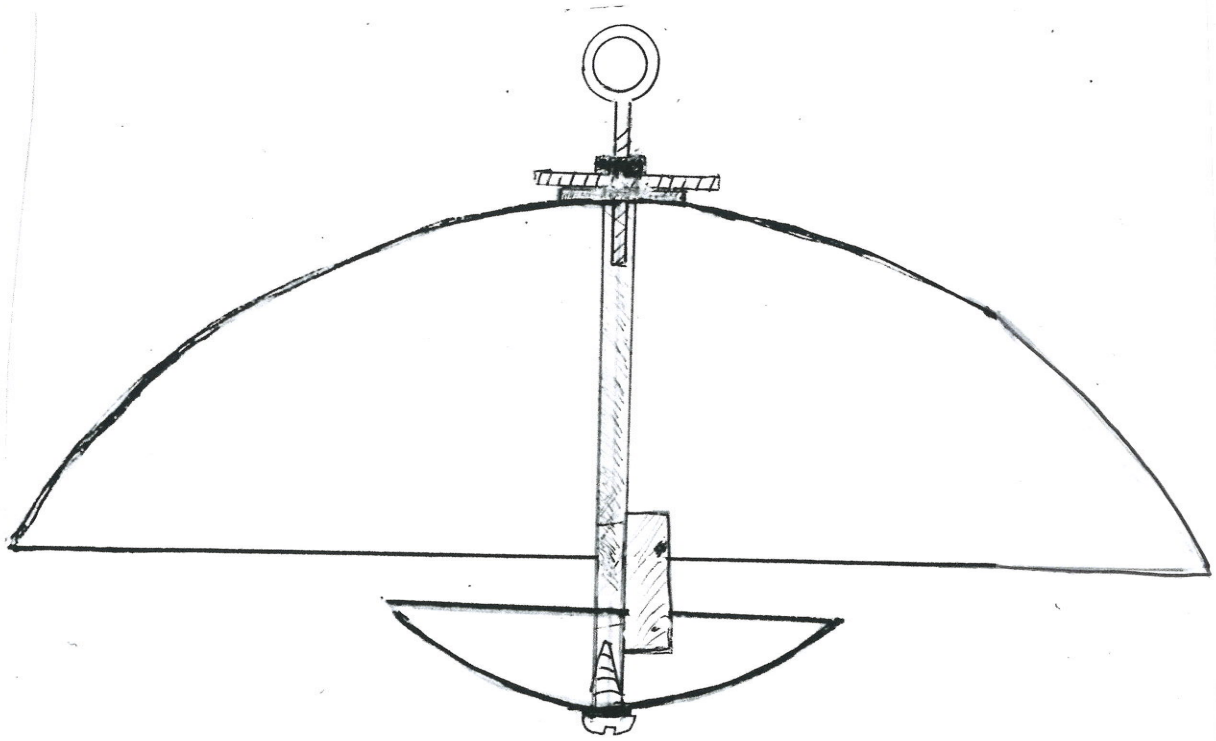
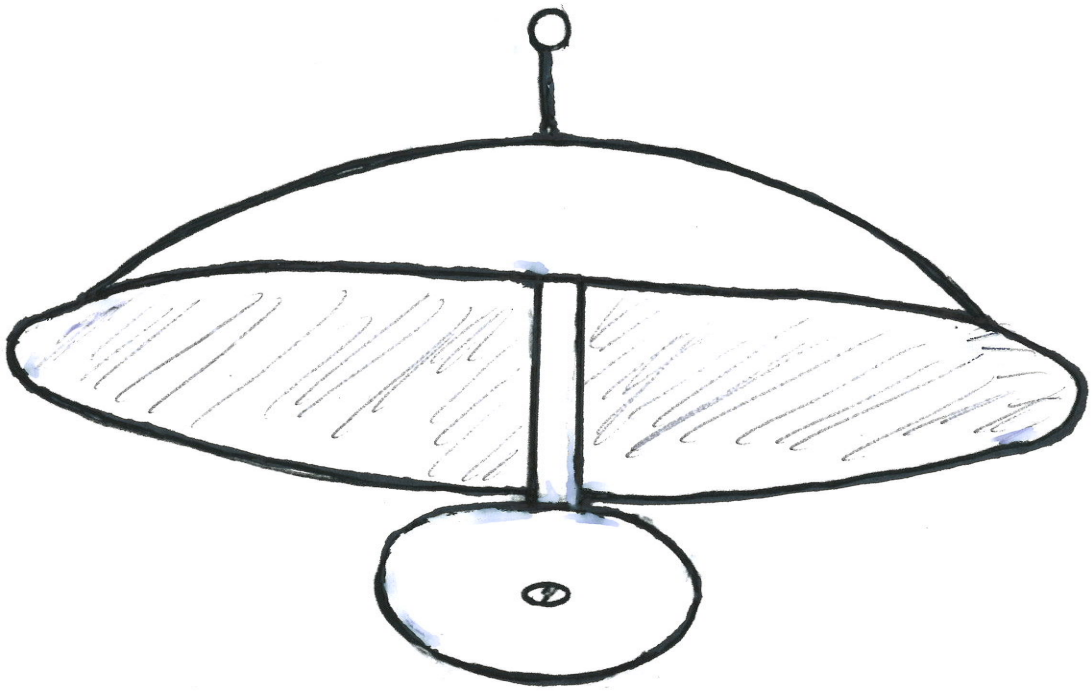
OMNIDIRECTIONAL VERSION; AIR TEMPERATURE MONITOR /RADIATION COMPENSATED THERMOMETER

