"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 1688-66 EWT(1) IJP(c) GG

ACCESSION NR: AP5020570 UR/0294/65/003/004/0648/0652 53 38 B

AUTHOR: Semenov, A. M. 44,55

TITLE: Consideration of quantum effects in calculating the second virial coefficient 21,44,55

SOURCE: Teplofizika vysokikh temperatur, v. 3, no. 4, 1965, 648-652

TOPIC TAGS: virial coefficient, thermodynamics, equation of state, quantum theory, mechanics, Planck constant

ABSTRACT: It is generally assumed that, starting from any given potential for intermolecular interaction $\varphi(r)$, if this potential decreases sufficiently rapidly as r approaches infinity, it is possible to calculate the second virial coefficient by the following formula:

$$B(T) = B_{cl}(T) = -2\pi N_A \int_0^\infty [e^{-\varphi(r)/kT} - 1] r^2 dr, \quad (1)$$

where this expression corresponds to the actual situation to the degree to which, at the temperatures under consideration, the laws of classical mechanics are

Card 1/3

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 1688-66
ACCESSION NR: AP5020570

valid to describe the movements of the molecules comprising the given gas. If the temperatures are such that the quantum effects are in the nature of corrections to the classical laws, B(T) can be expressed in the form of a series of powers of h^2/mkT, where h is Plank's constant and m is the mass of a molecule. In this series expression (1) above is the first term of the expansion. It is widely thought that at medium and high temperatures the quantum effects are so small that B(T) can be accurately equated to $B_{cl}(T)$. The present article is an attempt to show theoretically that this method of taking quantum effects into account is mistaken. The article demonstrates that $B_{cl}(T)$ splits naturally into two parts:

$$B_{\text{кл}}(T) = B_f(T) + B_{\text{связ}}(T). \qquad (2)$$

Here, B_f takes account of the energies of the relative motion of the particles when formation of bonded pairs is not possible, and B_{cl} owes its presence to bonded pairs of the initial particles. It is concluded from theoretical considerations that if it is desired to write the seoncd virial coefficient in the usual form for mixtures of real gases, the virial coefficient for a monomeric component of such

Card 2/3

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 1688-66
ACCESSION NR: AP5020570

15

a mixture should be expressed by the magnitude B_f, and not by the total "atom-atomic" virial coefficient B(T), as is generally done with partial error in such calculations. "In conclusion, I thank E. E. Shpil'rain for his many fruitful observations on the material in the present article, V. A. Belov for his constant interest in the work, and V. M. Dubner and S. A. Marty'yanov for his valuable remarks following reading of the manuscript." Orig. art. has: 14 formulas, 1 figure and 1 table

ASSOCIATION: Nauchno-issledovatel'skii institut vysokikh temperatur (High Temperature Research Institute)

SUBMITTED: 01Apr65 ENCL: 00 SUB CODE: GP

NR REF SOV: 000 OTHER: 006

Card 3/3

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

VERZUNOV, Mikhail Vasil'yevich; LOBANOV, Igor' Valentinovich; SEMENOV, Aleksandr Mitrofanovich; VENGRENYUK, L.I., red.; SLUTSKIN, A.A., tekhn. red.

[Single-band modulation] Odnopolosnaia moduliatsiia. Moskva, Sviaz'izdat, 1962. 298 p. (MIRA 15:7)
(Modulation (Electronics))
(Radio frequency modulation)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.M., inzh.

Improving the method of designing railroad station layouts. Transp. stroi. 14 no.4:43-45 Ap '64. (MIRA 17:9)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

S/275/63/000/002/004/032
D405/D301

AUTHORS: Levin, V.M., Khokhlov, V.K., Semenov, A.N., Rumyantsev, V.V., Stepanov, S.M., Suslenko, V.K., Fomin, L.P., Shikhov, V.Ya. and Chubinskaya, I.L.

TITLE: Linear 5-35 Mev electron accelerator with X-ray head for medical purposes

PERIODICAL: Referativnyy zhurnal, Elektronika i eye primeneniye, no. 2, 1963, 46, abstract 2A269 (Elektron. uskoriteli, Tomsk, Tomskiy un-t, 1961, 10-15 (Collection))

TEXT: A pulsed accelerator is described. The frequency of the microwave field is about 2800 Mc; the electron energy can smoothly vary from 3 to 35 Mev; the mean electron current in the entire range can be brought to 18 microampere. The technical characteristics and the design of the accelerator are described. The accelerating system, the microwave supply, the vacuum system and the X-ray head device are considered in detail. All the accelerator elements were tested on laboratory stands and the working drawings

Card 1/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

S/275/63/000/002/004/032
D405/D301

Linear 5-35 Mev electron ...

for the entire equipment were given over to a plant for serial production.
[Abstracter's note: Complete translation]

Card 2/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A. N.

20849. Semenov, A. N. Mekhanizatsiya polevogo khozyaystva v bor'be s zasukhoy. Trudy Odes. s.-kh. in-ta, t. V, 1948, s. 35-41.

SO: LETOPIS ZHURNAL STATEY- Vol. 28, Moskva, 1949.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A. N.

Tobacco

Mechanizing hard jobs in raising tobacco.
Tobak 13, no. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, June 1952. UNCLASSIFIED.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A. N., (Cand Tech Sci)

Dissertation: "Fundamentals of the Theory and Design of the Operating Mechanisms of Grain-Sowing Machines in Respect to the Uniformity of Seed Distribution." Dr Tech Sci, Joint Sci Council of the All-Union Sci Res Inst for the Mechanization of Agriculture (VIM) and the All-Union Sci Res Inst for the Electrification of Agriculture (VIESKh), 22 Jun 54. (Vechernyaya Moskva, Moscow, 11 Jun 54)

SO: SUM 318, 23 Dec 1954

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.N.

KIRTBAYA, Yuriy Konstantinovich; BULANENKO, F.M., kandidat tekhnicheskikh nauk, dotsent, retsenzent; SEMENOV, A.N., kandidat tekhnicheskikh nauk, dotsent, redaktor; SUHOKA, M.S., redaktor izdatel'stva; RUDENSKIY, Ya.V., tekhnicheskiy redaktor

[Principles of the theory of machine use in agriculture] Osnovy teorii ispol'zovaniia mashin v sel'skom khoziaistve. Kiev, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1957. 277 p.
(Agricultural machinery) (MIRA 10:6)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

BONDAROVSKIY, Fedor Pavlovich; KORNEYEV, Georgiy Vasil'yevich; BORAVSKIY, N.N., dots., retsenzent; STAROSEL'SKIY, A.A., kand.tekhn.nauk, dots, red.; SEMENOV, A.N., kand.tekhn.nauk, dots., red.; ZALOGIN, N.S., red.izd-va; RUDENSKIY, Ya.V., tekhn.red.

[Machine parts and hoisting machinery] Detali mashin i pod"emno-transportnye mashiny. Kiev, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1958. 520 p. (MIRA 11:4)

1. Zaveduyushchiy kafedroy soprotivleniya materialov i detaley mashin Leningradskogo sel'skokhozyaystvennogo instituta (for Boravskiy)
(Hoisting machinery)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, Aleksandr Nikolayevich; KALLYUS, V.Ya., dotsent, kand.tekhn. nauk, retsenzent; SOROKA, M.S., red.

[Grain drills] Zernovye seialki. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 312 p. (MIRA 13:2)
(Drill (Agricultural implement))

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

KORNEYEV, Georgiy Vasil'yevich; SEMENOV, A.N., kand. tekhn. nauk, retsenzent; FURER, P.Ya., red.; GORNOSTAYPOL'SKAYA, M.S., tekhn. red.

[Conveyers and elevators for agricultural use; theory and principles of designing] Transportery i elevatory sel'skokhoziaistvennogo naznacheniia; teoriia i osnovy proektirovaniia. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit. lit-ry Mashgiz, 1961. 230 p. (MIRA 14:6)

(Conveying machinery) (Grain elevators)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A. N., DOC. TECH SCI, "THEORETICAL ~~GROUNDS~~ principles AND METHODS OF the TECHNOLOGICAL ~~COMPUTATION~~ design OF ~~OPERATING~~ the working MECHANISMS OF GRAIN ~~DRILLS~~ seeders." LENINGRAD-PUSHKIN, 1961. (MIN OF AGR RSFSR, LEN AGR INST). (KL, 3-61, 212).

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 15328-65 EWT(1)/EWP(m)/FCS(k)/EWA(h) Pd-1/Pi-4 SSD(b)/ASD(f)-2/AFWL/SSD/
AEDC(a)/AEDC(b)/BSD/ASD(p)-3/AFETR/RAEM(c)/ESD(gs)/ESD(t)
ACCESSION NR: AP4049581 S/0258/64/004/004/0743/0750

AUTHOR: Semenov, A. N., (Leningrad)

TITLE: Determination of gas density behind a shock wave from shadow photographs

SOURCE: Inzhenerny*y zhurnal, v. 4, no. 4, 1964, 743-750

TOPIC TAGS: shock wave, airscrew sound wave, light ray diffraction, shadow photography

ABSTRACT: An experimental technique was developed for determining gas density from shadow photographs. Since the accuracy of the method depends primarily on accurate measurement of the width of the dark band in the shock wave, both the Fresnel diffraction at the edges of the geometric shadows and the diffractional distribution of exposure to light across the caustic were considered. The theory was used to calculate density relationships at the peak of a nonstationary, axisymmetric shock wave generated by the interaction between the horizontal front of the shock wave and a sphere. The measurement error averaged 10%. Orig. art. has: 7 figures and 40 formulas.

Card 1/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 15328-65
ACCESSION NR: AP4049581

SUBMITTED: 12Feb63 ENCL: 00 SUB CODE: ME, OP

NO REF SOV: 004 OTHER: 005 ATD PRESS: 3138

Card 2/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 24481-65 EWT(1)/EWP(m)/EWG(v)/FCS(k)/EWA(1) Pd-1/Pe-5/Pi-4 BSD/ASD(f)-2/SSD, AFWL/AEDC(a)/SSD(b)/AS(dp)-3/AFETR/AFTC(a)/AEDC(b)

ACCESSION NR: AP4049043 S/0057/64/034/011/2015/2020

B

AUTHOR: Sy*shchikova, M. P.; Berezkina, M. K.; Semenov, A. N.

