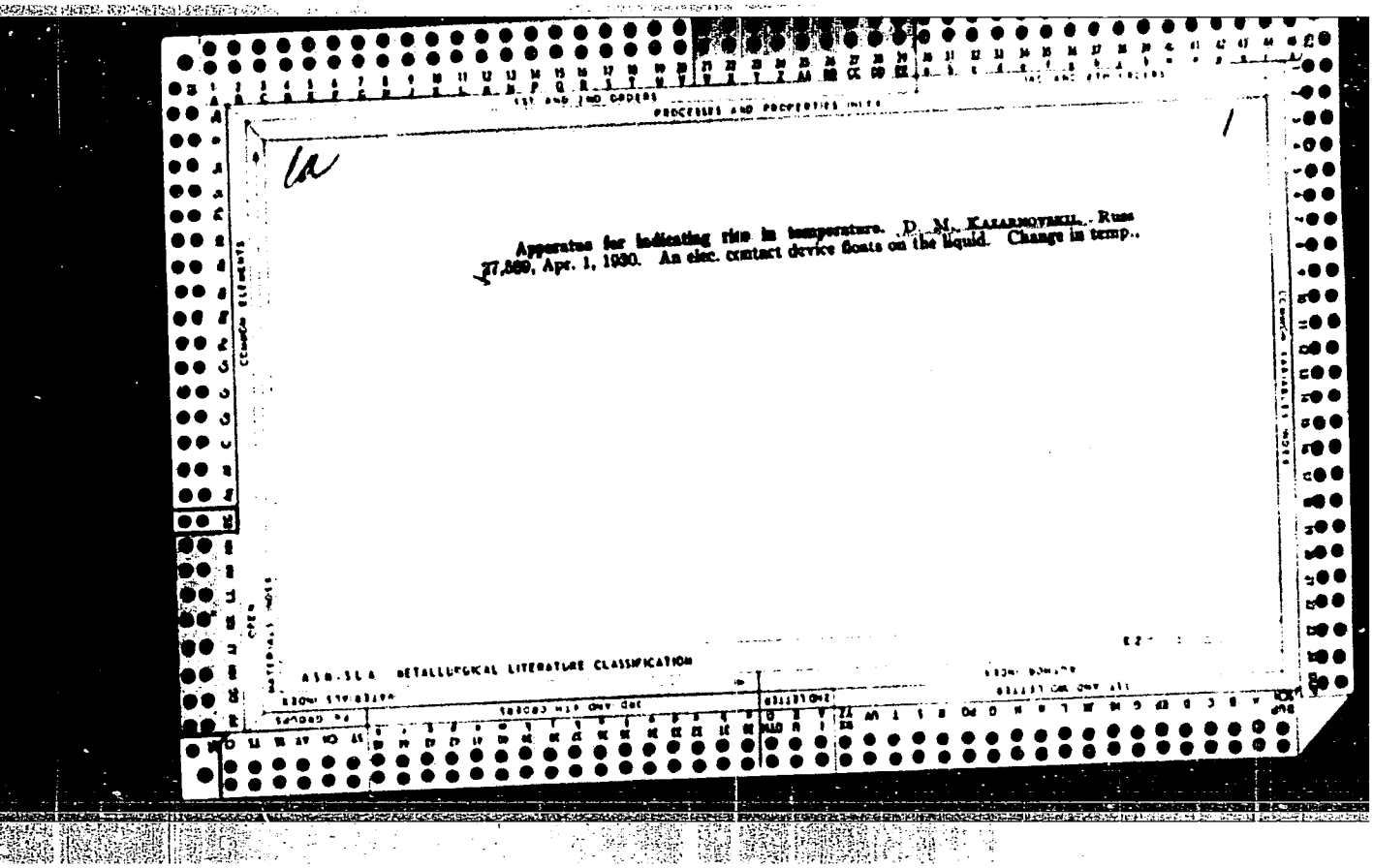
RABKIN, Lev Izrailevich; SOSKIN, Semen Aronovich; EPSHTEYN, Boris Shayevich; KAZARNOVSKIY, D.M., red.; SOBOLEVA, Ye.M., tekhn. red.

[Technology of ferrites]Tekhnologiia ferritov. Moskva, Gosenergoizdat, 1962. 358 p. (MIRA 15:9)
(Ferrates)



1a

Apparatus for indicating rise in temperature. D. M. KAZARNOVSKII. Russ 27,889, Apr. 1, 1930. An elec. contact device floats on the liquid. Change in temp..

KAZARNOVSKIY, D. M. PA 20T60

USSR/Radio Oct/Nov 1946
Capacitors, Ceramic Dielectric
Capacitors, High Frequency

"New Types of High-frenquency Ceramic Capacitors," G. I. Skanavi, Dr. of Physico-mathematical Sciences, D. M. Kazarnovskiy, Candidate of Mechanical Sciences, K. F. Kartashev, Mechanic, 8 pp

"Radiotekhnika" Vol I, No 7/8

The electrophysical properties and design data for new types of high-frenquency ceramic capacitors with improved performance characteristics and higher capacitance per unit volume.

KAZARNOVSKIY, D.M.

42264. KAZARNOVSKIY, D.M. Emkostnyye stabilizatory napryazheniya. Trudy Leningr. voen-vozdush. Inzh akad. VYP. 20, 1948 s. 77-87

SO: Letopis'Zhurnal nykh Statey, Vol. 47, 1948

KAZARNOVSKIY, D.M.

Kazarnovskiy, D.M. "Technology of articles shaped from native steatite," Trudy Keram. in-ta, symposium 21, 1948, p. 27-32

SO: U-2888, Letopis Zhurnal'nykh Statey, No. 1, 1949

KAZARNOVSKIY, D. M.

"Radio Engineering Materials and Parts", Leningrad Red Banner Military Aeronautical Engineering Academy (LKVVIA), 262 pp, 1950.

ACS

XI

Electric furnace for Seignette and refractory shapes. D. M. KAZARNOVSKII. *Zavodskaya Lab.*, 16 [2] 251 XI (1950). The furnace is cylindrical in shape and is provided with Silit rods. It meets following requirements: (*a*) temperature up to 1550°C, (*b*) smooth control, making possible a rise of up to 30° min. and constant temperature for several hours, (*c*) a temperature gradient of ±15° at 1300° to 1550°, and (*d*) an absence of ash and dust. B Z K

KAZARNOVSKIY, D. M.

USSR/Electricity - Literature May 51
Materials, Electrical

"Review of N. P. Bogorodintskiy, V. V Pasynkov and B. M. Tareyev's 'Electrical Engineering Materials,'" Docent D. M. Kazarnovskiy, Cand Tech Sci, Leningrad

"Elektrichestvo" No 5, pp 91-93

This book, issued by the Ministry of Higher Educ USSR as textbook for power engineering and elec engineering institutions and faculties, received favorable appraisal. It covers the fundamental physics of phenomena observed in

189T33

USSR/Electricity - Literature (Contd) May 51

elec engineering materials, and describes the properties and production technology of these materials. First part deals with insulating materials, and the 2d with conductors, semiconductors, and magnetic materials. Published by Gosenergoizdat, 1950, 436 pp plus 10 insets, 16 rubles.

189T33

1a

Section B

3634. Determination of permittivity of Seignette-ceramics [ferro-electrics] under a direct voltage by a discharge method. D. M. KAZARNOVSKII. *ZA. Tekh. Fiz.*, 21, 808–13 (*No. 7, 1951*) *In Russian.*

The ballistic galvanometer method of measurement of permittivity of ferroelectric ceramics under a direct voltage [Abstr. 322 (1948)] gives the mean value of permittivity as a function of the voltage across the condenser before discharge and the resistance of the ballistic galvanometer circuit. A new discharge method fully described with the necessary equipment permits measurement of instantaneous values of permittivity of ferroelectrics as a function of voltage (over a wide range) and accounts for various speeds of discharge with samples having appreciable leakage. With slow discharge speeds and strong fields permittivity decreases with voltage increase. Between 18°C and 108°C permittivity increases.

J. LUKASZEWICZ

RENNE, V.T.; KAZARNOVSKIY, D.M.; ZABRODINA, A.A., tekhnicheskiy redaktor.

[Electric condensers] Elektricheskie kondensatory. Leningrad, Gos energeticheskoe izd-vo, 1952. 512 p. (MLRA 8:10)
(Condensers(Electricity)

USSR/Electricity - Non-Linear Capacitors Aug 52
Barium Titanate

"Calculation of Nonlinear Capacitors," Docent D. M. Kazarnovskiy, Cand Tech Sci, Leningrad

"Elektrichestvo" No 8, pp 60-64

Cites exptl relationships between dielec consts of some dielectrics (i.e., barium titanate with or without admixts) on field intensity. Shows procedure for calcg a nonlinear capacitor and defines nature of field distribution in a cylindrical capacitor of this type. Submitted 2 Nov 51.

235T45

KAZARNOVSKIY, D. M.

USSR/Physics - Piezoelectricity Apr 52

"Time Variation of the Dielectric Properties of Piezoelectric Ceramics," D.M. Kazarnovskiy

"Zhur Tekh Fiz" Vol XXII, No 4, pp 553-558

B.M. Vul and his school created a new type of ceramic materials, in particular barium titanate, which possess piezoelec properties. The author presents exptl data on spontaneous variation, with time, of dielec permeability in piezo-ceramics and the results of investigations into regeneration and stabilization of its value. Indebted to B.M. Vul, Corr Mem, Acad Sci USSR. Received after revision 30 Jan 51.

216T95

KAZARNOVSKIY, D. M.

PHASE X TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 755 - X

BOOK Call No.: AF642507

Author: KAZARNOVSKIY, D. M.
Full Title: TESTING OF RADIO MATERIALS AND COMPONENTS
Transliterated Title: Ispytaniya radiotekhnicheskikh materialov i detaley

PUBLISHING DATA

Originating Agency: None
Publishing House: State Power Engineering Publishing House
Date: 1953 No. pp.: 388 No. of copies: 6,000
Editorial Staff: Contributors and appraisers: A. M. Zalesskiy, L. I. Rabkin, S. P. Dezhkin, and Yu. A. Il'kevich.

PURPOSE AND EVALUATION: The book is written for engineers and technicians who have to deal with experimental determination of properties and characteristics of radio materials and components. It can be used by engineering students as a textbook in electrical engineering faculties and institutes. Finally, the book can also be consulted by persons who in their work in government, various industrial enterprises, or scientific research institutes come upon details which belong to the field of industrial electronics. Since many of these persons are not specialists in that field, the book is intended to help them by introducing them into the basic principles of the subject. At the beginning of each chapter, terms, definitions and

standard forms of the given problem are presented and explained. The book is intended as an introduction into the wide field of electrical and mechanical testing of radio materials and components. Since very little testing and measuring apparatus is produced on a commercial scale, the author included much information on testing circuits and devices developed by Soviet engineers which can be easily built in local laboratories. Only the most important, basic tests are included, and attention is paid mainly to the methods and techniques of measurement and to the numerical evaluation of the measured data rather than to theoretical problems, which form the subject matter of special college courses. Much data concerning materials and testing procedure are presented in tabulated form. The book compares favorably with similar texts in the English language. It is well illustrated, has a list of 76 references, and an index.

TEXT DATA

Coverage: The text covers data on the following tests and measurements: resistance of insulation, dielectric constant and loss angle, capacitance and Q-factors, electric strength, permeability of magnetic materials, electrical characteristics of induction coils, transformers, smoothing chokes, and

conducting materials. At the end, methods of determining mechanical and structural characteristics of radio materials and components are given.

Table of Contents (annotated) Pages

of insulation of 29 different radio components. These tests are presented in tables which give permissible resistances and testing methods according to State Standards.

Ch. II Determination of the Dielectric Constant and of the Loss Angle at Low and Audio Frequencies 60-76

The chapter starts with definitions and continues with descriptions of methods of measuring capacitance and losses at commercial and audio frequencies. Measuring devices of Soviet design and construction are described and illustrated with connection diagrams.

Ch. III Determination of the Dielectric Constant and of the Loss Angle at High, Ultra, and Super High Frequencies 77-107

The chapter describes the methods of measuring capacitance and losses at R-f, V-H-F, U-H-F, and S-H-F, and of measuring the temperature coefficient of the dielectric constant at R-f. Several Soviet measuring apparatuses are described and illustrated with drawings and connection diagrams, e.g.: Q-meters of KV-1, 160-A, and 170-A types for R-f; an apparatus

Electrical Engineering Abst.
Vol. 57 No. 676
Apr. 1954
Electrical Engineering

621.319.4 : 621.3.011

1551. Analytical solution of circuits with non-linear condensers. D. M. KAZARNOVSKII. *Elektrichestvo*, 1953, *No.* 10, 68–73. *In Russian.*

Capacitance of non-linear capacitors varies with applied voltage. For a given condenser, charge in coulombs is plotted against applied voltage. This curve is represented by a function of voltage in terms odd powers of charge. Assuming a sinusoidal applied voltage, the current through such a condenser is derived. Using approximations general solutions are tabulated for 8 basic circuits containing a non-linear capacitor and series-parallel combinations of linear condenser, resistors and inductor. J. LUKASZEWICZ

8-26-54

KAZARNOVSKIY, D. M.

621.319.4 : 621.315.612.4 : 537.226.2

4229. On the unbalanced capacitance of a ferroelectric capacitor during charge. D. M. KAZARNOVSKII. *Zh. tekh. Fiz.*, 23, *No.* 10, 1812–15 (1953) *In Russian.*

A comparison is drawn between the dielectric hysteresis curve and the graph of charge vs. charging potential. An expression for the dynamic capacitance given by Yanus [Abstr. 4014 (1953)] is criticized on the basis of this comparison. It is concluded that the mean capacitance of such a capacitor under conditions of small leakage and d.c. charge can be obtained by conventional (ballistic) methods. [A comment on the above paper is made by N. P. Bogoroditskii in *Zh. tekh. Fiz.*, 24, *No.* 1, 149 (1954).]

V. V. ZAKHAROV (a)

KAZARNOVSKIY, D.M.

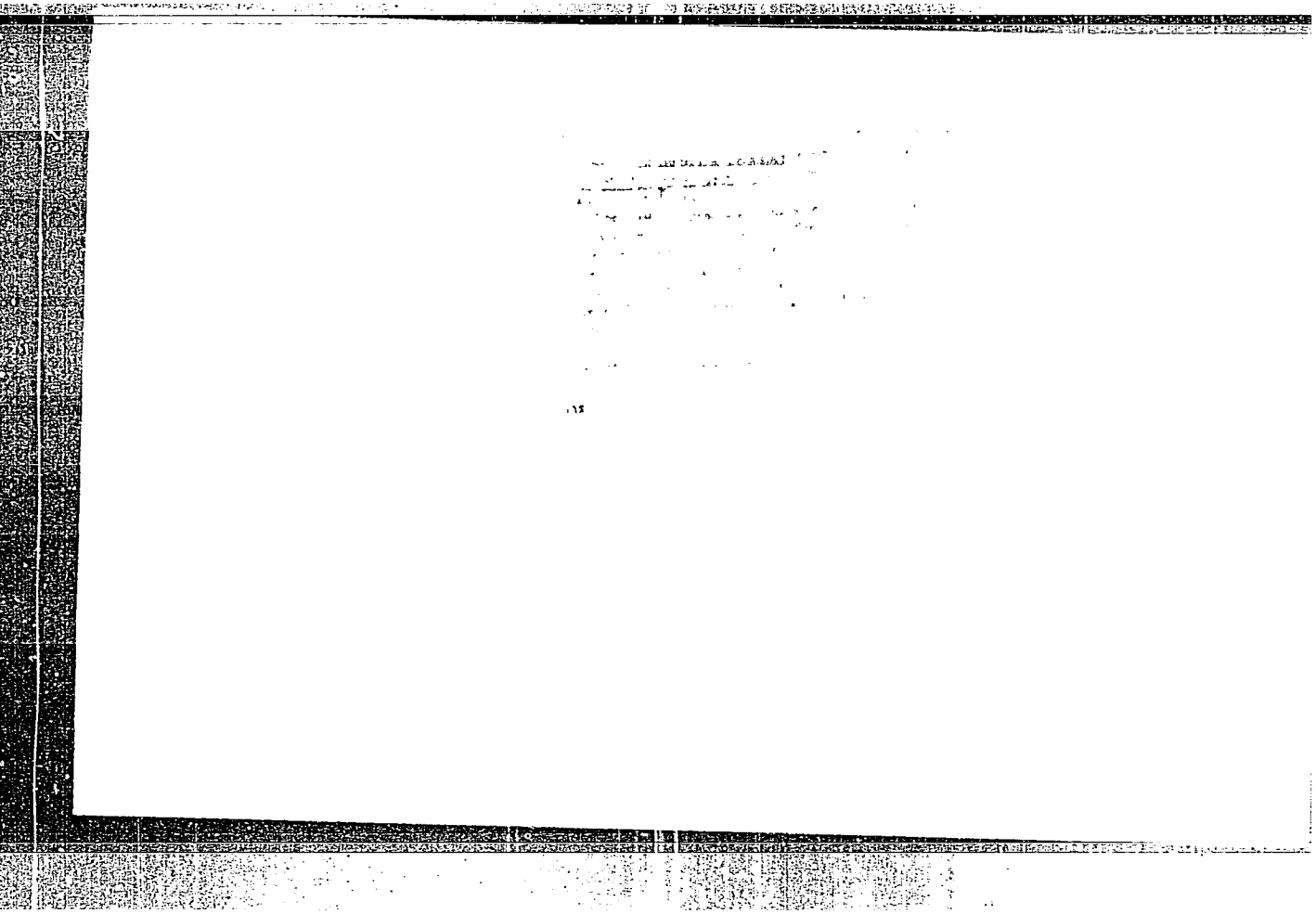
BAYDA, Leonid Il'ich; DOBROTVORSKIY, Nikolay Stepanovich; ORSHANSKIY, Dmitriy L'vovich; PCHELINSKAYA, Sof'ya Nikodimovna; RAZUMOVSKIY, Nikolay Nikolayevich; SVIRSKIY, Yevgeniy Antonovich, [deceased]; FREMKE, Andrey Vladimirovich, professor, doktor tekhnicheskikh nauk; KAZARNOVSKIY, D.M., redaktor; ZABRODINA, A.A., tekhnicheskiy redaktor.

[Electric measurements; general course] Elektricheskie izmereniia; obshchii kurs. Izd. 2-e, perer. Moskva, Gos. energeticheskoe izd-vo, 1954. 496 p.
(Electric measurements) (MLRA 7:12)

BRON, O.B.; KAZARNOVSKIY, D.M., redaktor; VORONETSKAYA, L.V., tekhnicheskiy redaktor

[Electric arc in control equipment] Elektricheskaia duga v apparatakh upravleniia. Moskva, Gos. energeticheskoe izd-vo, 1954. 532 p. [Microfilm] (MLRA 8:2)

(Electric arc) (Automatic control)



KAZARNOVSKIY, D.M.
ZAVALISHIN, P.I.