Utilizes same blackbody and shielding principles as the Directional Radiant Heat Thermometer.



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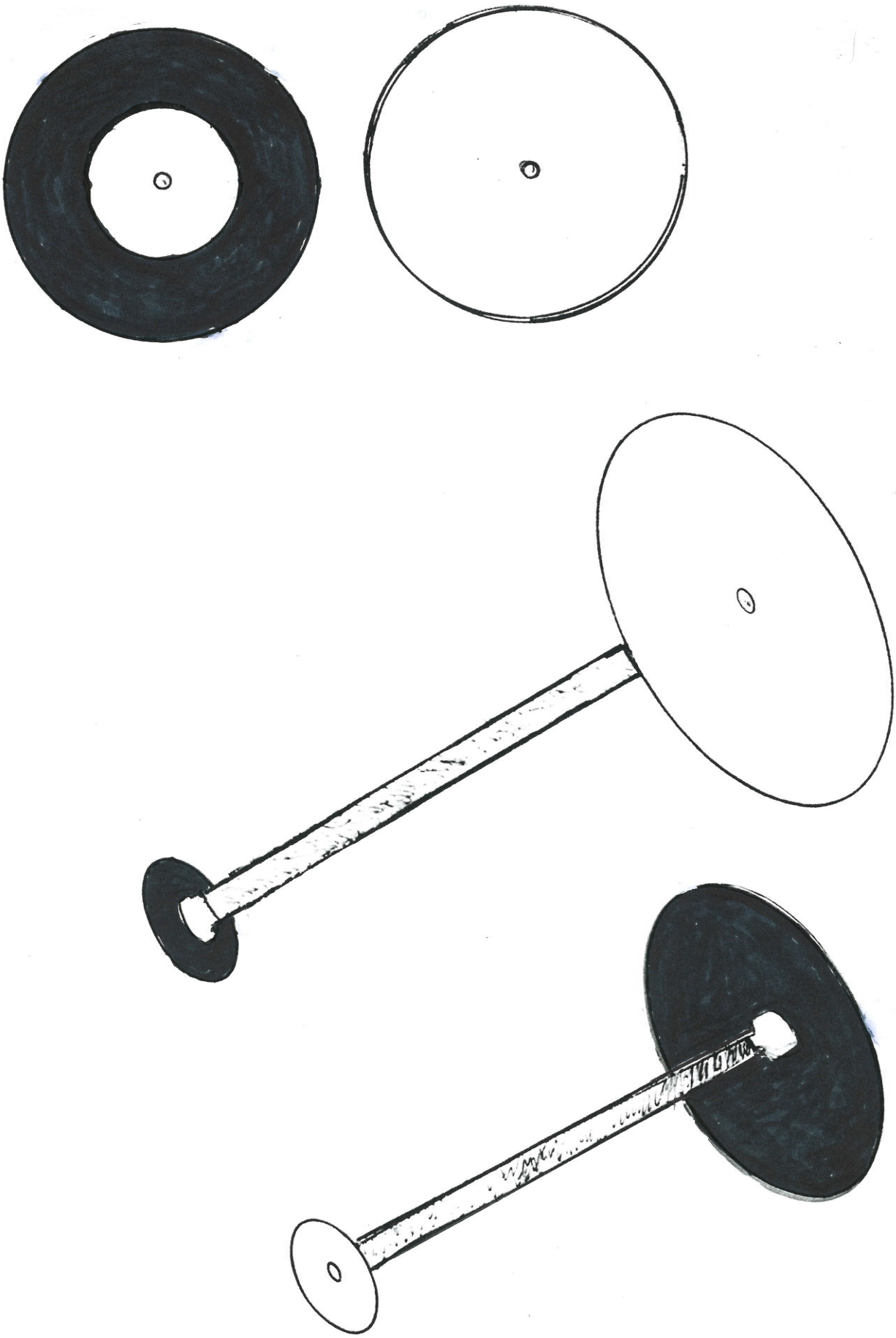
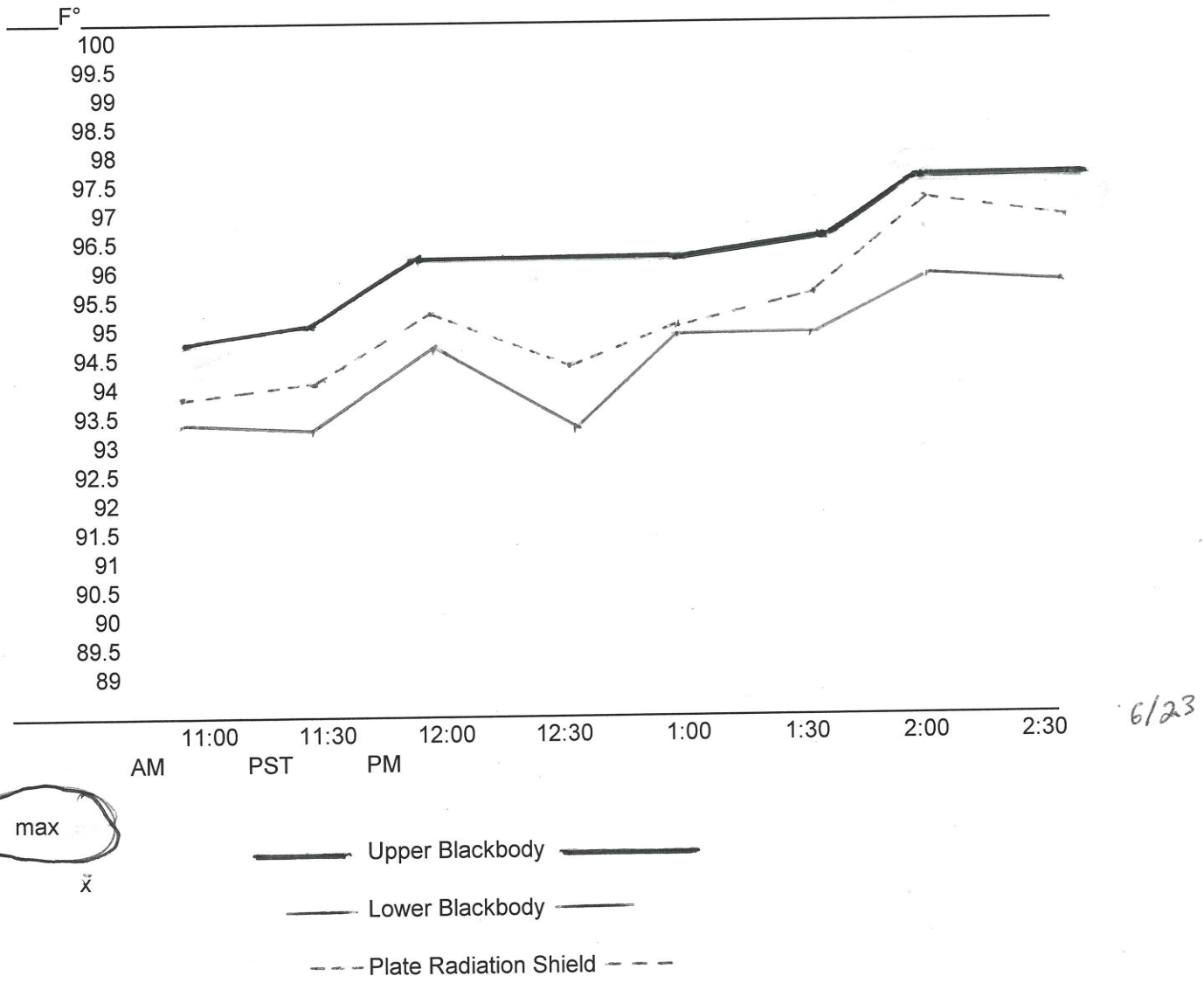


