

THE PRINCIPALS-GENERAL ELECTRIC DIAMOND SYNTHESIS

Chauncy Guy Suits, D.Sc.(physics), Director of Research
A. L. Marshall, Ph.D.(physical chem), mgr. Chem Dept.
A. J. Nerad, B.S. (eng'g), mgr. Mech. Investigations Section
Francis P. Bundy, Ph.D.(physics), Research Associate
Herbert M. Strong, Ph.D.(physics), Research Associate
Harold P. Bovenkerk, B.S.(eng'g), Eng'g ass't to Strong & Bundy
James E. Cheney, technician to Strong and Bundy
H. Tracy Hall, Ph.D.(physical chemistry), Research Associate
Robert H. Wentorf, Jr. Ph.D.(physical chem), Research Associate

THE VERIFIERS-GENERAL ELECTRIC DIAMOND SYNTHESIS

H. Hugh Woodbury, Ph.D.(physics), Research Associate
Physics Department
Richard A. Oriani, Ph.D.(physical chemistry), Research
Associate, Metallurgy Department
Percy W. Bridgman, D.Sc.(physics), Nobel Laureate 1948,
Harvard Professor

PATENTS OF THE PRINCIPALS FROM THE BEGINNING OF THE DIAMOND
PROJECT THROUGH 1960 RELATING TO DIAMOND & HIGH PRESSURE

PATENT ISSUE DATE	U.S.PATENT NUMBER	INVENTOR	FILING & REFILING DATES	TYPE OF INVENTION
27Dec55	2,728,651	Hall	25Nov52	diamond wheel
29Dec59	2,918,699	Hall	28Apr58	apparatus (tetrahedral)
21Jun60	2,941,241	Strong	14Feb55	apparatus
	242	Hall	14Feb55	apparatus
	243	Bundy	14Feb55	apparatus
	244	Wentorf	30Sep55	apparatus
	245	Cheney	20Oct55	die
	246	Bundy	20Mar57	apparatus
	247	Bundy	29Apr57	apparatus
	248	Hall	14Apr55 06Jan58	apparatus (belt)
	250	Hall	09Aug55	react. vessel
	251	Strong	21Dec55	react. vessel
	252	Bovenkerk	20Mar57	react. vessel
	861	Wentorf	31Mar55	garnet synthesis
12Jul60	2,944,289	Hall	18Aug55	react. vessel
02Aug60	2,947,034	Wentorf	27Nov59	apparatus
	608	Hall	18Aug55	diamond synthesis
	609	Strong	29Apr57 06Jan58	diamond synthesis
	610	Hall Strong Wentorf	14Feb55 10Jan57 06Jan58	diamond synthesis
	611	Bundy	29Apr57 06Jan58	diamond synthesis
	617	Wentorf	26Dec56 06Jan58	cubic boron nit- ride synthesis

PUBLICATIONS OF THE PRINCIPALS RELATING TO DIAMOND AND HIGH PRESSURE FROM THE BEGINNING OF THE DIAMOND PROJECT THROUGH 1960

BOVENKERK

1. (with Bundy, Hall, Strong, and Wentorf) "Preparation of Diamond," *Nature* 184, 1094-1098 (1959).

BUNDY

1. (with Hall, Strong, and Wentorf, "Man-Made Diamonds," *Nature*, 176, 51-54 (1955).
2. "The Phase Diagram of Bismuth to 130,000kg/cm²," *Phys. Rev.*, 110, 314-318 (1958).
3. "The Phase Diagram of Rubidium to 150,000kg/cm² and 400°C," *Phys. Rev.*, 115, 278-277 (1959).
4. (with Bovenkerk, Hall, Strong, and Wentorf) "Preparation of Diamond," *Nature* 184, 1094-1098 (1959).

