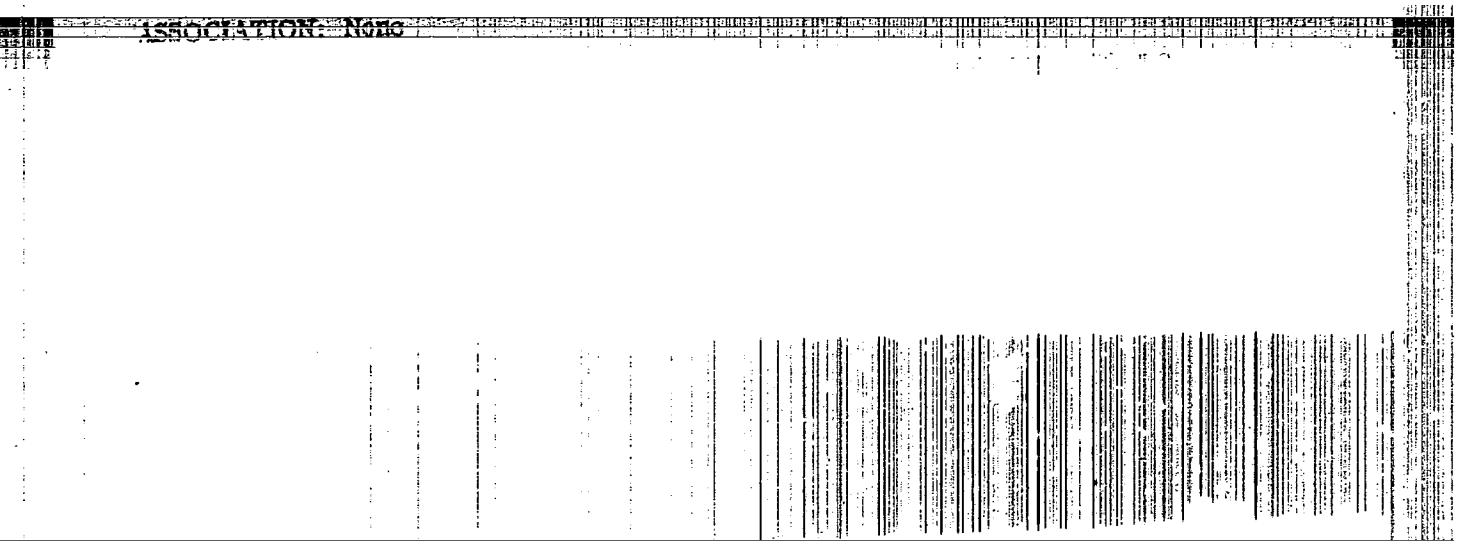


APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065420004-8"

ACCESSION NR: AT4040449

distilling capacity equal to 36 theoretical plates). Fractions at 140-160C were hydrogenated over Raney nickel and sulfides isolated from fractions at 160-190C were purified with picric acid to remove aromatic hydrocarbons. Using described identification procedures, the authors found 13 cyclic sulfides, basically $C_8H_{16}S$ with an admixture of $C_7H_{14}S$ and $C_6H_{12}S$, and identified 2-methylthiacyclohexane, 3-methylthiacyclohexane, 4-methylthiacyclohexane, 2-methyl-5-ethyl thiophane, 2-propyl thiophane, 2,5-diethyl thiophane and 2-methyl-5-propylthiophane. Orig. art. has: 11 graphs and 3 tables.

ASSOCIATION: Institut organicheskoy khimii, Bashkirskiy filial AN SSSR (Institute of Organic Chemistry, Bashkir Branch, AN SSSR)

SUBMITTED: 00 ENCL: 00

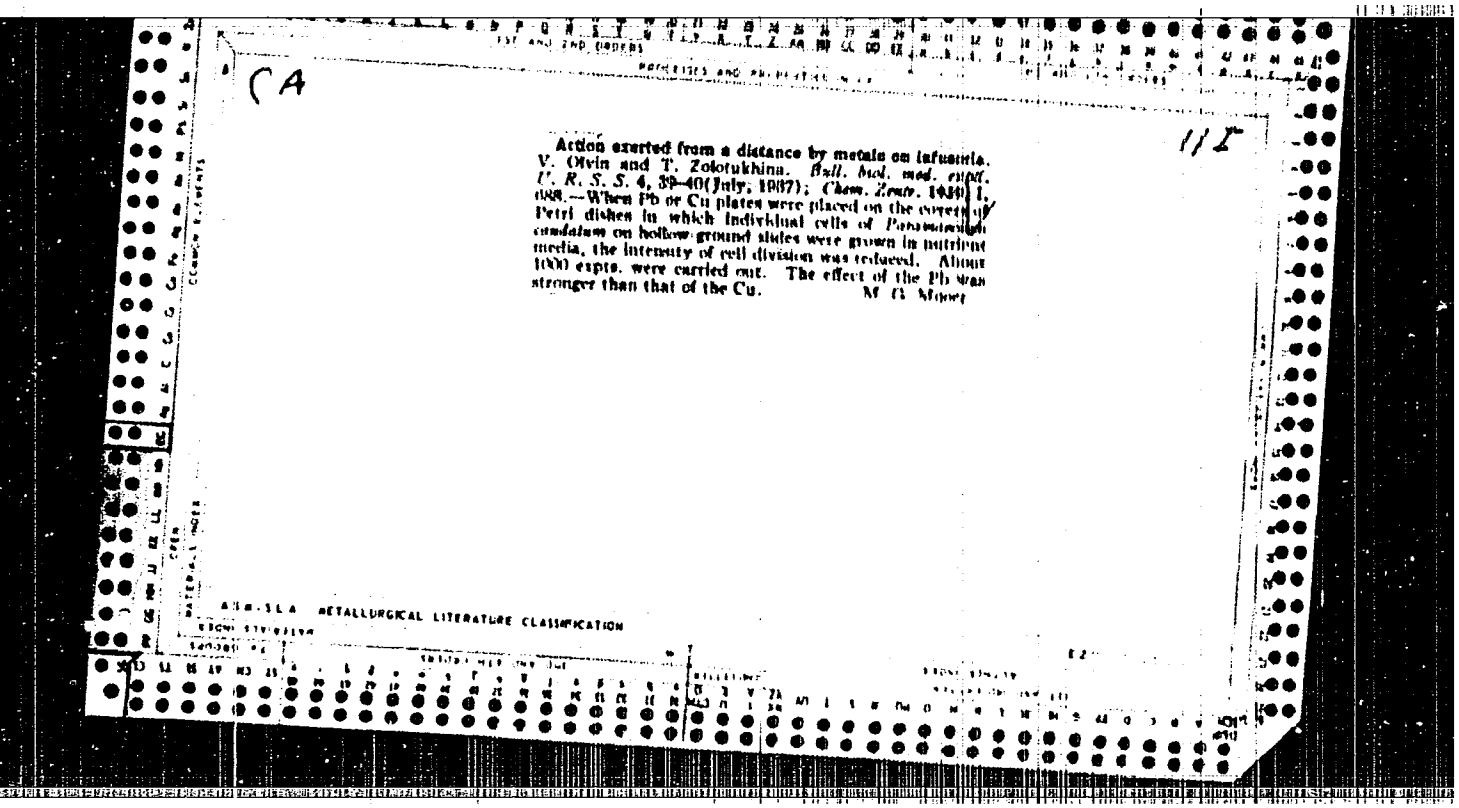
SUB CODE: FP NO REF SOV: 004 OTHER: 005

Card 2/2

PARKHOMENKO, Galina Maksimovna; ZOLOTUKHINA, Rita Yakovlevna; NOVIKOV, Yu.V., red.; ZUYEVA, N.K., tekhn.red.

[Industrial hygiene in work with radium] Gigiena truda pri rabote s radiem. Moskva, Gos.izd-vo med.lit-ry Medgiz, 1960. 64 p. (MIRA 14:3)

(RADIUM--PHYSIOLOGICAL EFFECT)
(RADIOACTIVITY--SAFETY MEASURES)



CA

11 E

Action exerted from a distance by metals on infusoria. V. Olvin and T. Zolotukhina. *Bull. biol. med. exptl. U. R. S. S.* 4, 39–40(July, 1937); *Chem. Zentr.* 1938 I, 088.—When Pb or Cu plates were placed on the covers of Petri dishes in which individual cells of *Paramecium candatum* on hollow-ground slides were grown in nutrient media, the intensity of cell division was reduced. About 1000 expts. were carried out. The effect of the Pb was stronger than that of the Cu. M. G. Moore

AISI-SLA METALLURGICAL LITERATURE CLASSIFICATION

ZHDANOV, Yu.A. ; BOGDANOVA, G.V.; ZOLOTUKHINA, V.G.

Condensation of the al-forms of sugars with 4-hydroxycoumarin.
Dokl. AN SSSR 157 no.4:917-918 Ag '64 (MIRA 17:8)

1. Rostovskiy-na-Donu gosudarstvennyy universitet. Predstavleno akademikom B.A. Kazanskim.

DROZDOV, P.I., kand. tekhn. nauk; KOLESNIKOV, V.S., inzh.; ZOLOTUKHINA, V.V., starshiy nauchnyy sotrudnik

"Stramite" slabs. Stroi.mat. 10 no.8:40-3 of cover Ag '64.
(MIRA 17:12)

1. Rukovoditel' laboratorii Gipronisel'proma (for Drozdov).

USSR/Cultivated Plants - Potatoes. Vegetables. Melons. M

Abs Jour : Ref Zhur Biol., No 18, 1958, 82363

Author : Gagina, Ye.V., Zolotukhina, Yu.S.

Inst : Scientific Research Institute of Agriculture of the Central Chernozem Belt

Title : Tomato and Cucumber Varieties for the Hothouses of Kirovskaya Oblast'

Orig Pub : Byul. nauchno-tekhn. inform. N.-i. in-ta s. kh. sev.-vost. r-nov nechernozem. polosy, 1957, No 2-3, 27-30

Abstract : Tomato varieties Ural'skiy mnogoplodnyy, Teplichnyy Brezhneva, Budennovka and Gruntovyy Gribovskiy were studied. Seedlings were prepared in the hothouses with natural soil 45-50 days prior to being transplanted in a permanent place at the rate of 5 plants per 1 sq a-re meter. The culture was guided by one stem by tying

Card 1/2

USSR/Cultivated Plants - Potatoes. Vegetables. Melons. M

Abs Jour : Ref Zhur Biol., No 12, 1958, 53643

Author : Zolotukhina, Yu.S.

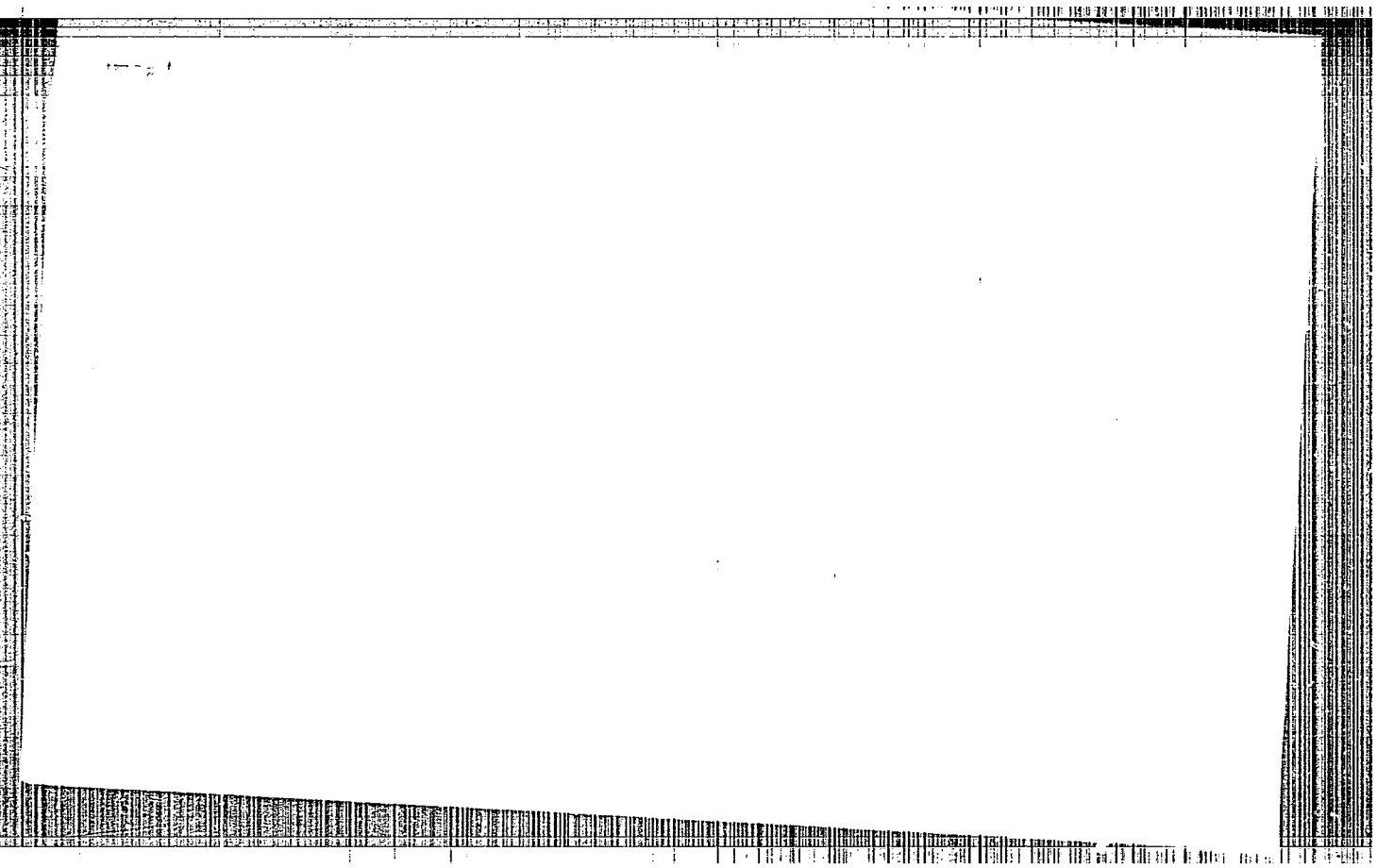
Inst : Scientific Research Institute for Agriculture in the North Eastern Regions of the Non-Chernozem Soil Belt