6/23/2011

COMPARISON OF 3 TEMPERATURE READINGS IN PROXIMITY

11:00a - 2:30p PST 30 Minute Intervals Prescott, AZ el 5040



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max

x̄

[0004] None.

BACKGROUND

[0005] An earlier air temperature monitor was patented in 1992 by David M. Bergstein (the present inventor) which, after testing, exhibited an error of about two (2) degrees F, maximum. This is described in U.S. Patent No. 5,141,332, which issued on August 25, 1992.

[0006] A publication by J.Y. Wang and C.M.M. Felton discusses temperature monitors, titled, "Instruments for Physical Environmental Measurements," published in 1983. On pages 127-130, it discusses the fact that radiation error in weather shelters may be up to 3 degrees F, under full sun. Wang and Felton propose an alternate "weather shelter" comprised of two parallel plates that are white facing outside, and black facing inside.

[0007] A publication by S. Negri is titled, "Sensors May be Flawed," published in The Arizona Republic, on October 10, 1990. This article concerned installation of the HO83, which was an early artificially aspirated air temperature device. Now known as HO-1088, this device draws air across a temperature sensor. There are some questions as to its accuracy and the necessity of needing the fan during night time hours, which creates erroneous low temperature readings.

[0008] The Gill Plate Radiation Shield is another type of air temperature monitor. This multi-plate radiation shield is made from plastic, and it is susceptible to both direct and indirect radiation error. It requires natural airflow to abate higher temperatures that accrue from this being a passive device. Its product literature states a radiation error of 2.7 degrees F. RMS, with 2.2 mph airflow through the shield.

[0009] The technology described herein is referred to as a Radiation Compensated Thermometer, which uses the natural thermoelectric emissive characteristics of metal, because metal has more in common with the universe than plastic. This is also a step towards greater integration of sensor and shield.

