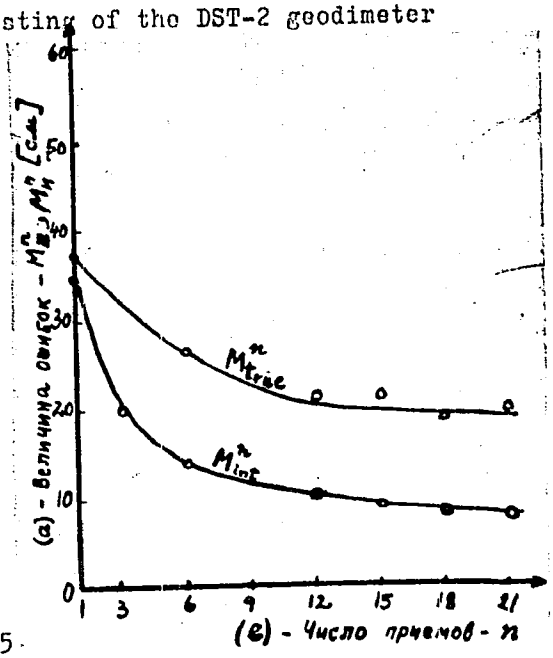
Field testing of the DST-2 geodimeter



Card 4/5

S/006/61/000/011/001/002
D054/D113

Fig. 2

a - Value of errors

M^n_{int}, M^n_{true}, in cm

b - number of receptions n

Field testing of the DST-2 geodimeter

Table 2

S/006/61/000/011/001/002
D054/D113

(1)	(2)	(3)	(4)	(5)	(a)	(b)	(6)	(7)	(8)
1	18.4	12	1781,70	1781,69	±48	±14	—1	1:180000
2	22.4	11	2577,83	2578,02	65	20	+19	1:13400
3	23.4	24	1799,10	1799,30	28	6	+20	1:9000
4	24.4	20	1801,03	1801,19	28	6	+16	1:11300
5	25.4	24	2255,88	2256,07	27	6	+19	1:11900
6	29.4	16	2016,06	2016,38	24	6	+32	1:6300
7	30.4	29	1830,76	1830,97	14	3	+21	1:8700
8	4.5	24	4359,54	4359,94	50	10	+40	1:11000
9	5.5	12	584,95	584,68	21	6	—27	1:2200
10	6.5	12	1110,99	1110,95	17	5	— 4	1:28000
11	7.5	12	928,05	927,98	36	10	— 7	1:13200
12	9.5	12	1527,56	1527,69	47	13	+13	1:11700
13	9.5	4	459,37	459,28	30	15	— 8	1:5700
14	9.5	15	405,03	404,64	10	3	—39	1:1050
15	10.5	17	1969,47	1969,51	45	11	+ 4	1:49000
16	10.5	15	680,71	680,90	20	5	+19	1:3600
17	10.5	15	456,22	456,24	21	5	+ 2	1:23000
18	11.5	9	930,50	930,46	16	5	— 4	1:23000
19	11.5	15	456,22	456,02	23	6	—20	1:2300
20	12.5	15	928,05	927,87	68	18	—17	1:5500
21	12.5	15	1110,99	1111,01	45	12	+ 2	1:55000
22	13.5	14	1527,56	1527,78	55	15	+22	1:7000
23	13.5	14	584,96	584,87	23	6	— 8	1:7400
24	14.5	18	246,06	246,03	26	5	— 3	1:8000
25	16.5	18	264,39	264,09	35	8	—30	1:1000
26	16.5	12	684,44	684,29	10	3	—15	1:4600
27	17.5	18	246,06	245,98	25	6	— 8	1:3100

Card 5/5

1- No. of lines
2- date of observation
3- number n of receptions
4- length of the line by triangulation D_T, in m
5- length measured by the geodimeter D_C, in m
6- mean square error for internal convergence:
   a- one reception m_{int}, in cm
   b- of the result M_{int}, in cm
7- $M_{true}=D_C-D_T$, in cm
8- $\frac{M_{true}}{D}$

BORODULIN, G.I., inzh.

Required accuracy and range of a geodimeter for mine surveying. [Trudy] VNIMI no.45:91-99 '62. (MIRA 16:4)
(Geodimeter)

BORODULIN, G.I., inzh.; CHAYKO, V.Ya., inzh.

Field testing the DST-2 phototachymeter. [Trudy] VNIIMI no.47 357-366 '62 (MIRA 17:7)

L 31034-66 EWT(1) GW

ACC NR: AR5027612 SOURCE CODE: UR/0270/65/000/009/0025/0025

AUTHOR: Borodulin, G. I.

TITLE: Study of the asymmetry effect of a luminosity curve on the accuracy of phase measurement by a method of comparison in a photo-tachymeter diagram

SOURCE: Ref. zh. Geodeziya, Abs. 9.52.187

REF SOURCE: Tr. Vses. n.-i. in-ta gorn. geomekhan. i marksheyd. dela, sb. 53, 1964, 363-370

TOPIC TAGS: phase measurement, error, Kerr cell, capacitor, photometry, frequency modulation, luminescence

ABSTRACT: Continuing the study, published previously (Ref. zh. 1965, 5.52.215), the author derives an expression for the magnitude of error in fixing phase difference (and consequently the error in distance), dependent on the asymmetry of a luminosity curve due to change in the operating conditions of Kerr condensers with change in frequency of modulation. A case of distance measurement by means of a visual phototachymeter by the method of comparison with a reference flare of constant brightness is analyzed. The magnitude of the errors for

Card 1/2 UDC 528.024.7.089.6

L 31034-66

ACC NR: AR5027612

various operating conditions of Kerr condensers is calculated in accordance with the expression derived by the author. The calculation results are presented graphically and in tables. M.R.

SUB CODE: 09,20/ SUBM DATE: Sep65

Card 2/2 LC

L 46307-65 EWT(1) GW

ACCESSION NR: AR5012219 UR/0058/65/000/003/A028/A028

SOURCE: Ref. zh. Fizika, Abs. 3A254

AUTHOR: Borodulin, G. I.

TITLE: Investigation of a reference light flux and of the accuracy of phase determination by the comparison method in a visual optical range finder

CITED SOURCE: Tr. Vses. n.-i. in-ta gorn. geomekhan. i marksheyd. dela, sb. 52, 1964, 319-333

TOPIC TAGS: optical range finder, reference light flux, phase determination, comparison method

TRANSLATION: A theoretical study is made of the quality of the reference light signal and the accuracy with which the phase shift is fixed by the comparison method in the Velichko variant as applied to an optical range finder with synchronous demodulation of the light flux and with continuous variation of the modulating frequency.

SUB CODE: OP ENCL: 00

Card 1/1

L 15261-66 EWT(d)/EWT(l) GW/BC

ACC NR: AR5014337 SOURCE CODE: UR/0270/65/000/005/0029/0029

AUTHOR: Borodulin, G.I.

40

B

ORG: none

TITLE: Study of a key light flow and of the accuracy of phase fixation by a comparison method in the system of an optical light range finder

SOURCE: Ref. zh. Geodeziya. Otdel'nyy vypusk, Abs. 5.52.215

REF SOURCE: Tr. Vses. n.-i. in-ta gorn. geomekhan. i marksheyd. dela, sb. 52, 1964, 319-333

TOPIC TAGS: light, light transmission, optic transmission, optic range finder

TRANSLATION: A study is made of the comparison method proposed by V.A. Velichko (RZh, 1962, 11G257P). On the basis of previously obtained data on the extreme compensation method by V.P. Vasil'yev and V.A. Velichko, an estimate is made of the value of the key light signal and the dependence of this value on errors in the mutual orientation of polaroids and the Kerr condenser. An evaluation is made of the accuracy in the fixation of phase variations in the different operating ranges of the Kerr condenser; taking into consideration this evaluation, a deduction is made regarding the most efficient operating system, with the proviso that the sum of polarization and modulation tensions does not exceed the critical point.

SUB CODE: 17 GP

Card 1/1

UDC: 528.021.7

2

L 14601-66 EWT(1) GW

ACC NR: AT5028159 (A) SOURCE CODE: UR/3172/64/000/053/0363/0370

AUTHOR: Borodulin, G. I. (Engineer) 43

ORG: All-Union Scientific Research Institute of Mining Geomechanics and Mine Surveying, Leningrad (Vsesoyuznyy nauchno-issledovatel'skiy institut gornoy geomekhaniki i marksheyderskogo dela)

TITLE: Investigation of the effect which asymmetry in the luminous flux curve has on the accuracy of phase measurements made by comparison in a phototachymeter circuit

SOURCE: Leningrad. Vsesoyuznyy nauchno-issledovatel'skiy institut gornoy geomekhaniki i marksheyderskogo dela. Trudy, no. 53, 1964. Gornoye davleniye, sdvizheniye gornykh porod i metodika marksheyderskikh rabot (Rock pressure, rock displacement, and methods of mine surveying), 363-370

TOPIC TAGS: optic range finder, phase measurement, Kerr cell

ABSTRACT: The author derives formulas for calculating errors due to luminous flux curve asymmetry caused by variations in the modulating voltage in the range of the main oscillator for various operating conditions of the Kerr cells in a phototachy-

Card 1/2

meter circuit. These formulas are used for calculating errors for a number of conditions assuming the use of the comparison method. The results are tabulated and graphed as a function of the variation in modulating and polarizing voltages. It is found that the error due to asymmetry in the luminous flux curve depends on the distance being measured, the frequency range and the operating conditions of the Kerr condensers. This error decreases with an increase in the distance being measured and the frequency range, and also with an increase in the modulating and polarizing voltages. Optimum conditions give an error of less than 0.25°. The effect of this error may be kept to a minimum in measuring short distances (below 300 m) by reducing changes in the amplitude of the modulating voltage with respect to range and keeping these changes smooth, by a linear variation in frequency with respect to range and by increasing the range. Orig. art. has: 3 figures, 1 table, 16 formulas.

