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(Chemistry, Analytical) (Pogodin, Sergei Aleksandrovich)
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Chemistry, Analytical

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[High-speed piston and turbine engines with compression ignition; theory, operation, and characteristics] Bystrokhodnye turboporšnevye dvigateli s vosplamenieniem ot szhatiia; teoriia, rabochii protsess i kharakteristiki. Moskva, Mashgiz, 1963. 638 p. (MIRA 16:7)
(Internal combustion engines)

SOV/124-58-4-4020

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 4, p48(USSR)

AUTHORS: Portnov, D. A., Pogodin, S. I.

TITLE: Comparative Evaluation of Methods for the Calculation of the Characteristics of Transport-type Gas-turbine Engines (Sravnitel'naya otsenka metodov rascheta kharakteristik transportnogo gazoturbinnogo dvigatelya)

PERIODICAL: Tr. N.-i. labor. dvigateley M-va transp. mashinostr. SSSR, 1957, Nr 3, pp 5-29

ABSTRACT: Formulas for computations are derived, and computations for two-spool transport-type gas-turbine engines are described for three cases: 1) When the characteristics of the compressor and turbines are available; 2) when turbine characteristics are not available, but compressor characteristics are available; and 3) when neither the turbine nor the compressor characteristics are available. For the cases Nrs 2 and 3 it is assumed that the turbine efficiency is a parabolic function of the ratio of the mean peripheral blade velocity to the gas velocity corresponding to adiabatic expansion in the turbine. Therein it is assumed that the flow of gas is independent of the turbine rpm.

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Comparative Evaluation of Methods (cont.) SOV/124-58-4-4020

Besides, for the third case it is assumed that the adiabatic work of the compressor is a function of the square of the compressor rpm. The following conclusion is made on the basis of the computations performed: For compressor speeds within 80 to 100% design rpm, and for power-turbine speeds within 60 to 80% of design rpm, all three of the methods produce fairly close results. For these conditions the engine power lies between 40 and 100% of the design value.

1. Gas turbines--Design 2. Compressors--Design A. I. Loshkarev
3. Mathematics

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AUTHOR: Pogodin, S.I. (Moscow)

TITLE: Combined Operation of a Gas Turbine and Free-Piston Gas Generator

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1960, Nr 3, pp 111-122 (USSR)

ABSTRACT: Operating experience of gas turbines combined with free piston gas generators shows that the range of variation of load is limited. Low outputs of power and gas can only be obtained if special control arrangements are made. This article presents a theoretical investigation of various methods of extending the range of combined operation with the object of determining the most favourable method. Under all operating conditions, the quantity and properties of the gas generated by the free-piston generator should correspond to the turbine nozzle conditions. The conditions of combined operation of turbine and generator may, to a first approximation, be written in the form of Eq (1.1), where G, T and p relate to the flow, temperature and pressure of the gas delivered to the turbine. A gas turbine connected to a

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generator of this type operates with a high level of gas expansion and, therefore, the referred coefficient of gas flow, given by Eq (1.1), changes relatively little when the turbine operating conditions are changed. The curves in Fig 1 show changes in gas flow and temperature as functions of pressure at the generator exhaust. The curves relate to various values of piston travel in a generator with low-pressure buffer. They show that the generator can operate together with the turbine only under certain definite conditions of gas pressure and piston travel. When the generator operates in conjunction with the gas turbine the possibilities of reducing the pressure and travel simultaneously are very limited. If the gas generator is working alone, it can operate down to the very lightest of loads. What is needed then is to modify the operation of either the generator or the turbine in such a way that they have a wider range of stable combined operation. This involves direct selection of the gas conditions in the turbine

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and generator and finding suitable methods of controlling the generator and turbine in power equipment. The selection of gas conditions for the turbine when it operates in conjunction with a free-piston gasifier is then considered. Curves of gas horse-power and specific fuel consumption are plotted as functions of gas pressure and piston stroke, as shown in Fig 2. The method of using these curves to determine the most favourable gas conditions for the turbine is then explained. In general, it may be stated that the greater the gas pressure at maximum output of gasifier and turbine, the more efficient the full-load operation, but the lower the efficiency at partial loads. Increasing the gas pressure at maximum output appreciably reduces the range of combined operation of gasifier and turbine. Special features of gas-turbine performance in locomotive service are briefly discussed. The main factors that influence the range of combined operation of gasifier and turbine are then enumerated. The permissible range of loading is characterized by two factors: the relative

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output expressed as a proportion of the rated output; the relative gas pressure at which this output is achieved. Obviously the lower the permissible gas flow, temperature and pressure, the lower the load at which the turbine may be operated. The least possible quantity of gas that can be delivered to the gasifier is given by Eq (3.1). Other expressions are derived to show that the range of loading of the set is influenced by the following factors: the gasifier circuit; the gasifier geometry under rated conditions, particularly in respect of compressor characteristics and piston travel; operating data such as compression ratios, gas temperatures, pressure drops in valves and the like; the minimum travel of the gasifier piston; variations in compressor efficiency under different operating conditions; the method of controlling the gasifier, particularly by alteration in compression ratio and by diverting air from the receiver to the back-pressure or gasifier exhaust. Of these, the gasifier circuit used is most important and the merits of the various kinds are discussed. The

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compressor design is also important. Changes in efficiency of the turbine and compressor under different conditions are of secondary importance. If air is by-passed from the receiver to the turbine, there is, as will be seen from the performance curves of Fig 5, some improvement in gasifier efficiency at part-load but little change in the permissible loading range. The results given in Fig 6 show that a reduction of the compression ratio at part-load appreciably extends the range of combined operation of gasifier and turbine. However, if the turbine inlet pressure is reduced too far, operation may be unstable. The widest possible range of load is best obtained by using gasifiers with high-pressure buffers compressing air during the working stroke of the piston. If a low-pressure buffer system is used and the air is compressed on the return stroke, the load range is much less, particularly if the gasifier piston travel cannot be altered much. Therefore, in gasifiers with low-pressure buffers, special measures are

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required to extend the range of operation with a turbine. In order to extend the working range of the set, it is necessary either to alter the characteristics of the gasifier, by reducing the quantity of air delivered by the compressor at partial load, or to alter the turbine characteristics so that at light loads the turbine can operate with an extra high discharge factor. The quantity of gas delivered to the turbine may be reduced by discharging excess gas to atmosphere, by throttling the air intake to the piston compressor or by by-passing air from the receiver to the compressor inlet. The turbine characteristics can be adjusted by control of the nozzles. These various methods are then considered in more detail. The method of discharging gas to air is, as will be seen from the curves of Fig 7, the simplest but least efficient. By throttling the air at the intake to the piston compressor the range of load may be appreciably extended, as will be seen from the curves of Fig 8, but the efficiency still falls off somewhat. In recent years, gasifiers with low-pressure

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buffers and air compression during the return stroke have used the third method of governing. At part loads, excess air from the receiver is delivered not to the turbine but to the inlet system of the piston compressor. This raises the temperature at the compressor inlet and so the amount of air delivered to the gasifier is reduced. The total result is that the region of stable operation of the gasifier is displaced towards lighter loads as indicated in Fig 10. Although there is some reduction in efficiency it is not serious. This method of control can be combined with reduction in compression ratio at partial loads. Nozzle control of the turbine is a very effective method of controlling the set. Compared with methods of control that act only on the gasifier, it improves the efficiency at partial loads and, in addition, makes for greater reliability of the turbine at partial loads. In general, the best results are obtained by methods based on alterations of compressor performance and turbine nozzle control, though these methods are mechanically the most complicated. Of the simpler methods,

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that of throttling the air-compressor intake and also passing air from the receiver to the gasifier intake with simultaneous reduction in compression ratio of the turbine are worth attention. In stations with a number of gasifiers, the problem of operation at light loads may be simplified by shutting down individual gasifiers; performance curves for this case are given in Fig 11. It is concluded that many of the limitations on the loading range of gasifier-turbine sets may be relaxed by appropriate application of the methods described. There are 11 figures and 4 references, 3 of which are English and 1 Soviet.

SUBMITTED: March 18, 1959

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POGODIN, S.I., kand.tekhn.nauk

"Free-piston gas producers" by P.A. Shelest. Reviewed by S.I. Pogodin. Vest.mash. 41 no.11:88-90 N '61. (MIRA 14:11)
(Gas producers)
(Shelest, P.A.)

ILYAKHOV, Konstantin Stepanovich, inzh.; CHENTSOV, Konstantin Petrovich, inzh.; SVIRIDOV, A.A., retsenzent; POGODIN, S.M., retsenzent; BARAKIN, A.P., red.; MAKRUSHINA, A.N., red.izd-va; RIDNAYA, I.V., tekhn. red.

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(Inland water transportation—Handbooks, manuals, etc.)

L 7655-66 EWT(d)/EWP(c)/EWP(v)/T/EWP(k)/EWP(h)/EWP(l)/ETC(m) WW
ACC NR: AP5025045 SOURCE CODE: UR/0286/65/000/016/0087/0087

AUTHORS: Borshchenko, Ye. I.; Kotenko, G. I.; Pogodin, V. I.

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B

ORG: none

TITLE: Method for contactless measurement of the roughness of a conducting surface and a device for its accomplishment. Class 42, No. 173959

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 16, 1965, 87

TOPIC TAGS: magnetic circuit, metal surface, Hall generator, galvanometer, galvanometry, magnetic field

ABSTRACT: This Author Certificate presents a method for contactless measurement of the roughness of a conducting surface according to the total magnetic flux passing through a galvanomagnetic detector. To increase the sensitivity of the integral measurement, an electric current is passed through the part. The magnetic field of the current interacts with the magnetic field of the detector, and the monitored parameter is determined according to the resulting value of the Hall emf. The device for measuring the roughness of a conducting surface, including small linear displacements of the surface, contains a magnetic circuit with a ferrite junction placed in the gap and a galvanomagnetic detector (see Fig. 1).

Card 1/3 UDC: 531.717.8:621.3

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ACC NR: AP5025045

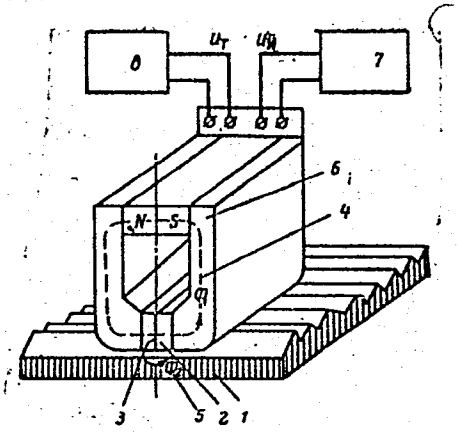


Fig. 1. 1- investigated part; 2- ferrite backings; 3- Hall emf detector; 4- magnetic rod determining initial value of Hall emf; 5- magnetic flux determining surface roughness; 6- magnetic circuit of device; 7- recording device; 8- supply source of Hall detector

To increase the sensitivity, the ferrite junction is in the form of flat backings, between which the galvanomagnetic detector is mounted. The magnetic

Card 2/3

L 7655-66

ACC NR: AP5025045

permeability of the ferrite backings is less than that of the magnetic circuit and the part material. Orig. art. has: 1 diagram.

SUB CODE: 14,20/ SUBM DATE: 29Apr63

Card 3/3

SUKHANOV, S.; PETROVA, I.V.; POGODIN, V.I.; GERLOVIN, I.L.

Current-sensitive reproducing heads on slender Hall transducers made from indium antimonide. Izv. AN Turk. SSR. Ser. fiz.-tekh., khim. i geol. nauk no.6:97-99 '64. (MIRA 18:4)

1. Fiziko-tekhnicheskiy institut AN Turkmenskoy SSR.

L 34912-65 EWT(m)/EWP(t)/EWP(b) IJP(c) RH/JD

ACCESSION NR: AP5004992 S/0202/64/000/006/0097/0099

AUTHORS: Sukhanov, S.; Petrova, I. V.; Pogodin, V. I.; Gerlovin, I. L.

TITLE: Flux-sensitive pickup heads using thin Hall pickups of indium antimonide

SOURCE: AN TurkmSSR. Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 6, 1964, 97-99

TOPIC TAGS: indium antimonide, Hall pickup, magnetic recording, pickup head

ABSTRACT: The article describes some results of experimental investigations of flux-sensitive playback heads with Hall-effect pickups. The experimental investigations were made for the purpose of improving their sensitivity and resolution, as compared with the pickups proposed by other authors. It is shown first that the best semiconduc-

Card 1/4

tor material for Hall pickups is one with maximum product of Hall constant and electron mobility. This has led to the choice of single-crystal InSb, which also has a low noise level. The construction of the magnetic heads and of the Hall pickup is shown in Fig. 1 of the Enclosure. An optimal shape for the pickup head is described. It is shown that the best pickup is one in which the maximum field is picked off the magnetic tape by using as thin a semiconductor as possible, secured between ferrite plates which concentrate the magnetic field. A reading gap of 2--3 microns can be obtained, with a sensitivity up to 500 microvolts at a recording level of 200 millimaxwell. The Hall pickup was specially shaped to facilitate connection of the leads. Orig. art. has: 3 figures, 3 formulas, and 1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN Turkmenskoy SSR (Physicotechnical Institute, Academy of Sciences, Turkmenian SSR)

L 34912-65
ACCESSION NR: AP5004992

SUBMITTED: 10Sep64 ENCL: 01 SUB CODE: EM, SS

NR REF SOV: 001 OTHER: 002

Card 3/4

L 34912-65

ACCESSION NR: AP5004992

ENCLOSURE: 01

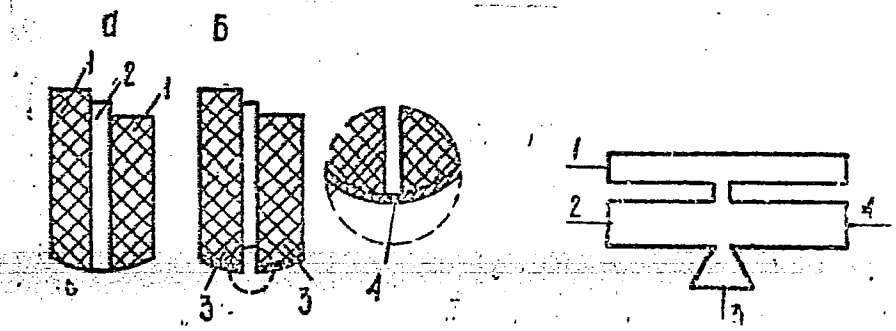


Fig. 1. Construction of the magnetic heads and of the Hall pickup.

Left - magnetic head variants: 1 - magnet, 2 - Hall pickup, 3 - polepiece, 4 - reading gap

Right - shape of Hall pickup: 1, 3 - Hall electrodes, 2,4 - current electrodes

Card 4/4

L 00811-66 EWT(1)/EWA(h) ESD

ACCESSION NR: AP5015912 UR/0103/65/026/006/1112/1114
621.373.9:538.63

AUTHOR: Bogomolov, V. N. (Leningrad); Geravzade, A. P. (Leningrad); Pogodin, V. I. (Leningrad); Fomenko, Ye. P. (Leningrad)

TITLE: Galvanomagnetic oscillator

SOURCE: Avtomatika i telemekhanika, v. 26, no. 6, 1965, 1112-1114

TOPIC TAGS: galvanomagnetic oscillator

ABSTRACT: An experimental galvanomagnetic oscillator with an InSb magnetoresistor is briefly described. The oscillator developed 4.4 w continuously or 10 w for a short time at 28 cps and water cooling (was immersed in water); the efficiency was 15% at 10 w. It is pointed out that the existing theory correctly describes the actual oscillator behavior: the discrepancy between the theoretical and experimental oscillatory currents is only 10%. A method of measuring the oscillator characteristics is given. Orig. art. has: 3 figures, 3 formulas, and 1 table.

ASSOCIATION: none

SUBMITTED: 22Feb64 ENCL: 00 SUB CODE: EC

Card 1/1 NO REF SOV: 002 OTHER: 001

S/081/61/000/020/051/089
B107/B101

18.8300

AUTHORS: Sarkisov, E. S., Sentyurev, V. P., Pogodin, V. P.

TITLE: Intercrystalline corrosion of 0X18H9T (OKh18N9T) steel in water at high temperatures

PERIODICAL: Referatiwnyy zhurnal. Khimiya, no. 20, 1961, 260, abstract 20I156 (Sb. "Korroziya reaktorn. materialov". M., Atomizdat, 1960, 145 - 148)

TEXT: The standard method (AM(AM) method, ГОСТ 6032-50 (GOST 6032-50)) for testing the tendency of steels to form intercrystalline corrosion is suitable in water at high temperatures of 300 - 350°C. The method AM ГОСТ 6032-58 (AM GOST 6032-58) yielded negative results when testing 0X18H9T (OKh18N9T) steel for intercrystalline corrosion in water at pH 3.2 - 7.0, 360°C, and 200 atm during 4000 hr. [Abstracter's note: Complete translation.]

Card 1/1

POGODIN, V P.

36

PHASE I BOOK EXPLOITATION SOV/5256

Gerasimov, Valentin Vladimirovich, ed., Candidate of Chemical Sciences.

Korroziya reaktornykh materialov; sbornik statey (Corrosion of Nuclear-Reactor Materials; a Collection of Articles) Moscow, Atomizdat, 1960. 284 p. 3,700 copies printed.

Ed.: A.I. Zavodchikova; Tech. Ed.: Ye.I. Mazel'.

PURPOSE: This collection of articles is intended for mechanical and metallurgical engineers as well as for scientific research workers concerned with the construction of nuclear reactors.

COVERAGE: The water corrosion of various types of stainless steel and alloys under high pressures and temperatures is investigated from the point of view of the use of these materials for the construction of nuclear reactors. Attention is given to the following: the use of oxygen for protecting steel against corrosion, the behavior of steel in high-temperature

Card 1/8

Corrosion of Nuclear- (Cont.)

water with various compositions, factors of metal stress corrosion, intergranular corrosion, the mechanism of corrosion cracking, and the corrosion resistance of aluminum and zirconium alloys. Conclusions based on test results are included. No personalities are mentioned. Most of the articles are accompanied by references. Of 238 references 97 are Soviet.

TABLE OF CONTENTS:

IKONNIKOV,VV., prof. Prinimali uchastiye: GUSAKOV, A.D., prof.; SHENGER, Yu.Ye., prof.; BATYREV, V.M., doktor ekon. nauk; KAZANTSEV, A.I., dots.; BUZYREV, V.M., prof.; BYSTROV, F.P., prof.; NADEZHDINA, A., red.; POGODIN, Yu., red.; TELEGINA, T., tekhn. red.

[Monetary circulation and credit in the U.S.S.R.]Denezhnoe obrashchenie i kredit SSSR. Kollektiv avtorov pod rukovodstvom V.Ikonnikova. Moskva, Gosfinizdat, 1962. 470 p. (MIRA 16:1)
(Money) (Credit)

SITARYAN, Stepan Aramaisovich, kand. ekon. nauk; KOSYACHENKO, G.I., prof., otv. red.; POGODIN, Yu., red.; KHMELINKA, Ye., red.

[Net income and budget; distribution of the net income of the national economy and its flow into the budget of the U.S.S.R.] Chistyi dokhod i biudzhet; voprosy raspredeleniia chistogo dokhoda gosudarstvennogo khoziaistva i ego mobilizatsii v biudzhet SSSR. Moskva, Finansy, 1964. 259 p. (MIRA 18:1)

KALAMKAROV, Kh. A., kand. med. nauk; POGODIN, V. S., assistent

Taking impressions from edentulous jaws and determining centric occlusion in one visit. Trudy KGMI no.2:191-195 '60. (MIRA 15:7)

1. Iz kafedry ortopedicheskoy stomatologii - zav. kafedroy dotsent M. A. Solomonov.

(DENTAL PROSTHESIS)

POGODIN, V.S., assistent

Changes in the rhythm of the cardiac activity during the preparation of teeth for crowns. Trudy KGMI no.10:432-440 '63. (MIRA 18:1)

1. Iz kafedry ortopedicheskoy stomatologii (zav. kafedroy - prof. Ye.I.Gavrilov) Kalininskogo gosudarstvennogo meditsinskogo instituta.

KALAMKAROV, Kh. A., kand. med. nauk; POGODIN, V. S., assistent

Effectiveness of applying prosthesis to edentulous jaws while taking impressions by Vainshtein's method. Trudy KGMI no.2: 182-190 '60. (MIRA 15:7)

1. Iz kafedry ortopedicheskoy stomatologii - zav. kafedroy dotsent M. A. Solomonov.

(DENTAL PROSTHESIS)

MITEL'MAN, Yefim Lazarevich; FOGODIN, Yu., red.; LUGROVA, L., red.

[Financing and credit in industry] Finansirovanie i kreditovanie promyshlennosti. Moskva, Izd-vo "Finansy" 1964. 359 p. (MIRA 17:8)

AFANAS'YEV, Anatoliy Aleksandrovich; BYSTROV, F.P., doktor ekonom. nauk, prof., otv. red.; POGODIN, Yu., red.; LEBEDEV, L., tekhn. red.

[The gold mining industry of capitalist countries; an economic survey]Zolotodobyvaiushchaia promyshlennost' kapitalisticheskikh stran; ekonomicheskii obzor. Moskva, Gosfinizdat, 1963. 61 p. (MIRA 16:3)

(Gold mines and mining)

VINOKUR, S.I.; MOGILEVICH, A.V.; SVOYKIN, S.V.; BURMISTROV, D.V.; KOSAREVA, Z.D.; BABUSHKIN, V.I., red.; POGODIN, Yu., red.; TELEGINA, T., tekhn.red.

[Handbook for tax workers] Spravochnik nalogovogo rabotnika. Moskva, Gosfinizdat, 1958. 367 p. (MIRA 12:6)
(Taxation)

RYAUZOV, Nikolay Nikolayevich, prof.; TERTUS, Andrey Fomich; POGODIN, Yu., red.; TELEGINA, T., tekhn. red.

[Bank statistics] Bankovskaia statistika. Izd.2., perer. i dop. Moskva, Gosfinizdat, 1961. 235 p. (MIRA 14:11)
(Banks and banking—Statistics)

IKONNIKOV, V.V., prof.; VASIL'YEV, P.G., ,and, ekon.nauk; LAVROV, V.V., prof.; RYUMIN, S.M.; KOLYCHEV, L.I., kand. ekon. nauk; SAMOYLOV, V.K.; LYSKOVICH, A.A.; KOLOMIN, Ye.V., kand. ekon. nauk; MITEL'MAN, Ye.L., kand. ekon. nauk; BEL'KINA, R.K., kand. ekon. nauk; SHTEYNSHLEYGER, S.B., kand. ekon. nauk; ROTLEYDER, A.Ya., kand. ekon. nauk; POGODIN, Yu., red.; TELEGINA, T., tekhn. red.

[Finance and credit in the U.S.S.R.] Finansy i kredit SSSR. Moskva, Izd-vo "Finansy," 1964. 447 p. (MIRA 17:3)

LOGACHEV, N.A., red.; MINEYEV, I.K., red.; ODINTSOV, M.M., red.; POGODIN, Yu.V., red.; TARNOVSKIY, G.N., red.; TUMOL'SKIY, L.M., red.; PERLOVICH, B.F., red.; KARAS', V.D., tekhn. red.

[Summaries of the reports of the Conference on Mineral Resources and the Geology of the Siberian Platform]Tezisy dokladov Soveshchaniia po geologicheskomu stroeniiu i mineral'nym resursam Sibirskoi platformy. Irkutsk, Akad. nauk SSSR, Sibirskoe otd-nie. No.4. 1960. 138 p. (MIRA 15:11)

1. Soveshchaniye po geologicheskomu stroyeniyu i mineral'nym resursam Sibirskoy platformy.
(Siberian Platform--Geology)
(Siberian Platform--Mines and mineral resources)

POGODIN, Yu.V.

Regularities in the location of copper mineralization in the southern Siberian Platform. Zakonom. razm. polezn. iskop. 5:408-414 '62.
(MIRA 15:12)

1. Vostochno-Sibirskiy geologicheskiy institut Sibirskogo otdeleniya AN SSSR.
(Siberian Platform--Copper ores)

15-57-5-6515

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 5, p 114 (USSR)

AUTHOR: Pogodin, Yu. V.

