

L 13352-66 EWT(1)/EWA(h) GG

ACC NR: AT5027159

SOURCE CODE: UR/3055/65/000/004/0157/0172

AUTHOR: Vaynshteyn, L. A. (Professor)

ORG: none

TITLE: Excitation of ^{21,44,55}electromagnetic oscillations in open resonators ₂₅

20
18
B+1

SOURCE: AN SSSR. Fizicheskaya laboratoriya. Elektronika bol'shikh moshchnostey.
no. 4, 1965, 157-172

TOPIC TAGS: electromagnetic oscillation, resonator, resonator Q factor

ABSTRACT: In general, the open resonator is a system of homogeneous or heterogeneous bodies having complex dielectric constant $\text{Im } \epsilon \geq 0$ and complex permeability $\text{Im } \mu \geq 0$, deployed in vacuum, and radiating electromagnetic energy into the surrounding space. It is assumed that, among natural damped oscillations of such a system, there are some known oscillations that have a very high Q. The problem of oscillations of an open resonator forced by external currents and the Cauchy problem are solved by an expansion into continuous-spectrum eigen-functions. The solutions explicitly show the resonance part of the field which is due to high-Q

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ACC NR: AT5027159

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natural oscillations; simple formulas are developed which describe this resonance part. Application of the general formulas is illustrated by an example of a homogeneous isotropic sphere excited by a radial electric dipole and acting as an open resonator. It is claimed that the formula for Q-factor developed by C. G. B. Garret et al. (Phys. Rev., 124, no. 6, 1807) is incorrect. "The author wishes to thank P. L. Kapitsa and V. A. Fok for their interest in this work." Orig. art. has: 74 formulas.

SUB CODE: 09 / SUBM DATE: 06Jan64 / ORIG REF: 004 / OTH REF: 003

gc
Card 2/2

L 2830-66 EPA(s)-2/EWT(m)/EPF(c)/ENP(t)/EWP(b) IJP(c) JD/JG

ACCESSION NR: AP5016165

UR/0051/65/018/006/0947/0953
539.186

AUTHOR: Vaynshteyn, L. A.

29
B

TITLE: Born effective excitation cross sections of hydrogen and sodium

SOURCE: Optika i spektroskopiya, v. 18, no. 6, 1965, 947-953

TOPIC TAGS: hydrogen, sodium, excitation cross section, transition probability

ABSTRACT: The effective cross sections for the excitation of a large number of transitions in H and Na by means of electrons are calculated in the Born approximation. The information on the effective cross sections for the excitation of the atoms, and in particular the cross sections for the transitions between excited states, is important for many problems in gas-discharge physics, astrophysics, and other branches. The effective cross sections are tabulated for s-d, s-s, and s-p transitions of hydrogen and s-s and s-p transitions of sodium. Empirical formulas are also presented for the cross sections, and the corresponding parameters are given for each formula. It pointed out that in many cases the cross section is not proportional to the oscillator strength. Orig. art. has: 11 formulas and 5 tables.

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L 2830-66

ACCESSION NR: A95016165

ASSOCIATION: None

SUBMITTED: 08Jul63

ENCL: 00

SUB CODE: NP

NO REF SOV: 002

OTHER: 003

BVK
Card 2/2

ACC NR: AP6035917

SOURCE CODE: UR/0413/66/000/020/0163/0163

INVENTOR: Bogdanov, S. A.; Kaloyev, A. V.; Makeyov, A. D.; Shipilevskiy, G. B.; Ponomarev, V. I.; Simonov, L. P.; Soshnikov, A. A.; Kalinovskiy, N. P.; Vaynshteyn, L. A.; Pann, L. A.; Kudel'skiy, V. A.; Skrypnik, I. A.

ORG: none

TITLE: Device for automatic control of a wheeled vehicle. Class 45, No. 187433 [announced by the State Union Scientific Research Tractor Institute (Gosudarstvennyy soyuznyy nauchno-issledovatel'skiy traktornyy institut); Khar'kov Tractor Plant (Khar'kovskiy traktornyy zavod)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 20, 1966, 163

TOPIC TAGS: agricultural machinery, ~~automatic control~~, automatic control ^{equipment}, tractor, *motor vehicle*

ABSTRACT: An Author Certificate has been issued for a device for the automatic control of a wheeled vehicle, which includes a duplicating feeler, a feeler-deflection transducer, an electric gate valve, and a hydraulic steering-gear amplifier. To simplify the changeover to and from automatic control, it is equipped with a three-way cock with a handle. The cock's input is connected to a pump, one of its outputs is connected to a distributing hydraulic amplifier, and its second output is connected

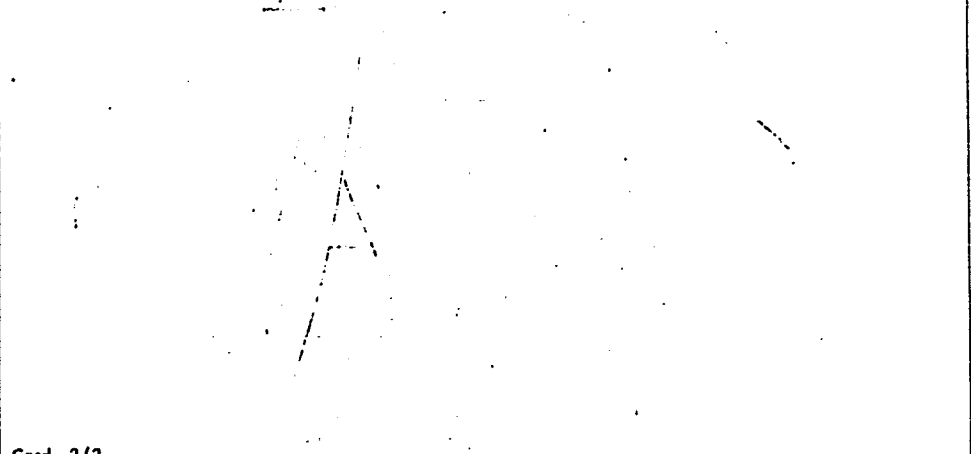
Card 1/2

UDC: 631.36:629.114.2-52

ACC NR: AP6035917

to the electric gate valve. In order to smoothly change the rpm, between the pump and the cock's input is mounted a throttle. Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 30Dec65/



Cord- 2/2

ACC NR: AP7004801 (A) SOURCE CODE: UR/0413/67/000/001/0141/0142

INVENTOR: Shapiro, Ye. M.; Vaynshteyn, L. A.

ORG: None

TITLE: Hydraulic power steering drive for a transportation vehicle with hinge-jointed frame. Class 63, No. 190225

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1967, 141-142

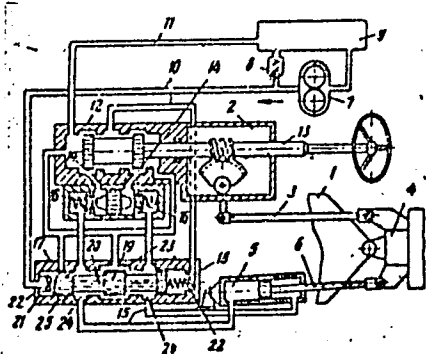
TOPIC TAGS: hydraulic equipment, mechanical power transmission device, drive train

ABSTRACT: This Author's Certificate introduces: 1. A hydraulic power steering drive for a transportation vehicle with hinge-jointed frame. The unit contains a steering mechanism mounted on one of the half-sections of the frame and connected by a tie rod to the other half-section. The installation also incorporates an actuating cylinder with rod and casing hinged to the frame members, a motor-driven pump, safety valve, reservoir, delivery and overflow lines and slide-valve distributor connected to the steering column. The working chambers of the distributor are connected by pipelines through shut-off valves to the cavities of the actuating cylinder. In order to provide direct control in turning the vehicle when the pump is inoperative, the hydraulic drive is equipped with a by-pass valve made in the form of a housing which holds a

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UDC: 629.113.014.52-522.5

ACC NR: AP7004801



1--forward member of the frame; 2--steering mechanism; 3--tie rod; 4--rear section of the frame; 5--actuating cylinder; 6--actuating cylinder rod; 7--pump; 8--safety valve; 9--reservoir; 10--delivery line; 11--overflow line; 12--slide-valve distributor; 13--steering column; 14--working cavities of the slide-valve distributor; 15--pipe-lines; 16--shut-off valves; 17--by-pass valve; 18--spring; 19--three-zone slide-valve; 20--axial opening; 21--choke; 22--end cavities of the by-pass valve; 23--central channel of the by-pass valve; 24--end channels of the by-pass valve; 25--channel connected to the overflow

Card 2/3

ACC NR: AP7004801

three-zone slide valve spring-loaded at one end. In this slide valve is an axial opening with a choke which joins the terminal cavities connected in the delivery line upstream from the slide-valve distributor. The housing for the by-pass valve is made with three channels: the central channel is connected to the overflow and the end channels are connected to the pipelines between the shut-off valves and the cavities in the actuating cylinder. 2. A modification of this drive with provision for maintaining a constant working fluid pressure. The by-pass valve is made with a channel in the housing connected to the overflow and located on the side of the end cavity which is connected to the pump through the delivery line.