Title : A New Cucumber Variety - Parnikovyy No 6

Orig Pub : Byul. nauchno-tekhn. inform. N.-i. in-ta s. kh. sev.-vost. r-nov nechernozemn. polosy, 1957, No 2-3, 31-32

Abstract : No abstract.

Card 1/1



APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065420004-8"

ZOLOTUKHINA, Yu. S.

"Kok-Saghyz of Natural Brushwoods as the Initial Material for Selection." Cand Agr Sci, Inst of Socialized Agriculture, Acad Sci Belorussian SSR, Minsk, 1954. (RZhBiol, No 7, Dec 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55

USSR/Electricity
Rectifiers, Mercury
Converters

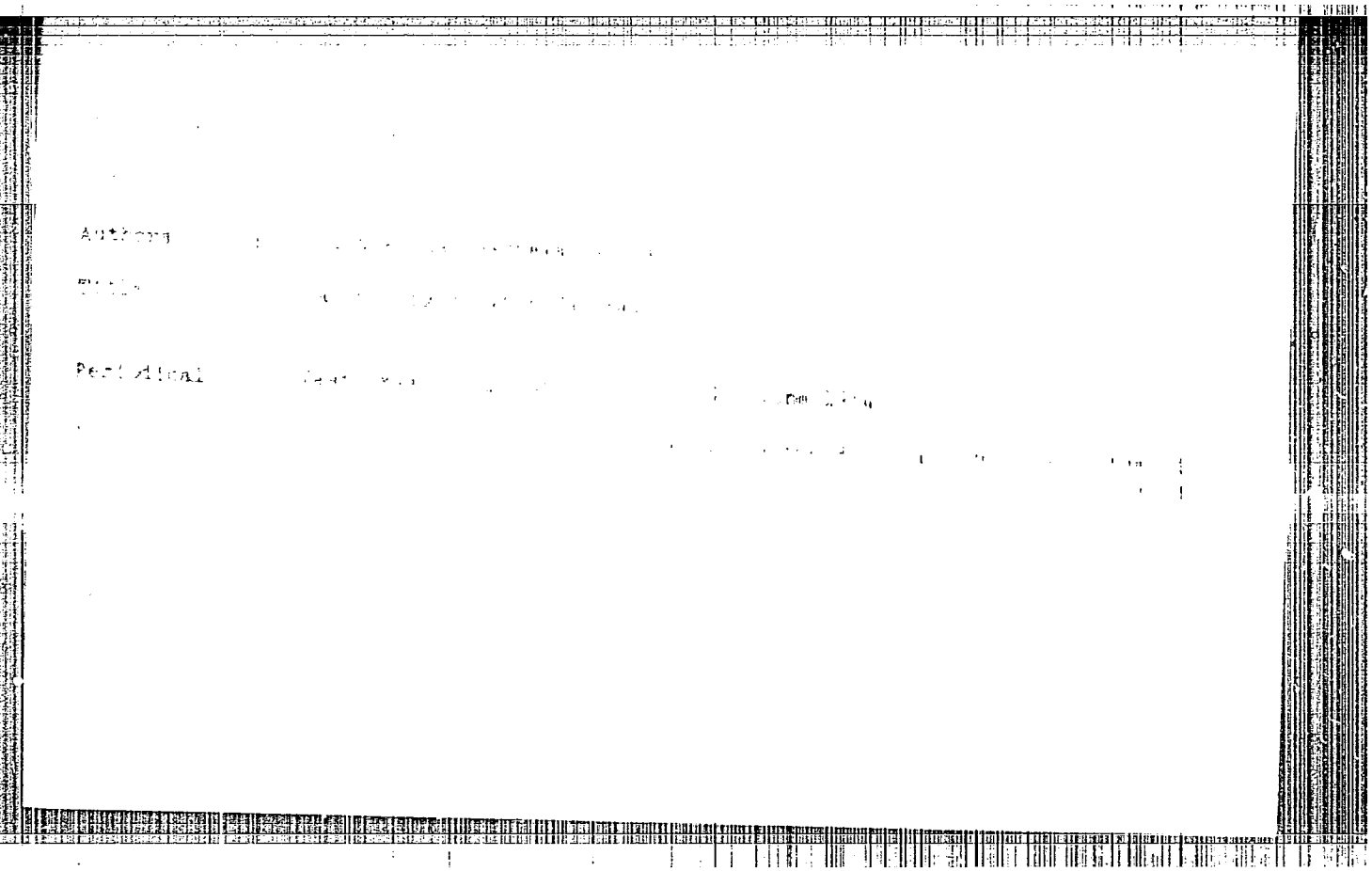
Feb 49

"Selecting the Proper Control Range for a Regulated Mercury Converter-Motor System Operating With Power Regeneration in theCircuit," V. V. Peretts, Cand Tech Sci, Z. P. Zolotukhina, Engr, 3 pp

"Prom Energet" No 2

Studies mechanical characteristics of regulated mercury converter-motor system to establish efficient operating limits of the system. Gives regulation characteristics of the converter for its operation as a rectifier and as an inverter.

PA 33/49T34



ZOLOTUKHINA-USACHEVA, A.Ya.

IAkov Grigor'evich Usachev. Vest.mash. 34 no.6:101-103 Je '54.
(Usachev, IAkov Grigor'evich, 1873-1941) (MLRA 7:7)

SIDERI, D.I., Prof., ZOLOTUN, V.P.

Fertilizers and Manures

Improving conditions of growth for oak on eroded soils of Zaporozhy. Les. i step' 4, no. 8, 1952.

9. Monthly List of Russian Accessions, Library of Congress, NOVEMBER 1952 [illegible], Uncl.

SIDORI, D.I., Prof., ZOLOTOV, V.P.

Oak--Zaporozh'ye

Improving conditions of growth for oak on eroded soils of Zaporozh'ye. Les. i step' 4, no. 3, 1952.

9. Monthly List of Russian Accessions, Library of Congress, NOVEMBER 1952 Unl., Uncl.

SIDERI, D.I., Prof., ZOLOTOV, V.P.

Zaporozh'ye Province—Oak

Improving conditions of growth for oak on eroded soils of Zaporozh'ye. Les. i step' 4, no. 3, 1952.

9. Monthly List of Russian Accessions, Library of Congress, NOVEMBER 1952 ~~1953~~, Uncl.

112-57-7-14639

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1957, Nr 7, p 127 (USSR)

AUTHOR: Zolotushkin, G. A.

TITLE: Electrical Vibration Knockout Grates
(Elektrovibratsionnyye vybivnyye reshetki)

PERIODICAL: Techn. transp. mashinostroyeniya (Technology of the Transportation Machine Construction), 1956, Nr 5, p 58

ABSTRACT: Bibliographic entry.

Card 1/1

KURMANOV, I.V., tokar'; KOSTYUKOV, Ya.Kh., doktor tekhnicheskikh nauk, professor, redaktor; ZOLOTUSHKIN, V., redaktor; KUCHERSKIY, I., tekhnicheskiy redaktor.

[My experience in rapid machining] Moi opyt skorostnoi obrabotki. Pod red. IA.Kh.Kostiukova. [Kharkov] Khar'kovskoe knizhno-gazetnoe izd-vo, 1951. 47 p. (MLRA 8:2)
(Metal cutting)

NIKOL'SKIY, S.N., professor; ZOLOTUSOVA, A.I., kandidat veterinarnykh nauk.

Penicillin in coccidiosis and pullorum disease in poultry. Veterinariia 32 no.7:85 Jl '55. (MLRA 8:9)

1.Stavropol'skiy SKhI.
(PENICILLIN) (COCCIDIOSIS) (PULLORUM DISEASE)

BLOKHIN, Ye.P.; SAMOYLOVICH, Yu.A.; GULUNOV, V.S.; SAKHAROVA, M.M.; LIBERMAN, L.F.; ZOLOTUYEVA, S.M.

Rapid heating of stainless steel ingots in soaking pits with central heating. Stal' 22 no.3:276-279 Mr '62. (MIRA 15:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metallurgicheskoy teplotekhniki i Chelyabinskiy metallurgicheskiy zavod.
(Steel, Ingots) (Furnaces, Heating)

ZOLOTUYEVA, S.M.

2

S/133/62/000/003/007/008
A054/A127

AUTHORS: Blokhin, Ye. P., Samoylovich, Yu. A., Gulunov, V. S., Sukharova, N. M., Liberman, L. F., Zolotuyeva, S. M.

TITLE: Accelerated heating of stainless steel ingots in heating pits with central burner

PERIODICAL: Stal', no. 3, 1962, 276 - 279

TEXT: At the Cholyabinskiy metallurgicheskiy zavod (Cholyabinsk Metallurgical Plant) the cold 1Kh18N9T (1Kh18N9T) stainless steel ingots are reheated for 15 - 19 hours prior to rolling in recuperating heating pits with central burner; in the first 10 - 11 hours a temperature of 1,280 - 1,300°C is attained, depending on the ferrite-content (alpha-phase) of the steel. The holding time is 5 - 8 hours; the ingot surface temperature is kept below 1,240-1,200°C. Tests were made to increase the reheating rate. Ingots of 530 x 530 - 620 x 620 mm (widening upward), weighing 4.5 tons were tested in the heating pit, with liquid slag skimming and fired with blast-furnace coke-gas (calorific value: 2,200 cal/standard m^3). 13 ingots were heated at the maximum rate with a holding time of not longer than 1 1/2 - 2 hours; the entire heating period lasted 7 1/2 hours.

Card 1/3

S/133/62/000/003/007/008
A054/A127

Accelerated heating of...

The test ingot surface temperature was 1,280 - 1,300°C. At the same time check tests with the conventional 19-hours heating period and at a pit-temperature of 1,250 - 1,270°C were carried out. In the accelerated method a temperature of 1,280°C of the ingot surface was attained in 6 hours. The temperature differential in the middle section was 80°C and could be reduced to 30°C during the next 1 - 1 1/2 hours holding time. Over the height of the ingot, the maximum temperature differential was 100 - 150°C at the beginning of heating, but it was reduced after 3 - 4 hours in the accelerated process (in the conventional process this required 6 - 7 hours). The ingots reheated by the accelerated process had good rolling properties. There were no rejects in blooms due to surface defects and microstructure; the quick reheating process (at raised temperatures) did not increase the alpha-phase content of the finished product. The rejects of rolled products due to drops and haircracks were also reduced. As during accelerated heating the maximum temperature differential in the cross section between the ingot surface and the coldest point of the ingot may attain 550 - 650°C, the effect of heat stresses arising in the first period of heating had to be determined. Calculations (partly carried out by Yu. A. Samoylovich on a Strela computer), taking into account the high ductility of 1Kh18N9T grade steel, showed that at Δt_{max} = 650°C the stresses are reduced from 118 to 66 kg/mm^2. As the tensile

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Accelerated heating of...

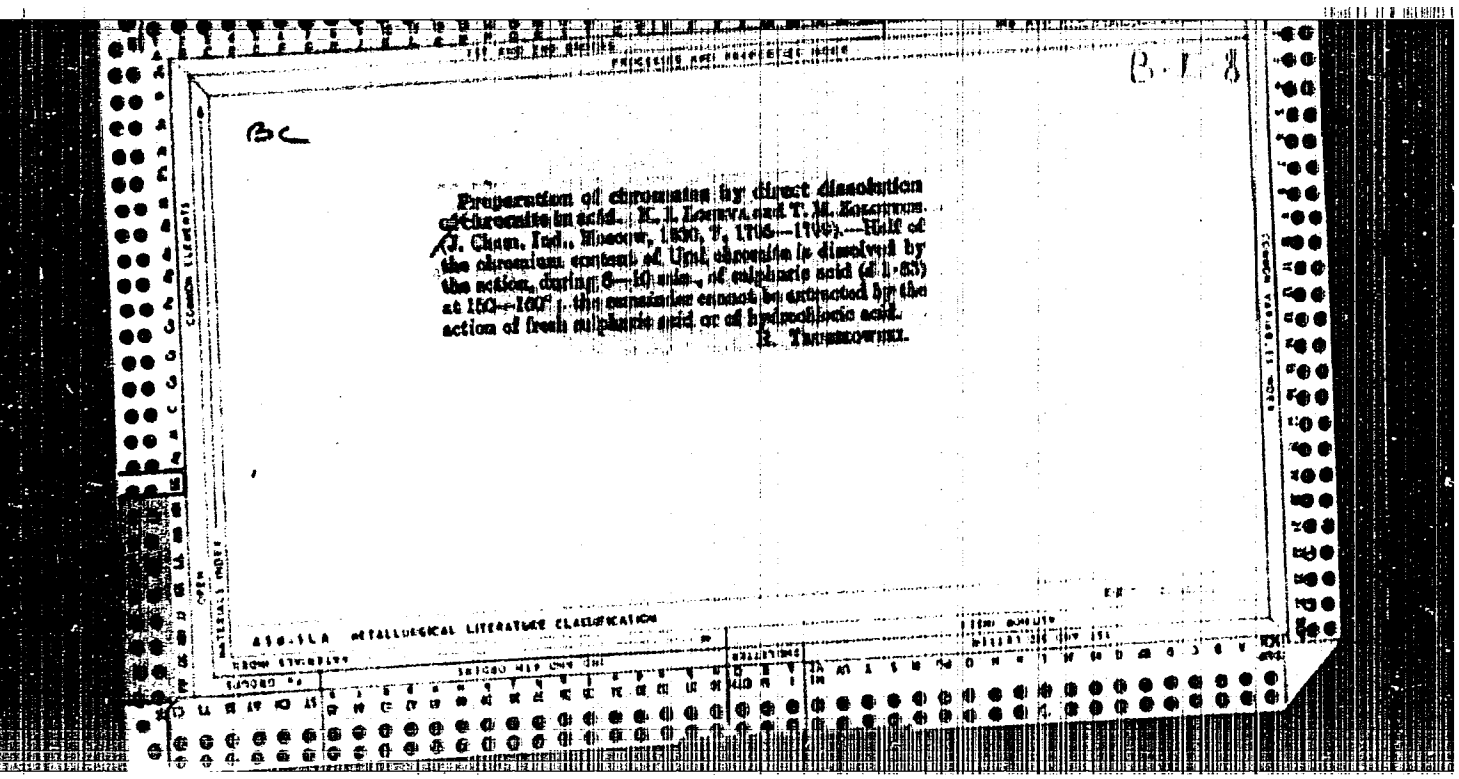
strength of 1Kh12N9T steel specimens is rather high (above 150 kg/mm^2), the possibility of rupture due to heat stresses is remote. The accelerated reheating tests supported the accuracy of these calculations. There are 4 figures, 1 table and 7 Soviet-bloc references.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut metallurgicheskoy teplotekhniki (All-Union Scientific Research Institute of Metallurgical Heat Technique) and Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk Metallurgical Plant)

Card 3/3

GULUNOV, Vasiliy Slangeriyevich; ZOLOTUKHA, Svetlana Mikhaylovna; LIBERMAN, Lev Fedorovich; SAKHAROVA, Nina[illegible]; SAPIR, Yakov Romanovich; GOLUBCHIK, R.M., red.; DOBUZHINSKAYA, L.V., tekhn. red.

[Metal heating before rolling] Nagrev metalla pered prokatkoi; spravochnik dlia rabochikh. [By] V.S.Gulunov, i dr. Moskva, Metallurgizdat, 1963. 220 p. (MIRA 16:10)
(Rolling (Metalwork))--Equipment and supplies)
(Furnaces, Heating--Handbooks, manuals, etc.)



B-1-8

Bc

Preparation of chromium by direct dissolution of chromite in acid. K. I. Lomova and T. M. Kocarnova. J. Chem. Ind., Moscow, 1930, 7, 1716—1744.—Half of the chromium content of Ural chromite is dissolved by the action, during 6—10 min., of sulphuric acid (d 1·83) at 150—160° ; the remainder cannot be extracted by the action of fresh sulphuric acid or of hydrochloric acid.
R. Truszkowski.

A10.1LA METALLURGICAL LITERATURE CLASSIFICATION

ZOLOTYKH, A.A.

[The pullorum disease and ways of controlling it] Pullorez ptits i mery bor'by s nim. Frunze, Kirgizgosizdat, 1954. 11 p. (MLRA 10:2)
(Pullorum disease)

ZOLOTYKH, A. A.

ZOLOTYKH, A. A. -- "The Viability of Streptococcus Equi under Various Conditions of the External Environment." Min Higher Education USSR, Kirgiz Agricultural Inst imeni K. I. Skryabin. Cand of Veterinary Science, Frunze, 1955. (Dissertation for the Degree of Candidate in Veterinary Sciences.)

So: Knizhnaya Letopis', No. 8, 1956.

F-2

USSR/Microbiology - Antibiosis and Symbiosis. Antibiotics.

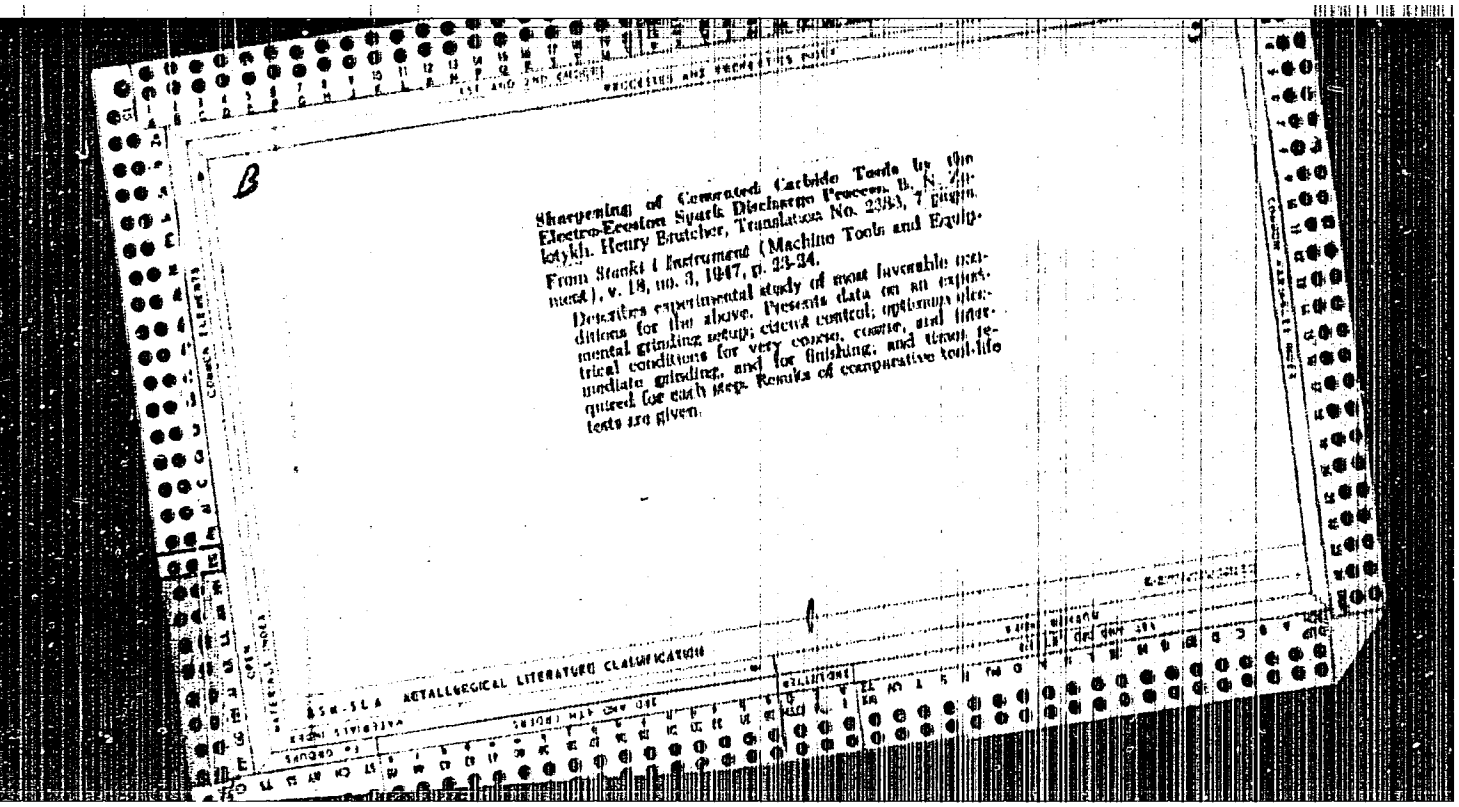
Abs Jour : Ref Zhur - Biol., No 3, 1958, 9837

Author : Zolotykh, A.A.
Inst :
Title : Bacteriostatic and Bactericidal Action of Streptomycin on Cultures of Molt [?] Streptococcus.

Orig Pub : Tr. Kirg. s.-kh. in-ta, 1956, No 9, 165-170

Abstract : Streptomycin (I) after exposure for 24 hours at 36° exerts a bacteriostatic action on a strain of molt [?] streptococcus in concentrations of 20-30 units per ml of medium and a bactericidal one in doses of 30-50 units per ml of medium. I in bacteriostatic doses does not affect the hemolytic and biochemical properties of molt [?] streptococcus.

Card 1/1



B

Sharpening of Cemented Carbide Tools by the Electro-Erosion Spark Discharge Process. B. N. Zhelotykh. Henry Brutcher, Translation No. 2383, 7 pages.

From Stanki i Instrument (Machine Tools and Equipment), v. 18, no. 3, 1947, p. 23-34.

Describes experimental study of most favorable conditions for the above. Presents data on an experimental grinding setup; circuit control; optimum electrical conditions for very coarse, coarse, and intermediate grinding, and for finishing; and time required for each step. Results of comparative tool-life tests are given.

METALLURGICAL LITERATURE CLASSIFICATION

ZOLOTYKH, B. N.

Elektroiskrovoi kontaktnyi sposob uprochneniia metallicheskikh poverkhnostei. Moskva, Gosenergoizdat, 1951. 55 p.

Electric spark contact method of strengthening metallic surfaces.

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

ZOLOTYKH, B.N.

[Physical principles of electric spark treatment of metals] Fizicheskie osnovy elektroiskrovoi obrabotki metallov. Moskva, Gos.izd-vo tekhniko-teoret. lit-ry, 1953. 107 p. (MLRA 6:7)
(Electric spark)

ZOLOTYKH, B.N
see card 2 6.

PHASE I BOOK EXPLOITATION 548

Akademiya nauk SSSR. Tsentral'naya nauchno-issledovatel'skaya laboratoriya elektricheskoy obrabotki materialov

Elektroiskrovaya obrabotka metallov (Electrospark Machining of Metals) Moscow, Izd-vo AN SSSR, 1957. 225 p. (Series: Its: Trudy, vyp. 1) 5,000 copies printed.

Resp. Ed.: Lazarenko, B. R.; Ed. of Publishing House: Moyzhes, S. M.; Tech. Ed.: Astaf'yeva, G. A.

PURPOSE: This book is intended for scientists and engineers working in the field of electrospark machining of metals and for metallurgists and machine builders.

COVERAGE: This collection of technical papers deals with electrospark machining of metals. It presents information on developments in this field in the Soviet Union and abroad. A detailed discussion is given of the results of investigations of physical phenomena of electrospark process, the methods of measuring spark-gap power, metallographic examination of machined surfaces, and the design and development of new types of electrospark installations. For the abstract of each paper see the Table of Contents. There are 126 references of which 91 are Soviet, 19 English, 10 German, and 6 French.

Card 1/7

tric. The experimental data and the mathematical expressions of the relations between the rate of metal erosion and the electrode gap energy are given and the effects of electrode polarity and pulse duration on the rate of erosion are investigated. Various existing theories developed in order to explain the nature of spark erosion are reviewed and their reliability in the light of available experimental data are discussed. The article contains several graphs of experimental data. There are 42 references, 33 of which are Soviet, 5 English, 3 German, and 1 French.

Lazarenko, N. I. Change in the Initial Properties of the Cathode Surface Under the Action of Electric Spark Pulses Flowing in Gaseous Media 70

In this article the author investigates changes in the properties of a negative electrode resulting from an electrical discharge when electrodes are immersed in a gaseous dialectric, and describes some practical applications of electrical erosion. Both electric spark and electric arc discharges were investigated. The author concludes that any type of electrical discharge is followed by erosion of electrodes and that for each type of electrical discharge there exists a corresponding polarity of erosion. There are 6 references, 5 of which are Soviet, and 1 German.

Mogilevskiy, I. Z., and Chepovaya, S. A. Metallographic Investigation of the Surface Layer of Steel Following Electrospark Machining 95

This article deals with the techniques of investigating the structure and

Electrospark Machining of Metals

properties of the surface layer of steel after electrospark machining especially in the machining of carbon steels with a graphite electrode. The investigation included U8 steel and Armco iron after machining with a graphite electrode under various operating conditions. It is concluded that after machining the surface layer becomes saturated with carbon to a considerable depth and it is possible to observe all structures and phases similar to those in iron-carbon equilibrium diagrams and nonequilibrium structures and phases observed after heat treatment of steel. It is also concluded that after electrospark coating of metals a diffusion of coating particles and the base material takes place. The article contains several photographs of the observed microstructure and a detailed description of their characteristics. There are 14 Soviet references.

Senatorov, K. Ya. Measurement of Power in Spark Gaps of Installations for Electrospark Machining of Metals 117

The article presents some of the results of experimental investigations conducted by TsNIL-ELEKTROM AN SSSR (Central Scientific Research Laboratory for Electric Treatment of Metals) in connection with the development of universal equipment and techniques for measuring the power of electrospark installations through the use of multielectrode tubes. The following methods of power measurement were investigated: 1) Calorimetric method 2) In-

Card 4/7

Electrospark Machining of Metals

direct (graphical-analytical) method 3) Method based on the use of electron-tube equipment. The procedure of each method and its advantages and disadvantages are presented in detail. It is stated that the calorimetric method is a direct method based on measuring energy dissipated in the form of heat but as it requires the construction of a special electrospark installation with calorimeter, it is only feasible in laboratory conditions. Also this method does not make it possible to measure energy lost due to chemical transformations and the method gives only average results. The graphical-analytical method includes a method of graphical integration in the coordinates of "u" and "i" (where u=voltage applied, and i=gap current). If the relationship between "u" and "i" is available as a function of t (t=time) the problem reduces to the solution of the following integral:

$$W = \frac{N}{T} \int u(t)i(t)\,dt$$

(where W= average power; t_u = pulse duration; and N = number of pulses). It is concluded that this method makes it possible to determine the energy and power in the spark gap with a high degree of accuracy, but requires special equipment to obtain the oscillograms of the relations between u(t) and i(t) or u(i) and that the solution of the integral is in many cases a time-consuming operation. The third method which is based on the use of electron-tube equipment is said to be an exact method

Card 5/7

and applicable to various types of electrospark-machining installations. A detailed description and illustration of the electron-tube watt meter used in this method are presented. There are 5 Soviet references.

Zolotykh, B. N., Mordvinov, Yu. B., and Kruglov, A. I. Mechanical Type Discharge Machines for Feeding Electrospark Installations and Their Characteristics 133

According to the article an increase in machining rate by the electrospark machining method may be achieved by the two following methods: 1) by pulse frequency 2) by increasing pulse energy. Since previous investigations have shown that the quality of a machined surface is inversely proportional to pulse energy, increase in energy will result in the reduction of surface quality. Thus this is not a practical method for increasing the rate of machining. On the other hand, an increase in pulse frequency does not affect surface quality, but can not be achieved in a system having condenser-charging circuit. As a result it was necessary to develop new types of pulse generators. A detailed description and an experimental investigation of such pulse generators are presented. It is stated that the maximum machining rate achieved by use of new machine generators during the process of producing holes at the full load was between 5000 and 5500 mm^3/min., and the use of MIG-3A and MIG-3B electrospark generators increases the rate of machining steel and hard alloys from 2-3 times more than the estimated rate when using a condenser-charging system. There are 9 Soviet references.

Card 6/7

Zolotykh, B.N.

8(2) 53 PHASE I BOOK EXPLOITATION SOV/1855

Soveshchaniye po elektricheskim kontaktam. Moscow. 1956.

Elektricheskiye kontakty; trudy soveshchaniya (Electrical Contacts; Transactions of the Conference) Moscow, Gosenergoizdat, 1958. 303 p. 4,150 copies printed.

Editorial board: B.S. Sotskov (Resp. Ed.), V.V. Usov, R.S. Kuznetsov, I.Ye. Dekabrun, and Z.S. Kirillova; Ed.: I.Ye. Dekabrun; Tech. Ed.: K.P. Voronin.

PURPOSE: This collection of articles is intended for engineers and technicians designing, developing and operating electrical apparatus and is concerned with electric contact materials. It may also be useful in scientific research institutes and laboratories.

COVERAGE: This book comprises reports delivered at the Electric Contacts Conference held in Moscow in November, 1956. These papers cover physical processes occurring during connecting or disconnecting, methods of designing and testing electric contacts, production and characteristics of contact materials. During this conference of the Institut avtomatiki telemekhaniki AN SSSR (Institute of Automation and Telemechanics, Academy of Sciences, USSR) participants approved periodic conferences of physicists, metallurgists, chemists and apparatus design specialists to discuss problems of electric contacts, which are the components of electric

Card 1/11

3

Mandel'shtam, S.L., Sukhodrev, N.K. and Shabanskiy, V.P. (Fizicheskiy institut AN SSSR - Institute of Physics, Academy of Sciences, USSR) Processes Occurring on Electrodes During an Arc Discharge 25

This article is an abridged version of the report delivered at the 10th Spectroscopy Symposium. It was printed in full in the transactions of this symposium. It is based on the results of research carried out by the authors at the Institute of Physics. The authors found that processes of arc discharge are different for the plate and cathode. Photographs of spots, left after the discharge show a different structure, the plate sport being much larger than the cathode arc.

Zolotykh, B.N. (Tsnilelektrom, Academy of Sciences, USSR) Dynamics of the Process of Electric Erosion of Metals by Electric Pulse Discharge 27

The author explains briefly the theoretical fundamentals of this phenomenon and discusses in detail its basic regularities, the additivity law, the relation between erosion volume and spark energy, the relation between erosion volume and thermal constants of metals, the polarity of electric erosion and its relation to pulse duration. He reports results of experimental investigation of the formation of spots and indentations on electrode surfaces caused by single pulse discharge. He refers to G.V. Gusev and A.S. Zingerman and thanks A.I. Kruglov, Zh.Ye. Gryazunova and I.P. Korobova.

ZOLOTYKH, B.N.; KASPRZHAK, G.M.; KONDRATENKO, V.N.; KRUBLOV, A.I.; RABINOVICH, I.Ya.; SLEPUSHKIN, Ya.I.; CHETVERIKOV, S.S.

"Using electric erosion method in machining metals" by A.L. Livshchits. Reviewed by B.N. Zolotykh and others. Izv. AN SSSR. Otd. tekh. nauk no.2:163-165 F '58. (MIRA 11:3)
(Metal cutting, Electric)
(Livshchits, A.L.)

SOV/24-58-6-16/35

AUTHORS: Aleksandrov, V.P. and Zolotykh, B.N. (Moscow)

TITLE: On the Selection of Optimum Regimes of Machining Heat Resistant Nickel Base Alloys by the Electro-Spark Method (O vybore optimal'nykh rezhimov pri obrabotke elektroiskrovym metodom zharoprochnykh splavov na nikelevoy osnove)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 6, pp 99-100 (USSR)

ABSTRACT: Various authors have found (refs 1-3) that the main technological characteristics of the process of electric-spark treatment are determined by the characteristics of the pulse, namely, its duration and its energy. In this paper results are described of investigations of electric spark treatment of a widely used high temperature alloy, EI-437B, which were carried out at TsNIL-ELEKTROK AN, SSSR. The results obtained for other nickel base high temperature alloys were similar. It was found that if the energy reserve in the impulse is constant, the dependence of the magnitude of the erosion of the electrodes on the duration of the pulse has a maximum. Thus, for instance, for a pulse energy W_u = 0.5 joules, the maximum erosion effect

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On the Selection of Optimum Regimes of Machining Heat Resistant Nickel Base Alloys by the Electric-Spark Method

is obtained for a pulse duration of t_u=250 μs; for a pulse energy of 4.5 joules the optimum duration is 600 μs. Thus, for the range of pulse energies 0.5 to 4.5 joules the pulse durations for which the erosion effect is highest for the alloy EI-437B are 250 to 600 μsec. The problem of selecting optimum pulse durations in electric spark treatment cannot be solved without taking into consideration changes which take place in the surface layer, particularly in components of machines which operate under difficult load conditions and are exposed to the effects of aggressive media (especially combustion products). The metallographic investigation of the surface layer of the investigated alloy indicates that this layer has a dendritic structure which is characteristic for a metal produced from the liquid state (see photographs, Figs 1 and 2). Directly behind the layer of the metal with a dendritic structure, produced by fusion, there is a thermally influenced zone which manifests itself in the investigated alloy by

On the Selection of Optimum Regimes of Machining Heat Resistant Nickel Base Alloys by the Electro-Spark Method

intensive diffusion of the carbon from the medium and from the electrode material along the grain boundaries (Figs 1a,1b and 2a) which brings about a drop in strength and in the anti-corrosion properties of the alloy; thereby the depth of diffusion in the individual cases is 1.5 to 2 times as large as the layer thickness. A further undesirable phenomenon occurs in the case of certain pulse durations namely, the appearance of micro-cracks in the surface layer emanating partly from the grain boundaries (Fig 2a). It was established that for a pulse energy reserve of W = 0.5 joules, the depth of the fused layer is 4-10 μ for pulse durations of t_u = 130 μsec increasing to 70-80 μ for pulse durations of 1050 μsec; for a pulse energy reserve W_u = 4.5 joules the depth of the fused layer is 5 to 20 μ for a pulse duration of t_u = 130 μs, increasing to 90-120 μ for t_u = 1050 μsec. Micro cracks and intensive diffusion along the grain boundaries occur for t_u = 300 μ s and more. For pulse durations of 130 to 200 μsec, micro cracks as well as

On the Selection of Optimum Regimes of Machining Heat Resistant Nickel Base Alloys by the Electro-Spark Method

diffusion phenomena cease (Figs 1b and 2b); thereby a fused layer with a dendritic structure will occur, the depth of which is 4 to 30 μ for pulse energy reserves of 0.5 to 4.5 joules. Thus, the duration of the pulse and the reserve of energy in the pulse determines the depth in the character of the changes which take place in the surface layer, whereby the duration of the pulse is of predominant importance. It is evident from the results that in selecting the optimum regimes for electric spark machining and treatment of nickel-base high temperature alloys, the pulse duration must be taken into consideration and this should not exceed 200 μsec. Thereby, micro cracks in the surface layer, and diffusion along the grain boundaries can be avoided and if even a very

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24.2130, 18.9500
AUTHOR: Zolotykh, B.N.

TITLE: Some Problems of the Qualitative Theory of Electric Erosion in the Pulse Discharges in Liquid Dielectric Media

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 8, pp 1330 - 1334 + 1 plate (USSR)

ABSTRACT: The phenomenon of electric erosion has been known for over 150 years (J. Priestley - Ref 1). However, the study of the physical nature of this phenomenon was commenced only after Lazarenko proposed a method of the electro-spark machining of metals, in 1941. The physical theory of the electric erosion can be based on the principle of additivity and on the consideration of non-stationary thermal processes at the surface of the electrodes. A number of authors (Refs 2-7) showed that the additivity does, in fact, take place in normal erosion processes. The overall effect of the erosion can therefore be represented as a sum of the action of single pulses. Further, it can reasonably be assumed (Refs 4, 5, 8) that the erosion process is determined by the action of a planar heat source, which is produced at the surface of the electrodes as a result of the discharge. The qualitative

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description of the erosion process can thus be based on the solution of the well-known Stefan problem for a unidimensional case. It can further be assumed (Ref 8) that the displacement of the boundary of fusion (with respect to the centre) can be approximately described by:

$$h = \alpha \sqrt{t} \qquad (1)$$

where t is time,
α is a coefficient dependent on the thermal stress of material and temperature, and
h is the depth of the so-called "moon".

The Stefan problem should be solved by assuming the following boundary condition:

$$T_1(0, t) = \bar{T} \qquad (2)$$

where T is a certain effective temperature on the surface of the electrode; subscript 1 refers to the liquid phase.

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The solution of the Stefan problem (Ref 9) shows that the volume of the "moon" is given by:

$$V = k \frac{W_e}{\omega_o} \varphi^2(\omega_o) \qquad (3)$$

where k is a coefficient dependent on the polarity of the electrodes, W_e is the energy supplied to the electrode, ω_o is the energy density in the centre of the source and φ is a function which is determined by solving the Stefan problem. The theory is compared with experiments in Figures 2 and 3. Figure 2 gives experimental and calculated curves showing the dependence of the depth of anode erosion on the duration of the pulses; the electrodes were made of copper, nickel or molybdenum and the pulse energy was constant. It is seen that the agreement between the experiment and the theory is quite

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Some Problems of the Qualitative Theory of Electric Erosion in the Pulse Discharges in Liquid Dielectric Media

satisfactory. Figure 3 gives experimental and calculated curves showing the dependence of the magnitude of erosion on the energy for the case of copper and iron electrodes (Figures 3a, 3б, respectively). The agreement between the curves is quite satisfatory. However, the solution of the Stefan problem does not fully describe the phenomena of electric erosion. Further data can be obtained from X-ray and "velocity" photographs. These are shown in Figures 1, from which it can be seen that the ejection of the main portion of the metal (about 70-80%) takes place after the disappearance of the current pulse. This means that the electrodynamic forces play a negligible part in the ejection of metal. Further photographs are shown in Figure 4; these were taken at velocities of 62500 and 500 000 lines/sec. From these, it is concluded that, during the initial stage of the discharge, the most important effect is the evaporation of metal; during the following stages, the forces of thermal nature are predominant; these include thermo-capillary

Some Problems of the Qualitative Theory of Electric Erosion in the Pulse Discharges in Liquid Dielectric Media

forces, the forces of compression at the front of the thermal wave and also a turbulent boiling of metal at the instant of a rapid fall of temperature inside the gas bubble, after the termination of the current pulse. There are 4 figures and 10 references, 9 of which are Soviet and 1 English.

ASSOCIATION: Tsentral'naya laboratoriya elektricheskoy obrabotki materialov AN SSSR (Central Laboratory for the Electrical Machining of Materials of the Ac.Sc.USSR)

SUBMITTED: March 5, 1959

4

ZOLOTYKH, B.N.

66702

24.2120 SOV/109-4-8-22/35

AUTHORS: Granovskiy, V.L., Luk'yanov, S.Yu., Spivak, G.V. and Sirotenko, I.G.

TITLE: Report on the Second All-Union Conference on Gas Electronics

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 8, pp 1339 - 1358 (USSR)

ABSTRACT: The conference was organised by the Ac.Sc.USSR, the Ministry of Higher Education and Moscow State University.
T.B. Fogel'son - "Methods of Reducing the Energy Lost in the Formation of a Breakdown".
L.I. Pivovar and V.I. Gordiyenko - "Microdischarges and pre-breakdown Currents Between Metal Electrodes in High Vacuum".
V.A. Simonov and G.P. Katukov - "Investigation of the Processes of Initiation and Development of a High-voltage Discharge in Vacuum".
E.M. Reykhrudel and G.V. Smirnitskaya - "The Characteristics of Ignition in High-vacuum in Magnetic Fields".
L.V. Tarasova et al. dealt with the transfer of the electrode material during the pre-breakdown stage in vacuum.
N.B. Rozanov et al. - "The Motion of Micro-particles of Substances During Electric Breakdown in Vacuum".
The third section dealt with the problems of electric sparks, corona and their practical applications. It was presided over by I.S. Stekol'nikov. The following papers were read:
V.I. Levitov et al. - "Probe Investigation of the a.c. Corona Fields".
G.M. Aleksandrov - "Elementary Processes in the Ionisation Zone of Corona-type Conductors at Atmospheric Pressures".
V.A. Burmakin - "Appearance of a Corona Discharge in Hydrogen and Nitrogen"
P.N. Chistyakov et al. - "Some Properties of the Corona Discharge in Hydrogen in/Coaxial, Cylindrical System".
A.S. Sobolева and B.N. Klyarfel'd - "Appearance of Discharge Phenomena Between a Point and a Plane at Gas Pressures of 10^{-3} - 1.0 mm Hg".
Ya.Yu. Reyneт et al. - "Methods of Unipolar Ionisation of Air By Means of Aero-Ionisers (see p 1333 of the journal).
M.P. Vanyukov et al. - "Time Spectra of the Radiation of a Spark Discharge in Inert Gases" (see p 1284 of the journal).
M.P. Vanyukov and A.A. Mak - "Production of High Temperatures by Means of Spark Discharges".
V.A. Paretyagin - "Influence of the Magnetic Field of the Electric Discharge on the Dividing Surface of Two Media".
I.S. Stekol'nikov - "New Data From the Study of Long Sparks".
M.I. Syaoyev - "Properties of the Breakdown of Compressed Air in a Comparatively Uniform Field in the Presence of Localised Non-uniformities".
A.A. Vorob'yev et al. - "Pulse and Oscillographic Techniques for the Measurement of the Discharge Lags in Dielectrics" (see p 1257 of the journal).
A paper by B.N. Zolotykh dealt with the problem of the basic theory of the electric erosion (see p 1770 of the journal).
The fourth section was presided over by S.Yu. Luk'yanov and was concerned with the non-stationary and low-frequency discharges. The following papers were read:
I.S. Abramovich and A.A. Labuz - "The Nature of the Current Interruption During the Electric Explosion of a Metal Wire".
V.A. Simonov - "Propagation of Plasma From Local Pulse Sources".
G.G. Timofeyev et al. - "Observation of an Electro-dynamically Compressed Arc By Means of an Electron-optical Converter".
M.S. Ioffe and Ye.Ye. Yushmanov - "Investigation of the Radial Electric Field in an Ion Magnetron".
V.A. Belyayev and M.K. Romanovskiy - "Experiments with an Electron Model of a System with Magnetic Samples".
A.M. Andrianov et al. "Distribution of Magnetic and Electric Fields in Powerful Pulse Discharges".
G.N. Harding (England) - "Spectroscopic Determination of the Plasma Temperature in the "Zeta" Equipment" (see p 1526 of the journal).
The paper by Harding aroused a lot of interest and Academician L.A. Artsimovich expressed the opinion that the electrons and ion temperatures in the "Zeta" should be of the same order; instead, according to Harding, the electron temperature is l[illegible] an order than that of the [illegible].

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ZOLOTYKH, B.N.; KRUGLOV, A.I.

High-speed photography of a pulse discharge in a liquid dielectric medium using SKS-1 and SFR cameras and in X-rays as applied to the investigation of the dynamics of electric erosion fragmentation of metals. Usp.nauch.fot. 6:185-192 '59. (MIRA 13:6)
(Photography--Scientific applications)
(Electric discharges)

ZOLOTYKH, B.N.

Mechanism of the electric erosion of metals in a liquid dielectric medium. Zhur.tekh.fiz. 29 no.12:1484-1486 D '59. (MIRA 14:6)
(Electric metal cutting) (Electrodes)

SOTSKOV, B.S., otv.red.; USOV, V.V., red.; KUZNETSOV, R.S., red.; ZOLOTYKH, B.N., red.; DEKABRUN, I.Ye., red.; KIRILLOVA, Z.S., red.; VORONIN, K.P., tekhn.red.

[Electrical contacts; transactions of the All-Union Conference on Electrical Contacts and Materials for them] Elektricheskie kontakty. Trudy Vsesoiuznogo soveshchaniia po elektricheskim kontaktam i kontaktnym materialam. Red.kollegiia: B.S.Sotskov i dr. Moskva, Gos.energ.izd-vo, 1960. 423 p. (MIRA 13:10)

1. Vsesoyuznoye soveshchaniye po elektricheskim kontaktam i kontaktnym materialam. 2d, Moscow, 1959.
(Electric contactors)

ZOLOTYKH, B.N

GAVRILOV, A.N., prof., doktor tekhn.nauk; DEN'YANYUK, F.S., prof., doktor tekhn.nauk; MITROFANOV, S.P., kand.tekhn.nauk; KORSAKOV, V.S., prof., doktor tekhn.nauk; IVANOV, D.P., doktor tekhn.nauk; SFO-ROZHEV, M.V., kand.tekhn.nauk; MALOV, A.N., kand.tekhn.nauk; KUDRYAVTSEV, I.V., prof., doktor tekhn.nauk; SHNEYDER, Yu.G., kand.tekhn.nauk; SHUKHOV, Yu.V., dotsent; KAZAKOV, M.F., kand. tekhn.nauk; ZOLOTYKH, B.N., kand.tekhn.nauk; ROZENBERG, L.D., prof., doktor tekhn.nauk; YAKHIMOVICH, D.Ya., inzh.; NIKOLAYEV, G.A., prof., doktor tekhn.nauk; VLADZIYEVSKIY, A.P., doktor tekhn. nauk; SHAUMYAN, G.A., prof., doktor tekhn.nauk; KOSHKIN, L.N., kand.tekhn.nauk; BOBROV, V.P., kand.tekhn.nauk; NOVIKOV, M.P., kand.tekhn.nauk; VIKHMAN, V.S., kand.tekhn.nauk; DERBISHER, A.V., kand.tekhn.nauk; KLIMENKO, K.I., prof., doktor ekonom.nauk; VYATKIN, A.Ye., inzh.; SATEL', E.A., prof., doktor tekhn.nauk; FOFANOV, I.G., inzh.; MATVEYENKO, V.V., inzh.; KOCHETOVA, G.F., inzh., red.izd-va; EL'KIND, V.D., tekhn.red.; TIKHANOV, A.Ya., tekhn.red.

[Present status and trends of future development of technological processes in the manufacture of machinery and instruments] Sovremennoe sostoianie i napravleniia razvitiia tekhnologii mashinostroeniia i priborostroeniia. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 563 p. (MIRA 13:7)
(Machinery industry--Technological innovations)
(Instrument manufacture--Technological innovations) (Automation)

ZOLOTYKH, B.N.

PHASE I BOOK EXPLOITATION SOV/5291

Soveshchaniye po kompleksnoy mekhanizatsii i avtomatizatsii tekhnologicheskikh protsessov v mashinostroyenii. 2d, Moscow, 1956

Avtomatizatsiya mashinostroitel'nykh protsessov, t. III: Obrabotka rezaniyem i obshchiye voprosy avtomatizatsii (Automation of Machine-Building Processes, v. 3: Metal Cutting and General Automation Problems) Moscow, Izd-vo AN SSSR, 1960. 296 p. (Series: Its: Trudy, t. 3) 4,700 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.

Resp. Ed.: V. I. Dikushin, Academician; Ed. of Publishing House: V. A. Kotov; Tech. Ed.: I. F. Kuz'min.

PURPOSE: This collection of articles is intended for technical personnel concerned with the automation of the machine industry.

COVERAGE: This is Volume III of the transactions of the Second Conference on the Full Mechanization and Automation of Manufacturing Processes in the Machine Industry, held September 25-29, 1956. The transactions have been published in three volumes. Volume I deals with the hot pressworking of metals, and volume II, with the actuation and control of machines. The present volume deals with the automation of metal machining and workhardening, and with general problems encountered in automation. The transactions on the automation of metal-machining processes were published under the supervision of F. S. Demyanok and A. M. Karatygin, and those on the automation of workhardening processes, under the supervision of E. A. Satel' and M. O. Yakobson. No personalities are mentioned. There are no references.

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ZOLOTYKH, B.N.

PHASE I BOOK EXPLOITATION SOV/[illegible]

Sovremennoye sostoyaniye i napravleniya razvitiya tekhnologii mashinostroyeniya i priborostroyeniya (Present State of the Manufacturing Processes in the Machine and Instrument Industries and Trends for Development) Moscow, Mashgiz, 1960. 563 p. 5,000 copies printed.

Ed.: Anatoliy Nikolayevich Gavrilov, Doctor of Technical Sciences, Professor; Managing Ed. for Literature on Machine Building and Instrument Construction (Mashgiz): N.V. Pokrovskiy, Engineer; Ed. of Publishing House: G.F. Kozhatova, Engineer; Tech. Eds.: Y.D. El'kind and A.Ya. Tikhanov.

PURPOSE: This book is intended for technical and scientific personnel in the machine and instrument industries and for students and teachers of schools of higher education.

COVERAGE: The book deals with current theory and practice in the manufacturing processes of the machine and instrument industries and includes discussions on trends for development. The physical nature of the processes and their technical-economic features and possibilities are considered. Particular attention is given to new and progressive processing (supersonic machining, electric machining, cold pressworking, precision casting, precision pressing, new methods of welding, etc.). The book consists of papers presented at the All-Union

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Scientific-Industrial Conference on "Advanced Machine and Instrument Manufacturing Processes," held in 1958. The papers have been revised in the light of recent developments in the field. A chapter is devoted to the automation and mechanization of the industry. Soviet and non-Soviet references accompany some of the chapters.

TABLE OF CONTENTS:

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S/196/61/000/010/029/037
E194/E155

AUTHORS: Zolotykh, B.N., Gioyev, K.Kh., and Tarasov, Ye.A.

TITLE: The mechanism of electrical erosion of metals in a liquid dielectric medium

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.10, 1961, 41, abstract 10K 237. (Symposium "Problems of electrical machining of materials", M., AS USSR, 1960, 58-64)

TEXT: Electrical erosion of metal in a fluid dielectric was investigated by a technique which disclosed the dynamics of formation and collapse of a gas bubble and also the processes occurring within the bubble and on the electrodes. The development of processes in the discharge gap was photographed with a type СФР (SFR) camera, at the rate of 25-500 thousand frames per second. The dielectric fluid was kerosine, and the electrode gap was 10-100 microns. Two arrangements of electrodes were used, to overcome the considerable influence of large electrodes on the shape of the gas bubbles. With the first variant, comprising wire electrodes 0.5-1 mm diameter, records were

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made of the external appearance of the gas bubble but processes on the electrode remained invisible. In order to record simultaneously both the dynamics of development of the gas bubble and the processes occurring within it, another electrode arrangement was used consisting of a strip of thin copper foil 0.05-0.1 mm thick (anode) firmly pressed against a transparent plate and a copper wire 1 mm diameter (cathode) at an angle of 90° to the plane of the anode. Pictures were taken from the side of the transparent sheet. The following conclusions are drawn: a) in the pulse duration range of 50-100 microseconds, metal removal occurs mainly in the liquid and only partially in the gas phase. b) In the gas phase metal is removed during the current impulse. c) In the liquid phase most of the eroded metal is removed after the end of the impulse. d) Hydrodynamic and gas dynamic processes play a vital part in the mechanism of erosion.
Illustrated. 3 literature references.

[Abstractor's note: Complete translation.]

Card 2/2

32195
S/196/61/000/010/032/037
E073/E535

1 1110

AUTHORS: Zolotykh, B.N., Kruglov, A.I.

TITLE: Thermal processes at the surface of electrodes during electrospark machining of metals

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.10, 1961, 42, abstract 10 K240. (Symposium "Problems of electrical machining of materials", M., AS USSR, 1960, 65-76)

TEXT: The shape of calculated curves of the dependence of the volume of the cavity on the pulse energy for pulses of constant duration are in agreement with experimental data. Both calculated and experimental curves of the dependence of the erosion on the pulse energy show inflection points. The location of these points corresponds with the duration of the pulse at which maximum erosion occurs for a given value of energy. The fact that there is an inflection point shift towards higher values of energy in the case of increasing pulse duration indicates a shift of the maximum erosion towards pulses of long duration with increasing pulse energies. The shift is attributed

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to an increase in the density of the energy of the source on the electrode with increasing source energy. This increase is more pronounced for metals with ferromagnetic properties and from this the conclusion can be drawn that the magnetic fields which are generated during the discharge affect the dimensions of the heat sources at the surface of the electrodes and, consequently, they also affect the diameter of the discharge channel. The obtained results are of practical interest; they show that by using pulse generators with pulses of the order of 10^{-3} sec and longer the increase in productivity with increasing energies is faster than linear and consequently machining of steel by using current pulses of longer durations is most favourable in the case of high pulse energies of the order of tens of Joules. The given results of the thermal calculation explain the quantitative and the qualitative relations observed in the case of machining with pulses of the order of 10^{-4} sec, which corresponds to the average regimes obtained with a typical RC circuit and also to characteristics which pertain to machining with pulses which last for 10^{-3} sec and longer. This is a further proof that there is no justification

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for singling out spark erosion machining with pulses of the order of 10^{-3} sec and referring to it as a new "electric pulse" method. Formulae are given and graphs are included which illustrate the investigations that have been carried out.
8 literature references.

[Abstractor's Note: Complete translation.]

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S/196/61/000/010/030/037
E194/E155

AUTHORS: Zolotykh, B.N., and Kruglov, A.I.

TITLE: The procedure and results of investigation of channel potentials of a low-voltage impulse discharge

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.10, 1961, 41, abstract 10K 238. (Symposium "Problems of electrical machining of materials", M., AS USSR, 1960, 77-85)

TEXT: This article briefly describes the procedure and results of measurement of energy distribution in the spark gap for impulses of 8 - 20 microsecond duration (no-load voltage 60 - 140 V). The impulse energy comprises energy dispersed in the discharge column and energy transmitted to the surface of the electrodes. The former consists of losses on heating the gas, on ionisation and on radiation; part is expended in forming and moving gas bubbles and impact waves. The energy transmitted to the electrodes consists of losses on the anode and on the cathode. The impulse energy is easily determined from synchronised oscillograms of current and voltage. The amount dissipated in

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The procedure and results of ...

the discharge column can be calculated from the voltage gradient in the column, which is determined by an oscillograph. A procedure was developed for measuring voltage gradients and the sum of anode and cathode voltage drops in low-voltage impulse discharges in a liquid dielectric. The potential gradient in the discharge column and the cathode and anode voltage drops were governed by elementary processes in the discharge channel. Alteration of these values with time reflects changes in the processes of formation of space charge and in the thermodynamic condition of the plasma. The experimental results show that during the initial development of the discharge, volume charges play a vital part in the discharge channel. At the end of an impulse the condition of the discharge column is probably near to that of plasma in thermal equilibrium. Consequently, in describing electrical processes occurring in spark gaps during spark machining, the part played by space charges must be allowed for. The results obtained give clear ideas about the effective dimensions of a plane heat source formed on the electrode under the influence of impulse discharge. This in its turn is

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The procedure and results of ... S/196/61/000/010/030/037
E194/E155

essential for solution of the thermal problem and calculation of the erosion process. Diagrams, graphs and oscillograms are given to illustrate the procedure and results of the investigation.
8 literature references.

[Abstractor's note: Complete translation.]

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34054

S/123/62/000/003/008/018
A004/A101

1.1110

AUTHORS: Zolotykh, B. N., Korobova, I. P.

TITLE: Selecting optimum conditions of electrospark machining of cermet sintered carbides

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 3, 1962, 35, abstract 3B176 ("Tr. Tsentr. n.-i. labor. elektr. obrabotki materialov, AN SSSR", 1960, no. 2, 114-119)

TEXT: The authors investigated the dependence of the erosion magnitude of the cermet compositions BK 3 (VK3), BK 8 (VK8), T15K6, T5K10, on the pulse parameters (duration and energy) and also the connection of the nature and magnitude of the defective layer (microcrack network) with the mentioned parameters. The operating electrode (cathode) was made of gray cast iron; the medium was kerosene. The curve picturing the dependence of erosion of the investigated sintered carbides on the pulse duration at a constant energy reaches its maximum in the duration range of 150 - 250 microseconds. If the energy is reduced, the maximum shifts in the direction of a reduced pulse duration. An analysis of the cross sections of machined sintered carbide specimens

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showed that the depth of microcracks grows with an increased pulse duration. An increase in the depth of microcracks with an increased pulse energy is less pronounced. If the pulse duration is reduced to 100 microseconds, the depth of cracks essentially decreases but they do not disappear completely. At a pulse duration of 10 microseconds no cracks are observed. A comparison of the hole shape and the crack geometry shows that the formation of the latter is of a thermal nature. Under the effect of short pulses, the depth of thermal action is localized within the limits of the hole volume, owing to which no microcracks arise. The authors recommend for roughing or semi-finish machining of sintered carbides to use pulses having a duration of less than 200 microseconds and an energy in the range of 1 - 2 joule. A flawless machining can be attained with pulses of less than 10 microseconds duration and an energy of less than 1 joule. There are 4 figures and 5 references.

A. Kruglov

[Abstracter's note: Complete translation]

Card 2/2

34052

S/123/62/000/003/006/018
A004/A101

1.1110

AUTHORS: Aleksandrov, V. P., Zolotykh, B. N.

TITLE: Selecting optimum conditions for the electrospark machining of heat-resistant alloys on a nickel base

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 3, 1962, 34, abstract 3B174 ("Tr. Tsentr. n.-i. labor. elektr. obrabotki materialov. AN SSSR", 1960, no. 2, 196-204)

TEXT: The difficulties arising with the mechanical machining of heat-resistant alloys of high toughness together with sufficient hardness and tendency to workhardening make it necessary to use electrospark machining. To determine the conditions of a flawless electrospark machining of these alloys, the authors measured the metal removal and surface finish, and analyzed the structural changes of the surface layer subjected to the effects of pulses of various energy (0.5 - 4.5 joule) and duration (130 - 1,050 microseconds). It was found that the dependence of the erosion magnitude on the pulse duration has a maximum at the constant energy. If the energy is increased, the maximum shifts in the direction of an increase in the pulse duration; at an energy of 0.5 joule the

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A004/A101

maximum corresponds to a duration of 250 microseconds; if the energy amounts to 4.5 joule, the duration is 600 microseconds. The surface roughness increases with the rise in energy and pulse duration. Metallographic investigations of the machined surface showed that the upper layer had the dendritic structure characteristical for metal obtained from the molten state. Below the fused layer, a zone of thermal effect is located which shows structural changes at the grain boundaries and microcracks. The thickness of the zone of the fused layer and that of structural changes depends, to a great extent, on the pulse duration. Microcracks and structural changes at the grain boundaries can be observed if the pulse duration exceeds 300 microseconds, while they disappear with pulses of less than 200 microseconds. The data presented pertain to the ЭИ 4375 (EI4375) alloy, while the results for other alloys differ only slightly. Thus the conclusion on the use of pulses having a duration of less than 200 microseconds can be considered as a general recommendation for the flawless electrospark machining of heat-resistant alloys on a nickel base.

S. Kruglova

[Abstracter's note: Complete translation]

S/856/62/000/000/003/011
E194/E135

AUTHORS: Zolotykh, B.N., and Sidorov, V.N.

TITLE: A demountable sharp-focus impulse X-ray tube

SOURCE: Problemy elektricheskoy obrabotki materialov. Tsentr. nauchnoissl. labor. elek. obrab. mat. AN SSSR. Ed. by B.R. Lazarenko. Moscow, Izd-vo AN SSSR, 1962. 86-90.

TEXT: To investigate the dynamics of the erosion process in a liquid dielectric with short pulses and short gaps (10 - 100 microns) it was necessary to develop a sharp-focus (some tenths of a millimetre) X-ray tube of relatively long wavelength. High intensity was not required but long tube life was necessary. Impulse X-ray tubes of sealed-off type are of short life, difficult to repair and not easily made for the longer wavelengths. Accordingly, TsNIL-ELEKTROM AN SSSR developed a demountable tube. The conical or needle-shaped anode, made of tungsten, molybdenum or copper, is arranged vertically 12.5 m above the top sharp edge of a hollow cylindrical stainless steel cathode. The ignition electrode is insulated from the cathode by

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transparent plastic. The main bushings have teflon sealing liners. The X-ray window is of cellophane film with vacuum rubber seals. The tube is mounted in a unit with vacuum and h.v. supplies and control equipment. The operating vacuum of $1-2 \times 10^{-5}$ mm Hg is reached in 20 minutes pumping and the best vacuum is 8×10^{-6} mm Hg. The voltage range is 30-100 kV, and the focal spot diameter does not exceed 1 mm. The X-ray pulse duration is 1 microsecond. The film holder is 200 mm distant from the anode. Performance is illustrated by radiograms of bubble development in an electric discharge taken at 100-microsecond intervals with 130 mm clearance between anode and object.
There are 6 figures.

ZOLOTYKH, B.N., kand.tekhn.nauk

My reply to A.S. Zingerman and D.A. Kaplan. Vest.elektroprom. 33 no.12:62-64 D '62. (MIRA 15:12)

(Electric discharges)

ZOLOTYKH, B.N., kand.tekhn.nauk

"Study of metal ejection in electric erosion" by A.S.Zingerman. Reviewed by B.N.Zolotykh. Izv. vys. uchab. zav.; elektromekh. 6 no.1:137 '63. (MIRA 16:5)

(Electrodes) (Zingerman, A.S.)

SOTSKOV, B.S., otv. red.; DEKABRUN, I.Ye., red.; ZOLOTYKH, B.N., red.; KUZNETSOV, R.S., red.; KIRILLOVA, Z.S., red.; SHUROVA, Yu.P., red.

[Electric contactors; transactions] Elektricheskie kontakty; trudy. Red. koll. B.S.Sotskov i dr. Moskva, Energiia, 1964. 502 p. (MIRA 17:8)

1. Vsesoyuznoye soveshchaniye po elektricheskim kontaktam i kontaktnym materialam. 3d, Moscow, 1962.

USSR/Medicine - Dysentery Toxin May/Jun 53

"The Effect of Caffeine on the Salivation of Dogs
Dysentery Intoxication," G. S. Zolotykh, I. D.
Morozov, Chair of Pharmacol and Toxicol, Ivanovo Ag
Inst

Farmakol i Toksikol, Vol 16, No 3, pp 39-43

Shiga dysentery exotoxin produces disturbances in th
cerebral cortex of dogs, as shown by changes in the
reaction to caffeine, a drug which normally induces
increased salivation. The functional disturbances

270T3

of the cortex continue up to one month, and resto-
ration of normal functions proceeds slowly, taking
1-1.5 mos. The results check with clinical obser-
vations to the effect that there is reduced saliv-
ation in Shiga dysentery patients. In view of the
fact that the action of caffeine is different in
toxicoinfectious diseases, smaller doses of this
drug should be prescribed.

270T3

ZOLOTYKH, M.N.

Sand drying in suspension. Lit.proizv. no.7:39-40 Jl '62.
(MIRA 16:2)

(Drying apparatus—Foundry sand)

ZOLOTYKH, Viktor Tikhonovich, kand. tekhn. nauk; ASHKENAZI, E.L., red.; BRUDNO, K.F., tekhn. red.

[English-Russian welding dictionary] Anglo-russkii slovar' po svarochnomu proizvodstvu. Moskva, Glav. red. inostr. nauchno-tekhn. slovarei Fizmatgiza, 1961. 191 p. (MIRA 14:5)
(Welding--Dictionaries)
(English language--Dictionaries--Russian)

ZOLOTYKH, V. T.

Training courses for welding engineers. Avtom. svar. 13 no.8:90-94 Ag '60. (MIRA 13:8)

1. Rostovskiy-na-Donu institut sel'skokhozyaystvennogo mashinostroyeniya.

(Electric welding—Study and teaching)

ZOLOTYKH, V.T.

PERIODICAL ABSTRACTS

Sub.: USSR/Engineering

AID 4179 - P

ALOV, A. A. and V. T. ZOLOTYKH.
AVTOMATICHESKAYA DUGOVAYA SVARKA LATUNI L62 (Automatic Electric Arc Welding of L62 Brass). Svarochnoye proizvodstvo, no. 1, Ja 1956: 1-4.

The authors describe the new process of automatic d.c. electric arc butt welding of L62 brass sheets 3 to 4mm thick, using brass and copper electrodes. The new method of welding was developed at the Moscow Aviation Technological Institute (MATI) to replace the very combersome and inefficient gas welding procedure now prevailing. The new method performed well in laboratory and mechanical tests, and is now in practice at a chemical machine-building plant. Further experiments are being conducted with 6 to 8mm thick brass sheets to be welded by the same process, with direct current of reversed polarity, the MATI-53 fusing agent and copper electrodis. One table, oscillogram, and pictures of welded pieces.

S/135/60/000/005/006/009
A115/A029

AUTHORS: Budnik, N.M.; Zolotykh, V.T.; - Candidates of Technical Sciences;
Gufan, R.M.; Ishchenko, Yu.L.; Sapov, P.M.; - Engineers

TITLE: Automatic Arc-Spot Riveting

PERIODICAL: Svarochnoye prozvodstvo, 1960, No. 5, pp. 32 - 35

TEXT: Flux welding used in the manufacture of agricultural machines is carried out manually in most cases. The apparatus ЭРСМ-8 (ERSM-8) designed by Rostsel'mash (Rostov Agricultural Machine Plant) has several drawbacks. A new apparatus was developed by the plant, the distinguishing feature of which is a new welding head. A diagram of the head is shown. The new machine equipped with this head makes it possible to facilitate welding, to increase the productivity, to reduce the consumption of electric energy and electrode wire. A detailed description of the operation principle is given. The new welding head can be used as basis for developing welding machines with program control and also of universal and specialized multielectrode machines.

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ALOV, A.A., doktor tekhnicheskikh nauk, professor; ZOLOTYKH, V.T., kandidat tekhnicheskikh nauk.

Automatic arc welding of L62 brass. Svar.proizv. no.1:1-4 Ja '56. (MLRA 9:4)

1.Moskovskiy aviatsionnyy tekhnologicheskiy institut.
(Brass--Welding)

ZOLOTYKH, V.T., kandidat tekhnicheskikh nauk.

Vaporization of the zinc and formation of porosities in the metal when welding brass. Svar. proizv. no.1:29-30 Ja '56. (Brass--Welding) (MLRA 9:4)

ZOLOTYKH, V. T.

"Investigation of the Automatic Welding Process With A Consumable Electrode Made of L62 Brass." Cand Tech Sci, Moscow Aviation Technological Inst, Min Higher Education USSR, Moscow, 1955. (KL, No 18, Apr 55)

SO: Sum. No. 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (16).

GUFAN, R.M., inzh.; ZOLOTYKH, V.T., kand. tekhn. nauk

Attachment for a series connection of an oscillator into a welding circuit. Svar. proizv. no.1:44 Ja '65.

(MIRA 18:3)

1. Rostovskiy-na-Donu institut sel'skokhozyaystvennogo mashinostroyeniya.

ZOLOTYKH, V.T., kand. tekhn. nauk; ZHAK, S.V., kand. fiz.-matem. nauk; GUFAN, R.M., inzh.; BELOUSOV, Yu.G., inzh.

Mechanism of striking the welding arc. Svar. proizv. no.2:4-6 F '65. (MIRA 18:3)

1. Rostovskiy-na-Donu institut sel'skokhozyaystvennogo mashinostroyeniya.

DUBASHINSKIY, M.M., inzh.; ZOLOTYKH, V.T., kand.tekhn.nauk

Conference of readers of "Svarochnoe Proizvodstvo" in Rostov-on-Don. Svar. proizv. no.6:43-44 Je '61. (MIRA 14:6)
(Welding--Congresses)

DYURGEROV, N.G., inzh.; ISHCHENKO, Yu.L., inzh.; ZOLOTYKH, V.T., kand. tekhn.nauk; SAPOV, P.M., inzh.; GRIGOR'YEV, G.G., inzh.; ZHIDKOV, A.I., inzh.; BARILOV, O.A., inzh.

Multiple-operator automatic welding under flux without ballast rheostats. Svar. proizv. no.4:40 Ap '63. (MIRA 16:5)

1. Rostovskiy-na-Donu institut sel'skokhozyaystvennogo mashinostroyeniya (for Dyurgerov, Ishchenko). 2. Rostovskiy zavod sel'skokhozyaystvennogo mashinostroyeniya (for Sapov, Barilov, Grigor'yev, Zhidkov).

(Electric welding--Equipment and supplies)

L 07429-67 EWP(k)/EWT(d)/EWP(h)/EWP(l)/EWP(v)
ACC NR: AP6030273 (N) SOURCE CODE: UR/0125/66/000/008/0050/0053 36 B

AUTHOR: Gufan, R. M.; Zolotykh, V. T.; Budnik, N. M.; Martinovich, V. V.; Gur'yev, K. S.; Sapov, P. M.; Barilov, O. A.; Fel'dman, B. Z.

ORG: [Gufan, Zolotykh, Budnik, Martinovich] Rostov-na-Donu Institute of Agricultural Machine Building (Rostovskiy-na-Donu institut sel'khozmashinostroyeniya); [Gur'yev] Taganrog Electrical Equipment Plant (Taganrogskiy zavod elektrotekhnicheskogo oborudovaniya); [Sapov, Barilov, Fel'dman] "Rostsel'mash" Plant (Zavod "Rostsel'mash")

TITLE: The ISO universal welding oscillator 14

SOURCE: Avtomaticheskaya svarka, no. 8, 1966, 50-53

TOPIC TAGS: welding, hf oscillator, spark ignition, automatic welding, WELDING EQUIPMENT COMPONENT

ABSTRACT: The authors describe the new ISO spark welding oscillator developed on the basis of an experimental investigation of the operation of various types of oscillators. This is a general-purpose unit, i. e. it may be used both as a series and as a parallel oscillator. The unit should be connected in series for welding currents which do not exceed the value given in the specifications and in parallel for higher currents. The hot side of the power line is fused and the unit has a line filter, step-up power transformer with limiting resistors, spark oscillator circuit, high-frequency output transformer and output capacitor. A schematic diagram and photographs

Card 1/2

UDC: 621.791.03:621.3.072

ZOLOTYKH, Ye.V.

Developing the basic formula for the viscosimeter with an inclined tube. Izm.tekh. no.4:44-48 Ap '62. (MIRA 15:4)
(Viscosimeter)

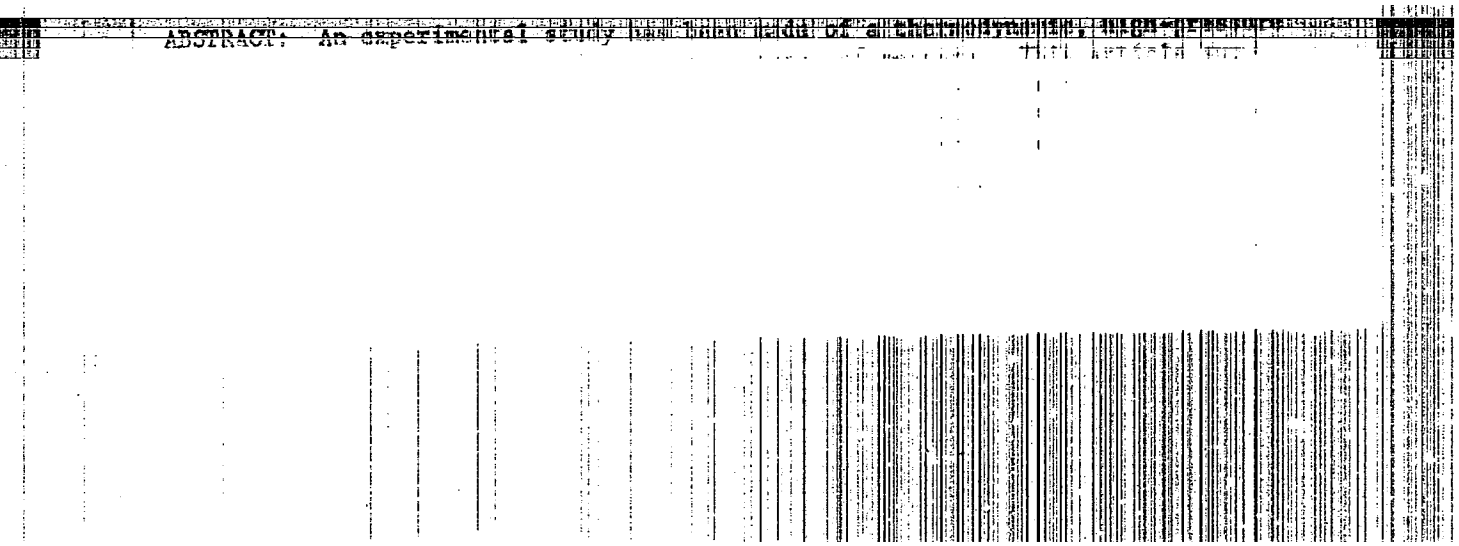
ZOLOTYKH, Ye.V.