TITLE: Formation of a bow shock wave ahead of a body in a shock tube

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 34, no. 11, 1964, 2015-2020

TOPIC TAGS: hypersonic flow, bow shock wave, shock wave, shock tube, shock detachment distance, shock wave reflection

ABSTRACT: A theoretical and experimental investigation of the formation of a bow shock wave ahead of a body in a shock tube is described. The bow shock wave is generated by the interaction of a shock wave produced in the shock tube with a spherical obstacle. The investigation was carried out in nitrogen and CO_2. The phenomena are described in detail and expressions for determining the reflected shock velocity and the shock detachment distance are given. The experimental procedure and associated apparatus are described. The theoretical and experimental shock detachment distances are given in graphical form for

Card 1/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 11481-65
ACCESSION NR: AP4049043

incident shock waves ranging from 2.75 M to 4.65 M in nitrogen and 3.98 M to 7.53 M in CO_2. The time required for shock wave formation is determined from shlieren photographs. Orig. art. has: 7 figures and 2 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad (Physicotechnical Institute, AN SSSR)

SUBMITTED: 09Mar64 ENCL: 00 SUB CODE: ME

NO REF SOV: 004 OTHER: 007 ATD PRESS: 3136

Card 2/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 22213-65 EWT(1)/EWP(m)/EWG(v)/EWA(h)/FCS(k)/EWA(1) Pd-1/Pe-5/Pi-4 SSD/AEDC(a)/SSDB/BSD/AFWL/AEDC(b)/ASDF-3/ASDP-3/AFETR/AFTC(a)/ESDG(s)/ESDT

ACCESSION NR: AP5002881 S/0207/64/000/005/0154/0159

AUTHOR: Berezkina, N. K. (Leningrad); Semenov, A. N. (Leningrad); Syshchikova, M. P. (Leningrad)

TITLE: Certain methods for investigating nonstationary phenomena in shock tubes

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 5, 1964, 154-159

TOPIC TAGS: shock tube, shock wave, detached shock, detachment distance, boundary layer, nonstationary flow, reflected shock wave, shock wave diffraction, bow shock wave

ABSTRACT: An experimental investigation is presented of nonstationary phenomena in shock tubes, such as formation and development of flow near a model generated by a travelling shock wave. The process of flow formation consisting of the reflection and diffraction of shock waves, the formation of a bow shock wave ahead of a body, the generation and development of a boundary layer, and the formation of flow in the wake of a body are of particular interest to the theory of non-

Card 1/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 22213-65

ACCESSION NR: AP5002881

stationary gasdynamic processes and are of great practical value. A detailed description of the shock tube (with a 150 x 50 mm cross section and 8 m long) and a block diagram of the experimental setup are given and various photographic methods for data recording are outlined. The data obtained make it possible to determine the velocities of the incident shock wave, of the flow in heated and cold regions, and of the contact surface, and also to determine the duration of flow between a shock wave and contact surface, and the Mach number of the flow from the detachment distance of the shock in homogeneous regions of flow. It is also possible to determine the time necessary for a shock wave to reach a steady state, and the dependence of this time on the parameters of the shock wave. Orig. art. has: 10 figures. [AB]

ASSOCIATION: none

SUBMITTED: 14Mar64 ENCL: 00 SUB CODE: ME

NO REF SOV: 004 OTHER: 001 ATD PRESS: 3162

Card 2/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.N. (Leningrad)

Determination of gas density beyond a shock wave by means of shadow photographs. Inzh. zhur. 4 no.4:743-750 '64 (MIRA 18:2)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.N. (Gor'kiy)

Approximate calculation of a rigid symmetrical grating on vertical piles. Osn.,fund. i mekh.grun. 6 no.6:23-25 '64. (MIRA 18:1)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

BEREZKINA, [illegible] (Leningrad); SOMENOV, A.N. (Leningrad); SY[illegible], [illegible] (Leningrad)

Some methods for studying nonstationary effects in shock tubes. (MIRA 18:4)
PMTF no.5:154-15[illegible] [illegible]-O '64.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

LIN'KOV, Ye.M.; SEMENOV, A.N.; SMIRNOV, V.A.

Dipmeter observations in the mines of the Kizel coal basin.
Geofiz. prib. no.19:93-101 '64. (MIRA 18:9)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 46163-65 EWT(m)/EPA(w)-2/EWA(m)-2 Pt-7/Pab-10 IJP(c) GS

ACCESSION NR: AT5007930 S/0000/64/000/000/0420/0424

AUTHOR: Val'ter, A. K.; Grishayev, I. S.; Yeremenko, Ye. V.; Kondratenko, V. V.; Zeytlenok, G. A.; Kuznetsov, G. F.; Levin, V. M.; Malyshev, I. F.; Rumyantsev, V. V.; Semenov, A. N.; Turkin, F. F.; Khokhlov, V. K.

TITLE: Linear traveling-wave accelerator of electrons with output energy 2 Gev

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 420-424

TOPIC TAGS: high energy accelerator, traveling wave electron accelerator, klystron

ABSTRACT: The accelerator consists of an injector and 49 accelerating sections each 4.5 meters long. The accelerator operates with a traveling $1/2\pi$-wave with constant phase velocity equal to the velocity of light c and group velocity equal to $0.04c$. The operating frequency of the accelerator is 2797 mc for a temperature of the accelerating section equal to 37°C. The energy of the accelerated electron beam is 2 Gev, the mean current is 1.2 μamp for a transmission frequency of 50 times per second and duration of the high-frequency pulse of $\tau = 2$ msec. The high-frequency power supply for each section is independent of the klystron amplifier. The exci-

Card 1/3

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 46163-65
ACCESSION NR: AT5007930

tation of the klystrons is carried out from a common wave-guide line, which is supplied from a high power klystron excited by a regulated master oscillator. The group velocity of the electromagnetic wave in the excitation line is equal to about: 0.805 c. The constant phase of the electromagnetic wave at klystron output is maintained by a phasing system with an accuracy of $\Delta\phi = \pm 2°$. The accelerating sections are installed in a special bunker which has a concrete wall-like shield and is covered on top by sectional reinforced-concrete slabs. The output installation is shielded by a special earthen enclosure covered by reinforced-concrete slabs. Purification of the beam from harmful admixtures is carried out by means of a magnetic parallel transfer system and magnetic separators. The present report discusses the parameters of the main units, such as: the injector, the vacuum system ($2 \cdot 10^{-6}$ mm/Hg), the accelerator's high-frequency pulsed power supply, the output installation, the formation and measurement of the beam, the control of the accelerator. It is planned to store the electrons and positrons which are obtained by the present accelerator in a suitable ring, but experience must first be gained with small storage rings and colliding beams, under study at the Physico-technical Institute, Academy of Sciences, Ukrainian SSR. The present accelerator was constructed in accordance with the principle of uniform structure, but not constant field. The entire adjustment phase of the large accelerator's operation is carried

Card 2/3

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 46153-65

ACCESSION NR: AT5007930

2

out by means of one injector. "The design and parameters of the one injector was the concern of V. A. Vishnyakov and associates." Orig. art. has: 5 figures, 1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UkrSSR (Physico-technical Institute, AN UkrSSR); Nauchno-issledovatel'skiy institut elektro-fizicheskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific-research Institute of Electro-Physical Equipment GKAE SSSR)

SUBMITTED: 26May64 ENCL: 00 SUB CODE: NP

NO REF SOV: 000 OTHER: 000

Card 3/3

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

GABRIYELOVA, M.G.; SEMENOV, A.N.; PARYLIS, E. Ya.; NIKITASH, V.G.

Separation of fluorine in the production of double superphosphates.
Khim. prom. 41 no. 12:924-925 D '65 (MIRA 19:1)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 44769-66 EWT(d)/EWT(m)/EWP(k)/EWP(t)/ETI/EWP(j) IJP(c) JD/JW/WB

ACC NR: AP6031407 SOURCE CODE: UR/0064/66/000/009/0063/0064

AUTHOR: Gabriyelova, M. G.; Semenov, A. N.; Nikitash, V. G.

ORG: none

TITLE: A new method for defluorination of phosphoric acid

SOURCE: Khimicheskaya promyshlennost', no. 9, 1966, 63-64

TOPIC TAGS: phosphoric acid, defluorination, sodium fluosilicate

ABSTRACT: A new method for defluorination of raw phosphoric acid has been introduced at the Krasnoural'sk Copper Combine. The method differs from the conventional removal of volatile fluorine compounds which involves evaporation at the acid concentration stage by the precipitation of sodium fluosilicate with soda-sodium sulfate solution prior to the concentration operation. The soda-sodium sulfate solution (which also contains Al_2O_3, Fe_2O_3, NaCl, SiO_2, etc.) is obtained as a by-product in the manufacture of aluminum and contains approximately 7% Na_2CO_3 and approximately 15% Na_2SO_4. Stoichiometric quantities of this solution are added to the raw phosphoric acid at 60—65C. The precipitated Na_2SiF_6 is separated by settling and filtering or centrifuging. The sediment is washed twice with water; the washing liquids are recirculated by adding them to the defluorinated acid (wash I) and to the soda-sulfate solution (wash II). The precipitation removes 75—80% of total fluorine from the raw acid; the residual fluorine content depends on the solubility of Na_2SiF_6 in the given

Card 1/2 UDC: 66/067.661.634.2-963.546.16

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 44769-66

ACC NR: AP6031407

raw acid batch (23.7—25% P_2O_5). The Na_2SiF_6 obtained is used in the glass and cement industry. Compared with the conventional defluorination by evaporation, the method described has the following advantages: simpler equipment and a simpler flow-sheet, lower fluorine content in the vapors of the concentration state, lower corrosiveness and better hygienic conditions. [BN]

SUB CODE: 07, 11/ SUBM DATE: none/ ATD PRESS: 5079

Card 2/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 46764-66 EWT(1) GG
ACC NR: AR6004339

SOURCE CODE: UR/0274/65/000/009/B053/B053

AUTHOR: Semenov, A. V.

