

SMIRNOV, V.S., prof.

Defense of dissertations in the M.I. Kalinin Polytechnical  
Institute in Leningrad. Izv. vys. ucheb. zav.; radiotekh.  
6 no.5:579-581 S-O '63. (MIRA 17:1)

1. Rektor Leningradskogo politekhnicheskogo instituta imeni  
M.I. Kalinina; chlen-korrespondent AN SSSR.

SMIRNOV, V.S.; DURNEV, V.D., kand.tekhn.nauk

"Longitudinal rolling of helical rib sections" by I.IA.Tarnovskii,  
V.K.Smirnova, S.L.Kotsar'. Stal' 23 no.6:552-553 Je '63.  
(MIRA 16:10)

1. Chlen-korrespondent AN SSSR (for Smirnov).

1 31369-65 EWT(m)/EWP(k)/T/EWP(b)/EWA(d)/EWP(e)/EWP(w)/EWP(t) Pf-4  
IJP(c) RDW/RH/JD/HW

ACCESSION NR: AT4047709 S/2563/64/000/238/0005/0014

41  
38  
B+1

AUTHOR: Smirnov, V. S., (Professor, Corresponding member AN SSSR); Alekseyev, A. M.

TITLE: Preparation of thermoelement branches by hot pressing through a die

SOURCE: Leningrad. Politekhnikheskiy institut. Trudy, no. 238, 1964.  
Obrabotka metallov davleniyem (Metalworking by pressure), 5-14

TOPIC TAGS: thermoelement, thermoelement branch, hot pressing, control system  
component, semiconductor manufacture, squeeze casting, powder metallurgy, bismuth  
selenide, bismuth telluride, antimony telluride

ABSTRACT: Considerable attention is currently being paid to thermoelectric cooling by means of semiconductors. Various micro-devices have been designed for lowering and stabilizing temperature locally. This theory was first worked out by A. F. Ioffe and his school. Over 60 thermal cooling devices have now been designed for use in astronomy, atomic physics, agriculture, vacuum engineering and other fields. At present, the best materials for thermoelements are solid solutions of  $Bi_2Te_3-Bi_2Se_3$  and  $Bi_2Te_3-Sb_2Te_3$ , developed at the Institut poluprovodnikov AN SSSR (Semiconductors Institute, AN SSSR). The thermoelement branches used in these devices are obtained by different methods, all of which have the disadvantages of low  
Card 1/3

L 31369-65

ACCESSION NR: AT4047709

2

productivity and high labor consumption. Powder metallurgy gives the best results. The negative and positive alloys are pulverized and pressed under 8-9 metric tons/cm<sup>2</sup>, after which they are sintered in a 10<sup>-1</sup> - 10<sup>-2</sup> mm Hg vacuum. The mechanical strength obtained with this method is low. Casting with directed crystallization and the single crystal method require complicated equipment and also show low efficiency in production. In this article, the authors propose a new method of preparing the thermoelements, by means of which a long semiconductor rod is obtained at a high rate. The rod is then cut to the required size. The best method for obtaining a long rod is the mouthpiece method of pressing. However, the authors propose the use of hot pressing through a die, by the "squeezing" method. This is accompanied by a precise stressed condition, temperature, and degree and rate of deformation. A favorable combination of these factors makes even brittle materials into plastic ones. Both pressing and sintering are combined, ensuring intensive diffusion and higher plasticity. Pressing was performed on 120- and 200-ton hydraulic presses with pressing rates of 40 and 600 mm/min under the protection of CO<sub>2</sub> or argon. The entire press was heated to the required temperature by a 3.5-kW resistance furnace. The weight of the powder for each pressing operation was 100-200 grams with 1-0.5 mm particles. The tests showed that friction was important for the quality of the rods; as well as the applied pressure. Intensive lubrication was needed for obtaining high quality rods. High quality Bi<sub>2</sub>Te<sub>3</sub>-

Card 2/3

L-31369-65

ACCESSION NR: AT4047709

Sb<sub>2</sub>Te<sub>3</sub> rods were produced at 410-440C and Bi<sub>2</sub>Te<sub>3</sub>-Bi<sub>2</sub>Se<sub>3</sub> rods at 430-470C, the latter having higher strength. Orig. art. has: 4 figures and 5 tables

ASSOCIATION: Leningradskiy politekhnicheskij institut imeni M. I. Kalinina  
(Leningrad polytechnical institute)

SUBMITTED: 00

ENCL: 00

SUB CODE: MM,TD

NO REF SOV: 007

OTHER: 001

Card 3/3

L 35591-65 EWP(k)/EWA(c)/EWT(m)/EWG(n)/EWP(b)/T/EWP(d)/EWP(w)/EWP(v) IJP(c)  
RIA/JD/HW

ACCESSION NR: AT4047711

S/2563/64/000/238/0021/0024

30

B+

AUTHOR: Alekseyev, A. M. ; Smirnov, V.S. (Professor, Corresponding member AN SSSR)

TITLE: Mechanical properties of thermoelement conductors from  $Bi_2Te_3-Bi_2Se_3$  and  $Bi_2Te_3-Sb_2Te_3$  produced by method of extrusion

SOURCE: Leningrad. Politekhicheskiy institut. Trudy\*, no. 238, 1964. Obrabotka metallov davleniyem (Metalworking by pressure), 21-24

TOPIC TAGS: <sup>27</sup> bismuth, <sup>27</sup> tellurium, <sup>27</sup> selenium, <sup>14</sup> solid solution, thermoelement, extrusion

ABSTRACT: The authors carried out mechanical tests of thermoelement conductors prepared from  $Be_2Te_3-Bi_2Se_3$  and  $Bi_2Te_3-Sb_2Te_3$  alloys. The higher hardness and strength of 300 mm long specimens, particularly those of  $Bi_2Te_3-Bi_2Se_3$  wire rods produced by extrusion is attributed to the substantial shear deformation which enhances grain refinement. Extruded specimens have an inhomogeneous structure and, consequently, non-uniform mechanical properties along and across the wire. This is due to the nonuniformity of deformation and the change of

Card 1/2

L 35591-65

ACCESSION NR: AT4047711

0

temperature conditions in the deformation area resulting in the appearance of residual stresses. The authors propose heating and lubrication of the tool as well as a degree of deformation exceeding 95% as a means of decreasing the non-uniformity of mechanical properties. Experiments have shown that the mean hardness values differ only negligibly in the various sections of the specimens. Orig. art. has: 2 figures and 2 tables.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: MM

NR REF SOV: 009

OTHER: 000

Card 2/2

L 5023-65 EWT(m)/EPF(n)-2/EWA(d)/EWP(t)/EWP(k)/EWP(b)/EWA(c) Pf-li/Pu-4

IJP(c) JD/HW/JG

ACCESSION NR: AT4047713

S/2563/64/000/238/0081/0089

11/21

AUTHOR: Smirnov, V. S. (Professor, Corresponding member AN SSSR); Aleksandrov, A. A.; Shibanov, L. A.

TITLE: Installation for the rolling of metals under vacuum or in inert atmosphere

SOURCE: Leningrad. Politeknicheskii institut. Trudy\*, no. 238, 1964.  
Obrabotka metallov davleniyem (Metalworking by pressure), 81-89

TOPIC TAGS: vacuum deformation, inert atmosphere, molybdenum, titanium,  
diffusion pump system

ABSTRACT: The authors discuss Soviet and foreign installations which make it possible to carry out hot plastic deformation under vacuum or in inert atmospheres. Fiziko-tehnicheskii institut AN USSR (Physico-Technical Institute, Academy of Sciences Ukr. SSR) built an experimental installation in 1953 but its productivity was very low. LPI im. M. I. Kalinina (Leningrad Polytechnic Institute im. M. I. Kalinin) improved the design by incorporating a system of diffusion pumping and using a pump before the vacuum chambers. A number of shortcomings

Card 1/2



L 35023-65

ACCESSION NR: AT4047713

still remain to be eliminated but the experimental rolling of Mo and Ti alloy specimens corroborates the possibility of utilizing the installation for the study of metal rolling under vacuum and its effect on the structure and properties of metals. Orig. art. has: 8 figures.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: MM

NR REF SOV: 005

OTHER: 002

Card 2/2

L 35022-65 EWT(m)/EPF(n)=2/EWA(d)/T/EWP(t)/EWP(k)/EWP(b)/EWA(c) Pf-l/Pu-l  
IJP(c) JD/HW/JG  
ACCESSION NR: AT4047714 S/2563/64/000/238/0090/0094 11/12/68

AUTHOR: Smirnov, V. S. (Professor, Corresponding member AN SSSR); Tron', A. S.;  
Aleksandrov, A. A.; Vitorskiy, Ya. M.; Rybal'chenko, N. D.

TITLE: The effect of vacuum rolling on the structure and gas impregnation of titanium and molybdenum

SOURCE: Leningrad. Politekhicheskiy institut. Trudy\*, no. 238, 1964.  
Obrabotka metallov davleniyem (Metalworking by pressure), 90-94

TOPIC TAGS: <sup>1</sup>titanium, <sup>2</sup>molybdenum, vacuum deformation, structure, gas impregnation

ABSTRACT: The effect of rolling under vacuum on structure, contents and distribution of gases during heating was observed in 20x35x120 mm Ti specimens (with 4% Al) and 25x50x90 mm cast Mo specimens. Metallographic examination showed that Ti specimens absorbed gases primarily during heating and not during rolling. The structure of vacuum rolled Ti specimens was more homogeneous and coarse-grained. After vacuum annealing at 1200C and air rolling, the gas impregnated layer in Ti specimens greatly exceeded the thickness of the 0.03 to

Card 1/2

L 35022-65

ACCESSION NR: AT4047714

0.05 mm surface layer of Mo specimens. Vacuum rolled specimens displayed no such layer. During subsequent rolling gas-impregnated surface layers are readily ruptured and cracks propagated. Orig. art. has: 6 figures and 3 tables.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: MM

NR REF SOV: 004

OTHER: 000

Card 2/2

L 55180-65  
HW/EM

EWT(d)/EWP(w)/EWA(d)/EWP(t)/EWP(k)/EWP(b)/EWA(c) Pf-4 JD/ 23

RU/0017/64/000/007/0285/0292

ACCESSION NR: AP5017592

AUTHOR: Smirnov, V. S. (Professor, Doctor, Corresponding member of AN SSSR);  
Chirita, V. (Candidate of technical sciences)

TITLE: Using the dimensional theory to determine the elongation coefficient with rolling of periodical sections in open calibers

SOURCE: Metalurgia, no. 7, 1964, 285-292

TOPIC TAGS: metal strain, metal plasticity, metal rolling

ABSTRACT: The authors continue their application of dimensional theory to the processing of experimental data relating to the plastic strain of metals. Starting from the establishment of the elongation coefficient for rolling open-caliber periodical sections, they deduce some general formulae for the determination of the elongation coefficient in caliber rolling. Orig. art. has: 7 figures, 10 graphs, 14 formulas.