TITLE: Problems on the Origin of the Lead-Zinc Deposits of Podkamennaya Tunguska (Voprosy genezisa polimetallicheskikh mestorozhdeniy Podkamennoy Tunguski)

PERIODICAL: Sov. geologiya, 1956, sb. Nr 50, pp 3-11

ABSTRACT: The author has studied a number of lead-zinc deposits in the basin of the Podkamennaya Tunguska River. Two hypotheses exist on the origin of these deposits: sedimentary and hydrothermal. The author cites and compares the factors favoring both the first and the second hypotheses. In this discussion he notes a divergence of opinion relative to the association of mineralization and magmatism among the adherents of the hydrothermal theory. He examines the problems of

Card 1/2

40-22-2-6/21

AUTHOR: ~~Pogodin, Yu.Ya.~~, Suchkov, V.A., and Yanenko, N.N. (Chelyabinsk)

TITLE: On Running Waves in the Equation of Gas Dynamics (O begushchikh volnakh uravneniy gazovoy dinamiki)

PERIODICAL: Prikladnaya matematika i mekhanika, 1958, Vol 22, Nr 2, pp 188-196 (USSR)

ABSTRACT: The authors investigate running waves in quasilinear differential equations of the type

$$A_{ijk}(u_1,\ldots,u_m)\frac{\partial u_j}{\partial x_k} = 0 \qquad (i,j,k, = 1,\ldots,m)$$

They denote a running wave to be of rank r, if it satisfies m - r functional dependences of the form

$$\varphi_\alpha(u_1,\ldots, u_m) = 0 \qquad (\alpha = 1,\ldots, m - r)$$

In a former paper there were investigated running waves of the rank 1 . In the present paper now waves of the rank m - 1 are investigated. A method for finding such waves is given and applied to gasdynamical problems. It can be shown that the

Card 1/2

On Running Waves in the Equation of Gas Dynamics 40-22-2-6/21

gasdynamical equations possess the given form for polytropic gases. Running waves for plane motions of rank 2 for poly - tropic gases are particularly investigated and the solutions are discussed. Several practical examples of application are calculated in the last section. E.g. the motion of a gas between two plane walls, the motion of isothermal gases, and motions in which strong discontinuities occur.
There are 5 figures, and 1 Soviet reference.

SUBMITTED: October 8, 1957

1. Gases--Properties 2. Wave analysis--Applications

Card 2/2

20-119-3-11/65

AUTHOR: Pogodin, Yu.Ya., Suchkov, V.A. and Yanenko, N.N.

TITLE: On Progressive Waves of the Equations of Gas Dynamics (O begushchikh volnakh uravneniy gazovoy dinamiki)

PERIODICAL: Doklady Akademii Nauk, 1958, Vol 119, Nr 3, pp 443-445 (USSR)

ABSTRACT: As a progressive wave of rank r the solution $u_i = u_i(x_1,..,x_m)$ of the quasilinear system

$$a_{ijk}(u_1,...,k_m)\frac{\partial u_i}{\partial x_k} = 0 \qquad i,j,k = 1,...,m$$

is denoted which satisfies m - r functional relations $\varphi_\alpha(u_1,...,u_m) = 0$, $\alpha = 1,..., m-r$. In the example of the equations of motion of a polytropic gas the progressive waves of rank 2 are considered in the adiabatic case.
Theorem: If $\varphi(u_1, u_2)$ satisfies the equation

$$(1)\left[(\gamma-1)\rho-\varphi_2^2\right](\varphi_{11}+1)+2\varphi_1\varphi_2\varphi_{12}+\left[(\gamma-1)\rho-\varphi_1^2\right](\varphi_{22}+1) = 0$$

where γ is the exponent of the adiabatic curve, then the progressive wave depends on two arbitrary functions of one ar-

Card 1/2

On Progressive Waves of the Equations of Gas Dynamics

gument.

Theorem: If $\varphi = C_0 + C_1 u_1 + C_2 u_2 - \frac{u_1^2 + u_2^2}{2}$, then all flows are conic. For other solutions φ of (1) in general they are not conic, however, to each solution φ there corresponds a certain solution of a transformed initial equation which describes a conic flow.

These theoretical results are used for the solution of the problem of two plane pistons. There is 1 Soviet reference.

PRESENTED: September 21, 1957, by A.D. Sakharov, Academician

SUBMITTED: November 21, 1957

66158

SOV/20-128-5-10/67

~~16(1)~~ 16.3500, 16.3900, 16.6500

AUTHORS: Yanenko, N.N., Suchkov, V.A., Pogodin, Yu.Ya.

TITLE: Difference Solution of the Thermal Conductivity Equation in Curvilinear Coordinates

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 5, pp 903-905 (USSR)

ABSTRACT: In the domain $D(0 \leqslant x_i \leqslant 1)$ with the boundary Γ the authors solve the mixed Cauchy problem

$$(1) \quad \frac{\partial u}{\partial t} = \sum_{i,j=1}^{2} a_{ij} \frac{\partial^2 u}{\partial x_i \partial x_j} \equiv Lu, \quad a_{11}a_{22} - a_{12}^2 > 0, \quad a_{ij} = \text{const}$$

$$(2) \quad u(x_1, x_2, 0) = \varphi(x_1, x_2) \qquad x_i \in D$$

$$u|_{\Gamma} = f(x,t), \quad 0 \leqslant t \leqslant T, \quad x \in \Gamma$$

They apply the scheme

$$(5) \quad \frac{u^{n+\frac{1}{2}} - u^n}{\tau} = \Lambda_{11} u^{n+\frac{1}{2}} + \Lambda_{12} u^n$$

Card 1/3

Difference Solution of the Thermal Conductivity Equation in Curvilinear Coordinates

$$(5)\quad \frac{u^{n+1}-u^{n+1/2}}{\tau} = \Lambda_{12}u^{n+1/2} + \Lambda_{22}u^{n+1},$$

where

$$\Lambda_{11}=a_{11}\frac{\Delta_1\Delta_{-1}}{h_1^2},\quad \Lambda_{12}=a_{12}\frac{(\Delta_1+\Delta_{-1})(\Delta_2+\Delta_{-2})}{4h_1h_2},\quad \Lambda_{22}=a_{22}\frac{\Delta_2\Delta_{-2}}{h_2^2}$$

$$(3)\quad \Delta_i = T_i - E,\quad \Delta_{-i} = E - T_{-i},\quad i=1,2$$

$$T_{\pm 1}u = u(x_1 \pm h_1, x_2),\quad T_{\pm 2}u = u(x_1, x_2 \pm h_2).$$

The scheme approximates (1), is spectrally stable and converges. The scheme can be used for the calculation of the equation of heat conductivity in Lagrange coordinates.

Card 2/3

66158

SOV/20-128-5-10/67

Difference Solution of the Thermal Conductivity Equation in Curvilinear Coordinates

There are 2 references, 1 of which is Soviet, and 1 American.

PRESENTED: June 6, 1959, by N.N.Bogolyubov, Academician

SUBMITTED: March 7, 1959

4

Card 3/3

L 10703-67 EWT(d)/EWT(m)/EWP(v)/EWP(t)/ETI/EWP(k)/EWP(h)/EWT(l) IJP(c) JD/DJ
ACC NR: AP6027580 (A,N) SOURCE CODE: UR/0403/66/000/006/0013/0016

AUTHOR: Porodin-Alekseyev, G. (Doctor of technical sciences, Meritorious in science and technology of the RSFSR); Mezhuyev, B. (Candidate of technical sciences); Muslimov, I. (Engineer)

ORG: None

TITLE: Electrochemical machining of materials

SOURCE: VDNKH SSSR. Informatsionnyy byulleten', no. 6, 1966, 13-16

TOPIC TAGS: electrochemistry, eletrolysis, SHAPING MACHINE, machine tool / AGE-2 shaping machine, EKhO-1 shaping machine, 7972-4014 shaping machine, BLUZ-14 shaping machine, BLUZ-3 shaping machine

ABSTRACT: Seven various electrolytic devices used for material shaping and forming operations are described and illustrated. The first device designed by the Lublin Branch of ENIMS is used for obtaining cono- or wedge-shaped articles by means of moving the workpiece (anode) in a cylinder (cathode) filled with a 15-pct salt solution (electrolyte). The process is described including data on article sizes, tolerances, electrode gaps, productivity, etc. The second apparatus is a machine tool of a semi-automatic AGE-2 type used for more complicated shaping operations. It is based on the principle of anodic dissolution of metals in a 7 to 10-pct salt solution at small inter-electrode gaps. It is provided with an electronic control system. Its production capacity is 7000 cu mm/min, requiring a power of 60 kw. The third device of semi-automatic EKhO-1 type is used for profile blade milling by means of straight moving electrodes of a mirror-image profile.

