SHEPELIN, V.A.; ZALKIND, Ts.I.; VESELOVSKIY, V.I.

Steady-state reduction of oxygen on a platinum cathode in alkaline solution. Zhur.fiz.khim. 38 no.8:2098-2101 Ag '64. (MIRA 18:1)

1. Fiziko-khimicheskiy institut imeni P.Ya.Karpova.

SHEFELIN, V.F., inzh.

Calculation of parameters and construction of mechanical characteristics of an automatic control system with a magnetic power amplifier. Elektrichestvo no.11:18-22 N '65. (MIRA 18:11)

1. ChETNII.

SHEPELOV, L., mayor

This must be adopted. Voen.sviaz. 16 no.4:42 Ap '58. (MIRA 11:4)
(Radio, Military--Equipment and supplies)

SHEPELOV, L., mayor

We study reception and transmission simultaneously. Voen. vest. 40 no. 1:101-102 Ja '61. (MIRA 13:12)
(Radiotelegraph)

USSR/Physiology of Human and Animal - Metabolism R-3

Abs Jour : Referat Zhur - Biologii, No 16, 1957, 70436

Author : Gordon, B.G. , Shepelov, M.B.
Title : Ammonia and Glutamine Content of the Blood of Cats with Different Kinds of Anastamoses, Developing After Constriction and Complete Closure of the Portal Vein.

Orig Pub : Bull. experim. biol. medizini, 1956, 42, No 12, 23-28

Abstract : Blood of animals was drawn 3-5 hrs after meat-meal on the 3-5 day after applying of constricting ligature, then after 3 weeks in presence of several anastomoses, and 5-7 days after complete ligature of the portal vein. Operative action on the portal vein, led to an increase in the blood of NH_3 (aver. plus 106%), and of glutamine (plus 31%), particularly prominent in cases of complete closure of the portal vein and a considerable development of porto-caval anastamoses, and the least in the development of the hepato-lobal anastamoses. It is

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USSR/Physiology of Human and Animal - Metabolism R-3

Abs Jour : Referat Zhur - Biologii, No 16, 1957, 70436

proposed that for experimental purposes that the Pavlov apparatus should be substituted by a simpler approach- that of stenosis, following it by a complete ligature of portal vein. The porto-caval anastamoses, in the opinion of the author, can act as the pavlovian fisturae.

Card 2/2 - 90 -

USSR / Cultivated Plants. Fruit Trees. Small Fruit Plants. Nut Trees. Tea. M

Abs Jour : Ref Zhur - Biologiya, No 6, 1959, No. 25020

Author : Shepel's'ka, O. G.
Inst : Not given
Title : Effectiveness of Mineral Fertilizers at Different Methods of Application in Young Orchards

Orig Pub : Byul. nauk.-tekhn. inform. po sadivnytstvu, 1957, No 4, 25-28

Abstract : Methods for the application of mineral fertilizers in young orchards were investigated by the Mleyev Experimental Station of Horticulture in the course of 6 years. In the experiments were the variants: without manure, NPK, at the rate of 60 kg/ha into

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apertures at a depth of 35-40 cm (4 apertures on 1 m); NPK, at the rate of 60 kg/ha at the furrow to a depth of 30 cm, and NPK, at the rate of 60 kg/ha under the plow to a depth of 20-22 cm. Once in 3 years on the entire area, and also on that under control, 20 t/ha of manure was introduced. The mineral fertilizers were applied yearly in autumn. The application of fertilizers under the plow in the period of autumn plowing was most effective. By this method of fertilizer application, the root system is not impaired, and it utilizes the fertilizers more energetically. -- A. M. Shevchenko

Card 2/2

SHEPEL'SKIY, A. I., CAND AGR SCI, "[redacted] OF ECONOMIC AND BIOLOGICAL CHARACTERISTICS AND PROPERTIES IN HYBRID APPLE TREES." KIEV, 1960. (MIN [redacted] AGR UKSSR, UKRANIAN ACAD OF AGR SCI). (KL, 22-61, 216).

SIMIRENKO, Lev Platonovich [deceased]; SHEFEL'SKIY, A.I., kand. sel'-khoz. nauk, glav. red.; KOVTUN, I.M., kand. sel'khoz. nauk, zam. glav. red.; POSTYUK, A.V., zam. glav. red.; RODIONOV, A.P., doktor biol. nauk, zam. glav. red.; DEM'YANETS, Ye.F., starshiy nauchnyy sotr., red. toma; LISOVENKO, L.T., kand. biol. nauk, nauchnyy sotr., red. toma; NIKONENKO, M.N., kand. biol. nauk, red. toma; POSTOYUK, A.V., red.; DEREVYANKO, G.S., tekhn. red.

[Pomology in three volumes; apple, pear, stone fruits] Pomologiia v trekh tomakh; iablonia, grusha, kostochkovye porody. Kiev, Izd-vo Ukrainskoi Akad. sel'khoz. nauk. Vol.1. [Apple] IAblonia. 1961. 578 p. (MIRA 15:2)

1. Ukrainskiy nauchno-issledovatel'skiy institut sadovodstva (for Dem'yanets, Lisovenko).

(Apple--Varieties)

SHEPEL'SKIY, I.F.; BINDMAN, N.I.

Long use of the Mar'ianchik filters. Sakh.prom. 31 no.8:43-44 Ag '57. (MLRA 10:8)

1.Mironovskiy sakharnyy zavod.
(Filters and filtration)

SHEPEL'SKIY, M. Ya.: Master Tech Sci (diss) -- "Investigation of the elastic-plastic operation of steel beams reinforced before loading and under load". Khar'kov, 1959. 18 pp (Min Higher Educ Ukr SSR, Khar'kov Construction Engineering Inst), 150 copies (KL, No 11, 1959, 120)

RYZHENKO, Ivan Maksimovich, kand. tekhn. nauk, dots.; NEVYAZHSKIY, Ya.I., prof., retsenzent; BRILING, R.S., kand. tekhn. nauk, retsenzent; GULYAYEV, P.V., kand. tekhn. nauk, dots., retsenzent; NIKOLAYEVSKIY, G.K., kand. tekhn. nauk, dots., retsenzent; SHEPEL'SKIY, P.F., dots., otv. red.; LOS', T.A., red.; SMILYANSKAYA, T.M., tekhn. red.

[Orthogonal and axonometric sketching]Ortogonal'noe i aksonometricheskoe eskizirovanie. Khar'kov, Izd-vo Khar'kovskogo univ., 1960. 118 p. (MIRA 15:10)
(Mechanical drawing)

Shepel'skiy, P.F.

PHASE I BOOK EXPLOITATION SOV/4266

Progressivnaya tekhnologiya i vysokoproizvoditel'nyy instrument; opyt KhTGZ imeni Kirova (Advanced Processing and Highly-Productive Tools; Experience of the Khar'kov Turbogenerator Plant imeni Kirov) Moscow, Mashgiz, 1960. 155 p. 5,500 copies printed.

Reviewer: P. Ye. Dudnik Engineer; Ed.: M. S. Soroka; Chief Ed. (Southern Division, Mashgiz): V. K. Serdyuk, Engineer.

PURPOSE: This booklet is intended for technical personnel and innovators.

COVERAGE: The booklet discusses the experience of innovators and technical personnel in introducing advanced processes and machine tools at the KhTGZ imeni Kirov (Khar'kov Turbogenerator Plant) for the manufacture of steam turbine rotors, for tapping coarse threads, processing steam turbine blades. Experience in introducing artificial cooling for interference fits, and in mastering the manufacture of welded steam-turbine rotors is described. The

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Advanced Processing (Cont.) SOV/4266

booklet covers the advances in technology developed and introduced at the factory in the last few years. No personalities are mentioned. No references are given.

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Advanced Processing (Cont.) SOV/4266

AVAILABLE: Library of Congress

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11-14-60

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11100

28945
S/114/61/000/011/002/003
E194/E555

AUTHOR: Shepel'skiy, P.F., Engineer

TITLE: Mechanisation of the machining of complicated shaped surfaces

PERIODICAL: Energomashinostroyeniye, no.11, 1961, 31-33

TEXT: Existing methods of machining turbine blades include milling with cylindrical milling cutters having spiral teeth, shaping, or planing combined with turning. These methods are slow and not accurate enough. It is considered that the quickest methods of machining the shaped surfaces of turbine blades are: (1) blades of 10-200 mm long should be machined simultaneously over the entire length, or in two passes, using conical or shaped milling cutters, depending upon the blade design, and a flat template. (2) Blades of length 140 mm and upwards should be machined with shaped milling cutters covering the entire width of the blade profile, using one or two flat templates. As almost no special machines are made for machining steam turbine blades, the works was obliged to design and make a number of fixtures for this kind of machining. Fig.4 shows a semi-automatic device for milling the external profile of blades with a spiral milling cutter. The

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following notation is used: 1 — the blade; 2 - a hydraulic cylinder; 3 - machine table; 4 - rotating table; 5 - template. The blade is fixed so that the centre of rotation of the table coincides with the centre of the external profile of the blade. The flat template is designed in polar coordinates and governs the position of the milling cutter. With this fixture the machining time was 0.34 hours against 1.46 hours with the usual method, and the accuracy was of the required standard. Fig.5 shows a diagram of templates for a semi-automatic fixture on a horizontal milling machine, type A663B (A663V). This is a single-spindle machine whose arbor can be moved vertically up and down a column. In the diagram, 1 denotes the template for turning the part and 2 the template for milling. A rotating cradle with clamp is fixed to the machine table, which is fed horizontally. The vertical template is fixed to the table and acts through a roller and adjustable collar on to the spindle stock of the machine, which is disengaged from the vertical feed screws. Thus the shaped milling cutter, which covers the whole width of the blade profile, can move vertically, repeating the template curves. The second horizontal template is also fixed to the machine table and is

designed to rotate the cradle of the fixture and with it the part being machined. In this way, using two flat templates, it is possible to mill the internal and external shaped surfaces of steam turbine blades which vary both in section and in twist. The equipment has been designed and made at the KhTGZ and is shown diagrammatically in Fig.6. The machining time for one passage of a blade 740 mm long is 32 minutes which is much faster than could be achieved on any planing machine. After adjusting the templates the minimum grinding tolerance of the profile was reduced to 0.7 mm which is also better than can be achieved by planing, although it is still greater than required (0.3 mm). The milling cutter design is not yet altogether satisfactory, and even when skew-teeth were used the output was still not good enough. Special skew-teeth milling tools are now being designed with a spiral angle of 25-40° and a front angle of 10-30° which should increase the output by at least 50% while preserving the necessary accuracy. There are 6 figures.