ASSOCIATION: Chirita I.C.T.C.M.

SUBMITTED: 00

ENCL: 00

SUB CODE: MM

NR REF SOV: 003

OTHER: 000

JPRS

Card 1/1

7 36309-65 EWT(m)/EPF(n)-2/EWG(m)/EWA(d)/EPR/EWP(t)/EWP(k)/EWP(b)/EWA(c)  
PE-4/PS-4/Pu-4 IJP(c) JD/EW/JG

ACCESSION NR: AT4047716

S/2563/64/000/238/0101/0103

58  
51  
LH/

AUTHOR: Smirnov, V. S. (Professor, Corresponding member AN SSSR); Aleksandrov,  
A. A. ; Tron', A. S.

TITLE: Using vacuum or inert media in metalworking by pressure

SOURCE: Leningrad. Politeknicheskiiy institut. Trudy\*, no. 238, 1964. Obra-  
botka metallov davleniyem (Metalworking by pressure), 101-103

TOPIC TAGS: pressure metalworking, refractory metal, vacuum, hot de-  
formation, molybdenum, titanium, niobium

ABSTRACT: In recent years, equipment has been developed for metalworking  
refractory and chemically active metals by pressure. The authors discuss for-  
eign equipment and methods and point out the difficulties involved in operating the  
mechanisms and machinery necessary for metalworking by pressure under va-  
cuum or in an inert gas medium. They emphasize the adverse effect of active  
gases on the properties of Mo, Ti and Nb during heating and hot plastic deforma-  
tion and contend that gases are absorbed by the surface layers of these metals,

Card 1/2

L 36309-65

ACCESSION NR: AT4047716

primarily, during the heating process. It is, therefore, suggested that the removal of the gas-saturated surface layer by method of pickling, electropolishing or mechanical working and by shortening the heating time, improves properties without the employment of vacuum treatment or inert gases during heating and hot deformation. However, the economic effectiveness of the recommendation remains to be verified on an industrial scale. Further study of the effect of vacuum treatment and of inert gases on structure and properties as well as the investigation of installation design and friction that occurs during hot deformation are recommended.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: MM

NR REF SOV: 010

OTHER: 008

Card 2/2 JO

L 31367-65 EPR/EPF(n)-2/EWT(m)/EWP(k)/EWP(b)/EWA(d)/EWP(t) Pf-4/  
Ps-4/Pu-4 IJP(c) JD/HW/JG

51  
50  
B+1

ACCESSION NR: AT4047715 S/2563/64/000/238/0095/0100

AUTHOR: Smirnov, V. S. (Professor, Corresponding member AN SSSR); Amonenko, V. M.;  
Tron', A. S.; Aleksandrov, A. A.

TITLE: Effect of rolling in a vacuum on metal properties

SOURCE: Leningrad. Politeknicheskii institut. Trudy no. 238, 1964. Obrabotka  
metallov davleniyem (Metalworking by pressure), 95-100

TOPIC TAGS: vacuum rolling, metal rolling, metal vacuum rolling, titanium, 1  
molybdenum, niobium, chromium, tantalum, vanadium

ABSTRACT: Highly purified refractory metals such as molybdenum, tungsten, niobium,  
chromium, tantalum, vanadium and their alloys are widely used in the development  
of new fields of engineering. All of these metals and alloys are generally pre-  
pared in a vacuum, since heat treatment of these metals in air leads to their  
contamination. Frequently, plating is used prior to rolling for protection of the  
metal. However, removal of the plating after rolling is very difficult. Heating  
and deformation of active metals in a vacuum has several advantages in comparison  
with treatment in an inert gas. The present paper briefly discusses the results  
of investigations into the effect of hot rolling in a vacuum on the mechanical

Card 1/3

L 31367-65

ACCESSION NR: AT4047715

properties and structure of several metals. The metals were deformed on a 170 rolling mill in a vacuum, but the auxiliary mechanisms and bearings were not in a vacuum. The metal was heated to 1500-1700C at a rolling rate of 0.1-1.0 m/sec with cooling of billets up to 800 mm in length in a vacuum of  $10^{-1}$  to  $2 \times 10^{-5}$  mm Hg or in a protective gas. The rolling mill and stand used for the tests is illustrated and described in detail. The tests indicated that the ultimate strength of titanium rolled in a vacuum is lowered by about 3-5% in comparison with titanium rolled in air. The relative elongation increased by 60-80%. Heating and rolling in a  $2 \times 10^{-5}$  mm Hg vacuum increases the plastic properties by 10-20% in comparison with rolling in a  $10^{-3}$  mm Hg vacuum. Heating in a vacuum and rolling in air lead to an increase in the plastic properties of titanium by 15-20%. Niobium heated and rolled in a vacuum has plastic properties 60-80% higher than those of metal rolled in air. The ultimate strength is lowered in this case by about 15-20%. Heating and rolling of molybdenum in a vacuum also leads to an increase in plastic properties by 60-90% and to a lowering in ultimate strength by 10%. The deformability of metals increases by 35-70% when heated and rolled in a vacuum. The plastic properties of the metals improve noticeably at residual pressures of  $10^{-3}$  mm Hg. Changing of the vacuum from  $10^{-3}$  to  $2 \times 10^{-5}$  mm Hg improves the plastic properties of the metals by an additional 15-20%. Hot rolling of metals in a vacuum not only protects them from contamination but also purifies them to some

Card 2/3



L 31367-65

ACCESSION NR: AT4047715

extent. Orig. art. has: 2 figures and 3 tables.

ASSOCIATION: Leningradskiy politekhnicheskiy institut imeni M. I. Kalinina  
(Leningrad polytechnical institute)

SUBMITTED: 00

ENCL: 00

SUB CODE: MM

NO REF SOV: 005

OTHER: 004

Card 3/3

SMIRNOV, V.S., prof.; GRIGOR'YEV, A.K., kand. tekhn. nauk

Theory of plastic working of metals. Book by I.Ya. Tarnovskiy,  
A.A. Pozdeyev, O.A. Ganago, V.L. Kolmogorov, V.N. Trubin, R.A.  
Vaysburd, and V.I. Tarnovskiy; Review. Stal' 25 no.4:348  
Ap '65. (MIRA 18:11)

1. Leningradskiy politekhnicheskii institut. 2. Chlen-  
korrespondent AN SSSR (for Smirnov).

L 55097-65 EWA(k)/FBD/EWT(1)/EWG(p)/EEG(k)-2/T/EEG(t)/EWP(k)/EEG(b)-2/EWA(m)-2/EWA(h)  
Pm-4/Pn-4/Po-4/Pf-4/Peb/Pi-4/Pl-4 SCTB/IJP(c) WG

ACCESSION NR: AP5014576

UR/0181/65/007/006/1756/1760

AUTHOR: Zhelnov, B. L.; Kazantsev, A. P.; Kolpashchikov, V. L.; Smirnov, V. S.

TITLE: Pulsations of stimulated emission in solids

SOURCE: Fizika tverdogo tela, v. 7, no. 6, 1965, 1756-1760

TOPIC TAGS: stimulated emission, laser action, solid laser, two level laser, system stability, laser, laser spiking

64  
63  
8

25

ABSTRACT: The article considers the pulsations of stimulated emission in solids at high energies, when the interaction of the electromagnetic field with the medium leads to the appearance of two types of oscillations, namely modulation of the field and slow damped oscillations. Making use of the analogy between this phenomenon and the motion of a particle in a potential well with twin valleys, the authors show by means of a phase-plane analysis that, regardless of the excitation conditions, undamped oscillations of the field amplitude are established in the system. The frequency, amplitude and period and the transient time of the oscillations are determined. Orig. art. has: 2 figures and 22 formulas. [02]

Card 1/2

L 55097-65

ACCESSION NR: AP5014576

ASSOCIATION: Institute fiziki poluprovodnikov, SO AN SSSR, Novosibirsk (Institute  
of Semiconductor Physics, SO AN SSSR)

SUBMITTED: 28Dec64

ENCL: 00

SUB CODE: EC, SS

NO REF SOV: 005

OTHER: 001

ATD PRESS: 4025

Card 2/2

L 1696-66 EWA(k)/FBD/EWT(1)/EEC(k)-2/T/EWP(k)/EWA(m)-2/EWA(h) SCTB/IJP(c) WG  
ACCESSION NR: AP5022729 UR/0181/65/007/009/2816/2820

AUTHOR: Zhelnov, B. L.<sup>44</sup>; Kazantsev, A. P.<sup>44</sup>; Smirnov, V. S.<sup>44</sup>

TITLE: Stimulated emission of a traveling-wave laser <sup>25</sup>44

34  
B

SOURCE: Fizika tverdogo tela, v. 7, no. 9, 1965, 2816-2820

TOPIC TAGS: laser, laser emission, stimulated emission, traveling wave laser

ABSTRACT: The generation of a traveling-wave laser is studied theoretically near the threshold for the case of high- and low-Q resonators. It is shown that three types of stationary generation can exist: 1) a highly unstable standing-wave, 2) a slightly unstable, slow traveling wave, and 3) a highly stable traveling wave of the type  $\exp i(\omega t - kx)$ . Under certain energy conditions, the second type can also become stable. Orig. art. has: 23 formulas. [YK]

ASSOCIATION Institut fiziki polyprovodnikov, SO AN SSSR, Novosibirsk (Semiconduc-  
tor Physics Institute, SO AN SSSR) 44

SUBMITTED: 30Jan65  
NO REF SOV: 003

ENCL: 00  
OTHER: 005,

SUB CODE: EC  
ATD PRESS: 4093

Card 1/1 mlb

L 16023-66 EWT(1)/FCC/EWA(h)

GW

ACC NR: AP6006654

SOURCE CODE: UR/0203/66/006/001/0019/0026

AUTHOR: Dorman, L. I.; Medvedev, M. Yu.; Smirnov, V. S.