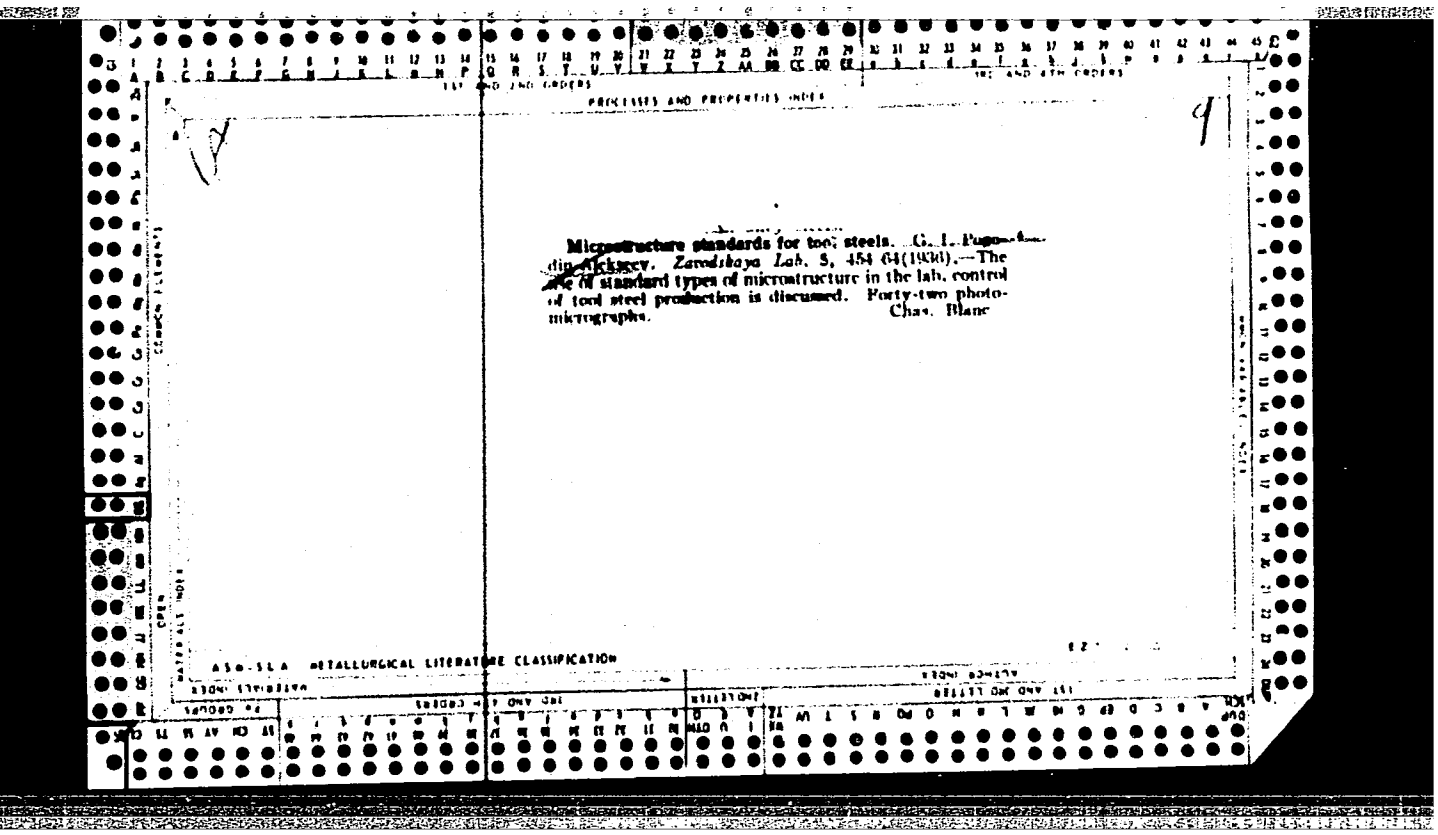
Card 1/2

ACC NR: AP6027580

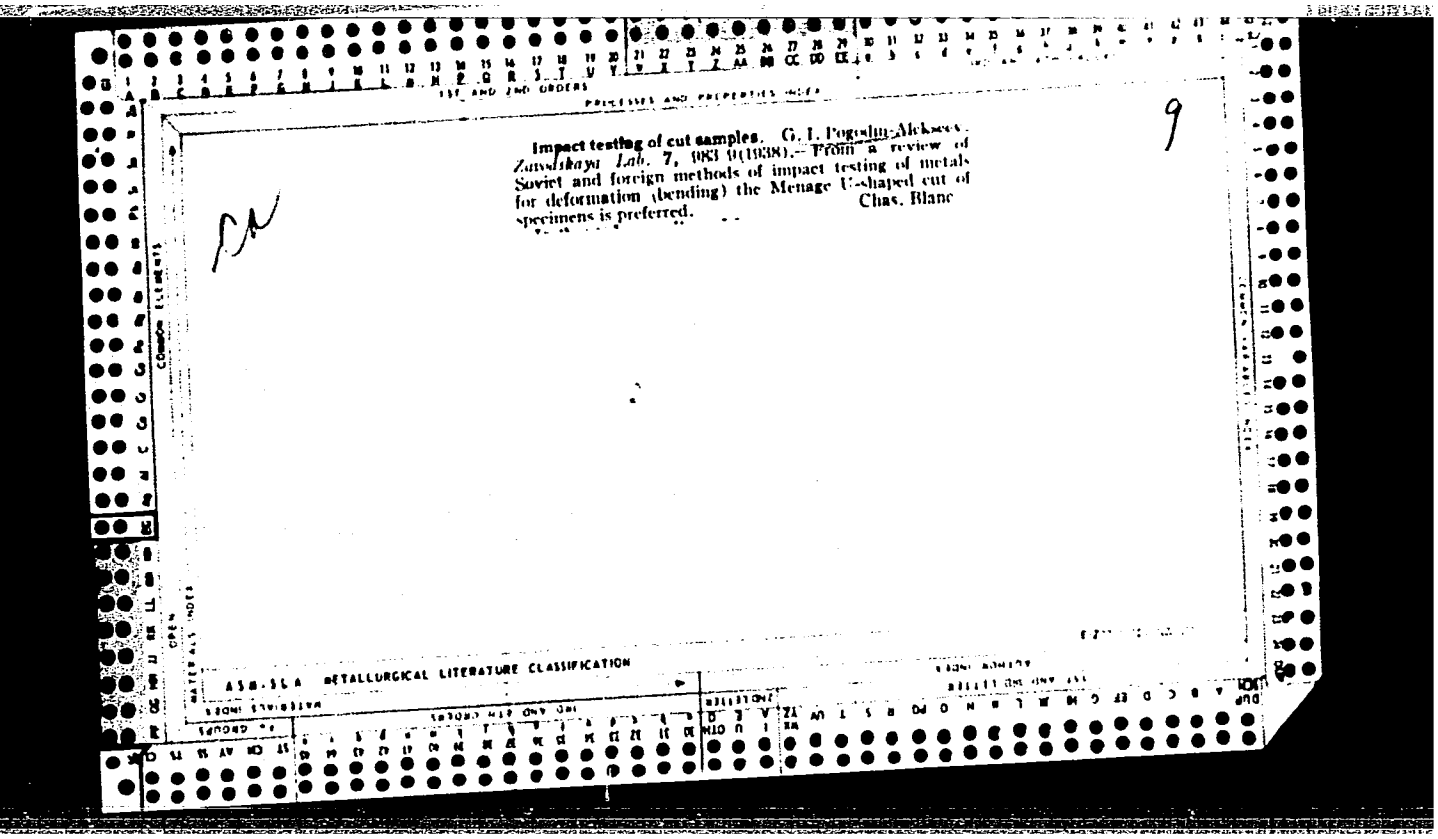
A 10-pct salt solution is used as electrolyte. The fourth description covers an electrochemical machine-tool of 7972-4014 type designed by the Noginsk Heating Equipment Plant. It is used for shaping holes of fuel pump drive fittings in a 6 to 10-pct salt solution. Its production is 40 cu mm/min. Its 990 x 580 x 980 mm casing is made of plastic materials. Its weight is 400 kg. The fifth described machine-tool of BLUZ-14 type designed by the ultrasonic laboratory of the Minsk Tractor Plant is used for removing various surface defects caused by heat treatment of pinion gears and other similar articles. A method of anodic dissolution in a running water-salt elecrolyte (10 to 20%) is applied. A d-c power supply of 15 kw, 10 to 15 v, 250-300 amp is needed. The overall size is 900 x 650 x 1100 mm. The sixth devico of an ultrasonic BLUZ-3 type is used for removing barbs from pinion gears by means of electrolytic jets (10 to 20-pct salt solution). It is fed from a d-c source of 500 amp and 20 to 40 v. Its size is 1240 x 600 x 1000 mm. The seventh item mentioned in the text covers the description of an electrochemical honing grinding machine used for polishing ductile metal alloys. A cross-section of the machine equipped with an electrolyte bath is presented. The operation of the machine is generally described. Orig. art. has: 6 photos, 1 diagram.

SUB CODE: 13/ SUBM DATE: None

Card 2/2 4/0



Microstructure standards for tool steels. G. I. Pugo-[illegible]din and Nikiforov. *Zavodskaya Lab.* 5, 454-64(1936).—The use of standard types of microstructure in the lab. control of tool steel production is discussed. Forty-two photomicrographs.
Chas. Blanc



Impact testing of cut samples. G. L. Pogodin-Alekseev. *Zavodskaya Lab.* 7, 983-9(1938).—From a review of Soviet and foreign methods of impact testing of metals for deformation (bending) the Menage U-shaped cut of specimens is preferred. Chas. Blanc

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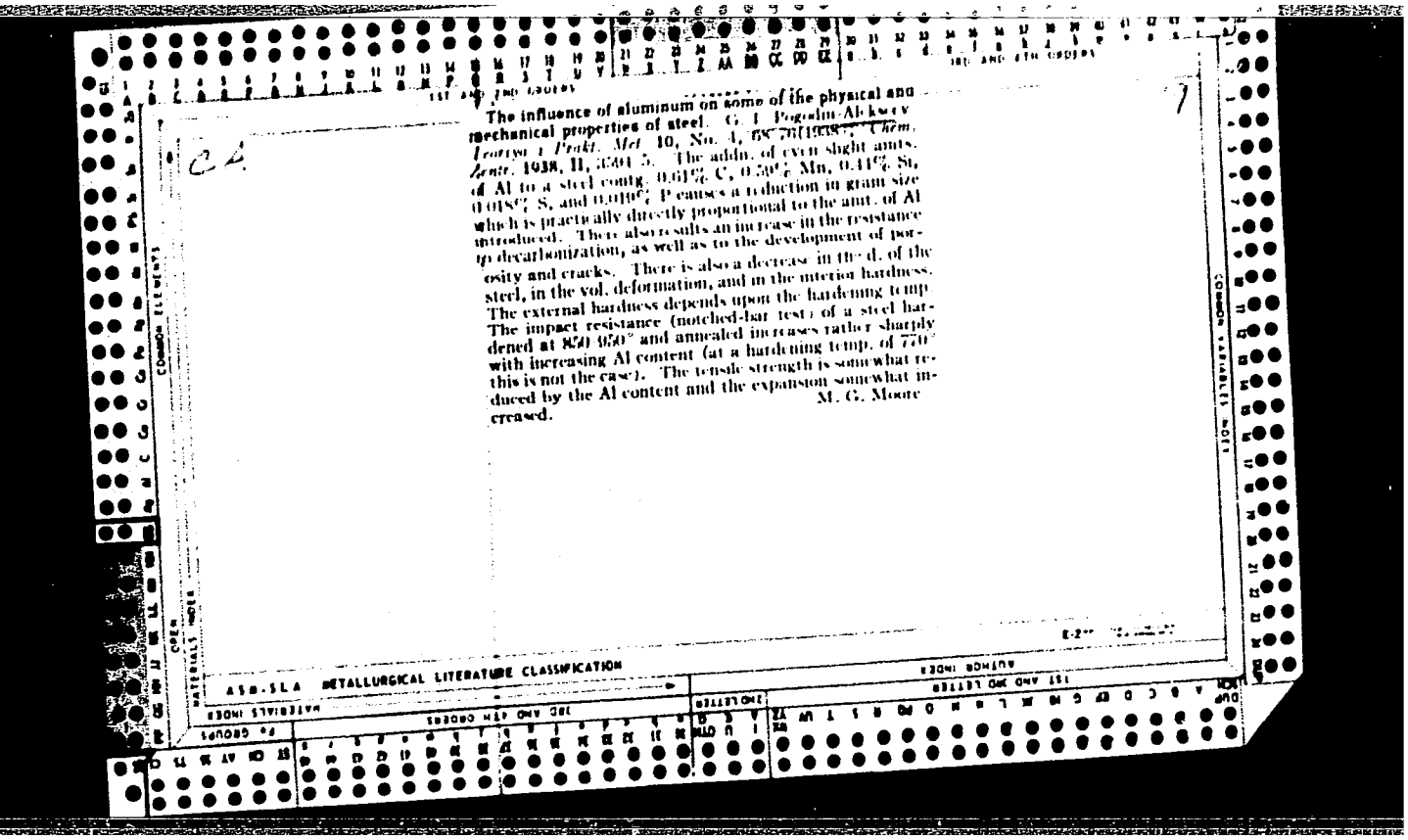
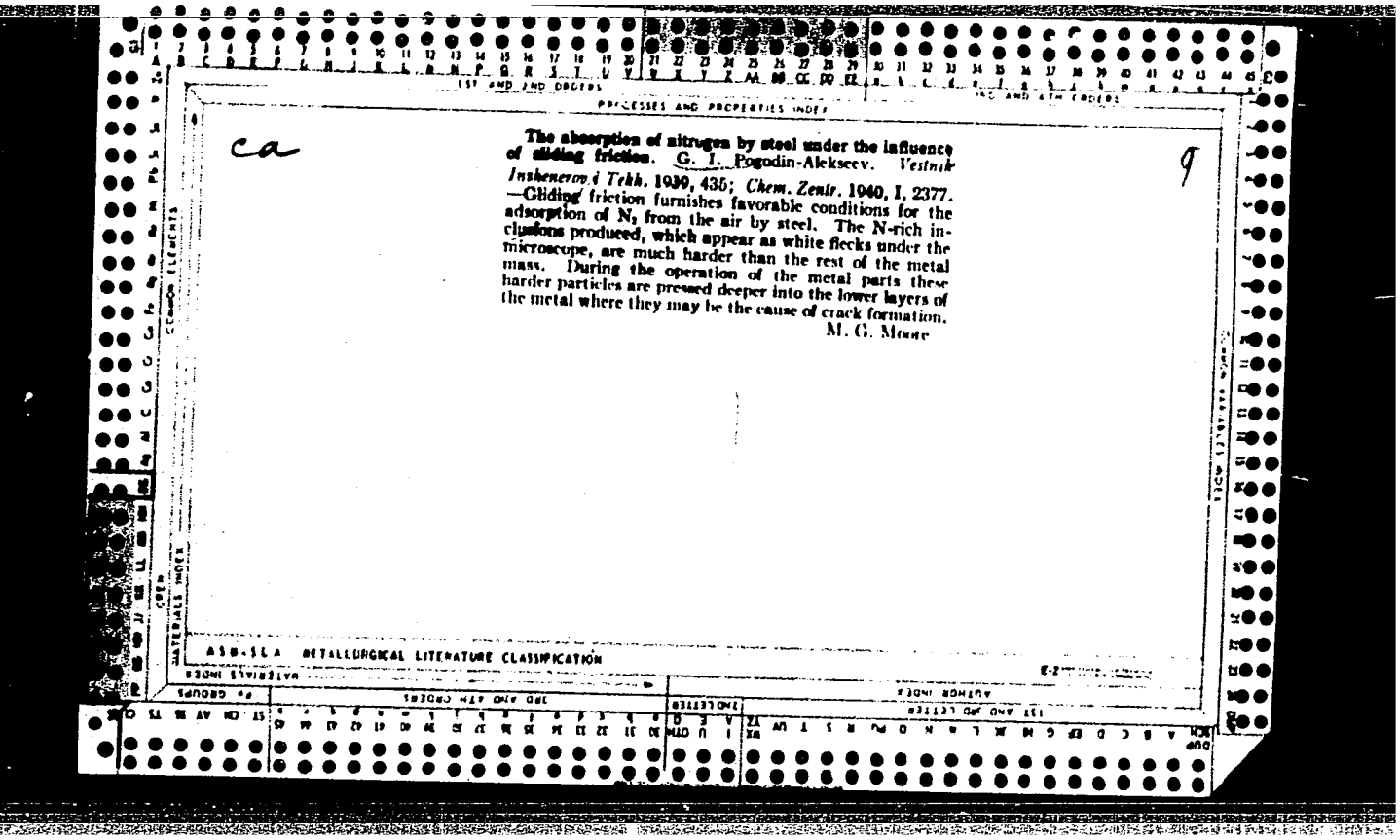
A58-SLA METALLURGICAL LITERATURE CLASSIFICATION



