed air, a pump fluidly coupled to the at least one air bladder for providing compressed air thereto, and a processor for providing commands to the improved valve enclosure assembly during an inflate/deflate cycle, the improved valve enclosure assembly being fluidly coupled intermediate the pump and the at least one air bladder for controlling the inflation of the at least one air bladder, comprising:

an enclosure defining a substantially fluidly sealed air chamber and having at least one air inlet to the air chamber being fluidly coupled to the pump, the enclosure being formed of an enclosure portion and a rear cover portion, a flexible seal being compressively interposed between the enclosure portion and the rear cover portion to effect a substantially fluid tight seal therebetween;

two or more valves being in fluid communication with both the exterior of the enclosure and with the air chamber; and

pressure monitor means including a sensor being operably coupled to the processor and being in fluid communication with the at least one bladder through a pressure monitoring port defining an opening through the enclosure and into an interior of the air chamber, the pressure sensor configured for continuously monitoring the pressure in the at least one bladder during an inflate/deflate cycle.

21. The improved valve enclosure assembly of claim 20 wherein the pressure monitoring port is disposed on the rear cover portion of the enclosure.

22. The improved valve enclosure assembly of claim 2 further including at least one solenoid configured to operate a valve, wherein the at least one solenoid is at least partially received within the air chamber of the enclosure.

23. The improved valve enclosure assembly of claim 2 further including at least one solenoid configured to operate a valve, wherein the at least one solenoid is positioned entirely within the air chamber of the enclosure.

24. The improved valve enclosure assembly of claim 2 wherein the enclosure is formed of an enclosure portion and a rear cover portion.

25. The improved valve enclosure assembly of claim 24 wherein a flexible seal is compressively interposed between the enclosure portion and the rear cover portion to effect a substantially fluid tight seal therebetween.

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