HALL

1. "A New Method of Mounting Diamonds," *Rev. Sci. Instrum.*, 25, 1035-1036 (1954).
2. (with Bundy, Strong, and Wentorf) "Man-Made Diamonds," *Nature*, 176, 51-54 (1955).
3. "The Melting Point of Germanium as a Function of Pressure to 180,000 Atmospheres," *J. Phys. Chem.*, 59, 1144-1146 (1955).
4. "Chemistry at High Temperature and High Pressure," *Research and Engineering*, 11, 27-28 (1956).
5. "Chemistry at High Temperature and High Pressure," in *High Temperature--A Tool for the Future*, Stanford Research Institute, Menlo Park, California, 161-166 and 214-215 (1956).
6. "Chemistry at High Pressures and High Temperatures," *J. Wash. Acad. Sci.*, 47, 300-304 (1957).
7. (with Billings Brown, Bruce Nelson, and Lane A. Compton) "I. An Apparatus for Use with Condensed Phases at 10,000 deg.; II. Some Thermodynamic Considerations at Very High Temperatures," *J. Phys. Chem.*, 62, 346-351 (1958).
8. "Some High Pressure, High Temperature Design Considerations: Equipment for Use at 100,000 Atmospheres and 3000 Deg.C," *Rev. Sci. Instrum.*, 29, 267-275 (1958). Tetrahedral Press.
9. "Ultrahigh Pressure Research," *Science*, 128, 445-449 (1958).
10. (with S.S.Kistler) "high Pressure Developments," *Annual Review of Physical Chemistry*, Annual Reviews, Inc., Palo Alto, California, 395-416 (1958).
11. "Diamonds," *Proceeding of the Third conference on Carbon* (held at the University of Buffalo, Buffalo, N.Y., June 1957), Pergamon Press, London, pp. 75-84.
12. "High Pressure Methods," *Proceedings of an International Symposium on High Temperature Technology*, Asilomar Conference Grounds, California, McGraw-Hill, New York, pp. 145-156 and 335-336.
13. "Ultrahigh Pressure, High Temperature Apparatus: The Belt," *Rev. Sci. Instrum.*, 31, 125-131 (1960).

PUBLICATIONS OF THE PRINCIPALS-- continued--

HALL continued--

14. (with Bovenkerk, Bundy, Strong, and Wentorf) "The Preparation of Diamond," *Nature*, 184, 1094-1098 (1959).
15. (with J. Duane Dudley) "Experimental Fusion Curves of Indium and Tin to 105,000 Atmospheres," *Phys. Rev.*, 118, 1211-1216 (1960).
16. "Some High Pressure Design Considerations: Equipment for Use at 100,000 Atmospheres and 3000°C," Series of Selected Papers in Physics, Solid State Physics in High Pressure, The Physical Society of Japan, Department of Physics, University of Tokyo, Japan (1960) pp.6-14.
17. *Scientific American*

STRONG

1. (with Bundy, Hall, and Wentorf) "Man-Made Diamonds," *Nature*, 176, 1035-1036 (1955).
2. "The Experimental Fusion Curve of Iron to 96,000 Atmospheres," *J. Geophys. Res.*, 64, 653-59 (1959).
3. "The Fusion Curve of Iron to 96,000 Atmospheres," *Nature*, 183, 1381-1382 (1959).
4. "Fusion Curves of Group VIII Metals to 100,000 Atmospheres," *Phys. Rev.*, 115, 278-284 (1959).
5. (with Bovenkerk, Bundy, Hall, and Wentorf) "The Preparation of Diamond," *Nature*, 184, 1094-1098 (1959).
6. "Melting Temperature of Metals at Very High Pressure," *Am. Scientist*, 48, 58-79 (1960).

Wentorf

1. (with Bundy, Hall, and Strong) "Man-Made Diamonds," *Nature*, 176, 51-54 (1955).
2. "The Formation of Gore Mountain Garnet and Hornblende at High Temperature and Pressure," *Am. J. Sci.*, 254, 413 (1956).
3. "Olivine-Spinel Transformation," *Nature*, 183, 1617 (1959).
4. "New High-Pressure Modification of BPO_4 and $BAso_3$," *Acta Crystallographica*, 12, 79 (1959). (with J.D. MacKenzie and W.L. Roth)
5. (with Bovenkerk, Bundy, Hall, and Strong) "Preparation of Diamond," *Nature*, 184, 1094-1098 (1959).
6. "Cubic Form of Boron Nitride," *J. Chem Physics*, 26, 956 (1957).
7. "Note on the Scratching of Diamond," *J. Appl. Phys.*, 30, 1765 (1959).
8. "Condensed Systems at High Pressures and Temperatures," *J. Phys. Chem.*, 63, 1934 (1959).

