KRAUS, N., Dr.; FOGAS, Aurora, dr.; FOGAS, C., dr.

Epidemic and sporadic eosinophilia. Med. int., Bucur. 4 no.8: 1233-1236 Dec 56.

1. Lucrare efectuata la Spitalul de adulti si de copii din Arad.
(EOSINOPHILIA
epidemic & sporadic, etiol. & manifest.)

KRAUS, N., Dr.; FOGAS, Aurora, dr.; FOGAS, C., dr.

Epidemic and sporadic eosinophilia. Med. int., Bucur. 4 no.8: 1233-1236 Dec 56.

1. Lucrare efectuata la Spitalul de adulti si de copii din Arad.
(EOSINOPHILIA
epidemic & sporadic, etiol. & manifest.)

FOGAS, Korhel, Dr.; ACEL, Henrik, Dr.

Primary sympathicoblastoma of the greater omentum. Orv. hetil. 100 no.10: 367-368 8 Mar 59.

1. Az Aradi Jarasi Korhaz kozlemenye.
(NEUROBLASTOMA, case reports
sympathicoblastoma of greater omentum, primary (Hun))
(OMENTUM, neoplasms
sympathicoblastoma of greater omentum, primary, case report (Hun))

FOGAS, Pal (Szentes)

Among trackmen. Munka 14 no.12:33 D '64.

FOGEC, Zvonko, mr

Activities of the Section for Industrial Pharmacy.
Farmaceut gl Zagreb 19 no. 12: 486-488 D '63

*

FOGEC, Zvonko, mr

First Technical Conference on Packaging in Pharmacy. Farmaceut gl Zagreb 20 no.9:328 S '64.

1. Secretary, Section of Industrial Pharmacy of the Federation of Pharmaceutical Associations of Yugoslavia.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000413410004-4"

Poland/Virology. Viruses of Man and Animal E

Abs Jour : Ref Zhur-Biol., No 13, 1958, 57346

Author : Makower Henryk, Skurska Zofia, Fogel Alicja, Wielgus Krystyna

Inst : ~~Not given~~ Below

Title : Study of the Viruses of Parapoliomyelitis. Report 1. Virus of Columbia MM

Orig Pub : Arch. immunol. i terap. doswiadcz., 1955, 3, 311-345

Abstract : The strain which was received from Stockholm was highly virulent to newlyborn and grown mice, but lost its infectious properties when systematically passed through these animals. The virus accumulated primarily in the spinal cord; in the brain it concentrated more in the cerebellum than in the hemispheres. It did not repro- .

Card1/3

Instytut Immunologii i Terapii Doswiadczalnej PAN we Wroclawiu (Director: prof. Dr. L. Hirszfeld) Dział Wirusologii (Kierownik: prof. dr. H. Makower)

Poland/Virology. Viruses of Man and Animal E

Abs Jour : Ref Zhur-Biol., No 13, 1958, 57345

Abstract : duce in the allantoin cavity, but did multiply in the amniotic area with rising virulence. Recovered mice acquired immunity which increased after a second infection. However, sera from mice which recovered from infections or from immunized animals did not neutralize the virus. The virus possessed hemagglutinating properties (HP). No parallelism between HP and infectious properties was established. The same immune serum did not always equally inhibit the hemagglutination reaction with different brain suspensions having similar hemagglutination titers. On the investigation of 473 sera of persons in Lower Silesia it was found that in the group of persons recovered from poliomyelitis there were 2.4 more positive RTGA than in the group that did not contract the disease. Hence, the authors

Card 2/3

Poland/Virology. Viruses of Man and Animal E

Abs Jour : Ref Zhur-Biol., No 13, 1958, 57346

Abstract : conclude that there is a possibility that viruses of the encephalomyocarditis group play a possible role in the etiology of poliomyelitis.

Card 3/3

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000413410004-4"

Poland/Virology. Viruses of Man and Animal E

Abs Jour : Ref Zhur-Biol., No 13, 1958, 57347

Author : Skurska Z., Makower H., Fogel A., Guzy K.
Inst : Not given
Title : Study of the Viruses of Parapoliomyelitis. Report 11. Virus Tward.

Orig Pub : Arch. immunol. i terap. doswiadcz., 1955,3, 481-598

Abstract : From the feces of a 1½ year old child with symptoms of poliomyelitis the virus Tward was isolated by means of the intraperitoneal infection of newlyborn mice. The virus belongs to the group of encehalocarditis viruses which serologically and by their infectious and hemagglutinating properties are similar to the virus Columbia MM. After the 11th passage the virus began to

Card 1/2

Poland/Virology. Viruses of Man and Animal E

Abs.Jour : Ref Zhur-Biol., No 13, 1958, 57347

Abstract : produce the diseases in grown mice. The sera of poliomyelitis patients in 21% of the cases inhibited the hemagglutination reaction with virus Tward. Of the 56 sera from poliomyelotis patients which were investigated, 5 sera inhibited RTGA with the virus Tward, but not with the Columbia MM virus. The serum from a child from whom virus Tward was isolated did not inhibit hemagglutination reaction by this virus and did not neutralize it.

Card 2/2

FOGEL, A.A. (Deceased)

(Geophysics)

See ILC

FOGEL', A. A.

Industrial use of high-frequency currents Leningrad, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry Leningradskoe otd-nie 1952. 76 p. (55-36963)

TK4601.F6

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000413410004-4"

FOGEL', A.A.

Prospects for the utilization of electromagnetic energy with a centimeter wave band. [Izdaniia] LONITOMASH no.30:27-46 '52. (MIRA 8:1)
(Industry heating) (Microwaves)

SHEKALOV, A.A.; SHTREYS, Ya.I.; FOGEL', A.A., kandidat tekhnicheskikh nauk, redaktor; BLINOV, B.V., inzhener, retsenzent; SOKOLOVA, L.V., tekhnicheskiy redaktor.

[Smelting in coreless-type induction furnaces] Plavka v besserdechnikovykh induktsionnykh pechakh. Pod red. A.A.Fogelia. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. i sudostroit. lit-ry, 1954. 29 p. (Bibliotechka vysokochastotnika-termista, no.14) (MLRA 7:11)
(Induction heating) (Smelting)

GOLOVIN, G.F.; FOGEL', A.A., kandidat tekhnicheskikh nauk, redaktor; ZAMYATNIN, M.M., kandidat tekhnicheskikh nauk, retsenzent; SOKOLOVA, L.V., tekhnicheskiy redaktor.

[Structure and properties of steel products tempered by high frequency heating] Struktura i svoistva stal'nykh izdelii, zakalennykh pri vysokochastotnom nagreve Pod red. A.A.Fogelia. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. i sudostroi. lit-ry, 1954. 34 p. (Bibliotechka vysokochastotnika-termista, no. 4) (MLRA 7:11)

(Induction heating) (Steel--Metallography)

RUDENKO, D.I.; FOGEL', A.A., kandidat tekhnicheskikh nauk, redaktor;
SPITSYN, M.A., kandidat tekhnicheskikh nauk, retsensent;
SOKOLOVA, D.V., tekhnicheskiy redaktor.

[Development of high-frequency heating technology] Razvitie tekhniki vysokochastnotnogo nagreva. Pod red. A.A.Fogelia. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroitel'noi i sudostroitel'noi lit-ry, 1954. 37 p. (Biblietechka vysokochastatnika-termista, no.1) (MLRA 9:1)
(Heat engineering)

SLUKHOTSKIY, A.Ye.; FOGEL', A.A., kandidat tekhnicheskikh nauk, redaktor; VASIL'YEV, A.S., kandidat tekhnicheskikh nauk, retsenzent; SOKOLOVA, L.V., tekhnicheskiy redaktor.

[Inductors for hardening] Zakolochnye induktory. Pod red. A.A.Fogelia. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit. i sudostroit. lit-ry, 1954. 46 p. (Bibliotechka vysokochastotnika-termista, no.6)(MLRA 7:11)
(Induction heating) (Metals--Hardening)

FOGEL, A.A.

VOLOGDIN, Vl.V.; KOROBKOV, A.V., kand.tekhn.nauk, retsenzent; FOGEL', A.A., kand.tekhn.nauk, red.; SOKOLOVA, L.V., tekhn.red.

[High-frequency soldering] Vysokochastotnaia paika. Pod red. A.A.Fogelia. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. i sudostroit. lit-ry, 1954. 49 p. (Bibliotechka vysokochastotnika-termista, no.13) (MIRA 11:7)

(Solder and soldering)

VASIL'YEV, A.S.; KONDRATSKIY, A.A.; FOGEL', A.A., kandidat tekhnicheskikh nauk, redaktor; SPITSYN, M.A., kandidat tekhnicheskikh nauk, retsenzent. SOKOLOVA, L.V., tekhnicheskiy redaktor.

