NEW REFERENCES FOR 1941 - 1959

1941

No. 297a. I. K. Kramer and F. M. Walters, Jr., "The Instability of Low Expansion Iron-Nickel-Cobalt Alloys," American Institute of Mining and Metallurgical Engineers, Technical Publication No. 1370 (Class C, Iron and Steel Division, No. 288), October, 1941, pp. 1-3.

Discusses the instability of iron-nickel-cobalt alloys. Low expansion iron-nickel-cobalt alloys are unstable in the temperature range 360° to 540°C. They partially transform to alpha with increase in length and generally with an increase in the coefficient of expansion.

1946

No. 340a. J. W. Harrison, "Electric Heaters and Their Control," Machine Design, Vol. 18, No. 9, September, 1946, pp. 120-124.

Describes how to determine capacity, type, and location of heaters and thermostats. Accurate control of electrically heated tools, tanks, and hoppers are attained when the heating element and the bimetallic thermostat are designed to assure balance of the thermal relation between the two components.

1948

No. 358a. M. E. Fine and W. C. Ellis, "Thermal Expansion Properties of Iron-Cobalt Alloys," American Institute of Mining and Metallurgical Engineers, Technical Publication No. 2320 (Classes C and E, Metals Technology), February, 1948, pp. 1-13.

This paper reports the expansion properties in the iron-cobalt system for temperatures from 30 to 850°C., shows the correlation with other physical properties, and proposes an explanation for the interrelation.

1949

No. 371a. H. R. Nelson, C. M. Schwartz and others, "Thermostatic Bimetals for Low Temperatures," Battelle Memorial Institute, 219 p., May 20, 1949. (Order from Library of Congress as PB 153 929).

Commercial contacts and experimental materials; dilatometry; elastic moduli and proportional limit determinations of bimetals and components; load-deflection tests; temperature-deflection tests; miscellaneous studies of bimetals; internal stress measurements of bimetals; internal stresses in treated bimetals and components; formation of bimetals by unusual methods.

1952

No. 415a. H. Masumioto, H. Saito, and T, Kobayashi, "On the Thermal Expansion, Rigidity Modulus and its Temperature Coefficient of the Alloys of Cobalt, Iron and Vanadium and a new Alloy, Velinvar," The Research Institute for Iron, Steel and Other Metals, 674th report, March 17, 1952, pp. 255-260.

The mean coefficient of thermal expansion was determined of ternary alloys of Cobalt, Iron and Vanadium in the range of 10° to 50°. The rigidity modulus and mean temperature coefficient of rigidity modulus was also determined over the same temperature range.

1953

No. 424a. F. J. Hassler and H. B. Puckett, "Supersensitive Thermostat," Agricultural Engineering, Vol. 34, No. 12, December, 1953, pp. 841-842.

Describes and gives schematic diagram of electrical circuit for a supersensitive thermostat. Combines two principles, each widely used in commercial thermostats to provide on-off control, which are a spiral bimetal coil as the primary sensing element and a thyratron relay to switch the working current.

1954

No. 435a. J. J. Dietz, "Some Notes on the Design and Application of Electro-Thermal Relays," paper presented at Symposium on Electro-Magnetic Relays, School of Electrical Engineering, Oklahoma Institute of Technology, Oklahoma A & M College, Stillwater, Oklahoma, February 24-26, 1954, 28 pages.

Paper deals with the design and applications of bimetal operated relays of the time delay type. Appendix contains definitions of terms employed and derivations of the equations referred to together with assumptions on which they are based.

1955

No. 447a. V. Ya. Grislis, "A Heat Regulator Pick-Up With Additional Impulses," Latv. PSR Zinat. Akad. Vestis, 1955, No. 6 (95), pp. 105-110.

The new pick-up can be used for air temperature conditioning of individual hotel rooms, passenger ships, incubators, etc. It contains three bimetallic strips instead of the usual single strip; one strip gives the usual impulse proportional to the change in temperature, whilst the two additional strips give impulses proportional to the rate of temperature change. It weighs only a little over two grams and no overall dimension exceeds 4 cm. It achieves an accuracy of temperature regulation better than ± 0.1°C., its sensitivity coefficient being of the order of 55 sec. compared with 216 sec. for the normal single impulse type. The author gives full details of the mode of operation, a constructional sketch, a photograph, and operational charts showing regulated temperature (20° or 24°C.) against time. (Science Abstracts)

No. 448a. P. Hidnert and R. K. Kirby, "Thermal Expansion and Phase Transformations of Low-expanding Cobalt-Iron-Chromium Alloys," Journal of Research of the National Bureau of Standards, Volume 55, No. 1, July, 1955, Research paper 2602, pp. 29-37.

The linear thermal expansion and phase transformations of some cobalt-iron-chromium alloys were investigated at various temperatures between -65° and +950°C.

1956

No. 464a. J. Kirchdorfer, "The Economic Use of Bimetals in Thermal Switches," Bull Assoc. Suisse Elect., Vol. 47, No. 11, pp. 517-523, May 26, 1956.

Discusses basic mechanical features, and derives formulae and curves for various parameters on the basis of simplifying assumptions. These can be used to indicate conditions for optimum performance of switches activated by heating of a bi-metallic element. The question of cost is taken into account, and practical aspects considered include criteria for freedom from chatter or bounce. (Science Abstracts)

1957

No. 485a. E. R. Kebbon, "Bimetal Thermometers," Process Instruments & Controls Handbook, McGraw-Hill Book Co., Inc., pp. 2-85 to 2-87, 1957.

Describes Thermostatic Bimetal and its action with temperature change. Construction, calibration, ranges, accuracy, over-ranging, stems, and types of bimetal thermometers are discussed.

1958

No. 496a. F. Kaspar, "Dvojkovy v Elektrotechnice," SNTL, Praha, 1958.

1959

No. 510a. A. Hentsch, "Untersuchungen an Sonderbimetallen," Elektrie 13, (1959), No. 8, pp. 309-312.