SECURITY ORDER

U. S. DEPARTMENT OF COMMERCE, PATENT OFFICE

Initiated: prior to 19 August 1955, the date that
H. Tracy Hall left G.E.

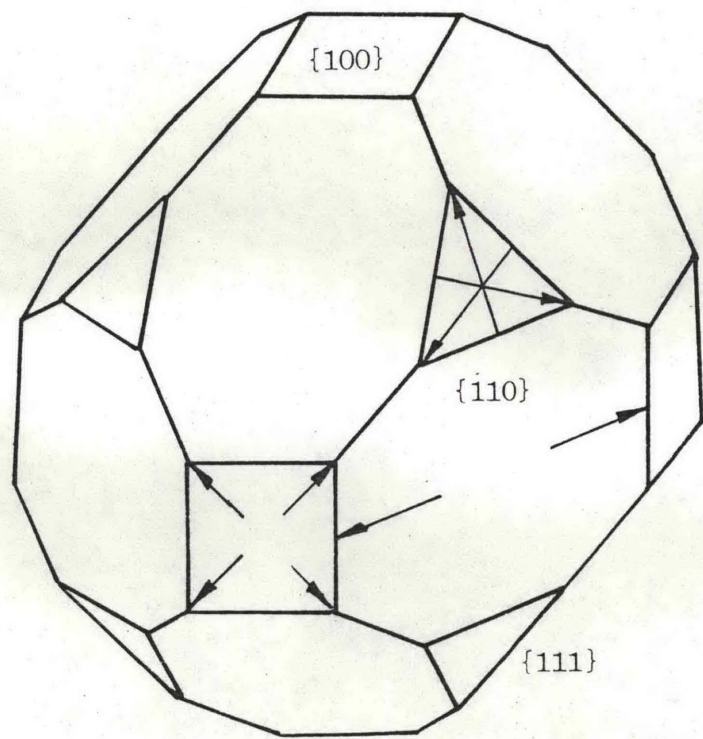
Modified: at various times to allow patents to be filed
in foreign countries, etc.

Rescinded: 8 September 1959

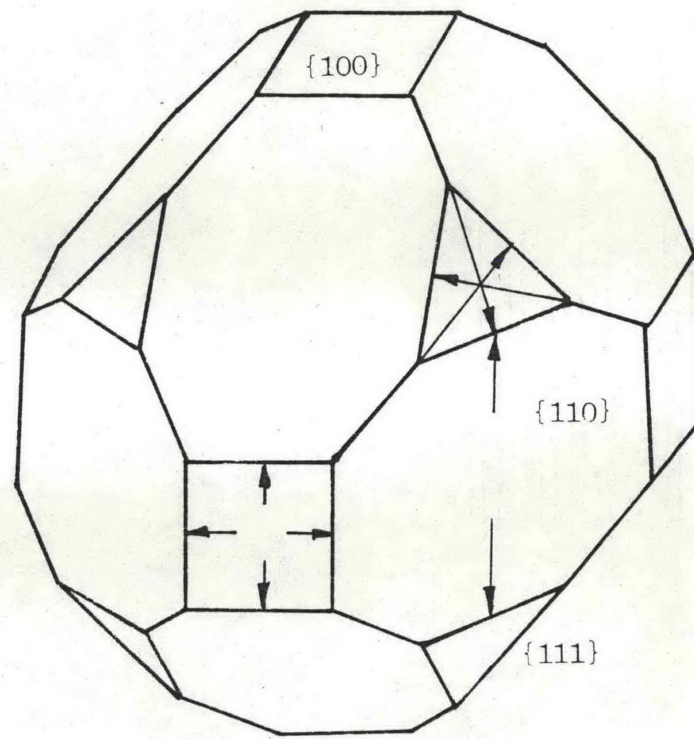
The special case of the Tetrahedral Press (invented at BYU)
Publication in Rev.Sci. Instrum. April 1958

Initiated: 15 January 1959

Rescinded: 24 June 1959



Hard directions in diamond



Soft directions in diamond