[Vacuum-tube generators for high frequency heating] Lampovye generatory dlia vysokochastotnogo nagreva. Pod red. A.A.Fogelia. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroitel'noi i sudostroit. lit-ry, 1954. 50 p. (Bibliotechka vysokochastotnika-termista, no.9) (MLRA 7:12)
(Induction heating)

GLUKHANOV, N.P.; FOGEL', A.A., kandidat tekhnicheskikh nauk; redaktor; VASIL'YEV, A.S., kandidat tekhnicheskikh nauk; retsenzent; SOKOLOVA, L.V., tekhnicheskiy redaktor.

[Physical principles of high-frequency heating] Fizicheskie osnovy vysokochastotnogo nagreva. Pod red. A.A.Fogelia. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. i sudostroit. lit-ry, 1954. 54 p. (Biblioteohka vysokochastotnika-termista, no.2) (MLRA 7:11)
(Induction heating)

ZHEZHERIN, R.P.; FOGEL', A.A., kandidat tekhnicheskikh nauk, redaktor; SOKOLOVA, L.V., tekhnicheskiy redaktor.

[Alternators for high-frequency heat treatment of metals] Mashinnye generatory dlia vysokochastotnogo nagreva. Pod red. A.A.Fogelia. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit. i sudostroit. litry, 1954. 58 p. (Bibliotechka vysokochastotnika-termista, no.8) (MLRA 7:11)

(Dynamos--Alternating current) (Metals--Heat treatment)

FOGEL', A.A.

Using high-frequency heating for drying and improving the sowing qualities of seeds. [Izd.] LONITOMASH no.33:249-273 '54.
(Seeds drying) (MLRA 8:2)

FOGEL, A. A.

"Melting, Not in a Crucible, But by Induction-Heating" lecture given at the International Metallurgists' Conference, Moscow 26-30 June 56

Source CS-3,302,240, 11 Jan 57.

24(8) PHASE I BOOK EXPLOITATION SOV/2117

Soveshchaniye po eksperimental'noy tekhnike i metodam vysokotemperaturnykh issledovaniy, 1956

Eksperimental'naya tekhnika i metody issledovaniy pri vysokikh temperaturakh; trudy soveshchaniya (Experimental Techniques and Methods of Investigation at High Temperatures; Transactions of the Conference on Experimental Techniques and Methods of Investigation at High Temperatures) Moscow, AN SSSR, 1959. 789 p. (Series: Akademiya nauk SSSR. Institut metallurgii. Komissiya po fiziko-khimicheskim osnovam proizvodstva stali) 2,200 copies printed.

Resp. Ed.: A.M. Samarin, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: A.L. Bankvitser.

PURPOSE: This book is intended for metallurgists and metallurgical engineers.

COVERAGE: This collection of scientific papers is divided into six parts: 1) thermodynamic activity and kinetics of high-temperature processes 2) constitution diagram studies 3) physical properties of liquid metals and slags 4) new analytical methods and production of pure metals 5) pyrometry, and 6) general questions. For more specific coverage, see Table of Contents.

Stroyev, A.S., Ye.S. Ovsepyan, and A.M. Ivanov. Arc Melting of Molybdenum in Vacuum 470

The high degree of purity necessary for satisfactory deformation of molybdenum can be obtained in electric arc furnaces only with high vacua of the order of 10^{-3} mm Hg and with proper deoxidation. Ingots weighing up to 15 kg, made under these conditions, are free of defects in the central zone, irrespective of the rate of cooling after melting. Because of their relatively fine grain structure and the distinctness of their grain boundaries, such ingots can be deformed by any method including hammer forging provided proper cooling and reduction conditions are adhered to. The deformed molybdenum exhibits satisfactory ductility characteristics at room temperature.

Fogel', A.A. Noncrucible Melting by the Induction-Heating Method 478

Berezin, A.B., and Yu.P. Stepanov. Production of High-purity Aluminum by Zonal Melting 489

The method, based on the separation of elements during crystallization, makes it possible to obtain aluminum 99.9999 percent pure, but is at present very costly and time consuming.

Paton, B.Ye., B.I. Medovar, V.Ye. Paton, Yu.V. Latash. New Method for "Electrical Casting" of Ingots 495

The ingot is formed of metal from one or more melting electrodes.

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Fogel', A.A.

YEVANGULOVA, Yevgeniya Pavlovna; FOGEL', A.A., kandidat tekhnicheskikh nauk, redaktor; SPITSYN, M.A., kandidat tekhnicheskikh nauk, redaktor; SLUKHOTSKIY, A.Ye., kandidat tekhnicheskikh nauk, redaktor; GLUKHANOV, N.P., kandidat tekhnicheskikh nauk, redaktor; BAMUNER, A.V., inzhener, redaktor; SIMONOVSKIY, N.Z., redaktor izdatel'stva; MIKHAYLOV-MIKHEYEV, P.B., doktor tekhnicheskikh nauk, retsenzent; SYCHEVA, O.V., tekhnicheskiy redaktor.

[Quality control of surface hardening] Kontrol' kachestva poverkhnostnoi zakalki. Izd. 2-oe, ispr. i dop. Pod.red. A.A. Fogelia. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1957. 33 p.(Bibliotechka vysokochastotnika-termista, no5]

(Metals--Hardening) (Quality control) (MIRA 10:6)

FOGEL', A.A.

GOLOVIN, Georgiy Fedorovich, ; FOGEL', A.A., kandidat tekhnicheskikh nauk, redaktor; SIMONOVSKIY, N.Z., redaktor izdatel'stva; SYCHEVA, O.V., tekhnicheskiy redaktor.

[Structure and characteristics of elements tempered for use in high frequency heating] Struktura i svoistva izdelii, zakalennykh pri vysokochastotnom nagreve. Izd. 2-oe, ispr. i dop. Pod red. A.A. Fogelia. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1957. 45 p. (Bibliotechka vysokochastotnika-termista, no.4). (MIRA 10:5)
(Induction heating) (Steel--Heat treatment)

FOGEL', A. A.

RYSKIN, Solomon Yefimovich; FOGEL', A.A., kandidat tekhnicheskikh nauk, redaktor; SPITSYN, M.A., kandidat tekhnicheskikh nauk, redaktor; SLUKHOTSKIY, A.Ye., kandidat tekhnicheskikh nauk, redaktor; GLUKHANOV, N.P., kandidat tekhnicheskikh nauk, redaktor; BAMYNER, A.B., inzhener, redaktor; SIMONOVSKIY, N.Z., redaktor izdatel'stva; DONSKOY, A.V., professor, doktor tekhnicheskikh nauk, retsenzent; SYCHEVA, O.V., tekhnicheskiy redaktor

[Hardening machines] Zakalochnye stanki. Izd. 2-oe, ispr. i dop. Pod red. A.A.Fogelia. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1957. 46 p. (Bibliotechka vysokochastotnika-termista, no.11)

(Induction heating) (Metals--Hardening)

ZHEZHERIN, Rostislav Petrovich; SPITSYN, Mikhail Aleksandrovich, kandidat tekhnicheskikh nauk; FOGEL', A.A., kandidat tekhnicheskikh nauk, redaktor; SLUKHOTSKIY, A.Ye., kandidat tekhnicheskikh nauk, redaktor; GLUKHANOV, N.P., kandidat tekhnicheskikh nauk, redaktor; BAMUNER, A.V., inzhener, redaktor; SIMONOVSKIY, N.Z., redaktor izdatel'stva; DONSKOY, A.V., professor, doktor tekhnicheskikh nauk, retsenzent; SYCHEVA, O.V., tekhnicheskiy redaktor.

[Power gererators for high-frequency heating] Mashinnye generatory dlia vysokochastotnogo nagreva, Izd.2-oe, ispr. i dop. Pod red. A.A. Fogelia, Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry. 1957. 49 p. (Bibliotechka vyskokochastotnika-termista, no.8) (MLRA 10:6)

(Induction heating) (Electric generators)

FOGEL', A.A.

PHASE I BOOK EXPLOITATION 318

Demichev, Aleksey Dmitriyevich and Shashkin, Semen Vasil'yevich

Vysokochastotnaya zakalka (High-frequency Case Hardening) 2nd ed., rev. and enl. Moscow, Mashgiz, 1957. 52 p. (Bibliotechka vysokochastotnika-termista. Vyp. 3) 10,000 copies printed.

