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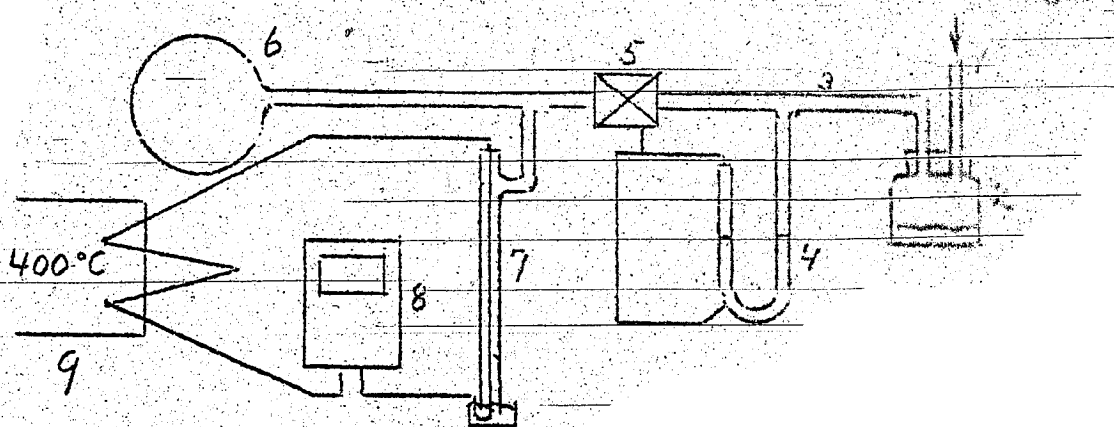
VACUUM OR PRESSURE RECORDER

An accurate knowledge of the amount of an end gas and its average composition are frequently necessary in experiments with hydrocarbons. Flow meters are not suited for the purpose because gas is not uniformly liberated. Wet gas meters get frequently out of order and do not indicate accurately very small amounts of gas. It becomes very difficult to obtain an average sa[illegible]

The arrangement showed below gives:

1. a very accurate measurement of the total amount of end gas.
2. guaranteed uniform average gas samples.
3. an Automatic record of the diagram "time - amount of end gas".



Description: The gas - gasoline mixture enters the condensate catchpot. (2). The end gas, freed from gasoline enters the tube (3), and the mercury displaced in the contact manometer (4) closes an electric circuit, which opens the magnetic valve (5) until the excess pressure has been discharged into the vacuum flask (6). When the vacuum flask is evacuated, the level of the mercury in the manometer (7) is at 760 mm. A resistance wire stretched inside the manometer is entirely immersed in mercury with a vacuum of 760 mm. The more end gas is produced the lower will be the level of Hg in the manometer, exposing more of the resistance wire. The resistance wire is however part of an electric circuit composed of two thermocouples (9) heated in a furnace to some constant temperature, e.g. 400°C, and a temperature recorder (8).

Measurement.

When no end gas is produced, the recorder indicates 2 x 400 = 800, because the resistance inside the manometer is completely immersed. With the vacuum flask half filled, half the resistance wire is shunted in, and the recorder will indicate less than 800. When the vacuum vessel is filled, all the resistance wire is shunted in, the recorder will indicate still less. The temperature scale can readily be recalibrated permitting direct reading of pressures.

Results

The diagram produced, naturally, without manual operations,

gives information on:

1. Whether the start and the end of the reaction has started at the proper time;
2. Whether the production of the end gas was uniform.
3. Whether the same amount of end gas is formed in the different reactions.
4. Whether the vacuum is tight.

Any irregularities in the input, temperature, operations, etc. will affect the gas formation and will be represented in the diagram. The end gas diagram is invaluable for the evaluation of a test run.