TAFONIUS
(WIND GOD)

THE TWENTY-FIRST CENTURY APPROACH TO LARGE ANIMAL ANAESTHETIC AND VENTILATORY SUPPORT

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Proposal for the design of a large animal anesthesia machine with integral ventilator

Design Goals:
To design a large animal anesthesia machine with integral ventilator that will provide the veterinary profession with a superior device able to deliver ventilatory support for large animals while administering inhalant anesthetics, or without as in the ICU setting.

To design a device that has features desired by large animal practitioners across the board, equine, marine mammal and zoo veterinarians. TAFONIUS will be supplied in two models. One being a turnkey unit for clinical every day use. The other will be a flexible, fully programmable version, usable as a research platform for the development of new more effective modes of ventilation in these larger species. The research machine will have the ability to generate any inspiratory and expiratory waveform desired. Both versions are to be smaller, more stable, easier to clean and in every respect more economical to run than any machine currently on the market. TAFONIUS will consume less oxygen, less anesthetic and generate less pollution. The anesthesia machine portion of TAFONIUS will be fully operable manually in the event of catastrophic computer failures.
**Approach:**

Solicitation of diverse expert opinions will be a high priority to insure the product satisfies the needs of a variety of markets.

Implementation of TAFONIVUS will be in phases. Once the basic system and physical plant has been proven feasible and problem free extra features and greater complexity will be added. Each existing machine will be upgradeable with new software.

**Deviation from the prior Art:**

The greatest departure from the “prior art” is evidenced by the complete removal of the intermediate layer of pneumatic driving power found in all machines currently on the market. This layer traditionally interfaces an electronic control system with movement of the mixed breathing gases. In our system the electronics will directly control a device which moves the mixed breathing gas directly. There will be no “driving gas” consumed by this machine.

Other departures from the prior art shall eventually include automated fresh gas and anesthetic agent delivery as based on measured system volume and agent concentration thereby reducing wasted gas, and wasted anesthetics virtually to zero, no pollution.
General requirements

- **TAFONIUS** shall be as compact as possible, 31”W x 36” D x 71’ H (787x914x1803mm);
- have a low center of gravity and large casters (8”, 200mm) to minimize tip-overs;
- be made of non corrosive materials;
- have an additional monitor shelf and an IV pole or bar from which fluids can be hung;
- have mounting space for two select-a-tec™ vaporizers;
- be able to hold a large amount of CO2 absorbent (11.7lbs, 5.3 kg);
- have a support arm for breathing system hoses;
- have controls at eye level or angled toward eye level;
- should run quietly;
- have accommodations for 2 oxygen E-cylinders for field use and backup;
- have the breathing bag locate at chest level for manual operation;
- be easy to disassemble, clean and disinfect;
- incorporate sprayer heads that will draw up a disinfectant via a venturi system for for cleaning inside all sections of the machine with a timed drying cycle;
- continuous system compliance compensation;
- deliver CPAP up to 20 cmH2O;
- operate automatically as a closed circle system;
- be able to deliver a settable FiO2 level;
- each machine shall have the capability of running in master or slave mode permitting the deliverable tidal volume to be doubled or tripled when machines are daisy chained together;
- contain integral monitoring equipment for ECG, EtCO2, FiCO2, FiO2, EtO2, SpO2, IBP, airway pressure and anesthetic agent concentration with trending and data collection;
- be network ready.
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- TOUCH SCREEN COMPUTER ON 3-AXIS ARTICULATING ARM
- SELECT-A-TEC MOUNTED VAPORIZERS (ROOM FOR 2)
- BACKUP DISPLAY AND CONTROLS
- 100% BRUSHED STAINLESS STEEL FRAME
- DUAL E-SIZE OXYGEN CYLINDERS
- BATTERY POWERED FOR FIELD AND TRANSPORT OPERATION
- IV BAG HANGER (NOT PICTURED)
- MANUAL BREATHING BAG (NOT PICTURED)

--------------- A work-in-progress ---------------
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- Monitor Shelf
- ECG, CO2, O2, SPO2, IBP, Agent Monitoring
  Ventilator Settings, Record Keeping
- Manual Operation Oxygen Flowmeter
- Work Surface w/ Drawer
- Swiveling Patient Connections
  and Visible Inspiratory /
  Expiratory Valves
- 1 1/4” Protective SS Bumper/Handle
- Master Tidal Volume Chamber
  20 Liters

_________ A collaboration _________

[Logos: Vetrionic Services, Hallowell EMC]
1. MASTER TIDAL CHAMBER OPENING LEVER

2. HOSPITAL AND CYLINDER PRESSURE GAUGES, AIRWAY PRESSURE GAUGE (NOT SHOWN)

3. NEGATIVE PRESSURE RELIEF VALVES
TAFONIUS
(WIND GOD)

1. LOWER CYLINDER
2. ABSORBER PAN
3. ABSORBER PAN SCREEN
4. CONDENSATION DRAINS (PLUGS NOT SHOWN)
   DAISY CHAINING PORTS FOR 40-60 LITER TV

5. LOW CENTER OF GRAVITY WITH 8” WHEELS
TAFONIUS
(WIND GOD)

A collaboration

Hallowell EMC
TIDAL VOLUME CHAMBER OPEN

LIFT THE LEVER FOR INSTANT
ACCESS TO THE SYSTEM INTERIOR.
CHANGES OF ABSORBENT AND
DISINFECTING MADE VERY EASY.

TIDAL VOLUME CHAMBER CLOSED

REMOVABLE, DIVIDED,
REVERSIBLE ABSORBER
PAN HOLDS 6.5LITERS,
11.7LBS, 5.3KG
TAFONIUS

(Wind God)

COMING SOON TO AN OPERATING THEATER NEAR YOU.