Ed.: (Title page): Fogel', A.A., Candidate of Tech. Sciences; Reviewer: Donskoy, A.V., Dr. of Tech. Sciences, Prof.; Ed. of Publishing House: Gofman, Ye. K.; Tech. Ed.: Speranskaya, O.V.; Editorial board of series: Fogel', A.A., Candidate of Tech. Sciences (Chairman); Spitsyn, M.A., Candidate of Tech. Sciences, Slukhotskiy, A.Ye., Candidate of Tech. Sciences, Glukhanov, N.P., Candidate of Tech. Sciences (Ed. of this issue); and Baumner, A.V., Engineer. Chief Ed. of the Leningrad Division of Mashgiz: Bol'shakov, S.A., Engineer.

PURPOSE: This booklet is one of a series published for the purpose of promoting high-frequency case hardening and of pooling advanced production "know-how". It is intended for a large circle of industrial workers interested in the techniques of high-frequency case hardening.

COVERAGE: The authors give general descriptions of high-frequency devices for induction case hardening of steel and cast-iron products. They discuss the problem of selecting proper frequencies to be used in case hardening of

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various surfaces of various shapes. There are 11 references, all USSR.

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Fogel', A.A.

SHEKALOV, Aleksandr Alekseyevich; SHTREYS, Yakov Iosifovich; BLINOV, Boris Vladimirovich; DONSKOY, A.V., professor, doktor tekhnicheskikh nauk, retsenzent; FOGEL', A.A., kandidat tekhnicheskiy nauk, redaktor; SPITSYN, M.A., kandidat tekhnicheskikh nauk, redaktor; SLUKHOTSKIY, A.Ye., kandidat tekhnicheskikh nauk, redaktor; GLUKHANOV, N.P., kandidat tekhnicheskikh nauk, redaktor; BAMUNER, A.V., inzhener, redaktor; SIMONOVSKIY, N.Z., redaktor izdatel'stva; SYCHEVA, O.V., tekhnicheskiy redaktor

[Smelting in small coreless induction furnaces] Plavka v malykh besserdechnikovykh induktsionnykh pechakh. Izd. 2-oe, ispr. i dop. Pod red. A.A.Fogelia. Moskva, Gos. nauchno-tekhn.izd-vo mashino-stroit.lit-ry, 1957. 53 p. (Bibliotechka vysokochastotnika-termista, no.14) (MIRA 10:7)

(Electric furnaces)

SUDAKOV, P.M.; DONSKOY, A.V., prof., doktor tekhn.nauk, retsenzent; FOGEL', A.A., kand.tekhn.nauk, red.; SPITSYN, M.A., kand.tekhn.nauk, red.; SLUKHOTSKIY, A.Ye., kand.tekhn.nauk, red.; GLUKHANOV, N.P., kand. tekhn.nauk, red. BAMUNER, A.V., inzh., red.; SPERANSKAYA, O.V., tekhn.red.

[Instruments and measuring in high-frequency heating] Pribory i izmereniia pri vysokochastotnom nagreve. Pod red. A.A.Fogelia. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1957. 54 p. (Bibliotechka vysokochastotnika-termista, no.16) (MIRA 11:2)
(Electric heating--Measurement)
(Electric meters)

FOGEL', A.A.

SLUKHOTSKIY, Aleksandr Yevgen'yevich, kandidat tekhnicheskikh nauk; FOGEL', A.A., kandidat tekhnicheskikh nauk, redaktor; SPITSYN, M.A., kandidat tekhnicheskikh nauk, redaktor; GLUKHANOV, N.P., kandidat tekhnicheskikh nauk, redaktor; BAMUNER, A.B., inzhener, redaktor; VASIL'YEVA, V.I., redaktor izdatel'stva; DONSKOY, A.V., professor, doktor tekhnicheskikh nauk, redaktor; SYCHEVA, O.V., tekhnicheskiy redaktor.

[Inductors used in steel hardening] Zakalochnye induktory. Izd.2-oe, ispr. i dop. Pod. red.A.A.Fogelia. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit.lit-ry, 1957. 54 p. (Bibliotechka vysokochastotnika-termista, no.6) (MIRA 10:6)

(Induction heating) (Steel--Hardening)

FOGEL, A.A.

SHAMOV, Aleksandr Nikolayevich; FOGEL', A.A. kandidat tekhnicheskikh nauk, redakter; SPITSYN, M.S., kandidat tekhnicheskikh nauk, redakter; SLUKHOTSKIY, A.Ye., kandidat tekhnicheskikh nauk, redaktor; GLUKHANOV, N.P., kandidat tekhnicheskikh nauk, redaktor; BAMUNER, A.V., inzhener, redakter; SIMONOVSKIY, N.Z., redaktor izdatel'stva; DONSKOY, A.V., professor, doktor tekhnicheskikh nauk, retsenzent; SYCHEVA, O.V, tekhnicheskiy redakter.

[Current supply of high-frequency heating installations by power generators] Pitanie vyskokochastotnykh nagrevatel'nykh ustroistv ot mashinnykh generatorov, Izd.2-oe, ispr. i dop. Pod red. A.A. Fogelia. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1957. 55 p. (Bibliotechka vysokochastotnika-termista, no.10) (MIRA 10:6)

(Induction heating)

GLUKHANOV, Nikolay Parmenovich , ; FOGEL', A.A., kandidat metkhnicheskikh nauk, redaktor; SPITSYN, M.A., kandidat tekhnicheskikh nauk, redaktor; SLUKHOTSKIY, A.Ye., kandidat tekhnicheskikh nauk, redaktor; BAMYNER, A.V., inzhener, redaktor;SIMONOVSKIY, N.Z., redaktor izdatel'stva; SYCHEVA, O.V., tekhnicheskiy redaktor.

[Physical basis of high frequency heating] Fizicheskie osnovy vysokochastotnogo nagreva, Izd.2-oe, ispr.i dorp. Pod red. A.A. Fogelia. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1957. 58 p. (Biblitechka vysokochastotnika-termista, no.2) (MIRA 10:5)
(Induction heating)

FOGEL', Aleksandr Aleksandrovich, kandidat tekhnicheskikh nauk, SPITSYN, M.A., kandidat tekhnicheskikh nauk, redakter; SLUKHOTSKIY, A.Ye., kandidat tekhnicheskikh nauk, redakter; GLUKHANOV, kandidat tekhnicheskikh nauk, redaktor; RAMUNER, A.B., inzhener, redakter; SIMONOVSKIY, N.Z., redaktor izdatel'stva; SYCHEVA, O.V., tekhnicheskiy redakter.

[Industrial application of high-frequency currents] Promyshlennoe primenenie tekov vysokoi chastoty. Izd.2-oe, ispr. i dop. Moskva, Gos.nauchne-tekhn.izd-vo mashinostroit. lit-ry, 1957. 58 p. (Biblietechka vysokochastotnika-termista, no.1) (MLRA 10:6)
(Induction heating)

Fogel, A.A.

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Vasil'yev, Aleksandr Sergeyevich.

Lampovyye generatory dlya vysokochastotnogo nagreva (Vacuum-tube Oscillators for High-frequency Heating) Moscow, Mashgiz, 1957. 60 p. (Bibliotechka vysokochastotnika-termista, vyp. 9) 10,000 copies printed.

Ed.: (title page): Fogel', A.A., Candidate of Technical Sciences; Reviewer: Donskoy, A.V., Doctor of Technical Sciences, Professor; Ed. of Publishing House: Gofman, Ye.K.; Tech. Ed.: Speranskaya, O.V. Editorial board of series: Fogel', A.A. (Chairman); Spitsyn, M.A. Candidate of Technical Sciences (Ed. of this issue); Slukhotskiy, A.Ye., Candidate of Technical Sciences; Glukhanov, N.P., Candidate of Technical Sciences, and Bamuner, A.V., Engineer.

PURPOSE: This monograph, one of a series of booklets published under the general title "Bibliotechka vysokochastotnika-termista" is addressed to a wide circle of workers in industry who are interested in high-frequency heating technique and equipment. The series is intended to encourage the widespread introduction of high-frequency heating, and the exchange of the latest production experience.

