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(54) **MINIATURE PORTABLE GAS CHROMATOGRAPH**

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(52) **U.S. Cl.**

USPC **D10/81**

(58) **Field of Classification Search**

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73/23.2-23.27, 23.3, 23.35-24.01, 52,
73/53.01, 61.52-61.61, 864.21, 431,

73/864.73, 31.03, 31.05, 866.5, 864.84,
73/864.23, 61.55, 863.01, 866, 864.62;
204/253, 400, 403.01, 403.02, 403.04,
204/403.05, 403.1, 403.11, 403.14;
205/775, 777.5, 778, 792;
210/656-660, 198.2, 635, 101, 103;
250/252.1, 251, 25, 281-300, 305,
250/336.1, 338.1, 338.5, 339.07, 339.13,
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356/301-337, 451, 72, 73; 422/50-53,
422/62-82, 83-98, 239.2, 400, 401, 404;
435/4, 283.1-284.1, 286.5, 287.1,
435/287.2, 806, 13, 14, 287.4, 287.7,
435/287.94, 6.18; 436/43-54, 68, 900, 514,
436/530, 95; 600/300, 301, 309, 322, 345,
600/347, 365, 393, 578, 583, 584, 532,
600/543; 604/207, 503, 65, 66, 67, 182;
702/19, 40; 221/65, 135; 235/451,
235/422.01; 95/87; 96/101, 106; 366/286,
366/207

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D458,167 S * 6/2002 Slocum et al. D10/81
8,759,080 B2 * 6/2014 Graessle et al. 435/287.3

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(57) **CLAIM**

The ornamental design for a miniature portable gas chromatograph, as shown and described.

DESCRIPTION

FIG. 1 is a front and left side view of an embodiment of the miniature portable gas chromatograph showing the mouthpiece “straw”, a “start” button and a front-facing camera for definitive identification of the subject providing an exhaled breath sample; the right side view is a mirror image of the left side;



FIG. 2 is a rear view of an embodiment of the miniature portable gas chromatograph showing the power connection cord and a vent;

FIG. 3 is a left side view of an embodiment of the miniature portable gas chromatograph showing the mouthpiece “straw”; the right side view is a mirror image of the left side;

FIG. 4 is a front and left side view of an embodiment of the miniature portable gas chromatograph showing the mouthpiece “straw”, a “start” button and a front-facing camera for definitive identification of the subject providing an exhaled breath sample; the right side view is a mirror image of the left side; and,

FIG. 5 is a front and left side view of an embodiment of the miniature portable gas chromatograph showing the device with a mouthpiece “straw” receiving port but without the

mouthpiece “straw” inserted in the mouthpiece receiving port and showing a speaker on the front face of the device and power connection cord on the rear, a “start” button and a front-facing camera for definitive identification of the subject providing an exhaled breath sample.

The bottom of the miniature portable gas chromatograph is flat and unornamented.

The article is a miniature portable gas chromatograph which can sit on a flat surface or be handheld and is intended for use by subjects who exhale into the device’s mouthpiece “straw” or into gas sampling bags or gas-tight syringes for introduction into the device’s mouthpiece “straw” for measurement of compounds present in the exhaled breath.

1 Claim, 5 Drawing Sheets



Figure 1



Figure 2

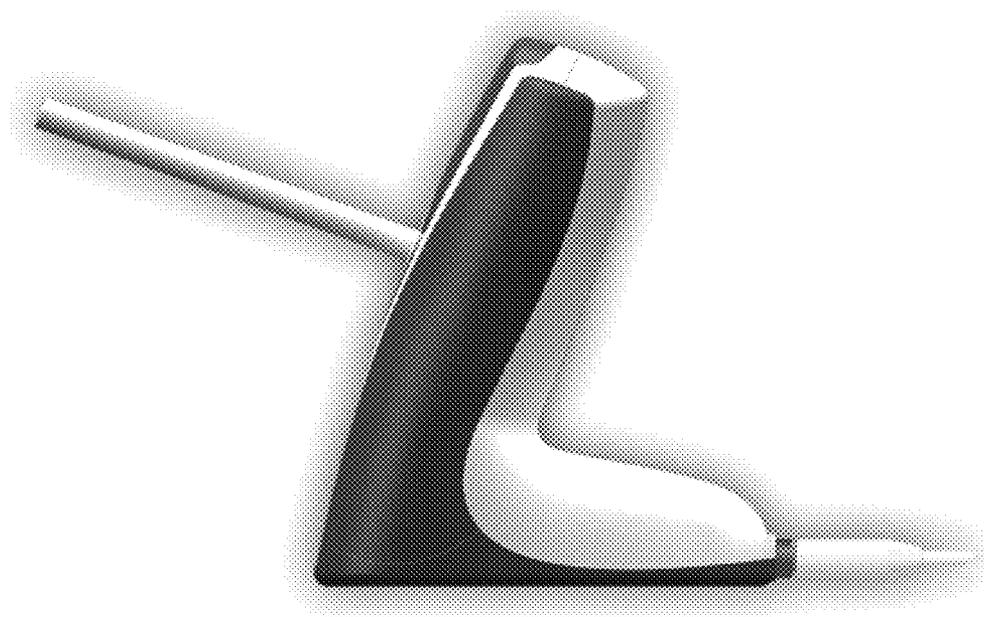


Figure 3

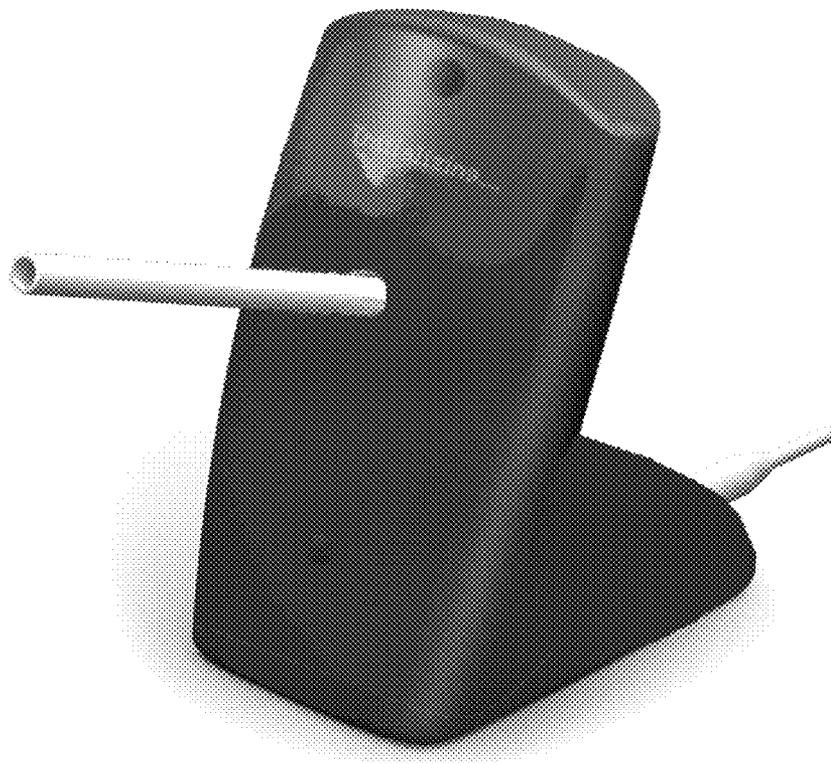


Figure 4



Figure 5