45
B

REF SOURCE: Dokl. Nauchno-tekhn. konferentsii, posvyashch. dnyu radio. Tomsk. Tomskiy un-t, 1964, 68-82

TITLE: The use of D403B semiconductor diodes in switches 25 and limiters 25 of input signals of very short wavelengths

SOURCE: Ref. zh. Radiotekhnika i elektrosvyaz', Abs. 9B366

TOPIC TAGS: semiconductor diode, switching circuit / D403B semiconductor diode, D403A semiconductor diode, D403V semiconductor diode

TRANSLATION: Three basic variants of wideband circuits for switching at high frequencies using D403B type diodes are described. These circuits make use of a single diode and two diodes connected in parallel to coaxial transmission lines. Graphs of attenuation characteristics for 10 diodes connected parallel to transmission lines are given. Also shown are graphs for three diodes connected in series to a transmission line. The connection depends upon the magnitude of a positive, zero or negative bias applied to the diode. The frequency characteristic of the insertion loss has a deviation of less than 0.2 db. The magnitude of the switched diode output power is restricted by the maximum permissible power dissipation of the D403B diode (about 100 mw) and its

Card 1/2

UDC: 621.396:621.2:621.374.36

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 46764-66

ACC NR: AR6004339

volt-ampere characteristics. Formulas are given for the calculation of the maximum value of the incident power in diodes connected in series and in parallel to compatible transmission lines. Switching time and choice of the shape of the commuting voltage are also considered. In the meter wave bands, it is possible to work with both resonant and nonresonant types of limiters of both the transfer and reflector types. Limiter circuits of the transfer type are shown; they use four diodes and operate without external bias. Curves relating P_{out} to P_{in} at a frequency of 150 Mhz are shown and frequency characteristics under various incident powers for continuous and intermittent oscillations are discussed. Switches using a D403B (or D403A or D403V) diode can be used as an on-off switch in modulators and in attenuators for low power levels. A limiter using the same diode can be used for the protection of highly sensitive receivers from powerful signals and can also be used in various measuring devices. 15 references. P. U.

SUB CODE: 09/ SUBM DATE: none

Card 2/2 mt

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV A. P. " The composition of the population of domesticated red clover in the light of theory of stages", Izvestiya akad. Nauk BSSR, 1948, no. 6 p 119-25 Bibliog 17 items.

SO: U-3261 10 april 53 (Letopis 'Zhurnal 'nykh Statey No. 11 1949)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

1. SEMENOV, A. P.

2. USSR (600)

4. Agriculture-Study and Teaching

7. How to conduct classes in agriculture and animal husbandry on collective farms. Dost.sel'khoz. no. 11, 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953, Unclassified.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

GRIMAL'SKIY, V.L., prof.; CHETYRKIN, V.S., prof., red.toma; RUD', G.Ya., kand.sel'skokhoz.nauk, red.; SUBBOTOVICH, A.S., kand.sel'skokhoz. nauk, red.; KOLESNIK, L.V., doktor sel'skokhoz.nauk, red.; SEMENOV, A.N., doktor tekhn.nauk, red.; KOVARSKIY, A.Ye., doktor sel'skokhoz.nauk, red.; FROLOV, N.P., doktor ekonom.nauk, red.; MATSYUK, L.S., kand.sel'skokhoz.nauk, red.; GUSAK, I.V., kand.tekhn.nauk, red.; URSUL, D.T., kand.filos.nauk, red.; LEGAS', I.Ye., kand. istor.nauk, red.; SHEVCHUK, I.P., kand.ekonom.nauk, red.; KACHANOVA, N., red.; TIMOSHENKO, A.G., kand.sel'skokhoz.nauk, zamestitel' red.; SHPANER, V., tekhn.red.

[Bodies of water of the Reut Basin, their hydrobiological conditions and the outlook for their utilization in commercial fishing.] Vodoemy basseina reki Reuta, ikh gidrobiologicheskii rezhim i perspektivy rybokhoziaistvennogo ispol'zovaniia. Kishinev, Izd-vo sel'skokhoz. lit-ry, 1962. 191 p. (Kishinev.Sel'skokhoziaistvennyi institut im. M.V.Frunze. Trudy, vol.29). (MIRA 17:2)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.P., kand. tekhn. nauk; CHESHKO, Yu.V., inzh.; STRYGIN, B.I., inzh.; PETROSYANTS, E.V., inzh.

Anchor or rod (mining terms)? Nauch. soob. IGD 18:201-203 '63. (MIRA 16:11)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

BUTKEVICH, R.V.; SEMENOV, A.P.

Mining thick seams of the Tom'-Usinsk district by caving. Ugol' 29 no.12:4-8 D '54. (MLRA 8:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy ugol'nyy institut.
(Kuznetsk Basin--Coal mines and mining)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A. P.

SEMENOV, A. P.: "On the problem of working thick strata at the Tom'-Usa deposit by removing the overburden". Moscow, 1955. Min Higher Education USSR. Moscow Mining Inst imeni I. V. Stalin, Chair of the Working of Stratum Deposits. (Dissertations for the Degree of Candidate of Technical Sciences)

SO: Knizhnaya letopis', No. 52, 24 December, 1955. Moscow.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

Semenov, A.P.

SEMENOV, A.P., kand. tekhn. nauk.

Two combines in one longwall. Mekh. trud. rab. 11 no.10:47 O '57. (MIRA 10:11)
(Czechoslovakia--Coal mines and mining)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

BAZHENOV, I.I., gornyy inzh.; SEMENOV, A.P., gornyy inzh.

Mining thick flat seams in the President Gottwald mine. (MIRA 10:10)
Ugol' 32 no.9:42-45 S '57.
(Czechoslovakia--Coal mines and mining)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

BAZHENOV, I.I.,; GRIDIN, A.D.; DUNAYEV, M.N.; LOKHANIN, K.A.; SEMENOV, A.P.; NURMUKHAMEDOVA, V.F., red. izd-va,; IL'INSKAYA, G.M., tekhn. red.; ALADOVA, Ye.I., tekhn. red.

[Coal industry in Czechoslovakia] Ugol'naia promyshlennost' Chekhoslovakii. Moskva, Ugletekhizdat, 1958. 263 p. (MIRA 11:12)
(Czechoslovakia--Coal mines and mining)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

BUTKEVICH, R.V.; SEMENOV, A.P.; BAKINOV, G.P.; PETROV, A.P.

Results of using the chamber mining system in Estonian shale mines. Ugol' 33 no.9:10-15 S '58. (MIRA 12:1)

1.Vsesoyvanyy nauchno-issledovatel'skiy ugol'nyy institut (for Butkevich , Semenov). 2.Leningradskiy gornyy institut (for Bakinov) 3.Trest Estonslanets (for Petrov).
(Estonia--Shale) (Mining engineering)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV A. P.

AVERSHIN, S.G., prof., dokt.tekhn.nauk; ANAN'IN, G.P., dotsent, kand.tekhn. nauk; BARANOV, A.I., dotsent, inzh.; BERLIN, A.Ye., inzh.; BOCHKAREV, V.G., kand.tekhn.nauk; BUTKEVICH, R.V., kand.tekhn.nauk; VESELOVSKIY, V.S., prof.,doktor tekhn.nauk; VESKOV, M.I., kand. tekhn.nauk; VOL'KENAU, A.V., kand.tekhn.nauk; GARKAVI, S.M., kand.tekhn.nauk; GORBACHEV, T.F.; DAVIDYANTS, V.T., kand.tekhn.nauk; DMITRIYEV, M.F., kand.tekhn.nauk; DOBROVOL'SKIY, V.V., kand.tekhn.nauk; DUKALOV, M.F., kand.tekhn.nauk; ZAYTSEV, N.A.; ZARANKIN, P.S., inzh.; ZVYAGIN, P.Z., dotsent, kand.tekhn.nauk; IL'SHTEYN, A.M., kand.tekhn. nauk; KILYACHKOV, A.P., dotsent, kand.tekhn.nauk; KIRICHENKO, I.P., inzh.; KRUPENNIKOV, G.A., kand.tekhn.nauk; KUZNETSOV, S.T., kand. tekhn.nauk; KUCHERSKIY, L.V., kand.tekhn.nauk; LINDENAU, N.I., inzh.; LIPKOVICH, dotsent, kand.tekhn.nauk; LOKSHIN, B.S., kand.tekhn.nauk; MURATOV, M.L., dotsent, kand.tekhn.nauk; MUCHNIK, V.S., prof., doktor tekhn.nauk; NAYDYSH, A.M., dotsent, kand.tekhn.nauk; NEKRASOVSKIY, Ya.E., prof., doktor tekhn.nauk; NEKHAYEV, G.A., inzh.; NUROK, G.A., prof., doktor tekhn.nauk; OVINOV, M.I., inzh.; PORTNOV, A.A., inzh.; PROSKURIN, V.V., dotsent, kand.tekhn.nauk; RUDNEV, B.A., inzh.; SAPITSKIY, K.F., kand.tekhn.nauk; SELETSKIY, R.A., dotsent, kand.tekhn.nauk; SEMENOV, A.P., kand.tekhn.nauk; SKAFA, P.V., inzh.; SONIN, S.D., prof.; SUDOPLATOV, A.P., prof., doktor tekhn.nauk; TIMOSHEVICH, V.A., inzh.; FURMAN, A.A., inzh.; CHINAKAL, N.A.; SHAKHMEYSTER, L.G., dotsent, kand.tekhn.nauk; TERPIGOREV, A.M., glavnyy red.; LOZNEVA, A.A., red.; NAUMKIN, I.F., red.; OSTROVSKIY, S.B., red.; PANOV, A.D., red.; STUGAREV, A.S., red.; SHELKOV, A.A.,

(Continued on next card)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

AVERSHIN, S.G.---(continued) Card 2.
red.; ARKHANGEL'SKIY, A.S., kand.tekhn.nauk, red.; REZNIKOV, G.A., inzh., red.; ALESHIN, M.I., red.izd-va; KACHALKINA, Z.I., red. izd-va; PROZOROVSKAYA, V.L., tekhn.red.; NADEINSKAYA, A.A., tekhn.red.

