An apparatus for estimating the product of peak height and retention time in gas chromatography

Quantitative estimation of peak areas on gas–liquid chromatograms has been carried out by a variety of methods, which include triangulation, cutting out the peak areas and weighing the cut paper, planimeter tracing and use of an integrator built into the recorder. The product of peak height and retention time may also be used as a measure of peak area. This method suggested by PECSOK[1] was referred to in a recent article by CARROLL[2].

Although the theoretical background of this method does not seem fully clear yet[3], its results can be used for many purposes and the method is very convenient for application in routine analytical work.

A simple method can be used to obtain immediately the product of peak height and retention time.

If a resistor R (Fig. 1) is connected to the output side of the measuring bridge, a signal V_{out} can be obtained between one terminal A of R and the movable contact

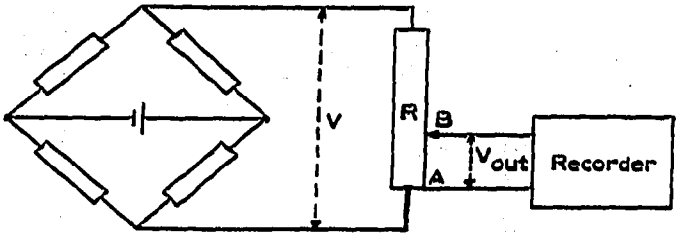

Fig. 1.

B on R. If the movable contact B is moved at a constant speed, starting at point A at retention time 0, the output V_{out} will be proportional to the product of bridge potential V and retention time.

A simple and inexpensive apparatus that works quite satisfactorily has been constructed by us.

A precision potentiometer is coupled to a synchronous motor and connected to the detector-bridge and strip chart recorder in the way shown in Fig. 1. The peak heights thus recorded are already multiplied by the retention time and can be measured easily.

We used a ten-turn precision potentiometer* coupled to the synchronous motor of a multispeed strip-chart recorder.

In our recorder** the paper rewind knob is replaced by a brass disc. On the shaft of the potentiometer a disc is mounted in the way shown in Fig. 2. This disc (A), clad with soft PVC sheet (B), is pressed to the recorder disc by means of a spiral spring.

A string connected to the potentiometer shaft is wound up during the analysis. This string can be used to reset the potentiometer to zero, after having disconnected the coupling by pressing back the friction disc and turning it some degrees relative to the axis. When the string is pulled with sufficient force, the coupling will be auto-

* Helipot 100 Ω model A.
** Philips automatic compensator.

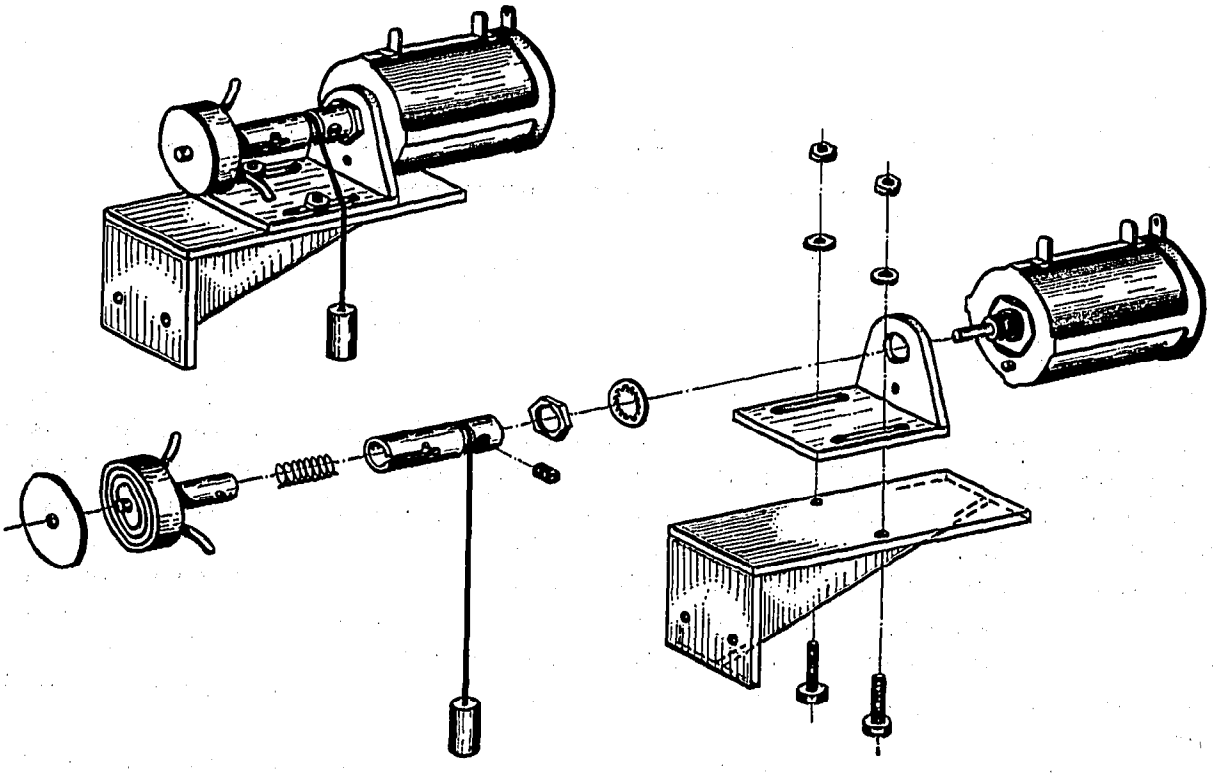

Fig. 2.

matically connected to the recorder when the potentiometer zero is reached. The coupling acts as slip-coupling after the potentiometer has reached its terminal stop in order to prevent the potentiometer from being damaged if the recorder motor is not stopped.

Laboratorium Stikstofbindingsbedrijf,
Staatsmijnen in Limburg,
Geleen (The Netherlands)

G. KATEMAN

[1] R. L. PECSOK, *Principles and Practice of Gas Chromatography*, John Wiley and Sons Inc., New York, 1959, p. 145.
[2] K. K. CARROLL, *Nature*, 191 (1961) 377.
[3] A. DIJKSTRA, *Nature*, 192 (1961) 965.

Received November 14th, 1961