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COVERAGE: This booklet is concerned with one phase of high-frequency heating technique, i.e., vacuum-tube oscillators for high-frequency heating. The series "Bibliotechka vysokochastotnika-termista" is devoted to publicizing the latest developments in the field of high-frequency heating, and the results of experimental work carried on by the Institute of High-Frequency Currents imeni V.P. Vologdin. Other work being carried on in this field in the Soviet Union and in the non-Soviet world is also covered. This booklet discusses the general principles for the design of vacuum-tube oscillators, and the function of the individual units. Commercial types of oscillators are described, and the problems of adjusting and tuning the units are discussed as well as the future development of vacuum-tube oscillators. This type of apparatus is important in many branches of industry where 100 kc/s currents are employed in dielectric and induction heating. In the USSR, all oscillators for this purpose are of the self-excitation type inasmuch as frequency stability is not important in the high-frequency heating of metals and semiconductors. The equipment is produced at the Leningrad

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High-Frequency Equipment Plant. Included in the discussion of the development of vacuum-tube oscillators is a description of a new type of oscillator, the electron-tube inverter, with which it is possible to generate high-efficiency currents of various frequencies. Various types of equipment of Soviet manufacture are described and a table of specifications is presented (pp 48, 49). No personalities are mentioned. A complete list of all the booklets of the series is given at the end of each issue (on inside back cover). There is a bibliography of 4 Soviet sources.

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June 4, 1958

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FOGEL A.A.

BRITSYN, N.L.; DONSKOY, A.V., prof., doktor tekhn.nauk, retsenzent; FOGEL', A.A., kand.tekhn.nauk, red.; SPITSYN, M.A., kand.tekhn.nauk, red.; SLUKHOTSKIY, A.Ye., kand.tekhn.nauk, red.; GLUKHANOV, N.P., kand. tekhn.nauk, red.; BAMUNER, A.V., inzh., red.; GOFMAN, Ye.K., red. izd-va; SPERANSKAYA, O.V., tekhn.red.

[High-frequency electric field heat treatment] Nagrev v elektricheskom pole vysokoi chastoty. Izd. 2-oe, ispr. i dop. Pod red. A.A. Fogelia. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1957. 62 p. (Bibliotechka vysokochastotnika-termista, no.15)
(Dielectric) (MIRA 11:2)
(Lumber--Drying)

FOGEL', A. A.

VOLOGDIN, Vladislav Valentinovich; ~~FOGEL', A.A.,~~ kandidat tekhnicheskikh nauk, redaktor; SPITSYN, M.A., kandidat tekhnicheskikh nauk, redaktor; SLUKHOTSKIY, A.Ye., kandidat tekhnicheskikh nauk, redaktor; GLUKHANOV, N.P., kandidat tekhnicheskikh nauk, redaktor; BAMUNER, A.V. inzhener, redaktor; SIMONOVSKIY, N.Z., redaktor izdatel'stva; KHOROSHAYLOV, V.G., kandidat tekhnicheskikh nauk, retsenzent; SYCHEVA, O.V. tekhnicheskiy redaktor.

[Induction soldering] Paika pri indutsionnom nagreve. Izd.2-oe, ispr. i dop. Pod red. A.A.Fogelia. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1957. 66 p. (MLRA 10:6)
(Induction heating)(Solder and soldering)

ФОГЕЛЬ, А.А.

BOGDANOV, Valentin Nikolayevich; FOGEL', A.A. kandidat tekhnicheskikh nauk, redaktor; SPITSYN, [redacted], kandidat tekhnicheskikh nauk, redaktor; SLUKHOTSKIY, A.Ye., kandidat tekhnicheskikh nauk, redaktor; GLUKHANOV, G.P., kandidat tekhnicheskikh nauk, redaktor; BAMUNER, A.V., inzhener, redaktor; VASIL'YEVA, V.P., redaktor izdatel'stva; DONSKOY, A.V., professor, doktor tekhnicheskikh nauk, retsenzent; SYCHEVA, O.V., tekhnicheskiy redaktor.

[Use of through induction heating in industry] Primenenie skvoznogo induktsionnogo nagreva v promyshelnnosti. Izd.2-oe, ispr. i dop. Pod red. A.A.Fogelia. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1957. 78 p.(Bibliotechka vysokochastotnika-termista, no.12) (MLRA 10:6)

(Induction heating)
(Metals--Heat treatment)

F...

TYAGODIN, Vsevolod Valentinovich; SLUKHOTSKIY, Aleksandr Yevgen'yevich; DONSKOY, A.V., professor, doktor tekhnicheskikh nauk, retsenzent; [redacted]kandidat tekhnicheskikh nauk, redaktor; SPITSYN, I.A., kandidat tekhnicheskikh nauk, redaktor; SLUKHOTSKIY, A.Ye., kandidat tekhnicheskikh nauk, redaktor; GLUKHANOV, N.P., kandidat tekhnicheskikh nauk, redaktor; BAMUNER, A.V., inzhener, redaktor; VASIL'YEVA, V.P., redaktor izdatel'stva; SPERANSKAYA, O.V., tekhnicheskiy redaktor

[Transformers for high-frequency heating] Transformatory dlia vysokochastotnogo nagreva. Pod red. A.A.Fogelia. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1957. 79 p. (Bibliotechka vysokochastotnika-termista, no.7) (MIRA 10:11)
(Induction heating) (Electric transformers)

8(4) SOV/112-59-4-7271

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 4, pp 117-118 (USSR)

AUTHOR: Fogel', A. A.

TITLE: Non-Crucible Melting by Induction Heating

PERIODICAL: V sb.: Prom. primeneniye tokov vysokoy chastoty. Riga, 1957, pp 19-30

ABSTRACT: Equipment for induction melting of metal held in suspension by an inductor field is described. It is noted that melting furnaces of 1-50-cm diameter operate with a capacity of $5 \times 10^{-1} - 10^{-2}$ kw/cm^3. Calculated curves are presented that show the possibility of raising the per-unit capacity, for the same furnace diameter, to $10 - 10^{-2}$ (?) kw/cm^3. Equipment for producing an ingot in a copper crystallizer that melts the cylindrical billets in vacuum and a vacuum equipment for melting the metal in a crucible which is made from a compacted powder of the same metal are described. An experiment with a

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Non-Crucible Melting by Induction Heating

metal water-cooled funnel is displayed; the funnel with a load suspended from it is held in suspension in an electromagnet field; the magnet is supplied by a 2,500-cps oscillator. The power supplied to the funnel is 1.7 kw. During the melting of aluminum by a single-turn inductor placed over the metal surface, the molten metal, in the copper water-cooled crystallizer, formed a column a few cm high in the center of the inductor. Aluminum melting within a slag lining was accompanied by a displacement of the metal in the inductor center and around the outer edge. These forces of metal-inductor interaction were used for driving the liquid metal from the melting zone into the mold. A higher metal-inductor electromagnetic coupling tends to raise the efficiency of energy transmission from inductor to metal. It is stated that an inductor comprising 2 opposing turns can ensure the stable position of a piece of metal in a free suspension. A 2-turn inductor, in which one turn is fed at 2-8 kc for maintaining the suspended state of the piece, while the second is fed by a higher

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Non-Crucible Melting by Induction Heating

frequency for melting, is recommended as the most expedient design. Such an inductor can serve also for eliminating the metal throw-off if the inductor is fed from one low-frequency generator or from two generators of different frequencies. By varying the field intensity or the field frequency, the diameter of the metal stream flowing through the inductor can be varied 1:10. The stream diameter can be reduced down to approximately twice the depth of current penetration into the molten metal. To make possible the use of larger-diameter billets, the property of a metal bar to form "reefs" on its surface when melting in a strong electromagnetic field can be used. The "reef" pitch depends on the strength and frequency of the field. Grooves with a pitch shorter than two current-penetration depths can be milled on the billet; then the "reefs" resting on the solid parts of metal, on both sides of the molten zone, will not be heated; the molten bar core will not flow out through the narrow slits between the reefs because of surface-tension forces. By heating

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Non-Crucible Melting by Induction Heating

the metal in tone-frequency fields, discharges were eliminated when manganese and chromium were melted in vacuum with a vapor pressure of 1 mm (mercury column) at the melting point. Rut's pump is recommended for maintaining the high vacuum required. Satisfactory results were also obtained with absorbing gases by a degassed activated carbon cooled by liquid nitrogen. 13 illustrations.

I.L.K.