[Mining; an encyclopedic handbook] Gornoe delo; entsiklopedicheskii spravochnik. Glav. red. A.M. Terpigorev. Chleny glav.red.: F.A. Barabanov i dr. Vol.5 [Underground coal mining] Razrabotka ugol'nykh mestorozhdenii podzemnym sposobom. Moskva, Gos. nauchno-tekhn.izd-vo lit-ry po ugol'noi promyshl. 1958. 447 p. (MIRA 12:2)

1. Chlen-korrespondent Akademii nauk SSSR (for Gorbachev, Chinakal).
2. Chlen-korrespondent Akademii nauk USSR (for Zaytsev).
(Coal mines and mining)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.P., kand.tekhn.nauk

Mechanizing the mine roof bolting. Mekh.i avtom.proizv. 15 no.8:51-52 Ag '61. (MIRA 14:9)
(Mine roof bolting--Technological innovations)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.P., kand.tekhn.nauk

World's largest mine. Ugol' Ukr. 6 no.5:47 My '62. (MIRA 15:11)

1. Institut gornogo dela im. A.A.Skochinskogo.
(United States--Coal mines and mining)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.P., kand.tekhn.nauk

Mechanization of coal mining operations in England. Mekh. i avtom.proizv. 16 no.1:53-54 Ja '62. (MIRA 15:1)
(Great Britain—Coal mining machinery)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

KHRUSHCHOV, M.M.; SEMENOV, A.P.; MATVEYEVSKIY, R.M.; LAZOVSKAYA, O.V.; BELOUSOV, N.N.; KOLESNIKOVA, V.S.

Investigating lubricated and nonlubricated friction of anti-friction bronzes and brasses. Tren. i izn. v mash. no.17:36-70 '62. (MIRA 17:10)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.P.

Freezing of metals is the basis of cold welding. Avtom. svar. 17 no. 5:4-9 My '64. (MIRA 17:11)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

VIYLUP, V.A. [Viilup, V.]; SEMENOV, A.P., kand.tekhn.nauk

Experiment in using the chamber mining method in the mines of Estonslanets Trust. Ugol' 37 no.1:13-18 Ja '62. (MIRA 15:2)

1. Upravlyayushchiy trestom Estonslanets (for Viylup).
2. Institut gornogo dela imeni A.A.Skochinskogo (for Semenov).
(Estonia--Slate)
(Mining engineering)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.P., kand. tekhn. nauk

Advanced methods of the production of antifriction materials and sliding bearings. Vest. mashinostr. 43 no.12:81-86 D '63. (MIRA 17:8)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.P.

International forum of miners. Ugol' 39 no.5:74-76 My '64.
(MIRA 17:8)

1. Sekretar' TSentral'nogo komiteta Professional'nogo soyuza rabochikh ugol'noy promyshlennosti.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 04167-67 EWT(d)/EWP(e)/EWT(m)/EWP(w)/EWP(v)/EWP(j)/I/EWP(t)/ETI/EWP(b) IJP(c)

ACC NR: AP6025689 (A) SOURCE CODE: UR/0380/66/000/003/0102/0107

JD/WW/HW/EM/RM/WH

52

51

B

AUTHOR: Semenov, A. P. (Moscow)

ORG: none

TITLE: The role of residual stresses in determination of adhesive capacity

SOURCE: Mashinovedeniye, no. 3, 1966, 102-107

TOPIC TAGS: adhesion, metal property, metal deformation

ABSTRACT: The article is of the review type; it discusses previous explanations of the phenomenon of pressure adhesion between metals and advances certain new opinions. According to previous opinion all metals and alloys, to be joined, need only true contact; that is to say, they all have practically the same capacity for adhesion. To the author of the present paper, this explanation is not sufficient. He advances the following considerations. 1) The magnitude of the deformation after adhesion can be very different for different metals and alloys. 2) The absolute value of the residual stresses after an identical deformation procedure is determined by the mechanical properties of the metal. 3) The joined zone in metals which allow cold welding is stronger than

Card 1/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

ACC NR: AP6025689

the undeformed metal; therefore, failure should be expected not at the location of the joint, but in the weaker unhardened metal. The article is illustrated with photos of metal failure demonstrating the above principles. Orig. art. has: 4 figures.

SUB CODE: 11,20/SUBM DATE: 14Jan65/ ORIG REF: 012/ OTH REF: 008

Card 2/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A. I.

SEMENOV, A. I. -- "STUDY OF THE SEIZING OF METALS DURING SIMULTANEOUS PLASTIC DEFORMATION." SUB 28 MAY 52, INST OF MACHINE SCIENCE, ACAD SCI USSR (DISSERTATION FOR THE DEGREE OF CANDIDATE IN TECHNICAL SCIENCES)

SO: VECHERNAYA MOSKVA, JANUARY-DECEMBER 1952

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

PA 234T48

USSR/Engineering - Metals, Deformation, Seizure Sep 52

"Seizure of Metals During Joint Plastic Deformation," A. P. Semenov, Inst of Mach Studies, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol 86, No 1, pp 125-128

Investigates phenomenon of seizure by 2 methods: joint deformation of sheet specimens with symmetrically sloping punches and joint deformation of cylindrical specimens in closed space. Studies also effect of temp, compn of alloy and its condition regarding heat treatment, and oxide, lubricating and

234T48

adsorbed films. Concludes that all possible ways for increasing energy of crystal lattice promote phenomenon of seizure. Heat energy, energy of elastic distortions of lattice, and energy accumulated by atoms during plastic deformation are kinds of energy to which author refers. Submitted by Acad P. A. Rebinder 9 Jul 52.

234T48

SEMENOV, A. P.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV A. P.

USSR.

*Effect of Surface Films on the Formation of Joints [Pressure Welding] of Aluminium. A. P. Semenov (*Doklady Akad. Nauk S.S.S.R.*, 1952, 85, [illegible] in Russian). Cf. *ibid.*, (1), 125; *M.A.*, 22, 607. The best method of cleaning surfaces having adsorbed films of weld-preventing substances is to heat in air at 450° C. for 30 min. Cleaning by washing in solvents, electrolytic degreasing, or Akhmatov's method (*Trudy Moskovsk. Stanko-Instrumental'no Inst.*, 1940, (9)) did not give reproducible results. A deformation of 62–63% was necessary to weld 3-mm.-thick specimens of Al (mark Al) which had been cleaned by heating, compared with 67·7% for specimens cleaned with a metal brush. The oils which hinder welding most effectively are also the best lubricants. In experiments with various oils, the deformations needed for welding sheet specimens of Al (mark Al) by compressing at 2 mm./min. between two wedge-shaped tools were (%): dry, unlubricated, 62·0; with heptane, 63·7; with non-polar vaseline oil contg. 0, 0·5, 5, 10, and 50% oleic acid, 63·6, 69·8, 81·6, 85·3, and 87·3; with oleic acid, 91·0; with oxidized oleic acid, no welding; with turbine oil, 73·9; with Avtol 10, 79·9; water, 78·2; and ethyl alcohol, 82·5. On plotting the sp. pressure against these necessary deformations, the points lie on a smooth curve. The property of the oil which affects welding is not viscosity but polarity. This action of the oil is related to the Rehbinder effect. The lubricating properties of oil are improved by addn. of surface-active agents, as is shown by plotting the necessary deformations for vaseline oil against its oleic acid content. In cleaning by heating, polymerization, oxidation, and condensation occur, causing first an increase, then a decrease, in the lubricity of the oil. —G. V. E. T.

Inst-Machine Studies, AS USSR

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A. P.

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 476 - I

BOOK Call No.: AF595007

Author: SEMENOV, A. P.

Full Title: NEW METHOD OF RESEARCH IN ADHESION OF METALS

Transliterated Title: Novaya metodika issledovaniya skhvatyvaniya metallov

PUBLISHING DATA

Originating Agency: Academy of Sciences, USSR. Machine-Building Institute, Treniye i iznos v mashinakh (Friction and Wear in Machines), Issue VIII

Publishing House: Academy of Sciences, USSR

Date: 1953 No. pp.: 16 (44-59) No. of copies: 2,500

Editorial Staff

Editor: Khrushchov, M. M., Prof.

PURPOSE: Technical improvements, development of wear-resistant machine parts.

TEXT DATA

Coverage: The local adhesion of metals sliding on one another with friction is a common cause of damage of machine parts. This adhesion occurs at low temperatures and takes the form of tearing, gripping or scuffing. The author describes a series of tests which make possible: 1. the selection of adequate materials for parts sliding on one another;

1/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.P.; KHRUSHCHOV, M.M., doktor tekhnicheskikh nauk, redaktor.

[Seizing of metals under the condition of common plastic deformation] Issledovanie skhvatyvaniia metallov pri sovmestnom plasticheskom deformirovanii. Moskva, Izd-vo Akademii nauk SSSR, 1953. 117 p.
(Friction) (Adhesion) (MLRA 7:8)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.P.

SEMENOV, A. P. "Study of the Cold-Pressure Welding of Metals." [In Russian]. 1.a. Svo, pp. 120. Illustrated. Moscow, 1953: Akademii Nauk SSSR.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.P.

New method in the investigation of seizure in metals. Tren. i izn. mash. no.8:44-59 '53. (MLRA 6:7)

(Friction) (Mechanical wear)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.P.

Automatic air escape valve for hot water heating systems. Rats i izobr.predl.v strei.no.124:16-17 '55. (MLRA 9:7)
(Hot-water heating) (Valves)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.P., kandidat tekhnicheskikh nauk.

Steel and plastic aluminum-alloy bimetal rolled strips for stamping bearing bushes. Vest. mash. 36 no.6:40-45 Je '56. (MLRA 9:10)

1. Institut mashinovedeniya Akademii nauk SSSR.
(Punches)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

AUTHOR: Semenov, A. P. (Moscow). 24-5-24/25

TITLE: On the influence of the concentration of certain dissolved elements on the seizing ability of copper. (O vliyanii kontsentratsii nekotorykh rastvorennykh elementov na sposobnost' medi k skhvatyvaniyu).