"Testing radio materials and parts." D.M.Kazarnovskii. Reviewed by P.I.Zavalishin. Elektrichestvo no.5:95-96 My '54. (MLRA 7:6)
(Kazarnovskii, D.M.) (Radio--Apparatus and supplies)

USSR/Electronics - Noise suppressors

FD-1469

Card 1/1 : Pub. 90-6/14

Author : Kazarnovskiy, D. M., and Fomenko, L. A.

Title : Ferroelectric capacitors for noise suppression

Periodical : Radiotekhnika 9, 43-47, Sep/Oct 1954

Abstract : The authors describe a ferroelectric by-pass capacitor for suppression of interference to radio reception, citing data from their investigation of it and comparing its performance with that of analogous paper capacitors. Preliminary data indicate that ferroelectric capacitors should cost 30% less to mass produce than paper capacitors. Ferroelectric capacitors for suppression of industrial radio interference are a future prospect depending on the further improvement of radio ceramics. Six references: USSR (1938-1954). Diagrams; graphs; photo.

Institution :

Submitted : February 2, 1954

USSR/Electronics - Dielectric amplifier FD-1473

Card 1/1 : Pub. 90-10/14

Author : Kazarnovskiy, D. M.

Title : American journal ignores Soviet invention (letter to the editor)

Periodical : Radiotekhnika 9, 56, Sep/Oct 1954

Abstract : During World War II the Soviet scientist B. M. Vul andhis associates discovered the ferroelectric group of materials, which can be used in dielectric amplifiers capable of handling radio frequencies up to 10 Mc. The dielectric amplifier bridge circuit was proposed in the USSR in 1947 by M. I. Kraytsberg under the title "Electrostatic Amplifier". This invention received a certificate of authorship, and it circuit and operating principles were published in 1949 (Svod Izobreteniy SSSR, 1949 No 6, Class 21, No 75431, p 239). Two and one half years later the American journal Electronics (December 1951, p 84) published an article on dielectric amplifiers, some of which used exactly the same principles and circuit as the Soviet amplifier, without mentioning the previous USSR work.

Institution :

Submitted :

Translation 207984-A
F-TS-8502/V

KAZARNOVSKIY, David Mikhaylovich; RHINE, V.T., redaktor; ZABRODINA, A.A., tekhnicheskiy redaktor

[Seignettoceramic capacitors] Segnetokeramicheskie kondensatory. Moskva, Gos. energ. izd-vo, 1956. 222 p. (MLRA 10:3)
(Ferroelectric substances) (Condensers (Electricity))

KASHIN,V.A.; NIKOTIN,P.P.; KAZARNOVSKIY,D.M., redaktor; VORONETSKAYA, L.V., tekhnicheskiy redaktor

[Manufacture and use of rubber in cable production] Izgotovlenie i primenenie reziny v kabel'nom proizvodstve. Moskva, Gos.energ. izd-vo, 1956. 327 p. (MLRA 9:4)
(Rubber) (Cables)

KAZARNOVSKIY, D.M.

MOMOT, Yevgeniy Grigor'yevich [deceased]; KAZARNOVSKIY, D.M., red.; SOBOLEVA, Ye.M., tekhn.red.

[Radio measurements] Radiotekhnicheskie izmereniia. Moskva, Gos. energ.izd-vo, 1957. 364 p. (MIRA 11:3)
(Radio measurements)

KAZARNOVSKIY, D.M.

SUBJECT: USSR/Luminescence

48-3-25/26

AUTHORS: Kazarnovskiy D.M. and Sidorenko V.P.

TITLE: Application of Ferroelectrics in Frequency Multipliers (Primeneniye segnetoelektrikov v umnoshitelyakh chastoty)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya fizicheskaya, 1957, Vol 21, #3, pp 455-465 (USSR)

ABSTRACT: An investigation was carried out in order to find out the basic properties of ferroelectric frequency changers for the three-phase current.

A ferroelectric condenser containing barium titanate with an addition of tin oxide, "Varikond VK1", was used as a main non-linear element, because only such ferroelectric condensers are manufactured by the radiotechnical industry.

Conclusions drawn from this investigation are:

1. That the properties belonging to the basic characteristics of ferroelectric condensers for frequency changers are: voltage- and temperature-dependences of the current I_n of the required harmonic, coefficient of the harmonic of current K_n

Card 1/5

AUTHORS: Kazarnovskiy D.M. and Sidorenko V.P. 48-3-25/26

TITLE: Application of Ferroelectrics in Frequency Multipliers (Primeneniye segnetoelektrikov v umnoshitelyakh chastoty)

and losses in the condenser P_a.

For one VK1-4 condenser in the open air, being under sinusoidal voltage of 200 v and a frequency of 500 cycles/sec, the following values were found:

$I_3 \leqslant 22$ mA; $K_3 \leqslant 0.55$; and $P_a \leqslant 1.7$ w ($tg\delta_{3\phi} = 0.2$).

2. That the percentage of currents of higher harmonics can be very significant in the circuits with inductance due to partial resonances. For a condenser placed in oil, under the same conditions as above, the following values were found: $I_3 \leqslant 65$ mA; $K_3 \leqslant 1.74$. The magnitude of inductance $L_{I3_{max}}$, corresponding to the peak current of the third harmonic I_{3max}, increases almost linearly with the rise in voltage.

3. That in the proposed frequency changer it is possible to achieve that the equivalent inductance decreases with the increase, within certain limits, of inductive load with $\cos\varphi_3 = 0.6,..,0.8$, continuing to be larger than $L_{I3_{max}}$;

Card 2/5

TITLE: Application of Ferroelectrics in Frequency Multipliers (Primeneniye segnetoelektrikov v umnozhitelyakh chastoty)

under these conditions, the voltage of the tripled frequency remains constant with a varying load. The limiting power of the tripled frequency rises with the voltage increase and decreases with the temperature rise. Under conditions of the experiment, the limiting power of one phase, in the case of three VK1-4 condensers connected in a triangle, at 25°C and 200 v amounted to 3.5 w for ferroelectric condensers in the open air and 4.3 w for those in oil. The voltage of the tripled frequency has a sinusoidal shape for all loads below the limiting power.

4. That the control of voltage and power, within the range of loads not exceeding the limiting power, is possible by means of a reactive shunt. The effect of the surrounding temperature on the voltage and output power can be compensated to a considerable degree.

5. That the dependence of the efficiency factor on the current of a load has a maximum which shifts with the change of temperature. The efficiency factor rises when the reactive shunt is switched in, but its value did not exceed 0.6 under conditions of the experiment.

TITLE: Application of Ferroelectrics in Frequency Multipliers (Primeneniye segnetoelektrikov v umnoshitelyakh chastoty)

6. That the power factor of the frequency changer depends on the character and magnitude of the applied load and voltage.

The frequency changer consumes capacitance current and has the value of $\cos\varphi_{\text{input}} \leqslant 0.17$; its switching into a network is accompanied with the compensation of inductive current and results in the power factor rise in the network.

7. That an increase in the limiting power of a frequency changer and its efficiency factor is possible when ferroelectric condensers with higher qualities and electric strength are applied.

8. That the next problem in this field is production of oil-cooled ferroelectric condensers possessing a capacitance of a few microfarads with lowered losses, a higher electric strength at alternating current, and the same level of harmonics percentage in the current curve.

The article contains 13 figures and 1 table. The bibliography lists 6 references, all Slavic (Russian).

Card 4/5

TITLE: Application of Ferroelectrics in Frequency Multipliers (Primeneniye segnetoelektrikov v umnozhitelyakh chastoty) 48-3-25/26

INSTITUTION: Not indicated

PRESENTED BY:

SUBMITTED: No date indicated

AVAILABLE: At the Library of Congress.

Card 5/5

KAZARNOVSKIY, D.M.

8(2)

PHASE I BOOK EXPLOITATION SOV/1867

Tareyev, Boris Mikhaylovich, and David Mikhaylovich Kazarnovskiy

Ispytaniya elektroizolyatsionnykh materialov (Testing Electric Insulating Materials) Moscow, Gosenergoizdat, 1958. 208 p. 20,950 copies printed.

Ed.: V.I. Timokhina; Tech. Ed. G.I. Matveyev.

PURPOSE: This is a textbook for students in electrical engineering tekhnikums. It may be useful to students in power and electrical engineering vuzes and also for technicians in industrial plants and scientific-research institutes.

COVERAGE: The authors describe the most important and widespread methods of testing electric insulating materials. They explain the theoretical basis of the various methods and describe a number of testing instruments and auxiliary equipment. Special attention is devoted to new methods of testing with automatic measuring instruments and apparatus and methods for continuous testing without interrupting production or operating conditions. There are 70 references, 53 of which are Soviet, 10 English, 4 German, 2 Czech and 1 Italian.

Card 1/5

Testing Electric Insulating Materials SOV/1867

TABLE OF CONTENTS:

Card 2/5

AVAILABLE: The Library of Congress (TK 3431 .T3)

JP/dfh
7-8-59

Card 5/5

RENNE, Vladimir Tikhonovich; ZAKGEYM, L.N., retsenzent; KAZARNOVSKIY, D.M., red.; ZABRODINA, A.A., tekhn.red.

[Electric capacitors] Elektricheskie kondensatory. Izd.2., perer. Moskva, Gos.energ.izd-vo, 1959. 602 p. (MIRA 13:1)
(Electric capacitors)

9.6110
3,5135

39956

S/263/62/000/001/007/009
I004/I204

AUTHOR: Kazarnovskiy, D. M. and Feofanov, B. N.

TITLE: Theory of ferroelectric (Rochelle salt) probes and their application

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk. 32. Izmeritel'naya tekhnika, no. 1, 1962, 59, abstract 32.1.373. In collection "Vses. Mezhvuz. konferentsiya po teorii i metodam rascheta nelineyn. elektr. tsepey". no. 2, Tashkent, 1960, 157-176

TEXT: Discussed is the theory and design of a different ferroelectric probe for measurement of permanent (static) electric fields in the atmosphere. The circuit of the differetial ferroelectric probe consists of two condensers employing Rochelle salt as dielectric connected in series with a secondary winding of a transformer that is provided with a center tap. The possible methods of increasing the sensitivity of the differential ferroelectric probe and the optimal parameters of the employed ferroelectric condensers are discussed theoretically. In order to compare the results of the calculation with experiment an investigation of the differential ferroelectric probe was carried out in a laboratory. An electric field was created between two metallic discs which were located close enough so that the field between them could be considered to be uniform in the central region. The accuracy of the instrument tested was better than 5%, sensitivity threshold 1 v/cm, the measurement range 1 to 50 v/cm (the measurement range can be extended up to 1000 v/cm). The ferroelectrics may also

Card 1/2

Theory of ferroelectric...

S/263/62/000/001/007/009
I004/1204

serve as indicators of partial discharges, as meters of very feeble currents, as frequency doublers and quadruplers and as ferroelectric amplifiers of the second harmonic. There are 13 figures.

[Abstracter's note: Complete translation.]

Card 2/2

KAPLYANSKIY, Aleksandr Yevseyevich, doktor tekhn. nauk, prof.; LYSENKO, Aleksey Petrovich, kand. tekhn. nauk, dotsent; POLTOVSKIY, Lev Solomonovich, kand. tekhn. nauk, dotsent; KAZARNOVSKIY, D.M., red.; SOBOLEVA, Ye.M., tekhn. red.

[Theoretical fundamentals of elctrical engineering]Teoreticheskie osnovy elektrotekhniki. Moskva, Gos. energ. izd-vo, 1961. 526 p. (MIRA 14:10)

(Electric engineering)

MYAZDRIKOV, Oleg Alekseyevich; MANOYLOV, Vladimir Yevstaf'yevich; ZAYEV, N.Ye., retsenzent; KAZARNOVSKIY, D.M., red.; ZHITNIKOVA, O.S., tekhn. red.

[Electrets] Elektrety. Moskva, Gosenergoizdat, 1962. 97 p. (MIRA 16:1)

(Electrets)

KOZYREV, Nikolay Alekseyevich; KAZARNOVSKIY, D.M., red.; ZHITNIKOVA, O.S., tekhn. red.

[Insulation of electrical machines and methods for testing it] Izoliatsiia elektricheskikh mashin i metody ee ispytaniia. Moskva, Gosenergoizdat, 1962. 263 p. (MIRA 16:1)
(Electric machinery)
(Electric insulators and insulation)

GAYLISH, Ye.A.; DROZDOV, N.G.; YEVSTROP'YEV, K.S.; KAZARNOVSKIY, D.M.; NEYMAN, L.R.; PASYNKOV, V.V.; PRIVEZENTSEV, V.A.; RENNE, V.T.; TAREYEV, B.M.

N.P. Bogoroditskii; on his sixtieth birthday and the thirty-fifth anniversary of his theoretical and educational work. Elektrichestvo no.7:87-88 Jl '62. (MIRA 15:7)
(Bogoroditskii, Nikolai Petrovich, 1902-)

CHERVINSKIY, Mark Mikhaylovich; KAZARNOVSKIY, D.M., doktor tekhn. nauk, prof., red.; ZHITNIKOVA, O.S., tekhn. red.

[Ferroelectrics and prospects for their use in computer engineering] Segnetoelektriki i perspektivy ikh primeneniia v vychislitel'noi tekhnike. Moskva, Gosenergoizdat, 1962. 134 p. (MIRA 16:4)
(Electronic computers--Equipment and supplies)
(Electric engineering--Materials)

RENNE, Vladimir Tikhonovich; ZAKGEYM, L.N., retsenzent; KAZARNOVSKIY, D.M., red.; SOBOLEVA, Ye.M., tekhn. red.

[Thin film capacitors with synthetic organic dielectric] Plenochnye kondensatory s organicheskim sinteticheskim dielektrikom. Moskva, Gosgortekhizdat, 1963. 201 p. (MIRA 16:6)
(Condensers (Electricity))

ZAKGEYM, Lev Nakhmanovich; RENNE, V.T., retsenzent; KAZARNOVSKIY, D.M., red.; ZHITNIKOVA, O.S., tekhn. red.

[Electrolytic condensers] Elektroliticheskie kondensatory. Izd.2., perer. i dop. Moskva, Gosenergoizdat, 1963. 283 p. (MIRA 16:7)
(Condensers (Electricity))

KAZARNOVSKIY, David Mikhaylovich; TAREYEV, Boris Mikhaylovich; KUCHINSKIY, G.S., red.; SOBOLEVA, Ye.M., tekhn. red.

[Testing of electric insulating materials] Ispytaniia elektroizoliatsionnykh materialov. Moskva, Gosenergoizdat, 1963. 314 p. (MIRA 17:1)

GREYSUKH, Moisey Ayzikovich; KUCHINSKIY, Georgiy Stanislavovich; KAPLAN, Daniyel' Aronovich; MESSERMAN, Girsha Tevelevich; KAZARNOVSKIY, D.M., red.; SOBOLEVA, Ye.M., tekhn. red.

[Oil-saturated paper insulation in high-voltage systems] Bumazhno-maslianaia izoliatsiia v vysokovol'tnykh konstruktsiiakh. [By] M.A.Greisukh i dr. Moskva, Gosenergoizdat, 1963. 298 p. (MIRA 17:1)

NIKOTIN, Pavel Petrovich; PERFILETOV, Aleksandr Nikolayevich; KAMINSKIY, Viktor Samoylovich[deceased]; KAZARNOVSKIY, D.M., red.; ZHITNIKOVA, O.S., tekhn. red.

[Materials for cable manufacture] Materialy kabel'nogo proizvodstva. Moskva, Gosenergoizdat, 1963. 310 p. (MIRA 17:1)

ACC ESSION NR: AR4042162 S/0196/64/000/005/B020/B020

SOURCE: Ref. zh. Elektrotekhnika i energetika, Abs. 5B86

AUTHOR: Kazarnovskiy, D. M.; Konstantinova, V. P.; Feofanov, B. N.

TITLE: Nonlinear properties of triglycine sulfate

CITED SOURCE: Izv. Leningr. elektrotekhn. in-ta, vy*p. 51, 1963, 242-251

TOPIC TAGS: triglycine sulfate, nonlinear property, ferroelectric capacitor

TRANSLATION: Experimental ferroelectric capacitors were prepared from large single crystals of triglycine sulfate $(NH_2 . CH_2 . COOH)_3 H_2SO_4$ obtained from an aqueous solution by lowering the temperature from 50 to 25° C with reversible mixing. On thin plates of rectangular shape, Y-cuts of the crystal were applied by the method of evaporation of gold electrodes in a vacuum. The polar axis was the Y axis. Nonlinearity of saturation

ACCESSION NR: AR4042162

$$N_{sat} = \frac{\epsilon_{d\cdot max}}{\epsilon_{d\cdot min}},$$

where $\epsilon_{d\cdot max} = \left(\frac{dD}{dE}\right)$ is maximum dynamic permeability; $\epsilon_{d\cdot min}$ is minimum dynamic permeability. Another criterion of estimating nonlinearity is integral nonlinearity

$$N_{int} = \int_0^{E_m} \left|\frac{d^2D}{dE^2}\right| dE.$$

The value of N_{sat} for BK1 is 3.3, for BK2 - 8, for triglycine sulfate - 222; value of N_{int} for BK1 is $1.5 \cdot 10^4$; for BK2 - $4.8 \cdot 10^4$, for triglycine sulfate - $32 \cdot 10^4$. Thus, with different methods of estimation, triglycine sulfate has higher nonlinear properties than ceramics VK1 and VK2. The even harmonics in the chain with triglycine sulfate have linear sections and, with the known value of the displacing field, pass through the maximum. An even harmonic of current in the maximum can significantly exceed a current of basic frequency. Position and magnitude of the indicated maximum depend not only on the displacing field, but

ACCESSION NR: AR4042162

also on the variable field of excitation. Significant inertness is observed in the processes of polarization under the conditions of the experiment at a basic frequency of 500 cps. Twenty-three illustrations. Bibliography: 2 references.

SUB CODE: IC, EC ENCL: 00

Card 3/3

BALYGIN, Ivan Yefimovich; KAZARNOVSKIY, D.M., red.

[Electrical strength of liquid dielectrics] Elektricheskaia prochnost' zhidkikh dielektrikov. Moskva, Energiia, 1964. 226 p. (MIRA 17:9)

ZERNOV, Nikolay Viktorovich; KARPOV, Veniamin Grigor'yevich; KRYLOV, N.N., retsenzent; KAZARNOVSKIY, D.M., nauchn. red.; PAVLOVA, L.S., red.

[Theory of radio circuits] Teoriia radiotekhnicheskikh tsepei. Moskva, Energiia, 1965. 891 p. (MIRA 18:5)

KAZARNOVSKIY, David Mikhaylovich, doktor tekhn.nauk, prof.

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BOGORODITSKIY, Nikolay Petrovich; VOLOKOBINSKIY, Yuriy Mikhaylovich; VOROB'YEV, Aleksandr Akimovich; TAREYEV, Boris Mikhaylovich; RENNE, V.T., retsenzent; VOROP'YANOV, K.K., retsenzent; KAZARNOVSKIY, D.M., nauchn. red.; PAVLOVA, L.S., red.

[Theory of dielectrics] Teoriia dielektrikov. Moskva, Energiia, 1965. 344 p. (MIRA 18:12)

EPSHTEYN, Solomon Lazarevich; KAZARNOVSKIY, D.M., doktor tekhn. nauk, prof., retsenzent; REMME, V.I., doktor tekhn. nauk, prof., nauchn. red.; RASKINA, T.D., red.

[Measurement of the characteristics of condensers; capacitance and tangent of the loss angle] Izmerenie kharakteristik kondensatorov; emkost' i tangens ugla poter'. Moskva, Energiia, 1965. 234 p. (MIRA 18:8)

YEVSEYEV, M.Ye.; LAMAGIN, K.A.; MERKIN, G.B.; MOROZOVA, I.A.; ORANSKIY, M.I.; PARAMONKOVA, V.I.; KAZARNOVSKIY, D.M., prof., retsenzent; GOL'DIN, O.Ye., dots., retsenzent; PINES, G.Ya., dots., retsenzent; VOL'PE, L., red.

[Alternating current theory; manual on the solution of problems in the theoretical principles of electrical engineering] Teoriia peremennykh tokov; posobie k resheniiu zadach po teoreticheskim osnovam elektrotekhniki. [By] M.E.Evseev i dr. Leningrad, Severo-Zapadnyi zaochnyi politekhn. in-t. Pt.2. 1964. 337 p. (MIRA 18:7)

1. Kafedra "Teoreticheskiye osnovy elektrotekhniki" Leningradskogo elektrotekhnicheskogo instituta svyazi im. Bonch-Bruyevich (for Gol'din, Pines).

[illegible], V. [illegible] TIKH[illegible], [illegible]

In a Russian Symposium of Papers entitled "Heat Treatment of Rails", edited by I. [illegible] Bardin and published by the Soviet Academy of Science, Moscow 1950, The following articles appeared; <u>High frequency hardening of railway rails</u>.

SO: [illegible]6103

KAZARNOVSKII, D. S. and I. S. SVET.

Khimiko-termicheskaia obrabotka detalei mashin. Kiev, Mashgiz, 1950. 155 p. illus.

Bibliography: p. 153-[154].

Chemical heat treatment of machine elements.

DLC: TS227.K35

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

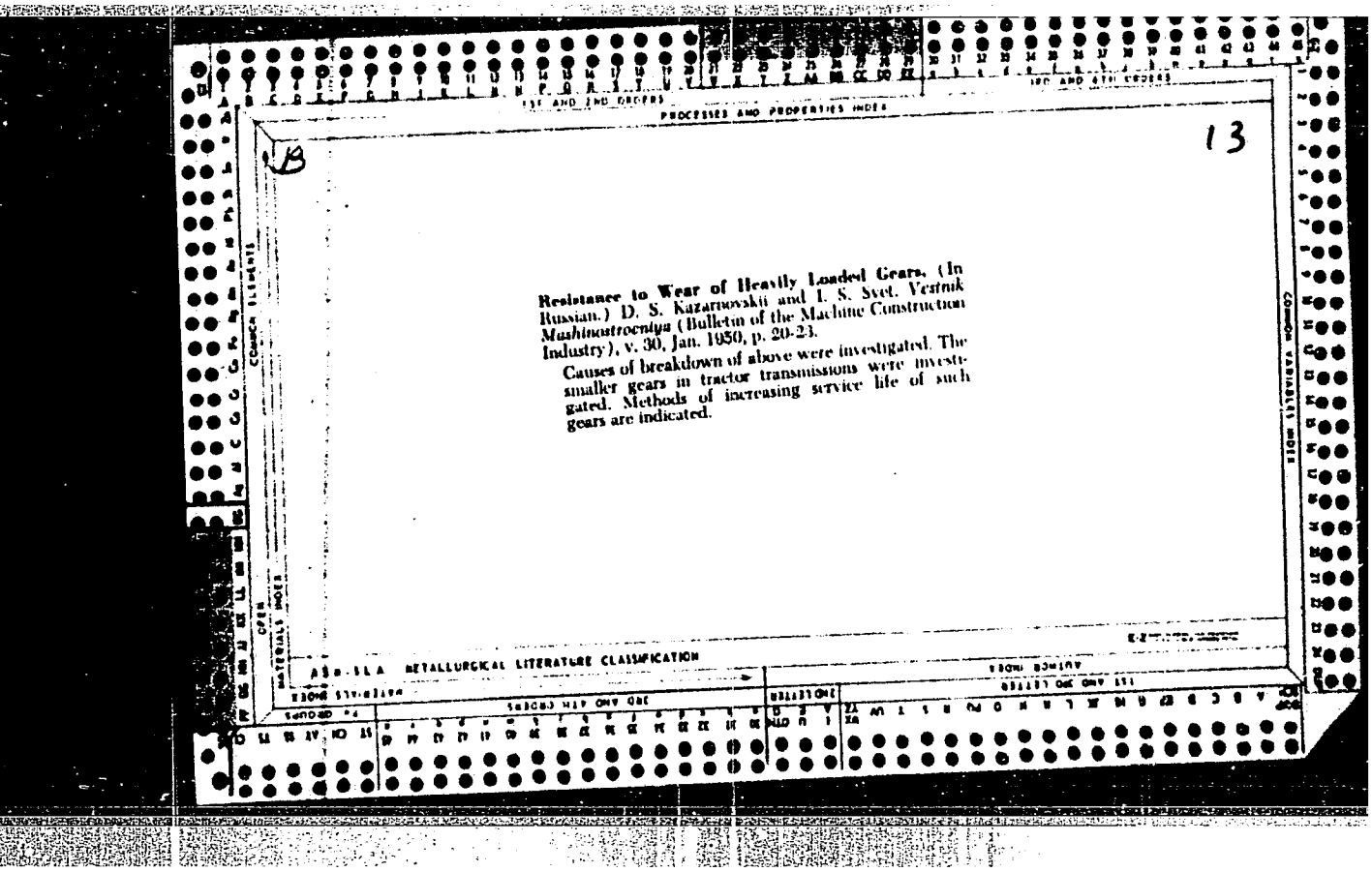
KAZARNOVSKIY, D. S. and I. S. SVET

Dolgovechnost' tiazhelonagruzhennykh shesteren. (Vestn. Mash., 1950, no. 1, p. 20-23)

Durability of heavily loaded gears.

DLC: TJ4.V4

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.



13

Resistance to Wear of Heavily Loaded Gears. (In Russian.) D. S. Kazarnovskii and I. S. Sverl. *Vestnik Mashinostroeniya* (Bulletin of the Machine Construction Industry), v. 30, Jan. 1950, p. 20-23.

Causes of breakdown of above were investigated. The smaller gears in tractor transmissions were investigated. Methods of increasing service life of such gears are indicated.

TIKHOVSKIY, V.A.; KAZARNOVSKIY, D.S.; KOLOGRIVOV, N.P.

Strengthening rail ends by hardening with induction heating.
[Izdaniia] LONITOMASH no.30:337-355 '52. (MLRA 8:1)
(Railroads--Rails) (Metals--Hardening)

KAZARNOVSKIY, D. S.

PA 245T24

USSR/Metallurgy - Steel, Structural Analysis — 21 Nov 52

"On the Phase and Structural Transformations in Steel During Repeated Recrystallization," D. S. Kazarnovskiy, Ukrainian Sci Res Inst of Metals

"Dok Ak Nauk SSSR" Vol 87, No 3, pp 409-412

Stating that there is no single viewpoint on effect of initial grain size on phase transformations during heating and on grain size and properties of steel after heat treatment, experimentally establishes that initial grain size and

245T24

dispersion degree of carbides have no effect on physicomechanical properties and grain size of carbon and low-alloy Cr steel after repeated recrystallization at temp of $A_3 + 50^{\circ}$. According to author, results of his experiments may lead tc intensification and simplifying of certain operations in metal hot working, such as rolling and forging, since definite terminal temp for preventing grain growth is not obligatory if product is subjected to heat treatment. Submitted by Acad I. P. Bardin 30 Aug 52.

245T24

[redacted]OVSKIY, D.S., kandidat tekhnicheskikh nauk; TIKHOVSKIY, V.A., professor.

Effect of the structure of the cross section of samples and products upon the process of disintegration during bending by a stroke. Vest.mash. 33 no.5:46-51 My '53. (MLRA 6:5)
(Steel--Testing)

USSR/Physics-Steel, aging

Card 1/1 Pub. 153-13/22 FD-1229

Author : Kazarnovskiy, D. S.

Title : Aging of steel with high carbon content

Periodical : Zhur. tekh. fiz. 24. 1636-1643, Sep 1954

Abstract : The lower tendency to aging of high carbon steels is explained by considering aging of alloys as a diffusion process: The diffusion of atoms in the crystalline lattice produces a change in composition and state of the alloy. The aging processes proceed in structurally free ferrite and in ferrite bound in the composition of pearlite. The transformation of lamellar form of canbide phase into grain structure is followed by a sharp drop of aging tendency. Ten references.

Institution :

Submitted : March 15, 1954

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 6, p 217 (USSR) SOV/137-57-6-10921

AUTHOR: Kazarnovskiy, D.S.

TITLE: Microsegregation and the Diffusion of Arsenic in Rail Steel (O mikrolikvatsii i diffuzii mysh'yaka v rel'sovoy stali)

PERIODICAL: V sb.: Svoystva i term. obrabotka transp. metalla. Khar'kov, Metallurgizdat, 1955, pp 126-143

ABSTRACT: An investigation is made of the nature of the appearance of inhomogeneities (banding) in the structure of high-carbon (0.8% C) rail steel, with addition of 0.0 to 0.31% As, and methods of eliminating this banding are sought. The specimens were cut from R-50 rails and were subjected to chemical and macro- and microstructural analysis. It is found as a result of these investigations that, in the middle of the rail web, where As segregation is at a maximum, banding of the structure is most pronounced and the bright segments are rich in nonmetallic inclusions of the sulfide type, elongated along the direction of rolling. Electron microscopy shows these bright bands to be of complex eutectoid structure and that the direction of crystallization of the components of the bright segments do not as a rule

Card 1/2

coincide with the direction of crystallization of the elements of the basic structure - the pearlite. In order to determine the capacity of the As to diffuse, specimens cut from the central portion of the rail web are subjected to various types of heat treatment. Diffusive annealing at 1100°C for 8 hours results in complete elimination of banding of the structure, and the As concentration is evened out by diffusive movement. All this points to a connection between banding and As segregation in steel and to the possibility of eliminating this defect.

Ye.U.

KAZARNOVSKIY, D. S.

USSR/ Physics - Austenite arsenous steel

Card 1/1 Pub. 22 - 11/47

Authors : Kazarnovskiy, D. S.

Title : Diffusion of As in steel

Periodical : Dok. AN SSSR, 100/6, 1073-1075, Feb 21, 1955

Abstract : Series of experiments were carried out on open-hearth steel to determine the diffusibility of As in high carbon structural steel used in the manufacture of R/R rails. It was established that the As concentration in austenite arsenous steel becomes equalized at 1100° as result of its diffusion shift from points of greater concentration into lesser ones. As diffusion was observed in an austenite medium having high C and Mn concentrations. The As diffusion in the steel tested was found to be quite extensive. Three USSR references (1934-1935). Tables; illustrations.

Institution : The Ukrainian Scientific Research Institute of Metals, Kharkov

Presented by : Academician G. V. Kudryumov, May 15, 1954

KAZARNOVSKIY, D.S.

USSR / Diffusion. Sintering.

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9336 E-6

Author : Kazarnovskiy, D.S.
Inst : Ukrainian Scientific Research Institute for Metals, Khar'kov, USSR.
Title : Intercrystalline and Bulk Diffusion of Manganese in Iron.

Orig Pub : Izv. AN SSSR, Otd. tekhn. N., 1956, No 7, 94-102

Abstract : A study is made of the character of the frontal diffusion of manganese in iron of two kinds: ordinary, molten by the scrap process, and experimental, without scrap additives. The diffusion layer is obtained by the method of cementation of iron specimen in ferro-manganese powder. Experiments were carried out with cylindrical specimens of iron at 1,200° for ten hours, and in special hollow specimens at 1,100° for ten hours. In both cases, in the case of microscopic investigation of specimens, it was observed after ce-

Card : 1/2

USSR / Diffusion. Sintering.

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9336 E-6

Abstract : mentation that the diffusion of manganese in ordinary iron follows a uniform front, parallel to the surface of the specimens; in the experimental iron, on the other hand, the diffusion takes place predominantly along the boundaries of the grains. The author explains this phenomenon by the fact that the admixtures present in ordinary iron are surface-active relative to the iron and thereby prevent the adsorption of the diffusing manganese. Bibliography, 26 titles.

Card : 2/2

AUTHOR: KAZARNOVSKIY, D.S., RAVITSKAYA, T.M., cand.of techn.science, SIDEL'KOVSKIY, M.P., and TARASOVA, L.P., engineers, Ukrainian Scientific Institute for Metals and "Azovstal'"-plant (Ukrainskiy nauchno-issledovatel'skiy institut metallov i zavod "Azovstal'"). PA - 2400

TITLE: Properties of Open-Hearth Steel Produced with Application of Oxygen. (Svoystva martenovskoy stali, vyplavlennoy s primeneniyem kisloroda, Russian).

PERIODICAL: Stal', 1957, Vol 17, Nr 2, pp 152 - 157 (U.S.S.R.).

Received: 5 / 1957 Reviewed: 5 / 1957

ABSTRACT: The following investigations were carried out jointly by the two Institutions: Rail steel of the M-73 type, cast of pig iron with a high content of phosphorus in 350 t basic tiltable open hearth furnaces. It was found that the addition of oxygen to the cannel coal of the open hearth furnace before deoxidation as well as into the trough during polishing does not deteriorate the investigated physical and mechanical properties of rail steel (0,6 - o,8 % C). The intensification of the smelting process of the carbon steel by means of the addition of oxygen into the trough by stopping blowing within 55 - 8 minutes before deoxidation does not lead to a reduction of the static values of strength, of the values of plasticity, and of the fatigue strength rate of the steel. However, a certain increase of the total

Card 1/2

Properties of Open-Hearth Steel Produced with Application of Oxygen. PA - 2400

content of oxygen, a reduction of the notch toughness, and an acceleration of the aging process were observed with the stopping of blow through the trough within less than 60 minutes before deoxidation to the same extent as the period of time between the ceasing of the blow and deoxidation was reduced. (7 tables and 8 illustrations).

ASSOCIATION: Ukrainian Scientific Research Institute for Metals, and the "Azovstal'" Plant.

PRESENTED BY:

SUBMITTED:

AVAILABLE: Library of Congress.

Card 2/2

AUTHOR: Kazarnovskiy, D. S. SOV/126-7-5-12/25

TITLE: On the Spheroidization of the Carbide Phase in Steel (K voprosu o sferoidizatsii karbidnoy fazy v stali)

PERIODICAL: Fizika metallov i metallovedeniye, Vol 7, Nr 5, pp 703-707 + 1 plate (USSR)

ABSTRACT: In this article the influence of soaking at a sub-critical temperature and the rate at which cooling is carried out from 700-600°C on the rate of spheroidization of the carbide phase in alloy steels is discussed. An investigation was carried out with Cr-Ni-Mo steel specimens of the type 35KhN2M and with a similar steel without Mo. The critical points of the steel were determined with the Kurnakov pyrometer. The heating and cooling rate was approximately 3°C per minute. The A_{c_1} point lies at 740-750°C. Specimens which had been normalized were heated to 700°C, held at that temperature for 5, 10 and 30 hours, and subsequently cooled to 600°C in the furnace at various rates from 130 to 10°C per hour. After such heat treatment micro-sections were made and inspected under an optical microscope. The results

Card 1/3

On the Spheroidization of the Carbide Phase in Steel

of the investigation (see table on p.705 and Figs.1 and 2) have shown first of all that at a sufficiently great cooling rate soaking of up to 30 hours at 700°C does not exert any noticeable influence on the spheroidization of carbides. After soaking at 700°C for 5, 10 and 30 hours and furnace cooling at a rate of 130°C per hour, the perlite remains lamellar. Further, the rate of cooling from 700-600°C exerts a decisive influence on the spheroidization of the carbide phase, independent of the time of soaking at 700°C. Thus, between 700 and 600°C at a cooling rate of 130°C per hour, perlite remains lamellar after soaking at 700°C for 10 hours (see Fig.1a) and for 30 hours (see Fig.2a). On cooling from 700-600°C at a rate of 20°C per hour, however, spheroidization of the carbide phase occurs independent of the length (10 and 30 hours) of soaking time at 700°C. (Fig.1б and 2б). After soaking at 700°C for 5 hours and on cooling from 700 to 600°C at a rate of 50°C per hour, the carbide phase begins to spheroidize (Fig.3a). On cooling from 700-600°C at a rate of 30°C per hour the microstructure suddenly changed qualitatively - the carbide phase acquired a spherical shape (Fig.3б). On further

KAZARNOVSKIY, D.S.

25(1) PHASE I BOOK EXPLOITATION SOV/2132

Kiyev. Ukrainskiy Nauchno-issledovatel'skiy institut metallov

Tekhnologiya proizvodstva i svoystva chernykh metallov; sbornik (The Manufacture and Characteristics of Ferrous Metals; a collection of articles) Khar'kov, Khar'kovskiy gos.univ. im. A.M. Gor'kogo, 1958. 271 p. (Series: Its: Trudy, vyp. 4) Errata slip inserted. 1,000 copies printed.

Editorial Staff of this book: P.A. Aleksandrov, D.S. Kazarnovskiy, M.I. Kurmanov, N.P. Leve, V.P. Onopriyenko, V.A. Tikhovskiy, and Ya. A. Shneyerov; Ed.: S.S. Liberman; Tech. Ed.: K.O. Gurin

PURPOSE: The book is intended for the scientific personnel of institutes and for engineers and technicians of metallurgical enterprises and other branches of the industry.

COVERAGE: The collection of articles reviews the work carried on at the Institute of Metals on the technology of blast furnaces, open-hearth furnaces, and rolled stock production. It also deals with problems in metallography, heat treatment of ferrous metals and methods for their study. Particular attention is devoted to; the preparation of charges and blast furnace practice with increased gas pressure, open-hearth production with oxygen blast and rolling of light profiles. No personalities are mentioned. References accompany each article.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress (TN 607.T4)

Card 6/6

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Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 5, pp 207-208 (USSR)

AUTHORS: Kazarnovskiy, D.S., Ravitskaya, T.M., Zannes, A.N., Loyzan, O.R.

TITLE: The Effect of Arsenic on Properties of Rail Steel Quench-Hardened by High Frequency Current

PERIODICAL: Byul. nauchno-tekhn. inform. Ukr. n.-i. in-t metallov, 1958, Nr 6, pp 90 - 103

ABSTRACT: The authors investigated "M-73" grade rail steel of the following composition (in %): C 0.67 - 0.78; Mn 0.78 - 0.97; Si 0.19 - 0.25; S 0.018 - 0.027; P 0.24 - 0.34; As 0.125 - 0.139. The steel was quench-hardened by high-frequency current (500 cycles). To investigate the effect of higher As amounts ($>$ 0.15%) experimental rails with 0.204 - 0.243% As were manufactured. It was established that an As content, increased from 0.125 to 0.24%, did not entail substantial changes in H_B, σ_b, σ_ω and toughness of steel

Card 1/2

The Effect of Arsenic on Properties of Rail Steel Quench-Hardened by High Frequency Current

after high-frequency quench-hardening. a_k decreased with a higher As content. For instance, in steel with 0.67% C after high-frequency quench-hardening a_k at +20 and -60°C is equal to 6.5 and 4.35 kgm/cm^2 respectively; with 0.125% As, it is 4.45 kgm/cm^2; at 0.24 As it is 3.25 kgm/cm^2.

I.B.

Card 2/2

KAZARNOVSKIY, D.S., kand.tekhn.nauk (Khar'kov); KLIMOV, K.N., kand.tekhn.nauk (Khar'kov)

How to prolong the life of rails. Put' i put.khoz. no.11:9-11 N'58. (MIRA 11:12)

(Railroads--Rails)

Kazarnovskiy, D.S.

AUTHOR: Kazarnovskiy, D.S. (Cand.Tech.Sc.) 133-2-8/19

TITLE: Ways of Solving the Problem of Rails (Puti resheniya rel'sovoy problemy)

PERIODICAL: Stal', 1958, Nr 2, pp.138-144 (USSR)

ABSTRACT: The problem of increasing the service life of rails is discussed. After reviewing the achievements of Soviet technology in the manufacture of rails, the author points out that as yet the durability of rails in the USSR, as well as abroad, is insufficient. Strengthening of rails has been obtained by increasing the weight per length and the content of carbon in steel. However, increasing carbon above 0.75% is accompanied by a decrease in the tensile strength of notched specimens (Fig.2) and the brittleness of steel on impact bending (Fig.3). The increasing intensity of railway traffic and the distribution of defects in the rails taken off from lines are discussed. It is pointed out that increasing the weight of rails had little effect on the proportion of defects of a brittle nature, and as a result of wide investigations carried out by various institutions in post-war years, the following methods of

Card 1/4

Ways of Solving the Problem of Rails.

further improvement of the service life of rails seem to be possible: a) thermal treatment of rails from carbon steel, b) the manufacture of rails from alloy steels and c) improvement in the profile of rails and their service conditions on railways. After discussing the above methods in the light of published literature, the following conclusions are drawn. In the field of manufacture of rails: 1) An industrial check of the effect of surface hardening of the head along the whole length of rails made from carbon steels from a separate heating. 2) Organisation of the production of a proportion of rails (10-15%) for laying on curves from alloy steels. The required improvement of the quality of rails can be obtained by alloying with one or a few of the following elements: Mn up to 2%; Cr up to 3%; Mn up to 1% and Cr up to 1.2%; Mn 1%, Cr 1.2% and Si 0.75%. 3) Normalisation of rails from Bessemer steel with increased carbon content up to 0.75%. 4) A sharp decrease of residual stresses after cold straightening. 5) Increase in the production of rails 25m long. 6) The choice of optimum weight of ingots and method of their deformation for the manufacture of heavy rails (types P-65 and P-75). In the field of improvement of operating

Ways of Solving the Problem of Rails.

conditions of rails: 1) Improvement in the profile, in particular the solution of the problem of shape of the rail head for type P-50 and of the size of the radius of the upper face of the rail head. 2) Improvement in the layout of tracks - a decrease in the number of curves and an increase in their radius. 3) Optimum inclination of rails on curves. 4) Lubrication of side working face of external rails on curves. 5) Improved feeting of bogies of locomotives into curves of a small radius. The following names are mentioned in the paper: T.M. Ravitskaya (cooperated with the author); K.N.Klimov (observation of service of rails on a special sector, Ukrainian Institute of Metals); Yu.V. Grdina, Prof., V.A.Tikhovskiy and N.P.Shchapov - members of the Interdepartments Rail Brigade (which functioned from 1947-1956); I.P.Bardin, Academician (in charge of NITO which functioned from 1951-1956, from 1956 functions of the above institution were taken over by the Interdepartmental Committee of the Academy of Sciences of the USSR, under the direction of I.P.Bardin); N.I.Dolotova (cooperated with the

Card 3/4

Ways of Solving the Problem of Rails.

author); D.S.Kazarnovskiy (in charge), M.G.Gershgorn, P.T. Besedin, N.P.Dyubin, I.P.Kravtsov and A.I.Kotenko (investigation of mechanical properties of rails from alloy steels in the Ukrainian Institute of Metals). There are 5 figures, 1 table and 17 Russian references.

ASSOCIATION: Ukrainian Scientific Research Institute of Metals. (Ukrainskiy n.-i.institut metallov)

AVAILABLE: Library of Congress.

Card 4/4

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SOV/180-59-4-4/48

AUTHORS: Kazarnovskiy, D.S. and Ravitskaya, T.M. (Khar'kov)

TITLE: Diffusion Processes in Steel Containing Arsenic

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1959, Nr 4, pp 15-27 (USSR)

ABSTRACT: The authors point out that although a considerable amount of work has been done on the effect of arsenic on the mechanical properties of iron and steel, little is known of its effect on phase transformations and less of the influence of arsenic on diffusion in iron and steel; the present investigation was undertaken to fill this gap in knowledge. M.A.Gershgorn, I.P.Kravtsova and A.M.Ponomarenko participated in the experimental work. Kazarnovskiy carried out a series of experiments (Ref 3) in which steel from seven heats with 0.127 to 0.313% As and 0.67 to 0.78% C was subjected to metallographic investigation after various heat treatments: Fig 1 and 2 show microstructures, the latter showing the banded structure often obtained with arsenic-containing steels, while Fig 3 shows the removal of this structure to diffusional annealing (an effect reported by A.K.Shurin and V.N.Svechnikov). To study the influence of banding on

Card 1/5

the properties, four heats of rail steel (0.14 to 0.30% As, 0.71 to 0.78% C) were subjected to tensile testing at ordinary and low temperatures (-183°C) and to static-bend (Table 1), toughness (Fig 4) and fatigue tests. Test pieces were cut from rails across and along the direction of rolling and tested after heat treatment with and without diffusional annealing. The results failed to support, at any rate for high-carbon steel, the conclusions of Kameron and Vatergauz (Ref 1) (Cameron and Waterhouse) that arsenic cannot diffuse in steel and that the banded structure cannot be eliminated by any heat treatment. In fact the present work shows that properties of high-arsenic steel can be improved by special heat treatment. To check the reported (Ref 5) presence of a high-arsenic surface zone at high temperatures of heating two series of experiments were carried out. In the first, in which K.N.Klimov participated, 10 mm diameter and 40 mm long specimens of low and high-carbon steels with about 0.10% As were heated for 2, 4, 6 and 8 hours in air at 1220 to 1230°C. After descaling successive layers of the metal were dissolved in acid, the arsenic content of the solution and

Diffusion Processes in Steel Containing Arsenic

the loss in weight of the specimen giving the layer arsenic content. The results showed that just below the scale a concentration of arsenic occurs, the scale being poor in arsenic. In the second series specimens of 8 heats with 0.5 to 0.78% C and 0.018 to 0.267% As 12 mm in diameter and 140 mm long were heated in air at 900, 1000, 1100 and 1200°C for 1, 3 and 6 hours, the rest of the procedure being as before. Fig 5 shows arsenic content plotted against depth of layer below the surface for the different temperatures and arsenic contents. Surface concentration of arsenic occurred with all specimens (even these with only 0.018% As) increasing with the arsenic content and temperature. Microstructure of the surface layer of steel (0.75% C, 0.258% As) after 6 hours heating at the different temperatures are shown in Fig 6: the thickness of the light-coloured arsenic-rich layer increases with increasing arsenic content of the steel. Concentration gradients were also studied by X-ray methods (by N.I.Sandler) in specimens heated at 900 and 1200°C for 3 and 6 hours by lattice-constant determination of the surface and at the centre of the specimen. Analysis of

Card 3/5

Diffusion Processes in Steel Containing Arsenic

the results (Table 2) again shows a very high degree of arsenic concentration at the surface. The authors consider that all factors accelerating carbon-diffusion in ferrite will accelerate carbide spheroidization, and vice versa, and therefore studied the influence of arsenic on spheroidization. Heat-treated 10 x 10 x 27 mm specimens were studied with anoptical microscope, it being found that a higher As-content promotes spheroidization (Fig 7 and 8 show microstructures for steel with the same carbon content and 0.141 and 0.363% As, respectively; Fig 9 those for steel with varying carbon and arsenic contents). Similar effects were found in microstructures observed with an electron microscope. Finally, the authors studied the frontal diffusion of manganese in steel by cementation of specimens in 50 to 60 mesh ferromanganese mixed with fireclay (to prevent sintering); the mixture was tamped down in a 3 mm diameter axial hole in 15 mm diameter, 25 mm long specimens with various arsenic contents. The specimens were then heated at 1200°C for 10 hours. A study of transverse polished sections (Fig 11) shows that with a low (about 0.05%) arsenic content, the rates of manganese