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FOGEL, A. A.
~~Leningrad Branch~~ of Baykov, Institute

"Crucibleless Melting in Vacuum or in the Prbtective Atmosphere in Laboratory Scale."

paper presented at Second Symposium on the Application of Vacuum Metalllurgy.
1-6 July 1958, Moscow

AUTHOR: Fogel', A.A. (Leningrad) SOV/180-59-2-5/34

TITLE: Fusion of Laboratory Samples in a Vacuum or Inert-Gas Atmosphere Without a Crucible (Bestigel'naya plavka laboratornykh obraztsov v vakuume ili atmosfere inertnogo gaza)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i Toplivo, 1959, Nr 2, pp 24-34 (USSR)

ABSTRACT: The author describes a number of methods and equipment suitable for fusion of reactive metals without contamination. Advances in this field have been made by the laboratoriya vysokochastotnoy elektrotermii (high-frequency electro-thermics laboratory) of the Institut Metallurgii imeni A.A. Baykova AN SSSR (Institute of Metallurgy of the AS USSR im. Baykov) together with the Institut tokov vysokoy chastoty imeni V.P. Vologdina (High-frequency currents institute imeni Vologdin). The author deals first with levitation, discussing the metal weight which can be dealt with. He shows that, with the "spoon" inductor developed (Figs 1 and 2), the heat input to the metal is not related simply to power input. Since pumping time for vacuum melting greatly exceeds melting

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time (a few minutes), arrangements are provided for successive melting of several charges without breaking the vacuum (Fig 3). Fig 4 shows some titanium ingots obtained. Activated charcoal, cooled indirectly with liquid nitrogen, is located close to the molten metal (Fig 5) to help the maintenance of the highest vacuum (or gas purely with inert-gas atmospheres). An absorber (Fig 7) filled with activated charcoal (GOST 6217 - 52) and type KSM silica gel (GOST 3956-54) is also provided. A simpler design of absorber can be used (Fig 8) if all-metal construction is not required. To increase the weight of metal that can be melted several spheres can be fused simultaneously in a zigzag or "boat" shape of inductor (Fig 11). With modifications the same fusion chamber can be used for melting in a water-cooled copper crucible: up to 100 g of metal can be melted simultaneously. On fusion the metal is squeezed from under the inductor by the action of the electromagnetic field and forms a high and mobile meniscus (Fig 12); on switching off, the metal solidifies in the form of a

Fusion of Laboratory Samples in a Vacuum or Inert-Gas Atmosphere Without a Crucible

pancake (Fig 13 shows some titanium-alloy pancake ingots drilled for sampling). In the same apparatus bars of compressed powder or granules can be melted over the mould, into which the metal drips to form an ingot. Fig 14 shows the arrangement and Fig 15 its application to titanium.

Card 3/3 There are 16 figures and 4 references, of which 3 are English and 1 Soviet.

ASSOCIATION: Institut Metallurgii AN SSSR (Institute of Metallurgy, AS USSR)

SUBMITTED: June 27, 1958

PHASE I BOOK EXPLOITATION SOV/4548

Akademiya nauk SSSR. Komissiya po fiziko-khimicheskim osnovam proizvodstva stali

Primeneniye vakuuma v metallurgii (Use of Vacuum in Metallurgy) Moscow, Izd-vo AN SSSR, 1960. 334 p. Errata slip inserted. 4,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A.A. Baykova. Komissiya po fiziko-khimicheskim osnovam proizvodstva stali.

Resp. Ed.: A.M. Samarin, Corresponding Member, Academy of Sciences USSR; Ed. of Publishing House: G.M. Makovskiy; Tech. Ed.: S.G. Markovich.

PURPOSE: This collection of articles is intended for technical personnel interested in recent studies and developments of vacuum steelmaking practice and equipment.

COVERAGE: The book contains information on steel melting in vacuum induction furnaces, and vacuum arc furnaces, reduction processes in vacuum, and degassing of steel and alloys. The functioning of apparatus and equipment, especially vacuum furnaces and vacuum booster pumps is also analyzed. Personalities are mentioned in connection with some of the articles and will appear in the Table of Contents. Three articles have been translated from English. Some of the

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AUTHOR: Fogel', A.A., Candidate of Technical Sciences

TITLE: Induction Methods of Melting Metals Without a Crucible (Levitation Melting)

PERIODICAL: Vestnik elektropromyshlennosti, 1960, No.4, pp.16-20

TEXT: Levitation melting of small quantities of metals by induction heating enables conserving the original purity of the metals and carrying out the melting process in an atmosphere of inert gases and in deep vacuum. The Laboratoriya vysokochastotnoy elektrotermii, Institut metallurgii imeni A. A. Baykova AN SSSR (High-Frequency Electrothermal Laboratory of the Metallurgical Institute imeni A. A. Baykov) jointly with the Institut tokov vysokoy chastoty imeni Prof. V. P. Vologdina (High-Frequency Current Institute imeni Professor V. P. Vologdin) developed universal equipment enabling the melting of chemically active metals by induction heating using three methods: the metal is suspended freely in the magnetic field of the inductor; the metal is in a water-cooled copper crucible; a metallic rod is melted above an ingot mould. Depending on the method used, the equipment enables melting 10, 100 and 1000 g of metal, respectively. All the

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Induction Methods of Melting Metals Without a Crucible
(Levitation Melting)

methods of levitation induction melting involve high heat losses and, therefore, much greater (up to ten times) power is required than for ordinary induction furnaces. The magnetic field generates considerable forces which act on the metal. As long as the metal is solid, some of these forces are mutually equalized, the rest equalize the weight of the heated metal and as a result it will remain suspended in the inductor field when not otherwise supported. About 10 to 15 g of metal can be held suspended in the molten state. Photographs of a few types of inductors are included and the flow conditions of the molten material are discussed. One of the most reliable types is the "boat" inductor, Fig.5. In this, the blank is held above the inductor by means of a low-frequency magnetic field and the material is made to melt off by using a high-frequency field. The configuration of the magnetic field of the "boat" inductor is shown in Fig.6. The minimum potential field is located between the two top conductors which encircle the metal suspended in the field. A disadvantage of the "boat" inductor is that high temperatures cannot be obtained at frequencies

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Induction Methods of Melting Metals Without a Crucible (Levitation Melting)

which are usual for industrial tube oscillators produced for smelting and heating metals. This drawback can be eliminated by using an inductor with a reverse turn consisting of two turns which are wound in mutually opposite directions (Fig.8); the configuration of the magnetic field of the latter is shown in Fig.7. For melting metal in quantities of 10 to 15 g in the suspended state, oscillators of the frequencies 70 to 400 kc/s are suitable. The designs described in the paper enable melting almost any metal by means of a 200 kc/s tube oscillator. "Boat" inductors enable melting metals with fusion points below 2000°C and inductors with a reverse winding enable melting metals with fusion points below 3000°C. For studying the kinetics of interaction between metals and gases, the metal can be enclosed in a quartz ampoule placed inside the inductor; multi-turn inductors can be used, although the larger voltages involved are undesirable in the given case. There are 8 figures and 5 references: 2 Soviet and 3 non-Soviet.

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Induction Methods of Melting Metals Without a Crucible
(Levitation Melting)

Fig.5

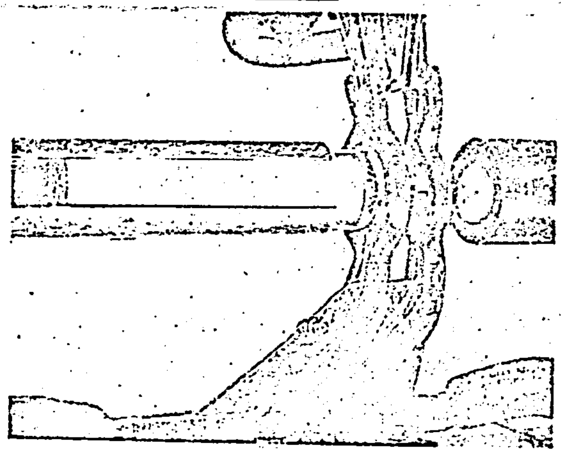

Рис. 5. Заготовка, удерживаемая над индуктором магнитным полем низкой частоты, оплавляется магнитным полем высокой частоты.

Fig.6

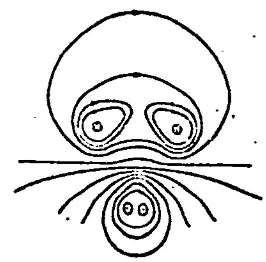

Рис. 6. Конфигурация магнитного поля индуктора „лодочка".

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Induction Methods of Melting Metals Without a Crucible (Levitation Melting)

Fig.7

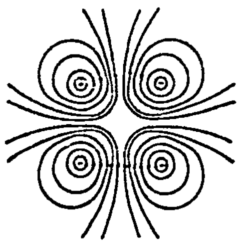

Рис. 7. Конфигурация магнитного поля индуктора с обратным витком.