SUB CODE: 13/ SUBM DATE: 06Dec65

Card 3/3

ZAYTSEV, R.S., inzh.; VAYNSHTEYN, L.A., inzh.:

Technology of coal extraction in the longwalls of development
workings. Ugol.prom. no.5:25-28 8-0 '62. (MIRA 15:11)

1. Kombinat "Donetskugol'."
(Coal mines and mining)

VAYNSHTEYN, L.A., gornyy inzh.; GRINENKO, Ye.A., gornyy inzh.; GERGEL',
N.A., gornyy inzh.

Mined 430 meters of inclined drifts in one month. Ugol' Ukr.
6 no.9:9-10 S '62. (MIRA 15:9)
(Donets Basin--Coal mines and mining--Labor productivity)

MOSHCHIR, M.S.; VAYNSHTEYN, L.B.

Improve the economic work in sugar factories. Sakh.prom. 37
no.6:51-53 Je '63. (MIRA 16:5)

1. Ukrainskiy nauchno-issledovatel'skiy institut pishchevoy
promyshlennosti. (Sugar factories--Management)

SVYATENKO, M.M.; VAYNSHTEYN, L.B.

Potentialities for increased sugar production. Sakh.prom. 30 no.5:
34-35 № 156. (MIRA 9:9)

1. Tsentral'nyy nauchno-issledovatel'skiy institut sakharney pro-
myshlenosti (for Svyatenko). 2. UNIIPP (for Vaynshteyn).
(Cern sugar)

VAYNSHTEYN, L.B.; ARTMENKO, V.P.

Economic effectiveness of producing caramel-base candy. Khleb. i kond. prom. 1 no.1:33-36 '57. (MLRA:4)

1. Ukrainskiy nauchno-issledovatel'skiy institut pishchevoy promyshlennosti.

(Confectionery)

VAYNSHTEYN, L.B.

Calculating the net cost of alcohol. Spirt. prom. 24 no.3:21-22
'58.

(MIRA 11:6)

(Alcohol--Costs)

VAYNSHTEYN, L.B.

Studies in the field of economics and organization of the production
in the food industry. Trudy UHIIP no.2:161-174 '59.

(MIRA 14:1)

(Food industry)

VAYNSHTEYN, L.B.; GERBER, M.I.

Measuring labor productivity in the sugar industry.
Sakh.prom. 34 no.8:47-51 Ag '60. (MIRA 13:8)

1. Ukrainskiy nauchno-issledovatel'skiy institut pishchevoy
promyshlennosti.
(Sugar industry—Labor productivity)

TYURIN, P. Ya., inzh. (Moskva); VAYNSHTEYN, L.M., inzh. (Moskva)

In regard to I.A. Syromiatnikov's article "Principal trends in
achieving overall electrification." Elektrichestvo no.4:85-88
Ap.'61. (MIRA 14:8)

(Electrification)
(Syromiatnikov, I.A.)

VAYNSHTEYN, I.M., Eng.; MEL'NIKOV, N.A., prof.

Possibility of replacing networks with mutual inductance with
equivalent ones without mutual inductance. *Elektrichestvo*
no.5:16-18 My '65. (MIRA 18:6)

VAYNSHTEYN, L.M., inzhener.

Operating processes of intra-plant electric equipment of thermal
electric power stations. Elek.sta. 25 no.12:31-33 D '54.(MIRA 7:12)
(Electric power plants)

VAYNSHTEYN, L.M., inzh. (Moskva); MEL'NIKOV, N.A., prof. (Moskva)

Calculation of complex nonsymmetrical operating conditions in
electrical systems using a d.c. network analyzer. Elektrichestvo
no.9:37-43 S '63. (MIRA 16:10)

VAYNSHTEYN, L.M. (Moskva); MEL'NIKOV, N.A. (Moskva)

Study of complex nonsymmetrical operating conditions of networks using a d.c. network analyzer and generalized parameters. Elektrichestvo no.6:13-20 Ja'64 (MIRA 1967)

VAYNSHTEYN, L.M., inzhener.

Economic transmission of reactive power from distant electric
power stations. Elek, sta. 27 no.1:26-27 Ja '56. (MIRA 9:6)
(Electric power distribution)

VAYNSHTEYN, L.M.

SYSTEM STABILITY

"On the Static Stability of a System When the Automatic Excitation Regulators are Disconnected from Some of the Generators" by Engineer L. M. Vaynshteyn, Elektricheskiye Stantsii, No. 5, May 1957, Pages 47 -- 49.

When a power system operates with some of the generators provided with automatic excitation regulators and the other part of the station is operating without regulation, the stability margin of the system cannot be calculated by considering the regulated and unregulated generators separately. It is necessary to analyze the operation of the system as a whole and the author proposes a scheme to simplify these calculations and to determine to what extent the regulated generators provide stability for the unregulated ones. Results obtained by means of such an analysis make it possible, in some cases, to avoid shutting down part of the station when some of its regulators are out of order, even when working at large power angles.

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BIRASHEVICH, V.M., inzh.; VAYNSHTEYN, L. M., inzh.

Economic effectiveness of intersystem couplings. Elek.
sta. 35 no. 4:50-54 Ap '64. (MIRA 17:7)

ACC NR: AP7005447

SOURCE CODE: UR/C281/66/000/005/0030/0036

AUTHOR: Vaynshteyn, L. M. (Moscow); Mel'nikov, N. A. (Moscow)

ORG: none

TITLE: Development of a method of calculating the operating mode of complex electrical circuits

SOURCE: AN SSSR. Izvestiya. Energetiki i transport, no. 5, 1966, 30-36

TOPIC TAGS: electronic circuit, circuit design

ABSTRACT: An analysis of the possibility of solving the problem of calculating the operating mode of a complex electrical network with sectors at various nominal voltages without reduction of the parameters to one common basic stage in the case of replacement of loads by a circuit consisting of a fixed current and transverse link with a resistance and an emf. Linear transformations are used to produce formulas for determination of the generalized parameters of the entire system with transformations. Orig. art. has: 1 figure and 35 formulas. [JPRS: 39,568]

SUB CODE: 09 / SUBM DATE: 15Feb66 / ORIG REF: 005

Card 1/1

UDC: 621.311.1

VAYNSHTEYN, I.S.; USTIMOV, I.G.

Mechanization of the removal of parts from dies. Avt.trakt.
prom. no.11:16 a,b. N '54. (MIRA 8:1)

1. Gor'kovskiy avtozavod im. Molotova.
(Punching machinery)

VAYNSHTEYN, M.A.

Develop the track machinery manufacture. Part 1. p.1.2.3.4. 5
no.8:15-16 '65.

(SIRA 1518)

1. Zamestitel' direktora Gosudarstvennogo Instituta po
proektirovaniyu zavodov tyazhelego mashinostroyeniya.

BOGATYREV, M.F.; VAYNSHTEYN, M.I.

Immediate and late sequelae of closed trauma of the brain in
young men. Zhur. nevr. i psikh. 61 no.9:1350-1354 '61. (MIRA 14:9)

(BRAIN--WOUNDS AND INJURIES)

BOGATYREV, M.F.; VAYNSHTEYN, M.I. (Yaroslavl')

On Raynaud's disease in young males. Zdrav. Bel. 9 no.8:40-43
Ag'63 (MIRA 17:3)

VAYNSHTEYN, M.S.