Diffusion Processes in Steel Containing Arsenic

diffusion over and through the grains are equal; however, with a high content (0.288%) the tendency of the arsenic to concentrate towards grain centres leads to slower diffusion of manganese through than between grains. The authors mention that they consider the effects of arsenic on phase transformations in another paper; the present work, however, explains many of the observed effects (eg decreased stability of austenite). There are 11 figures, 2 tables and 11 Soviet references.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut metallov (Ukrainian Scientific Research Institute for Metals)

SUBMITTED: April 21, 1958

67834
SOV/180-59-6-11/31

18.2500

AUTHORS: Kazarnovskiy, D.S., and Ravitskaya, T.M. (Khar'kov)

TITLE: Influence of Arsenic on the Phase Transformations in Carbon Steel

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1959, Nr 6, pp 83-91 (USSR)

ABSTRACT

The authors point out that in spite of the importance of phase changes for the properties of steels and the sensitivity of these changes to impurities the corresponding published data for arsenic as the impurity are scarce, isolated and sometimes contradictory. The object of the present investigation was to fill this gap for medium- and high-carbon steels. M.A. Gershgorn and A.M. Ponomarenko participated in the experimental work. The metal studied contained 0.46-0.92% C, 0.018-0.36% As, 0.77-0.93% Mn, 0.15-0.24% Si, 0.022-0.32% S, 0.018-0.039% P. The test metal was melted in a 250-kg basic induction furnace and in a tilting 350-tonne or open-hearth furnace at the "Azovstal'" works. Arsenic additions were effected for the small heats by adding iron-arsenic briquettes into the teaming ladle, all

Card 1/4

Influence of Arsenic on the Phase Transformations in Carbon Steel

ingots being forged into 30 x 30 mm bars. For the production heats the additions were made as ferro-arsenic into the furnace after tapping 50-60% of the metal into the first ladle; the metal was rolled into type R-50 (50 kg/m) rails. All samples were normalized from Ac_3 + 60°. Critical points were determined with a M.M. Kantor type DKM dilatometer. The kinetics of austenite grain growth were measured at 800-1200 °C for steels with 0.63% C (Fig 1a) and 0.76-0.80% C (Fig 1б): the higher curve numbers indicate lower As contents. Grain size numbers are given in terms of the GOST 5639-51 scale. Microstructures of a 0.48% C steel with 0.018 and 0.204% As heated at 900 and 1000 °C are shown in Fig 2. The increase in grain size with increasing arsenic content is shown in Fig 3 for a 0.72-0.78% C steel heated at 1100 and at 1200 °C. The isothermal austenite transformation was studied on three experimental heats with 0.018-0.36% As and 0.78-0.92% C, specimens 3 mm long and 30 in diameter being tested in a N.S. Akulov anisometer with the aid of T.F. Filippova. Austenization temperatures were 850 and 1000 °C.

Influence of Arsenic on the Phase Transformations in Carbon Steel

Fig 4 shows the transformation diagrams, while Fig 5 gives plots of percentage of austenite decomposed against arsenic content for different temperatures and times, showing the accelerating effect of arsenic. Hardenability of several heats was determined on 20 x 22 x 75 mm notched or 25-mm diameter test pieces. Fig 6 shows the hardenability curves for a 0.76% C steel with different arsenic contents. Temper brittleness was measured by impact-bending tests of standard test pieces with 2-mm deep notches subjected (as blanks) to various heat treatments, including one specially likely to aggravate temper brittleness. Results for various 0.13 and 0.208% As steels are shown as curves of toughness vs temperature (-100 to +20 °C) in Fig 7. The microstructures in the tough and brittle states are shown in Figs 8a and b, respectively; electron-microscopic pictures of the corresponding areas are shown in Fig 9. The authors conclude that for steels with 0.46-0.80% C an increase in arsenic content up to 0.36% has no appreciable effect on the critical points. Increasing arsenic content leads to greater austenite grain-size

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Influence of Arsenic on the Phase Transformations in Carbon Steel

on heating to about 1000 °C and over. In high (0.78-0.92%) carbon steels higher arsenic content accelerates or slows down austenite decomposition in the higher (above 500 °C) and lower temperature regions, respectively. In 0.62-0.92% C steels it leads to a reduction in hardenability on quenching from 80-100 °C above Ac_3; at higher quenching temperatures arsenic has little effect. With heat treatment involving high (about 1000 °C) hardening temperatures and slow cooling after tempering from temperatures above 600 °C arsenic promotes temper brittleness in medium- and high-carbon steels; it has little effect with normal hardening temperatures.

Card 4/4

There are 9 figures and 17 references, of which 9 are Soviet, 5 English, 2 German and 1 Czechoslovak.

SUBMITTED: April 21, 1958

KAZARNOVSKIY, D.S.

Search for the best composition and conditions of heat treatment of alloyed steel for railroad rails. Trudy Ukr. nauch.-issl. inst. met. no.6:183-205 '60. (MIRA 14:3)
(Railroads—Rails) (Steel alloys—Heat treatment)

SHNEYEROV, Ya.A.; LEPORSKIY, V.V.; KAZARNOVSKIY, D.S.; KOTIN, A.G.; KURMANOV, M.I.; SUKACHEV, A.I.; SLADKOSHTEYEV, V.T.; BUL'SKIY, M.T.; SVIRIDENKO, F.F.; SIDEL'KOVSKIY, M.P.; KOZHEVNIKOV, I.Yu., red.; BORODAVKIN, M.L., red. izd-va; ISLENT'YEVA, P.G., tekhn. red.

[Converting phosphorous cast iron in open-hearth furnaces] Peredel fosforistykh chugunov v martenovskikh pechakh. Moskva, Gos. nauchno-tekhn. izd-vo po chernoi i tsvetnoi metallurgii, 1961. 256 p. (MIRA 14:8)

(Open-hearth process)

S/137/62/000/003/116/191
A060/A101

AUTHOR: Kazarnovskiy, D. S.

TITLE: Influence of grain boundaries and phase-separation interfaces upon the deformation resistance of steel

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 3, 1962, 20, abstract 3I121 ("Sb. tr. Ukr. n.-i. in-t metallov", 1961, no. 7, 206 - 231)

TEXT: An investigation was carried out upon the effect of the extension of the grain boundaries and phase-separation interface upon the mechanical characteristics of steel 45, 45X, and U8 (45, 45Kh, and U8). The varying grain size and ferrite-carbide phase-separation interface was obtained by heating the specimens up to 1,000 - 1,300°C. As the temperature of heating the steel increases, the resistance of the steel to deformation increases, and no notable change in the size of the interphase surface is observed. The increase in resistance to deformation is connected with an increase in the grain size, since then intergranular displacement is made more difficult. There are 30 references.

[Abstracter's note: Complete translation] T. Fedorova

Card 1/1

GERSHMAN, I.S.; KAZARNOVSKIY, D.S.; FILONOV, I.G.; KUTSENKO, A.D.; UL'YANOV, D.F

Production of low-alloy bessemer rail steel. Stal' no.5:404-408 My '61. (MIRA 14:5)

1. Ukrainskiy institut metallov i zavod im. Dzerzhinskogo. (Bessemer process) (Steel alloys)

S/276/63/000/001/006/028
A006/A101

AUTHORS: Kazarnovskiy, D. S., Legeyda, N. F., Tseluyko, V. I.

TITLE: Strengthening heat treatment of low-carbon steel, containing arsenic

PERIODICAL: Referativnyy zhurnal, Tekhnologiya mashinostroyeniya, no. 1, 1963, 40, abstract 1B207 ("Sb. tr. Ukr. n.-i. in-t metallov" 1962, no. 8, 318 - 326)

TEXT: The investigation was made on rolled 3 (St. 3kp) steel sections. The steel was melted in 350-ton tilting open-hearth furnaces on phosphorous iron of the following composition: (in %) C 0.16 - 0.17; S 0.028 - 0.058; P 0.021 - 0.031; Mn 0.44 - 0.50; Si 0 - 0.15; As 0.06 - 0.13. The mechanical properties were tested; the toughness of the steel was determined prior and after aging; the dependence of toughness upon test temperature and the condition of the steel was also determined (after rolling, after rolling and aging, heat treatment, and heat treatment and aging). The fatigue strength of the steel in the initial and thermally improved state was also determined. The authors studied the effect of welding upon the properties of thermally strengthened steel, containing arsenic; they

Card 1/2

determined the toughness of specimens prior and after electric welding. As a result of the investigation performed it was established that rimming steel (St.3) and killed steel (St.3sp) containing up to 0.15% As, were considerably improved after quenching from 910°C, ductility and toughness being satisfactory. Welding does not impair the strength characteristics of the steel obtained by quenching. There are 5 figures and 6 references.

T. Kislyakova

[Abstracter's note: Complete translation]

MAKUKHIN, S.I.; NAVROTSKIY, I.V.; KAZARNOVSKIY, D.S.

Investigating the contact strength of steel for railroad rails.
Stal' 22 no.9:838-842 S '62. (MIRA 15:11)

1. Ukrainskiy nauchno-issledovatel'skiy institut metallov.
(Railroads--Rails--Testing)

KAZARNOVSKIY, D.S., kand.tekhn.nauk; VEKSER, N.A.

Investigating all-rolled railroad wheels and ways to improve their operational durability. Stal' 22 no.12:1115-1117 D '62. (MIRA 15:12)

(Car wheels—Defects) (Steel—Heat treatment)