PERIODICAL: "Izvestiya Akademii Nauk, Otdeleniye Tekhnicheskikh Nauk", (Bulletin of the Ac.Sc., Technical Sciences Section), 1957, No.5, pp.140-143 (U.S.S.R.)

ABSTRACT: During friction of metals undesired phenomena occur frequently which are due to the seizing of metals in the solid state and simultaneous plastic deformation. Seizing does not require an elevated temperature and junction of the rubbing surfaces may even occur at below freezing point temperatures. For investigating the tendency to seizing of a number of homogeneous copper alloys produced from grade MO electrolytic copper, a method of simultaneous deformation of sheet specimens by symmetrically inclined and flat plungers was used which has been developed by the Mechanical Engineering Institute, Ac.Sc. U.S.S.R. (Institut Mashinovedeniya AN SSSR) (2). Deformation by symmetrically inclined plungers permits the determination of the deformations at which seizing occurs,

Card 1/3

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

On the influence of the concentration of certain dissolved elements on the seizing ability of copper. (Cont.) 24-5-24/25

whilst deformation by flat plungers was carried out for determining the limit pressure during the seizing deformation. The antifriction properties of various aluminium alloys were investigated earlier by the same method (3). The results are summarised in a table, p.140 and graphed in Figs.1-4. The graphs show that increase in the concentration of any component added to the copper increases the deformation resistance of the alloy whereby zinc has the least influence, whilst tin and silicon have the highest influence on increasing the resistance to deformation. The obtained values of deformations and specific seizing pressures confirm the general rule that the inclination of an alloy to seize depends on the concentration of a component and also on its character. The higher the increase in the resistance to plastic deformation with increasing concentration of a given component, the lower will be the tendency of the alloy to seizing and the more justified will be the selection of such admixtures to a given group of antifriction alloys. Thus, the use as antifriction materials of tin bronzes and of bronzes containing P and Sb is fully justified.

Card 2/3

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.P.

AUTHOR: Semenov, A.P. 32-9-34/43

TITLE: On the Use of Metal Capsules in Laboratory Practice (O primenenii metallicheskikh kapsul v laboratornoy praktike)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 9, pp.1133-1133 (USSR)

ABSTRACT: When using capsules which are hermitically closed at room temperature by common plastic deformation, it is possible, without any special preheating devices, to carry out annealing in an inert or a reduction atmosphere, to store the material for long periods, to carry out the thermal treatment of oxidizing metals or such metals as easily absorb gases, as well as to carry out heating for a deformation that is to follow. Any metal can be used for the capsules. When closing the capsules deformation was brought about either by means of narrow stamps or by means of rotating roller stamps. The latter procedure is the more favorable because it requires no special devices for compression. The atmosphere required in the capsule is attained by blowing through a suitable gas before they are finally closed.

ASSOCIATION: Institute for Machine Technology AN USSR (Institut mashinovedeniya Akademii nauk SSSR)

AVAILABLE: Library of Congress

Card 1/1

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

PHASE I BOOK EXPLOITATION 1092

Semenov, Aleksandr Pavlovich

Skhvatyvaniye metallov (Seizure of Metals) 2d ed., rev. and enl. Moscow, Mashgiz, 1958. 279 p. 5,000 copies printed.

Reviewer: Kragel'skiy, I.V., Doctor of Technical Sciences, Professor; Ed.: Korableva, R.M., Engineer; Tech. Ed.: El'kind, V.D.; Managing Ed. for Literature on General Technical and Transport Machine Building (Mashgiz): Ponomareva, K.A., Engineer.

PURPOSE: This book is intended for scientific, technical and engineering personnel concerned with problems of friction and solid phase bonding of metals.

COVERAGE: The book presents modern concepts on the nature of the seizure of metals and the author's experiments conducted for the purpose of studying this phenomenon. Various types of cold welding and the effect on seizure of certain factors encountered in various types of metals and alloys are discussed. Subjecting existing notions on the nature of seizure to a critical analysis and utilizing his experimental findings, the author formulates an energy hypothesis of seizure. New approaches to the study of seizure are discussed in Chapter IV.

Card 1/ 4

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

There are 229 references, of which 143 are Soviet, 75 English, 10 German and 1 French.

TABLE OF CONTENTS:

Introduction 3

Ch. I. Seizure of Metals Caused by Friction 5

Ch. II. Seizure of Metals in Metal Forming and Cutting 46

Ch. III. Utilization of Seizure in Methods of Solid Phase Bonding of Metals 53
Pressure welding of metals 53
Cold pressure welding 65
New ways of deforming metals in cold pressure welding 75
Ultrasonic welding of metals 82
Cladding and obtaining of bimetal products by rolling 83
Production of bimetal products by rolling in pairs 91
Powder metallurgy 95
Diffusion joining of metals or "baking on" 101

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

Ch. IV. Laboratory Methods of Studying the Seizure of Metals 105
Existing methods of studying the seizure of metals 105
A new method of studying seizure caused by friction 113
New methods of studying seizure of metals when mutual plastic deformation takes place 120

Ch. V. Effect of Certain Factors on the Appearance of Seizure 145
Tendency of similar metals to seizure 145
Tendency of dissimilar metals to seizure 147
Effect of external influences and cold working on seizure 151
Effect of chemical composition on the seizure of alloys 174
Effect of hardening and chemical-thermal treatment on the seizure of alloys 194
Tendency of silver chloride and sodium chloride to seizing 201

Ch. VI. Effect of Surface Films on Seizure of Metals 205
Effect of oxide films 205
Effect of oil and adsorbed films 211
Effect of metallic surface films on seizure 218

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

Ch. VII. Notions on the Nature of Seizure of Metals 222
Introduction 222
Nature of the interatomic interaction of metallic surfaces 225
Recrystallization hypothesis of seizure 231
Diffusion hypothesis of seizure 236
Hypothesis based on the relationship of mechanical properties of surface films and base metal 243
An energy theory of seizure 252
Seizure and plastic deformation 263
On the possibility of seizure of nonmetallic crystalline bodies (including oxides) 266

Conclusion 269

Literature 270

AVAILABLE: Library of Congress

Card 4/4

GO/mas
2-13-59

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

28(1) PHASE I BOOK EXPLOITATION SOV/2156

Soveshchaniye po kompleksnoy mekhanizatsii i avtomatizatsii tekhnologicheskikh protsessov. 2nd, 1956.

Avtomatizatsiya mashinostroitel'nykh protsessov; /trudy soveshchaniya/, tom. 1: Goryachaya obrabotka metallov (Automation of Machine-Building Processes; Proceedings of the Conference on Over-All Mechanization and Automation of Technological Process, Vol 1: Hot Metal-Forming) Moscow, 1959. 394 p. 5,000 copies printed.

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

Resp. Ed.: V.I. Dikushin, Academician: Compiler: V.M. Raskatov: Ed. of Publishing House; V.A. Kotov; Tech. Ed.: I.P. Kuz'min.

PURPOSE: The book is intended for mechanical engineers and metallurgists.

COVERAGE: The transactions of the Second Conference on the Over-All Mechanization and Automation of Industrial Processes, September 25-29, 1956, have been published in three volumes. This book, Vol. I, contains articles under the general title, Hot Working of Metals. The investigations described in the book were conducted by the Sections for Automation and Hot Working of Metals, under the direction of the following scientists: casting - P.N. Aksenov, D.P. Ivanov and G.M. Orlov; forming - A.I. Tselikov, A.D. Tomlenov and V.T. Meshcherin; welding - G.A. Nikolayev, B.I. Frolov and G.A. Maslov. There are 183 references: 142 Soviet, 34 English, 6 German, and 1 French.

TABLE OF CONTENTS:

Balkovets, D.S. and P.L. Chuloshnikov. Automatic Process Control in Contact Welding 266

Gromov, N.A. Development of Automatic Welding Equipment 276

Nikolayev, G.A. Studies at the MVTU im. Baumana (Moscow Higher Technical School im. Bauman) on Automation of Welding Processes 280

Kasprzhak, G.M., I.Ya. Rabinovich, Ye. I. Slepushkin, and V.M. Shchitova. New Systems for Automating Welding Equipment 290

Verchenko, V.R. Automation of Arc Welding in a Protective Gas Medium 322

Frumin, I.I. Automatic Weld Seam of Wear-Resistent Alloys 330

Rabkin, D.M. Automatic Welding of Articles from Aluminum and Aluminum Alloys

Kochanovskiy, N.Ya. Work of the All-Union Scientific Research Institute of Electric Welding Equipment on Mechanization and Automation of Welding Processes 348

Lyubavskiy, K.V., L.M. Yarovinskiy, I.L. Brinberg, and I.M. Novozhilov. Mechanization and Automation of Welding Processes in Heavy Machine Building 361

Semenov, A.P. Seizing of Metals and Utilization of this Phenomenon 371

Aybinder, S.B. Cold Welding of Metals 385

AVAILABLE: Library of Congress

Card 8/8

TM/ajr
9/15/59

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

PHASE I BOOK EXPLOITATION SOV/5053

Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh. 3d, 1958.

Iznos i iznosostoykost'. Antifriktsionnyye materialy (Wear and Wear Resistance. Antifriction Materials) Moscow, Izd-vo AN SSSR, 1960. 273 p. Errata slip inserted. 3,500 copies printed. (Series: Its: Trudy, v. 1)

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Resp. Ed.: M. M. Khrushchov, Professor; Eds. of Publishing House: M. Ya. Klebanov, and S. L. Orpik; Tech. Ed.: T. V. Polyakova.

PURPOSE: This collection of articles is intended for practicing engineers and research scientists.

