

DEMONSTRATIONS

Device for cycle-by-cycle spirometry, applied to the continuous recording of air overflow

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The air expelled in a respiratory cycle can be measured by a Fleisch tube connected to a micromanometer, integrating its output over each cycle. The device shown uses the output of the micromanometer to generate two consecutive pulses every cycle by means of flip-flops. The first pulse closes a transistor switch transferring the charge from the integrator to a storage capacitor feeding the recorder input; the second pulse resets the integrator (Fig. 1). A continuous record is thus obtained of the volume per cycle: in this case, air overflow.

The same pulses operate a circuit automatically correcting zero drift of the micromanometer (Gardiner, 1971). The first transfers the voltage of the most negative portion of the waveform (V, Fig. 2) from a peak detector to a storage capacitor; the

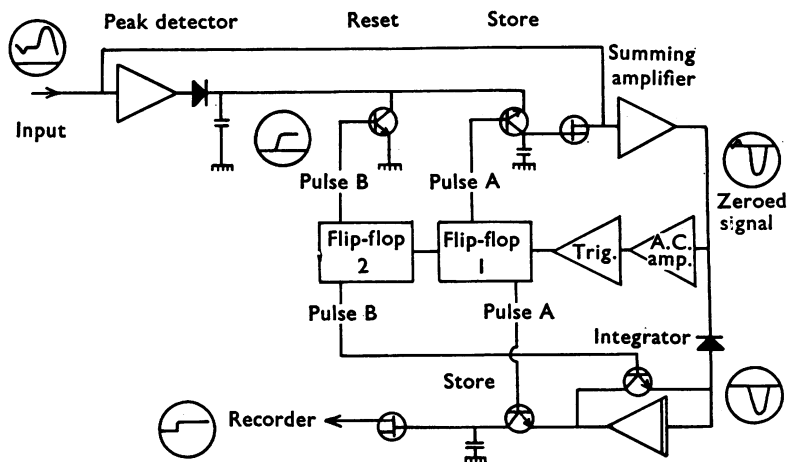


FIG. 1

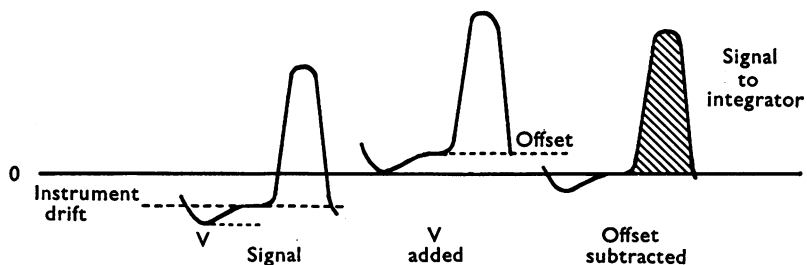


FIG. 2

the second resets the detector. The stored potential, less an offset, is subtracted from the original signal which is thus referred to earth before integration.

REFERENCE

GARDINER, D. G. (1971). Zero correcting circuit. *Provisional patent spec.*, No. 1068/71.