SUMMARY

US005141332A

United States Patent [19]

Bergstein

[11] Patent Number: 5,141,332

[45] Date of Patent: Aug. 25, 1992

[54] **AIR TEMPERATURE MONITOR**

[76] Inventor: **David M. Bergstein**, 2708 Georgia La., Chino Valley, Ariz. 86323

[21] Appl. No.: **722,543**

[22] Filed: **Jun. 20, 1991**

[51] **Int. Cl.**[5] **G01W 1/02**; G01K 13/02

[52] **U.S. Cl.** ..... **374/135**; 73/170 R; 324/457; 340/601

[58] **Field of Search** ..... 374/135, 109, 132, 115; 73/170 R

[56] **References Cited**

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D. A. Robinson, U.S. Cooperative Climate-Observing Systems: Reflections and Recommendations, Jun. 1990, pp. 826–828.

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An Intercomparison of Radiation Shields for Auto Stations, D. J. McKay and J. D. McTaggart Cowan, World Meterological Organization Abstract from a Meeting in Geneva, Switzerland, Jul. 1977, pp. 208–213.

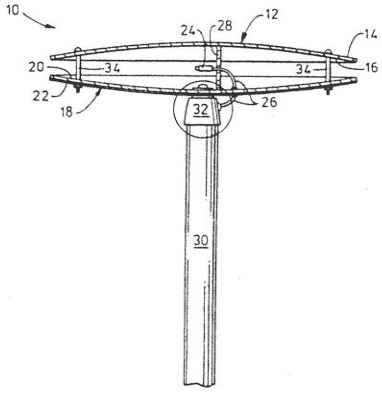
Primary Examiner—Daniel M. Yasich

Attorney, Agent, or Firm—Frost & Jacobs

[57] **ABSTRACT**

A temperature monitor comprising two circular metallic plates which are disposed in the horizontal plane in a spaced-apart configuration, the upper plate having a mirrored top surface and a black bottom surface, the lower plate having a black top surface and a mirrored bottom surface, and a temperature sensor mounted in the space between the two plates. The plates are fastened in the spaced-apart configurataion by use of nylon bolts, and the temperature sensor is mounted using nylon or other electrically insulating washers. The entire apparatus is mounted on wood or PVC supports. A thin layer of temperature-stabilized air is traped in between the two plates, allowing the temperataure sensor to achieve great accuracy.

12 Claims, 2 Drawing Sheets



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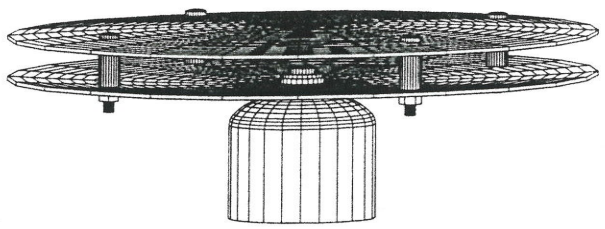

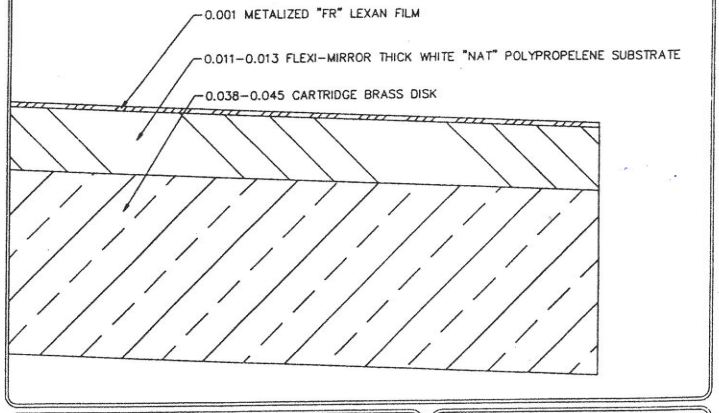

J.D. McCADD COMPUTER AIDED DESIGN CONSULTING, PLOTTING, DRAFTING SERVICES	DATE: 07/08/92 FILENAME: SHIELD.DWG SCALE: 50:1 SHEET: 2 OF: 2

REFLECTING DISK SHIELD FOR REMOTE TEMPERATURE SENSOR

DAVID BERGSTEIN

Original Patent & Prototypes