COVERAGE: The collection, published by the Institut mashinovedeniya, AN SSSR (Institute of Science of Machines, Academy of Sciences USSR) contains papers presented at the III Vsesoyuznaya Konferentsiya po treniyu i iznosu v mashinakh (Third All-Union Conference on Friction and Wear in Machines) which was held April 9-15, 1958. Problems discussed were in 5 main areas: 1) Hydrodynamic Theory of Lubrication and Friction Bearings (Chairmen: Ye. M. Gut'yar, Doctor of Technical Sciences, and A. K. D'yachkov, Doctor of Technical Sciences); 2) Lubrication and Lubricant Materials (Chairman: G. V. Vinogradov, Doctor of Chemical Sciences); 3) Dry and Boundary Friction (Chairmen: B. V. Deryagin, Corresponding Member of the Academy of Sciences USSR, and I. V. Kragel'skiy, Doctor of Technical Sciences); 4) Wear and Wear Resistance (Chairman: M. M. Khrushchov, Doctor of Technical Sciences); and 5) Friction and Antifriction Materials (Chairmen: I. V. Kragel'skiy, Doctor of Technical Sciences, and M. M. Khrushchov, Doctor of Technical Sciences). Chairman of the general assembly (on the first and last day of the conference) was Academician A. A. Blagonravov. L. Yu. Pruzhanskiy, Candidate of Technical Sciences, was scientific secretary. The transactions of the conference were published in 3 volumes, of which the present volume is the first. This volume contains articles concerning the wear and wear resistance of antifriction materials. Among the topics covered are: modern developments in the theory and experimental science of wear resistance of materials, specific data on the wear resistance of various combinations of materials, methods for increasing the wear resistance of certain materials, the effects of friction and wear on the structure of materials, the mechanism of the seizing of metals, the effect of various types of lubricating materials on seizing, abrasive wear of a wide variety of materials and components under many different conditions, modern developments in antifriction materials, and the effects of finish machining on wear resistance. Many personalities are mentioned in the text. References accompany most of the articles.

Misharin, Yu. A., and A. V. Sivyakova. Laboratory Investigation of the Antiseizing Stability of Several Materials Used in Worm Gears 170

Semenov, A. P. Problems in the Theory of the Seizing of Metals 174

Semenov, A. P. Comparative Estimate of the Antiseizing Properties of Materials and Their Combinations 184

3. Abrasive Wear. Wear Under Special Conditions of Friction

Bezborod'ko, M. D. Wear of Steel and Bronze at High Specific Contact Pressures in the Presence of Organic and Nonorganic Lubricants and an Abrasive 191

Vasilenko, A. A., V. I. Stetsenko, and Ye. A. Markovskiy. Investigation of the Wear Resistance of Highly Durable Cast Iron 201

Card 8/13

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, Anatoliy Pavlovich; SMIRENSKIY, M.M., red. izd-va; SHKLYAR, S.Ya., tekhn. red.; BOLDYREVA, Z.A., tekhn. red.

[Methods of underground coal mining] Sposoby podzemnoi vyemki uglia. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po gornomu delu, 1961. 86 p. (MIRA 14:11)

(Coal mines and mining)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

33012
S/663/61/000/000/006/009
D040/D112

15 8360

AUTHORS: Semenov, A.P.; Pozdnyakov, V.V.

TITLE: An investigation of the antifriction properties of plastics in dry friction and with lubrication

SOURCE: Plastmassy kak antifriktsionnyye materialy. Inst. mashinoved. AN SSSR. Moscow, Izd-vo AN SSSR, 1961, 60-73

TEXT: The primary purpose of the described experiments was to see if a new friction test method devised for metals was also suitable for plastics. The method consisted in moving two short cylindrical specimens along a long cylindrical specimen (Fig. 1) at a constant speed and gradually increasing load at the point of contact (from 0 to 9 kg). The device for this method was designed for the ИМ-12 (IM-12) test machine previously described (Ref. 1: A.P. Semenov. Skhvatyvaniye metallov [The seizure of metals]. Mashgiz, 1958). In the method, the short specimens are either not rotated at all or else slowly rotated in opposite directions, so that fresh portions of all three specimens are continually brought into contact. The first variant was used

Card 1/4

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

33012

S/663/61/000/000/006/009
D040/D112

An investigation of the ...

in the tests. The long specimen was connected to a ring spring serving as a dynamometer, and the friction force at the point of contact was recorded by a loop oscillograph. Jerky friction, (Fig. 2) if present, was recorded by the movement of the long specimen. The tested materials were: textolite, caprone, teflon, nylon, НД (ND) polyethylene, DU material produced by the British "Glazier Company", and plexiglas. Polymethyl metacrylate was also tested for the sake of comparison. Each plastic was tested for friction with steel and with the same plastic. Distilled water and АУ (AU) spindle oil were used as lubricants. The results, presented in graphs and a table, were as follows: Plexiglas and steel produced jerky friction increasing with load, the friction factor being 0.57-0.42 under a 5 kg load. Textolite and steel produced jerky friction only when oil was used; the friction factor was 0.5 for dry friction and about 0.3 with water lubrication. Caprone tested for friction with steel produced smooth friction without lubrication and with water lubrication, but the friction became jerky at a contact pressure above 4 kg when AU oil was used. Similar results were obtained with nylon, although the friction was slightly less and was not jerky when the oil was used. Friction between ND polyethylene and steel was smooth in all conditions; the

Card 2/~~8~~ 4

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

33012
S/663/61/000/000/006/009
D040/D112

An investigation of the ...

friction factor was 0.14 at a 5 kg load in dry friction or with water, and 0.115 with oil. Teflon and steel produced a friction factor of only 0.049 in dry friction and 0.027 when oil was applied to the steel specimen (teflon is not wettable with oil and water): no jerkiness whatsoever was present. The friction coefficients of the DU material were higher than with teflon as the test loads considerably exceeded the permissible loads for this material, as a result of which the surface film was stripped off, thus exposing the underlying bronze. In the tests between identical plastics, teflon had the lowest friction factor, oil reducing the latter by 30%. It was also found that the spreading of teflon on steel reduced the friction, and it was suggested to coat the steel surface with teflon also. Conclusions: (1) The method used is applicable for testing the antifriction properties of plastics; (2) The method is sensitive and permits easy observation of the effects of various factors on the antifriction properties of plastics; (3) The methods used make possible a sharp division of materials and conditions according to their tendency to produce jerky friction; (4) Teflon, and to a lesser degree, ND polyethylene, are the best materials for service under conditions of dry friction or insufficient lubrication; the high heat re-

Card 3/4

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

33012
S/663/61/000/000/006/009
D040/D112

An investigation of the ...

sistance of teflon makes it the most promising antifriction material for sleeve bearings in such service conditions; (5) The transfer of teflon to the other part in contact with it, can be a positive factor reducing friction, but the transfer of caprone can increase the friction. There are 17 figures, 1 table and 2 Soviet references.

Card 4/4

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

S/125/61/000/003/008/016
A161/A133

AUTHOR: Semenov, A.P.

TITLE: Two views on the phenomenon of metal seizure. (The "energetic" and "film" hypotheses)

PERIODICAL: Avtomaticheskaya svarka, no. 3, 1961, 52 - 60

TEXT: The author discusses the two existing theories of metal seizure in pressure welding and refutes statements of S.B. Aynbinder in an article that criticizes the so-called "energetic" hypotheses (Ref. 3: On the article by G.P. Sakhatskiy, On the basic principles of pressure welding. Avtomaticheskaya svarka, no. 4, 1960), as well as his views expressed in other publications. The "energetic" theory which the author advocates explains the seizure as a peculiar chain reaction that is analogous to a thermic explosion or breakdown of a dielectric from electric discharge. It is pointed out that the hypothesis of surface films effect, that originated in Great Britain had been disproved in British investigations, and that the conclusions made by S.B. Aynbinder in his book on pressure welding [Ref. 2: S.B. Aynbinder, Kholodnaya svarka metallov (Pressure welding of metals). Izdatel'stvo AN Latv. SSR, 1957] are wrong. The discussion is supple-

Card 1/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

S/125/61/000/003/008/016
A161/A133

Two views on the phenomenon of metal seizure....

mented by references to 42 publications including 9 of the author's own. There is 1 figure and 42 references: 27 Soviet-bloc and 15 non-Soviet-bloc. The 4 references to the most recent English-language publications read as follows: R. F. Tylecote, Investigations on cold pressure welding. British Welding Journal, v. 1, no. 3, 1954; J.S. Mc Farlane and D. Tabor, Adhesion of solids and the effect of surface films. Proc. of the Royal Society, A, v. 202, 1,069, 1959; E.C. Rollason, Pressure welding of metals (Introductory Survey). British Welding, no. 1, January 1959; R.F. Tylecote, D. Howd and J.F. Furmidge, The influence of surface films on the pressure welding of metals. British Welding Journal, no. 1, January 1958.

ASSOCIATION: Institut mashinovedeniya AN SSSR (Institute of Science of Machines AS USSR)

SUBMITTED: July 29, 1960

Card 2/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

45260

S/883/62/000/000/007/020
E194/E155

1X 8000

AUTHOR: Semenov, A.P.

TITLE: The encapsulation method of preserving a specimen prepared for seizure and friction tests

SOURCE: Metody ispytaniya na iznashivaniye; trudy soveshchaniya, sostoyavshegosya 7-10 dek. 1960. Ed. by M.M. Khrushchov. Moscow, Izd-vo AN SSSR, 1962. 63-72

TEXT: Specimens may be protected from exposure to atmosphere by encapsulating them in thin-walled metal capsules, which may be evacuated or filled with an inert gas. The specimens may be tested immediately on removal from the capsule or sometimes even without removing them at all. Aluminium has been a convenient capsule material because it is readily cold-welded, but copper, nickel and other metals are also suitable. The aluminium tubes are cleaned in solvent and heated in air at 350 - 400 °C, for half an hour. The specimens may be sealed in any convenient cold-welding device; hand-operated rollers mounted in a vice have been successfully used. The roller design should ensure that there is a gas-tight seam and rollers or dies should be tapered to meet in a wedge.

Card 1/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

The encapsulation method of ... S/883/62/000/000/007/020
E194/E155

Various methods of blowing inert gas through the tube whilst it is being sealed are explained. Stronger seals can be made by repeated folding of the capsule on a hot roller device or by rapid deformation on rollers heated in molten lead or by a gas burner. Encapsulation has been used for long-term storage of prepared specimens and also for immediate tests. For example, specimens may be encapsulated in pairs and tested for seizure without removing the encapsulation. The specimen may, of course, be the encapsulated tube itself which is sealed at the two ends. Some kinds of tests of flow between different samples can be made with both samples separately encapsulated.
There are 9 figures.