Fig.8

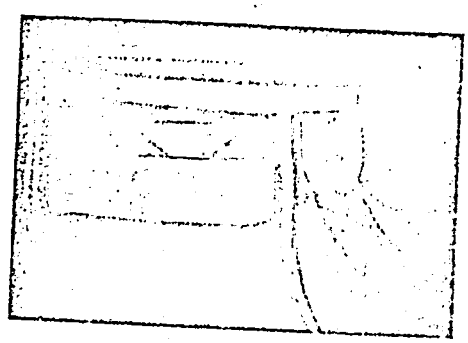

Рис. 8. Вытеснение жидкого алюминия в поле индуктора с обратным витком.

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AUTHORS: Ageyev, N. V., Fogel', A. A., Sidorova, T. A., Trapeznikov, V. A.

TITLE: Melting Chromium in a Suspended State

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 2, pp 332-337 (USSR)

ABSTRACT: The use of chromium as a base for heat-resistant alloys presents difficulties due to the brittleness of this metal caused by various impurities. One of the authors (A, A. Fogel, Izv. AN SSSR, OTN, 1959, Vol 2, p 24: Experimental Technique and Methods of Investigation at High Temperatures (Eksperimental'naya tekhnika i metody issledovaniy pri vysokhkikh temperaturakh) publ. by AN SSSR, 1959, p 478) developed a method of melting chromium which dispensed with the use of a crucible and avoided in this manner the contamination of the metal with mineral and gaseous impurities. The metal was kept suspended in an electromagnetic field, and melted by induction heating

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in purified helium atmosphere. The melting apparatus was fed by a standard electronic generator type LGPZ-60 with a frequency of 200,000 hertz. The initial vacuum in the melting chamber before the introduction of helium was from $3 \cdot 10^{-3}$ to $5 \cdot 10^{-6}$ mm Hg, depending on the conditions of the experiment. To avoid volatilization of the metal, the melting was made under 1.1-1.2 atm helium pressure. The gas was carefully purified by passing it through a adsorbing filter filled with activated carbon and silica gel, cooled down to the boiling point of liquid nitrogen. Chromium samples were prepared from electrolytically refined metal, or from metal purified by means of the iodide method, designated in this abstract as "iodide chromium." Little spheres (d - about 16 mm; weight, 12-15 g) were compressed from the above materials and degassed before melting by slow heating in high vacuum (about 10^{-5} mm Hg). The metal was maintained suspended in the magnetic field until fully molten; when the field was switched off, the metal dropped into a copper casting mold. From 100 cast samples, 25% showed a lower content of nitrogen as compared with the initial content, 73% showed no changes, and 2% showed a higher than initial nitrogen content. The electrolytic chromium used in the experiments contained: O, 0.0084-0.013%; N, 0.008-0.0108%; H, about 0.001%; C, 0.020-0.025%; S, 0.003-0.004%; Si, 0.040%; Fe, 0.030%; Al, 0.01-0.015%; Mn, 0.003%; Ni, 0.0007%; Cu, 0.001-0.004%; Ti, 0.006%; Co, 0.001%. The compressed spheres showed 0.0103-0.0122% oxygen on the surface, and 0.0082-0.0092% near the center; nitrogen content was respectively 0.012% and 0.0073%. The melting took 105 sec, and the O and N content inside the cast samples was, respectively, 0.0068-0.0110%, and 0.0030-0.0069%, i.e., the O and N content did not increase during the melting and casting. Similar results were obtained with the iodide chromium (about 0.005% oxygen, and about 0.006% nitrogen inside the cast samples). Hardness of the cast samples

Melting Chromium in a Suspended State

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(Rockwell scale B converted to Brinell) was 115-116 kg/mm^2 for the electrolytic, and 108-110 kg/mm^2 for the iodide chromium. Tensile strain of the electrolytic chromium castings was determined in an IM-4P type machine in the range of 45-400° C. The yield point was reached above 250° C, but even at 450° C the tensile strain was only 3%. Compression tests showed that the point of transition from plastic to brittle state (at 150-175° C) was identical for both the electrolytic and the iodide chromium casts. There are 5 figures; and 5 Soviet references.

ASSOCIATION: A. A. Baykov Institute of metallurgy, Academy of Sciences USSR (Institut metallurgii imeni A. A. Baykova AN SSSR)

SUBMITTED: June 6, 1959

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AUTHORS: Fogel', A.A., Pavlov, N.A., Korkin, I.V. and Sidorova, T.A. (Leningrad)

TITLE: Inductors for heating and melting metals in the levitated condition

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo, no.5, 1961, 51-61

TEXT: The practice of heating levitated metals suspended freely in an electromagnetic field is increasing, but many practical problems remain unsolved. This article considers the influence of the frequency and configuration of the electromagnetic field on the heating of a metallic body suspended in it. Expressions are written for the relationship between the electromagnetic pressure on the levitated metal and the specific power transmitted to it. The formulae show that by altering the frequency and intensity of the magnetic field the electromagnetic pressure on the metal may be changed without altering the power transmitted to it. In the case of a freely-suspended metallic body, the force applied by the field is equal to the weight of the body.

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Thus, by altering the frequency it is possible to regulate the power transmitted to the metal and so its temperature. The effect is not strictly a surface one, as the metal has some 'transparency' to the field. Elementary consideration is therefore given to the case of induction heating of a metal plate in a longitudinal plane parallel magnetic field. Formulae are derived for the power transmitted per unit surface of plate, for the electromagnetic pressure on the plate and for the ratio of pressure to power. These expressions are used to construct the curves shown in Fig.1 in which the power transmitted to the plate (curve 1), the electric field strength (curve 2) and the magnetic field strength (curve 3) are plotted as functions of field frequency with a constant electromagnetic pressure on the plate surface (F = const) and constant plate thicknes (d = const). The depth of penetration of the electromagnetic energy $\Delta = \sqrt{\rho\rho/\pi\mu f}$. For a levitated body the necessary electromagnetic force is determined by its weight. The power required for heating depends mainly on the temperature required because, as there is no thermal insulation, thermal equilibrium is established very quickly, within two or three minutes. The graph of Fig.1 shows that for a given body

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with constant electromagnetic pressure applied to it the power increases with the frequency, so that to raise the temperature the frequency should be raised. The limiting frequency depends on the maximum permissible electrical field intensity at the body surface or on the associated voltage on the inductor. The maximum permissible electrical field intensity should be less than that which causes electrical breakdown and this depends on the properties of the gaseous medium surrounding the inductor. If, with constant electromagnetic pressure, the frequency is reduced then the magnetic field strength must be increased; that is to say, the inductor current must be increased. The limit in this case depends on the permissible current density in the inductor conductors. Thus for a metal body of given size there is a definite range of frequency within which the body can be suspended in the electromagnetic field. The choice of frequency depends on the temperature required and by altering the frequency within this range it is possible to control the limiting temperature of the metal whilst maintaining it in the levitated condition. When a fixed metal body is heated by induction there is a direct relationship between the power applied to the inductor and that transmitted to the body. But in the case of a body of levitated metal an allowance must be made for the configuration of the field set up by the inductor, because the configuration determines the nature of the relationship between the power applied to the inductor and that transmitted to the metal. The power transmitted to the metal body is related to the pressure applied to it by the magnetic field. Both the power and the electromagnetic pressure depend upon the magnetic field intensity at the body surface. If the body is levitated, the vertical component equals the weight of the body and the horizontal is zero. Evidently to support the weight of a freely suspended metal body the field intensity under the body should be greater than that above it. In a more uniform field a higher overall field intensity is necessary to support the body. Thus a greater power is transmitted to the body in the more uniform field. If the power applied to the inductor is altered, the position of the body may alter. If it moves vertically but without any change in the field at its surface, there will be no change in the power transmitted to the body. Whereas

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if in moving vertically it passes from a field of one configuration to that of another, then as the power applied to the inductor is increased, that transmitted to the body may increase or decrease, depending upon the configuration of the field. A brief analysis is then made of the field between the two conductors with current flowing in opposite directions. The force acts perpendicular to the direction of the magnetic field, so it is the horizontal component of the field that governs the vertical thrust that supports the body, whilst the lateral component of the field causes only a compression of the body. Thus, if the ratio of the horizontal to the vertical component is low, the plate is suspended at a lower level and a greater power is transmitted to it. Further consideration shows that, in the case of a single-loop inductor, as the power applied to the inductor is increased and the metallic body rises, the power transmitted to it first decreases and then rises again. It is important that the metallic body suspended in the field should have lateral stability, which is not achieved in the simple cases so far considered. The inductors of practical interest are those in which the metal can hang stably in the field.