Indications for secondary operations in complications following resection of the stomach. Khirurgia 35 no.12:24-28 D '59.

(MIRA 13:6)

1. Iz kliniki obshchey khirurgii (zav. - prof. A.I. Kozhevnikov) Gor'kovskogo meditsinskogo instituta i khirurgicheskogo otdeleniya Oblastnoy bol'nitsy imeni Semashko (glavnyy vrach - zasluzhenny vrach RSFSR K.I. Kuznetsov).

(GASTRECTOMY complications)

VAYNSHTEYN, M.S.

Effectiveness of anti-recurrence treatment of rheumatic fever.
Vrach. delo no.2:134-135 F '62. (MIRA 15:3)

1. Terapevticheskoye otdeleniye (zav. - M.S. Vaynshteyn)
Vasil'kovskoy rayonnoy bol'nitsy.
(RHEUMATIC FEVER)

ALANDARENKO, E.N.; VAYNSHTEYN, M.S.

Results of treating peptic ulcer patients with v. calin according
to materials of the Vasil'kov District Hospital. Vrach. delo
no.3:123 Mr '64. (MIRA 17:4)

1. Vasil'kovskaya rayonnaya bol'nitsa Kiyevskoy oblasti.

VAYNSHTEYN, M.Ya.

Circuits of a single-digit adding machine. Dokl. AN SSSR 135 no.5:
1031-1034 D '60. (MIRA 13:12)

1. Institut elektronnykh upravlyayushchikh mashin AN SSSR. Pred-
stavleno akademikom M.V. Keldyshem.
(Calculating machines)

VAYNSHTEYN, M.Z.

Physicomechanical properties of porous aggregates made of raw material from Kazakhstan, and their effect on the properties of types of lightweight concrete. Trudy Kazakh. fil. Asia no.2:138-154 '60. (MIRA 15:2)
(Kazakhstan--Lightweight concrete)

VAYNSHTEYN, M.Z., inzh.

Lightweight concretes ~~made~~ with expanded vitrophyre.
Bet. i zhel.-bet. 8 no.11:513-517 N '62. (MIRA 15:11)
(Porphyry)
(Lightweight concrete)

VAYNSHTEYN, M.Z.; KUZNETSOVA, Z.N.

Electrolyte for glossy nickel plating with the simultaneous leveling of the surface. Med. prom. 16 no.3:43-47 Mr '62. (MIRA 15:5)

1. Mediko-instrumental'nyy zavod "Krasnogvardeyets".
(NICKEL PLATING) (ELECTROLYTES)

VAYNSHTEYN, N.

Bank and industry workers support: Advantages are indubitable.
Den. i kred. 21 no.6:25-26 Je '63. (MIRA 16:8)

1. Nachal'nik kreditnogo otdela Kiyevskogo otdeleniya Gosbanka
Moskvy.

(Moscow--Credit)

VAYNSHTEYN, N.Ya., kand.tekhn.nauk

Instrument for marking boreholes. Transp.stroi. ll no.3:51 Mr '61.

(MIRA 14:3)

(Blasting—Equipment and supplies)

VAYNSHTEYN, N.Ya., kand.tekhn.nauk

Hydrogeological calculations for drainage conduits of tunnels.

Transp. stroi. ll no.7:43-45 Jl '61.

(MIRA 14:7)

(Drainage) (Tunnels)

BURDZINA, N.L.; VAKHURKIN, K.A., retsenzent; VAYESHTEYN, N.Ya., retsenzent;
ANANICH, S.A., kand. tekhn. nauk, nauchnyy red.; SHERSHUKOVA, M.A.,
red. izd-va; RUDAKOVA, N.I., tekhn. red.

[Static design of hydraulic engineering tunnels] Statische ras-
chet gidrotekhnicheskikh tunnelei. Moskva, Gos.izd-vo lit-ry po
stroit., arkhitekt. i stroit. materialam, 1961. 194 p. (MIRA 14:6)
(Hydraulic structures) (Tunnels)

VAYNSHTEYN, N.Ya., kand.tekhn.nauk

Air-purification filters for engine exhaust gases. Gor. zhur.
no.9:39-40 S '61. (MIRA 16:7)

1. Vsesoyuznyy ordena Lenina proyektno-izyskatel'skiy i nauchno-
issledovatel'skiy institut im. Zhuk, Moskva.
(Gas and oil engines) (Air filters)

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S/G20/60/135/005/001/043
C111/C222AUTHOR: Vaynshteyn, M.Ya.

TITLE: Schemes for an Adder of Numbers Having the Same Place - Value

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol.135, No.5, pp.1031-1033

TEXT: Let b , c and e be three dyadic numbers with the same number of digits, corresponding to two digits (of a given place) of the summands and to the digit of the carry-over from the preceding place. The author considers schemes consisting of the logical elements \wedge , \vee and θ ; the schemes yield the carry-over E in the next place as well as the sum $B \pmod 2$ of the magnitudes b , c and e . The operation θ has to be applied only once. It is assumed that the schemes do not contain cycles. The author investigates the question how large, under these assumptions, is the minimal number of the diodes needed in the scheme of the adder, and how do the most economical schemes look. At first he investigates optimal schemes consisting only of the elements \vee and \wedge . Then it is stated that B cannot be obtained from b , c , e only by \wedge and \vee ; an inverter must still be used, where E has to appear at its entrance. The scheme for obtaining E used in the apparatus NAREC has 8 diodes and is the single optimal one (up to permutations of the b , c , e and an exchange of \vee and \wedge). For a restriction to 16 diodes, the function B can be obtained with two

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C111/C222

Schemes for an Adder of Numbers Having the Same Place - Value

essentially different schemes. If besides the inversion is admitted (beside of b, c, e still b', c', e') and if it is demanded that the adder delivers the carry-over as it uses it, then not all combinations of these magnitudes are admissible. Figure 4a, b shows the optimal schemes with e and e' and at most 16 diodes. For five magnitudes (b, b', c, c', e or b, b', c, c', e') there exists only one optimal (up to an exchange of b and c and up to dual carry-over) scheme with 16 diodes (fig.4c,d).

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C111/C222

Schemes for an Adder of Numbers Having the Same Place - Value

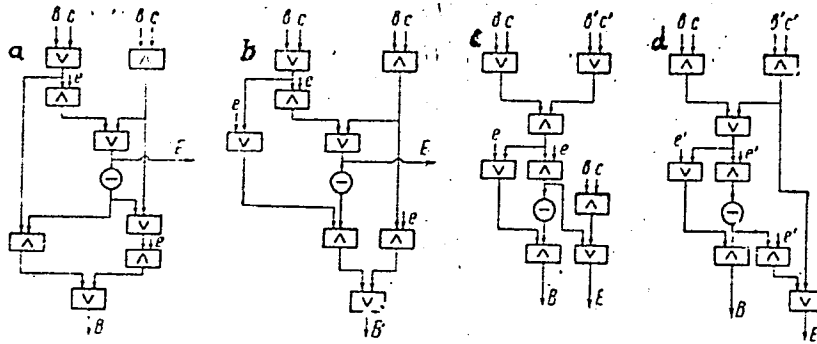


Fig. Para 4

There are 4 figures and 1 Soviet reference.

ASSOCIATION: Institut elektronnykh upravlyayushchikh mashin Akademii nauk SSSR (Institute for Electronic Control Apparata of the Academy of Sciences
PRESENTED: July 1, 1960, by H.V.Keldysh, Academician
SUBMITTED: June 28, 1960

USSR)

Card 3/3

MINAS, A.I., kand.tekhn.nauk; VAYNSHTEYN, M.Z., insh.

Using ferroslags as raw materials in making binding materials.
Stroi.mat. 5 no.12:33-34 D '59. (MIRA 13:3)
(Slag) (Binding materials)

VAYNSHTEYN, M.Z., inzh.

Operating railroad motorcar sections on a rotating schedule. Elek.
i tepl. tiaga 2 no.3:26-27 Mr '58. (MIRA 11:4)
(Railroad motorcars) (Electric railroads--Management)

STURLIS, Yu., inzhener; VAYNSHTEYN, N., inzhener.

A new type of inspection pit. Avt. transp. 33 no.2:12-14 P 155.

(MIRA 8:5)

1. Tekhnicheskoye upravleniye Ministerstva avtomobil'nogo transporta i shosseynykh dorog SSSR (for Sturlis). 2. Sochinskoye avtoupavleniye (for Vaynsteyn).

(Motor trucks--Inspection)

VAYNSHTEYN, N.

VAYNSHTEYN, N., inzh.

Large quarries in India. Stroi.mat. 3 no.11:36 N '57. (MIRA 10:12)
(India--Quarries and quarrying)

VAYNSHTEYN, N., mayor; BUKHIN, B., inzhener-mayor.

Training roentgenmeter with a gas meter. Voen.vest. 37 no.8:63-64
Ag '57. (MIRA 10:10)

(Nuclear counters)

1. VAYNSHTEYN, N.; STROKIN, N.

2. USSR (600)

4. Metalwork

7. Economizing metal and advanced technology. Za ekon. mat. No. 3, 1952.

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

VAYNSHTEYN, N. G.

TJ1160.A34

TREASURE ISLAND BOOK REVIEW

AID 865 - S

VAYNSHTEYN, N. G.

OPYT RABOTY KOMPLEKSNYKH BRIGAD PRESSOVYKH TSEKHOV PO EKONOMII LISTOVOGO METALLA (Experience of Leading Groups ["Complex Brigades"] in Metal Pressworking Shops in the More Efficient Utilization of Sheet Metal). In Akademiya Nauk SSSR. Peredovoy opyt novatorov mashinostroyeniya (Progressive Experience of Leading Men in the Machine-Building Industry) 1954. Part II: Peredovaya tekhnologiya liteynogo proizvodstva, obrabotki davleniyem i svarki (Advanced Technique in Foundry Casting, Metal Pressing, and Welding). p. 176-187.

The author presents examples of several substantial technical improvements in making certain parts at the Gor'kiy Automobile Plant im. Molotov. Leading individuals and groups of technicians and qualified workers, the so-called "complex brigades", developed and introduced more efficient methods of production to achieve better utilization of sheet metal. Marked improvement in the quality of the finished product coupled with lowered costs of production are tangible results of the changes introduced by these men in making certain parts by cold stamping. Seventeen drawings.

1/1

VAYNSHTEYN, N.Ya., kand. tekhn. nauk

Moving sidewalks as a new type of city transportation. Gor.
khoz. Mosk. 37 no.11:23-25 N '63. (MIRA 17:1)

1. Vsesoyuznyy ordena Lenina proyektno-izyskatelskiy i nauchno-
issledovatel'skiy institut im. Zhuk.

VAYNSHTEYN, N.Ya., kand.tekhn.nauk

Thermal drilling of holes. Transp. stroi. 12 no.11:29-31 H '62.
(MIRA 15:12)
(Tunneling)

VAYNSHTEYN, N.Ya., kand.tekhn.nauk

Tunneling in India. Transp. stroi. 13 no.2:55-57 ? '63.
(MIRA 16:3)

(India--Tunneling)

VAYNSHTEYN, N.Ya., kand.tekhn.nauk; MOSTKOV, V.M., kand.tekhn.nauk

"Design of tunnel linings" by M.A.Arkhangel'skii, D.I.Dzhincheradze,
A.S.Kuris'ko. Reivewed by N.IA.Vainshtein, V.M.Mostkov. Transp. (MIRA 14:5)
stroi. 11 no.4:58-59 Ap '61.
(Tunnels) (Arkhangel'skii, M.A.) (Dzhincheradze, D.I.)
(Kuris'ko, A.S.)

BURDZGLA, N.L.; VAKHURKIN, K.A., retsenzent; VAYNSHTEYN, N.Ya., retsenzent;
ANANICH, S.A., kand.tekhn.nauk, nauchnyy red.; SHERSHUKOVA, M.A.,
red.izd-va; RUDAKOVA, N.I., tekhn.red.

[Static design of hydraulic engineering tunnels] Stitcheskii
raschet gidrotekhnicheskikh tunnelei. Moskva, Gos.izd-vo lit-ry
po stroit., arkhitekt. i stroit.materialam, 1961. 194 p.
(Tunnels) (MIRA 14:6)

История, с. 1.

Historiography of the Middle Ages as related to the development of historical thought from the beginning of the Middle Ages to the present time. Moskva, Gos. sots-ekon. izd-vo, 1940. 372 p.

ROZINA, L.A.; VAYNSHTEYN, O.L., professor, otvetstvennyy redaktor; YEKIMOV,
A.A., redaktor; KUZNETSOV, S.S., professor, redaktor

Sergei Pavlovich Kravkov (1873-1938). Bibliogr. sost. L.A.Rozinai.
Leningrad, 1949. 34 p. (MLBA 10:1)

1. Leningrad. Nauchnaya biblioteka imeni M.Gor'kogo.
(Kravkov, Sergei Pavlovich, 1873-1938)

KIRIKOVA, N.N.; VAYNSHTEYN, O.L., professor, otvetstvennyy redaktor;
KUZNETSOV, S.S., professor, redaktor; YEKIMOV, A.A., redaktor

Petr Andreevich, 1856-1942. Bibliogr. sost. N.N.Kirikovoi. Leningrad,
1949. 55 p. (MLBA 10:1)

1. Leningrad. Nauchnaya biblioteka imeni M.Gor'kogo.
(Zemlatchenski, Petr Andreevich, 1856-1942)

VAYNSTEYN, O.L.

AUTHOR: VAYNSTEYN, O.L. PA - 2470
TITLE: Valuable Documents Concerning the History of the U.S.S.R.
in Swedish Archives. (Tsennyye dokumenty po istorii SSR v arkhi
vakh Shvyetsii, Russian)
PERIODICAL: Vestnik Akademii Nauk SSSR, 1957, Vol 27, Nr 1, pp 83 - 91
(U.S.S.R.)
Received: 5 / 1957 Reviewed: 5 / 1957
ABSTRACT: The hand-written historical documents - mostly dating back
to the XVII and the beginning of the XVIII centuries - which
being conserved in Swedish archives, have since long attract-
ed the attention of Russian men of letters, but hitherto no
complete list of these documents has been available. The
documents which are of the greatest interest to Russian
historians and which have also been made accessible to them,
are manuscripts kept in the Stockholm archives in the depart-
ment known as "Moscovitica". A similar department of the
Swedish State Museum (Riksarkivet) has partly been examined by
Russian and Swedish historians, but those manuscripts, which
are of the greatest importance for Russian history and which
are known as "Extranea", have hitherto remained untouched as
also several documents and collections which are in private
hands. One of them (Eriksbergs arkiv) is now being sorted,
but it is not accessible to the public. Nobody has ever

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PA - 2470

Valuable Documents Concerning the History of the U.S.S.R.
in Swedish Archives.

systematically investigated the hand-written books and documents which are of "enormous value for the history of the U.S.S.R." and which are kept in the archives of the Swedish Ministry of Commerce and Industry, the War Ministry, and in the manuscript libraries of Upsala, Lund, Vesteros, in the Royal Swedish Library, and elsewhere.

The author is of the opinion that it would be of eminent importance for Soviet history to gain access to the manuscripts kept in Swedish archives and other institutes. The author himself was able to travel to Sweden in the summer of 1956 and to interest himself in such documents kept in Swedish archives as deal with the history of Russia. Within four pages the author published his comments, extracts, and notes on what he was able to see (with 2 illustrations), and from this it appears that indeed there is an abundance of material bearing on Russian history in Swedish archives. He mentions a number of facts which have hitherto either been unknown or are in complete contradiction to what has hitherto been accepted.

Card 2/3

PA - 2470
Valuable Documents Concerning the History of the U.S.S.R.
in Swedish Archives.

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED:
AVAILABLE: Library of Congress.
Card 3/3

BOGATENKOV, V.F.; VAINSTEIN, O.I. [Vavnshteyn, O. Ya.]; ZVEREV, B.F.; KOLOSOV,
M. I.; LUBENET, I. A. [Lubenets, I.A.]; MOROZOV, A. N.; POVOLOTKY, D.I.
[Povolotskiy, D.Ya.]; STROGANOV, A.I.

Desilicification of Martin iron in mixers. Analele metalurgie 16 no.1:
21-27 Ja-Mr '62.

KEYS, N.V.; VAYNSHTEYN, O.Ya.; KHRYUKINA, V.A.; KAMKINA, L.A.; KORABLEV,
Ye.I.

Use of nickel-bearing emery dust in open hearth furnaces.
Metallurg 7 no.2:20-21 F '62. (MIRA 15:3)

1. Chelyabinskiy metallurgicheskiy zavod.
(Open-hearth furnaces--Equipment and supplies)
(Metallurgical plants--By-products)

VAYNSHTEYN, O.Ya., KOLOSOV, M.I., MOROZOV, A.M., STROGANOV, A.I., REYLLIS, N.V.

AYZENSHTEK, I.Ya.

"Influence of Blast Humidity on the Cast-Iron Hydrogen Content and the Quality of Steel,"

lecture given at the Fourth Conference on Steelmaking, AIA. Baikov Institute of Metallurgy, Moscow, July 1-6, 1957

VAYNSHTEYN, O.Ya., MOROZOV, A.N., KOLOSOV, M.I., POVOLOTSKIY, D.Ya., KOSSOVSKIY, L.D.
STROGANOV, A.I.

"Behaviour of Hydrogen in Steel During the Production and REmelting,"
lecture given at the Fourth Conference on Steelmaking, A.A. Baikov Institute of
Metallurgy, Moscow, July 1-6, 1957

SOV/137-58-8-16552

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 46 (USSR)

AUTHORS: Kolosov, M.I., Morozov, A.N., Stroganov, A.I., Isayev, V.F.,
Keys, N.V., Vaynshteyn, O.Ya.

TITLE: The Rate and Sequence of Crystallization in Ingots of Killed Steel (Skorost' i posledovatel'nost' kristallizatsii slitkov spokoynoy stali)

PERIODICAL: V sb.: Primeneniye radioaktivn. izotopov v chernoy metal-
lurgii. Chelyabinsk, Knigoizdat, 1957, pp 95-105

ABSTRACT: Radioactive Fe⁵⁹ (introduced in the form of Fe oxide) was employed in conjunction with the method of overturning of molds in order to investigate crystallization processes in ingots of steel ShKh15SG (2.65 t) and of steels 10 and 45 (6.2-t ingots). The radioactivity of various zones of the ingot was determined from the radiation intensity of 3.5-g specimens of metal drilled out on different levels of a longitudinal templet of the ingot. As the crystallization progresses, the two-phase region on the sides of the ingot amounts to 30-50 mm. After the formation of a zone of columnar crystals, a two-phase region fed with liquid metal from the central part is formed in the lower part

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SOV/137-58-8-16552

The Rate and Sequence of Crystallization in Ingots of Killed Steel

of the ingot. In a 6.2-ton ingot, the height of this zone extends to 850 mm. Up to a certain time (approximately 80 min in the case of the 6.2-t ingot) the thickness of the crystallized layer (including the two-phase region) taken in a horizontal section of the ingot is proportional to the square root of the crystallization time. Deviations from this relationship, which occur toward the end of the crystallization period, are attributable to a more rapid formation of a two-phase region at the center of the ingot. Extension risers, employed in production of high-quality steel ingots, may be removed only after the crystallization of the ingot has been completed. Bibliography: 19 references.

Ya.L.

1. Steel--Crystallization
2. Iron isotopes (Radioactive)--Applications

Card 2/2

137-1958-1-333

VAYNSHTEYN, O. YA.

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p.51 (USSR)

AUTHORS: Morozov, A.N., Stroganov, A.I., Vaynshteyn, O. Ya.

TITLE: Kinetics of Transport of Iron from Slag to Metal in an Open Hearth Furnace During Boil (Kinetika perekhoda zheleza iz shlaka v metall v martenovskoy pechi vo vremya kipeniya)

PERIODICAL: V sb.: Fiz.-khim. osnovy proiz-va stali. Moscow, AN SSSR, 1957, pp 124-131. Diskus. pp 160-187

ABSTRACT: Experimental melts were run in a 100-ton open hearth furnace working on scrap and ore. The radioactive isotope Fe⁵⁹ was introduced into the slag as oxide at the start of the period when boiling alone was in progress. Samples of metal and slag taken thereafter were checked for radioactivity. Isotope exchange was found to exist between particles in different Fe phases, exhibiting a considerably greater velocity than the process of FeO transport from slag to metal. This circumstance permits the conclusion that the limiting factor in the process of oxidation in an open hearth bath during the period of pure boil is the rate of transport of wustite across the slag-metal interface.

A.S.

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- 1. Iron--Production
- 2. Open hearth furnaces-operation
- 3. Iron (Liquid)--Chemical reactions
- 4. Iron isotopes (Radioactive)--Applications
- 5. Slags--Formation--Test results

VAYNSHTEYN, O. YA.

137-1958-1-337

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 52 (USSR)

AUTHORS: Morozov, A.N., Stroganov, A.I., Vaynshteyn, O.Ya., Isayev, V.F.

TITLE: Rate of Solution of Scrap Iron in Open Hearth Furnaces After Charging of Pig Iron (Skorost' rastvoreniya zheleznogo loma v martenovskikh pechakh posle zalivki chuguna)

PERIODICAL: V sb.: Primeneniye radioaktivn. izotopov v chernoy metallurgii. Chelyabinsk, Knigoizdat, 1957, pp 135-144

ABSTRACT: The radioactive isotopes P^{32} , introduced into the furnace with the ore, and CO^{60} , introduced into the pig iron ladle when pig iron from the mixer is poured into it, were used to study the rate of fusion of the scrap in 380-t open hearth furnaces operating on scrap and ore. Samples of metal for measurement of radioactivity were taken during the heat, the amount of scrap fusing being established by the change in the intensity of radiation by the metal specimens relative to the intensity of radiation of the pig iron. Curves showing the radioactivity of the metal during the heat, and curves of the change in its composition are presented. A specimen calculation of the rate of fusion of scrap iron on the

Card 1/2 basis of radioactivity measurement is presented. It is remarked

137-1958-1-337

Rate of Solution of Scrap Iron (cont.)

that fusion of the scrap iron does not proceed uniformly; 60-70 % is dissolved rapidly in the pig, whereas the remainder follows more slowly. The rate of carbon elimination during the heat is determined.

M.Kh.

- 1. Open hearth furnaces--Performance--Test results
- 2. Ores--Melting rate--Determination
- 3. Iron--Melting rate--Determination
- 4. Carbon--Elimination
- 5. Phosphorus isotopes (Radioactive)--Applications
- 6. Cobalt isotopes (Radioactive)--Applications
- 7. Liquid metals--Sampling

Card 2/2

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 62 (USSR) SOV/137-58-7-14377

AUTHORS: Kolosov, M.I., Stroganov, A.I., Vaynshteyn, O.Ya., Khryukina, V.A.

TITLE: Silicon-chromium in the Smelting of Chrome Grades of Steel in the Open Hearth (Primeneniye silikokhroma pri vyplavke khromistykh marok stali v martenovskikh pechakh)

PERIODICAL: Tekhn.-ekon. byul. Sov. nar. kh-va Chelyab. ekon. administrat. r-na, 1957, Nr 2, pp 8-9

ABSTRACT: In 11 experimental heats of medium-carbon chromium steels: 37KhS, 40Kh-45Kh, 35KhGS, and 40KhS, and 8 of low-carbon steels 20Kh and 2KhNZA run in 100-t furnaces with high molten-pig-iron charges, Fe-Cr was replaced by two grades of Si-Cr, containing respectively 56.6 and 46.9% Cr, 14.5 and 18.7% Si, and 4.5 and 3.1% C. No preliminary deoxidation of the metal in the furnace was performed. Loss of Cr by oxidation in experimental heats of medium-carbon steels (St) was 10.6% versus 12.5% in standard heats, while the respective figures for mild St were 19.5 and 26.3%. The duration of heats with Si-Cr is diminished by 2.5%, and there is no change in the quality of the steel. Working conditions are also improved.

A.S.

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1. Steel alloys--Production 2. Chromium-silicon alloys
--Metallurgical effects 3. Chromium--Oxidation

137-58-6-11691

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 68 (USSR)

AUTHOR: Vaynshteyn, O.Ya.

TITLE: The Smelting of Killed Carbon Steel Without Prior Deoxidation in the Furnace (Vyplavka spokojnoy uglerodistoy stali bez predvaritel'nogo raskisleniya metalla v pechi)

PERIODICAL: Tr. Nauchno-tekhn. o-va chernoy metallurgii, 1957, Vol 18, pp 442-449

ABSTRACT: Results are presented of a comparative investigation of the technical and economic indices and the quality of low-carbon killed grades 10 and 20 steels smelted with preoxidation (P) and without P by blast-furnace Fe-Si in the furnace. The steels were smelted in 100 and 185-t furnaces at the Chelyabinsk Metallurgical Plant. On deoxidation in the furnace by Fe-Mn alone, the duration of a heat is diminished by approximately 3%, the cost of one ton of steel is Rubles 2.44 less than on deoxidation with blast-furnace Fe-Si. Burning loss of Mn in tapping heats without P is 15% greater, and total burning loss of Si diminishes by 20-25% on the average. Deoxidation of Fe-Mn in the furnace results in a smaller cooling of the bath and makes

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The Smelting of Killed Carbon (cont.)

137-58-6-11691

it possible to heat the metal before deoxidation to less elevated temperatures than in P with blast furnace Fe-Si. This eases and speeds the heat. The tapping of heats without P makes for a diminution in [P] by 0.003-0.005% in the finished steel and a diminution in H by 0.5-0.7 cm³/100 g in the ladle sample. The quantity of nonmetallic inclusions electrolytically isolated from the finished steel and the Al₂O₃ content are somewhat higher in heats oxidized in the furnace by Fe-Mn alone. It is established that the mechanical properties of the finished metal, and rejects due to macroscopic faults in structure and surface defects are not dependent upon the mode of deoxidation of the metal in the furnace.

V.G.

1. Steel--Processing 3. Steel--Test results 3. Blast furnaces--Applications

Card 2/2

SOV/137-58-9-18676

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 75 (USSR)

AUTHORS: Morozov, A.N., Kolosov, M.I., Stroganov, A.I., Isayev, V.F.,
Keys, N.V., Vaynshteyn, O.Ya.

TITLE: A Nucleonic Study of the Rate and Sequence of Steel-ingot
Crystallization (Izucheniye skorosti i posledovatel'nosti
kristallizatsii stal'nykh slitkov pri pomoshchi radioaktivnykh
indikatorov)

PERIODICAL: V sb.: Staleplavil'n. proiz-vo. Moscow, Metallurgizdat,
1958, pp 203-217

ABSTRACT: Radioactive tracers were used to investigate the crystallization of 2.65-t ingots of ShKh15SG and 6.2-t ingots of Nrs-10 and 45 steels, bottom poured. 3-5 batches of Fe⁵⁹ (4.5-14.5 millicuries per t steel) were introduced as Fe₂O₃ mixed with Al powder. The tops of the ingots were held in the liquid state by periodic additions of lungerite pipe eliminator. At the same time, crystallization of Nr-10 steel was also studied by overturning three ingots on single stool at different time intervals after pouring. The isotope was introduced at the moments when the residual liquid metal from each of these ingots was poured

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SOV/137-58-9-18676

A Nucleonic Study of the Rate and Sequence of Steel-ingot Crystallization

into a fourth on the same stool. The thickness of the frozen layer as determined by radiography was greater than when determined by pouring out the liquid residue of the metal. This is explained by the fact that the zones of isotope distribution describe the region of the ingot occupied by liquid metal, whereas the thickness of the crystallized layer determined by pouring out defines the region of solid metal phase alone. The difference between them is the magnitude of the region in which two phases exist. The length of that region along the sides of the ingot in the course of crystallization does not exceed 30-40 mm. At the conclusion of the formation of the zone of columnar crystals in the bottom of the 6.2-t ingot there arises a two-phase region attaining 850 mm in height. This region comes into being as the result of the accumulation of equiaxed crystals that have torn away after formation on the interface between the solid and liquid phases. The crystallization of the two-phase region is intermittent in nature. The development of V-segregation and axial porosity are dependent upon the taper of the ingot and the conditions under which the two-phase zone is fed liquid metal from the upper portion of the ingot. In the making of high-quality steel, the hot top should be removed only after the body of the ingot has completely hardened. Within given time limits, the thickness of the crystallized layer is proportional to the square root of the crystallization time; the proportionality factor therein,

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SOV/137-58-9-18676

A Nucleonic Study of the Rate and Sequence of Steel-ingot Crystallization
which is $21-29 \text{ mm/min}^{0.5}$ for carbon steels, declines with reduction in the
[C] of the steel.

L.K.

1. Steel--Processing
2. Steel--Crystallization
3. Radioisotopes--Performance

Card 3/3

ВЫХОДНЫЕ, 1958

133-1-7/24

AUTHORS: Kolosov, M.I., Engineer, Morozov, A.N., Doctor of Technical Sciences, Stroganov, A.I., Candidate of Technical Sciences, Popov, Yu.A., Engineer, Vaynshteyn, O.Ya., and Keys, N.V.

TITLE: The Quality of Steel from Pig Iron Produced with a Constant Moisture Blast (Kachestvo stali iz chuguna, vyplavlennogo na dut'ye postoyannoy vlazhnosti)

PERIODICAL: Stal', 1958, No.1, pp. 24 - 27 (USSR).

ABSTRACT: The influence of moisture content of blast on the hydrogen content in pig iron and the influence of hydrogen content of pig iron on the hydrogen content of steel as well as flake sensitivity of steel on the hydrogen content in the liquid metal were investigated. Nos. 1 and 3 blast furnaces on the above works were transferred to operation with a constant moisture blast (15-20 g/m³). This resulted in the smoother operation, higher blast temperatures 750 - 800 °C (against previous 450 - 500 °C), increase in output (No.1 - 3%; No.3 - 1.3%) and a decrease in the coke rate (No.1 - 6.5%; No.3 - 1.3%). As the works produce quality steel it was considered necessary to check the possible effect of higher moisture in blast on the steel quality. It was found that with increasing moisture content in blast, the hydrogen content of pig iron increases but not proportionally. However, the mean content of hydrogen in the

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133-1-7/24

The Quality of Steel from Pig Iron Produced with a Constant Moisture Blast

open-hearth bath after melting and on teeming was found to be practically independent of the hydrogen content of pig or moisture content in the blast (Fig.1), The final hydrogen content of steel on teeming was not correlated to its content in the corresponding pig (Table 1, Fig.2). The comparison of hydrogen content in pig, steel and rolled products of various levels of moisture content in blast is shown in Table 2; the comparison of the degree of flaking in semis and their hydrogen content and the mechanical properties of finished steel at various levels of moisture in blast - Tables 3 and 4, respectively. It is concluded that the hydrogen content of pig iron has no influence on the hydrogen content of quality steel after melting and on teeming. The direct relationship between the flake sensitivity and hydrogen content of liquid metal was not established. The methods of heating and cooling flake-sensitive steels used on the works secure the absence of flakes in finished products at any level of moisture in the blast. The macro-structure of rolled semis is independent from the moisture content of the blast. There are 4 tables, 2 figures and 6 Russian references.

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The Quality of Steel from Pig Iron Produced with a Constant Moisture
Blast 133-1-7/24

ASSOCIATION: Chelyabinsk Metallurgical Works (Chelyabinskiy
metallurgicheskiy zavod)

AVAILABLE: Library of Congress
Card 3/3

VAINSHTEYN, O. YA.

#133/60/000/007/004/016

ATTORNS: Kolesov, M.I., Candidate of Technical Sciences; SIZENOV, A.I., Candidate of Technical Sciences; KYZA, N.Y., Engineer; Krasnikov, V.F., Candidate of Technical Sciences; Kuznetsov, O.V., Engineer; Danilov, A.M., Engineer; Gerasimov, V.I., Engineer; Gerasimov, V.G., Engineer; Shymalovskiy, V.I., Engineer.

TITLE: The Use of Silicochrome when Smelting Steels in Open Hearth Furnaces

PERIODICAL: Stal', 1960, No. 7, pp. 607 - 608

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48 - 56 29 - 39
49 - 54 40 - 54
50 - 59 0-12 - 0-20
51 2-75 - 4-50

When using 12 - 20 type silicochrome 7 - 20 kg/t were added, whereas of the 40 - 50 type silicochrome about 4.5 kg/t (in the CHZ) and about 7.5 kg/t (in the ZK) and for 30 - 35 DMS 6.5 kg/t were added. When applying silicochrome, steels of the required composition could be produced without any difficulty and the duration of the preliminary desoxidation could be reduced by 5 - 9 min in both plants, (i.e., by 0.5 - 1.5% of the melting time). The amount of chrome, manganese and silicon scale is practically the same in the conventional method (in Zlatoustovsk) - Cr 18%, Mn 0.6%, Si 3%, in Chelyabinsk - Cr 19%, Mn 2%, Si 3.5%. The lower chrome content of the steel before desoxidation 0.15 - 0.3% compared to the values obtained in the CHZ - 0.08 - 0.13%, in case steel, the amount of 20 type silicochrome should reduce the amount of chrome, manganese and silicon scale in the steel by 11 - 13 kg/t in the CHZ and 8.5 - 9.5 kg/t in the ZK and the silicon used in conventional setting be replaced by blast-furnace ferroalloy. When

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using low-alloy steels, 12 - 13 kg silicochrome per ton should be used when the chrome content of the steel is above 0.3% and 15 - 17 kg of silicochrome per ton when it is above 0.2%. The melting process of low-carbon steels and 30 type silicochrome only in the melting process of low-carbon steels. The holding time of the bath at 1600-1700°C is only 15 - 20 min and for steel with a chrome content below 0.05% it is 20 - 30 min on account of the decrease in weight of silicochrome as compared to ferrochrome. The initial rapid absorption of silicochrome in the melting process was decreased by 20% when using silicochrome in the melting process was decreased by a factor of 2 - 2.5 million roubles per annum, from 400 million in 1958 for the 40M type steel to 20.4 million roubles for the 40M type steel in Chelyabinsk and from 1.1 million roubles for the 30M type steel to 12.6 million roubles for the 30M type steel in Zlatoustovsk. There is a special Association: Chelyabinsk naučno-issledovatskiy institut metallurgicheskoy (Chelyabinsk Scientific Research Institute of Metallurgical Engineering and Zlatoustovsk Metallurgical Plants)

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S/133/61/000/001/002/016
A054/A033

AUTHORS: Kolosov, M.I., Candidate of Technical Sciences; Stroganov, A.I.,
Candidate of Technical Sciences; Vaynshteyn, O.Ya., Engineer;
Keys, N.V., Engineer; Khryukina, V.A., Engineer

TITLE: Crystallization and Quality Improvement of 18-30XГТ (18-30KhGT)
Grade Steel

PERIODICAL: Stal', 1961, No. 1, pp. 25 - 28

TEXT: In the 18KhGT grade steel defects in the form of blisters and twists were found, mainly in the top part of the ingot, resulting in 7% rejects. The defects in the ingot body were most probably due to pouring in such a way that in the ingot mold top a skin was formed at the walls. When 5-ton ingots were cast the defects decreased due to the shorter pouring time resulting in a smaller temperature difference between the beginning and the end of the casting process. An efficient measure to prevent these defects was topping the ingots at 19% of their height instead of 17%. Another type of defect is the "tongue" observed on the face of the ingot when cutting the hot metal. In the 5-ton and 6.2-ton ingots this type of defect increased to 25%. When investigating these "tongues" on

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A054/A033



Crystallization and Quality Improvement of 18-30XГТ (18-30KhGT) Grade Steel

etched longitudinal and lateral macrosections and on the longitudinal hardened fracture, it was found that they were actually laminations of the central zone of the ingot. Macrostructural tests revealed at the place of laminations an accumulation of non-metallic impurities, extending along the axis of lamination. Moreover, investigations of the longitudinal hardened fracture showed that this lamination is an internal defect of the metal connected with the crystallization of the ingot. Therefore, tests were made to determine the character of crystallization and the structure of 18-30KhGT grade steel ingots. The crystallization process was studied in 6.2-ton ingots by the tilting method, radiometry and temperature tests. In the radiometric method (Ref. 1, M.I. Kolosov, A.N. Morozov, et al.: "Rate and Sequence of the Crystallization of Killed Steel Ingots". In the collection: "The Application of Radioactive Isotopes in Ferrous Metallurgy", Chelyabinsk, 1957), the Fe⁵⁹ radioactive isotope was applied. The metal temperature during crystallization was recorded at distances 665, 1,125 and 1,425 mm from the riser, with platino-rhodium-platinum thermocouples, protected by double-wall quartz tubes between which graphite rings were fitted at each level. During crystallization a double-phase zone formed along the axis of the ingot. The considerable toughness of the 18-30KhGT steels makes the feeding of the central part

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S/133/61/000/001/002/016

AO54/AO33

Crystallization and Quality Improvement of 18-30XPT (18-KhGT) Grade Steel

of the ingot difficult, causing the origination of a porous zone. As the location of this central porous zone coincides with the lamination in the rolled product it can be assumed that lamination is caused by the porosity of the metal. In the places of lamination considerable amounts of non-metallic impurities were found impeding the scalding of the lamination even at greater reductions. Based on the tests two methods were found to prevent lamination: 1) reducing the porosity of the central part of the ingot and 2) reducing the quantity of non-metallic impurities. 1) In order to reduce the central porosity, the process of feeding the central area of the ingot had to be improved. Measures were taken to increase the time during which the metal is liquid in the hood of the riser. It was found, however, that neither the application of "lunkerite" with an aluminum content of 28% instead of 14%, added in quantities of 3 - 4 kg/ton instead of 1.5 - 2 kg/ton, nor the use of lunkerite containing 35 - 50 % magnesium powder (1.5 - 2.0 kg/ton) yielded a considerable improvement of the macrostructure. Thus it was not possible to improve the feeding of the ingot with liquid metal by increased heating of the top. Better results were obtained in this respect when the riser hood was insulated by asbestos sheets (10mm thick) between its casing and lining and by winding

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A054/A033

Crystallization and Quality Improvement of 18-30XTT (18-30KhGT) Grade Steel

asbestos cores, 22 mm thick, or asbestos sheets around the ingot molds, at a distance of 500 mm from the top, fixed with sheet iron. The riser hoods were also mounted on asbestos disks. The longitudinal templates taken from ingots melted in insulated ingot molds showed a satisfactory density and the axial porosity found in conventional ingots was absent. The products rolled from ingots produced with the insulation method (140 x 140 mm section) were also free from lamination. 2) The second method to prevent lamination, i.e., the reduction of non-metallic impurities was tested with 3 kinds of deoxidizing agents: a) Silicomanganese in the furnace and 45% solution of ferro-silicium in the ladle (conventional method); b) 15 - 17 kg/ton AMS alloy in the furnace and 45% solution of ferrosilicium in the ladle; c) manganese silicate in the furnace and calcium-silicon in the ladle. The best results were obtained with method b) (3.05% rejects due to lamination and 0.06% rejects due to macrostructure, while the corresponding figures for method a) are 5.05% and 0.5% and for method c) 17.0%) (see table). To improve the steel quality, further tests were carried out in 1958 - 1959 to study preliminary oxidation with silicochromium, instead of AMS, the use of titanium-containing scrap instead of ferro-titanium for alloying and the optimum metal temperature prior to deoxidation, ensuring a satisfactory macrostructure and metal surface. By employing titanium-containing scrap the temperature drop in the ladle decreased
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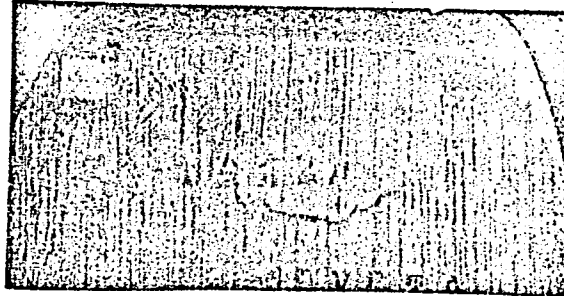
А037/А033

Crystallization and Quality Improvement of 18-30XГТ (18-30KhGT) Grade Steel

and the toughness of steel was reduced. Rejects due to surface defects were 0.1% instead of 0.24% in the conventional melts. There are 2 figures, 1 table and 1 Soviet reference.

ASSOCIATIONS: Nauchno-issledovatel'skiy institut metallurgii, Chelyabinskiy metallurgicheskiy zavod (Scientific Research Institute of Metallurgy, Chelyabinsk Metallurgical Plant)

Figure 1: "Tongue" defect in 18KhGT steel ingot



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POVOLOTSKIY, D.Ya.; VAYNSHTEYN, O. Ya.; KHRYUKINA, V.A.; VOTYAKOV,
A.A.

Content of ferrous oxide in slag before decidation and the
quality of alloyed, low-carbon, open-hearth steel. Izv.vys.
ucheb.zav.; chern.met.7 no. 4:43-47 '64. (MIRA 17:5)

1. Chelyabinskiy metallurgicheskiy zavod i Chelyabinskiy
politehnicheskiy institut.

KHOROSHAVIN, L.B.; PEREPELTSYN, V.A.; ZHUKOV, A.V.; MOROKOV, P.K.;
MAKRUSHIN, V.V.; BARTOLISH, D.M.; BRYUNETKIN, M.G.; VAYNGHTEYN,
O.Ya.; GISS, A.N.; SHLL'KIN, M.A.; SHOTIN, V.S.

Use of metallurgical magnesite powder burned at low
temperature. Stal' 25 no.12:1086-1088 D '65.

(MIRA 18:12)

VAYNSHTEYN, O.Ya.; MOLCHANOVA, A.A.; POVOLOTSKIY, D.Ya.; KHRYUKINA, V.A.;
SHUL'KIN, M.L.

Production of 18KhNT and 15KhGHTA steel in open-hearth furnaces.
Stal' 23 no.7:621-623 J1 '63. (MIRA 16:9)
(Steel alloys--Metallurgy) (Open-hearth furnaces)

VAYNSHTEYN, O.Ya.; DENISOV, V.G.; KHRYUKINA, V.A.; SHUL'KIN, M.L.

Economizing chromium in the production of chromium steel. Metallurg
8 no.4:18-19 Ap '63. (MIRA 16:3)
(Chromium steel—Metallurgy)

ALYM, L.A., inzh.; VAYNSHTEYN, O.Ya., inzh.; KEYS, N.V., inzh.; LUBENETS, I.A.,
inzh.; SMIRNOV, Yu.D., inzh.; FIRSOV, S.G., inzh.

Production of ' St. 5ps semikilled steel for concrete reinforcements.
Stal' 23 no.4:320-321 Ap '63. (MIRA 16:4)
(Steel, Structural--Metallurgy) (Concrete reinforcements)

GOL'DSHTEYN, Ya.Ye., kand.tekhn.nauk; ZEL'DOVICH, V.I., inzh.; KEYS, N.V.,
inzh.; KOSSOVSKIY, L.D., inzh.; VAYNSHTEYN, O.Ya., inzh.;
SHMATKO, K.S., inzh.

Effect of treating liquid chromium-nickel steel by cerium on
the characteristics of its crystallization. Stal' 22 no.3:256-
261 Mr '62. (MIRA 15:3)

1. Chelyabinskiy nauchno-issledovatel'skiy institut metallurgii
i Chelyabinskiy metallurgicheskiy zavod.
(Chromium-nickel steel--Metallography) (Cerium)

BOGATENKOV, V.F.; VAYNSHTEYN, O.Ya.; ZVEREV, B.F.; KOLOSOV, M.I.; LUBNETS,
I.A.; MOROZOV, A.N.; POVOLOTSKIY, D.Ya.; STROGANOV, A.I.

Desiliconization of open-hearth pig iron in the mixer. *Izv. vys.*
ucheb. zav.; chern. met. 4 no.8:32-36 '61. (MIRA 14:9)

1. Chelyabinskiy metallurgicheskiy zavod, Chelyabinskiy nauchno-
issledovatel'skiy institut metallurgii i Chelyabinskiy politekhnich-
eskiy institut.

(Cast iron--Metallurgy)

BOGATENKOV, V.F.; VAYNSHTEYN, O.Ya.; ZVEREV, B.F.; FIRSOV, S.G.

Improving the method of phosphorus removal during steel smelting.
Metallurg 6 no.11:11-13 N '61. (MIRA 14:11)

1. Chelyabinskiy metallurgicheskiy zavod i Chelyabinskiy
nauchno-issledovatel'skiy institut metallurgii.
(Steel—Metallurgy)

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VAYNSHTEYN, O. YA.

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AUTHORS: Gol'dshteyn, Ya. Ya., Candidate of Technical Sciences, Zel'dovich, V. I., Keys, N. V., Kossovski, L. D., Vaynshteyn, O. Ya., Shmatko, K. S., Engineers

TITLE: The effect of treating liquid chrome-nickel steel with cerium on its crystallization

PERIODICAL: Stal', no. 3, 1962, 258 - 261

TEXT: Tests were carried out to study the effect of adding ferrocerium to chrome-nickel structural steel on the flake formation and crystallization. The tests were based on the chemical affinity of cerium to hydrogen, which increases when the temperature is raised. As rare-earth metals mostly tend to adsorb hydrogen in the 200 - 600°C range, where the hydrogen separation from the metal is particularly intensive, this phenomenon can be used to reduce flaking. Four 40 X 40 (40X40) steel ingots of the same melt were tested: one, checking specimen, without ferrocerium, the others containing 0.1, 0.25 and 0.6% ferrocerium, respectively. Lumps of ferrocerium, containing 94% rare-earth metal (primarily cerium) were used. The ingots were top-cast and weighed 2.65 ton. Lateral macrotemplates,

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cut from blooms rolled from the test ingots, (air-dried after rolling, non-annealed) were analyzed after 1 and 6 months. Flakes were not found in templates from steel to which at least 0.6% ferrocerium was added. The analysis also showed that the effect of cerium (lanthanum, etc.) actually does not manifest itself in the adsorption of hydrogen, but rather in bonding it in the form of stable hydrides. In steel, containing as much as 3.7 cm³ hydrogen/100 g, there was no flaking, due to the addition of 0.6% ferrocerium, while flakes were found in steel containing not more than 0.56 cm³/100 g hydrogen, if not treated with cerium. When ferrocerium is added to the liquid steel in amounts above 0.25%, the pattern of dendritic crystallization changes and sulfur will be re-distributed in the micro-areas of the metal. High-smelting cerium-sulfides pass from the interaxial areas into the dendritic axes. When ferrocerium is added in amounts of up to 0.6%, dendritic crystallization disappears, and, under the effect of cerium, the steel is cleaned from sulfur, antimony, stannum, bismuth, lead, etc. 0.6% ferrocerium reduces the sulfur-content of the metal 5 times. However, when ferrocerium is added in the ingot mold, the cerium-sulfides (oxy-sulfides) cannot entirely be removed into the slag and the feeding head. This results in a nonhomogeneity of the boundary zone. The high-temperature cerium-sulfides (oxy-sulfides of intricate composition) are forming already in the period prior to crystallization

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and are moved to the ingot surface during the casting. The liquation in the boundary zone can be prevented by smooth, rather slow filling of the ingot mold from the bottom and by an increase of the head temperature. Cerium containing steel with a liquation in the boundary zone shows a tendency to red shortness. This can be reduced by adding ferrocerium in the ladle instead of in the ingot mold, or by roughing the ingot before rolling. The addition of ferrocerium in amounts of at least 0.25% prevents spotty liquation, because a greater part of sulfur is bonded in the form of cerium-sulfides with a high melting point. There are 5 figures and 9 references: 8 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: Russel, Journal of Metals, no. 4, 1954, 438 - 442.

✓

ASSOCIATION: Chelyabinskii nauchno-issledovatel'skiy institut metallurgii
(Chelyabinsk Scientific Research Institute of Metallurgy) and
Chelyabinskii metallurgicheskii zavod (Chelyabinsk Metallurgical
Plant

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