The influence of aluminum on some of the physical and mechanical properties of steel. G. I. Pogodin-Alekseev *Izvestiya Otdel. Met.* 10, No. 4, 68-70(1938); *Chem. Zentr.* 1938, II, 3540-1. The addn. of even slight amts. of Al to a steel contg. 0.61% C, 0.50% Mn, 0.41% Si, 0.018% S, and 0.010% P causes a reduction in grain size which is practically directly proportional to the amt. of Al introduced. There also results an increase in the resistance to decarbonization, as well as to the development of porosity and cracks. There is also a decrease in the d. of the steel, in the vol. deformation, and in the interior hardness. The external hardness depends upon the hardening temp. The impact resistance (notched-bar test) of a steel hardened at 850-950° and annealed increases rather sharply with increasing Al content (at a hardening temp. of 740° this is not the case). The tensile strength is somewhat reduced by the Al content and the expansion somewhat increased.

M. G. Moore



PROCESSES AND PROPERTIES INDEX

ca

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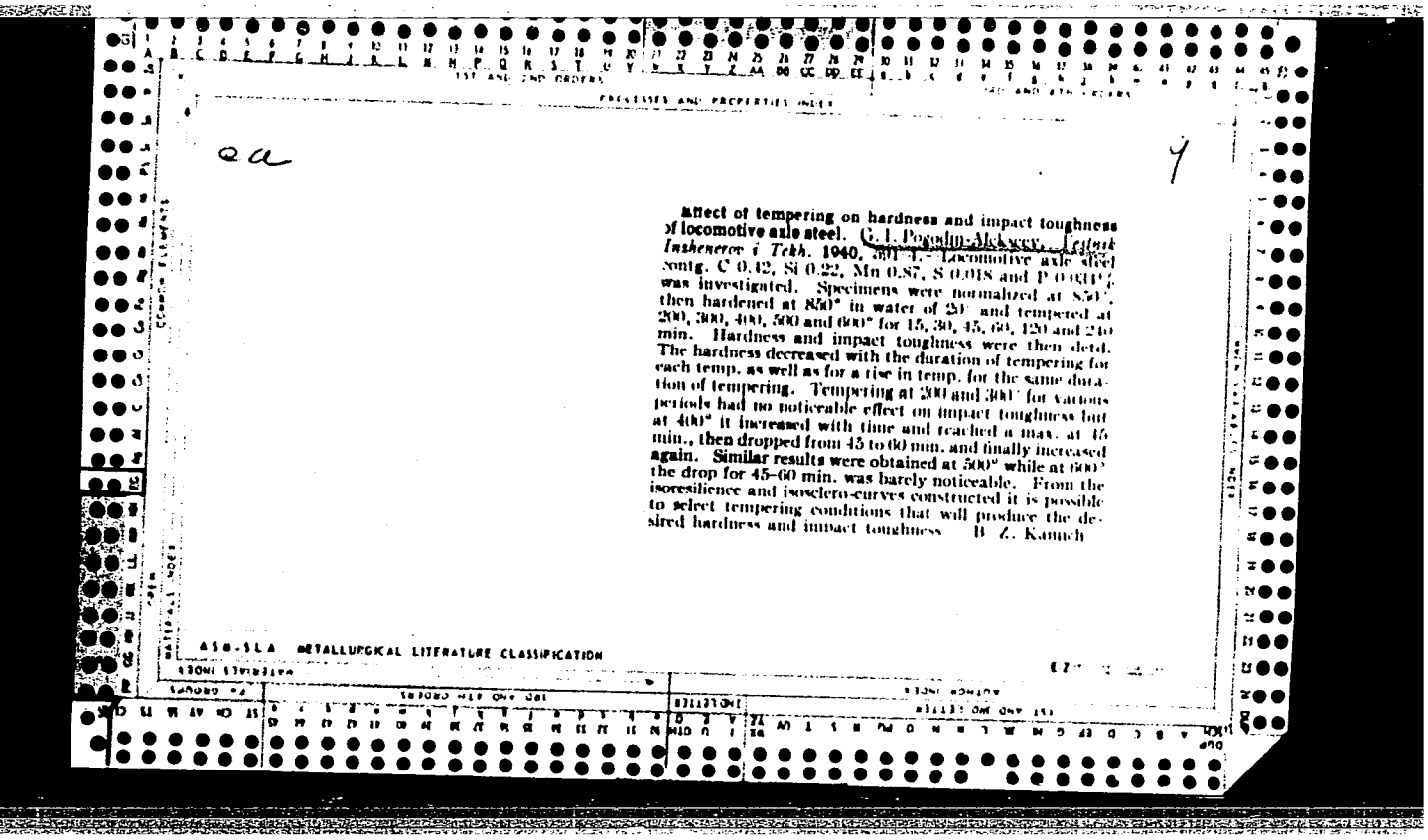
The absorption of nitrogen by steel under the influence of sliding friction. G. I. Pogodin-Alekseev. *Vestnik Inzhenerov i Tekh.* 1939, 435; *Chem. Zentr.* 1940, I, 2377. —Gliding friction furnishes favorable conditions for the adsorption of N_2 from the air by steel. The N-rich inclusions produced, which appear as white flecks under the microscope, are much harder than the rest of the metal mass. During the operation of the metal parts these harder particles are pressed deeper into the lower layers of the metal where they may be the cause of crack formation.
M. G. Moore

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



qa

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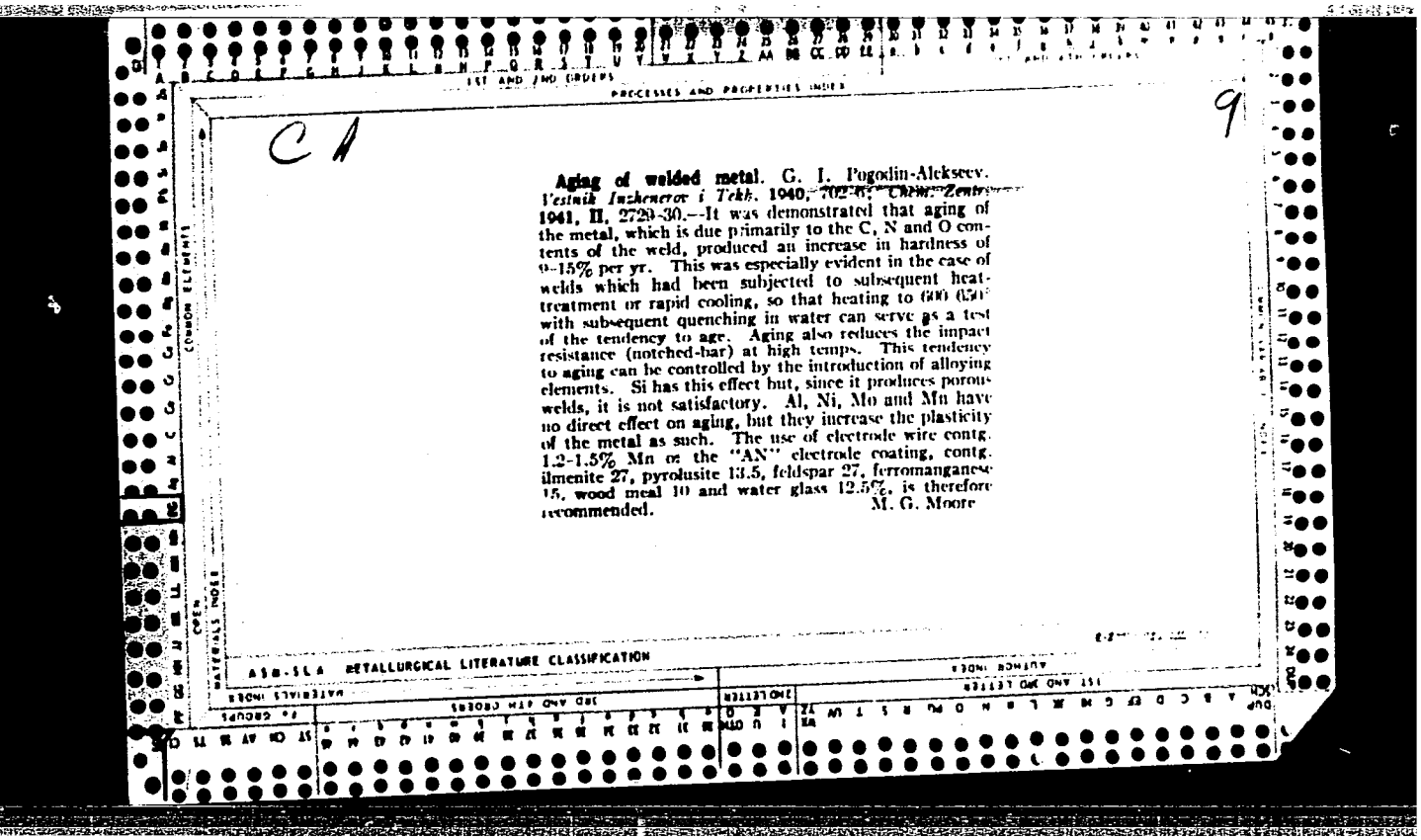
Affect of tempering on hardness and impact toughness of locomotive axle steel. G. I. Pogodin-Alekseev. *Izvestiya Inzhenerov i Tekh.* **1940**, 301–4.—Locomotive axle steel contg. C 0.42, Si 0.22, Mn 0.87, S 0.018 and P 0.014% was investigated. Specimens were normalized at 850°, then hardened at 850° in water of 25° and tempered at 200, 300, 400, 500 and 600° for 15, 30, 45, 60, 120 and 240 min. Hardness and impact toughness were then detd. The hardness decreased with the duration of tempering for each temp. as well as for a rise in temp. for the same duration of tempering. Tempering at 200 and 300° for various periods had no noticeable effect on impact toughness but at 400° it increased with time and reached a max. at 45 min., then dropped from 45 to 60 min. and finally increased again. Similar results were obtained at 500° while at 600° the drop for 45–60 min. was barely noticeable. From the isoresilience and isosclero-curves constructed it is possible to select tempering conditions that will produce the desired hardness and impact toughness. B. Z. Kanuch

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

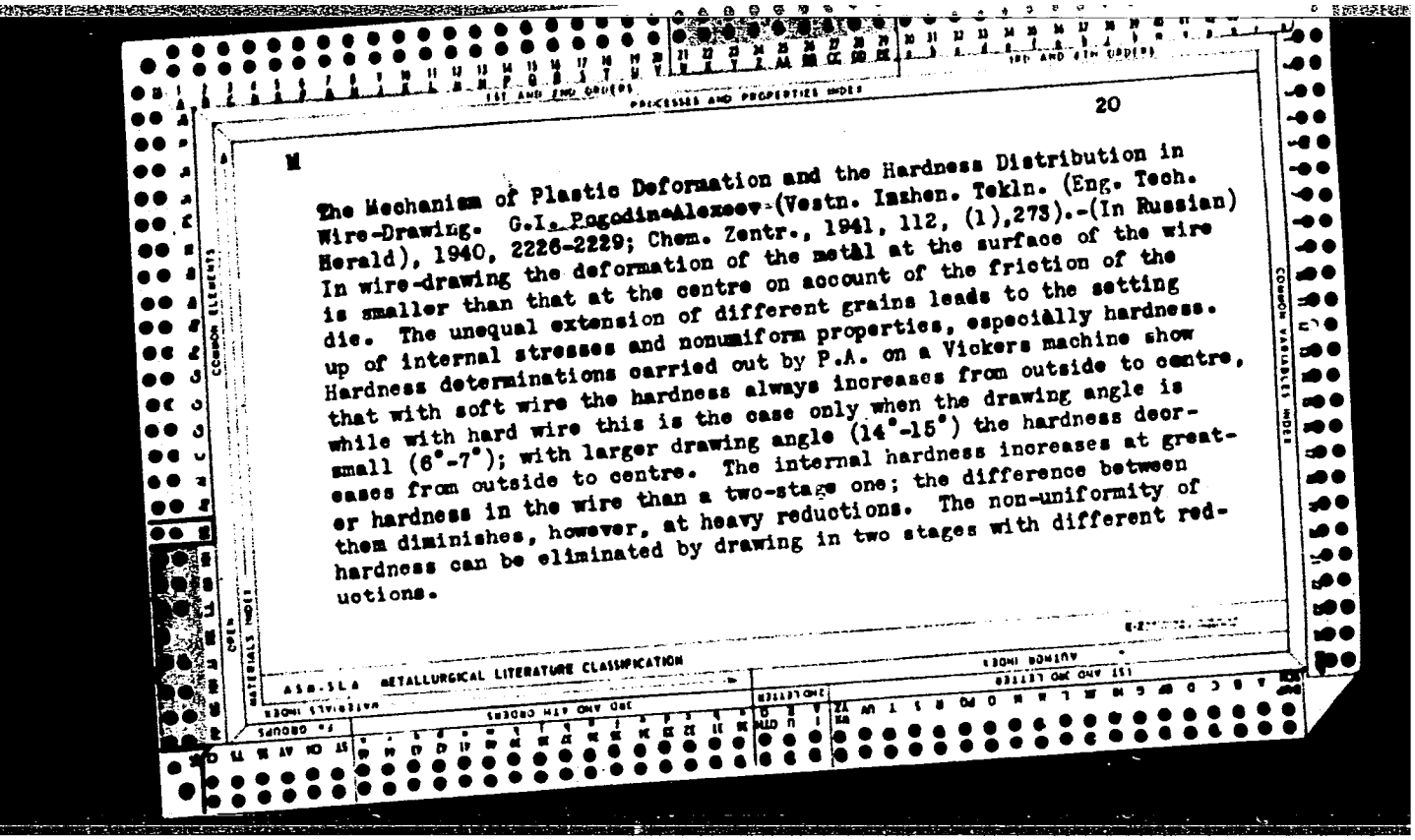


C A

9

Aging of welded metal. G. I. Pogodin-Alekseev. *Vestnik Inzhenerov i Tekh.* 1940, 702-6; *Chem. Zentr.* 1941, II, 2729-30.—It was demonstrated that aging of the metal, which is due primarily to the C, N and O contents of the weld, produced an increase in hardness of 9–15% per yr. This was especially evident in the case of welds which had been subjected to subsequent heat-treatment or rapid cooling, so that heating to 600 650° with subsequent quenching in water can serve as a test of the tendency to age. Aging also reduces the impact resistance (notched-bar) at high temps. This tendency to aging can be controlled by the introduction of alloying elements. Si has this effect but, since it produces porous welds, it is not satisfactory. Al, Ni, Mo and Mn have no direct effect on aging, but they increase the plasticity of the metal as such. The use of electrode wire contg. 1.2–1.5% Mn or the "AN" electrode coating, contg. ilmenite 27, pyrolusite 13.5, feldspar 27, ferromanganese 15, wood meal 10 and water glass 12.5%, is therefore recommended.

M. G. Moore



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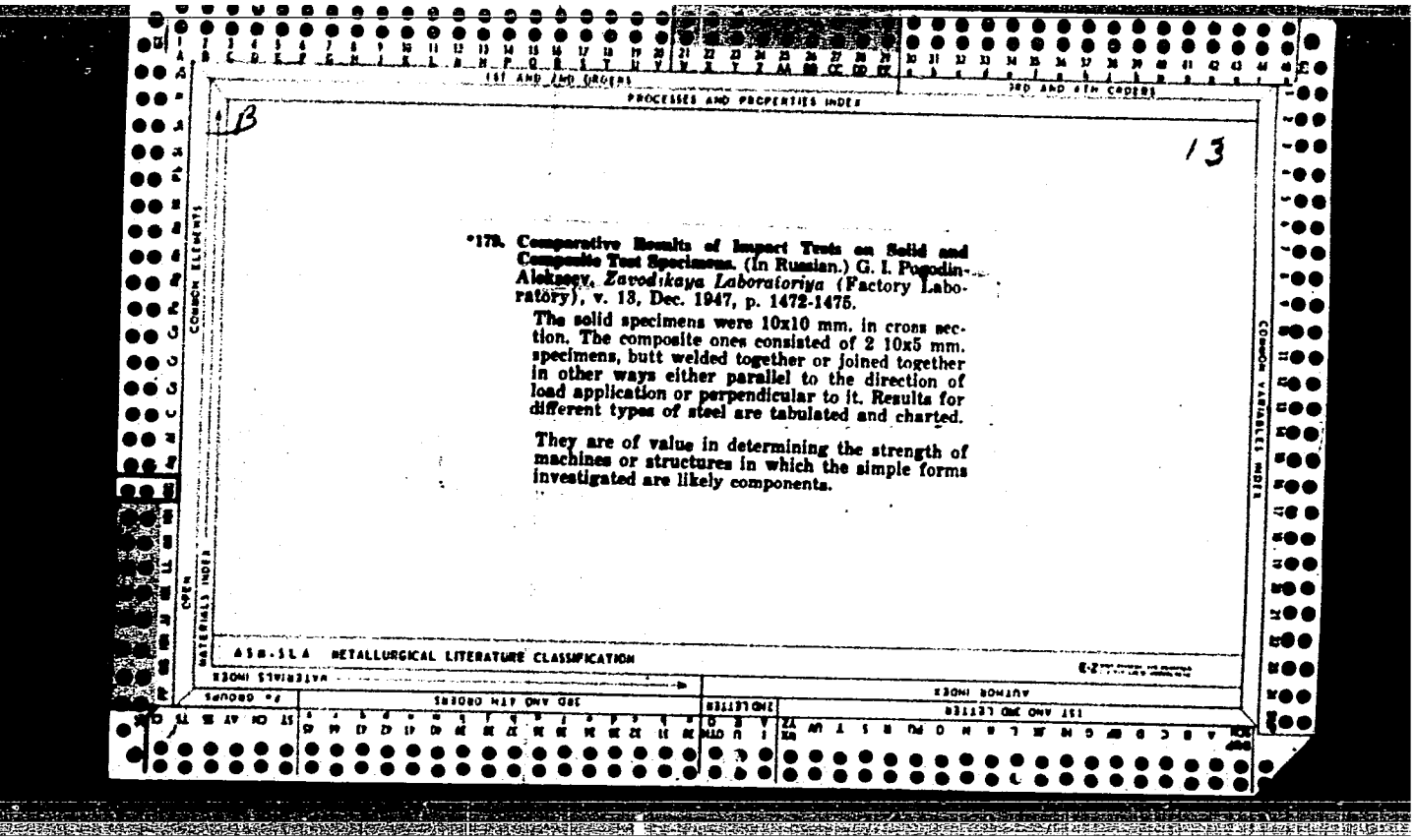
M

The Mechanism of Plastic Deformation and the Hardness Distribution in Wire-Drawing. G.I. Pogodine-Alexeev (Vestn. Inzhen. Tekln. (Eng. Tech. Herald), 1940, 2226-2229; Chem. Zentr., 1941, 112, (1),273).-(In Russian) In wire-drawing the deformation of the metal at the surface of the wire is smaller than that at the centre on account of the friction of the die. The unequal extension of different grains leads to the setting up of internal stresses and nonuniform properties, especially hardness. Hardness determinations carried out by P.A. on a Vickers machine show that with soft wire the hardness always increases from outside to centre, while with hard wire this is the case only when the drawing angle is small (6°-7°); with larger drawing angle (14°-15°) the hardness decreases from outside to centre. The internal hardness increases at greater hardness in the wire than a two-stage one; the difference between them diminishes, however, at heavy reductions. The non-uniformity of hardness can be eliminated by drawing in two stages with different reductions.

POGODIN-ALEKSEYEV, G.I., prof.; RZHAVINSKIY, V.V., red.

[Theory of welding processes] Teoriia svarochnykh protsessov. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1945. 366 p.

(Welding) (MIRA 11:12)



PROCESSES AND PROPERTIES INDEX

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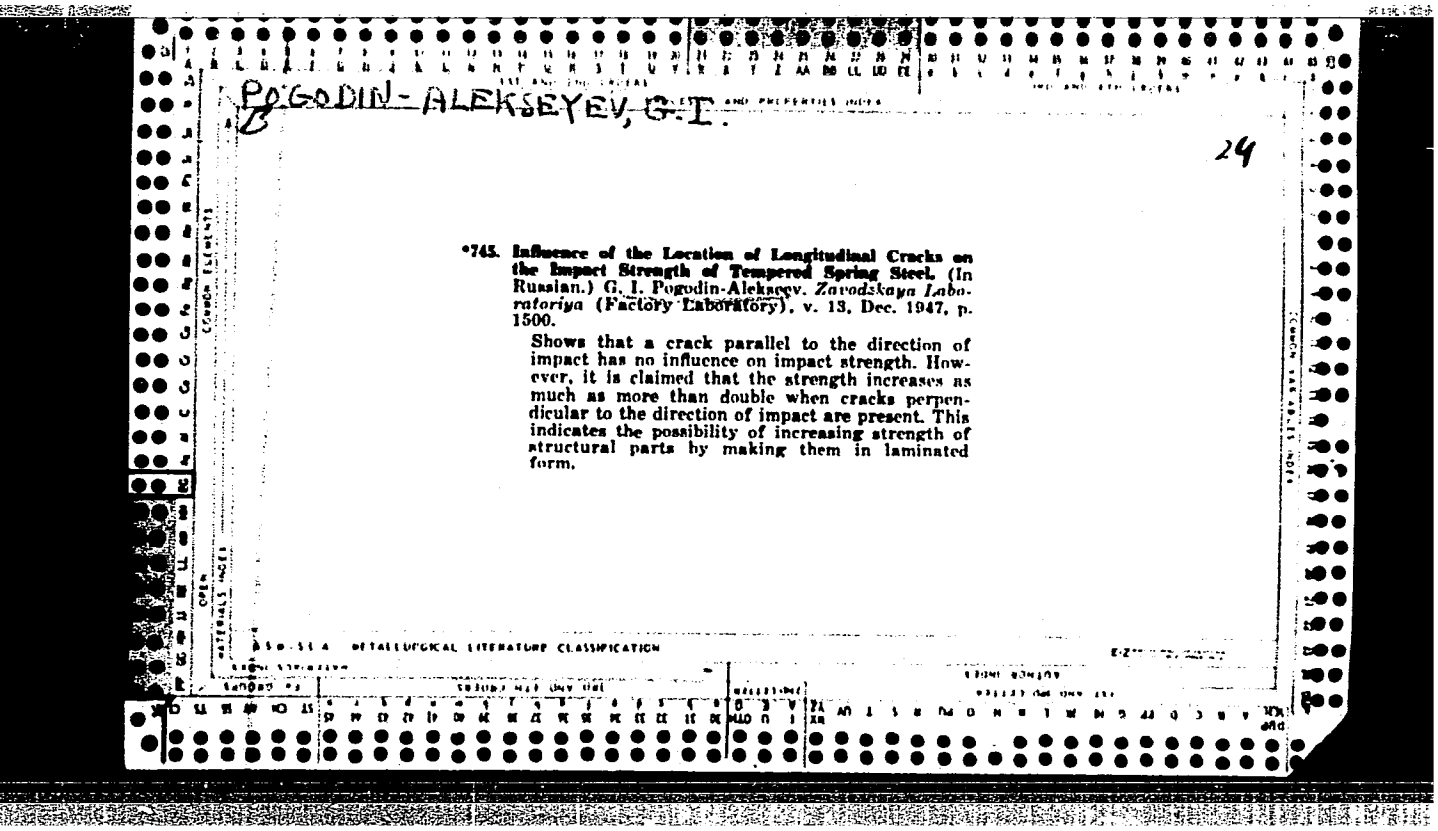
*178. **Comparative Results of Impact Tests on Solid and Composite Test Specimens.** (In Russian.) G. I. Pogodin-Alekseev. *Zavodskaya Laboratoriya* (Factory Laboratory), v. 13, Dec. 1947, p. 1472-1475.