SUB CODE: 17,09/ SUBM DATE: 00/ ORIG REF: 000/ OTH REF: 000

FW

L 1343-66 EWT(d)/EWT(l)/EED-2 GW/JT/BC

ACCESSION NR: AP5020912 UR/0006/65/000/008/0015/0021
528.517

AUTHOR: Borodulin, G. I.; Sinitsyn, V. A.; Popov, I. A.; Mal'tsev, B. N.; Plyushchev, A. N. 44,55

TITLE: Results of tests of a prototype of the TD-1 optical range finder

SOURCE: Geodeziya i kartografiya, no. 8, 1965, 15-21

TOPIC TAGS: geodetic instrument, range finder, geodimeter, TD 1 range finder, mining survey 44,55,12

ABSTRACT: Two prototypes of the TD-1 small optical range finder, originally developed in 1960 by the Vsesoyuznyy nauchno-issledovatel'skiy institut gornoy geomekhaniki i marksheyderskogo dela (All-Union Scientific Research Institute of Mining Geomechanics and Mine Surveying), to measure distances in the 150—5000-m range with a mean square error ±1.5 cm, were produced in 1963 and field tested in 1964 by the Electronics Instruments Laboratory of the Institute. Simultaneous testing was carried out with a Swedish NASM-4B geodimeter. Comparative measurements were made against those of the Institute's field comparator, highly precise traverse, second- and third-order triangulation, and invar wires. Subsequent field tests

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L 1343-66
ACCESSION NR: AP5020912

were made by an interdepartmental commission set up by the USSR Administration of Measuring Instruments of the State Committee of Standard Measures and Measuring Instruments. Results of these tests showed these instruments to be highly precise. The mean square error of a single measurement for the first prototype was ±9 mm and for the second ±16 mm; the systematic error was +1 mm and +8 mm, respectively; and the mean value of the deviation of the number of waves computed from the total number of waves was ±0.02 for both prototypes. Orig. art. has: 2 figures and 5 tables. [ER]

ASSOCIATION: none

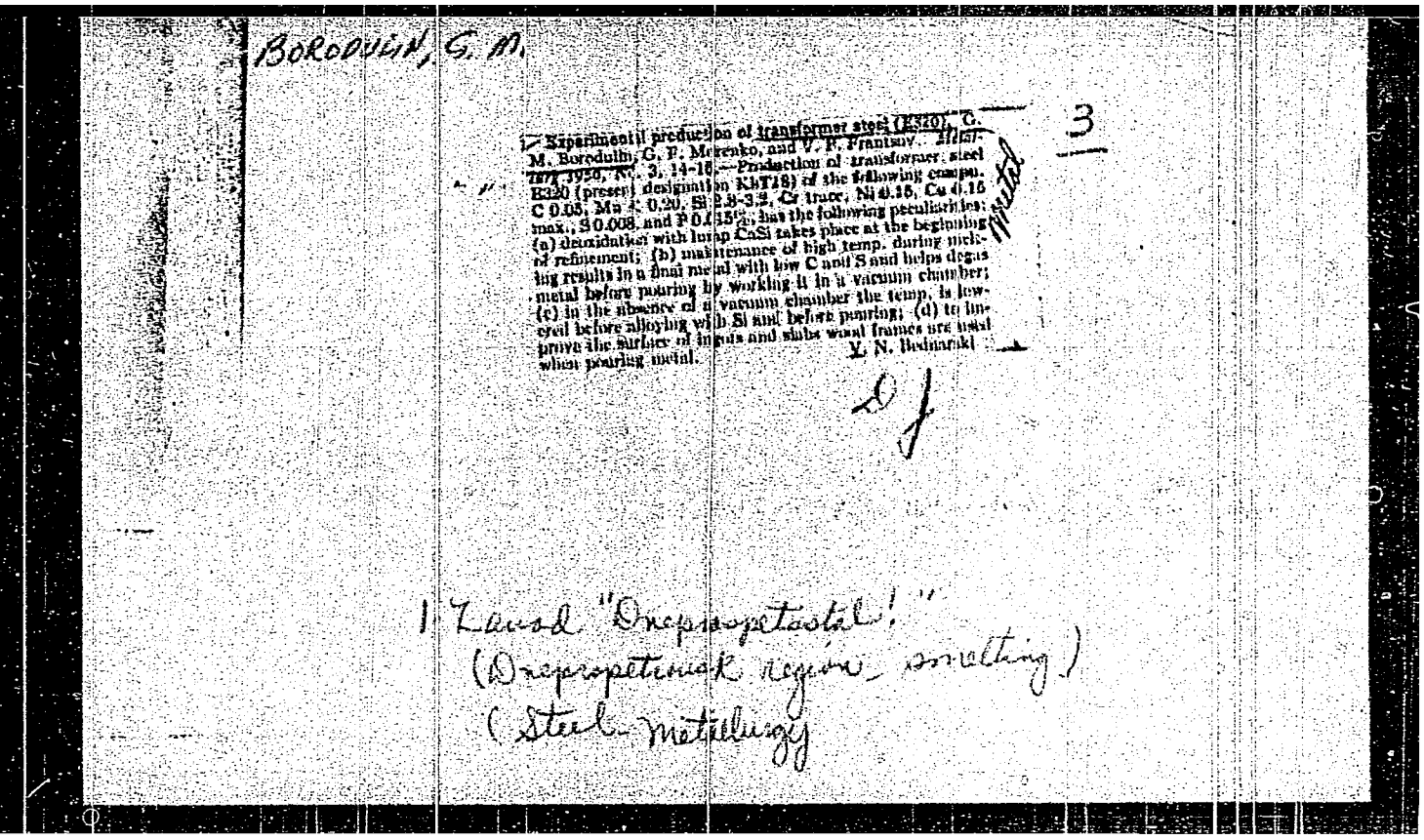
SUBMITTED: 00 ENCL: 00 SUB CODE: EC, OP

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4092

Card 2/2

BORODULIN, G.H. [Borodulin, G.Kh.]

Portabrasive axis for precision grinding. Metalurgia constr mas 14 no.8:761 Ag '62.



Borodulin, G. M.

Experimental production of transformer steel (E320). G. M. Borodulin, G. F. Merenko, and V. F. Frantsuz. Metallurg, 1939, No. 3, 14-16.—Production of transformer steel E320 (present designation KhT18) of the following compn.: C 0.05, Mn 0.20, Si 2.8-3.2, Cr trace, Ni 0.15, Cu 0.15 max., S 0.008, and P 0.015%, has the following peculiarities: (a) deoxidation with lump CaSi takes place at the beginning of refinement; (b) maintenance of high temp. during melting results in a final metal with low C and S and helps degas metal before pouring by working it in a vacuum chamber; (c) in the absence of a vacuum chamber the temp. is lowered before alloying with Si and before pouring; (d) to improve the surface of ingots and slabs wood frames are used when pouring metal.

V. N. Bednarski

Metal

3

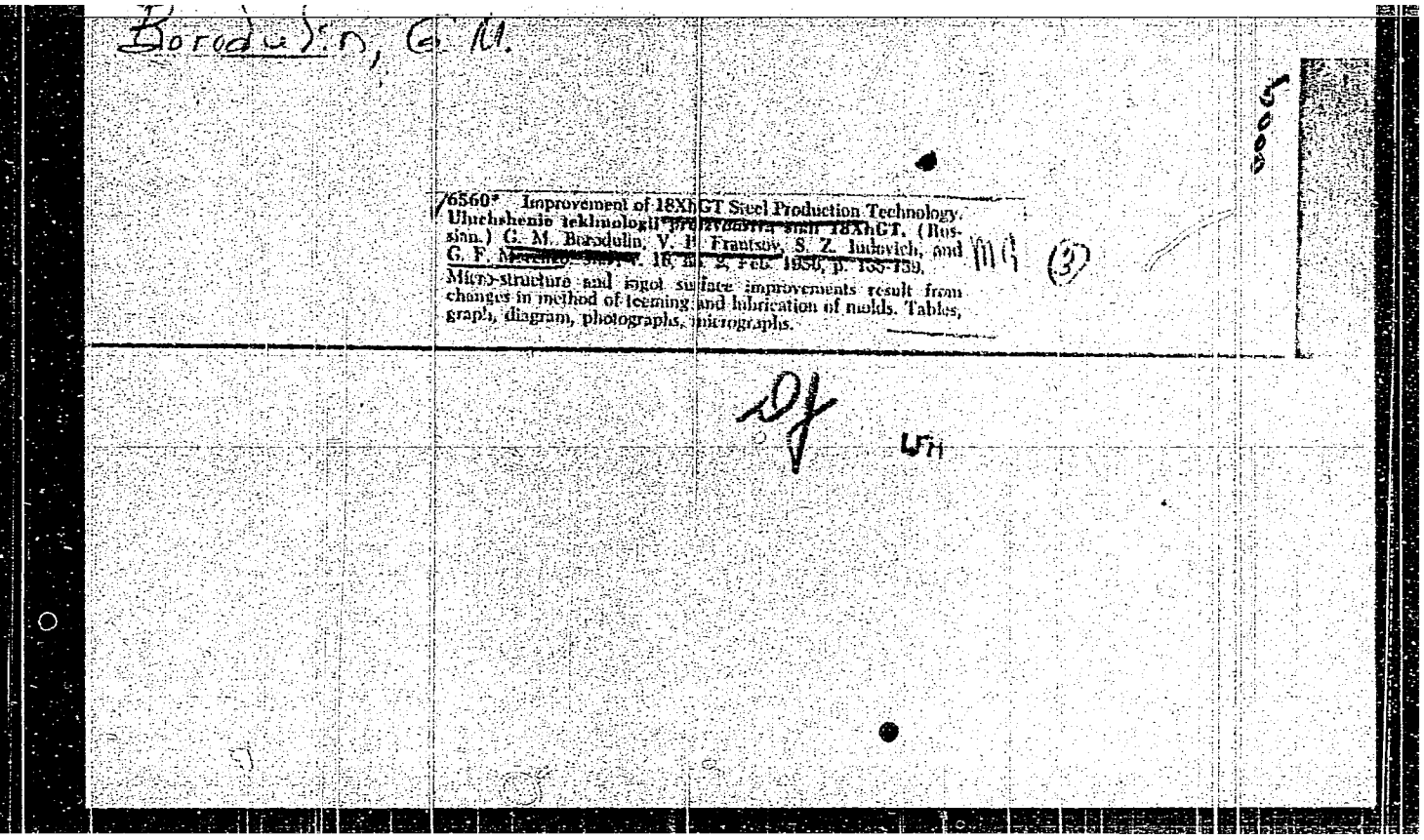
Lund "Dnepropetrovsk"

(Dnepropetrovsk region, smelting)

(Steel-Metallurgy)

9566 Industrial Experience With Manufacturing E330 Transformer Steel. Iz opyta proizvodstva transformatornoi stali (E330). (Russian.) G. M. Borodulin, G. F. Morenko, and V. P. Frantsov. *Metallurg*, 1956, no. 3, Mar. 1956, p. 14-16.

A technological process of refining transformer steel in basic electric arc furnaces; peculiarities of the method. Table.



Borodulin, G. M.

6560* Improvement of 18XhGT Steel Production Technology. Uluchshenie tekhnologii [illegible] stali 18XhGT. (Russian.) G. M. Borodulin, V. I. Frantsov, S. Z. Iudovich, and G. F. [illegible]. Sb. st., 16, No. 2, Feb. 1950, p. 135-139.

Micro-structure and ingot surface improvements result from changes in method of teeming and lubrication of molds. Tables, graph, diagram, photographs, micrographs.

BORODULIN, GEORGIY MIKHAYLOVICH

PHASE I BOOK EXPLOITATION 525

Borodulin, Georgiy Mikhaylovich and Speranskiy, Viktor Grigor'yevich

Proizvodstvo transformatornoy stali v elektropechakh (Producing Transformer Steel in Electric Furnaces) Moscow, Metallurgizdat, 1957, 41 p. 4,000 copies printed.

Ed.: Mikhaylov, O.A.; Ed. of Publishing House: Rozentsveyg, Ya.D.; Tech. Ed.: Dobuzhinskaya, L.V.

PURPOSE: This booklet is intended for engineers and technicians working in electric-steel melting shops. It should also be useful to research workers and students of metallurgy.

COVERAGE: The booklet describes modern methods of making transformer steel in electric furnaces and also the technique of vacuum-treating steel in the ladle. Basic specifications for transformer steel are given, and properties of the steel are described. The book draws on the work practices of the "Dneprospetsstal'" Plant (Zaporozh'ye). There are 8 references, all Soviet. No personalities are mentioned.

Card 1/2

Producing Transformer Steel in Electric Furnaces 525

TABLE OF CONTENS:

AVAILABLE: Library of Congress (TN 706.B6)

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GO/ad
8-19-58

SPERANSKIY, Viktor Grigor'yevich; BORODULIN, Georgiy Mikhaylovich; BOYARSHINOV, V.A., redaktor; ZINGER, S.L., redaktor izdatel'stva; EVENSON, I.M., tekhnicheskiy redaktor

[Technology of stainless steel production] Tekhnologiia proizvodstva nerzhaveiushchei stali. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1957. 202 p. (MLRA 10:5)
(Steel, Stainless)

AUTHOR: Borodulin, G. M. (Works Manager). 130-5-8/22

TITLE: Vacuum Treatment of Electrical Steel (Obrabotka elektrostali pod vakuumom).

PERIODICAL: "Metallurg" (Metallurgist) 1957, No.5, pp.16 - 18, (USSR).

ABSTRACT: This article brings up to date the description of the vacuum treatment of steel at the Dneprospetsstal' works given by V. G. Speranskiy in "Metallurg", 1956, No.8. Vacuum installations are now available in steel melting shops No.1 and No.2. The pumping technique is as follows: the chamber is evacuated to a residual pressure of 100 mm mercury by means of a type PMK-4 pump, after which this pump is disconnected and the pumping is continued by means of Type BH-6 and PBH-60 (PBH-30 in shop No.2) pumps. For all pumps except PMK-4 types, the input gas is carefully cleaned. The residual pressure (mm Hg) in the chamber 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 minutes after the start of pumping is 760, 475, 255, 145, 95, 55, 40, 30, 25, 20 and 18, respectively. Recently a different vacuum-treatment method has been tested. In this one ladle is placed in the vacuum chamber under a funnel set in

Card 1/3

Vacuum treatment of electrical steel. (Cont.) 130-5-8/22

the roof of the chamber. Metal is poured from one ladle into the funnel and, melting through the aluminium sheet with which the funnel was closed so as to enable a vacuum to be produced in the chamber, falls in a disintegrated state into the ladle in the chamber. The funnel is kept filled with metal throughout. The large surface of metal produced by this technique makes effective de-gassing possible. In 1956 a total of 25,800 tons of electric steel were vacuum treated at the works. The greatest benefits were obtained with transformer steel, a metal with less than 0.02% carbon and 0.005% sulphur being obtainable, with a doubling of the proportion of best-quality sheets. Vacuum treatment of alloy structural steel in the ladle considerably reduced internal hairline cracks; no reduction in non-metallic inclusions was obtained with ball-bearing steels either by vacuum treatment in the ladle or vacuum treatment by the pouring technique. With the evacuation obtained no decarburization occurs in the ladle; the reduction in the carbon content is obtained in the furnace because of hotter oxidation period. Some reduction in the hydrogen content of steels occurs

Card 2/3

Vacuum treatment of electrical steel. (Cont.) 130-5-8/22

during vacuum treatment: the reduction in hydrogen produced by the pouring technique being approximately double that obtained by vacuum treatment in the ladle without pouring. Work is continuing on the extension of the vacuum-treatment process. There are 2 figs, 1 table.

ASSOCIATION: "Dneprospetsstal'"

AVAILABLE:

Card 3/3

BORODULIN, G.M.

AUTHOR: Borodulin, G.M. 130-10-1/18

TITLE: The "Dneprospetsstal'" Works are 25 Years Old (Zavodu "Dneprospetsstal'" - 25 let)

PERIODICAL: Metallurg, 1957, No.10, pp. 1 - 2 (USSR)

ABSTRACT: The author traces the development of the works since its foundation in the Ukraine during the first five-year plan. By 1940, the works had become one of the main producers of high-quality tool and structural steels in the USSR. During the war, the whole works was evacuated but was reconstructed on its old site in 1948 with improved equipment (consisting mainly of electric furnaces, rolling mills, heat-treatment furnaces and forging hammers). Data are presented showing the frequent over-fulfilment of production targets by the works and the steady improvement of its technical and economic efficiency. There is one photograph (of a dwelling house).

ASSOCIATION : "Dneprospetsstal'" Works (Zavod "Dneprospetsstal'")

AVAILABLE: Library of Congress.

Card 1/1

Borodulin, G.M

133-10-12/26

AUTHOR: Borodulin, G.

TITLE: Mechanization of the **Labor** Consuming Operations on Electric Steel Melting Furnaces. (Mekhanizatsiya Trudoyemkikh Operatsiy Pri Pabote na Elektropechakh).

PERIODICAL: Stal', 1957, No.10, pp. 912-914 (USSR).

ABSTRACT: Some special features of mechanisation of labour consuming operations on the above works are outlined. The following are mentioned: mechanical charger of ore, lime and other materials into electric furnaces (Fig. 1), tuyere for blowing oxygen into the bath (Figs. 2 and 3) and fettling equipment (Fig. 4); There are 4 figures.

ASSOCIATION: Dneprospetsstal' Works. (Zavod Dneprospetsstal').

AVAILABLE: **Library of Congress**

Card 1/1

137-58-6-11809

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 88 (USSR)

AUTHOR: Borodulin, G.M.

TITLE: Vacuum Treatment of Electric Steel in the Ladle (Obrabotka elektrostali pod vakuumom v kovshe)

PERIODICAL: Tr. Nauchno-tekhn. o-va chernoy metallurgii, 1957, Vol 18, pp 572-575

ABSTRACT: Bibliographic entry. Ref. RzhMet, 1957, Nr 10, abstract 18863

1. Steel--Production 2. Vacuum apparatus--Applications
3. Dippers--Applications

Card 1/1

PETROV, A.K.; SPERANSKIY, V.G.; KHIZHNICHENKO, A.M.; SHILYAYEV, B.A.; DANILOV, A.K.; BORODULIN, G.M.; ZAMOTAYEV, S.P.; MARKARYANTS, A.A.; SOLNTSEV, P.I.; SMIRNOV, Yu.D.; VAYNBERG, G.S.; OKOROKOV, N.V.; KOLOSOV, M.I.; SEL'KIN, G.S.; MEDOVAR, B.I.; LATASH, Yu.B.; YEFROYMOVICH, Yu.Ye.; VINOGRADOV, V.M.; SVEDE-SHVETS, N.N.; SKOROKHOD, S.D.; KATSEVICH, L.S.; SHTROMBERG, Ya.A.; MIKHAYLOV, O.A.; PATON, B.Ye.

Reports (brief annotations). Biul. TSNIICHM no.18/19:67-68 '57. (MIRA 11:4)

1. Zavod Dneprospetsstal' (for Speranskiy, Borodulin). 2. Chelyabinskiy metallurgicheskiy zavod (for Khizhnichenko). 3. Uralmashzavod (for Zamotayev). 4. Trest "Elektropech'" (for Vaynberg). 5. Moskovskiy institut stali (for Okorokov). 6. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii (for Sel'kin, Svede-Shvets). 7. Institut elektrosvarki AN USSR (for Paton, Medovar, Latash). 8. TSentral'naya laboratoriya avtomatiki (for Yefroymovich, Vinogradov). 9. Gisogneupor (for Skorokhod). 10. Trest "Elektropech"" (for Katsevich). 11. Tbilisskiy nauchno-issledovatel'skiy institut okhrany truda Vsesoyuznogo tsentral'nogo soveta profsoyuzov (for Shtromberg).

(Steel—Metallurgy)

18(5) PHASE I BOOK EXPLOITATION SOV/2726

Borodulin, Georgiy Mikhaylovich

Primeneniye kisloroda v elektrometallurgii stali (Utilization of Oxygen in the Electrometallurgy of Steel) Moscow, Metallurgizdat, 1959. 86 p. Errata slip inserted. 3,000 copies printed.

Ed.: Ya. M. Bokshitskiy; Ed. of Publishing House: S.L. Zinger; Tech. Ed.: L.V. Dobuzhinskaya.

PURPOSE: This book is intended for engineers and foremen in electrometallurgy. It may also be useful to metallurgical students.

COVERAGE: The author discusses the use of oxygen in the electric-furnace production of stainless, transformer, cracking, high-speed, chrome-nickel constructional, ball-bearing, and carbon tool steels. Information is given on the quality of steel made with oxygen blast, together with engineering and economic data. There are 20 references, all Soviet.

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Utilization of Oxygen (Cont.) SOV/2726

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Utilization of Oxygen (Cont.) SOV/2726

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Utilization of Oxygen (Cont.) SOV/2726

AVAILABLE: Library of Congress

Card 4/4

GO/gmp
12-23-59

BORODULIN, G.M.

Changes in the order of determining the angle i. Geod. i kart. no.7:18-20 Jl '61. (MIRA 14:7)
(Leveling)

BORODULIN, G.M.

Protective screen for emery grinding wheels and snagging grinding machines. Mashinostroitel' no.7:34 '61. (MIRA 14:7)
(Grinding machines—Attachments)

BORODULIN, G.M.

Automatic electromagnetic stop device. Mashinostroitel' no.8:36 Ag '61. (MIRA 14:7)
(Automatic control)

KHITRIK, S.I., doktor tekhn. nauk; KADINOV, Ye.I., inzh.; BORODULIN, G.M., inzh.; TREGUBENKO, A.F., inzh.; YATSKEVICH, I.S., inzh.; DEMIDOV, P.V., inzh.; FRANTSOV, V.P., inzh.; SMOLYAKOV, V.F., inzh.; MALIKOV, G.P., inzh.; DOVGIY, M.M., inzh.; MOSHKEVICH, Ye.I., inzh.; RABINOVICH, A.V., inzh.

Reducing chromium losses in the manufacture of acid-resistant and stainless steels in electric arc furnaces. Met. i gornorud. prom. no.1:17-20 Ja-F '62. (MIRA 16:6)
(Steel, Stainless—Electrometallurgy)

BORODULIN, G.M.

Hold-down chuck for grinding holes. Mashinostroitel' no.2:27 F '62. (MIRA 15:2)

(Chucks)

(5)

S/133/62/000/009/003/009
A054/A127

AUTHORS: Chuyko, N.M., Doctor of Technical Sciences, Rutkovskiy, V.B., Danichek, R.Ye., Perevyazko, A.T., Borodulin, G.M., Tregubenko, A.F., Shamil', Yu.P., Frantsov, V.P., Volovich, V.G., - Engineers

TITLE: Blowing inert gases through the metal in the ladle under vacuum

PERIODICAL: Stal', no. 9, 1962, 809 - 811

TEXT: Vacuum treatment of liquid steel promotes the removal of gases and reduces the amount of nonmetallic inclusions. Tests were carried out (in cooperation with I.M. Ioffe, M.I. Lavrent'yev, G.P. Parkhomenko, V.I. Demidenko, Ye.M. Rysin, and T.M. Vorob'yeva, Engineers) to determine the optimum methods of blowing inert gases through the liquid metal in the ladle in combination with the vacuum treatment. The method established does not require special refractory materials, the apparatus used (designed by N.M. Chuyko, Professor and Ye.I. Lavreyev, Engineer) is of a simple design and metal losses through the spout can be prevented. The argon feed can be controlled very closely by means of 3 rotameters [PC-7 (RS-7) type], having 30 standard m^3/h capacity and supplied with

Card 1/3

(5)

S/133/62/000/009/003/009
A054/A127

Blowing inert gases through the metal in ....

needle valves. The test steel [ШХ15 (ShKh15)] was smelted in four versions: I. blowing through the reduced metal in the ladle under atmospheric pressure; II. the same, under vacuum; III. vacuum treatment of non-reduced metal, containing less than 0.05% Si, in the ladle and reduction with ferrosilicon and aluminum at the end of the process; IV. blowing through non-reduced metal in the ladle under vacuum, with addition of ferrosilicon and aluminum at the end of blowing. Ferrosilicon was added in an amount to ensure 0.27 - 0.28% Si content in the metal, the amount of aluminum added was 0.5 kg/ton. The technically pure argon gas contained 0.003 - 0.009% oxygen and maximum 0.01% nitrogen. The hydrogen content of the metal (both in reduced and non-reduced condiction) could most efficiently be removed when argon gas was blown through at residual pressures of 10 - 12 mm mercury column in the vacuum chamber, with a blowing time of at least 8 min. A maximum reduction of the oxygen content can be obtained by blowing gas into the ladle through non-reduced metal under vacuum (IV). With regard to nonmetallic inclusions the best results are attained by versions III and IV. Some of the heats were entirely without spheroidal inclusions. The amount of oxygen and of impurities also depends on the degree of reduction of the slag, in view of the intensive mixing of metal and slag during blowing. The

Card 2/3

Blowing inert gases through the metal in ....

lowest oxygen content (0.0019%) and the smallest number of oxide and spheroidal inclusions are ensured when argon is blown in amounts of 0.05 - 0.06 m^3/ton, under vacuum, at remanent pressures of 18 - 30 mm Hg. The intense stirring of the metal caused by the argon gas blown into the ladle also causes a uniform distribution of silicon in the bottom part of the ladle and its complete adsorption. There are 3 figures. The English-language reference is: Iron and Steel Engineer, 1959, v. 36, no. 9 (September), 192.

Card 3/3

BORODULIN, G.M.

Surface-grinding machine. Stan.i instr. 33 no.2:42 F '62.
(MIRA 15:1)
(Grinding machines)

BORODULIN, G.M.

Machine for bending brace stems. Mashinostroitel' no.4:11 Ap '63. (MIRA 16:5)

(Bending machines)

BORODULIN, G.M.

Automation of spring coiling. Mashinostroitel' no.12:7 F '63. (MIRA 16:3)

(Springs (Mechanism)) (Automation)

BORODULIN, G.M., inzh.; SMOLYAKOV, V.F., inzh.; MOSHKEVICH, Ye.I., inzh.; SHAMIL', Yu.P., inzh.

Technology of the production of chromium-nickel stainless steel with a carbon content of not more than 0.03%. Stal' 23 no.1:27-29 Ja '63. (MIRA 16:2)

1. UkrNIISpetsstal' i Dnepropetrovskiy staleplavil'nyy zavod vysokokachestvennykh i spetsial'nykh staley.
(Chromium-nickel steel—Electrometallurgy)

L 15210-65 EWT(m)/EWP(w)/EWA(d)/EWP(t)/EPR/EWP(b) Ps-4 SSD/ASD(m)-3/AFTC(p)
MJW/JD/JG/MLK

ACCESSION NR: AT4046858 S/0000/64/000/000/0299/0303

AUTHOR: Borodulin, G. M.; Kravchenko, V. A.; Ply*shevskiy, A. I.

TITLE: Investigation of heavy chromium diffusion coatings 18 27 671

SOURCE: AN SSSR. Nauchny*y sovet po probleme zharoprochny*kh splavov. Issledovaniya staley i splavov (Studies on steels and alloys). Moscow, Izd-vo Nauka, 1964, 299-303

TOPIC TAGS: diffusion coating, gaseous state coating, chromium coated steel, chromium coating, coated steel property

ABSTRACT: A method has been developed for deposition of heavy diffusion coatings, including chromium, aluminum, and manganese coatings. The method is novel in that there is no direct contact between the medium which contains the coating metal and the article being coated. The method ensures a very strong bond between the coating and the base metal, permits the formation of coatings of any thickness, eliminates the danger of the coating-containing medium being fused to the article being coated, and produces coatings free of nonmetallic inclusions or gases. The method has been variously tested, including in chromium

Card 1/3

L 15210-65

ACCESSION NR: AT4046858

3

plating of finished articles such as bolts, bushings, and tubes and in chromium cladding of semifinished products such as slabs, which were subsequently hot and cold rolled into chromium-clad sheets 1.0—1.5 mm thick. The diffusion layer on 08KP steel slabs was approximately 6 mm thick with a surface chromium content of 40%. Sheet, 3 mm thick, hot rolled from these slabs, had a diffusion layer 0.1 mm thick with a surface chromium content of 27%. No difficulties were encountered in hot or cold rolling, or in deep drawing of the sheets. Corrosion tests of the chromium-coated 08KP steel specimens with a diffusion layer 1.5 mm thick and a surface chromium content of 52% showed that the chromium-coated steel has a corrosion resistance comparable and in some cases superior to that of 1Kh18N9T stainless steel. Tubes rolled from chromium-coated billets are of the same quality as tubes which are chromium coated after rolling, but the cost of the former is considerably lower. Chromium-coated articles can be carburized or nitrided. Surface hardness exceeding 70RC can be achieved. Orig. art. has: 6 figures and 1 table.

ASSOCIATION: none

Card 2/3

L 16210-65

ACCESSION NR: AT4046858 C

SUBMITTED: 16Jun64 ENCL: 00 SUB CODE: MM, IE

NO REF SOV: 000 OTHER: 000 ATD PRESS: 3139

Card 3/3

ACC NR: AP7000366 SOURCE CODE: UR/0413/66/000/022/0143/0143

INVENTOR: Borodulin, G. M.; Dekhanov, N. M.; Kravchenko, V. A.; Plyshevskiy, A. I.

ORG: none

TITLE: Method of obtaining a bimetallic material. Class 48, 188818

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 22, 1965, 143

TOPIC TAGS: metal cladding, diffusion metal ~~cladding~~

ABSTRACT: This Author Certificate introduces a method of manufacturing clad metal products such as sheets, tubes and bars by impregnating the surface of the base metal with a sublimated substance without direct contact between them. In order to improve the corrosion and oxidation resistance of the surface layer, the impregnation is carried out at 1400—1450C, after which the article is hot or cold rolled.

[TD]

SUB CODE: 13/ SUBM DATE: 15Dec61/ ATD PRESS: 5109

Card 1/1 UDC: 621.793.6:621.771.8

L 27254-66 EPF(n)-2/EWT(m)/EWP(t) IJP(c) WW/JD/JG

ACC NR: AP6009833 SOURCE CODE: UR/0413/66/000/004/0027/0028

AUTHOR: Kovalenko, A. M.; Murin, F. V.; Borodulin, G. M.; Yel'tsov, K. S.; Smolyakov, V. F.

ORG: none

TITLE: Method for vacuum degassing of liquid metals with simultaneous treatment with slag. Class 18, No. 178843

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 4, 1966, 27-28

TOPIC TAGS: metal, liquid metal, metal degassing, vacuum degassing

ABSTRACT: This Author Certificate presents a method for vacuum degassing and simultaneous refining of liquid metals by a slag treatment in a two-tube chamber. The metal is sucked into the chamber through one tube and, after vacuum degassing, is discharged through the other tube containing liquid slag which refines the metal.

SUB CODE: 11 / SUBM DATE: 05Sep64

Card 1/1 UDC: 669.162.683-982

BORODULIN, Iosif Pavlovich; MATSNEV, K.M., nauchnyy red.; GUREVICH, I.F., red.; NESMYSLOVA, L.M., tekhn. red.

[Industrial training of mechanics for the repair of electrical equipment and underframes of diesel locomotives in professional technical schools]Proizvodstvennoe obuchenie slesarei po remontu elektrooborudovaniia i ekipazhnoi chasti teplovozov v professional'no-tekhnicheskikh uchilishchakh; metodicheskoe posobie. Moskva, Proftekhizdat, 1962. 132 p. (MIRA 16:3)
(Diesel locomotives--Maintenance and repair)
(Electricians--Education and training)

KOVNER, G.M., dotsent; BORODULIN, I.P., inzh.; LISITSYN, Ye.V., inzh.

Investigating the smooth regulation of the magnetic flux of the electric traction engines of diesel locomotives. Trudy MIIT no.151:153-170 '62. (MIRA 16:2)
(Diesel locomotives) (Electric railway motors--Testing)

BORODULIN, I.P., inzh.

Analytical study of the electrical transmission system of a diesel locomotive with smooth regulation of the magnetic flux of the traction motors. Trudy MIIT no.188:112-127 '64.
(MIRA 17:10)

KOVNER, G.M., kand. tekhn. nauk; BORODULIN, I.P., aspirant

Traction engines with mixed excitation for the electric driving of locomotives. Vest. TSNII MPS 23 no.4:24-28 '64.
(MIRA 17:8)

1. Moskovskiy institut inzhenerov zheleznodorozhnogo transporta.

SARIN, V.I.[deceased]; GRIBKOV, V.A.; RIBBE, A.I.; SOKOLOV, V.Ya., red.; BORODULIN, I.F., red.

[Narrow-gauge TU2 and TU3 diesel locomotives with electric driving] Uzkokoleinye teplovozy s elektricheskoi peredachei TU2 i TU3. Moskva, Transport, 1965. 297 p. (MIRA 18:12)

BORODULIN K. Ya.

BAZHENOV, Ivan Ivanovich, inzh.; LEONENKO, Ivan Abramovich, inzh.; KHARCHENKO, Aleksey Kondrat'yevich, kand.tekhn.nauk. Prinimali uchastiye: DOBROVOL'SKIY, V.V., kand.tekhn.nauk; BORODULIN, K.Ya., inzh.; POPOV, A.A., inzh.; KHODAKOV, I.K., red.izd-va; PROZOROVSKAYA, V.L., tekhn. red.

[Coal mines and mining in the Chinese People's Republic] Ugol'naia promyshlennost' Kitaiskoi Narodnoi Respubliki. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu Gosgortekhizdat, 1959. 479 p. (MIRA 13:2)

(China--Coal mines and mining)

BORODULIN, L.

Photography of sports. Sov. foto 19 no.4:34-36 Ap '59. (MIRA 12:5)

(Photography of sports)

BORODULIN, L. P.

USSR/Chemistry Adsorption, Equation for
Chemistry - Adsorption, Nomographs for

Mar 1948

"Nomographs for Langmuir's Equation," G. V. Vinogradov, L. P. Borodulin, 2pp

"Zhur Prik Khim" Vol XXI, NO 3

Wide practical application of Langmuir's adsorption equation has led authors to increase its utility by constructing two nomographs. Claim that they are sufficiently accurate for all practical purposes. Submitted 22 Feb 1947. Two diagrams reproduced.

PA 70T19

BORODULIN, M.I.

Studying the sedimentary formation in the Kursk Magnetic Anomaly by seismic prospecting methods. Mat. po geol. i pol. iskop. tsentr. raion. evrop. chasti SSSR no.2:234-240 '59. (MIRA 13:9)

1. Kurskaya geofizicheskaya ekspeditsiya.
(Kursk Magnetic Anomaly—Rocks, Sedimentary)
(Seismic prospecting)

BORODULIN, M.I.; SHEYNKMAN, S.L.

Method of studying the elastic properties of rocks. Razved. i prom. geofiz. no.38:103-106 '60. (MIRA 14:3)
(Rocks—Testing) (Elastic waves)

BORODULIN, M.I.

Practice of using geophysical data in mapping the Pre-Cabrian in the Mikhaylovka region of the Kursk Magnetic Anomaly. Mat. po geol.i pol.iskop.tsentr.raion.evrop.chasti SSSR no.5:21-24 '62. (MIRA 16:6)

(Kursk Magnetic Anomaly—Maps)

BORODULIN, M.I.

Solution of a three-dimensional problem for the case of diffraction of direct waves from the horizontal line. Geofiz. sbor. no.7:51-53 '64. (MIRA 17:11)

1. Dnepropetrovskaya geofizicheskaya ekspeditsiya.

BORODULIN, M.I.

Experience gained in recording transverse and alternating waves in the Black Sea Depression. Geofiz. i astron. no.8:75-77 '65.

(MIRA 19:1)

1. Dnepropetrovskaya geofizicheskaya ekspeditsiya.

L 00210-67 EWP(1) GW

ACC NR: AT6025359 (A) SOURCE CODE: UR/3169/65/000/003/0053/0058

28

AUTHOR: Borodulin, M. I.

ORG: Dnepropetrovsk Geophysical Expedition of the "Ukrgeofizrazvedka" Trust [Dnepropetrovskaya geofizicheskaya ekspeditsiya tresta "Ukrgeofizrazvedka"]

TITLE: Certain distinctive kinematic features of refracted waves in the three dimensional problem with one vertical division boundary

SOURCE: AN UkrSSR. Geofizicheskiy sbornik, no. 3(14), 1965. Stroyeniye neftegazonosnykh provintsiy po geofizicheskim dannym (The structure of oil and gas yielding provinces according to geophysical data), 53-58

TOPIC TAGS: hodograph, seismology, solid kinematics, three body problem

ABSTRACT: An analysis of certain distinctive kinematic features of refracted waves for the three dimensional problem with one vertical division boundary is made. A system of equations is presented describing certain kinematic regularities which is similar to the system suggested by I. S. Berzon in High Frequency Seismics, Moscow, 1957, but expressed in terms of more easily determined physical parameters. It is determined that the overlying mass has no influence on the nature of changes in value of t, since it is a constant value. It is discovered that the location of the break in the profile hodograph does not change with change in the explosion point. This constancy of location, and the direct proportionality of the hodograph discontinuity to the distance along the profile from the explosion source to the

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L 09249-67
ACC NR: AT6025359

contact line, can be used as criteria for recognition of vertical contacts when they encounter the profile with an angle greater than the critical angle. Orig. art. has: 11 formulas and 4 figures.

SUB CODE: 08, 17 / SUBM DATE: 01 Sep 63 / ORIG REF: 002

ACC NR: AR6035082 SOURCE CODE: UR/0169/66/000/008/D019/D019

AUTHOR: Borodulin, M. I.

TITLE: Experimental recording of transverse and exchanged waves in the conditions of the Black Sea area depression

SOURCE: Ref. zh. Geofizika, Abs. 8D121

REF SOURCE: Izv. Dnepropetr. gorn. in-ta, v. 46, 1965, 229-244

TOPIC TAGS: seismic station, seismology, seismic receiver/NS-3 seismic receiver, SS-30-60 KMPV seismic station

ABSTRACT: Experiments were made in 1963 in two sectors. The first is situated within the northern margin of the depression (reference refracting horizon was the cover of the pre-Cambrian and paleozoic basment, lying at a depth of 2.5—4.5 km, $V_{boundary}$ = 5.8—6.2 km/sec); the second one is situated at the southern margin (the reference horizon is coordinated with the upper part of the paleozoic basement, lying at a depth of 1.5—3 km, $V_{boundary}$ = 5.8—6.4

Card 1/3 UDC: 550.834

km/sec). Transverse and exchanged waves were recorded by an SS-30-60 KMPV seismic station, and NS-3 seismic receivers were used. A two-component installation (x, z) of instruments and an eight-ray azimuth installation with 45- and 60-degree inclination angles were used. The filtering systems used changed from a 3—3 value to a 1—1 value when the hodograph length changed from 5 to 30 km. Elastic vibrations were caused by explosive charges of 25 to 100 kg in boreholes 30 to 40-m deep. Moreover, in the southern sector, reflected waves were also recorded by the system of single point continuous profiling during a 435-m explosion interval at installations x and z. The wave picture obtained is described. It is shown that transverse and exchange SV waves are of sufficient intensity. Two groups of waves are isolated: $P_0P_1P_0$ (exchange boundary-basement) with velocities of 5—6 km/sec, and refracted transverse S_0S_1S waves with velocities of 2.5—3.5 km/sec. A 100-m dislocation is clearly shown in these waves at a depth of 2 km. The interpretation of longitudinal refracted waves cannot be made unequivocally. According to results of recordings of reflected waves, clearly defined, reference horizons related to the Jurassic and to the superface of the paleozoic basement are isolated along the transverse waves. Only scattered areas are recorded on the same sector by longitudinal waves. The following basic deductions have been made as a result of the processing of

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000206510004-3"

ACC NR: AR6035082

material. The possibility of recording transverse and exchange waves up to depths of 3 to 5 km has been shown. Their intensity is 1.5 to 4 times higher than that of corresponding longitudinal waves at roughly similar values of the fading coefficient. The possibility of recording transverse reflected waves during explosions in boreholes is shown. A. Titkov. [Translation of abstract] [GC]

SUB CODE: 08, 20/

Card 3/3

L 52102-65 EWT(m)/EWP(j) Pc-4 RM

ACCESSION NR: AP5015272 UR/0286/65/000/009/0051/0052

AUTHORS: Borodulin, M. M.; Taranenko, I. T.; Kovaleva, N. N.

TITLE: A method for cleaning asbestos fibers. Class 29, No. 170610

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 9, 1965, 51-52

TOPIC TAGS: asbestos, cleansing, iron, impurity, oxygen

ABSTRACT: This Author Certificate presents a method for cleansing asbestos fibers of ferrous magnetic admixtures. To heighten the effectiveness of cleansing and simultaneously to lower the loss of asbestos, the latter is heated at 200-350C in the presence of atmospheric oxygen.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy i konstruktorsko-tekhnologicheskiy institut asbestovykh tekhnicheskikh izdeliy (All-Union Scientific Research and Construction-Technology Institute of Asbestos Technical Products)

SUBMITTED: 30Jun64 ENCL: 00 SUB CODE: IE

NO REF SOV: 000 OTHER: 000

Card 1/1 mjs

BORODULIN, P.T.

Securing porcelain teeth in the metal portion of the prosthesis with AKR-7 plastic. Stomatologiia no.3:55 My-Je '55. (MLRA 8:9)

(DENTAL PROSTHESIS,
reinforcement of porcelain teeth in metal portion of prosthesis with acrylics)

BORODULIN, P.T., kapitan meditsinskoy sluzhby

Depressor and mouth mirror with an electric lamp. Voen.-med. zhur. no.7:77-78 Jl '56. (MLRA 9:11)

(MEDICAL INSTRUMENTS AND APPARATUS)

BORODULIN, P.T.

Electric welding and soldering of parts of artificial dentures.
Stomatologiia 37 no.6:69-70 N-D '58 (MIRA 11:12)
(DENTAL PROSTHESIS)
(ELECTRIC WELDING)
(SOLDER AND SOLDERING)

ACCESSION NR: AP4040464 S/0131/64/000/006/0253/0253

AUTHORS: Chepelenko, Yu. V.; Yem, A. P.; Borodulin, P. Ya.; Momot, L. V.

TITLE: Strength of crucibles made of refractory material on boron nitride base

SOURCE: Ogneupory*, no. 6, 1964, 253

TOPIC TAGS: boron nitride refractory, refractory strength, refractory crucible, manganese slag, crucible

ABSTRACT: The strength of crucibles made of refractory materials on a boron nitride base was studied to determine their suitability for the process of selective reduction of manganese slags at 1800-2000C. Experimental meltings were conducted in a 60-kwa oven with a graphite heating unit. A crucible with 40-50 g of slag was placed in the oven heated to the required temperature and was hermetically sealed to prevent its oxidation. After a period of time the crucible was emptied into a mold and the experiment was repeated with another portion of slag. Crucible wettability by slag was determined visually after cooling to 200-300C. It was noted that the thickness of the crucible walls

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ACCESSION NR: AP4040464

decreased in the process of melting. This was explained by the oxidation of the material caused by the unavoidable air inflow. In spite of this the crucibles preserved their high strength. Every crucible withstood 10 - 12 meltings with each melting lasting for 30-40 minutes. Orig. art. has: 2 tables.

ASSOCIATION: Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute); Zaporozhskoye otdeleniye instituta metallokeramiki i spetsial'nykh splavov AN USSR (Zaporozhye Branch of the Institute of Metallocera-mics and of Special Alloys AN UkrSSR)

SUBMITTED: 00 DATE ACQ: 06Jul64 ENCL: 00

SUB CODE: MM NO REF SOV: 001 OTHER: 000

Card 2/2

ACC NR: AP6025800 SOURCE CODE: UR/0131/66/000/005/0052/0053

AUTHOR: Degtyarev, V. S.; Denisov, S. I.; Semenov, Yu. N.; Borodulin, P. Ya.

ORG: [Degtyarev, Denisov] Titanium Institute (Institut titana); [Semenov, Borodulin] Institute of Materials Science Problems, AN SSSR (Institut problem materialovedeniya AN SSSR)

TITLE: Boron carbonitride crucibles

SOURCE: Ogneupory, no. 5, 1966, 52-53

TOPIC TAGS: refractory compound, alundum, heat resistant material, chemical resistant material, temperature dependence, slag, boron nitride compound

ABSTRACT: In research studies on the reduction of molten iron-titanium concentrates by gases, the refractory material of the crucibles must withstand temperatures up to 1700°C and the chemical interaction of metal and slag. Tests were conducted on refractory crucibles made from porcelain, alundum, graphite, molybdenum, and boron carbonitride. Reduction of molten iron-titanium concentrates was carried out in a Tamman furnace under an inert gas to prevent burning during reduction. A schematic diagram of the apparatus is shown. The crucible, filled with a 50g charge, was placed on a graphite stand in the highest temperature zone and reducing gas was passed through a boron carbonitride tube which was inserted 5-10 mm into the melt. The effect of purging

UDC: 666.78

time, coefficient of excess gas, and process temperature on the degree of reduction were determined. The influence of the first two factors was studied at 1600°C. The chemical compositions of the concentrate and of final products are presented. As a result of purging with reducing gas, metallic oxides were reduced to the metallic state which deposited in the form of beads on the crucible walls. All of the refractory materials except boron carbonitride were unsatisfactory: porcelain and alundum cracked, graphite burned during reduction of the metallic oxides, and molybdenum dissolved in the melt. Boron carbonitride, which performed the best, was produced by nitriding compressed boron carbide. The boron carbide powder (3 to 40 μk) was composed of 73% boron, 20% combined carbon, and 2.5% free carbon. After drying, the powder was compressed under a pressure of 150-200 kg/cm^2 into crucibles, positioned in the Tamman furnace, filled with boron nitride powder, and nitrided at 1800-1900°C. The finished crucible contained 82-83% boron nitride, 17-18% graphite, and 18-22% porosity. The physical properties are given. During reduction of the iron-titanium concentrate at 1600--2000°C, the titanium slag and the metallic phase did not react with the crucible walls, except by wetting them. The crucibles made of boron carbonitride were heat resistant and did not crack after quenching in water from 1400°C. Orig. art. has: 1 figure, 1 table.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 002

Card 2/2

16599

S/131/62/000/007/003/003
B117/B138

15.2240

AUTHORS: Samsonov, G. V., Semenov, Yu. N., Borodulin, P. Ya.

TITLE: Refractories on boron nitride base

PERIODICAL: Ogneupory, no. 7, 1962, 332-336

TEXT: The authors studied the possibility of producing boron nitride refractories by nitriding pressed pieces of boron carbide. Experiments in a nitrogen stream showed 1800-1900°C to be the best sintering temperature. After 2 to 3 hrs, the boron carbide was almost completely converted. The products contained 82-83% boron nitride and 17-18% graphite, almost the same as the calculated amounts. Porosity was 18-22%. Due to the low porosity the material after sintering, had not 2.2 times (as expected), but 1.3 times its initial volume. The new fine grained, gray material is strong (compressive strength at 20°C: 1000 kg/cm^2, bending strength: 200-230 kg/cm^2) and can easily be cut, sawn, or drilled. The coefficient of thermal expansion is low: $\alpha = 2.35 \cdot 10^{-6}$ to $3.92 \cdot 10^{-6}$ between 170 and 1070°C. Below 1500-1600°C, samples of porosity ~ 20% had high resistivity (determined on an MOM-4 (MOM-4) instrument) (at 20°C $\rho = 2.5 \cdot 10^{12}$ ohm/cm,

Card 1/2

Refractories on boron nitride ...

at 1550°C (ϱ = $2.5 \cdot 10^5$ ohm/cm). Its variation with temperature was much slower than that of pure boron nitride. In vacuo (10^{-5} mm Hg) the boron nitride - graphite fusion evaporates more slowly than pure boron nitride (at 1500 ± 10°C (2.02 ± 0.15)·10^{-7} g/cm^2·sec) and oxidizes above 1000°C. Articles made of this new refractory have been used in the Institut metallurgii im. A. A. Baykova (Institute of Metallurgy imeni A. A. Baykov), in the Leningradskiy politekhnicheskiy institut (Leningrad Polytechnic Institute) and in the Institut metallokeramiki i spetsial'nykh splavov AN USSR (Institute of Powder Metallurgy and Special Alloys AS UkrSSR) to compare their refractoriness and chemical stability with those of fusions containing the silicides of transition metals, boron - silicon alloys (at 2000°C), of cryolite - aluminum melts (at 1000°C), borate and chloride melts (900°C). The new material has a better refractoriness than graphite, zirconium dioxide, and boron carbide and can be used for the production of aluminum for electrolizer linings, thermocouple sheathes, very pure metals and alloys for semiconductors, and also for machine parts working under low load in contact with agressive molten media. There are 3 figures and 1 table.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR (Institute of Powder Metallurgy and Special Alloys AS UkrSSR)

Card 2/2

FRANTSEVICH, I.N.; GNESIN, G.G.; SEMENOV, Yu.N.; BORODULIN, P.Ya.; ANTIPIN, L.N.; VAZHENIN, S.F.; MAKSIMENKO, V.M.; MASHNITSKIY, A.A.

Lining material for aluminum electrolytic cells. TSvet. met. 38 no.6:49-54 Je '65. (MIRA 18:10)

BORODULIN, V. A.

USSR/Mining - Coal sampling

Card 1/1 : Pub. 71 - 10/17

Authors : Podbel'skiy, G. N.; Borodulin, V. A.; and Kogus, F. L.

Title : The complex mechanization of collecting, separating, and analyzing coal samples.

Periodical : Mech. trud. rab. 5, 32-35, July 1954

Abstract : The Kuznets Scientific-Investigational Coal Institute, designed several types of machinery which enables a mechanized collection, separation, and analysis of coal samples. The following machines are described: Sample-collecting drill, type BPM-2; coal separating machine, type PRM; and an electrical furnace EITP-2. Illustrations; drawings; tables; diagrams.

Institution : .....

Submitted : .....

BORODULIN, V.A.

USSR/Chemical Technology - Chemical Products and Their Application. Treatment of Solid Mineral Fuels, I-12

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62521

Author: Grigor'yev, M. Yu., Borodulin, V. A.

Institution: None

Title: On a Change-Over in Technological Schemes of Coal Concentration Mills of Kuznetsk Coal Fields Utilizing the Pneumatic Concentration Method

Original Periodical: Ugol', 1955, No 5, 40-44

Abstract: On the basis of investigations of technological indexes of the operation of USh-3 separators and POM-1 pneumatic jigging machine it has been ascertained that concentration is most effective in the case of oversize classes of coal. Efficacy of concentration of fine classes decreases sharply which results in a lowering of the over-all concentration effect. The authors propose to subject the concentrate of size 13-0 and 6-0 mm obtained from USh-3 separator to a second concentration in POM-1, and to include in the technological scheme

Card 1/2

USSR/Chemical Technology - Chemical Products and Their Application. Treatment of Solid Mineral Fuels, I-12

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62521

Abstract: of concentration of coal of ready and medium concentrability characteristics a dust flotation process.

Card 2/2

GRIGOR'YEV, M.Yu., kand.khim. nauk; BORODULIN, V.A., inzh.

Investigating the performance of USh-3 pneumatic separators and POM-1 jigs at the Kuznetsk Basin coal preparation plant. Nauch. trudy po vop. pererab. i kach ugl. no.4:86-93 '57. (MIRA 11:5)

(Kuznetsk Basin--Coal preparation)
(Separators (Machines))

BORODULIN, V.A., inzh.

Experimental preparation of Cheremkhovo Basin coals from Khramtsovo cut no.2. Nauch. trudy po vop. pererab. i kach ugl. no.4:114-119 '57. (MIRA 11:5)

(Cheremkhovo Basin--Coal preparation)

BORODULIN, V.A., inzh.; CHERNYKH, N.P., inzh.

New products for artificial beds in jigs. Obog. i brik.ugl. no.10:3-13 '59. (MIRA 13:9)
(Kuznetsk Basin—Coal preparation)

BORODULIN, V., inzh.

Coal preparation in the Kuznetsk Basin. Mast.ugl. 8 no.6:4 Je '59. (MIRA 12:10)
(Kuznetski Basin--Coal preparation)

BORODULIN, V.A., inzh.; SARYCHEV, V.P.; CHERNYKH, N.P.

Practices in the operation of jigs with an artificial bed of weighted rubber. Ugol' 35 no.8:59-60 Ag '60. (MIRA 13:9)

1. Kuznetskiy nauchno-issledovatel'skiy ugol'nyy institut (for Borodulin, Chernykh). 2. Obogatitel'naya fabrika "Tomusinskaya 1-2" (for Sarychev).
(Coal preparation plants--Equipment and supplies)

BORODULIN, V.A., inzh.

Scientific research by the Kuznetsk Coal Preparation Research Institute. Nauch. trudy KuzNIIUgleobog. no.2:3-8 '64. (MIRA 17:10)

BORODULIN, V.A., inzh.; STANKEVICH, A.S., inzh.; ARTAMONOV, V.V., inzh.

Investigating the effect of the depth of preparation on the coking properties of petrographic ally heterogenous Kuznetsk Basin coal. Nauch. trudy KuzNIIUglecbog. no.2:198-207 '64. (MIRA 17:10)

BORODULIN, V.A., inzh.; KARTASHEVA, I.P.; PETROVSKAYA, Ye.A.

Breaking up of coal in the hydraulic conveying process. Nauch.trudy KuzNIIUgleobog. no.2:240-249 '64. (MIRA 17:10)

KOLLODIY, K.K., inzh.; BORODULIN, V.A.; NAZAROV, P.G.

Processing coal mined by the hydraulic method. Ugol' 39 no.9: 64-69 S '64. (MIRA 17:10)

1. Gosudarstvennyy komitet po toplivnoy promyshlennosti pri Gosplane SSSR (for Kollodiy). 2. Kuznetskiy nauchno-issledovatel'skiy i proyektno konstruktorskiy institut ugleobogashcheniya (for Borodulin). 3. Vsesoyuznyy nauchno-issledovatel'skiy i proyektno-konstruktorskiy institut dobychi uglya gidravlicheskim sposobom (for Nazarov).

L 28374-66 EEC(k)-2/EWA(h)/EWP(k)/EWT(1)/EWT(m)/FBD/T IJP(c) GG/WH/WG/WW

ACC NR: AP6013028 SOURCE CODE: UR/0051/66/020/004/0709/0712

AUTHOR: Borodulin, V. I.

ORG: none

TITLE: Resonance absorption of radiation in an inhomogeneous medium with alternately positive and negative absorption coefficient

SOURCE: Optika i spektroskopiya, v. 20, no. 4, 1966, 709-712

TOPIC TAGS: resonance absorption, light absorption, absorption coefficient, radiation density, quantum oscillator, ruby, laser r and d, ruby laser

ABSTRACT: It is shown that a quantum amplifier can be realized by synthesizing a medium (transmission line) in which the absorption coefficient is alternately positive and negative, by locating different types of quantum oscillators in the alternating regions and by varying the radiation passing through the system from region to region. Equations are derived for the energy flux in such a system, and the threshold energy of the radiation entering into the system, necessary in order for the system to be capable of amplifying the radiation, is calculated. It is shown further that such a transmission line can be constructed of identical elements, containing the same quantum oscillators provided the elements are alternately excited and unexcited. The conclusions were checked by testing a system consisting of two ruby rods placed in a Fabry-Perot resonator. One ruby was self-excited by means of a pump pulse. The resulting laser single pulse was accompanied by spikes

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ACC NR: AP6013028

produced by the continuing pumping of the first rod and bleaching of the second ruby, thus demonstrating the possibility of Q-switching a ruby laser by means of an underexcited ruby crystal. The author thanks L. A. Rivlin for discussions and N. A. Yermakova and V. S. Shil'dyayev for help with the experiment. Orig. art. has: 3 figures. [02]

SUB CODE: 20/ SUBM DATE: 14Dec64/ ORIG REF: 004/ OTH REF: 003/ ATD PRESS: 4262

Card 2/2

MASLOV, M.S.; BORODULIN, V.I.

"K.A. Raukhfus (1835-1915)" by M.S. Maslov. Reviewed by V.I. Borodulin. Sov. zdrav. 20 no.12:80-82 '61. (MIRA 15:6)
(RAUKHFUS, KARL ANDREEVICH, 1835-1915)
(MASLOV, M.S.)

BORODULIN, V.I. (Moskva)

Nikolai Dmitrievich Strazhesko; on the tenth anniversary of his death. Fel'd. i akush. 27 no.9:43-49 S'62 (MIRA 16:8)
(STRAZHESKO, NIKOLAI DMITRIEVICH, 1876 - 1952)

BORODULIN, V.I. (Moskva)

G.F.Lang prominent Soviet therapeutist. Med. sestra 22 no.9: 60-63 S'63. (MIRA 16:10)
(LANG, GEORGII FEDOROVICH, 1875 -)

L 1074-66 EWA(k)/FBD/EWT(l)/EWP(e)/EWT(m)/EEC(k)-2/EWP(i)/T/EWP(k)/EWP(b)/
EWA(m)-2/EWA(h) SCTB/IJP(c) WG/WH 61 S/0056/65/048/003/0845/0849

ACCESSION NR: AP5008742 59 B

AUTHOR: Borodulin, V. I.; Yermakova, N. A.; Rivlin, L. A.; Shil'dyayev, V. S.

TITLE: Emission of single pulses of coherent light by a two-component medium with negative absorption

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 3, 1965, 845-849

TOPIC TAGS: coherent light, negative absorption, pulsed laser, ruby laser, air breakdown

ABSTRACT: Stimulated emission is studied in a medium containing two types of quantum emitters with identical energy transitions in a Fabry-Perot resonator. When the relationship between parameters reaches a certain value, this type of medium emits single pulses of light. The shape, amplitude, energy and duration of the pulses are theoretically determined. Emission of this type was experimentally observed in a two-component medium consisting of a cylindrical ruby single crystal 75 mm long with a Cr-concentration of 0.05%, and a plane-parallel plate of KS-19 glass 3 mm thick located in a resonator with mirrors having transmission factors of 0 and 30%. Pumping was done by pulse discharge of a 1600-joule capacitor bank through two IPF-800 tubes. The emitted pulse had a duration of 70-

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ACCESSION NR: AP5008742

-80 nanoseconds and a total energy of 0.08-0.1 joule, which corresponds to an amplitude of about 1.0-1.4 Mw. An increase in the pumping level or a reduction in the thickness of the glass causes a repeat performance of the entire phenomenon with two more pulses separated by an interval of about 70 μsec. The emitted pulse was amplified in a ruby single crystal 240 mm long with coated end surfaces, pumped by two IPF-5000 tubes with a total flash energy of 5400 joules. The output pulse had an amplitude of about 10-14 Mw. When this light was concentrated by a lens with a focal length of 130 mm, an intense electric breakdown was observed in the free air. Experiments of this type using KS-17 and KS-18 glass showed similar results with somewhat weaker energies and amplitudes. The light transmission factor for KS-19 glass is strongly dependent on the intensity of the incident light (see fig. 1 of the Enclosure). The results of the experiment are ambiguous, and a special analysis will be required to determine whether the theoretical mechanism proposed in the paper is applicable to the experiment described. Orig. art. has: 5 figures, 11 formulas.

ASSOCIATION: none
SUBMITTED: 28Oct64
NO REF SOV: 003

ENCL: 01
OTHER: 005

SUB CODE: EC, OP

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L 1074-66

ACCESSION NR: AP5008742 ENCLOSURE: 01

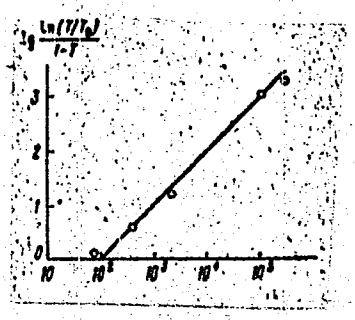

Fig. 1. Transmission factor of KS-19 glass as a function of the intensity of incident light (in W/cm^2).

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L 14628-66 FBD/EWT(l)/EWP(e)/EWT(m)/EEC(k)-2/T/EWP(k)/EWP(l)/EWA(h)
ACC NR: AP6002709 SCTB/IJP(c) SOURCE CODE: UR/0056/65/049/006/1718/1722
WG/WW/GG/WH

AUTHOR: Borodulin, V. I.; Yermakova, N. A.; Rivlin, L. A.; Tsvetkov, V. V.; Shil'dyayev, V. S.

ORG: none

TITLE: Nonlinear negative absorption of resonance light in ruby and neodymium glass

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 6, 1965, 1718-1722

TOPIC TAGS: ruby laser, solid state laser, neodymium glass, laser pulsation, resonance absorption, light absorption

ABSTRACT: The purpose of the experiment was to obtain a quantitative comparison of the calculated drop in the negative light absorption induced in a laser by a resonance signal, and the experimental drop observed in ruby and neodymium glass. The materials tested were a ruby sample with 90° orientation, 0.05% Cr ions, and bleached end surfaces, and glass with about 4% neodymium ions. The pumping was done with high-intensity flash lamps in both cases, and the input and output light pulses were recorded with photocells and an oscilloscope.

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ACC NR: AP6002709

The results show that propagation of a monopulse from a laser and the distortion of the pulse waveform during the propagation cause negative absorption of the resonance light in ruby single crystals as well as in neodymium glass, and the degree of nonlinearity of the negative absorption and the distortion of the pulse waveform can be readily determined from the deviation of the oscillogram from a straight line. The agreement between theory and experiment is regarded as satisfactory. "The authors are grateful to N. Al'tshil', Yu. Romanov, V. Trukhan, and A. Uits for participating in the experiment." Orig. art. has: 5 figures and 2 formulas. [02]

SUB CODE: 20/ SUBM DATE: 29Jun65/ ORIG REF: 004/ OTH REF: 005
ATD PRESS: 4198

Card 2/2

ACC NR: AP7004744 SOURCE CODE: UR/0413/67/000/001/0033/0033

INVENTOR: Borodulin, V. N.

ORG: none

TITLE: Method of manufacturing dielectric films. Class 21, No. 189902 [announced by Moscow Power Engineering Institute (Moskovskiy energeticheskiy institut.)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1967, 33

TOPIC TAGS: dielectric layer, dielectric property, dielectrics

ABSTRACT: An Author Certificate has been issued for a method of manufacturing dielectric films. The method is based on vaccuum deposition of bismuth-titanium compounds on metallic, dielectric, and semiconductor substrates. In order to increase the specific capacitance of capacitors incorporating bismuth-titanium dielectric films and to decrease the loss-angle tangent of the film, the solid solution of a bismuth-ferrite such as $[Pb(Zr_x Ti_{1-x})O_3]_y [BiFeO_3]_{1-y}$ was used. A thin film of the solid solution is deposited on an evaporator made of a refractory metal. The deposited layer is then melted, and the resulting protective layer on the surface of the evaporator is coated with a

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suspension of the bismuth-ferrite. This suspension is then evaporated and the film is subjected to after-oxidation for 0.5—2 hours at 300—400°C.
[GS]

SUB CODE: 09/ SUBM DATE: ~~none~~ 4Nov65