Card 2/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

S/883/62/000/000/006/020
E194/E155

AUTHOR: Semenov, A.P.

TITLE: A method of assessing anti-seizure properties in dry friction

SOURCE: Metody ispytaniya na iznashivaniye; trudy soveshchaniya, sostoyavshegosya 7-10 dek. 1960. Ed. by M.M. Khrushchov. Moscow, Izd-vo AN SSSR, 1962. 63-72

TEXT: Most procedures suggested for testing the anti-seizure properties of pairs of metals fulfil only one or other of the two fundamental requirements, namely, that the load should increase according to a predetermined law during the test and the sliding surfaces should be continually renewed so that early stages of the test do not affect the later ones. These requirements are met by a crossed-cylinder machine first developed by the author in 1955, though a similar construction has since been developed in England (A.A. Milne, D. Scott and D. Macdonald. Some studies of scuffing with a crossed-cylinder machine, Proceedings of the Conference on Lubrication and Wear, 1957). The surfaces are renewed by causing the two crossed-cylinders to rotate whilst the third one is drawn

Card 1/3

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

between them and friction is a combination of sliding and rolling. The crossed cylinders rotate through less than one revolution during the test. Equipment was designed for use in conjunction with a tensile testing machine type ИМ-12А (IM-12A). The central cylinder remains stationary but the load on it is measured by a strain gauge arrangement. The two crossed cylinders that press against it are driven by gears and their compressive force on the central cylinder increases with travel by the action of rollers operating against cams on the testing machine. The recording mechanism of the testing machine was not sufficiently sensitive and a special one was devised. The results are usually plotted as graphs of total frictional force (on the two-point contacts) as a function of load; typical test results are given. Surface preparation of the test specimens is most important. As washing in solvents is not sufficient to remove films of surface active organic substances and heating in a vacuum furnace is generally inconvenient and with some materials impossible, washing with solvents is followed by exposure to corona discharge (ionic bombardment). The surface of noble metals can be cleaned by

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

A method of assessing anti-seizure... S/883/62/000/000/006/020
E194/E155

heating in air. In the case of aluminium the formation of a surface oxide film is unimportant because strain of the metal in testing causes it to break away without having much effect. The best method of preparing the surface of soft metals and alloys or plastics is by cutting the surface with a diamond tool. The equipment permits reliable assessment of the anti-seizure properties of various combinations of metals unaffected by the presence of thin lubricant films, thick oxide films or accidental surface damage. The anti-seizure properties are assessed by the value of the coefficient of friction and its law of change, by damage to the surfaces and by the amount of metal transferred. Any tendency to stick-slip motion is easily revealed and the influence on this of different materials or lubricants can be studied. A small furnace can be fitted to carry out tests at high temperatures up to about 200 °C.
There are 8 figures.

Card 3/3

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

S/711/62/015/000/003/004
D207/D308

AUTHOR: Semenov, A.P.

TITLE: The effect of copper alloying on its tendency to seizure in the temperature range 23 - 450°C

SOURCE: Akademiya nauk SSSR. Institut mashinovedeniya. Treniye i iznos v mashinakh, v. 15, 1962, 227 - 253

TEXT: The author reports partial results of an investigation of the tendency to seizure of copper alloys. The investigation was carried out at the Laboratoriya iznosostoykosti Instituta mashinovedeniya AN SSSR (Wear Laboratory, Institute of the Science of Machines AS USSR) under the direction of Professor M.M. Khrushchov. The materials studied were pure copper and its alloys with the following metals: 0.45 - 7.60 % Al, 0.60 - 4.95 % Si, 0.15 - 0.90 % P, 0.12 % Fe, 0.97 - 9.5 % Mn, 0.5 - 0.8 % Sb, 0.22 - 9.96 % Sn, 1.5 - 50.0 % Zn (all values in weight per cent). Two identical sheets were compressed together until a strong joint was formed between them. The deformation and pressure at this point were called seizure deformation and seizure pressure respectively. Seizure of pairs of identi-

Card 1/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

LANKO, A. I.; SEMENOV, A. P.

Modernizing the model 111 pug mill. Lit. proizv. no.10:43 O '62. (MIRA 15:10)

(Foundries—Equipment and supplies)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

SEMENOV, A.P., kand.tekhn.nauk

Causes of warping and loss of tension in bimetal steel-aluminum antifriction alloy linings. Metalloved. i term. obr. met. no.10:37-41 O '62. (MIRA 15:10)

1. Institut mashinovedeniya Gosudarstvennogo komiteta Soveta Ministrov SSSR po avtomatizatsii i mashinostroyeniyu.
(Laminated metals) (Bearing metals)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 3299-66 EWP(e)/EWT(m)/EWP(i)/EPF(c)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/WW/DJ/

ACCESSION NR: AP5012074 WH UR/0380/65/000/001/0091/0103

539.62:546.26-162

61

59

B

AUTHOR: Semenov, A. P. (Moscow); Pozdnyakov, V. V. (Moscow)

TITLE: Friction of graphite materials at high temperatures in vacuum and in gases

SOURCE: Mashinovedeniye, no. 1, 1965, 91-103

TOPIC TAGS: graphite, antifriction material, friction, high temperature effect

ABSTRACT: Thick rods of AG-1500 and AG-600 graphite antifriction material and blocks of EEG graphite material were tested for friction at high temperatures in a vacuum and in gaseous media. These materials showed smooth friction at high temperatures, random grabbing being observed only at relatively low temperatures. Specimens of AG-1500 showed uniform friction contact with fine lines in the direction of sliding. About half the surface is covered with smooth slightly polished areas. The friction area has the appearance of black velvet while the remaining surface of the specimen is dark-gray silver. The coefficient of friction for AG-1500 specimens at room temperature is 0.7 in vacuum and 0.08 in air. At 650°, the coefficient of friction drops to 0.25 and natural oscillations cease. Sliding remains smooth with

Card 1/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 3299-66

ACCESSION NR: AP5012074

2

a further temperature increase and the coefficient of friction gradually drops, reaching 0.15 at 1960°. During cooling, a sharp increase in the coefficient of friction is observed at 200°. The transition from smooth to grabbing friction during cooling takes place at about 525°, i. e. 100° less than for heating conditions. The other two materials showed similar behavior. The test data indicate that the antifriction properties of graphite materials are not due chiefly to absorbed gases and vapors. A reduction in friction at high temperatures in vacuum and in inert gases (argon, helium and nitrogen) is apparently due to a weakening of the bonds between crystal lattice layers. Tests of AG-600 graphite material in inert gases show that these media have comparatively little effect on friction properties in comparison with tests in vacuum. There is an unexplained minimum during friction in gases at 600-700°, and somewhat of a reduction in friction close to room temperature. Orig. art. has: 9 figures, 3 tables.

ASSOCIATION: none

SUBMITTED: 07Oct64 ENCL: 00 SUB CODE: MT, IE, TD

NO REF SOV: 000 OTHER: 000

Card 2/2 DP

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 34111-65
EWG(j)/EWP(e)/EWT(m)/EWP(w)/EPF(c)/EPF(n)-2/EWG(m)/EWA(d)/EPR/T/EWP(t)/EWP(b)
Pr-4/Ps-4/Pu-4 IJP(c) JD/WW/JG/DJ/AT/WH

ACCESSION NR: AP5006854 S/0020/65/160/004/0811/0814

AUTHOR: Semenov, A. P.; Pozdnyakov, V. V.

TITLE: Antifriction properties of solids at high temperatures in a vacuum and in some gaseous media

SOURCE: AN SSSR. Doklady, v. 160, no. 4, 1965, 811-814

TOPIC TAGS: friction, graphite material, graphite friction, metal carbide, metal boride, metal oxide, high temperature friction, adhesion, refractory compound friction

ABSTRACT: An investigation has been made of the friction between identical materials in a vacuum of 10^{-4}—10^{-5} mm Hg and in an atmosphere of argon, helium, or nitrogen at temperatures up to 2000C. Graphite-base materials, and TiC, VC, Cr_3C_2, NbC, Mo_2C, WC, CrB, ZrB_2, SiC, and MgO were tested under a load of 5 kg and a sliding speed of 0.8 m/min. In vacuum, the friction coefficient of graphite-base materials decreased from 0.7—0.75 at 20C to 0.1—0.15 at temperatures over 1500C. Admission of air in a vacuum chamber at room temperature sharply decreased the friction coefficient from 0.7 to 0.08. In the helium, argon, and nitrogen atmospheres, the friction coefficient differed only slightly from that in a vacuum. At 1000C, the highest friction was observed in helium and the lowest in nitrogen. The friction behavior of the

Card 1/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 34111-65

ACCESSION NR: AP5006854

investigated compounds followed a similar pattern, except for CrB whose friction coefficient increased at temperatures over 1550C. At 1000C, titanium and niobium carbides had the lowest friction coefficients and molybdenum and tungsten carbides, the highest. Admission of air in a vacuum chamber sharply reduced friction in the case of titanium carbide but had no effect on other carbides. In the helium, argon, or nitrogen atmospheres, the average value of the friction coefficient changed only slightly. In the friction between AG-1500 graphite-base material and carbides, the properties of the graphite material play a major role. Adhesion tests in vacuum showed that seizing between like materials is characteristic for all refractory compounds (not for graphite-base materials). However, seizing occurred at higher homologous temperatures than for corresponding pure metals. The temperature of the beginning of adhesion varied from 1000 and 1955C for Mo_2C and NbC, respectively. Orig. art. has: 3 figures and 1 table. [MS]

ASSOCIATION: Gosudarstvenny nauchno-issledovatel'skiy institut mashinovedeniya (State Scientific Research Institute of the Science of Machines)

SUBMITTED: 20Jul64 ENCL: 00 SUB CODE: MM

NO REF SOV: 001 OTHER: 000 ATD PRESS: 3209

Card 2/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 35013-65 EWP(e)/EWT(m)/EWP(w)/EPF(c)/EPF(n)-2/EWG(m)/EWA(d)/T/EWP(t)/EWP(b)/EPR Pr-4/Ps-4/Pu-4 IJP(c) JD/JG/DJ/AT/WH

ACCESSION NR: AP5007559 S/0020/65/160/005/1057/1060

AUTHOR: Semenov, A. P.; Pozdnyakov, V. V.

TITLE: Spontaneous transition of the sliding friction to rolling friction in high-temperature testing of refractory carbides

SOURCE: AN SSSR. Doklady, v. 160, no. 5, 1965, 1057-1060

TOPIC TAGS: friction, sliding friction, rolling friction, high temperature friction, friction spontaneous transition, vacuum friction

ABSTRACT: A spontaneous change from sliding to rolling friction was observed during high-temperature tests of friction between molybdenum carbide or vanadium carbide specimens in a vacuum. In the tests with molybdenum-carbide specimens, an increase in temperature to 1250C sharply increased the friction moment under unchanged load. At about 1700C the friction coefficient rose to almost 1.0, after which, however, the load (applied by a flat spring) increased spontaneously and the friction moment sharply decreased as the friction coefficient decreased to 0.19 and then to 0.09. Examination of the contact surfaces revealed the presence of rounded particles of molybdenum carbide about 1.5 mm in diameter and fairly wide and deep grooves with smooth, bright surfaces. A reverse transition from rolling to sliding friction with the friction coefficient somewhat lower than the initial was observed with

Card 1/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 35013-65
ACCESSION NR: AP5007559

decreasing temperature. A similar phenomenon was observed in specimens of vanadium carbide. It appears that with increasing temperature, the investigated carbides become more susceptible to seizing and plastic deformation. Under certain conditions, the torn-out particles begin to roll between the surfaces and to grow in size like a snowball. The bodies of rotation thus formed attain an equilibrium for the given conditions and roll in the grooves which are gradually formed on the friction surfaces. With gradually decreasing temperature, the seizing stops and the bodies of rotation cannot maintain their size. This results in wear or crushing of the extant bodies of rotation and in a reverse transition from rolling to sliding friction. Orig. art. has: 4 figures. [MS]

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy institut mashinovedeniya (State Scientific Research Institute of Machine Science)

SUBMITTED: 20Jul64 ENCL: 00 SUB CODE: MT

NO REF SOV: 001 OTHER: 000 ATD PRESS: 3216

Card 2/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 62778-65 EWT(d)/EWT(m)/EWP(w)/EWP(c)/EWA(d)/EWP(v)/T /EWP(t)/EWP(k)/EWP(b)/EWP(1)/EWA(c) Pf-4 IJP(c) JD/HM

ACCESSION NR: AP5017485

UR/0135/65/000/007/0018/0019
621.791.053.004.5

AUTHOR: Semenov, A. P. (Engineer); Shcherbinskiy, V. G. (Engineer)

32
43

TITLE: Laminar radiography of extra-thick butt welds

SOURCE: Svarochnoye proizvodstvo, no. 7, 1965, 18-19

TOPIC TAGS: butt weld, laminar radiography, geometric unsharpness, focal length, weld seam distance, aluminum alloy, thick weld

ABSTRACT: The authors performed experiments to elucidate the possibility of laminar scanning of 40, 60, 80, and 140 mm thick aluminum-alloy butt welds, both in hot and cooled state, with partly filled groove, by placing the film magazine at different distances from the weld seam. The radiography was performed with the aid of a Mosrentgen X-ray apparatus with a magazine containing RT-1 X-ray film (with two reinforcing screens and 0.09 mm thick lead foil). The experiments were carried out on special models with rectangular grooves of standard dimensions as well as drilled apertures simulating the pore-type defects most characteristic of aluminum alloys. The focal length F = 800 mm was kept constant. The geometric unsharpness was determined with the aid of an MF-4 microphotometer with a 0.2 mm wide slit. Considering that the minimum geometric unsharpness still clearly perceivable by the unaided eye is 0.25 mm, the X-ray pictures made at distances of up to 50 mm from the seam

Card 1/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 62778-65

ACCESSION NR: AP5017485

may be considered sufficiently sharp. If the distance from the seam is increased to 120 mm, geometric unsharpness increases to 0.37 mm which in practice still does not affect the detectability of defects during the decoding of X-ray pictures. Thus 120 mm may be considered the maximum acceptable distance between the weld seam and the film magazine. Another way of accelerating and simplifying the radiography of thick butt welds while they still are in heated state is to insert heat insulating pads with a low absorption factor (10-15 mm thick porolon or felt) between the magazine and the weld seam. Orig. art. has: 3 figures.

ASSOCIATION: none

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

NR REF SOV: 000 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 2568-66 EWT(d)/EWP(e)/EWT(m)/EWP(w)/EPF(c)/EWP(i)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EWP(z)/EWP(b)/EWP(l) JD/WW/DJ/GS/WH

ACCESSION NR: AT5022687 UR/0000/65/000/000/0332/0336

AUTHORS: Semenov, A. P.; Pozdnyakov, V. V.

TITLE: A method for studying friction and adhesion interactions of high temperature materials at temperatures of up to 2000C

SOURCE: AN SSSR. Nauchnyy sovet po treniyu i smazkam. Teoriya treniya i iznosa (Theory of friction and wear). Moscow, Izd-vo Nauka, 1965, 332-336

TOPIC TAGS: friction, adhesion, high temperature friction, friction apparatus/MVP ZM induction furnace, VN 461 vacuum pump, TsVL 100 diffusion pump

ABSTRACT: An apparatus for studying friction and adhesion of high temperature materials in a vacuum (to 10^{-5} mm Hg) at temperatures of up to 2000C was developed at the Laboratoriya iznosostoykosti, Gosudarstvennogo nauchno-issledovatel'skogo instituta mashinovedeniya (Wear Laboratory of the State Scientific Research Institute of Machinery Operation). The device (see Fig. 1 on the Enclosure) has an MVP-ZM vacuum induction furnace, a VN-461 vacuum pump, and a TsVL-100 diffusion pump as the major components. The friction area has the geometry shown in Fig. 2 on the Enclosure. The lower specimen is attached to a graphite tube 2 (see Fig. 1 on the Enclosure) which is motor-driven through a vacuum seal and bevel gears. The

Card 1/4

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 2568-66

ACCESSION NR: AT5022687

4

upper specimen is attached to a rod 7 (same material as 2) which is mounted on the loading and measuring assembly 8. The load is applied by cam 10, and the contact force and friction torque are measured by two sets of strain gage instrumented springs 12 and 13. The specimens are heated by cylindrical heater 14 mounted on tube 2 (and rotating with it) and excited by a high frequency inductor 15. Sample curves of the friction coefficient as a function of temperature (20-1750C in a vacuum) are presented for graphite-graphite (AG-600) and magnesium oxide-magnesium oxide couples. Orig. art. has: 5 figures.

ASSOCIATION: Nauchnyy sovet po treniyu i smazkam, AN SSSR (Scientific Committee on Friction and Lubrication, AN SSSR)

SUBMITTED: 18May65 ENCL: 02 SUB CODE: ME

NO REF SOV: 000 OTHER: 000

Card 2/4

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 2568-66

ACCESSION NR: AT5022687

ENCLOSURE: 01

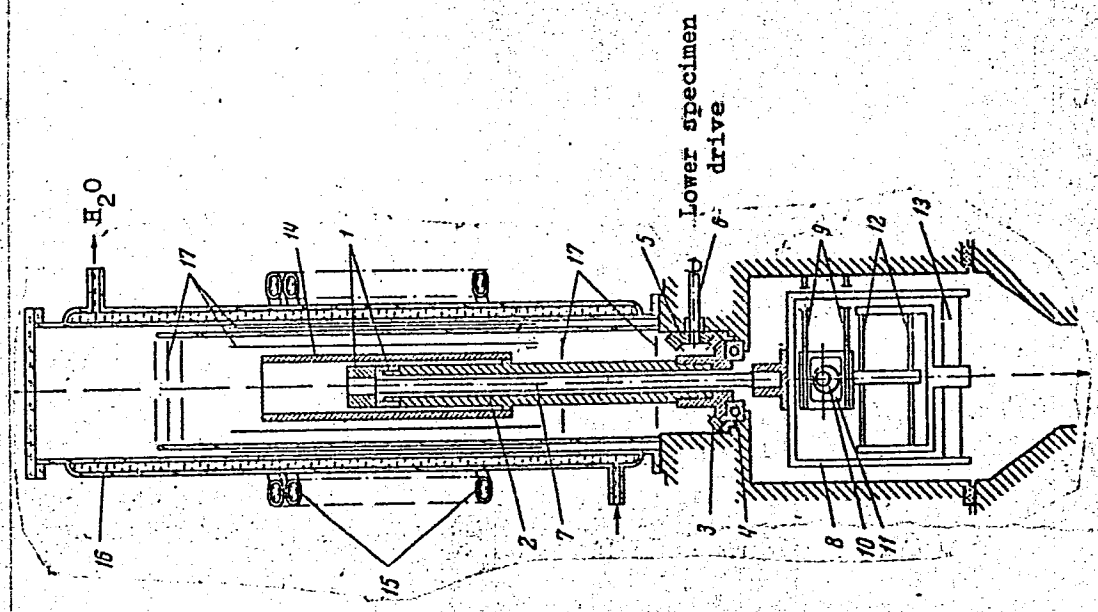

Fig. 1. Schematic of apparatus

Card 3/4

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8

L 2568-66

ACCESSION NR: AT5022687 ENCLOSURE: 02

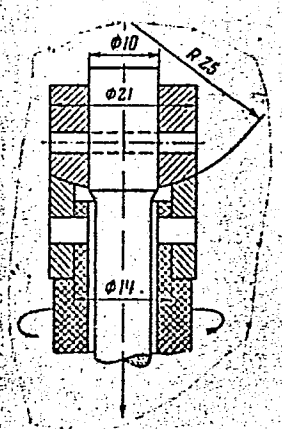

Fig. 2. Geometry of friction area

Card 4/4

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547810016-8"