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The metallic body is displaced from a region of strong field to one of weak field, or, as it were, rolls down a 'hollow' in the field. Inductors for melting levitated metals may be classified into three types according to the relationship between the power transmitted to the body and the power applied to the inductor. One type consists of two co-planar rings connected in parallel with currents flowing in opposite directions. In a particular case the rings were of 120 and 210 mm internal diameter and the suspended metal was a disc of 150 mm diameter weighing 460 g. The outer coil was used to stabilise the disc. As the disc moves vertically the field at its surface remains constant; it is horizontal at the lower surface and zero at the upper because the disc thickness is much greater than the depth of penetration of the field. Thus the power applied to the body should remain constant and this is in fact found to be the case. The second type of inductors are those shaped like a boat or cradle consisting of two vertical coils connected in parallel and shaped like a cradle. The ends of the inductor are bent vertically upwards to make the suspended cylindrical body stable in the axial direction. With an inductor of this

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type an increase in the power applied to the inductor reduces the power absorbed by the body. Only after the body has risen a considerable distance above the lower conductors is there an appreciable increase in the power intake of the metal. The third type of inductor again has two vertical loops but one is cross-connected, so that whereas in the second type the upper pair of conductors both carry current in the same direction, in this type diametrically opposite conductors carry current in the same direction. In this type of inductor the metal body undergoes symmetrical compression by the electromagnetic field. As the power applied to the inductors is increased, the field intensity at the body surface increases on all sides and so the transmitted power increases. Comparison of test results for similar specimens at a frequency of 2 500 c/s shows that for a given power applied to an inductor of this cross-connected type, the maximum power transmitted to the body is at least four times greater than that of the 'cradle' type. Thus the cross-connected type should be used to produce high temperatures. The design of inductors for melting metals in the levitated condition has special features.

Inductors for heating and melting ...

30896
S/180/61/000/005/006/018
E194/E555

In suspending a liquid body it is necessary that the hydrostatic pressure should be equalised by the electromagnetic at every point of the surface. The weight of suspended liquid metal is limited by its surface tension and specific gravity. To increase the efficiency of the system the size of the inductor should be quite small and to avoid the liquid metal sticking to the inductor conductors the field must be symmetrical. The current-carrying leads distort this symmetry and weaken the field in places. To restore the symmetry various devices are used, such as false leads placed opposite the real ones or displacement of the centres of the upper and lower rings of the inductor, and so on. It is desirable that the bottom of the inductors should be at equal potentials, otherwise the metal at the bottom of the inductor will initially short-circuit the portions at different potential, which can cause sparking and contamination of the hot metal by copper from the inductor. A special 'boat' type of construction is used to set up an equipotential bottom. As before, increasing the power applied to the inductor reduces the power transmitted to the molten metal and this somewhat limits its field of application.

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30896

Inductors for heating and melting ... S/180/61/000/005/006/018
E194/E555

The boat-type inductor is very convenient for series melting but the maximum temperature of the molten metal is lower than in a cross-connected inductor. In experiments with the 'boat' construction at a frequency of 70 kc/s, the metal could be raised to a temperature of 1500°C, and at a frequency of 200 kc/s to 2000°C. Therefore, as previously mentioned, the cross-connected inductor should be used to obtain higher temperatures. Two types have been developed, one with the coils connected in parallel and the other connected in series. In neither type is it possible to develop an equipotential bottom as in the boat conductor. However, the low voltage on the lower coil and the high contact resistance between the inductor conductors and the still cold solid metal practically prevents sticking of the metal to the inductor. At the instant of switching-on, the metal jumps and hangs in the field. In the inductor with parallel-connected coils the maximum potential difference between conductors is less than in that with series coils and, therefore, the parallel construction is more reliable in operation. However, the series connection can give higher temperatures. The limiting temperature for an inductor

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30896

Inductors for heating and melting ... S/180/61/000/005/006/018
E194/E555

with parallel cross-connected coils at a frequency of 200 kc/s was 2500°C and for the series version 3000°C. This difference arises partly from heavier losses in the leads to the parallel case and partly from the higher magnetic pressure above the suspended metal body in the series case. In the latter the current is the same in both turns whereas in the parallel connection the current in the upper turn is less than that in the lower because of the difference in diameter. The following table gives data on the melting of various metals in inductors of different designs and the weight of the samples.

Metal	Density g/cm^3	Melting point, °C	Weight*, g	Type of inductor
Titanium	4.5	1720	12	'Boat'
Zirconium	6.5	1850	12	"
Chromium	7.1	1890	15	"
Vanadium	6.0	1910	12	"
Rhodium	12.4	1966	10	"
Niobium	8.5	2420	10	Parallel cross-connected

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(Table cont. next card)

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Inductors for heating and melting ... S/180/61/000/005/006/018
E194/E555

Molybdenum	10.2	2630	8	Series cross-connected
Tantalum	16.6	3000	8	" " "
Tungsten	19.8	3400	**	" " "

* Weight of liquid metal levitated

** Levitated in solid condition but did not melt.

There are 8 figures, 1 table and 6 references: 4 Soviet and 2 non-Soviet. The English-language references read as follows: Ref.5: Okress E.C., Wroughton D.W., Comenetz G., Brace P.H., Kelly J.C.R. Electromagnetic Levitation of solid and molten metals. J. Appl. Phys. 1952, v.23, No.5, pp.545-552; Ref.6: Harris B. Sc. and Jenkins A.E. Controlled atmosphere levitation system. J.Scient. Instrum. 1959, v.36, May, pp.238-240.

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SUBMITTED: February 9, 1961

Card 11/11

GUTS, Z. A.; REYNOV, N. M.; KRIVKO, N. I.; SIDOROVA, T. A.; FOGEL', A. A.

Superconducting alloys in the system Nb - Zr. Fiz. tver. tela 5 no.1:361-362 Ja '63. (MIRA 16:1)

1. Fiziko-tekhnicheskiy institut imeni A. F. Ioffe AN SSSR, Leningrad.

(Niobium-zirconium alloys) (Superconductivity)

SPITSYN, M.A.; FOGEL', A.A., kand. tekhn. nauk, red.

[Mechanical generators for induction heating] Mashinnye generatory dlia vysokochastotnogo nagreva. Izd.3., perer. i dop. Moskva, Mashinostroenie, 1965. 51 p. (MIRA 18:8)

BAMUNER, A.V.; DONSKOY, A.V., doktor tekhn. nauk, prof., retsenzent; FOGEL', A.A., kand. tekhn. nauk, red.

[Automatic control of high-frequency heating processes] Avtomaticheskoe regulirovanie protsessov vysokochastotnogo nagreva. Moskva, Mashinostroenie, 1965. 56 p. (Biblioteka vysokochastotnika-termista, no.17) (MIRA 18:8)

FOGEL', A.A.; DONSKOY, A.V., prof., doktor tekhn. nauk, retsenzent

[Industrial uses of high-frequency currents] Promyshlennoe primenenie tokov vysokoi chastoty. Izd.3., ispr. i dop. Moskva, Mashinostroenie, 1965. 76 p. (Bibliotechka vysokochastotnika-termista, no.1) (MIRA 18:8)

L 2559-66 EWT(l)/EWT(m)/EWP(w)/EPF(n)-2/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/JG/GG

ACCESSION NR: AP5024050 UR/0057/65/035/009/1675/1677

AUTHOR: Guts, Z. A.; Krivko, N. I.; Morozova, V. K.; Sidorova, T. A.; Fogel', A. A.

TITLE: Superconducting alloy in the Nb-Ga system

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 9, 1965, 1675-1677

TOPIC TAGS: superconductivity, superconducting alloy, niobium, gallium

ABSTRACT: Results are presented of measurements of the superconducting properties of alloys in a Nb-Ga system at a temperature of 4.2K and magnetic fields up to 28 koe. The alloys were prepared by means of special equipment developed by the FTI Laboratory and described elsewhere (I. V. Korkin. Promyshlennoye primeneniye tokov vysokoy chastoty, ed. G. F. Golovina, Izd. "Mashinostroyeniye," M—L, 1964, 269-275). The starting materials consisted of vacuum-refined niobium and metallic gallium. The latter was additionally degassed at 800—1000C in vacuum at 10^{-4}—$2\cdot10^{-5}$ mm Hg for a period of 2—3 min. The transition from the superconducting state to the normal state was recorded by a change in the inductance of a coil prepared from the given alloy. Mechanical experiments showed the highest plasticity in alloys with 7—12% Ga (by weight). Their hardness did not exceed 350 kg/mm^2, whereas the hardness of alloys

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L 2559-66

ACCESSION NR: AP5024050

3

with 12—32% Ga was 450—850 kg/mm^2. Alloys containing 7—12% Ga are apparently the most suitable for wires. Orig. art. has: 1 table and 1 figure. [YK]

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad (Physicotechnical Institute, AN SSSR) 44,55

SUBMITTED: 21Dec64 ENCL: 00 SUB CODE: MM, EM

NO REF SOV: 002 OTHER: 002 ATD PRESS: 4108

Card 2/2

GLUKHANOV, N.P.; DONSKOY, A.V., prof., doktor tekhn. nauk, retsenzent; FOGEL', A.A., kand. tekhn. nauk, red.