The solid specimens were 10x10 mm. in cross section. The composite ones consisted of 2 10x5 mm. specimens, butt welded together or joined together in other ways either parallel to the direction of load application or perpendicular to it. Results for different types of steel are tabulated and charted.

They are of value in determining the strength of machines or structures in which the simple forms investigated are likely components.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



POGODIN-ALEKSEYEV, G.I.

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*745. **Influence of the Location of Longitudinal Cracks on the Impact Strength of Tempered Spring Steel.** (In Russian.) G. I. Pogodin-Alekseev. *Zavodskaya Laboratoriya* (Factory Laboratory), v. 13, Dec. 1947, p. 1500.

Shows that a crack parallel to the direction of impact has no influence on impact strength. However, it is claimed that the strength increases as much as more than double when cracks perpendicular to the direction of impact are present. This indicates the possibility of increasing strength of structural parts by making them in laminated form.

POGODIN-ALEKSEYEV, Prof. G. I.

Mbr.,L'vov Polytechnic Inst., -c1948-.

"The Effect of Plate Layout and Fastening Methods on the Resilience of Joined Samples," Zavod. Lab., 14, No. 1, 1948;

"Studying the Strength of Welded Structures which Operate under Shock Forces," Avtogen, Delo, No. 7, 1949;

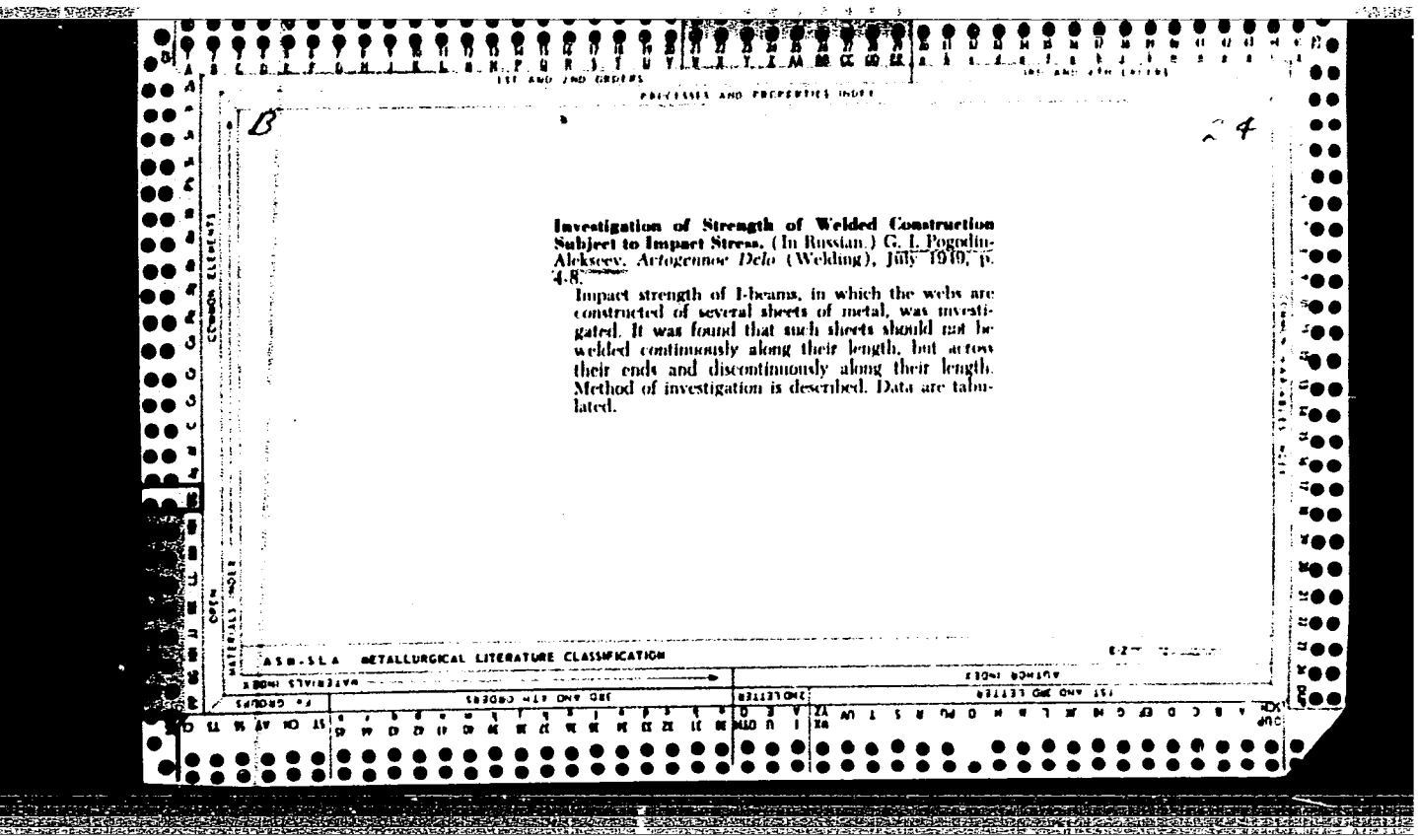
"Comparative Impact Tests of Square and Cylindrical Specimens with Various Methods of Stress Concentration," Zavod. Lab., 16, No. 6, 1950.

Br. abs.

BI. 5 Ferrous Met.

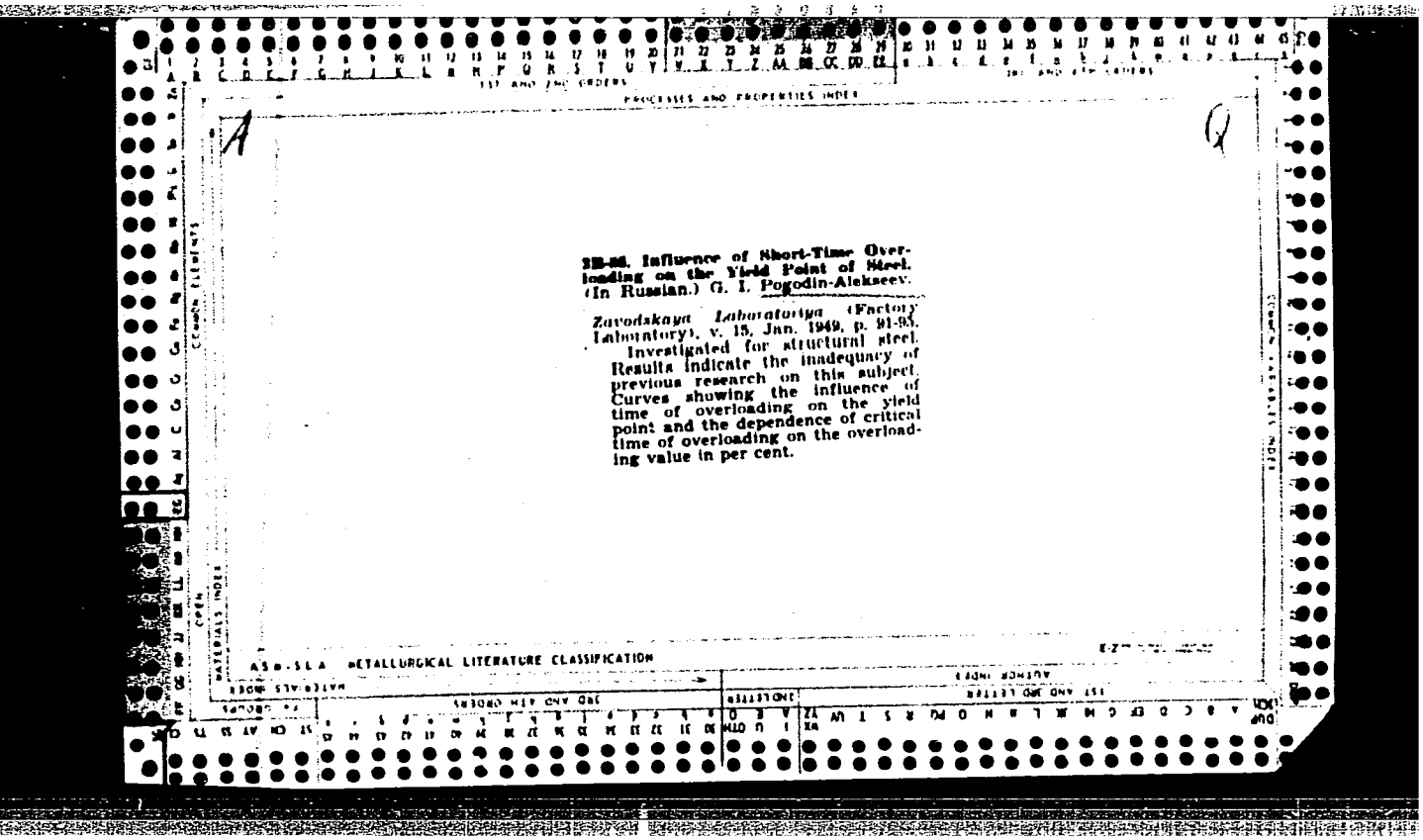
Influence of short periods of overloading on endurance limit of steel. G. I. Pogodin-Alekseev (*Zavod. Lab.*, 1948, 14, 91—95; *J. Iron Steel Inst.*, 1949, 162, 386).—Cylinders (10 mm. in diameter) of axle steel were subjected to a 21·6% overload for various fractions of the predetermined mean no. of cycles required for failure, and the no. of cycles to produce failure was then determined. The endurance limit was raised by 4—5% when the above fraction was 25% but reduced when it was 60%. The significance of the results is discussed.

R. B. CLARKE.



Investigation of Strength of Welded Construction Subject to Impact Stress. (In Russian.) G. I. Pogodin-Alekseev. *Avtogennoe Delo* (Welding), July 1949, p. 4-8.

Impact strength of I-beams, in which the webs are constructed of several sheets of metal, was investigated. It was found that such sheets should not be welded continuously along their length, but across their ends and discontinuously along their length. Method of investigation is described. Data are tabulated.

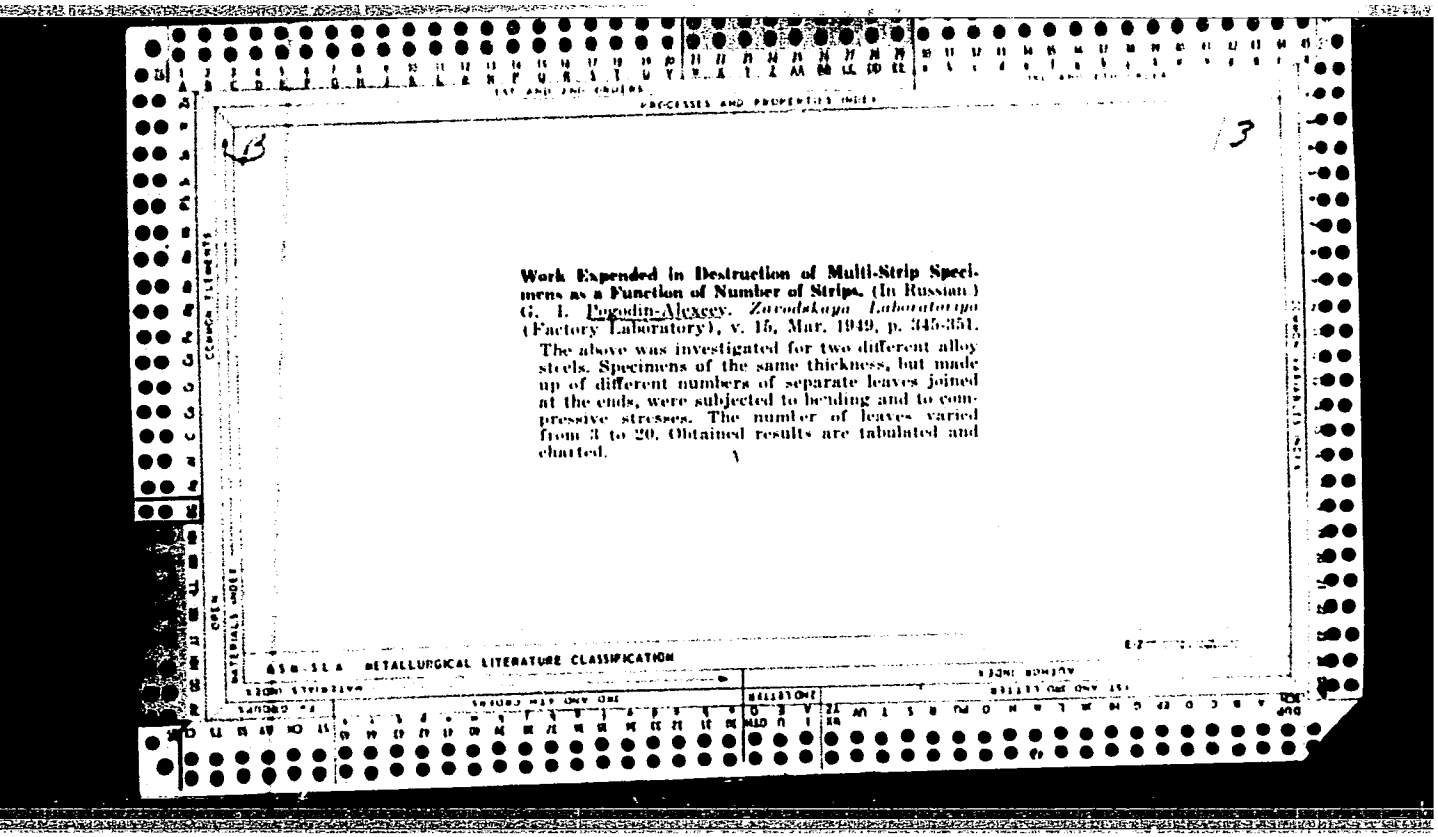


22-88. Influence of Short-Time Overloading on the Yield Point of Steel. (In Russian.) G. I. Pogodin-Alekseev.

Zavodskaya Laboratoriya (Factory Laboratory), v. 15, Jan. 1949, p. 91-93.

Investigated for structural steel. Results indicate the inadequacy of previous research on this subject. Curves showing the influence of time of overloading on the yield point and the dependence of critical time of overloading on the overloading value in per cent.

A 5 8 - 5 L A METALLURGICAL LITERATURE CLASSIFICATION



Work Expended in Destruction of Multi-Strip Specimens as a Function of Number of Strips. (In Russian) G. I. Pogodin-Alexeev. *Zavodskaya Laboratoriya* (Factory Laboratory), v. 15, Mar. 1949, p. 345-351.

The above was investigated for two different alloy steels. Specimens of the same thickness, but made up of different numbers of separate leaves joined at the ends, were subjected to bending and to compressive stresses. The number of leaves varied from 3 to 20. Obtained results are tabulated and charted.

POGODIN-ALEKSEYEV, G.I., zasluzhennyy deyatel' nauki i tekhniki

Modulus of indentation and the hardness number determined by the pyramid impression. Metalloved. i term. obr. met. no.8:46-48 Ag '62. (MIRA 15:11)

(Hardness--Testing)

POGODIN-ALEKSEEV, G. I. and M. N. GAPCHENKO

Kontrol' svarochnykh rabot. Kiev, Ukr. otd-nie Mashgiza, 1950. 175 p. diagrs.

Bibliography: p. 174.

Control of welding work.

DLC: TS227.P6

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

POGODIN-ALEKSEEV, G. I.

Teoriia svarochnykh protsessov. 2., perer. i dopoln. izd. Dop. v kachestve uchebn. posobiia dlia vyssh. uchebn. zavedenii. Moskva, Mashgiz, 1950. 416 p. illus.

Bibliography: P. 411-412.

Theory of welding processes.

DLC: TN686.P6 1950

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

POGODIN-ALEKSEYEV, G.I.

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 441 - I

BOOK

Authors: POGODIN-ALEKSEYEV, G. I., Prof., GELLER, YU. A., Ass. Prof., RAKHSHTADT, A. G., Ass. Prof. Call No.: TN690.P57

Full Title: SCIENCE OF METALS. METHODS OF ANALYSIS, LABORATORY WORK AND PROBLEMS

Transliterated Title: Metallovedeniye. Metody analiza laboratornyye raboty i zadachi

Publishing Data

Originating Agency: None

Publishing House: State Publishing House of the Defense Industry

Date: 1950 No. pp.: 455 No. of copies: 15,000

Editorial Staff

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Appraisers: Gulyayev, A. P., Dr. of Tech. Sci., and Blanter, M. E., Kand. of Tech. Sci.

Others: Yakhnina, V. D., Fomina, N. N. and Kazarnovskaya, Z. M.

Text Data

Coverage: This excellent textbook gives in its introductory chapter a historical sketch of Russian metallurgical science and in the subsequent sections a description of methods for studying metals, various stages of laboratory work (heat analysis, macro- and microanalysis, hardening measurement, determination of physical properties, heat

1/3

material to specific practical problems.

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Metallovedeniye. Metody analiza laboratornyye raboty i zadachi

AID 441 - I

TABLE OF CONTENTS

Purpose: A textbook for students of institutes of technology and mechanical engineering

Facilities: None

No. of Russian and Slavic References: Numberous references throughout book.

Available: Library of Congress.

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POGODIN-ALEKSEYEV, G. I.

USSR/Metals - Testing, Impact
Stress Analysis

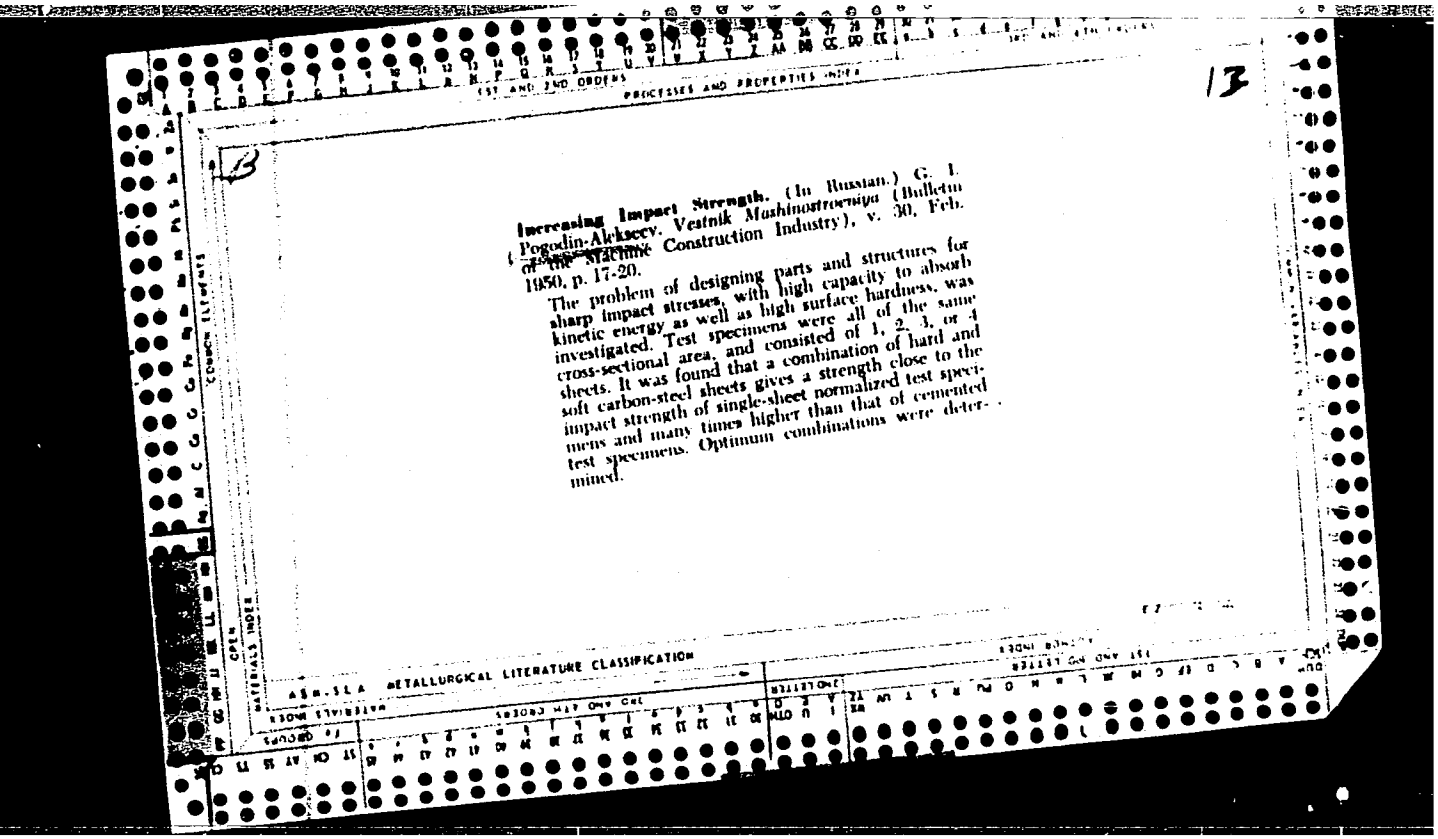
Jun 50

"Comparative Impact Tests of Square and Cylindrical Specimens With Various Methods of Stress Concentration," G. I. Pogodin-Alekseyev

"Zavod Lab" Vol XVI, No 6, pp 721-728

Describes experiments for impact testing specimens of square and circular cross sections with U-shape notch and composite specimens with holes drilled through entire thickness of specimen, at reduced and elevated temperatures. Investigates and discusses optimum diameter of the hole and its position as to direction of impact.

163T59



Increasing Impact Strength. (In Russian.) G. I. Pogodin-Alekseev. *Vestnik Mashinostroeniya* (Bulletin of the Machine Construction Industry), v. 30, Feb. 1950, p. 17-20.

The problem of designing parts and structures for sharp impact stresses, with high capacity to absorb kinetic energy as well as high surface hardness, was investigated. Test specimens were all of the same cross-sectional area, and consisted of 1, 2, 3, or 4 sheets. It was found that a combination of hard and soft carbon-steel sheets gives a strength close to the impact strength of single-sheet normalized test specimens and many times higher than that of cemented test specimens. Optimum combinations were determined.

E. D.

RUSSIA-

1/2

The Influence of Surface Roughness upon the Impact Strength of Steels at Low Temperatures

By G. I. Pogodin-Alexeyeff and A. V. Pamfiloff. (From *Stanki i Instrument*, No. 4, 1951, pp. 22-23. 3 illustrations.)

The authors' report on investigations into the influence of surface roughness on impact strength at room and subzero temperatures. All criteria expressing toughness are impaired with smoother machining, this applies, in particular, to strength under repeated impact. This tendency is more noticeable with hard steels than with soft steel.

The influence of surface roughness on static and fatigue strengths has been investigated fully by N. N. Davidenkoff, S. V. Sorensen and others. An improvement in surface smoothness increases the static strength as well as the endurance limit of steel. The influence of surface smoothness on impact strength has not been sufficiently examined. E. M. Shevandin has established that the condition of the surface inside the notch does not influence the critical temperature range of cold brittleness. However, the zone of plastic deformation of the test specimen following the impact usually greatly exceeds the extent of the notch, and the surface smoothness in the zone of plastic deformation, particularly in unnotched test specimens, must, in our opinion, have some influence on impact strength and the threshold of cold brittleness in steel.

The authors have investigated unnotched test specimens made of steel St 5* and steel St 3† of cylindrical shape, 8 mm in diameter and 75 mm in length, and also cylindrical test pieces of 10 mm diameter, their length being equal to that of the former specimens, but with a spherical notch extending along a length of 4 or 7 mm in the middle of the test specimen and having a depth of 2 mm (on radius). Surface machining of the test specimens was carried out to smoothness class 3, 9, and 11, in accordance with Russian standards. Furthermore, for comparison, test specimens with rough-machined surfaces having a maximum peak-to-valley height of 100-200 microns were also tested. This roughness is beyond the range of the above standard specifications and is arbitrarily denoted by zero smoothness.

Single impact tests at room temperature, on a pendulum-type impact machine, on test specimens having a notch length of $l_0 = 4$ mm and made of steel St 5 have shown the following impact energies (mean of 10 test specimens) :—