ORG: Polar Geophysical Institute, Kola Division, AN SSSR (Polyarnyy geofizicheskiy institut Kol'skogo filiala AN SSSR)

TITLE: Highly accurate trajectories of cosmic rays in a geomagnetic field

SOURCE: Geomagnetizm i aeronomiya, v. 6, no. 1, 1966, 19-26

TOPIC TAGS: cosmic ray intensity, magnetic dipole, geomagnetic field, anisotropic motion, asymptotic direction, spherical harmonic function

ABSTRACT: A study of planetary distribution of the intensity of cosmic rays revealed that the theoretical computations based on the magnetic dipole do not agree with the measured intensity of cosmic rays. This result indicated that the higher harmonics of a geomagnetic field influence the trajectories of cosmic-ray particles. The anisotropic motion of cosmic rays is associated with asymptotic directions. These directions can be found by solving the potential of the geomagnetic field by means of six harmonic spherical functions. The solution was based on two maps of the geomagnetic field with isolines of its components. The one

Card 1/2

UDC: 523.165

Card 2/2

L 32633-66 FBD/EWT(1)/EEC(k)-2/T/EWP(k) IJP(c) WG

ACC NR: AP6018808

SOURCE CODE: UR/0056/66/050/005/1291/1295

AUTHOR: Zhelnov, B. L.; Kazantsev, A. P.; Smirnov, V. S.

ORG: Institute of Physics of Semiconductors, Siberian Department, Academy of Sciences SSSR (Institut fiziki puluprovodnikov Sibirskogo otdeleniya Akademii nauk SSSR)

TITLE: Wave interaction in a gas laser *js*

SOURCE: Zh eksper i teor fiz, v. 50, no. 5, 1966, 1291-1295

TOPIC TAGS: gas laser, laser beam, laser propagation, traveling wave interaction, frequency locking

ABSTRACT: The authors consider the interaction between waves traveling in opposite directions in a gas laser with a ring resonator, brought about either by the non-linearity of the medium or by the coupling between waves as they are reflected from the mirrors. A phenomenological formula describing the latter coupling is derived and is introduced into the equations of motion for the wave amplitudes and the phases in a rotating coordinate system. The solution of these equations is used to describe frequency locking effects and suppression of one of the traveling waves. It is shown that under standard gas-laser conditions frequency locking takes place within a band of several hundred cps if the coupling coefficient between the reflected waves is of the order of  $10^{-5}$ . The degree of suppression of one of the waves increases monotonically but not uniformly with the relative detuning. The authors thank Yu. V. Troitskiy for a useful discussion. Orig. art. has: 2 figures and 24 formulas. [02]

SUB CODE: 20/  
Card *1/1*

SUBM DATE: 04Nov65/

ORIG REF: 005/

OTH REF: 003/ ATD PRESS:  
*5025*

SMIRNOV, V.S.

Animal tagging with the help of self-ringing loops. Trudy Inst.  
biol. UFAN SSSR no.38:21-28 '65.

(MIRA 18:12)



SMIRNOV, V.S., student

Consolidation of road soils with water glass by adding granulated  
blast-furnace slag. Trudy STI 37:173-175 '64.

(MIRA 18:5)

ZHEKINOV, P.I.; KALANTSEV, A.I.; KOLCHAGCHIKOV, V.I.; OMIENOV, V.I.

Fluorations of induced radiation in solids. Fiz. tverd. tela 7  
no.6:1756-1760 Ja '65. (MIRA 18:6)

1. Institut fiziki poluprovodnikov Sibirskogo otdeleniya AN  
SSSR, Novosibirsk.

ACC NA: AR6083105 SOURCE CODE: UR/0137/66/000/057/D009/D010

AUTHOR: Smirnov, V. S.; Tron', A. S.; Aleksandrov, A. A.;  
Rybnichenko, N. D. 4/

TITLE: Producing bimetals by hot rolling in vacuum

SOURCE: Ref. zh. Metallurgiya, Abs. 7D70

REF SOURCE: Tr. Leningr. politekhn. in-ta, no. 260, 1965, 22-27

TOPIC TAGS: bimetal, hot rolling, plastic deformation, bimetal welding

ABSTRACT: The results are presented of an investigation of the effect of reduction values, the ratio of thicknesses in a packet, and the purity of treatment of welding surfaces on the weld strength of Me during plastic deformation in vacuum. The results of metallographic examination of the transition zone are also given. The investigations were carried out on pairs of Me: steel 3—Cu, steel 3—Ti, steel 3—1Kh18N9T, Mo—Ni, and Mo—Cu. To ensure strong welds deformation of 5--10% is sufficient. With increased reduction of the packet, the weld strength grows. In changing the ratio of thickness of layers of individual Me in a bimetal packet, the weld strength decreases with increased thickness of the layer of more plastic Me. At the boundary of Me contact in a bimetal, obtained

Card 1/2

UDC: 621.771.014.2

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ACC NR: AR6033105

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by hot rolling in vacuum, a transition zone is produced as a result of diffusional processes. The thickness of the zone depends on the temperature of rolling, the value of reduction of the packet, the purity of mechanical treatment of welded surfaces, and on the subsequent metal heat treating. N. Yudina. [Translation of abstract]

SUB CODE: 13/

KHATIN, M. G. (Professor) and SMIRNOV, V. T. (Aspirant, ENTIVS [All-Union Scientific Research Institute of Veterinary Sanitation]).

"The use of rogor for hypodermatosis in cattle..."  
Veterinariya, vol. 39, no. 2, February 1962 pp. 73

ANDREYEV, K.P., prof.; KHATIN, M.G., prof.; IVASHKOV, I.S., nauchnyy  
soтрудnik; SMIRNOV, V.T., aspirant

Chlorophos in the prophylaxis of hypodermosis. Veterinariia 41  
no.2:44-45 F '65. (MIRA 18:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut veterinarnoy  
sanitarii.

С.И.Р.В. В.В.

Increasing labor productivity in oleoresin dipping and  
transportation. *Gidroliz. i lesokhim. prom.* 16 no.4:25-26 '63.  
(MIRA 16:7)

1. Borskoye lesokhimicheskoye khozyaystvo.  
(Turpentine—Equipment and supplies)

SMIRNOV, Valentin Vladimirovich

[How to assure the preservation of cabbages and onions] Kak obespechit'  
dlitel'noe khranenie kapusty i luka. Sverdlovsk, Ob-vo po raspro-  
straneniuiu polit. i nauchn. znaniu RSFSR, Sverdlovskoe obl. otd-nie,  
1956. 11 p. (MLRA 10:2)

1. Glavnyy agronom-ovoshchevod Oblasel'khozupravleniya.  
(Cabbage--Storage) (Onions--Storage)



RABINOVICH, R.I. Prinimali uchastiye: ALEGLAN, L.K., kand. sel'khoz. nauk;  
BARABANOVA, N.N.; BOSENKO, K.S.; VINNIK, V.V.; GRIGORCHUK, Ye.V.;  
GUMEROV, A.Kh.; DOBROCHASOV, D.F.; ZAMURAYEV, I.V.; ZAYTSEVA, A.G.,  
kand. sel'khoz. nauk; KOL'TSOV, N.A.; LEVITIN, Kh.Z., kand. biol.  
nauk; LISITSKIY, B.Ya.; MATYASH, G.P.; MENTOV, A.V.; RABINOVICH, R.I.;  
SAL'NIKOV, V.V.; SVECHNIKOV, I.V.; SIMONOV, P.K.; SMIRNOV, V.V.;  
SMIRNOV, L.P.; SMIRNOVA, V.I.; STEPANOVA, V.I.; TARASOV, A.A.; FILA-  
TOVICH, V.V., kand. sel'khoz. nauk; FEDOROV, N.G., kand. tekhn. nauk;  
TSAPLIN, M.F.; KHROMOV, L.V.; DAVYDOVA, I., red.; PAL'MINA, N., tekhn.  
red.

[Sverdlovsk in Agricultural Exhibition of 1959] Sverdlovskaya sel'-  
khoz'iaistvennaya vystavka. Sverdlovsk, Sverdlovskoe knizhnoe izd-vo,  
1960. 131 p. (MIRA 14:10)

1. Sverdlovsk. Sverdlovskaya oblastnaya sel'skokhozyaystvennaya  
vystavka, 1959.

(Sverdlovsk—Agricultural exhibitions)

ZYUZIN, Fedor Stepanovich; YARTSEV, Aleksandr Konstantinovich;  
SMIRNOV, V.V., red.; LARIONOV, G.Ye., tekhn. red.;

[Repairing peat machinery] Remont torfianykh mashin. Mo-  
skva, Gos.energ.izd-vo, 1961. 382 p. (MIRA 15:2)  
(Peat machinery--Maintenance and repair)

15 (2)

AUTHORS:

Smirnov, V. V., Chesnovetskiy, M. Ya.,  
Zaytsev, G. K.

SOV/72-59-8-14/17

TITLE:

Removal of Bricks Which Have Sunk in in the Vault of a Tunnel  
Furnace (Ustraneniye kirpichey, prosevshikh v svode tunnel'noy  
pechi)

PERIODICAL:

Steklo i keramika, 1959, Nr 8, pp 46-47 (USSR)

ABSTRACT:

At the beginning of the current year 3 bricks sank in in the  
Dinas vault of a tunnel furnace in the zone of maximum  
temperatures at the Leningrad chinaware plant "Proletariy".  
This meant that in this particular place the furnace vault was  
lowered by 120-150mm, so that the piling height of the lorries  
had to be diminished. This, however, was of no avail either,  
since it upset the working conditions of the furnace. It was  
tried to break out the bricks by means of a ram lorry, but the  
attempt was unsuccessful. The authors of the present article  
suggested to shoot the bricks down with a military rifle, which  
was then carried out within an hour. In this way it was not  
necessary to stop the operation of the furnace, which would have

Card 1/2

Removal of Bricks Which Have Sunk in in the Vault of a Tunnel Furnace SOV/72-59-8-14/17

resulted in great production losses.

ASSOCIATION: Leningradskiy farforovyy zavod "Proletariy" (Leningrad  
Chinaaware Plant "Proletariy")

Card 2/2

S/115/62/000/007/008/008  
E194/E455

AUTHOR: Smirnov, V.V.

