

fined within the end 72 is a thermistor-sensor 38'. Electrical lines confined within the probe 70 couple the sensor 38' to the components within the handle 66. The handle end 68 has a socket 80 which receives an ear-
phone 82 which may be used by a medical attendant. Carried atop the end 68 are an on/off switch 84, a low
battery lamp 86, a light-emitting diode lens 88, a "ready" lamp 90, and a pair of speakers 92.

In use, the probe 70 is inserted through an intubation tube, and then into the mouth of the patient, and down into the trachea. It locates the trachea by sensing the gross airflow there and, consequently, provides for locating the intubation tube correctly thereat. Upon the probe 70 locating the trachea, the intubation tube is advanced thereto, and the probe 70 is then withdrawn (whereupon standard anesthesia equipment may be coupled to the intubation tube).

The handle-confined circuitry of FIG. 6 comprises another battery 36' which supplies current to the probe-carried thermistor-sensor 38'. The sensor 38' is coupled to another amplifier 44'. In this embodiment 64, what is provided is a signal frequency representative of the breathing or air flow into and out of the trachea. The sensor 38' provides a signal which varies with the air flow to the amplifier 44', which avoids saturation from heavy airflow, and, in turn, the signal is conducted to a pair of voltage-controlled oscillators 94 and 96. Oscillator 94 is coupled to a speaker amplifier 98. The latter supplies a signal, which increases in frequency with increasing airflow—indicative of a closure of the probe 70 onto the location of the trachea—to the speakers 92 and/or the earphone 82. The oscillator 96 supplies a same signal, which also increases in frequency with increasing airflow, to a light-emitting diode 100 (within lens 88). Oscillator 94 is configured to deliver an audio frequency, whereas oscillator 96 is configured to provide signal pulses within a range of zero to 25 pulses per second for visual perception. A further monitoring element, meter 102 having a reciprocating component 104 therewithin, is also coupled to the output of amplifier 44'. The component 104 is translatable within the meter 102 to track, and represent, the airflow in the trachea of the patient 16.

Embodiment 64 can be set into a battery recharger 106, as shown in FIG. 5, when not in use. The handle 66 has contactors (not shown) for engagement with receptors within the recharger 106, and the latter has a line cord 108, for attachment thereof to a source of voltage.

A further, alternative embodiment 110 of the invention is configured for incorporation with standard anesthesia equipment to constantly monitor a patient's respiration. The same is shown in FIG. 7, and in FIG. 8 in association with an intubation tube and anesthesia and oxygen tubes. Embodiment 110 comprises a housing 112 which confines the relevant circuitry to operate inhale and exhale light-emitting diodes 114 and 116, a battery 118 as a power source, as well as a low battery indicator 120. A collar 122 at one end receives an end of an intubation tube 124, and another collar 126 at the opposite end receives the Y-connector 128 of anesthesia and oxygen tubes. The housing 112 has a socket connection 130 which may be used for the attachment of an optional visual display unit 132. The operation of this embodiment 110 is identical to that of the embodiment 10 of FIGS. 1-3; only the housing 112 differs from the enclosure 18 of the first embodiment.

While the invention has been described in connection with specific embodiments thereof it is to be clearly

understood that this is done only by way of example and not as a limitation to the scope of the invention as set forth in the objects thereof and in the appended claims.

We claim:

1. A respiration-signalling device, comprising:
 - a housing; wherein
 - said housing comprises a face mask;
 - said face mask comprises (a) means for enclosing therewithin both the nasal and oral breathing passages of a patient, and (b) an electrical -circuitry enclosure;
 - said enclosure confines therewithin a pair of thermistors which are disposed to accommodate a conduct of a patient's breathing thereacross;
 - said enclosure further confines therewithin (a) a battery, and (b) means coupling said thermistors to said battery for heating of said thermistors to a stable temperature which is higher than the temperature of such patient's inhaled and exhaled breath;
 - one thermistor of said pair thereof comprises means responsive to a conduct of such patient's exhaled breath thereacross to cause (a) a cooling of said one thermistor, and (b) an increase in electrical resistance of said one thermistor;
 - the other thermistor of said pair thereof comprises means responsive to a conduct of such patient's inhaled breath thereacross to cause (a) a cooling of said other thermistor, and (b) an increase in electrical resistance of said other thermistor; and further including
 - sensory indicator means also confined within said enclosure, and coupled to said thermistors, responsive to an increase in electrical resistance of said thermistors for providing a sensory indication of such patient's breathing performance.
2. A respiration-signalling device, according to claim 1, wherein:
 - said sensory-indication means comprises a pair of light-emitting diodes.
3. A respiration-signalling device, according to claim 1, wherein:
 - said sensory-indication means comprises means for producing an audible signal.
4. A respiration-signalling device, according to claim 2, wherein:
 - said sensory-indication means comprises, further, means coupled to said thermistors for enhancing an electrical output of said thermistors.
5. A respiration-signalling device, according to claim 2, further including:
 - voltage amplifiers interposed between said diodes and said thermistors.
6. A respiration-signalling device, according to claim 5, further including:
 - signal comparators interposed between said voltage amplifiers and said diodes.
7. A respiration-signalling device, according to claim 3, wherein:
 - said audible-signal producing means comprises a buzzer.
8. A respiration-signalling device, according to claim 7, further including:
 - timing means, interposed between said buzzer and said thermistors, for controlling operation of said buzzer.
9. A respiration-signalling device, comprising: