

INDUSTRIAL APPLICABILITY

The invention relates to the medical industry and industries supplying medical monitoring devices.

I claim:

1. A portable spirometer for measuring a respiration rate of a patient comprising:

- a housing having a top and bottom and first and second ends, said housing having an air passage extending therethrough said first and second ends;
- an air flow sensing plate having top and bottom portions movably mounted within said passage, said plate pivotally mounted by said bottom portion at said bottom of said housing and said top portion of said plate extending to said top of said housing, said plate movable forwards and backwards in response to the directional flow of air in said passage as the patient breaths in and out said first end, said plate sufficiently smaller than said passage such that air can flow in said passage about said plate;
- position sensing means mounted within said housing for sensing the position of said air flow sensing plate, said position sensing means providing a first output signal when said air flow sensing plate moves forward and backwards;
- circuit means coupled to said sensing means for counting the number of times per unit time said air flow sensing plate moves forward and backwards and providing a second signal proportional to the respiration rate; and

display means coupled to said circuit means and receiving said second output signal for displaying the respiration rate.

2. The spirometer as set forth in claim 1 wherein said position sensing means comprises:

- said plate having a reflective surface;
- a light source mounted in said housing for directing a beam of light onto said reflective surface when said plate is in proximity to said light source; and
- a photo detector mounted in said housing for detecting the beam of light reflected off said reflective surface when said plate is in proximity to said light source, said photo detector providing said first output signal upon receipt of the reflected beam of light.

3. The spirometer as set forth in claim 2 wherein said reflective surface is located in proximity to said top portion of said plate.

4. The spirometer as set forth in claim 3 wherein said light source and said photo detector are in proximity to each other.

5. The spirometer as set forth in claim 4 further including power supply means disposed in said housing for supplying electrical power to said light source, said photo detector, said circuit means and said display means.

6. The spirometer as set forth in claim 2, or 3, or 4, or 5 wherein said circuit means comprises a microprocessor means for receiving said first output signal from said photo detector and for providing said second output signal to said display means.

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