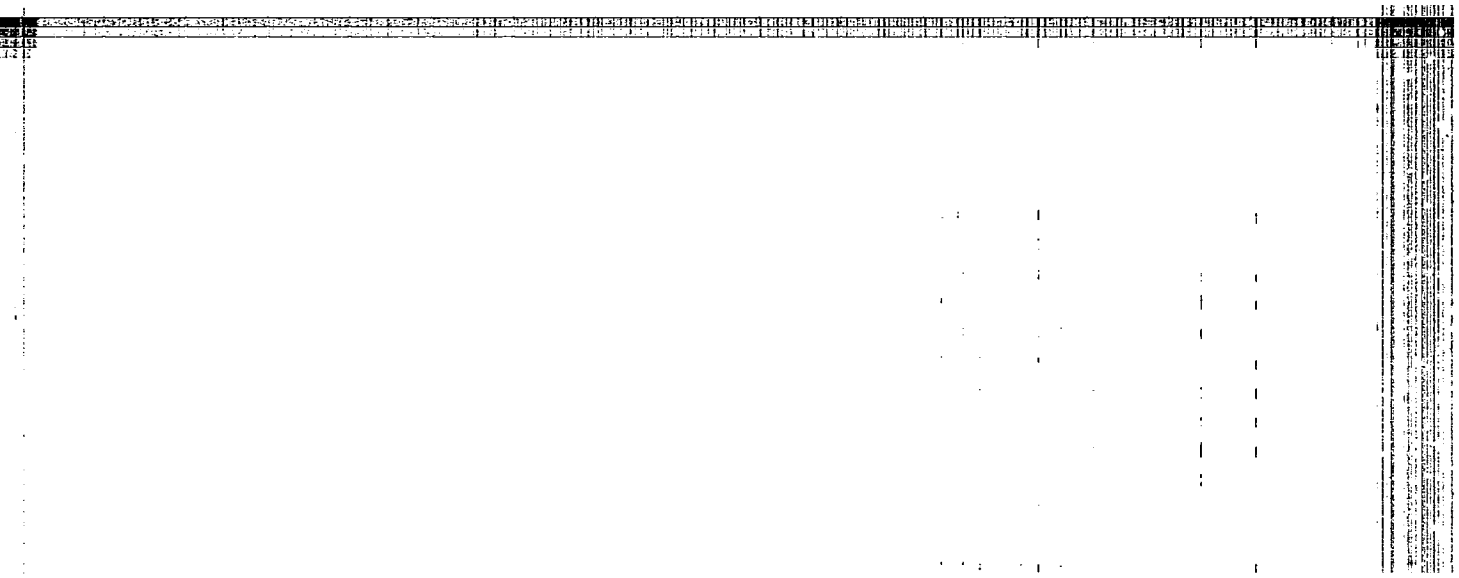
Theoretical and experimental investigation of viscosimeters with a falling and a rolling ball. Trudy inst.Kom.standartov mer i izmerit. no.75:93-110 '64.

Investigating the relationship between the viscosity of liquids and pressures up to 10,000 kgf/cm^2. Ibid.:123-131

(MIRA 18:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy.





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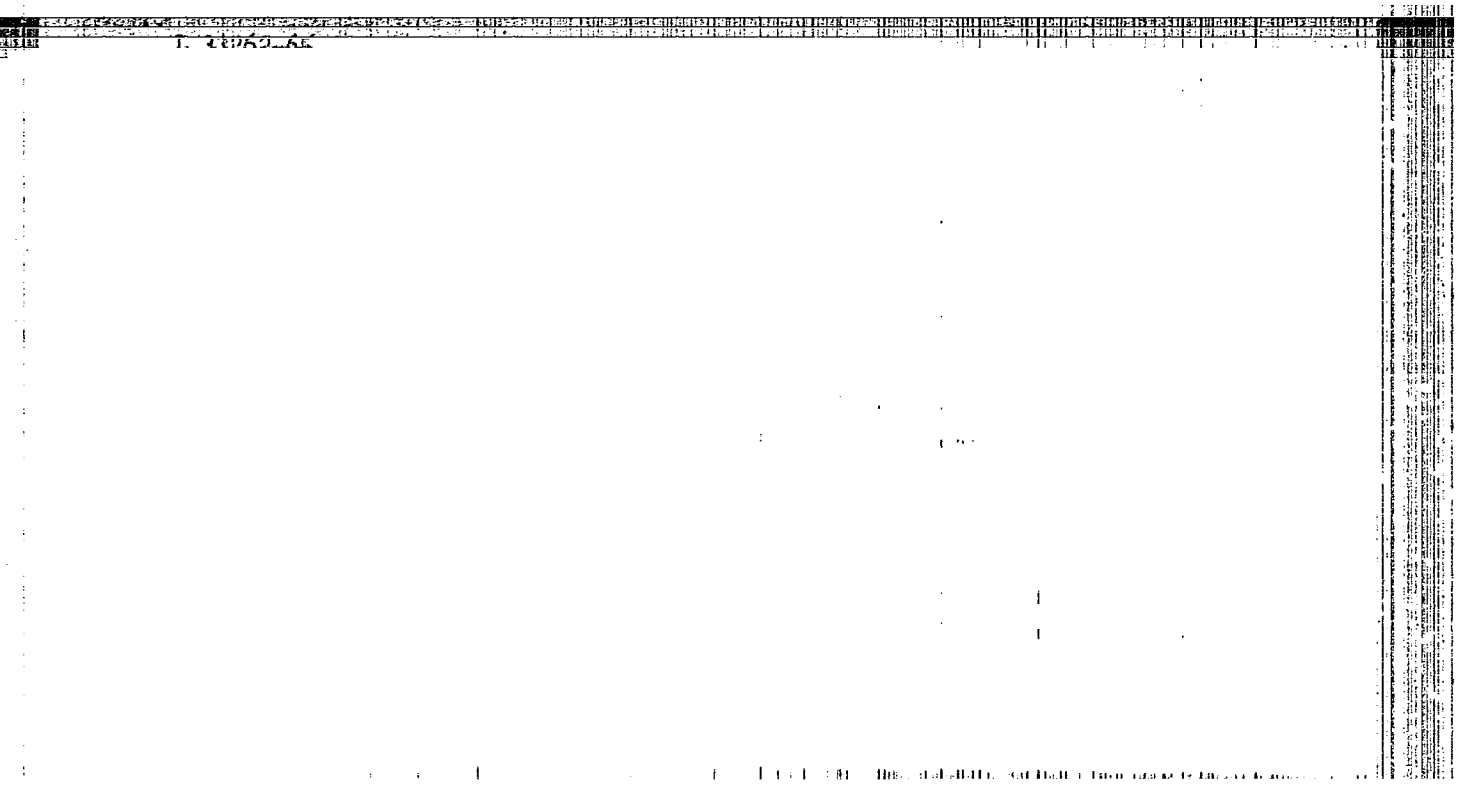

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ZOLOTYKH, Yu.V.; SEMIN, V.P.; KHOKHULYA, Yu.P.

Unit for measuring the viscosity of liquids at pressures up to 10,000 kgf/cm^2. Trudy inst.Kom.stand.mer i izm.prib. no.35:111-122 '64. (MIRA 18:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy.

ZOLOTYKH, Yevdokiya Vasil'yevna, kandidat tekhnicheskikh nauk; KOMAREV, M.I., kandidat khimicheskikh nauk, redaktor; UDAL'TSOV, A.N., glavnyy redaktor

[High pressure viscosimeter (up to 5000 kG/sm^2)] Viskozimetr vysokogo davleniia (do 5000 kG/sm^2). Tema 4, no. P-56-406. Moskva, Akademiia nauk SSSR, 1956. 9 p.
(Viscosimetry) (MLRA 10:3)

24 (8)

06181
SOV/115-59-11-9/36

AUTHORS: Zhokhovskiy, M.K., Razumikhin, V.N., Zolotykh, Ye.V., Burova, L.L.

TITLE: A Thermodynamic Scale of High Pressures up to 25,000 kg/cm^2

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 11, pp 26-29

ABSTRACT: This article is based on a previous publication of the aforementioned authors [Ref 1]. At that time the authors investigated the curve of melting mercury up to 20,000 kg/cm^2. They applied it for solving the problem of a high pressure scale. They confirmed experimentally that the extrapolation of the equation of the curve of melting mercury (on which the thermodynamic scale of pressure is base) is permissible up to 20,000 kg/cm^2 with an accuracy of 0.4-0.8%. In this article, the authors present the results of new investigations in a pressure range extended to 25,000 kg/cm^2. The equipment for the experimental determination of the phase equilibrium of mercury and the methods of determining

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A Thermodynamic Scale of High Pressures up to 25,000 kg/cm^2

the equilibrium pressures and temperatures in the new pressure range up to 25,000 kg/cm^2, remained the same as in [Ref 1]. The thermodynamic scale of pressures was extended to 25,000 kg/cm^2 with an accuracy of ± 0.5%. A group of reference resistance pressure gages was developed which reproduce the thermodynamic scale of pressures within the aforementioned limits and with the aforementioned accuracy. A device was developed which may be used for transferring the values of the pressure scale to any device of high pressure engineering. This device consists of manually and mechanically operated hydraulic pumps, pressure multiplicators to 6000 and 25,000 kg/cm^2 and the necessary valve system as shown in Fig 2. In the interval between 5000 and 25,000 kg/cm^2, any intermediate value may be produced. There are 1 diagram, 1 graph, 1 table, and 3 Soviet references.

ZOLOTYKH, Ye.Y.

24(0); 5(4); 6(2) PHASE I BOOK EXPLOITATION SOV/2215

Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii imeni D.I. Mendeleyeva

Referaty nauchno-issledovatel'skikh rabot; sbornik No.2 (Scientific Research Abstracts; Collection of Articles, Nr 2) Moscow, Standartgiz, 1958. 139 p. 1,000 copies printed.

Additional Sponsoring Agency: USSR. Komitet standartov, mer i izmeritel'nykh priborov.

Ed.: S. V. Reshetina; Tech. Ed.: N. A. Kondrat'yeva.

PURPOSE: These reports are intended for scientists, researchers, and engineers engaged in developing standards, measures, and gages for the various industries.

COVERAGE: The volume contains 123 reports on standards of measurement and control. The reports were prepared by scientists of institutes of the Komitet standartov, mer i izmeritel'nykh priborov pri Sovete Ministrov SSSR (Commission on Standards, Measures, and Measuring Instruments under the USSR Council of Ministers). The participating institutes are: VNIIM - Vsesoyuznyy nauchno-issledovatel'skiy metrologii imeni D.I. Mendeleyeva (All-Union Scientific Research Institute of Metrology imeni D.I. Mendeleyev) in Leningrad; Sverdlovsk branch of this institute; VNIIK - Vsesoyuznyy nauchno-issledovatel'skiy institut Komiteta standartov, mer i izmeritel'nykh priborov (All-Union Scientific Research Institute of the Commission on Standards, Measures, and Measuring Instruments), created from MGIMIP - Moskovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Moscow State Institute of Measures and Measuring Instruments) October 1, 1955; VNIIFTRI - Vsesoyuznyy nauchno-issledovatel'skiy institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy (All-Union Scientific Research Institute of Physicotechnical and Radio-engineering Measurements) in Moscow; KhGIMIP - Khar'kovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Khar'kov State Institute of Measures and Measuring Instruments); and NGIMIP - Novosibirskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Novosibirsk State Institute of Measures and Measuring Instruments). No personalities are mentioned. There are no references.

Card 14/27

ZOLOTYKH, Ye.V.; BUROVA, L.L.

Investigating some properties of manganin resistance manometers for measuring pressures up to 10,000 kg./ cm^2. Trudy inst. Kom. stan., mer i izm. prib. no. 46:62-67 '60. (MIRA 13:12)
(Manometer)

22227

S/124/61/000/003/019/028
A005/A105

11,1710

AUTHOR: Zolotykh, Ye. V.

TITLE: Investigation of the dependence of liquid viscosity on pressure up to 5,000 kgf/cm^2

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 3, 1961, 79, abstract 3B543 (Tr. in-tov Kom-ta standartov, mer i izmerit. priborov pri Sov. Min. SSSR, 1960, no. 46 (106), 81-95)

TEXT: Having briefly given characteristics of the methods of liquid viscosity measurement at high pressures, the author describes a viscometer intended for the measurement of viscosity at pressures up to 5,000 kgf/cm^2. The liquid viscosity in the viscometer was determined during the drop of a ball in a vertical pipe of 30 mm in diameter. The time of fall of the balls was visually determined through sight holes. The liquid pressure in the pipe was supplied from a press-pump. An investigation of the viscosity of various liquids in the viscometer and a comparison of the obtained data showed that the errors of the viscosity measurement did not exceed 5%. The Oseen-Fuxon formula is recommended for the calculation of the viscosity. The experimental dependences of viscosity

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