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(54) **GYRATORY COMPACTOR ANGLE MEASUREMENT DEVICE**

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(58) **Field of Search** ..... **33/1 N, 534, 542, 33/549, 551, 552, 555, 531, 501.02, 501.03; 73/841, 824, 818, 815, 813, 795, 794**

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

4,087,918 A	*	5/1978	Schmid et al. ....	33/542
5,456,118 A	*	10/1995	Hines et al. ....	73/818
5,824,913 A	*	10/1998	Pyle .....	73/818

\* cited by examiner

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(57) **ABSTRACT**

An angle measuring device for use in a gyratory compactor. The device is a self-contained unit which is placed in the bottom of the mold and the asphalt or other material being compacted is placed on top of it. Inside the device is a carrier which has two vertically aligned probes which project out from it and touch the walls of the mold. One probe is fixed to the carrier; the other can move independently of the carrier. The difference in extension between the two probes is related to the angle of compaction.

**15 Claims, 1 Drawing Sheet**