[Physical principles of high frequency heating] Fizicheskie osnovy vysokochastnogo nagreva. Moskva, Mashinostroenie, 1965. 78 p. (Bibliotechka vysokochastotnika-termista, no.2) (MIRA 18:10)

GUTS, Z.A.; KRIVKO, N.I.; MOROZOVA, V.K.; SIDOROVA, T.A.; FOGEL', A.A.

Superconducting alloys in the system Nb - Ga. Zhur. tekh. fiz. 35 no.9:1675-1677 S '65. (MIRA 18:10)

1. Fiziko-tekhnicheskiy institut imeni A.F.Ioffe AN SSSR, Leningrad.

SHAMOV, A.N.; DONSKOY, A.V., prof., doktor tekhn. nauk retsenzent; FOGEL', A.A., kand. tekhn. nauk, red.

[Power supply of high-frequency heating systems from large electric generators] Pitanie vysokochastotnykh nagrevatel'nykh ustroistv ot mashinnykh generatorov. Izd.3., Pod red. A.A.Fogelia. Moskva, Mashinostroenie, 1965. 57 p. (Bibliotechka vysokochastotnika-termista, no.10)

(MIRA 19:1)

BOGDANOV, V.N.; DONSKOY, A V., doktor tekhn. nauk, retsenzent; FOGEL', A.A., kand. tekhn. nauk, red.

[High-frequency welding of metals] Vysokochastotnaia svarka metallov. Pod red. A.A.Fogelia. Moskva, Mashinostroenie, 1965. 65 p. (Bibliotechka vysokochastotnika termista, no.11) (MIRA 19:1)

SUDAKOV, P.M.; DONSKOY, A.V., doktor tekhn. nauk, prof., retsenzent;
FOGEL', A.A., kand. tekhn. nauk, red.

[Equipment and measurements in high-frequency heating] Pribory i izmereniia pri vysokochastotnom nagreve. Izd.2., ispr. i dop. Pod. red. A.A.Fogelia. Moskva, Mashinostroenie, 1965. 73 p. (MIRA 18:12)

VASIL'YEV, A.S.; DONSKOY, A.V., doktor tekhn. nauk, prof., retsenzent; FOGEL', A.A., kand. tekhn. nauk, red.

[Electron-tube oscillators for high-frequency heating] Lampovye generatory dlia vysokochastotnogo nagreva. Moskva, Mashinostroenie, 1965. 81 p. (Bibliotechka vysokochastotnika-termista, no.9) (MIRA 18:11)

DEMICHEV, A.D.; GOLOVIN, G.F.; SHASHKIN, S.V.; DONSKOY, A.V., doktor tekhn. nauk prof., retsenzent; FOGEL', A.A., kand. tekhn. nauk, red.

[High-frequency hardening] Vysokochastotnaia zakalka. Izd.3., ispr. i dop. Pod red. A.A.Fogelia. Moskva, Mashinostroenie, 1965. 83 p. (MIRA 18:12)

L 36943-66 EWT(m)/EWP(t)/ETI/EWP(k) IJP(c) JD

ACC NR: AP6021443 (A) SOURCE CODE: UR/0413/66/000/011/0050/0050

INVENTOR: Fogel', A. A.; Naydenov, A. F.

ORG: none

TITLE: A method of levitating a conducting liquid in an electromagnetic crucible. Class 21, No. 182263

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 11, 1966, 50

TOPIC TAGS: levitation condition, ~~conducting liquid~~, electromagnetic field, electromagnetic crucible, constrained condition, CONDUCTIVE FLUID, FLUID SURFACE

ABSTRACT: This Author Certificate introduces a method of levitating a conducting liquid in an "electromagnetic crucible." To increase the amount of the liquid, it is constrained by surfaces of negative curvature formed by the action of a nonhomogeneous electromagnetic field which is asymmetric in relation to a geometric line along which the field intensity is zero, and is maintained at a required height above the stationary positions of the surfaces having a positive curvature. [WW]

SUB CODE: 20 / SUBM DATE: 25Oct62/ ATD PRESS: 5038

Card 1/1

UDC: 621.365.52-219.5:538.313

GOGIBERIDZE, A.A., kandidat sel'skokhozyaystvennykh nauk; FOGEL', A.N.

Raising chayote. Priroda 42 no.11:110-111 N '53. (MLRA 6:11)

1. Vsesoyuznaya selektsionnaya stantsiya vlazhno-subtropicheskikh kul'tur (Sukhumi) (for Fogel). (Chayote)

USSR M

Cultivated Plants. Medicinal. Essetial Oil Bearing. Toxins.

Ref Zhur-Biologiya, No.1, 1959, No. 1873

Boyarova, L.I.; Fogel', A.N.

All-Union Selection Station of Humid Sub-

Peculiarities of Flowering and Seed Setting in the Dogflower Javatea (Orthosiphon stamineus Benth.).

Botan. zh., 1957, 42, No.8, 1220-1220

Research made at the All-Union Selection Station of Humid Subtropical Cultures at Sukhumi in 1950-1957, ... characteristic of javatea flowers. Supplementary pollination performed 5-6 times during large-scale flowering (in the morning and evening during the period of most intensive blossoming; application during budding of potassium fertilizers at 60 kg, phosphorus at 40 kg and side-dressings of liquid manure fertilizers

CARD: 1/3

*tropical Cultures in Sukhumi

COUNTRY :
CATEGORY :

ABS. JOUR. : Ref Zhur-Biologiya, No. [illegible], 1959, No. [illegible]873

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : boosted seed setting by as much as 56 percent, augmented their size [illegible] on 2 to 2.5 mm, their absolute weight from 6 to 6.5-[illegible] The plants which were grown from seed in comparison with those gotten by vegetative reproduction have greater growth dynamics (81 against 64 cm), increased energy of shoot formation, better foliation and higher weight of the plant raw material mass from the roots (535 as against:

CARD: 2/3

191

COUNTRY
CATEGORY

ABS. JOUR. Ref Zhur-Biologiya, No1, 1959, No. 1873

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : 3[illegible] [illegible]s).--N.P. Novosel'tseva

:

CARD: 3/3

BOKAREVA, L.I.; GOGIBERIDZE, A.A.; FOGEL', A.N.

Cultivation of turmeric in the Soviet subtropics. Agrobiologika no.4:136-139 Jl-Ag '58. (MIRA 11:9)

1. Sukhumskaya opytnaya stantsiya subtropicheskikh kul'tur Vsesoyuznogo instituta rasteniyevodstva.
(Turmeric)

BOKAREVA, L.I.; FOGEL', A.N.

Morphological changes in the blossoms of Java tea (Orthosiphon stamineus Benth.) caused by meteorological conditions. Biul. Glav. bot. sada no.30:41-46 '58. (MIRA 11:6)

1. Sukhumskaya opytnaya stantsiya Vsesoyuznogo instituta rasteniyevodstva.
(Abkhazia--Java tea) (Inflorescence) (Abnormalities (Plants)

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[Possibilities for developing the lumbering industry in the region of the Angara Valley Hydroelectric Power Station Cascade; utilization of forests in flooded areas] Perspektivy razvitiia lesnoi promyshlennosti v raione Angarskogo kaskada GES; osvoenie lesov na zatopliaemykh territoriiakh. Moskva, Goslesbumizdat, 1961. 125 p. (MIRA 14:9)

(Angara Valley—Lumbering)

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(Kherson Province--Brickmaking)

GUR'YEV, Viktor Vasil'yevich [deceased]; MAKHNOVETSKIY, Solomo
Iosifovich; SSCRIN, Vladimir Aleksandrovich; FOGEL', P.M.,
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[Principles and methods of the organization of permanent
lumbering enterprises] Osnovy i puti organizatsii postoianno deistvuiushchikh lesozagotovitel'nykh predpriiatii. Moskva, Lesnaia promyshlennost', 1964. 287 p.
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47-28717

Permanent molds for casting metallic articles; survey of inventions.

DLC: TS233.F6

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Improvement of textile materials of rayon or of mixed fibers. Imre Fogel. Hung. 131,240, Feb. 15, 1943. The usual methods for treating cellulose derivs. are combined with a treatment that produces artificial resins and a treatment for making the fibers hydrophobic. I. F.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION