GOLOVINA, Z.O. [Holovina, Z.O.]; NEKHAYEVA, M.I. [Nekhaieva, M.I.]; SOKOLOVA, N.V.

Production of potato chips. Kharch.prom. no.4:53-56 O-D '63. (MIRA 17:1)

CHUMAKOV, Yu.I.; Prinimali uchastiye: ZHIGACH, T.K.; NEKHAYEVA, N.G.; CHVYREVA, Ye.G.; ISKOVSKIKH, N.G.

Pyridinecarboxylic acids. Metod.poluch.khim.reak. i prepar. no.7:74-79 '63. (MIRA 17:4)

1. Kiyevskiy politekhnicheskiy institut.

S/079/62/032/010/008/008
D214/D307

AUTHORS: Andrianov, K.A., Khayduk, Ionel, Khananashvili, L.M., and Nekhayeva, N.I.

TITLE: The synthesis of dimethylcyclosilthioxanes

PERIODICAL: Zhurnal obshchey khimii, v. 32, no. 10, 1962, 3447

TEXT: A description of the synthesis of two examples of a hitherto unknown class of compounds: cyclosilthioxanes. The treatment of 1,3-dichlorotetramethyldisiloxane with H_2S in the presence of pyridine gave a crystalline compound (b. range 116-122°C/2 mm Hg; m.p. 38-42°C). From the quantitative analysis of this compound and from ir, which showed the presence of Si-O-Si, Si-S-Si and Si-CH_3 bonds, the structure was found to be $(CH_3)_2\overline{Si\ O\ Si(CH_3)_2S\ Si(CH_3)_2O\ Si(CH_3)_2S}$'. Under similar conditions 1,5-dichloro-hexamethyltrisiloxane gave a colorless, transparent liquid (b. range 170-172.5°C) the structure of which was shown to be $(CH_3)_2\overline{SiOSi(CH_3)_2SSi(CH_3)_2O}$.

Card 1/2

The synthesis of ...

S/079/62/032/010/008/008
D214/D307

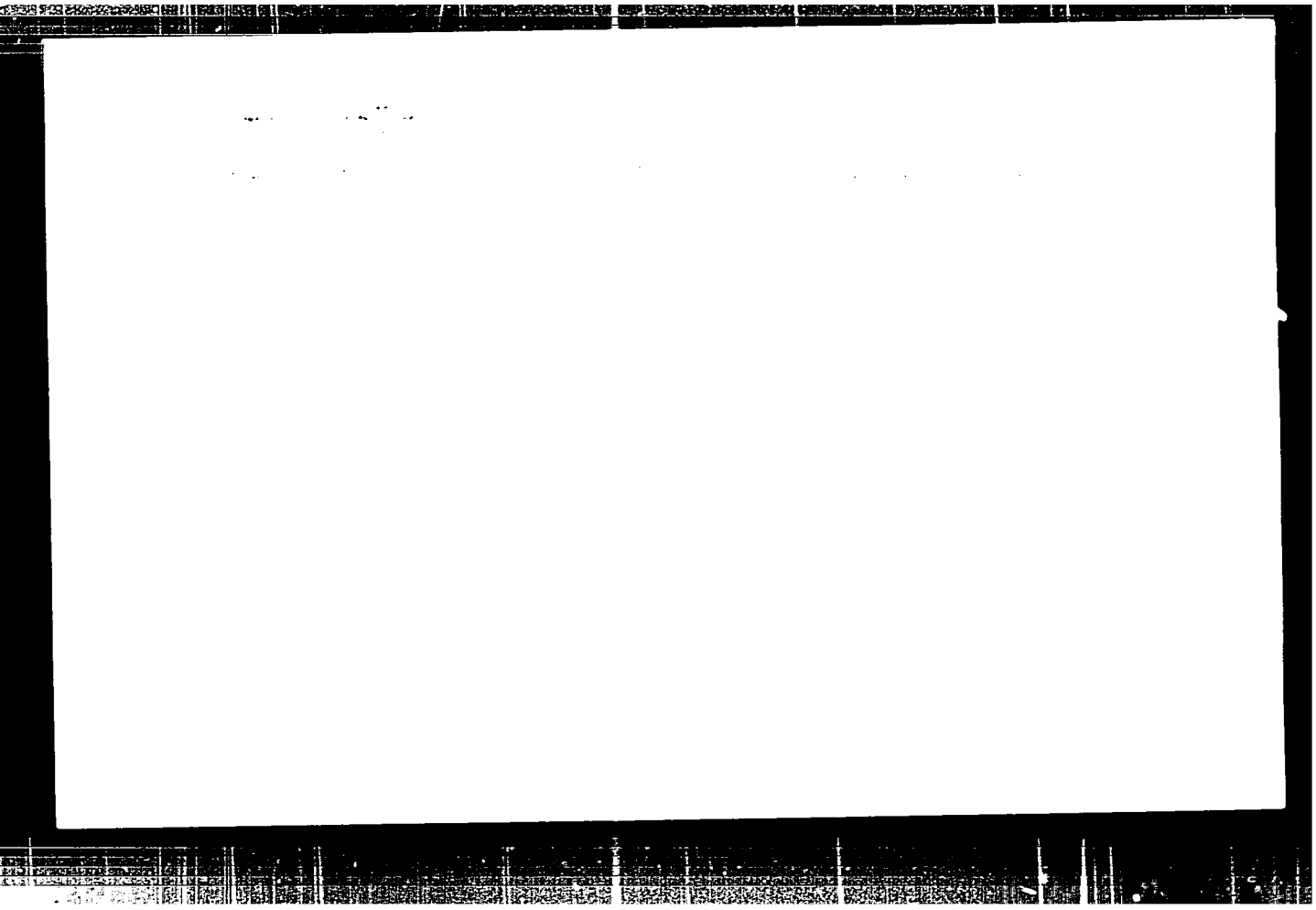
ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V. Lomonosova (Moscow Institute of Fine Chemical Technology imeni M.V. Lomonosov)

SUBMITTED: May 20, 1962

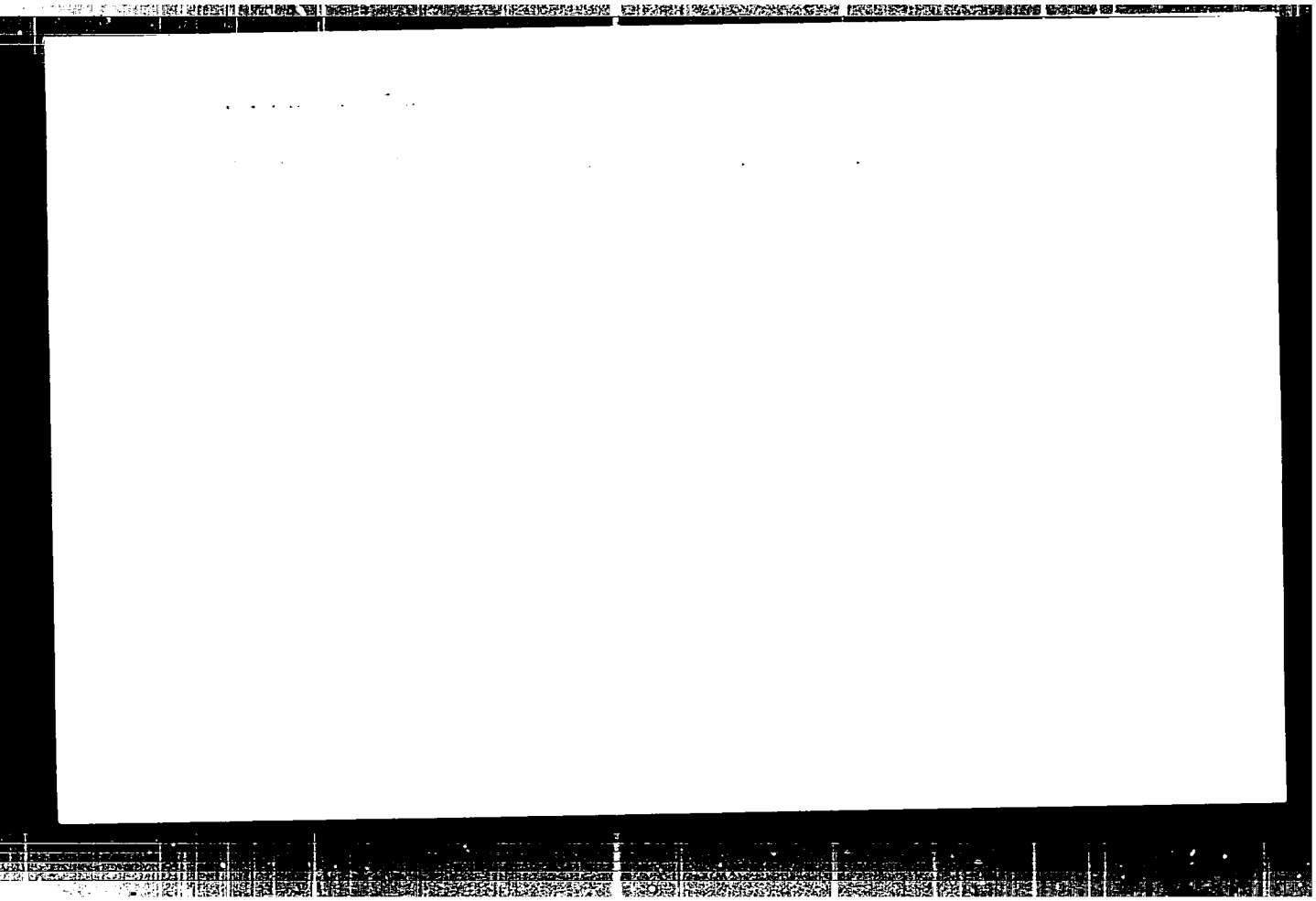
Card 2/2

MIKHAYEVSKIY, N.; PAN'KIN, N.

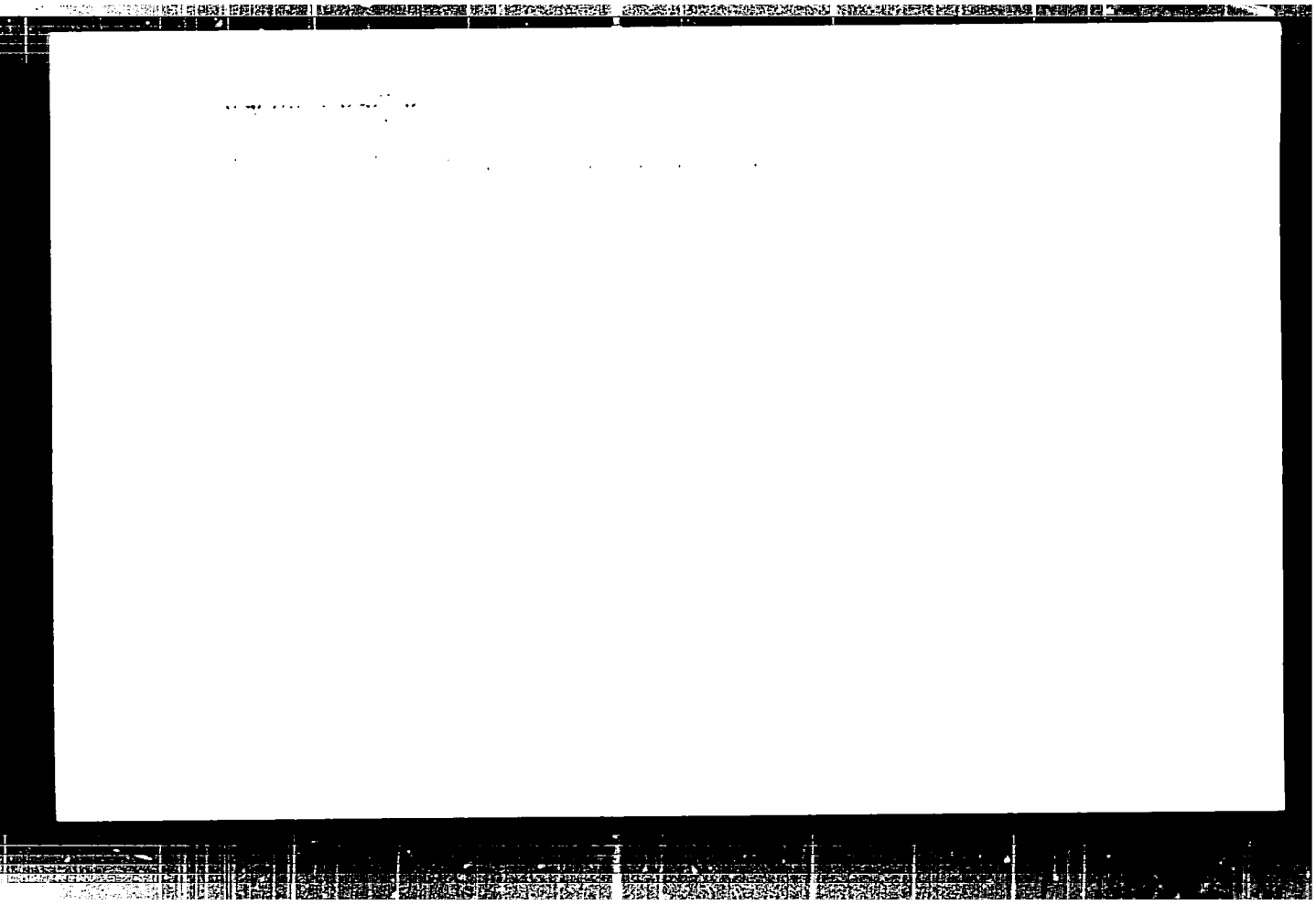
What kind of garage equipment is needed by automotive transport units? Avt.transp. 35 no.11:13-14 N '57. (MIRA 10:12)
(Service stations)



APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001136



APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001136



APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001136

NEKRASOVSKIY, Ye. A. (Kn. .)

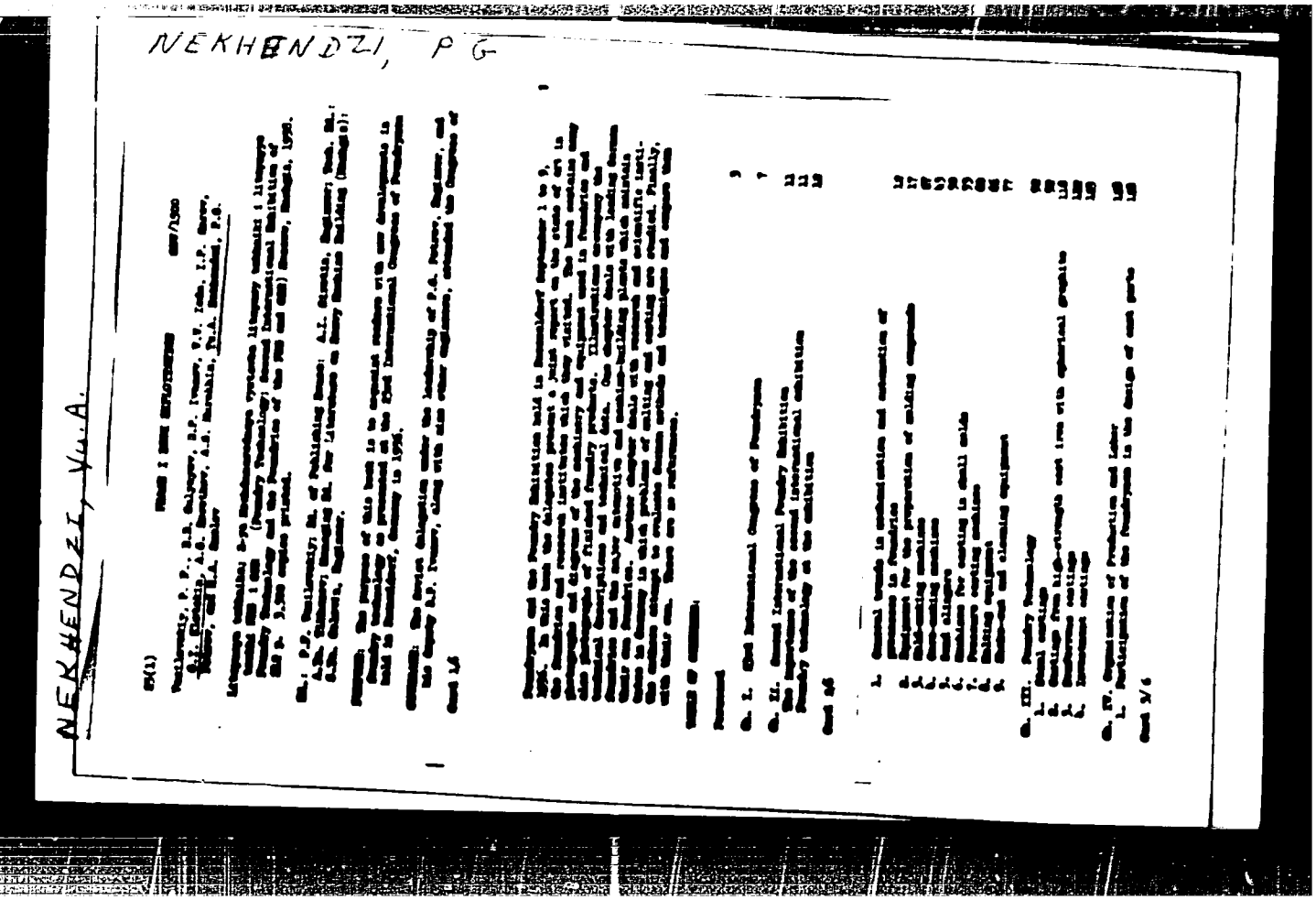
"Development of a Radio-Active Instrument for Measurement of the Weight of Paper Strip,"

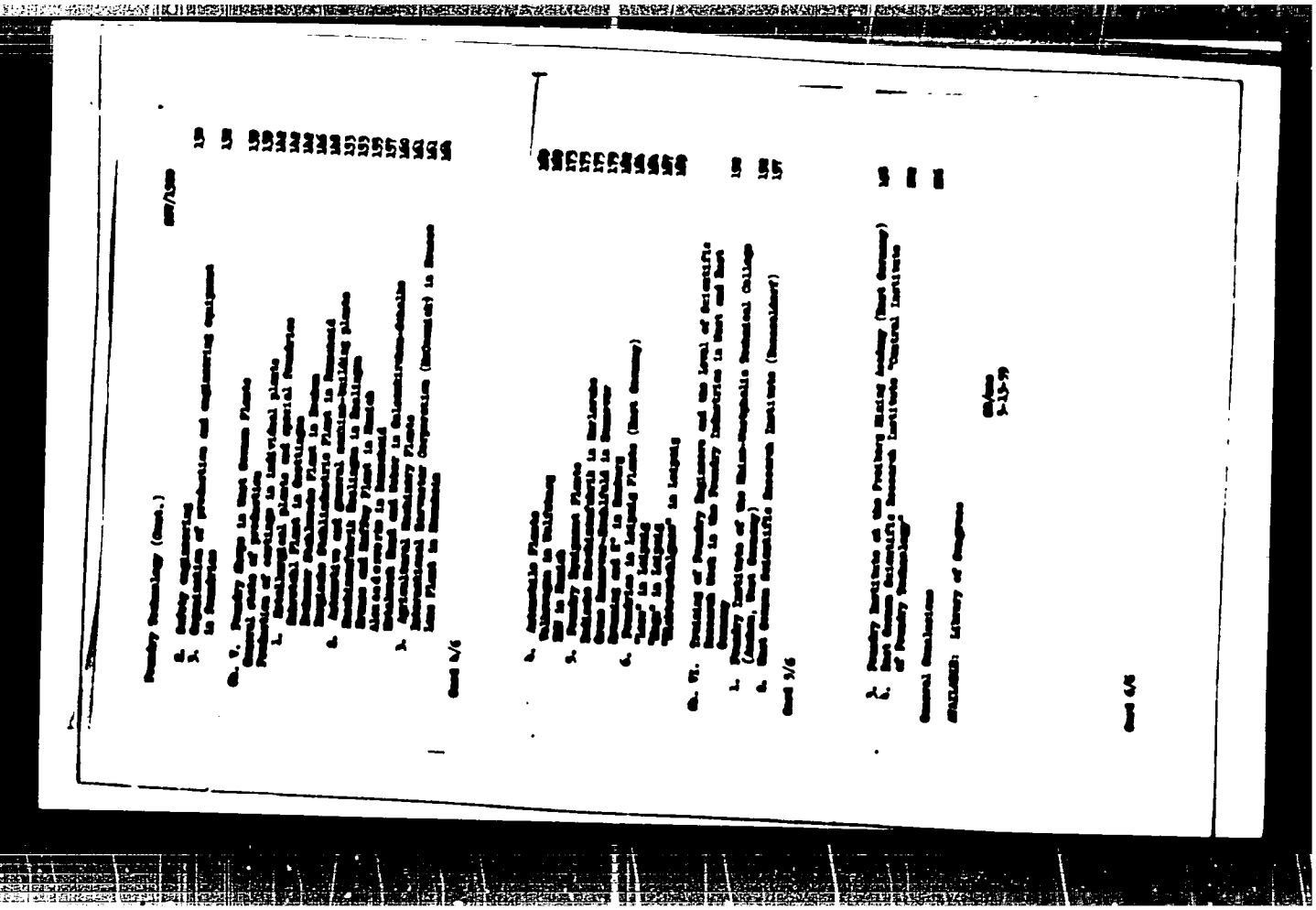
paper read at the Session of the Acad. Sci. USSR, on Scientific Problems of Automatic Production, 15-20 October 1956.
Avtomatika i telemekhanika, No. 2, p. 192-192, 1957.

9015229

Nekhayevskiy, Ye.A.

Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science; Machine and Instrument Manufacturing, Moscow, Izd-vo AN SSSR, 1958. 358 p.





NEKHENDZI, Ye. Yu.

USSR/ Physics - Heat conduction

FD-1038

Card 1/1 : Pub. 153 - 9/23

Author : Nekhendzi, Ye. Yu

Title : Determination of the heat capacity and conductivity of metals under conditions of regular regime

Periodical : Zhur. tekh. fiz., 24, 1428-1440, Aug 1954

Abstract : Discusses: problem of the cooling of a sphere; Prof. G. M. Kondrat'yev's method for determining the thermal constants of heat insulators; the determination of the heat capacity and conductivity of metals. Describes the experimental set-up. Thanks Prof. I. S. Gayev. Fourteen references, 7 USSR (e.g. V. I. Arkharov, Trudy Instituta fiziki metallov, UFAN, No. 11, 1950).

Institution : --

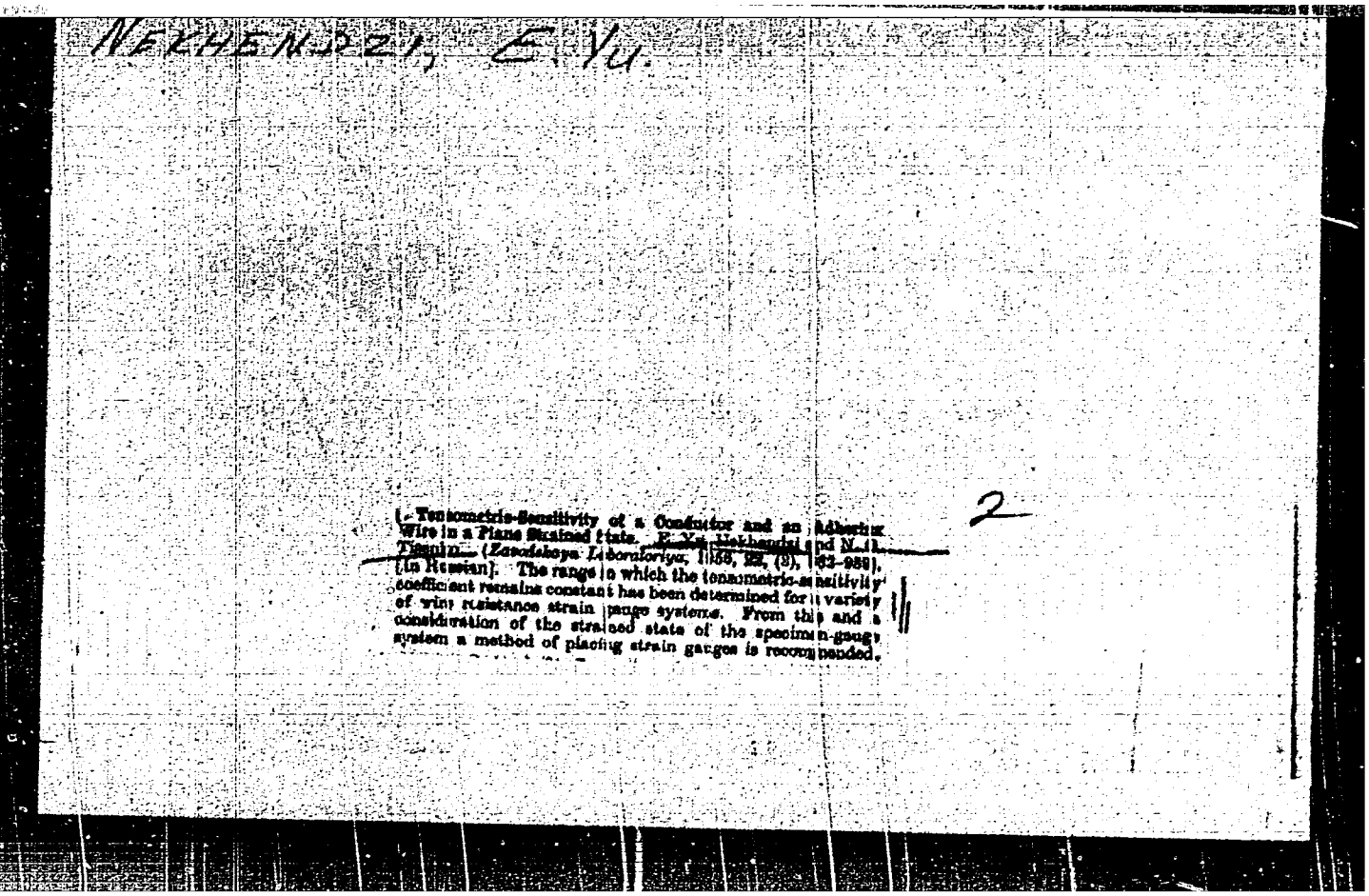
Submitted : 6 January 1953

[redacted], Ye. Yu.

Yerchenkii, Ye. Yu.

"Determination of the thermal constants of metal in the metals of regulated conditions." Min Heavy Mach ne Building USSR. Central Sci Res Boiler and Turbine Inst imeni I. I. Polzunov. Leningrad, 1956. (Dissertation for the degree of Candidate in Technical Science)

Knizhnaya letopis
No. 15, 1956. Moscow



NE245 N221, E, Yu.

2

Tensometric-Sensitivity of a Conductor and an Adhering Wire in a Plane Strained State. P. Ya. Ustinov and N. I. Tsapin. (*Zavodskaya Laboratoriya*, 1958, 22, (8), 962-969). [In Russian]. The range in which the tensometric-sensitivity coefficient remains constant has been determined for a variety of wire resistance strain gauge systems. From this and a consideration of the strained state of the specimen-gauge system a method of placing strain gauges is recommended.

NECHENDSI E.Y.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1279
AUTHOR NECHENDSI, E.YU.
TITLE The Analysis of the "Two Bio Method" for the Determination of the Thermal Constants of Metals and Insulators.
PERIODICAL Žurn. techn. fis, 26, fasc. 8, 1857-1861 (1956)
Publ. 8 / 1956 reviewed 9 / 1956

In the recently published monograph by KONDRATJEW the principle of the "Two Alpha Method" was dealt with, which is characterized by the investigated sample (insulator) being cooled (heated) in two stages with the heat transfer coefficients α_1 and α_2. From two characteristic equations two unknown thermal constants of the type? temperature conductivity a_x and heat conductivity λ_x were determined. This method was not developed experimentally.

A similar method, the "Method of the two Balls" was used by the author for the purpose of determining the heat constants of metals. The general part is studied as the "Method of the two Bio" for metals and insulators. Experimental results are shown in a table from which it may be seen that the minimum ratios $K = Bi_1/Bi_2$ (on the occasion of the cooling of both balls in a medium) are attained in the case of vortex-like regime in a free convection and in a turbulent flow at $Nu \sim Re^{0,8}$. For insulators it seems to be best if a compulsory flow round the samples takes place from two radii

Žurn.techn.fis, 26, fasc.8, 1857-1861 (1956) CARD 2/2 PA - 1279

in the same medium. The most favorable method for metals seems to be to measure the characteristic number Bi_2 in a metallic melt and Bi_1 in some other medium as e.g. in a salt melt, the conditions of forced convection as well as temperature being the same.

INSTITUTION:

Nukhendzi, Yu. Yu.

Category : USSR/Atomic and nuclear physics - Heat I-4

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 8295

Author : Nukhendzi, Yu.Yu.
Title : Analysis of the "Doubled-Heat Source Method" for Determining the Thermal Constants of Metals and Insulators.

Orig Pub : Zh. tekhn. fiziki, 1956, 26, No 4, 787-794

Abstract : Experimental data are used to consider the conditions for the most suitable cooling conditions for use in the determination of the coefficient of heat conductivity of metals and insulators using regular heat-condition theory. In the case of insulators it is recommended that specimens of various dimensions be placed in a single medium that is force-circulated, and that metals be placed in different media (for example, in a fused metal-salt mixture) at identical temperatures. Under these conditions, the relative error does not exceed ± -- 10%.

Card : 1/1

SHATIL', A.A.; NEKHENDZI, Ye.Yu.

Wire strain gauges used in automatic recording of tension drops.
Izm. tekh. no.3 45-47 My-Je '57. (MLRA 10:8)
(Strain gauges)

AUTHORS: Nekhendzi, Ye. Yu., Tisenko, N. G. SOV/32-24-7-40 65

TITLE: A Tensometer for the Measuring of Static Deformations up to a Temperature of 450° (Tenzometry dlya izmereniya staticheskikh deformatsiy do temperatury 450°)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 7, pp. 872 - 874 (USSR)

ABSTRACT: As the design of heat-resistant tensometers involves difficult problems the present paper describes a tensometer for measuring the static deformations up to temperature ranges about 450°. As with this type of tensometer an improvement of the electrical insulating properties of the tensometer cement must be achieved, and as on the other hand good technological properties are required the authors used a mixture of waterglass cement which has a resistance of one thousand times greater than the compositions already known. From the data given may be seen that a mixture of the composition 1 PbO + 1 Al_2O_3 + 1 SiO_2 has the best filler properties; good results were obtained in the case of electro-corundum of the VNIIASh, the softening temperature of the cement is mentioned to be $t_1 > 1200°$. The technique of

Card 1/2

A Tensometer for the Measuring of Static Deformations up to a Temperature of 450° SOV/32-24-7-40/65

the production of the tensometers by means of this cement is given. The static evaluation and the determination of the temperature dependence of the sensitivity to tension was carried out on a TsKTI-2 machine for creeping tests. The tensometers were mounted to cylindrical standard samples of EI 437 steel, and the measurements were carried out within the isothermal range. A high reproducibility of the results was found, with the maximum errors of the deformation measurements being about $\sim \pm 3 - 5\%$; this agrees with the data obtained by means of the reflecting extensometer according to Martens (Ref 3). Also a diagram of the working characteristics of the tensometer described is given.
There are 2 figures, 1 table, and 3 references, which are Soviet.

ASSOCIATION: Tsentral'nyy kotloturbinnyy institut im. I. I. Polzunova (Central Institute for Boiler Turbines imeni I. I. Polzunov)

Card 2/2

28(2)

AUTHOR: Nekhendzi, Ye.Yu.

TITLE: An Investigation of the Causes of Instab... Various Tensometric Circuits at High Tem... (Issledovaniye prichin nestabil'nosti ... tenzometricheskikh skhem pri vysokikh ...

PERIODICAL: Izmeritel'naya tekhnika, 19[illegible], Nr [illegible], pp [illegible]

ABSTRACT: The ultimate temperature of applying heat-pro... tensometer transducers in static tests is lim... by the zero instability and the unbalance of elec... trical tensometer circuits. Some unbalance ... ed by the imperfection of the temperature ... tion and the instability of the electrical ... ance of the tensometer wire itself. The ... the opinion that a reduction of the electrical ... sulation properties of the cement used ... principal reason for the zero instability ... at high temperatures. Investigations of the ... bility of the dc bridge circuits were ...

Card 1/4

An Investigation of the Causes of Instability of Var... in Tens... metric Circuits at High Temperatures

a MTV-1 dc bridge and a mirror galvanometer M 2. Tensometer transducers made of cements [illegible] composition were investigated, for example [illegible] with a water glass basis or composed of silicon organic compounds. The author established that cement showed a behavior as a capacitor when used in a tensometer transducer. The instability of the dc tensometer circuits at high temperatures [illegible] caused by the shunting influence of the [illegible] layer, but because of the polarization of the [illegible] certain cement types. In cements with a water glass base apparently an ion-relaxation takes place (so called high-voltage polarization) which has unfavorable characteristics. The author recommends the application of silicon-organic cements which do not show a strong polarization effect. Further the author presents a method for operating [illegible] resistant tensometer transducers based on the

Card 2/4

SOV

An Investigation of the Causes of Instability of Variable Parameter Circuits at High Temperatures

glass cement at temperatures of up to [illegible] C. The author describes also an investigation of potentiometer circuits. The influence of the polarization effect on the instability of the potentiometer circuit was established experimentally. Finally, the author investigated an ac bridge circuit since it would not have the dc polarization effect. When in a thermostat under isothermic conditions, the ac circuit will give stable readings even at high temperatures, but the balancing of the bridge will be disturbed during insignificant temperature changes, apparently because of the considerable temperature dependence of capacity and ohmic resistance. Since fluctuations of the temperature must be always expected at higher temperatures, the ac bridge will show even higher inaccuracies than the dc bridge. For this reason the author recommends in his conclusions the application of dc circuits. This conclusion is [illegible]

Card 3/4

SOV/115-[illegible]

An Investigation of the Causes of Instability of Various Ter... metric Circuits at High Temperatures

importance for dynamic tests of high-strength con- cretes based on water glass at temperatures of [illegible]F to 800°C. These dynamic tests are usually perform- ed by using a carrier frequency and the author re- commends using a dc circuit. There are [illegible] and 5 Soviet references.

Card 4/4

80533

18.1250

S/126/60/009/05/021/025
E021/E335

AUTHOR: Nekhendzi, Ye. Yu.

TITLE: Heat-conduction of Nickel and Nickel Alloys in Relation to the Content of Alloying Elements

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 5, pp 792 - 794 (USSR)

ABSTRACT: Although there is a great deal of literature on the heat conductivity of steels and iron-based alloys, there is not much similar data on nickel-based alloys and yet these alloys are used at elevated temperatures. In Figures 1-3, all the data already published on nickel alloys is collected together in the form of curves of heat conductivity against nickel content. It can be seen from these diagrams that, with the exception of cobalt, all the constructed curves are similar. The addition of cobalt slightly decreases the heat conduction, evidently because of the similarity of cobalt and nickel atoms. Copper-nickel alloys have increased heat conductivity. From results on electrolytic and commercial nickel it can be seen that the heat conductivity is strongly affected by purity. With the addition of 3% impurity, the heat conductivity at room

Card1/2

4

80535
S/126/60/009/05/021/025
E021/E335

Heat-conduction of Nickel and Nickel Alloys in Relation to the Content of Alloying Elements

temperature falls by a factor of 2. In the region 55-80% nickel, the heat conductivity is practically unaffected by chemical composition. This leads to the conclusion that the heat conductivity of all commercial high-temperature resistant nickel-based alloys is practically the same. With increase in temperature, the dependence of heat conductivity on nickel content levels down. There are 3 figures and 22 references, 12 of which are English, 2 German and 8 Soviet.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy kotloturbinnyy institut imeni Polzunova (Central Scientific-research Boiler-Turbine Institute imeni Polzunov)

SUBMITTED: May 25, 1959

Card 2/2

NEKHENDZI, Yevgeniy Yulianovich, kand. tekhn. nauk; KHARITONOV, Nikolay Pavlovich, kand. khim. nauk; TYUMENEVA, S.T., inzh., red.; FREGER, D.P., red. izd-va; GVIRTS, V.L., tekhn. red.

[Resistance tensicmeters for measuring static deformations at high temperatures; stenographic record of reports presented at the LDNTP seminar on vibration technology] Tenzometry soprotivleniia dlia izmereniia staticheskikh deformatsii pri povyshennykh temperaturakh; stenogramma dokladov na seminare v LDNTP po vibratsionnoi tekhnike. Leningrad, 1962. 57 p.
(MIRA 15:5)

(Strain gauges)

3313?

18.6200 [illegible]

S/115/62/000/001/003/007
E194/E355

AUTHORS: Nekhendzi, Ye.Yu. and Kharitonov, N.P.

TITLE: Strain gauges of Constantan wire for high temperatures

PERIODICAL: Izmeritel'naya tekhnika, no. 1, 1962, 24 - 27

TEXT: During 1956-1958 the Tsentral'nyy kotloturbinnyy institut (Central Boiler Turbine Institute) studied the use of Constantan wires as strain gauges for the temperature range of 20 to 250-300 °C. A systematic study was made of the electrical properties of various brands of Constantan wire suitable for strain gauges as functions of temperature, time and heat-treatment. The adhesive used was heat-resistant cement, grade B-58 (V-58), prepared by the Institut khimi silikatov AN SSSR (Institute of Silicate Chemistry of the AS USSR). This material can be polymerized by moderate heat so that the properties of the annealed Constantan strip strain-gauges are not affected. Soviet grades of Constantan MHMTs (MNMts) 40-1.5, enamel-insulated grade ПЭК (PEK) hard grades without enamel KT and Kopel MNMts 43-0.5 were

Card 1/-

Strain gauges ....

studied, also wires made by the American firm, Driver-Harris (hard Constantan, Advance (enamelled) and Cupron (enamelled)). All the wires had a minimum diameter of 0.0[illegible] mm except the Cupron wire which was 0.0255 mm. The wires corresponded in resistance and mechanical strength to standard ГОСТ (GOST) [illegible]07-39 and in chemical analysis the Soviet wire and Amer[illegible] hard Constantan corresponded to standard GOST [illegible]2-52 while Advance and Cupron were similar in composition to [illegible]el. Three series of tests were made. In the first [illegible] were first annealed for one hour, the annealing at a temperature of 200 - 420 °C being carried out in neutral silicon fluid in air and at temperatures of 450 - 700 °C in a vacuum in argon. The specimens were tested as strain gauges with porcelain tubes. In the second series of tests the wires in the condition of delivery were fixed to specimens of austenitic and perlitic steels. The strain gauges were annealed for hour with successive increase of temperature from 300-480-500 °C. The results were similar [illegible] series [illegible]

Card 1/

Strain gauges ....

duration of annealing; the gauges were annealed isothermally at temperatures of 370, 390, 420 and 450 °C. The annealing was carried out in stages of 1 - 4 hours for a total time of 12 - 19 hours. The following properties were determined from the tests: the mean value of the temperature coefficient of resistance α in the ranges 20 - 50, 20 - 200 and 20 - 300 °C, the relative change of electrical resistance during isothermal annealing at a given temperature above 300 °C, the relative change in electrical resistance at 20 °C after heat treatment. It was found that the various properties measured are mostly interrelated and the curves are of similar form for all the Constantan wires tested. For wires with an initially negative value of α, in which the curves of α as functions of annealing temperature twice cross the zero line, it is recommended to use heat-compensating annealing with two series of conditions: in a region of holding at a temperature below 400 °C and in the region of recrystallization at a temperature of about 450 °C. Constantan wires can be annealed at temperatures below 400 °C, for times of the order of 1 hour in air, and this can be used to produce thermally-compensated strain

Card 3/5

Strain gauges . .

gauges for the temperature range 20 - 270 °C.
The tests showed that only wires with a negative value of α in the condition of delivery can be thermally compensated by annealing. The manufacturers should be recommended to make hard Constantan wires with a stable value of α in the temperature range 20 - 200 °C of -10 to -20 x 10^{-6} (for enamelled wires) and about -50 x 10^{-6} (for hard wires) in the unannealed condition. Three temperature ranges of service of thermally-compensated Constantan strain gauges are distinguished 1) from 20 to 220-270 °C. In this temperature range the strain gauges are thermally compensated and the readings do not depend on temperature, there is no need to measure the temperature of the part being investigated.
2) from 220-270 to 300 °C. In this range the temperature of the part must be measured and corrections made from an experimental curve of change of resistance with temperature. Instability of the characteristics can usually be neglected in this [illegible]

Card 1/2

Strain gauges

3) above 300 °C to 400-500 °C. In this temperature range either a compensating circuit must be used or the influence of temperature and time must be allowed for by making a thermal calibration of a number of compensating strain gauges, using temperature conditions similar to those of the actual tests. Differences of temperature and differences of characteristics between the actual compensating thermocouples have their effects. The use of compensating circuits without preliminary selection of the strain gauges can lead to appreciable errors. In individual favourable cases, it was found possible to make reliable strain measurements up to 500 °C.
There are 4 figures and 7 Soviet-bloc references

Card 5/5

S/[illegible]
D202/D305

AUTHOR: Nekhendzi, Ye.Yu.

TITLE: A search for heat resistant cements with improved electrical insulating properties based on water glass

PERIODICAL: Zhurnal prikladnoy khimii, v. [illegible], no. [illegible], 1961, 2615 - 2622

TEXT: The author investigated many factors, which affect the resistivity ρ of water glass cements, such as the ratio of SiO_2 to the alkali oxide, (modulus M) and the effects of different alkaline ions, the moisture absorption, different fillers and the effect of emf polarization. Other properties such as hardness, durability, adhesion and thermal expansion, in the temperature range of 20-700°C were also studied. Full experimental details of the testing installation are given. Samples of water glass cement, 20 mm in diameter and 2-3 mm thick, were slowly dried at 150-180°C, polished and fitted in the middle with graphite or silver electrodes. The resistivity was measured on three installations: the megohmmeter M1101 an electronic megohmmeter MOM-2M and on an apparatus conior-

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ming to TOCT 6433-52 (GOST 6433-52), in all cases the results obtained being practically identical. P.B. Knopov took part in these measurements. Preliminary results showed that samples with graphite and silver contacts had the same resistivity which was unaffected by the initial water content in the cements. The results were ... reproducible. The effect of moisture absorption from air ... served only up to 150°C; at that temperature samples needed ... hours to lose the whole moisture; at 180°C the drying was complete and the dependence of ρ on the temperature was linear. The effect of the composition was studied on 40 samples; in the first experimental series the 50 % potassium water glass, with M ... .6 being used. The following substances were tested as fillers: Cr_2O_3, Al_2O_3 (as corundum and α-alumina) quartz, mullite, cyanite and other aluminosilicates, TiO_2, BeO, B_2O_3. From the above fillers only TiO_2 and the aluminosilicates improved the resistivity about 100 times more than other fillers. B_2O_3 had a favorable effect on the resistivity, but made the cement very brittle, with poor adhesive properties. In another series of experiments the neutralization effect was studied; this effect was discovered by Skanavi and F.I. Matyu-

Card 2/4

snov (Ref. 5: ZhTF 9, 11, 1939) and consists of an increase in the glass resistivity by partially exchanging the alkaline ions; it was also studied by L.Yu. Kurts. The author studied the neutralization effect on cements from the following water glasses: K-Na, Na-Li, K--Li and K-Na-Li. The alkali oxides being used in nearly equimolar ratios. The cements were prepared with SiO_2 as the filler, only the K-Na-Li water glass having a substantial effect on the resistivity. The author tried to introduce Ba and Pb ions into water glass solutions, but failed to obtain satisfactory results. Only by adding PbO to the filler (e.g. PbO: SiO_2:Al_2O_3 = 1:1:1) did he obtain an outstanding increase in the resistivity of the cement. If Al_2O_3 is used in the form of corundum the thermal expansion coefficient of the above cement $(\alpha)_{20-400^\circ} = 15.2 \cdot 10^{-6}$, $(\alpha)_{20-500^\circ} = 15.2 \cdot 10^{-6}$ and its softening point is higher than 1200°C. The resistivity of this cement is affected neither by M nor the kind of SiO_2 and Al_2O_3 used, and no neutralization effect was observed in its case. The effect of water glass modulus is different with different fillers; having no effect on a PbO cement, the increase of M in cements

Card 3/4

with SiO_2 or aluminosilicates improves their resistivity but causes some brittleness. Better results may be obtained when [illegible] % water glass solution is used with M = 4. The author also tested the effect of sorbents: silica gel KSK and alumina gel, but with unfavorable results. The value of emf polarization, given by the ratio ρ_t/ρ_0 decrease with rising temperature which is believed to be due to the increase in the thermal mobility of the ions; the polarization depends not on the resistivity, but on the nature of the ions present. There are 6 figures, 1 table and 7 Soviet-bloc references.

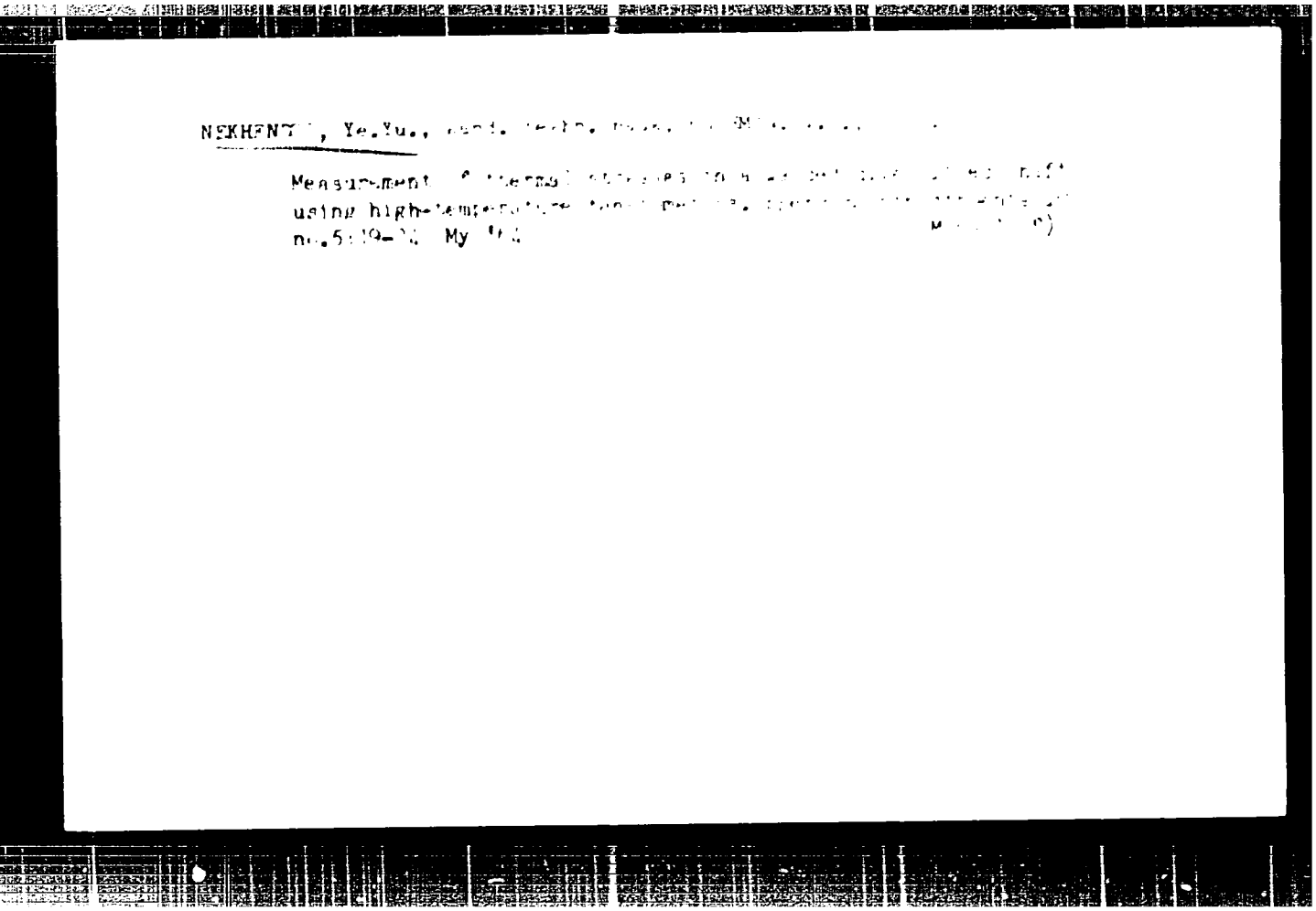
SUBMITTED: 1959 (initially)
August 20, 1961 (after revision)

Card 4/4

NEKHENDZI, Ye.Yu.

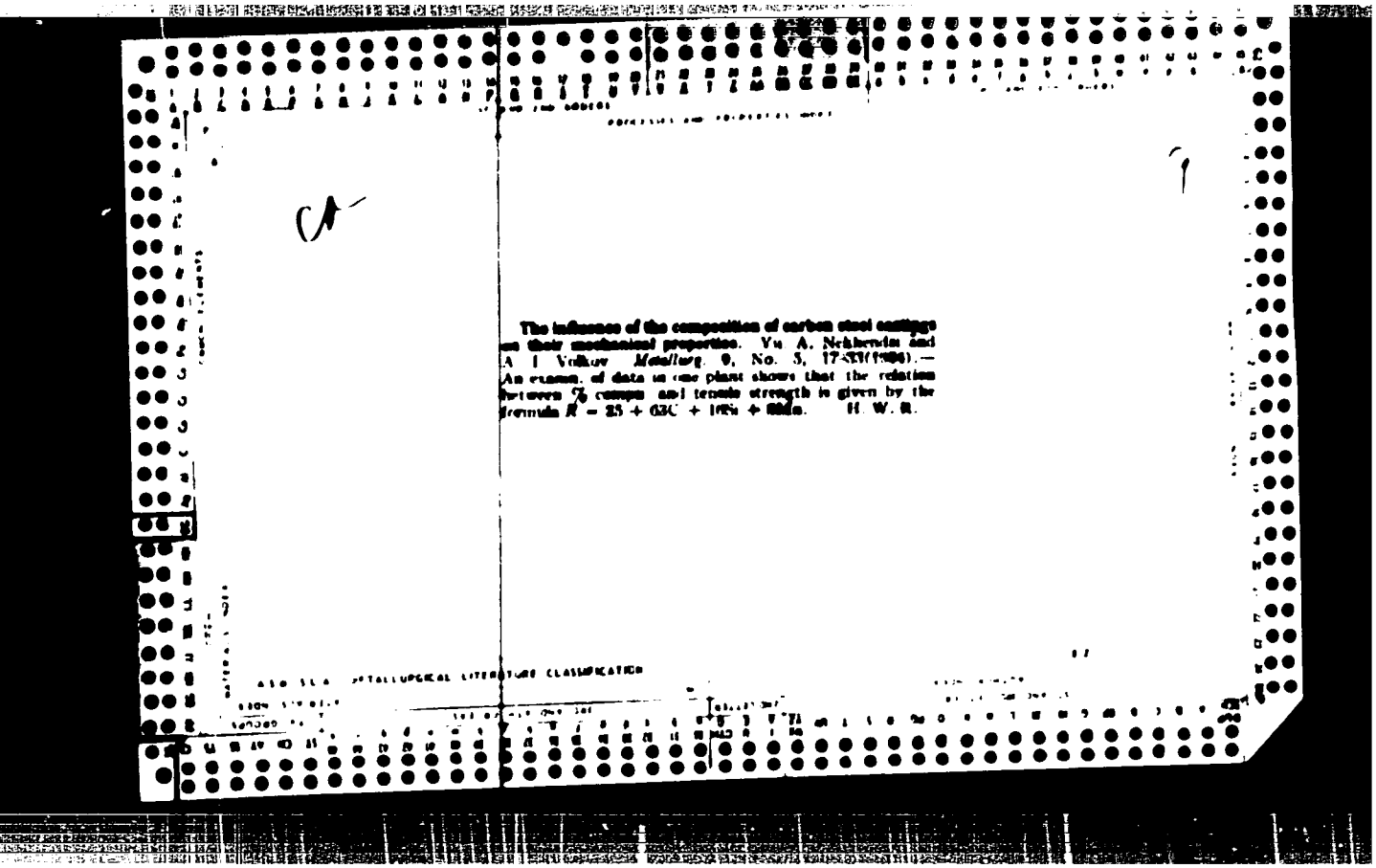
Measurement of creep deformations at 700° C by means of strain gauges. Zav. lab. 29 no.10:1241-1246 '63. (MIRA 16:12)

1. TSentral'nyy kotloturbinnyy institut imeni I.I. Polzunova.

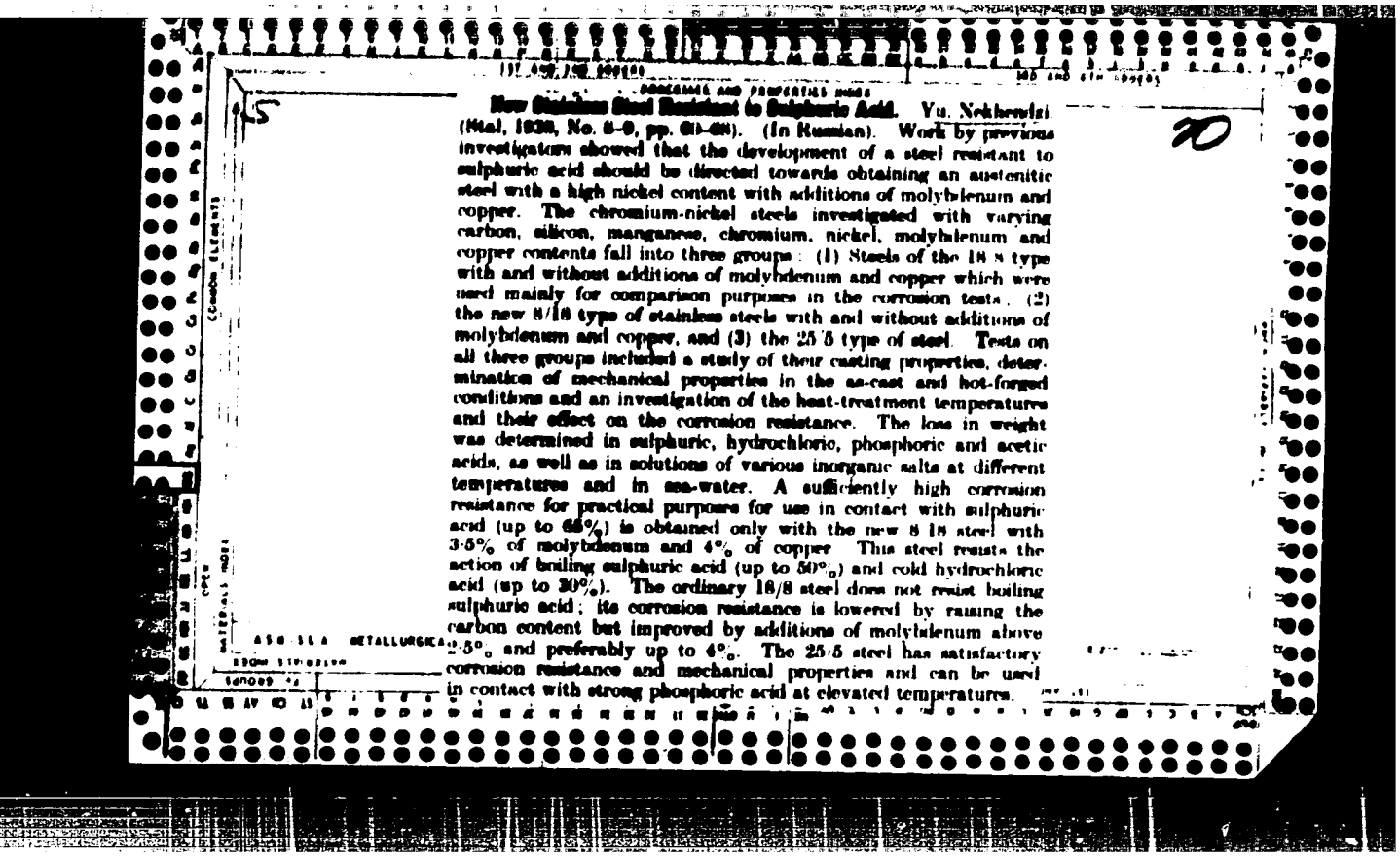


LEVCHENKO, B.L., inzh.; NEKHENIZI, Ye.Yu., inzh.; ROMANCHIK, K.K., inzh.; KHASINA, E.A., inzh.

Study of tightening stresses in turbine pins using high-temperature tensiometers. Energomashinostroenie 10 no.5:37-39 My '64. (MIRA 17:8)



The influence of the composition of carbon steel castings on their mechanical properties. Yu. A. Nekhendzin and A. I. Volkov. *Metallurg.* 9, No. 5, 17-23(1934).—An examn. of data on one plant shows that the relation between % compn. and tensile strength is given by the formula $R = 25 + 63C + 10Si + 6Mn$. H. W. R.



New Stainless Steel Resistant to Sulphuric Acid. Yu. Nekhendzi (Metal, 1938, No. 8-9, pp. 61-68). (In Russian). Work by previous investigators showed that the development of a steel resistant to sulphuric acid should be directed towards obtaining an austenitic steel with a high nickel content with additions of molybdenum and copper. The chromium-nickel steels investigated with varying carbon, silicon, manganese, chromium, nickel, molybdenum and copper contents fall into three groups: (1) Steels of the 18/8 type with and without additions of molybdenum and copper which were used mainly for comparison purposes in the corrosion tests; (2) the new 8/18 type of stainless steels with and without additions of molybdenum and copper, and (3) the 25/5 type of steel. Tests on all three groups included a study of their casting properties, determination of mechanical properties in the as-cast and hot-forged conditions and an investigation of the heat-treatment temperatures and their effect on the corrosion resistance. The loss in weight was determined in sulphuric, hydrochloric, phosphoric and acetic acids, as well as in solutions of various inorganic salts at different temperatures and in sea-water. A sufficiently high corrosion resistance for practical purposes for use in contact with sulphuric acid (up to 65%) is obtained only with the new 8/18 steel with 3·5% of molybdenum and 4% of copper. This steel resists the action of boiling sulphuric acid (up to 50%) and cold hydrochloric acid (up to 20%). The ordinary 18/8 steel does not resist boiling sulphuric acid; its corrosion resistance is lowered by raising the carbon content but improved by additions of molybdenum above 2·5% and preferably up to 4%. The 25/5 steel has satisfactory corrosion resistance and mechanical properties and can be used in contact with strong phosphoric acid at elevated temperatures.

NEKHENDZI, Yulian Arkad'evich.

Steel casting; a textbook Moskva, Gos. nauch.-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1948. 766 p. (48-26876)

TS320.N46

NEKHENDZI, Yu. A.

PA 196T92

USSR/Metals - Steel, Castings Jun 51

"Obtaining Sound Thermal Joints in Steel Castings," Dr Tech Sci, Laureate of Stalin Prize, Yu. A. Nekhendzi, F. D. Obolentsev Cand Tech Sci, Leningrad Polytech Inst imeni M. I. Kalinin

"Litey Proizvod" No 6, pp 15-19

Conducted expts to establish conditions for obtaining sound metal in X, T, L, Y and V-shaped joints of steel castings, using metal chills. Also studied influence of dimensions and material of chills on their effectiveness.

196T92

USSR/Metals - Steel, Castings (Contd) Jun 51

Discusses directional solidification, as a most essential factor in fabrication of good castings, and outlines methods for controlling, with the aid of metal chills, solidification of intricate castings.

196T92

[redacted], Yu.A.; SOROKIN, P.V.

Effect of the temperature rarefaction and of a mold upon steel liquidity. Lit.proizv. no.8:17-20 [illegible] '54. (MLRA 8:1)
(Founding)

NEKHENDZI, Yu. A.

A New Method for Determining the Fluidity of Alloys by Vacuum Suction. Yu. A. Nekhendzi, N. G. Girshovich, and E. I. Egorov. (*Zavodskaya Laboratoriya*, 1955, 21, (1), 66–68). [In Russian]. The drawbacks of existing methods for determining the fluidity of liquid alloys are discussed and a technique in which the liquid is sucked up a quartz tube connected to an evacuated vessel is described. The tube is immersed to a depth of 50–70 mm, and suction is applied after 10–15 s. Fluidity is estimated from the length of tube filled with metal less the depth of immersion, the latter being indicated by a copper wire fixed to the outside of the tube. Results obtained with iron (3·02% C, 1·06% Si) at 1400° C are presented.

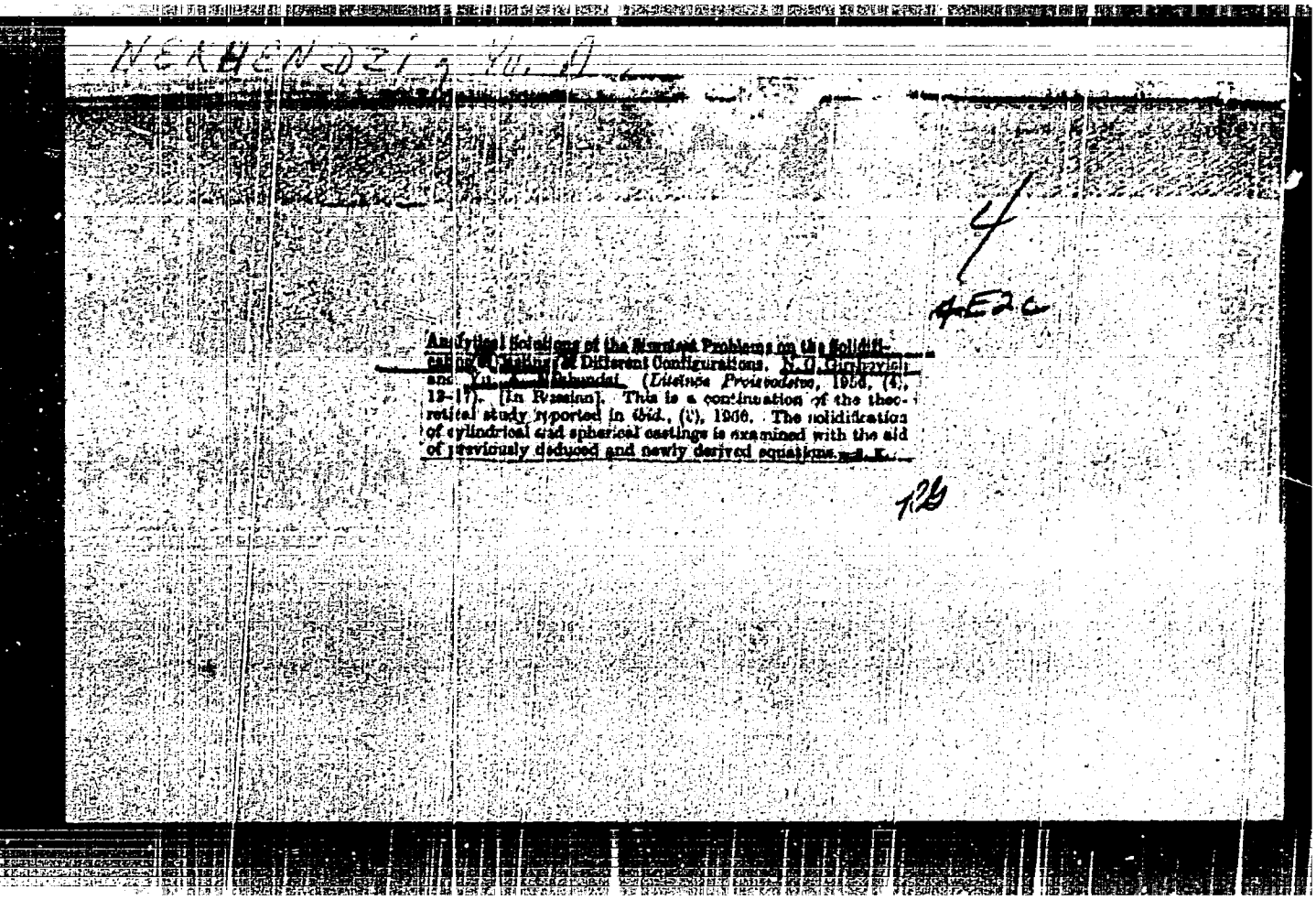
3

NEKHENDZI, YU. A.

4
4E-2c

V Analytical Solution of the Simplest Problems on the Solidification of Castings / V. S. Chirkovich and Yu. A. Nekhendzi. [Abstract] / Liteinoe Proizvodstvo, 1956, (8), 14-16). [In Russian].
After a pertinent discussion of the solidification of castings and the classification of this process into four types, the authors go on to develop equations for the solidification of flat castings ((6), 14-16). In this instalment of their mathematical analysis of casting solidification the authors consider solutions of their equations for a sphere and for a cylinder without taking into account the physical heat of the solid metal.—e. z.

1221



NEKRASOV, Yu. D.

4

4E2c

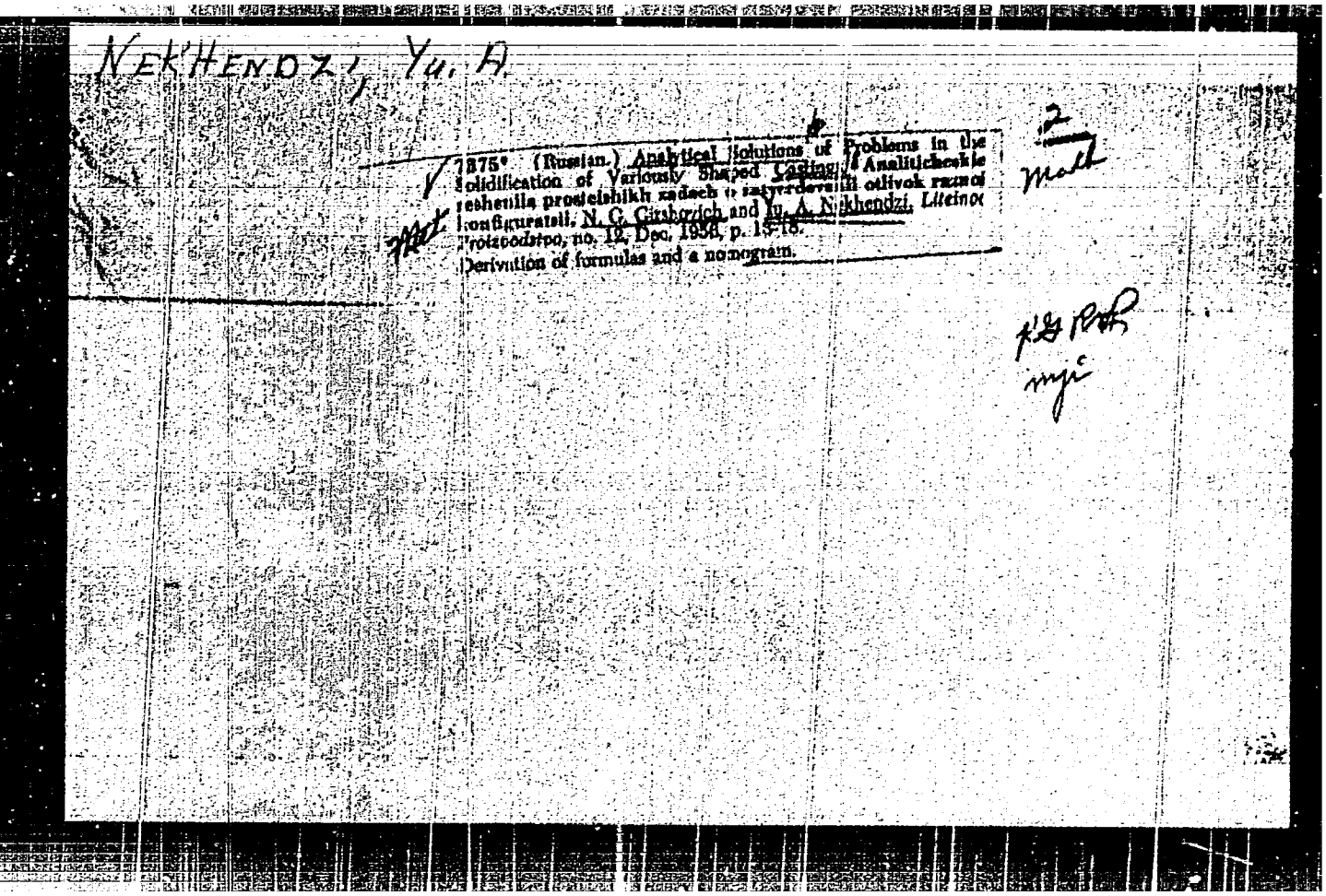
An Exact Solution of the Stefan Problem on the Solidification of Casting of Different Configurations. N. O. Girshovich and Yu. D. Nekrasov. (*Liteinoe Proizvodstvo*, 1956, (4), 13-17). [In Russian]. This is a continuation of the theoretical study reported in *Ibid.*, (1), 1956. The solidification of cylindrical and spherical castings is examined with the aid of previously deduced and newly derived equations. M. K.

126

GIRSHOVICH, N.G., doktor tekhnicheskikh nauk; MEKHEDZI, Yu.A., doktor tekhnicheskikh nauk.

Analytic solution of simple problems on the solification of various configurational castings. Lit.proizv. no.6:14-18 Je '56. (MLRA 9:8)

(Solidification) (Founding)



NEKHENDZI, Yu. A.

7875* (Russian.) Analytical Solutions of Problems in the Solidification of Variously Shaped Castings. Analiticheskie resheniia prostelshikh zadach o zatverdevanii otlivok razno konfiguratsii. N. G. Girshovich and Yu. A. Nekhendzi. *Liteinoe Proizvodstvo*, no. 12, Dec. 1958, p. 15-16.
Derivation of formulas and a nomogram.

2 Math

NEKHENDZI

GIRSHOVICH, N.G.; NEKHENDZI, Yu.A.

Foundry practices in Leningrad. Lit.proizv. no.10:13 O '57.
(MIRA 10:12)
(Leningrad--Founding)

MEKHENDZI, Yu.A.

Steel casting at the 23d International Foundry Congress. Lit. proizv. no.11:27-32 N '57. (MIRA 10:12)
(Germany, West--Founding--Congresses)

NEKHENDZI, Yu.A.

[redacted] steel casting at the 23d International Congress of Founders (to be continued). Lit.proizv.no.12:23-27 D '57. (MIRA 11:1)
(Steel castings)

NEKHENDZHI, Yu. A., FILIN, Yu. A., PEROV, N. I., BUTALOV, L. V.
Leningrad Polytechnic Institute.

"Influence of the Vacuum and the Protective Atmosphere Melting on the Titanium Casting Properites."

paper presented at the Second Symposium on the Application of Vacuum in Metallurgy, Moscow, 1-5 July 1958.

SOV/ . . .

AUTHORS: Girshovich, N. G., Nekhendzi, Yu. A., Lebedev, . I.

TITLE: The Resistance to Cracking of Iron-Carbon Alloys (. . . reshch . . . noustoychivost zhelezouglerodistykh splavov)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, . . . Nr 1 pp . . . USSR

ABSTRACT: The resistance to cracking of iron-carbon alloys was quantitatively investigated. A special method based on the determination of the electric resistance was used for the investigation of the resistance to cracking. A jump-like change in the electrical resistance is caused by the formation of cracks in the alloys.
The alloys investigated in addition to carbon also contained 0. . . - 0.. % silicon, 0. . - 0.3 % manganese, 0.03 % sulfur and 0.0. - 0.0. % phosphorus.
Alloys with a content of 0.. % carbon are characterized by a higher resistance to cracking. The decrease of the carbon content therefore causes sharp decrease in the resistance to cracking. Iron alloys with a graphite system have a higher resistance to cracking than alloys with a cementite system.

Card 1/2

The Resistance to Cracking of Iron Carbon Alloys SOV, 1[illegible]

The resistance to cracking of iron-carbon alloys as well as of the graphite and cementite systems was measured at a temperature of 20°C. The influence of silicon and manganese on the resistance to cracking was investigated as well. Phosphorus exerts a considerable influence on the resistance to cracking in the alloys only in the case of low sulfur content. In metallurgical investigations it is known that in the case of a higher sulfur content the sulfides and oxides accumulate at the boundary of the primary crystals of the alloys, which fact represents a decrease in the intercrystalline strength and which represents a factor promoting the formation of cracks.
The investigation of the influence of casting temperatures on the resistance to cracking showed that when the casting temperatures are raised the resistance to cracking decreases. There are 4 figures, 2 tables, and 1 reference.

Card 2/2

ASSOCIATION: Leningradskiy politekhnicheskiy institut (Leningrad Polytechnical Institute)

SUBMITTED: October 4, 1957

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001136

NEKHENDZI, Kh.A.

Steel casting at the 23d International Foundry Congress. Lit. proizv. no.2:27-30 F '58. (MIRA 11:3)
(Germany, West--Founding--Congresses)

AUTHORS: Girshovich, N. G., Nekrenda , Yu. A. SOV/[illegible]

TITLE: Determining the Duration of the Hardening in Casting Processes as a Scientific Method of Research (Opredeleniye prodolzhitel'nosti zatverdevaniya otlivki kak metod issledovaniya)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, [illegible] No. 2, pp. 77-83 (USSR)

ABSTRACT: The analytical and experimental determination of the hardening and the kinetics of the hardening in the casting process are of great theoretical and practical importance. In the hardening process the structure of the cast is formed. The method of the duration of hardening may be used as a method for the scientific investigation, and from the results obtained the physical constant of the alloys, the characteristics of the phase diagram, the characteristics of the [illegible] the alloys and also some mechanical properties [illegible] may be determined. The duration of hardening is expressed by the simple formula:

$$\tau = K \frac{Q_v^2}{\Theta^2_{cr}},$$

Card 1/3

SOV/[illegible]

Determining the Durat[illegible] f the Hardening [illegible] Casting Pr[illegible]

Method of Resear[illegible]

The dependence between the durat[illegible] f harde[illegible]

$\left(\frac{Q_v}{\Theta_{cri}}\right)^2$ is linear (see Fig 1). The pr[illegible]

duration f hardening leads [illegible] crystal [illegible] parts. The dependence between the dura[illegible] hardening and the [illegible] f the primary grains [illegible] f the [illegible] Fe-Ni-Cr-C (with 0,1% C and 20% [illegible]. There is a direct relation between the dura[illegible] f hardening and the mechanical properties f the [illegible]. F[illegible] f the hardening curves may be seen that [illegible]. The hardening conditions f steel have [illegible] f the crystal [illegible] f the steel [illegible] a slow hardening and a [illegible] crystal [illegible] is very big. All [illegible] with an extended [illegible] hardening process have a [illegible] liquidus stat[illegible]. A [illegible] relation between [illegible] hardening and [illegible] was f[illegible]

Card 2/3 the f[illegible]wing way: [illegible]

Determining the Dura[illegible] of the Harde[illegible]g in Casti[illegible] Pr[illegible] as a S[illegible] f
Method of Research SOV[illegible]

ing). The results obtained and the calculations of the duration of hardening show that a new and valuable method was found which supplies useful information as to the nature of the crystallization, the phase diagram, the flow of the physical constants and the mechanical properties.
There are 3 figures and 2 referen[illegible] 2 f[illegible] S[illegible].

ASSOCIATION: Leningradsk[illegible]

SUBMITTED: [illegible]

Card 3/3

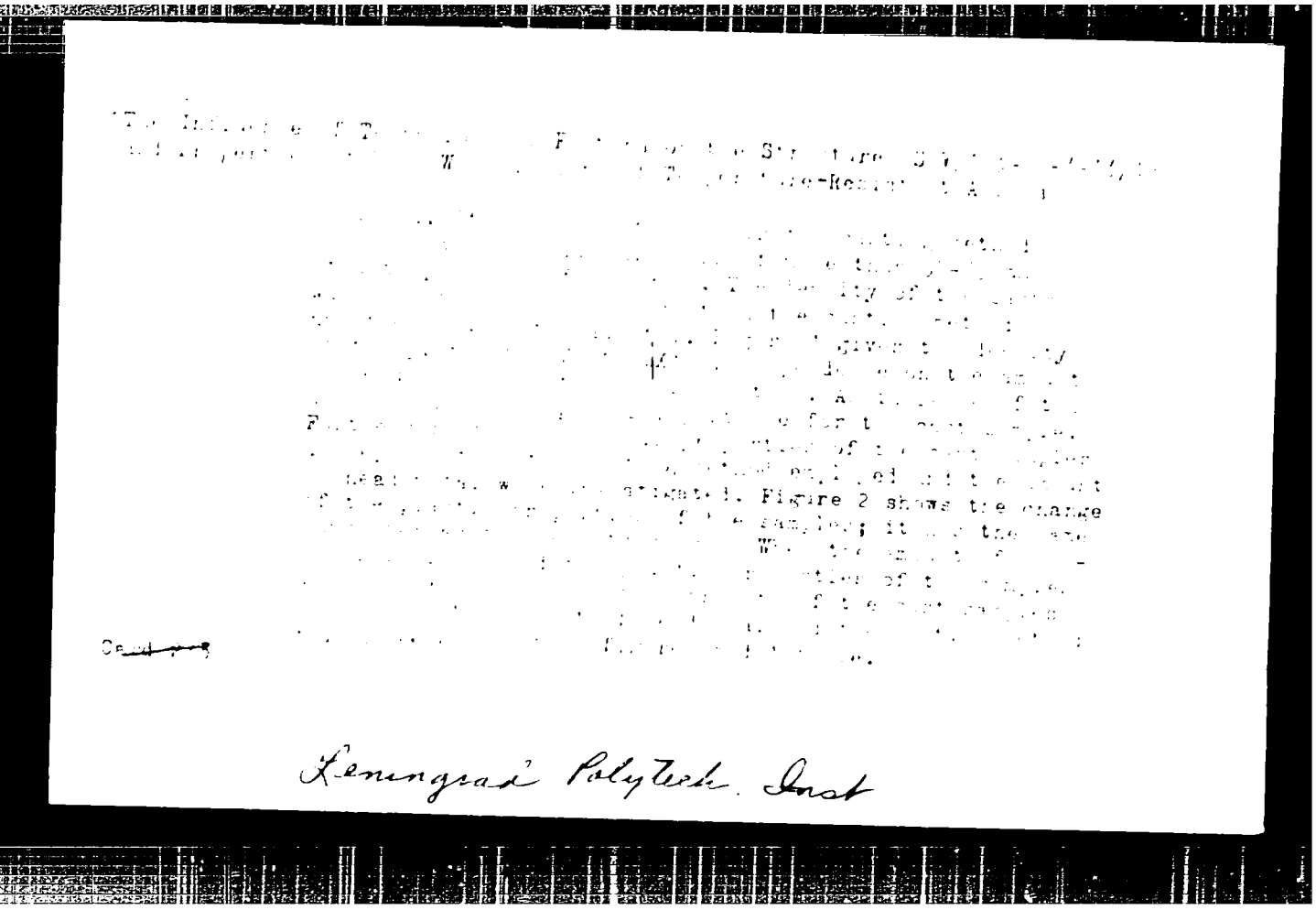
AUTHORS: [illegible]

TITLE [illegible]

PERIODICAL [illegible]

ABSTRACT [illegible]

Card 1/3



Leningrad Polytech. Inst

SOV/137-58-10-21617

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 166 (USSR)

AUTHORS: Nekhendzi, Yu.A., Vyaznikov, N.F., Yermakov, S.S.

TITLE: New Types of Steel for Manufacture of Cutters of Drilling Bits and Methods of Their Investigation (Novyye stali dlya sharoshek burovykh dolot i metodika ikh issledovaniya)

PERIODICAL: Materialy Mezhvuz. nauchn. soveshchaniya po vopr novoy tekhn. v neft. prom-sti, 1958, Vol 3, pp 111-127

ABSTRACT: Factors affecting the destruction of cutters of drilling bits (CDB) were investigated and a number of requirements which must be satisfied by steels of which the CDB are made were developed. Comparative impact-strength tests were performed on 11 different types of steel. It was established that the increase in impact strength, produced during surface hardening of the CDB by means of cementation, is decisively affected by the strength of the carburized layer (CL), rather than by the magnitude and nature of distribution of the residual and surface stresses. It is therefore essential that such alloying elements as Ni, Cu, etc., which tend to reduce brittleness and increase the strength and plasticity of the CL be introduced into

Card 1/2

New Types of Steel for Manufacture of Cutters of Drilling Bits (cont.)

carburized steels employed for the manufacture of the CDB. The greatest increase in impact strength as a result of carburization is observed when the ratio of the depth of the CL to the radius of the specimen amounts to 0.18-0.22, and the ratio of the surface of the CL to the surface of the entire specimen amounts to 0.36-0.38. It is found that the following types of steels combine optimal mechanical properties with high impact strength: 1) 25Kh2GN2D2F steel containing 0.2-0.28% C, 0.3-0.4% Si, 0.8-1.1% Mn, 1.5-1.8% Cr, 1.8-2.2% Ni, 0.15-0.2% V, and 1.8-22% Cu. R_C 44-37, σ_s, 158-141 kg/mm^2; σ_b, 169-152 kg/mm^2, ψ, 48.3-53.6%, δ, 7.95-10.1%, a_k, 7.6-13 kgm/cm^2; 2) 25Kh2GN2T steel containing 0.2-0.28% C, 0.3-0.4% Si, 0.8-1.1% Mn, 1.5-1.8% Cr, 1.8-2.2% Ni, 0.8-0.15% Ti, R_C, 44-38, σ_s, 150-138 kg/mm^2; σ_b, 163-152 kg/mm^2, ψ, 48.8-52.6%, δ, 8.8-9.9%, a_k, 7.3-9 kgm/cm^2; 3) 25KhNFR steel containing 0.2-0.28% C, 0.3-0.4% Si, 0.6-0.8% Mn, 0.9-1.2% Cr, 0.9-1.2% Ni, 0.15-0.2% V, 0.003-0.004% B, R_C, 39-32; σ_s, 147-134 kg/mm^2, σ_b, 156-145 kg/mm^2, ψ, 42.3-49.6%, δ, 7.5-8.7%; a_k, 8-9.38 kgm/cm^2.

1. Drills--Production 2. Cutting tools--Materials 3. Steel--Physical properties I.B.

Card 2/2

18(7),18(5)

AUTHORS: ~~Sakhnovich~~, Yu. A., Vyazniko v, N. ., Yermakov, S. S. SOV/1.7-58-1-17/27

TITLE: New Comp ositions of Casehardening Steel (Novyye sostavy tsementuyemoy stali)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 4, pp ..0-..7 (USSR)

ABSTRACT: The present investigation was carried out at the laboratoriya term obrabotki i liteynaya laboratoriya LPI (Laboratory for Heat Treatment and Foundry Work at the Leningrad polytechnical Institute). The results of an investigation of standard steels 18KhGT and 15KhGT (formerly used for milling cutters), and those of four new casehardening steels (suggested by the authors) are given. The new steels are: 25KhGGN2D2F , 25Kh2GN2T and 25KhNFB. The method, the determination of critical points, the investigation of depth hardening capacity, the investigation of mechanical properties, the investigation of the steel for repeated impact, the investigation of the influence of hardening layer depth and steel composition on fatigue impact strength, the investigation of fatigue impact strength of steel in air and

Card 1/3

New Compositions of Casehardening Steel SOV/[illegible]-58-4-44/47

[illegible] liquid medium is given. The investigation showed that the introduction of nickel and copper into the casehardening steel increases the fatigue impact strength of steel. The fatigue impact strength of steel increases, on account of casehardening, only to a certain depth of the hardening layer. The optimum depth of the hardening layer is obtained at a ratio of 0.18-0.22 between depth of layer and radius. In the investigation of the casehardened samples for fatigue impact strength in liquid media, the impact endurance limit of the steel increases [illegible] tests (5-7 hours) and in [illegible] tests (2-4 minutes). The new types of steel [illegible] to be recommended for the production of parts [illegible] impact. There are 4 figures, 2 tables, and 6 [illegible] references.

ASSOCIATION: Leningradskiy politekhnicheskiy institut imeni M.I. Kalinina (Leningrad Polytechnical Institute)

SUBMITTED: October 1, 1957

Card 1/2

AUTHOR: Mekhandzi, [illegible] [illegible]

TITLE: Some Problems on the Theory of Alloying [illegible] Cast High Alloys (Nekotoryye voprosy teorii legirovaniya [illegible] litykh vysok legirovannykh splavov)

PERIODICAL: Liteynoye proizvodstvo, [illegible], Nr [illegible], pp [illegible]

ABSTRACT: The increased use of cast high alloys in the fields of gas turbine, aircraft and rocket building and preparation of installations for atomic energy production has intensified the study of these alloys. These investigations have been going on in the Leningradskiy politekhnicheskiy institut (Leningrad [illegible] Institute) under the participation of [illegible] of the Foundry Laboratory, [illegible], F. D. [illegible]lentsev, [illegible] Lebedev, Candidates of Technical Sciences A. Ya. Ioffe and [illegible] [illegible]nov, and the scientific Assistants [illegible] [illegible]nkareva, [illegible] [illegible], [illegible] [illegible]danov, M. [illegible] Yefimova, [illegible] [illegible]rovskaya, [illegible] Antipov, A. V. [illegible]zin, [illegible] [illegible]dirova, and [illegible] [illegible]ting, and [illegible] of the Laboratory of Heat Treatment and Strength of Metals, [illegible] Maksimov (deceased), [illegible] Zamyatnin, [illegible] Zaytseva, [illegible] [illegible]masheva, [illegible] Yermolayeva and Ya [illegible] [illegible]rzburg. They found

Card 1/2

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R00113[illegible]

Some Problems in the Theory of Alloying Special Cast High Alloys

out that the composition of an alloy alone does not determine its value in final use but also the technological treatment it has to undergo including such decisive factors as cooling speed, duration of solidification and free shrinking. Various compositions of alloys are being investigated under diverse conditions of treatment and mold shape. It has been found that some elements can be exchanged for other elements without changing the value of the alloy. More experiments must be made, especially with highly heat-resistant alloys, before large-scale industrial utilization can begin. There are 12 graphs, 2 diagrams, 2 photos and 9 Soviet references.

1. Alloys--Processing 2. Alloys--Casting

Card 2/2

NEKHENDZI I. A

Report submitted for the 5th Technical Chemical Conference on Steel Production, Moscow 30 Jan 1959.

NEKHENDZI, Yu A.

PHASE I BOOK EXPLOITATION SOV/3559

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. 5 (Investigations of Heat-Resistant Alloys, Vol 5) Moscow, Izd-vo AN SSSR, 1959. 425 p. Errata slip inserted. 2,000 copies printed.

Ed. of Publishing House: V.A. Klimov; Tech. Ed.: I.F. Kuz'min; Editorial Board: I.P. Bardin, Academician, G.V. Kurdyumov, Academician, N.V. Ageyev, Corresponding Member, USSR Academy of Sciences (Resp. Ed.), I.A. Oding, I.M. Pavlov, and I.F. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgical engineers, research workers in metallurgy, and may also be of interest to students of advanced courses in metallurgy.

COVERAGE: This book, consisting of a number of papers, deals with the properties of heat-resisting metals and alloys. Each of the papers is devoted to the study of the factors which affect the properties and behavior of metals. The effects of various elements such as Cr, Mo, and W on the heat-resisting properties of various alloys are studied. Deformability and workability of certain metals as related to the thermal conditions are the object of another study described. The problems of hydrogen embrittlement, diffusion and the deposition of ceramic coatings on metal surfaces by means of electrophoresis are examined. One paper describes the apparatus and methods used for growing monocrystals of metals. Boron-base metals are critically examined and evaluated. Results are given of studies of interatomic bonds and the behavior of atoms in metal. Tests of turbine and compressor blades are described. No personalities are mentioned. References [illegible] most of the articles.

24(8)

PHASE I BOOK EXPLOITATION

SOV/2117

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

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

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

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

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

A versatile new instrument was developed for determining free linear shrinkage, hindered (or retarded) shrinkage, force developing during hindered shrinkage, and resistance of the metal to the formation of hot cracks. By means of this instrument it was shown that steel with a peritectic composition (about 0.2 percent C) exhibits maximum resistance to the formation of hot cracks. This resistance falls sharply both with a decrease and an increase in carbon content. But with an increase the resistance falls only until a content of 0.5 percent C has been reached; with greater amounts of carbon the resistance begins to rise again. The effect of manganese content and teeming temperature on hot-crack formation were also investigated.

Card 14/32

Nekhendzi, Yu. A

MIKHEIDZI, Yu.A., doktor tekhn.nauk, prof.; KALEMOV, V.P., inzh.

Effect of hydrogen on the mechanical properties of cast carbon steel. Izv.vys.ucheb.zav.; chern.met. 2 no.7: 101-103 Jl '59. (MIRA 13:2)

1. Leningradskiy politekhnicheskiy institut.
(Steel castings) (Steel--Hydrogen content)

MEKHEDZI, Yu.A., dokt.tekhn.nauk; KALENOV, V.P., inzh.

Effect of manganese content in steel on hydrogen absorption during the process of pouring into foundry molds. Izv.vys. uchab.zav.; chern.met. 2 no.8:123-126 Ag '59.
(MIRA 13:4)

1. Leningradskiy politekhnicheskiy institut.
(Manganese steel--Hydrogen content)

Rikhenko, Yu. P.

PHASE I BOOK EXPLOITATION SOV/4199

Leningrad. Politekhnicheskiy institut

Sovremennyye dostizheniya liteynogo proizvodstva; trudy mezhvuzovskoy nauchno-tekhnicheskoy konferentsii (Recent Achievements in Founding: Transactions of the Scientific and Technical Conference of Schools of Higher Education) Moscow, Mashgiz, 1960. 336 p. Errata slip inserted. 4,000 copies printed.

Resp. Ed.: Yu. A. Nekhendzi, Doctor of Technical Sciences, Professor; Eds.: N. G. Girshovich, Doctor of Technical Sciences, Professor, and K. P. Lebedev, Docent; Managing Ed. for Literature on Heavy Machine Building (Leningrad Department, Mashgiz): Ye. P. Naumov, Engineer; Tech. Eds.: Ye. A. Dlugokanskaya, and L. V. Shchetinina.

PURPOSE: This book is intended for the technical personnel of foundries. It may be used by students of the field.

COVERAGE: This collection of articles discusses problems in founding processes. Individual articles treat the melting of metals and their alloys, mechanization and automation of casting processes, aspects of the manufacture of steel, cast iron, and nonferrous metal castings. No personalities are mentioned. References accompany individual articles.

Recent Achievements in Founding (Cont.) SOV/4199

Card 7/9

PHASE I BOOK EXPLOITATION SOV/4199

Leningrad. Politekhnicheskiy institut

Sovremennyye dostizheniya liteynogo proizvodstva; trudy mezhvuzovskoy nauchno-tekhnicheskoy konferentsii (Recent Achievements in Founding: Transactions of the Scientific and Technical Conference of Schools of Higher Education) Moscow, Mashgiz, 1960. 336 p. Errata slip inserted. 4,000 copies printed.

Resp. Ed.: Yu. A. Nekhendzi, Doctor of Technical Sciences, Professor; Eds.: N. G. Girshovich, Doctor of Technical Sciences, Professor, and K. P. Lebedev, Docent; Managing Ed. for Literature on Heavy Machine Building (Leningrad Department, Mashgiz): Ye. P. Naumov, Engineer; Tech. Eds.: Ye. A. Dlugokanskaya, and L. V. Shchetinina.

PURPOSE: This book is intended for the technical personnel of foundries. It may be used by students of the field.

COVERAGE: This collection of articles discusses problems in founding processes. Individual articles treat the melting of metals and their alloys, mechanization and automation of casting processes, aspects of the manufacture of steel, cast iron, and nonferrous metal castings. No personalities are mentioned. References accompany individual articles.

Recent Achievements in Founding (Cont.) SOV/4199

AVAILABLE: Library of Congress

VK/dwm/gr

PHASE I BOOK EXPLOITATION SOV/4508

Akademiya nauk SSSR. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, tom 6 (Investigations of Heat-Resistant Alloys, Vol. 6) Moscow, 1960. 319 p. Errata slip inserted. 3,[illegible] copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A. A. Baykova. Nauchnyy sovet po probleme zharoprochnykh splavov.

Editorial Board: I. P. Bardin (Deceased) Academician, G. V. Kurdyumov, N. V. Ageyev, Corresponding Member, Academy of Sciences USSR (Resp. Ed.), I. A. Oding, L. M. Pavlov, and I. F. Zudin, Candidate of Technical Sciences; Ed. of Publishing House: V. A. Klimov; Tech. Ed.: S. G. Tikhomirova.

PURPOSE: This book is intended for research workers in the field of physics of metals and for metallurgists, particularly those working on heat-resistant alloys.

COVERAGE: This collection of 43 articles deals with various problems in the production of heat-resistant alloys. Special attention is paid to the mechanisms of deformation of such metals as aluminum, copper, iron, and nickel. Various defects and failures of metals are analyzed, and means for increasing the heat resistance and plasticity are described. Among the special problems discussed are: electrolytic conductivity of iron-aluminum alloys in the solid state; the mobility of atoms in nickel-iron alloys, depending upon defects of their crystalline structure; the kinetics of change in isolated pores; the irreversible thermal transformation of solid bodies, etc. No personalities are mentioned. References follow each article.

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

Primeneniye vakuuma v metallurgii (Use of Vacuum in Metallurgy) Moscow, Izd-vo AN SSSR, 1960. 114 p. Errata slip inserted. 4,500 copies printed.

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

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

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

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

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PHASE I BOOK EXPLOITATION SOV/4199

Leningrad. Politekhnicheskiy institut

Sovremennyye dostizheniya liteynogo proizvodstva; trudy mezhvuzovskoy nauchno-tekhnicheskoy konferentsii (Recent Achievements in Founding: Transactions of the Scientific and Technical Conference of Schools of Higher Education) Moscow, Mashgiz, 1960. 336 p. Errata slip inserted. 4,000 copies printed.

Resp. Ed.: Yu. A. Nekhendzi, Doctor of Technical Sciences, Professor; Eds.: N. G. Girshovich, Doctor of Technical Sciences, Professor, and K. P. Lebedev, Docent; Managing Ed. for Literature on Heavy Machine Building (Leningrad Department, Mashgiz): Ye. P. Naumov, Engineer; Tech. Eds.: Ye. A. Dlugokanskaya, and L. V. Shchetinina.

PURPOSE: This book is intended for the technical personnel of foundries. It may be used by students of the field.

COVERAGE: This collection of articles discusses problems in founding processes. Individual articles treat the melting

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of metals and their alloys, mechanization and automation of casting processes, aspects of the manufacture of steel, cast iron, and nonferrous metal castings. No personalities are mentioned. References accompany individual articles.

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[redacted]I, Yu.A.; BOGDANOV, M.T.

Method of making specimens for the mechanical properties control of castings prepared by the melting-out process. Lit.proizv. no.2:2-6 F '60. (MIRA 13:5)
(Precision casting)

20516

IS 1785 [illegible]

S/128/60/000/003/001 [illegible]
A105/A133

AUTHORS: Nekhendzi, Yu. A.; Butalov, L. V.; Perov, N. I., and Filin, Yu. A.

TITLE: Casting properties of low-alloyed titanium

PERIODICAL: Liteynoye proizvodstvo, no. 3, 1960, 2-4

TEXT: Investigations showed some chemical changes of titanium at temperatures of 1,000°C causing a deterioration of the mechanical properties. New processes are being employed in the production of argon shielded arc welded bars, pipes and various rolled goods of titanium and its alloys. Intricate casts, free from casting defects have been achieved lately. High melting temperatures (1,725°) and a low heat conductibility (0.04 cal/cm sec °C) affect the hardening time and fluidity of titanium. The casting properties of titanium melted in induction furnaces, containing 0.8 - 1.0% carbon, have been tested by the Chikel' test (Chikel', I. - Ref. 1: "Liteynoye proizvodstvo", no. 1, 1959). The testing device consists of a 25 mm thick disk with vertical channels 1 - 10 mm in diameter. The filling-up conditions of the vertical channels are analogous to the filling up of vertical sections of

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A105/A133

Casting properties of low-alloyed titanium

thinwalled casts. All channels more than 6 - 7 mm in diameter were filled up to full height. At 1,850°C the vertical channels of 10 mm in diameter fill up to the full height, 5 - 6 mm diameter channels fill up to half their height. The temperature effect on the fluidity of 1% carbon titanium is shown in Figure 2. The best filling of forms is achieved with vacuum smelting and pouring. Figure 3 shows that, the overheat being the same, the fluidity of titanium and steel are close. Channels of smaller diameter fill up better with steel because of a less intensive heat transfer; wider channels fill up better with titanium than with steel due to the low heat conductivity of titanium. The linear shrinkage of titanium is similar to that of steel; therefore patterns for steel casting may be used for titanium casting. The smelting method and gas content of the metal affect the quantity and location of blowholes. Vacuum smelted titanium does not show more blowholes than steel. At identical smelting conditions the structure of titanium casts is finer. Figure 4 shows dependence of primary crystals on the cross section of castings and overheating temperature. Higher temperatures increase the grain size. Titanium hardens faster than steel; therefore the filling of molds has to be accomplished faster to reduce the time of interaction of titanium

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and gas-phase. The elimination of blowholes may be achieved by degassing during the smelting or by filling the furnace with inert gas producing a lower pressure. Both systems secure good casts. In contrast to steel, titanium moistens the walls of ceramic molds forming over the meniscus thin, solidifying metal "tongues" affecting the origination of a thin crust. The right position of the mold is of great importance during the pouring; a minimum of horizontal surfaces should be ensured. There are 7 figures and 3 Soviet-bloc references.

Fig. 2

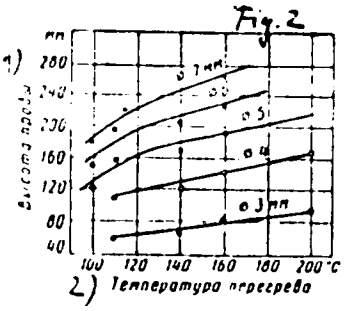

Figure 2:

(1) height of specimen;

(2) overheating temperature.

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Casting properties of low-alloyed titanium

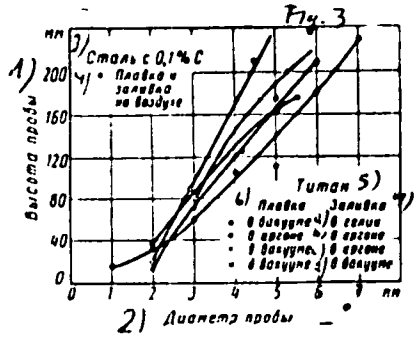

Figure 3:

(1) height of specimen;
(2) specimen diameter;
(3) steel with 0.1% C;
(4) smelting and pouring in the air;
(5) vapor;
(6) smelting: a) in vacuum, b) in argon, c) in vacuum, d) in vacuum;
(7) pouring: a) in helium, b) in argon, c) in argon, d) in vacuum.

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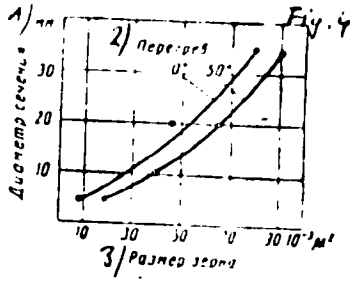

Fig. 4

Figure 4:

(1) cross-section diameter;

(2) overheating;

(3) grain size.

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MIKHEIDZE, Yu.A.; GIRSHOVICH, N.G.; GRUZNYKH, I.V.; BILYKH, V.Ya.; KUPTSOV, I.V.; SIMANOVSKIY, M.P.; ANTIPOV, M.V.

Foundry properties of heat-resistant alloys. Issl. po zharopr. splav. 6:308-313 '60. (MIRA 13:9)
(Heat-resistant alloys) (Founding)

MEKHUZI, Yu.A.; KALENOV, V.P.

Methods of determining the amount of hydrogen evolved from alloys at room temperature. Zav.lab. 26 no.3:314-316 '60. (MIRA 13:6)

1. Leningradskiy politekhnicheskiy institut.
(Metals--Hydrogen content)

TIRSHOVICH, N.G. (Leningrad); NEKHENDZI, Yu.A. (Leningrad)

Isotherms or lines of equal overheating? Izv. AN. SSSR. Otd. tekh. nauk. Met. i topl. no.3:140-142 My-Je '61. (MIRA 14:7)
(Metals—Thermal properties) (Curves, Isothermal)

KALENOV, V.P.; MEKHENDZI, Yu.A.

Effect of carbon content and the temperature of casting on gas content in cast iron-carbon alloys. Lit. proizv. no. 4:19-21 Ap '61. (MIRA 14:4)
(Iron founding) (Gases in metals)

S/128/61/000/006/002/004
A054/A127

AUTHORS: Gruznykh, I.V.; Nekhendzi, Yu.A.

TITLE: Technological testing of hot cracks in steel castings

PERIODICAL: Liteynoye proizvodstvo, no. 6, 1961, 7 - 9

TEXT: The technological tests generally used to determine the development of hot cracks do not fully meet the requirements, because they principally record the effect of the metal quality and the casting temperature within narrow limits The technological test suggested simulates the conditions of industrial casting adequately, while, moreover, the effects of various factors involved in the casting process can be studied as well. A ring is used as test specimen which has a cylindrical part, 100 mm in height and a conical part, 50 mm in height, and walls of 6 and 20 mm, respectively. The inner hollow part of the ring is formed by a core, which ensures the required degree of shrinkage delay, actually causing the hot cracks. The upper part with a thicker wall which is connected to the thinner wall of the lower part ensure the conditions necessary for thermal delay of shrinkage and consequently for hot cracks at the bend where the thin and thick wall sectors meet. The upper tapered part can also be made cylindrical in order

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Technological testing of hot cracks in steel castings

to increase the capacity of the specimen. The runner system consists of a stand pipe and a feeder. There are two dead heads at the top of the specimen, each 25 mm in diameter. Some 15 kg of metal are fed tangentially into the cylindrical part. The size and shape of the runner system ensure that pouring takes a long time, so that a high temperature is obtained in the specimen in the zone where the metal enters. All this increases the sensitivity of the test to a number of external factors affecting the crack formation. The feeder widens upward towards the stand pipe in order to prevent solidification. Hot cracks usually form in the cylindrical part of the specimen and at the bend where the thick and thin wall sectors meet. The tendency of the casting to cracking is usually assessed by the degree of its crack resistance. However, the parameters indicating this degree do not give an indication of the size of the cracks that form. Nor is it sufficient to assess the tendency of the casting to crack formation to the length of the cracks. The "cracked" condition which should be applied for completing the parameter of crack resistance takes into account both the length and the width of the cracks formed. Therefore, it is suggested to use the area of cracks on the surface of the casting as quantitative parameter of its cracked condition. Tests carried out with carbon and alloyed structural steels prove that the method based on the area of cracks is reliable. The results obtained with this method corres-

Technological testing of hot cracks in steel castings

pond to those received for crack resistance by conventional methods. By calculating the crack area in the casting, the steels investigated could be arranged according to their crack resistance. Other casting factors such as the core mixture were also studied in the laboratory of the Leningradskiy politekhnicheskiy institut (Leningrad Polytechnic Institute). When a composition of 94% quartz sand, 6% refractory clay and 6% liquid glass (density 1.5), having a strength of 0.40 - 0.50 kg/cm^2 in moist condition and 3.0 - 3.5 kg/cm^2 when dry, was used, no cracks formed at the wall bend of carbon steel castings, most probably due to the slight difference in the thickness of the wall sectors for the given casting conditions. By changing the ratio of thickness of thin and thick wall sectors in the specimen it is possible to determine the critical wall thickness, which for given local circumstances is necessary to prevent crack formation. As it is easily possible to modify the various factors of casting in the test suggested it is suitable for the determination of the effect of these factors and of steel composition on crack formation. There are 5 figures, 3 tables and 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: H.P. Hall, "Iron and Steel", no. 15, 1936, 65 - 93; K. Bakius, "Foundry Trade Journal", v. 104, no. 2156 and 2159, 1958

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S/598/61/000/006/032/034
D217/D303

AUTHORS: Nekhendzi, Yu.A., Butalov, L.V., Perov, N.I., and Filin, Yu.A.

TITLE: Casting properties of low-alloyed titanium and mechanical properties of castings made in this material

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Titan i yego splavy. no. 6, 1961. Metallotermiya i elektrokhimiya titana, 240 - 250

TEXT: The casting properties of Ti, containing 0.8 - 1.0 % C, melted in the graphite crucible of an induction furnace, were investigated. In order to determine the dependence of fluidity on various factors, Chikel's probe was used; this consists of a stand and disc with vertical channels of various diameters made in it along it's circumference. The influence of superheating temperature (difference between casting temperature and melting point of Ti) and atmosphere on the fluidity of Ti was investigated and the mechani-

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cal properties of Ti castings and their microstructures were studied. Some aspects of the manufacture of, and defects encountered in, Ti castings are discussed. It is concluded that the mechanical and casting properties of Ti are close to those of special steel and enable completely satisfactory castings of considerable complexity to be obtained, in spite of some difficulties encountered. There are 10 figures, 1 table and 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: Van Thyne and H.B. Kessler, J. Metals, USA. 1954, 6/2, 193.

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GIRSHOVICH, M.G.; NEKHENDZI, Yu.A.

Effect of inoculation on the crystallization of alloys. Lit. proizv. no.5:19-25 My '62. (MIRA 16:3)
(Founding) (Crystallization)

KREMER, M.A.; NEKRASOV, Yu.A., doktor tekhn. nauk, retsenzent

[Shaped castings from alloyed steel] Fasonnoe lit'e iz legirovannykh stalei. Moskva, Mashinostroenie, 1964. 226 p. (MIRA 18:1)

S/128/62/000/010/001/001
A004/A127

AUTHOR: Nekhendzi, Yu.A.

TITLE: The effect of vacuum treatment on the casting properties of alloys

PERIODICAL: Liteynoye proizvodstvo, no. 10, 1962, 24 - 32

TEXT: The author starts with a survey on the development of metal vacuum treatment in the ladle and during pouring, enumerates a number of Soviet and foreign vacuum processes and points out that vacuum treatment in the primary ladle under slag is the most easy to carry out, ensures a sufficiently high degree of degassing and purification of the steel from non-metallic inclusions, etc. Treatment of the metal in the ladle in a vacuum chamber takes 10 - 15 min at a residual pressure of 5 - 15, up to 30 mm Hg, while vacuum treatment during overflowing takes 5 - 8 min at a residual pressure under optimum conditions of 1 - 5, often 10 - 20 mm Hg. The author gives a detailed description of installations for vacuum treatment during overflowing and in the ladle, and offers a number of graphs, figures and tables showing the test results. Both standard and other alloys with special physical and chemical properties were tested. It

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A004/A127

The effect of vacuum treatment on the ....

was found that vacuum treatment practically does neither affect the liquidus and solidus temperatures, nor the solidification duration of a number of alloys, although a more protracted vacuum treatment causes such structural changes of some alloys in the liquid state that the fluidity improves. Generally it can be said that vacuum treatment affects the alloy fluidity in various ways, depending on the conditions of the vacuum treatment proper and its effect on the liquid metal. The lower the residual pressure, the greater is the effect of vacuum treatment. There are 18 figures and 3 tables.

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