TITLE: A capacitative follow-up level meter

PERIODICAL: Izmeritel'naya tekhnika, no.7, 1962, 49-50

TEXT: This instrument is intended for continuous automatic reading of level or of the boundary of separation between two phases having different dielectric properties. It is particularly intended for use with mineral slurries in ore flotation plants where there is a sharp boundary between the clarified liquid and the slurry. Graphs are plotted of the pick-up capacitance as a function of slurry concentration for a number of minerals. The parallel plates of the pick-up carry a thin film to insulate them electrically from the liquid phase. The capacitance of the pick-up is a function of its position relative to the plane of phase separation. The pick-up is in one arm of a capacitance bridge and a similar pick-up located in clarified liquid is placed in the opposite arm to cancel the effect of changes in the ionic composition of the slurry. The bridge feeds a phase-sensitive amplifier which controls a miniature reversible electric hoist.

Card 1/2

PONOMARENKO, V.I.; SAYFULLIN, R.Z.; SMIRNOV, V.V.

Floating chain level indicator. Priborostroenie no.10:22-23  
0 '63. (MIRA 16:11)

KHAN, G.A.; SMIRNOV, V.V.; ZAZNOBIN, M.G.

Method of automatically controlling the turbidity of a thickener  
overflow. Obog. rud 7 no.2:19-42 '62. (MIRA 16:4)  
(Ore dressing) (Automatic control)

GERASIMOV, V.V.; GROMOVA, A.I.; GOLOVINA, Ye.S.; MOSKVICHEV, G.S.;  
PAVLOVA, P.S.; SMIRNOV, V.V.; SHAPOVALOV, E.T.;  
PANASENKOVA, Ye.I., red.: MALIN, Ye.I., tekhn. red.

[Corrosion and irradiation] Korrozia i obluchenie. (By)  
V.V.Gerasimov i dr. Moskva, Gosatomizdat, 1963. 267 p.  
(MIRA 16:11)

(Corrosion and anticorrosives)  
(Materials, Effect of radiation on)



SMIRNOV, Viktor Vasil'yevich; MARINSKIY, Ye., red.; KURLIKOVA, L.,  
tekhn. red.

[Listen to the bells of the clamorous battle] Slushai kolo-  
kola gromkogo boia. Moskva, Molodaiia gvardiia, 1964. 141 p.  
(MIRA 17:4)

SMIRNOV, V.V.

Role of the microbiological factor in the increase of the corrosive aggressiveness of mine waters of the Kizel coal basin. Mikrobiologiya 32 no.4:695-699 J1-Ag '63. (MIRA 17:6)

1. Permskiy universitet.

SMIRNOV, V.V.

New developments in turpentine. *Gidroliz. i lesokhim. prom.*  
18 no.5:27-28 '65. (MIRA 18:7)

L. Sarapul'skoye lesokhimicheskoye khozyaystvo.

SMIRNOV, V.V.

Samolet "Razdvizhnoe krylo". (Grazhdanskaia aviatsiia, 1938, no.6, p.31-37, illus.)

Title tr.: "Variable wing" airplane.

TL504.G7 1938

So: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

SHIRNOV, V. V., and I. P. SIVAK

O podbore gorizonta'nogo opereniia s shaitami na kotsakh razmakha.  
(Tekhnika vozdushnogo flota, 1940, no. 7, p. 59-71, tables, diagrs.)

Title tr.: Selection of a horizontal tail surface wit tip fins.

TL504.T4 1940

SC: Aeronautical Sciences and Aviation in the Soviet Union, Library of  
Congress, 1955.

SMIRNOV, V. V.

Priblizhennaia otsenka poletnogo vesa i nym chislom rabotaiushchikh motorov. (Tekhnika  
vozdušnogo flota, 1945, no. 9, p. 16-19, tables, diags.)

Title tr.: Approximate evaluation of gross weight and controllability of a multiengine  
airplane with some of the engines cut-off.

TI504.Th 1945

GERSHUNSKIY, Boris Semenovich; GORELIK, A.L., kard. tekhn. nauk, retsenzent; SMIRNOV, V.V., преподаvatel, retsenzent; BELYASHAYA, A.Ye., red.; MIRONETS, Ye.M., red.

[Principles of electronics and semiconductor technology]  
Osnovy elektromoi i poluprovodnikovoi tekhniki. Kiev, Izd-vo Kievskogo univ., 1964. 322p. (MIRA 17:10)

1. Zaveduyushchiy kafedroy "Elektronnyye i ionnyye pribory" Khar'kovskogo Instituta gornogo mashinostroyeniya, avtomatiki i vychislitel'noy tekhniki (for Gorelik). 2. L'vovskiy tekhnikum radioelektroniki (for Smirnov).

VOSPOLIT, V.G.; ~~SMIRNOV, V.V.~~ redaktor; FEYTEL'MAN, N.G., redaktor;  
SABITOV, A., tekhnicheskij redaktor.

[Improving work organization and production norms in mining] Ulu-  
chshat' organizatsiiu i normirovanie truda na shakhte. Moskva,  
Ugletekhizdat, 1954. 57 p. (MLRA 8:3)  
(Coal mines and mining)



TOTMAKOV, Anatoliy Vasil'yevich, dotsent; SMIRNOV, V.V., otvetstvennyy  
redaktor; FRYTEL'MAN, N.G., redaktor izdatel'stva; ALADOVA, Ye.I.,  
tekhnicheskiy redaktor

[Organization of management in the coal industry of the U.S.S.R.]  
Organizatsiia upravleniia v ugol'noi promyshlennosti SSSR. Moskva,  
Ugletekhnizdat, 1956. 28 p. (MLRA 9:7)  
(Coal mines and mining)

BOKIY, Orest Borisovich, dotsent; MOROZOV, Aleksandr Ivanovich, dotsent;  
MORDUKHOVICH, Mikhail Vladimirovich, dotsent; CHETYRKIN, M.I.,  
otvetstvennyy redaktor; SMIRNOV, V.V., otvetstvennyy redaktor;  
MIKHEYEV, G.F., redaktor izdatel'stva; KOROVENKOVA, Z.A., tekhnicheskiy redaktor; ALADOVA, Ye.I., tekhnicheskiy redaktor

[Organization and planning of work in auxiliary sectors and plants of  
mines] Organizatsiya i planirovaniye raboty vspomogatel'nykh uchastkov  
i tsukhov shakhty. Moskva, Ugletekhizdat, 1956. 310 p. (MLRA 9:12)  
(Coal mines and mining)

USATOV, Georgiy Afanas'yevich; SMIRNOV, V.V., otvetstvennyy redaktor;  
FEYTEL'MAN, N.G., redaktor izdatel'stva; DODEVA, G.V., redaktor  
izdatel'stva; ALADOVA, Ye.I., tekhnicheskiy redaktor

[Struggle for increased labor productivity; practices of mines of  
the Nesvetay Anthracite Trust] Bor'ba za povyshenie proizvoditel'-  
nosti truda; opyt raboty shakht tresta Nesvetaiantratsit. Moskva,  
Ugletekhizdat, 1957. 66 p. (MLRA 10:9)  
(Labor productivity) (coal mines and mining)

L 17015-63 INT (R) EP (w) / I / EP (t) / INT I/P (c) ID/WB

ACC NR: AP6023446

SOURCE CODE: UR/0369/66/002/003/0304/0307

AUTHOR: Smirnov, V. V.; Pokhmurskiy, V. I.; Boltarovich, A. V.

ORG: Physicomechanical Institute, AN UkrSSR, L'vov (Fiziko-mekhanicheskiy institut AN UkrSSR)

TITLE: Physicomechanical and corrosion properties of heat-resistant EP-479 stainless steel

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 3, 1966, 304-307

TOPIC TAGS: stainless steel, heat resistant steel, chromium steel, nickel containing steel, manganese containing steel, silicon containing steel, molybdenum containing steel, nitrogen containing steel, steel property/EP 479 Kh17N2 steel

ABSTRACT: The new EP-479 stainless steel, containing 0.12-0.18% C, 15-16.6% Cr, 2-2.5% Ni, 0.6% max Mn, 0.6% max Si, 1.2-1.5% Mo, and 0.05-0.10% N2, is intended for parts used in the chemical and aircraft industry operating at temperatures up to 500C and was developed as a substitute for Kh17N2 steel, which is not suitable for operation at temperatures above 400C. The best combination of properties in EP-479 steel is achieved by annealing at 1040C followed by oil quenching and tempering at 570 or 650-680C. At 20, 400, or 500C, EP-479 steel has a respective tensile strength of 120, 98, and 80 dan/mm2; a yield strength of 90, 80, and 70 dan/mm2; an elongation of 12, 14, and 12%; a reduction of area of 50, 60, and 65%; and

Card 1/2

Card 2/2 mep

ACC NR: AP7006473

SOURCE CODE: UR/0415/66/000/004/0102/0105

AUTHOR: Smirnov, V. V.

ORG: Institute of Mining SO AN BSSR, Novosibirsk (Institut gornogo dela SO AN BSSR)

TITLE: On some mechanical properties of rocks in the strip pit of the Barandat deposit in the Kan-Achensk Basin

SOURCE: Fiziko-tekhnicheskiye problemy razrabotki poleznykh iskopayemykh, no. 4, 1966, 102-105

TOPIC TAGS: mining engineering, tensile strength, compressive strength, hardness, solid mechanical property

ABSTRACT: Some of the physical and mechanical properties of rocks in the strip pit of the Barandat deposit in the Kan-Achensk Basin were determined as a basis for establishing relationships between the basic characteristics of rocks in this deposit. The following empirical formulas are derived for the interrelationship between tensile and uniaxial compressive strength and punch hardness:  $\sigma_{comp} = 14.3\sigma_{tens}$ ,  $\sigma_{comp} = 7.3h_p$ ,  $h_p = 1.73\sigma_{tens}$ . The validity of these relationships is established by the methods of probability theory and mathematical statistics. These formulas may be used to evaluate the properties of rocks in the Barandat deposit with satisfactory accuracy. Orig. art. has: 4 figures, 1 table, 5 formulas.

SUB CODE: 11, 08 / SUBM DATE: 08Oct65 / ORIG REF: 006

Card 1/1

UDC: 622.831(571.51)+622.01.013

SMIRNOV, V.V.; SUKACHEV, V.N., akademik.

Certain peculiarities of the vegetative reproduction of aspen. Dokl. AN  
SSSR 90 no.5:909-912 Je '53. (MLRA 6:5)

1. Institut lesa Akademii nauk SSSR (for Smirnov).
  2. Akademiya nauk SSSR (Aspen)
- (for Sukachev).

SMIRNOV, V. V.

"Replacing Oak With Aspen on the Cutover Areas of the Southern Forest Steppes and Measures for Its Regulation." Cand Agr Sci, Inst of Forestry, Acad Sci USSR, Moscow, 1954. (KL, No 3, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (13)  
SO: Sum. No. 598, 29 Jul 55

SMIRNOV, V.V.

USSR/Biology - Plant ecology

Card 1/1      Pub. 22 - 48/56

Authors      : Smirnov, V. V., and Odinkova, N. S.

Title        : Hydrological role of aspen forests

Periodical   : Dok. AN SSSR 99/5, 849-852, Dec 11, 1954

Abstract     : Scientific data regarding the hydrological role of aspen trees, planted under identical soil-geomorphological conditions, are presented. The physical properties of soil best suited for the planting of aspen trees are tabulated. Ten USSR references (1846-1953). Tables; graph.

Institution: Academy of Sciences USSR, Forest Institute

Presented by: Academician V. N. Sukachev, October 11, 1954



SMIRNOV, V.V.

Vegetative propagation of aspen trees in the mountainous part of  
the Tellermskoye Forest. Trudy Inst. lesn 40:5-52 '59.  
(MIRA 12:10)

(Balashov Province--Aspen)

SMIRNOV, V.V.

Distribution of needles by age in *Picea excelsa* Link growing in pure spruce and mixed spruce-deciduous stands of the taiga zone. Bot. zhur. 45 no.10:1522-1530 O '60. (MIRA 13:11)

1. Laboratoriya lesovedeniya Akademii nauk SSSR, selo Uspenskoye Moskovskoy oblasti. (Spruce) (Leaves)

KALMAKOV, A. A. (eng), FOLKIN, S. I. (Prof, Dr.Eng.), KHAN, G. A. (eng student), SMIRNOV, V.V.

"The use of radioisotopes for the determination of the contents of certain metals in the products of ore dressing."

report submitted for 6th Intl Mineral Processing Cong, Cannes, 26 May-2 Jun 63.

Kalinin Inst Non-Ferrous Metals & Gold, Moscow.

TITOV, A.I., SMIRNOV, V.V.

Chemistry, Organic - Synthesis

Effect of complex formation, ionization, and isomerization of organic substances on their chemical activity during nitration. Synthesis of phenyltrinitromethane and its properties. Dokl. AN SSSR 83 no. 2 (1952)

Monthly List of Russian Accessions, Library of Congress, August, 1952, UNCLASSIFIED.

SMIRNOV, V.V.

AUTHOR

TIPOV A.I., VEREMEYEV G.N., SMIRNOV V.V., SHAPILOV O.D. ~~XXXXXXXXXX~~

TITLE

A New Substitution Reaction of Alcohol Hydroxyl For Fluorine  
And Its Use. 20-2-32/67

PERIODICAL

(Novaya reaktsiya zameny spirtevoye gidroksila na fter i yaye  
primeneniye -Russian)  
Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 2, pp 358-360 (U.S.S.R.)  
Received 6/1957 Reviewed 7/1957

ABSTRACT

The generally known reactions for obtaining haloalkyls, especially the influence of fluorine hydrogen and fluorine phosphate compounds, turn out to be of little use for the immediate replacement of alcohol hydroxyls by fluorine. Appropriate methods must still be found. In 1942 one of the authors together with A.N. Baryshnikova had the possibility to carry out such a replacement in a single phase. It concerned the transformation of ethylene chlorohydrin into 1,2-fluorine-chloro-ethane when being boiled with a mixture of benzol-sulfofluoride and fluorine potassium. Also the reaction mechanism was demonstrated. The reaction passes the following phases: 1. An alcoholate develops, 2. acylation by a sulfofluoride under formation of alkyl sulfonate follows. The partial formation of sulfonates without the presence of fluorine potassium is also possible on the occasion of sulfofluoride acting on alcohols. 3. In the last phase the alkylation of the fluorine potassium takes place, as already known. Secondary processes can take place at the same time in the course of which simple ethers and unsaturated compounds develop or their polymerization takes place respectively.

Card 1/2

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2209, 2409

27506

S/079/61/031/009/007/012  
D215/D306

AUTHORS: Petrov, K.A., Smirnov, V.V., and Yemel'yanov, V.I.

TITLE: Alkylation and arylation of white phosphorus

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 9, 1961,  
3027 - 3030

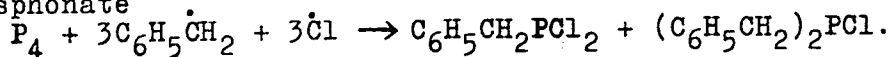
TEXT: The authors for the first time carried out direct alkylation and arylation of white phosphorus without catalysts or activating additives. Heating benzyl chloride with white phosphorus at 300°C for 4 hrs. gave benzyldichlorophosphine. It may be assumed that alkylation and arylation reaction proceed according to a free radical mechanism as in both alkyl and aryl halides. C - Halogen bond may undergo homolytic splitting. The free radicals formed attack the white phosphorus molecule, whose structure is a tetrahedron with P atoms at each apex; this decomposes into two P<sub>2</sub> molecules only at 800°C. In the initial stages of alkylation and arylation the splitting of P - P bond occurs under the action of free radical.

Card 1/4

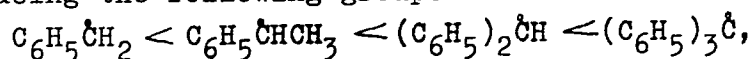
Alkylation and arylation of ...

27506  
S/079/61/031/009/007/012  
D215/D306

cals to form a tetraphosphorus - alkyl - or aryl halide which on renewed attack causing breaking of P - P bonds converts to a halophosphonate



The authors established a relation between the stability of the free radical and the minimum temperature, at which the reaction occurs by introducing the following groups into the reaction



the stability of which increases from left to right. The temperature of the reaction decreases on passing from haloderivatives forming less stable radicals, to haloderivatives giving more stable radicals; for benzyl chloride the temperature is 300°C, for 1-chlorophenylethane 270°C, for diphenyl-chloromethane 250°C, and for triphenylchloromethane 225°C. Aralkylation of white phosphorus with benzyl chloride was conducted in a sealed tube heated at 300°C for 4 hrs. Distillation yielded three fractions, the second

Card 2/4

27506

S/079/61/031/009/007/012

D215/D306

Alkylation and arylation of ...

being identified as benzyl dichlorophosphine. This was dissolved in  $\text{CCl}_4$  and nitrogen oxides passed through the solution to give benzylphosphinic acid dichloride, b.pt.  $130^\circ\text{C}/2$  mm. Hydrolysis of the latter by refluxing with water yielded white crystalline benzylphosphinic acid, m.pt.  $166-166.5^\circ\text{C}$ . The third fraction, b.pt.  $234-236^\circ\text{C}/12$  mm was identified as dibenzylchlorophosphine. The distillation residue after boiling with alkaline  $\text{H}_2\text{O}_2$ , neutralization and acidification gave dibenzylphosphinic acid. Arylation of white phosphorus with bromobenzene using a similar method gave phenyldibromophosphine, diphenyldibromophosphine and triphenyldibromophosphineoxide. Arylation with m-bromotoluene gave m-toluyldibromophosphine b.pt.  $110-111^\circ\text{C}/2$  mm and di-m-toluyldibromophosphine, b.pt.  $141-142^\circ\text{C}/2$  mm. Alkylation with n-octyl bromide produced n-octyldibromophosphine b.pt.  $72^\circ\text{C}/22$  mm and di-n-octyldibromophosphine b.pt.  $140^\circ\text{C}/11$  mm. There are 10 non-Soviet-bloc references. The references to the English language publications read as follows: O. Masson, J.B. Kirkland, J. Chem. Soc., 55, 138, 1870; F.W. Bennet, H.J. Emeleus, R.

Card 3/4



VOROB'YEV, S.F.; DAVYDOV, I.F.; SMIRNOV, V.V.

Solution of magnesium in an ammonium nitrate solution. Zhur.  
neorg. khim. 9 no.9:2159-2162 S '64.

(MIRA 17:11)

SMIRNOV, V.V., dotsent; BUR'YANOV, V.F., kandidat tekhnicheskikh nauk.

"Mechanical equipment of rolling mills." A.A.Korolev, G.M.Nikolaevskii; Reviewed by V.V.Smirnov, V.F.Bur'ianov. Stal' 15 no.3: 286-287 Mr '55. (MIRA 8:5)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche im. Baumana (for Smirnov).
  2. Vsesoyuznyy zaochnyy politekhnicheskii institut (for Bur'yanov).
- (Rolling-m'ill machinery) (Korolev, A.A.) (Nikolaevskii, G.M.)

SMIRNOV, V.V., kandidat tekhnicheskikh nauk.

Investigation of acting forces in rolling friction-bearing raceways.  
[Trudy] MVTU no.62:74-109 '55. (MLRA 9:7)  
(Rolling (Metalwork)) (Bearings (Machinery))

SMIRNOV, V V.

25 (1)

p 3

PHASE I BOOK EXPLOITATION

SOV/292

Moscow. Vyssheye tekhnicheskoye uchilishche. Kafredra "Mashiny i tekhnologiya prokatki i volocheniya"

Prokatnyye stany i tekhnologiya prokatki; sbornik statey (Rolling Mills and Methods of Rolling; Collection of Articles) Moscow, Mashgiz, 1957. 125 p. (Series: Moscow. Vyssheye tekhnicheskoye uchilishche. /Trudy/ vyp. 80) 4,000 copies printed.

Ed.: M.I. Zaroshchinskiy, Doctor of Technical Sciences, Professor; Tech. Ed.: Ye.N. Matveyeva; Managing Ed. for Literature on Heavy Machine Building: Ya.S. Golovin, Engineer.

PURPOSE: This collection of articles is intended for the personnel of scientific research institutes, engineers, designers, teachers and students specializing in rolling methods and the building of rolling mill machinery.

COVERAGE: Theoretical and experimental studies done by the scientific workers of the department of "Machinery and methods of rolling and drawing" of MTU (Moscow Higher Technical School) imeni Bauman are published in this collection.

Card 1/ 4

SOV/292

Rolling Mills and Methods of Rolling

The articles deal with the following topics: spreading of stock in rolling and distribution of stresses and spread along the width of the stock, resistance to deformation in metal forming, change of the form of the strip depending on dimensions of the contact area in rolling in plain rolls; the theory of elastoplastic bending of a strip during straightening on a multiroll machine, investigation of basic parameters characterizing the resistance of material to rolling; simplified formula for spreading, and measuring unit pressure along the arc of contact using strain gages. No personalities are mentioned. There are 41 references, 39 Soviet and 2 English.

TABLE OF CONTENTS:

Introduction

3

Tselikov, A.I., Corresponding Member of the Academy of Sciences, USSR.  
Effect of the Ends of the Workpiece on Spreading and Distribution of  
Speeds and Stresses Along the Width of the Rolled Strip

5

Card 2/4

Rolling Mills and Methods of Rolling		SOV/292
Tslikov, A.I., Corresponding Member of the Academy of Sciences, USSR, and V.A. Persiyantsev, Candidate of Technical Sciences. Effect of Cold Hardening on Resistance to Deformation in Overrecrystallization Processes		22
Zaroshchinskiy, M.L., Doctor of Technical Sciences, Professor. Change in Form of the Strip in Rolling in Plain Rolls		35
<u>Smirnov, V.V.</u> , Candidate of Technical Sciences, Docent. On the Theory of Calculating the Power of the Drive for Rotary-type Straighteners		50
Kovolev, A.A., Candidate of Technical Sciences. Elastoplastic Bending of a Strip During Straightening on a Multiroll Machine		57
Zhavoronkov, V.A., Candidate of Technical Sciences. Investigation of Forces in Cross-helical Die Rolling of Periodic Profiles		77
Pushkarev, V.F., Candidate of Technical Sciences. Determination of Parameters Characterizing Resistance to Deformation of the Stock in Rolling		90

Card 3/4

137-58-6-12147

Translation from. Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 139 (USSR)

AUTHOR: Smirnov, V.V.

TITLE: On the Theory of Design and Analysis of Power Trains for Leveling Machines With Skew Rolls (K teorii rascheta moshchnosti privoda pravil'nykh kosovalkovykh mashin)

PERIODICAL: V sb.: Prokatn. stany i tekhnol. prokatki. (MVTU, 80). Moscow, Mashgiz, 1957, pp 50-56

ABSTRACT: The author examines the design of a machine capable of two cycles of leveling (L) operations in accordance with the two possible flexions of the axis of the metal by the action of the primary rollers (R). The pressure of these R's is determined successively from the conditions of equilibrium of the moments of external forces as in the case of a beam with many supports. As in the general case, the pressures of the R's in a two-cycle L machine are proportional to the plastic resisting moment and inversely proportional to the advance of the R's. The problem of determination of the power ( $N_l$ ) necessary for the L operation presents considerable difficulties and necessitates the determination of two power components, the first of which

Card 1/2

137-58-6-12147

On the Theory of Design and Analysis of Power Trains (cont.)

depends only on the motion of translation of metal  $N_{trans}$ , while the second one is dependent only on the rotary motion,  $N_{rot}$ . It is suggested that  $N_{trans}$  be determined by the method commonly used for standard machines employed for longitudinal L.  $N_{trans}$  is expressed as a sum of the products of the bending moments and the angular velocity of bending of metal with residual curvature. A formula is derived for the determination of  $N_{rot}$ . In order to calculate the rotary power it is essential that the values of the nominal lengths of the regions of metal undergoing plastic deformation be determined. By employing the relation between the sides of a moment triangle, as derived by A.D. Kuz'min, these lengths are found to be equivalent to 0.4 of the advance of the R's. Next, the final value of the L moment is obtained by means of simultaneous solution of the equation  $N_s = N_{trans} + N_{rot}$  together with a number of other equations. All computations are based on the assumption of dealing with a material with ideal elastic-plastic properties; however, in order to achieve better accuracy it is desirable that  $\sigma_s$  values be replaced by actual values of resistance to deformation with proper allowances for its magnitude and velocity and the temperature of the metal. A number of mathematical relationships are proposed for this purpose.

1. Rolling mills--Design    1. Rolling mills--Theory    3. Rolling    A.N.  
Card 2/2    mills--Equipment



SMIRNOV, V. V.

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21  
THERMODYNAMICS OF MOLTEN MIXTURES OF ALKALINE METAL CHLORIDES AND THORIUM TETRACHLORIDE. V. V. Smirnov and L. E. Ivanovski (Sverdlovsk Electrochemical Lab. Acad. of Science). Zhur. Fiz. Khim. 31, 640-7(1957) Mar. (In Russian)

6  
1-4E4j

The equilibrium potentials of Th-Zn alloy electrode against a chlorine electrode were measured in molten eutectic mixtures of Li and K chlorides containing 2.98 to 40 x 16% by weight ThCl<sub>4</sub> and in pure molten ThCl<sub>4</sub> at 840°C. It was observed that melts with less than 25% by weight of ThCl<sub>4</sub> behave as ideal solutions. Equations were developed for the temperature and concentration dependence of the electrode potential Th/Th<sup>4+</sup> in molten mixtures of alkaline metal chlorides of less than 25% by weight ThCl<sub>4</sub> with respect to the chlorine electrode. (R.V.J.)

Handwritten initials and scribbles.

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PHASE I BOOK EXPLOITATION

SOV/3226

Mezhvuzovskaya nauchno-tekhnicheskaya konferentsiya na temu:  
"Sovremennyye dostizheniya prokatnogo proizvodstva."

Trudy... (Transactions of the Intercollegiate Scientific and Techni-  
cal Conference on Recent Achievements in the Rolling Industry)  
Leningrad, 1958. 251 p. 1,000 copies printed.

Sponsoring Agencies: Leningradskiy politekhnicheskii institut im.  
M.I. Kalinina, Nauchno-tekhnicheskoye obshchestvo mashinostroit-  
eley, Leningradskoye otdeleniye, and Nauchno-tekhnicheskoye obshch-  
estvo metallurgov, Leningradskoye otdeleniye.

Resp. Ed.: V.S. Smirnov, Doctor of Technical Sciences, Professor;  
Ed.: N.N. Pavlov.

PURPOSE: These proceedings of the conference are intended for  
specialists in the rolling industry.

COVERAGE: The articles of this collection cover various theoretical  
and practical problems of rolling, such as: pressure, spread,  
efficiency of rolls, determination of deformation, forces required,  
Card 1/9

Transactions of the Intercollegiate (Cont.)

SOV/3226

pass design, optimum conditions for rolling, experiences of various plants, modernization of equipment, aluminum-clad steel, and rolling of nonferrous metals. No personalities are mentioned. References appear after each article.

TABLE OF CONTENTS:

Smirnov, V.S. [Leningradskiy politekhnicheskiy institut im. M.I. Kalinina (Leningrad Polytechnical Institute im. M.I. Kalinin)] Recent Achievements in the Rolling Industry"	5
Shvayun, V.L. [SKMZ im. Ordzhonikidze, Kramatorsk] Old Kramatorsk Machine-Building Plant in the Drive for Technical Progress	15
Chekmarev, A.P., L.Ye. Kapturov, and P.L. Klimenko. [Dneproptrov- skiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute)] Experimental Investigation of Unit Pressure in Rolling on Plane and Grooved Rolls	20
Tarnovskiy, I.Ya., and V.N. Trubin. [Ural'skiy politekhnicheskiy institut im. S.M. Kirova (Urals Polytechnical Institut im. S.M. Kirov), Sverdlovsk] Study of Spread in Rolling, Using Variational Principles Card 2/9	29

## Transactions of the Intercollegiate (Cont.)

SOV/3226

- Tarnovskiy, I.Ya., and V.N. Trubin. [Ural'skiy politekhnicheskiy institut im. S.M. Kirova (Urals Polytechnical Institute im. S.M. Kirov), Sverdlovsk] Zones of Sticking and Slipping on the Contact Surfaces of the Focus of Deformation in Rolling 43
- Starchenko, D.I. [Zhdanovskiy metallurgicheskiy institut (Zhdanov Metallurgical Institute)] Forward Slip, Retardation and Spread in Rolling With Normal and Extra High Drafts 48
- Mut'yev, M.S. [Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute)] Determining Spread During Rolling in Simple Passes 62
- Arkulis, G.E. [Magnitogorskiy gornometallurgicheskiy institut im. G.I. Nosova (Magnitogorsk Mining and Metallurgy Institute im. G.I. Nosov)] Method of "Surface Marks" for Calculation of the Internal Nonuniformity of Deformation in Upsetting 66
- Vydrin, V.N. [Chelyabinskiy politekhnicheskiy institut (Chelyabinsk Polytechnical Institute)] Rolling in Rolls of Unequal Diameter  
Card 3/9 71

Transactions of the Intercollegiate (Cont.)	SOV/3226	
Golubev, T.M. [Kiyevskiy politekhnicheskiy institut (Kiyev Polytechnical Institute)] Rolling With Constant Pressure		78
Dinnik, A.A. [Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institut)] Calculation of Metal Pressure on Rolls in Hot Rolling of Steel		81
Pavlov, N.N. [Leningradskiy politekhnicheskiy institut im. M.I. Kalinina (Leningrad Polytechnical Institut im. M.I. Kalinin)] Calculating Forces in Shape Rolling by the Equivalent Strip Method		91
Klimenko, V.M. [Institut chernoy metallurgii AN USSR (Institute of Ferrous Metallurgy, AS Ukr SSR), Kiyev] Design of Passes with Pinching Effect [top and bottom of pass have small tapers] and the Experimental Determination of Side Pressure of Work in Rectangular Passes		95

Card 4/9

Transactions of the Intercollegiate (Cont.)

SOV/3226

Lavrukhin, G.S., and V.D. Durnev. (Leningrad) Some Problems of  
Production and Equipment in Longitudinal Periodic Die Rolling 103

Chelyshev, N.A. [Sibirskiy metallurgicheskiy institut (Siberian  
Metallurgical Institute), Stalinsk] Optimum Conditions of Deformation in Rolling 109

Grechko, V.P. [Institut chernoy metallurgii AN USSR (Institute  
of Ferrous Metallurgy, AS Ukr SSR)] Quality of Rolling With  
Great Drafts 122

Bakuma, S.F. [Zavod "Krasnyy Oktyabr'" (Plant "Krasnyy Oktyabr'"),  
Stalingrad] New Type of Rolled Stock for the Tractor Industry 126

Boyarshinov, M.I. [Magnitogorskiy gornometallurgicheskiy  
institut im. G.I. Nosova (Magnitogorsk Mining and Metallurgy  
Institute im. G.I. Nosov)] New Technique in the Metallurgical  
Method of Producing Copper-Clad Steel Wire Rod 131

Card 5/9

Transactions of the Intercollegiate (Cont.)	SOV/3226
Gorenshteyn, M.M. [Zhdanovskiy metallurgicheskiy institut (Zhdanov Metallurgical Institute)] Intensifying Régimes of Drafts in Rolling According to Friction Conditions	136
Khlebnikov, V.P. [Zavod "Azovstal'" (Plant Azovstal'"), Zhdanov] Mastering Rolling of Rails at the "Azovstal'" Plant	141
Ilyukovich, B.M. [Chusovskoy metallurgicheskiy zavod (Chusovoy Metallurgical Plant)] Rolling and Roll Pass Design of Light T-shapes for Framework of Industrial Buildings	145
Baram, A.N., A.M. Nakhimov, and M.D. Kozin. [Kirovskiy zavod (Kirov Plant), Leningrad] Rolling Spring Leaf and Spring Steel at Kirov Plant	151
Yatsura, V.K. [Zakavkazskiy metallurgicheskiy zavod im. I.V. Stalina (Transcaucasian Metallurgical Plant im. I.V. Stalin)] Application of Repeaters in Rolling Steel Angles	155

Card 6/9

Transactions of the Intercollegiate (Cont.)	SOV/3226
Korshunov, Ye.A. [Ural'skiy politekhnicheskiy institut (Urals Polytechnical Institute)] Effect of a Manipulator on Blooming Productivity	158
Grevtsov, M.M. [Zavod "Azovstal'" (Plant "Azovstal'"), Zhdanov] Rolling Double-length Blooms in the 650 Blooming Mill at the Large Section Rolling Shop of the "Azovstal'" Plant	162
Malenok, F.T. [Leningradskiy zavod po obrabotke tsvetnykh metallov (Leningrad Plant for Treatment of Nonferrous Metals)] Modernizing the Equipment of Foil-rolling Shops	163
Chernyak, S.N. [Leningradskiy zavod po obrabotke tsvetnykh metallov (Leningrad Plant for Treatment of Nonferrous Metals)] Improving Production of Aluminum-clad Iron	176
Gurevich, D.Ya. [Leningradskiy listoprokatnyy zavod (Leningrad Sheet-rolling Mill)] Combined Method of Producing Roofing Sheets	182

Card 7/9



Transactions of the Intercollegiate (Cont.)

SOV/3226

- Benyakovskiy, M.A. [Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov (Urals Scientific Research Institute of Ferrous Metals), Sverdlovsk] Forces of Deformation of Metal and Automation of Band Thickness Control in Cold Rolling 184
- Meleshko, V.I., and M.M. Saf'yan. [Institut chernoy metallurgii AN USSR (Institute of Ferrous Metallurgy, AS UkrSSR)] Investigation of Energy Consumption, and Action of Force in a Continuous Hot-rolling Sheet Mill 197
- Kuzema, I.D. [Zavod imeni Il'icha (Plant im. Il'ich)] Relation Between Geometric and Weight Tolerances of Plate Steel 208
- Bogoyavlenskiy, K.N. [Leningradskiy politekhnicheskiy institut im. M.I. Kalinina (Leningrad Polytechnical Institute im. M.I. Kalinin)] Bending Forces in a Structural Mill 214
- Chekmarev, A.P., Ya.L. Vatin, and D.M. Litinskiy. [Dnepropetrovskiy metallurgicheskiy institut] (Dnepropetrovsk Metallurgical Institute)] Wall Thickness Variation of Large Diameter Pipe 223  
Card 8/9

Transactions of the Intercollegiate (Cont.)	SOV/3226
Zhavoronkov, V.A. [Moskovskoye vyssheye tekhnicheskoye uchilishche im. Baumana (Moscow Higher Technical School im. Bauman)] Producing Solids of Rotation by Helical Rolling	230
Belousov, N.P. [Leningradskiy politekhnicheskoye institut im. M.I. Kalinina (Leningrad Polytechnical Institute im. M.I. Kalinin)] Investigation of the Process of Drawing Brass and Copper Tubes on a Short Mandrel	234
Zholobov, V.V. [Vsesoyuznyy alyuminiyevy-magniyevyy institut (All-Union Aluminum-magnesium Institute)] Rolling and Extrusion of Titanium and Its Alloys	240
Smirnov, V.V. [Moskovskoye vyssheye tekhnicheskoye uchilishche im. Baumana (Moscow Higher Technical School im. Bauman)] Remarks on Rolling Technique in the KNR (Chinese People's Republic)	245

AVAILABLE: Library of Congress (TS340.m42)

Card 9/9

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SMIRNOV, V.V.

25(2)

PHASE I BOOK EXPLOITATION

SOV/1329

Tselikov, Aleksandr Ivanovich, Corresponding Member, USSR Academy of Sciences and Viktorovich Smirnov, Candidate of Technical Sciences, Docent.

Prokatnyye stany (Rolling Mills) Moscow, Metallurgizdat, 1958. 432 p. 13,500 copies printed.

Ed.: Korolev, A.A.; Ed. of Publishing House: Sidorov, V.N., Engineer; Tech. Ed.: Islent'yeva, P.G.

**PURPOSE:** This book is approved by the USSR Ministry of Higher Education as a textbook for metallurgical and for machine-building institutes and may be helpful to machinists, processing engineers, designers and engineers working in manufacturing and in design offices.

**COVERAGE:** The design and construction of rolling mills, their mechanisms and individual parts are examined in the book. The authors present their own theories on a number of problems pertaining to the field of design loads and design stresses in various kinds of rolling mill machinery. The chapter on lubricating equipment was written by Engineer M.P. Vavilov. The authors thank Docent A. A. Korolev, Candidate of Technical Sciences, for editing the book. Many illustrations are published for the first time; some of them are reprinted from the book written by A. A. Korolev and G. M. Nikolayevskiy, Mekhanicheskoye obrudovaniye prokatnykh tsekhov (Mechanical Equipment

Card 1/14

Rolling Mills

SOV/1329

1. Primary mills	27
Blooming mills	27
Slabbing mills	29
2. Billet mills	30
3. Structural mills	31
Universal mill for rolling wide-flange beams	32
Rail mills	33
Large-section structural mills	34
Medium-section structural [merchant bar] mills	37
Small-section structural [merchant bar] mills	38
Wire [rod] mills	40
Strip mills	43
4. Sheet and plate mills	44
Plate mills	44
Wide strip continuous and semicontinuous mills	45
5. Roll piercing mill (complete mill unit)	47
6. Cold rolling mills	52

PART II. COMPONENT PARTS AND MECHANISMS OF THE ROLL STAND

Card 3/14

SOV/1329

Rolling Mills

2.	Hand-operated screw-down mechanisms for the top roll	93
3.	High-speed screw-down mechanisms for the top roll	94
4.	Low-speed screw-down mechanisms for the top roll	105
5.	Mechanisms and devices for adjusting the bottom roll	111
6.	Lifting screws and nuts	112
7.	Torque necessary for operating lifting screws	114
8.	Safety devices	115
9.	Devices and mechanisms for adjusting the middle roll	117
10.	Devices for axial adjustment and detents of rolls	118
Ch. IV. Guides, Loop-holders, Work-stretching Control and Roll-changing Devices		121
1.	Purpose and arrangement of entering and delivering guides	121
2.	Edging guides and repeaters	125
3.	Roller-type guides for cold-rolling mills	127
4.	Loop-holders and devices for work-stretching control	130
5.	Roll-changing devices	131
Ch. V. Stand Housings and Setting Them on Foundations		137

Card 5/14

SOV/1329

Rolling Mills

- 1. Basic types of housings 137
- 2. Stand design for overturning and forces in [housing] supports 137
- 3. Design for strength of a closed-type housing for vertical forces 139
- 4. Design of a closed-type housing for deformation 141
- 5. Design of an open-type housing for vertical forces 143
- 6. Material for housings and allowable stresses 144
- 7. Construction of housings 144
- 8. Bedplates 146

PART III. PARTS TRANSMITTING ROTATION TO ROLLS

- Ch. I. Connecting Spindles 156
  - 1. Universal spindles 156
  - 2. Design of universal spindles for strength 160
  - 3. Wobbler spindles and couplings 163
  - 4. Balancing of spindles 164
- Ch. II. Main and Motor Couplings 170
  - 1. Gear couplings 170
  - 2. Double-universal (Schlemann) coupling 173

Card 6/ 14

SOV/1329

Rolling Mills

- 3. Flexible spring (Bibby) coupling
- 4. ~~Force~~ values for design of couplings
- 5. Safety couplings

173  
174  
174

Ch. III. Gear Drives

- 1. Types of gearing for roll drive
- 2. Design of the pinion stand for overturning
- 3. Pinions of pinion stands
- 4. Construction of pinion stands
- 5. Geared speed reducers

176  
176  
178  
179  
180  
188

Ch. IV. Flywheels

- 1. Purpose of the flywheel and determination of its basic parameters
- 2. Construction of flywheels

191  
191  
194

PART IV. SPECIAL ROLLING MILLS

Ch. I. Mills With Vertical Rolls

- 1. Vertical stands (edgers)
- 2. Vertical stands of plate mills
- 3. Vertical stands of structural and billet mills
- 4. Universal stands

196  
196  
196  
200  
204

Card 7/14

SOV/1329

Rolling Mills

207

Ch. II Tube-manufacturing Mills

207

1. Roll piercing mills

213

2. Plug rolling mills

216

3. Rotary rolling (reeling) mills

216

4. Sizing mills

218

5. Cold tube reducing machines

222

Ch. III. Wheel Mills

PART V. AUXILIARY MACHINES AND MECHANISMS

Ch. I. Classification, Working Regimes and Drive of Auxiliary Machines

226

1. Classification of auxiliary machines

226

2. Operating regime and drive of auxiliary machines

227

Ch. II. Shears

1. Basic types of shears

229

2. Resistance to shearing

229

3. Force in shearing metal with parallel blades

229

4. Work [needed] for shearing metal with parallel blades

232

5. Force and work in shearing metal with inclined blades

232

234

Card 8/14



SOV/1329

Rolling Mills

- 6. Force and work in cutting metal with rotary shears 236
- 7. Shears with parallel blades 237
- 8. Drives for shears with parallel blades 244
- 9. Shears with an inclined blade 245
- 10. Rotary slitting shears 251

Ch. III. Flying Shears

- 1. Classification of flying shears 257
- 2. Cutting regimes of flying shears for cutting work in given lengths 257
- 3. Control of lengths cut on shears working by intermittent method 258
- 4. Control of cut lengths on continuously working shears 261
- 5. Connection between feeding rollers and shears 262
- 6. Cutting the front end to a given length 262
- 7. Level-swing-type shears 263
- 8. Single-axis rotary shears 263
- 9. Rotary shears 264
- 10. Drum-type shears 266
- 11. Shears with translatory motion of blades 269
- 12. Cutting forces in flying shears 269
- 13. Motor power for flying shears 270
- 14. Selection of basic parameters of flying shears

Card 9/14

30V/1329

## Rolling Mills

## Ch. IV. Hot Saws

1. Purpose of saws
2. Cutting force and power
3. Cutting force and speed of feed
4. Construction of saws

271  
271  
271  
272  
273

## Ch. V. Straighteners and Levelers

1. Types of straighteners and levelers
2. Straightener presses
3. Theory of straightening in a press
4. Theory of straightening in multiroll machines
5. Limit values of curvature in elastic bending
6. Pressure on rollers of a straightening machine
7. Power for the drive of roller-type machines
8. Basic parameters of sheet and plate levelers
9. Construction of sheet and plate levelers
10. Straighteners for structural shapes
11. Rotary straighteners with rollers having nonparallel axes for rounds and tubes
12. Forces acting in machines with rollers having nonparallel axes
13. Power for the drive of machines with rollers having non-parallel axes
14. Stretch-type straighteners

276  
276  
276  
277  
280  
283  
284  
284  
287  
289  
294  
296  
299  
299  
301

Card 10/14

sov/1329

Rolling Mills

Ch. VI. Coilers and Uncoilers

- 1. Drum-type stretch coilers
- 2. Power for driving the stretch-coiling drums
- 3. Coiling machine
- 4. Power for coiler drive
- 5. Wire rod and narrow-strip coilers
- 6. Uncoilers

303  
303  
307  
307  
313  
313  
317

Ch. VII. Roller-type Conveyors

- 1. Basic types of roller conveyors
- 2. Parameters of roller conveyors
- 3. Loading of rollers of a conveyor
- 4. Torque of rollers
- 5. Construction of roller conveyors
- 6. Construction of rollers and their bearings
- 7. The next-to-stand rollers of roller tables
- 8. Lifting roller tables
- 9. Design of roller table lifting mechanism

320  
320  
321  
323  
325  
326  
332  
333  
334  
337  
343  
343  
344

Ch. VIII. Manipulators, Tilters and Turning Mechanisms

- 1. Manipulators of roughing mills
- 2. Manipulator of three-high structural mills

Card 11/14

SOV/1329

Rolling Mills

	344
3. Manipulators of plate mills	349
4. Hook-type roughing mill tilters	351
5. Structural mill tilters	354
6. Plate tilters	355
7. Turning devices	
Ch. IX. Ingot Buggies and Mechanisms for Transportation of Short Pieces	361
1. Ingot buggies	361
2. Stationary ingot dumpers	363
3. Stops	364
4. Furnace [charging] pushers	366
5. [Billet] pushers	367
6. Pilers and charge tables for slabs	367
7. Furnace discharge pushers	372
8. Pushers in front of stands	372
9. Crop conveyor	
Ch. X. Cooling Devices and Transverse Transfers of Long Rolled Pieces	375
1. Purpose of cooling devices and transverse transfers	375
2. Basic parameters of cooling devices	375
3. Rope transfers	377

Card 12/14

Rolling Mills

SOV/1329

- 4. Chain transfers 379
- 5. Transfers with load-carrying chains 380
- 6. Cooling devices of merchant bar mills 381

PART VI. LUBRICATING SYSTEMS OF ROLLING MILLS

- Ch. I. Basic Kinds of Lubricants and Means of Feeding Them to the Bearing Surfaces 389
  - 1. Oil and grease 389
  - 2. Devices for oil lubrication 390
  - 3. Devices for grease lubrication 394
- Ch. II. Oil Pressure Lubrication Systems 397
  - 1. Arrangement of pressure lubrication systems with rotary piston pumps 397
  - 2. Instruments for checking and automation of operation of pressure lubrication systems 398
  - 3. Arrangement of pressure lubrication systems with gear pump 399
  - 4. Main pipeline and oil tanks 400
  - 5. Oil pumps 401

Card 13/14

SHIRNOV, V. V.

"Investigation of the Stresses at Hot Expansion of the Raceways of Rolling Friction Bearings." Sub 29 Jan 51, Moscow Order of the Labor Red Banner Higher Technical School imeni Bauman

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55

SOV/133-58-12-11/19

AUTHOR: Smirnov, V.V. (Candidate of Technical Science, Dotsent)

TITLE: Some Special Features of Rolling Practice in the Chinese People's Republic (Osobennosti prokatnoy tekhniki Kitayskoy Narodnoy Respubliki)

PERIODICAL: Stal', 1958, Nr 12, pp 1118-1121 (USSR)

ABSTRACT: Some engineering features of the continuous linear wire rod rolling mill (Swiss Succo) in Shanghai (Fig 1), in particular tangentially fed coilers (Figs 2 and 3, made by Demag) and some Chinese original designs such as chain turn-over device (Fig 4) and twin tables for servicing two-roll stands of a sheet rolling mill (Fig 5) are described.

There are 5 figures.

ASSOCIATION: MVTU imeni Bauman

Card 1/1

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31935  
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A004/A101

AUTHORS: Pevzner, M.L., Smirnov, V.V.

TITLE: Copper-plating in a pyrophosphate electrolyte in the ultrasonic field

PERIODICAL: Referativnyy zhurnal. Mashinostroyeniye, no. 22, 1961, 73-74, abstract 22B444 ("Tr. Proyechn., tekhnol. i n.-i. in-ta Gor'kovsk. sovnarkhoz", 1959, no. 1, 22 - 30)

TEXT: The authors present the results of investigations carried out at the Gor'kovskiy avtozavod (Gor'kiy Automobile Plant) on the copper-plating in a pyrophosphate electrolyte using ultrasonics. The investigations were carried out on an experimental bath production line. In the latter a vinylplastic-lined steel bath 650 x 980 x 860 mm was installed, this bath having a volume of 450 liters at an electrolyte level of 760 mm. The electrolyte was heated by a stainless steel coil pipe placed on the bath bottom. The ultrasonic power sources were 2 tube generators of the ГYM-2 (GUM-2) and ГYM-2 M (GUM-2M) type with an output power of 1.5 kw each. The emitters with nickel magnetostrictive HЭЖI-4 (NEL-4) converters were suspended at the transverse side of the bath, two on each

Card 1/3



31935  
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A004/A101

Copper-plating ...

side. For a uniform sound treatment of the parts being coated the emitters were arranged one over the other. The emitter position in the bath was not changed. For tests with a high specific ultrasonic power a bath of 60 liters capacity was used. On its bottom an emitter of 1,5 kw h-f input power was placed. The direction of the sound beam was horizontal. The copper-plating of steel parts was carried out in an electrolyte of the following composition (in g./liter):

$CuSO_4 \cdot 5H_2O - 35$ ,  $Na_4P_2O_7 \cdot 10H_2O - 140$ ,  $Na_2HPO_4 \cdot 12H_2O - 95$  and also  $CuSO_4 \cdot 5H_2O - 15.4$ ,  $Na_4P_2O_7 \cdot 10H_2O - 53$ ,  $Na_2HPO_4 \cdot 12H_2O - 36.4$ ;  $CuSO_4 \cdot 5H_2O - 70$ ,  $Na_4P_2O_7 \cdot 10H_2O - 200$ ,  $Na_2HPO_4 \cdot 12H_2O - 95$ . It is shown that the optimum pH-value of the electrolyte corresponding to the conditions of good efficiency and ensuring a good adhesion between the coating and the steel base, should be 6.6. With an increase in the electrolyte temperature up to  $45^{\circ}C$  at a pH-value of 6.6 and a specific ultrasonic power of 3.5 w/l, the cathode current density limit grows up to  $6 \text{ amp/dm}^2$ . A further temperature increase of the electrolyte does practically not result in a cathode current density rise. High-quality fine-grained deposits are obtained in an electrolyte with a copper concentration of  $35 \text{ g/l } CuSO_4 \cdot 5H_2O$  at a current density of  $6 \text{ amp/dm}^2$ . An increase in the concentration up to  $70 \text{ g/l}$  ensures an operation at a current density of up to  $8 \text{ amp/dm}^2$ , but the coating produced is coarse-grained at a layer thickness of more

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Card 2/3

31935  
S/123/61/000/022/012/024  
A004/A101

Copper-plating ...

than 10  $\mu$ . The copper plating obtained from pyrophosphate electrolytes using ultrasonics possesses practically the same porosity as a copper coating from cyanogen electrolytes with current reversal. The process of pyrophosphate copper-plating using ultrasonics can be expediently applied to replace the copper-plating process in cyanogen electrolytes, if between steel base and nickel coating an intermediate layer of 7 - 8  $\mu$  is produced and for the copper-plating of steel parts with a thickness of 35 - 40  $\mu$  with subsequent polishing of the obtained coating. The throwing power of the pyrophosphate electrolyte does not permit its use for the preliminary application of a copper layer on steel parts prior to copper-plating in an acid electrolyte. There are 4 references, X

N. Savina

[Abstracter's note: Complete translation]

Card 3/3

TSELIKOV, A.I.; SMIRNOV, V.V.

History of the development of Russian rolling-mill machinery  
manufacture. Trudy Inst. ist. est. i tekhn. 21:3-43 '59.  
(MIRA 13:3)

(Rolling mills)

25(1)

SOV/148-59-2-21/24

AUTHOR: Smirnov, V.V., Docent

TITLE: A Propos of an Article by V.M. Grebenik On "The Dependence of Deformation, Moments and Accuracy of Straightening on the Adjustment of Straightening Machines" (Po povodu stat'i V.M. Grebenika "Zavisimost deformatsii, momentov i tochnosti pravki ot nastroyki pravil'noy mashiny")

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, 1959, Nr 2, pp 157-160 (USSR)

ABSTRACT: The author states his opinion on the article mentioned above, published by V.M. Grebenik in a previous copy of the periodical. He discusses some conclusions made by Grebenik and includes recommendations on the subject. The following points are discussed: deformation magnitude in straightening; combined adjustment of rolls; and computation of the straightening force. There is 1 set of graphs.

Card 1/2