SHEPEL'SKIY, Yu.F. [Shepel's'kyi, IU.F.]

Baceteriological problems of the sugar industry. Khar.prom. no.1:81-83 Ja-Mr '62. (MIRA 15:8)
(France—Sugar—Bacteriology)

ACC NR: AR6036136 (N) SOURCE CODE: UR/0398/66/000/010/A058/A058

AUTHOR: Shepel'skiy, Yu. L.

TITLE: Nomogram for determining the heat-insulation thickness of marine piping systems

SOURCE: Ref. zh. Vodnyy transport, Abs. 10A490

REF SOURCE: Tr. Leningr. in-ta vodn. transp., vyp. 87, 1966, 142-143

TOPIC TAGS: shipbuilding engineering, heat insulation, ship component, pipe, graphic technique

ABSTRACT: A calculation nomogram for determining the heat-insulation thickness of marine piping systems is discussed. The nomogram can be used by design bureaus and technical departments of shipbuilding plants.

SUB CODE: 13/ SUBM DATE: none/

Card 1/1 UDC: 629.12.06

L 15213-66 EWT(m)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b)/EWA(h) JD

ACC NR: AP6002912 SOURCE CODE: UR/0286/65/000/024/0074/0074

INVENTOR: Shepelyakovskiy, K. N.; Stroganov, K. V.; Shklyarov, I. N.; Orlov, I. V.; Nikonov, V. F.; Assonov, A. D.

ORG: none

TITLE: Steel for surface-hardened parts. Class 40, No. 177083

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 24, 1965, 74

TOPIC TAGS: steel, surface hardened steel, manganese containing steel, silicon containing steel, chromium containing steel, shallow hardenable steel

ABSTRACT: This Author Certificate introduces a steel for surface-hardened parts containing 0.4—1.2% carbon and alloyed with manganese, silicon, and chromium. To obtain steel with a specified hardenability, one of three alloying elements is added in a specified amount and the content of the other two is limited. For example, in steel containing 0.3—1.4% manganese, the chromium and silicon contents are limited to 0.15% and 0.17%, respectively. Steel with 0.3—1.4% silicon should contain 0.15% chromium and 0.20% manganese, and steel with 0.3—1.8% chromium should contain 0.20% manganese and 0.17—0.27% silicon. [AZ]

SUB CODE: 11/ SUBM DATE: 29Dec60/ ATD PRESS: 4190

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SHEPELIAKOVSKIY, K. Z. and S. E. RYSKIN.

Novaia avtomaticheskaia ustanovka dlia zakalki kolenchatykh valov. (Vestn. Mash., 1948, no. 4, p. 36-39)

(New automatic device for hardening crankshafts.)

DLC: TN4.V4

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

SHEPELYAKOVSKIY, K. Z.

"Experience in Operating High-Frequency Installations at the Automobile Plant imeni Stalin," Collection of Data of the Scientific and Technical Session on Electric Power Economy (Sbornik materialov nauchno-tekhnicheskoy sessii po ekonomii elektroenergii), No II, MONITOE, 1949, 139 pp.

All-Union Scientific and Technical Society of Power Engineers Moscow Division, Industrial Electrical Engineering Section.

W - 15368, 6 Dec 50

SHEPELYAKOVSKIY, K. Z. and S. E. RYSKIN.

Tekhnika primeneniia induktsionnogo nagreva. Moskva, Mashgiz, 1949. 240 p.

(Technique of the application of induction heating.)

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

1. SHEPELYAKOVSKIY, K.Z.: SHKLYAROV, I.N.

2. USSR (600)

4. Automobile Industry

7. Automatic machine for the transfer of parts heated with high frequency currents. Avt. trakt. prom. no. 11. 1952

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

SHEPELYAKOVSKIY, K.Z.

Centralized feeding of induction heating installations. [Izdaniia] LONITOMASH no.30:162-173 '52. (MLRA 8:1)
(Induction heating)

SHEPELYANKOVSKIY, K.Z.; SHKLYAROV, I.N.

High-frequency surface hardening of flywheel gear rims. Avt.trakt.prom. no. 11:14a-b '53. (MLRA 6:11)

(Flywheels) (Hard-facing)

SHEPELYAKOVSKIY, K.Z.

SLUKHOTSKIY, A.Ye.; RYSKIN, S.Ye.; SHEPELYAKOVSKIY, K.Z., kandidat tekhnicheskikh nauk, retsenzent; GOLOVIN, G.F., kandidat tekhnicheskikh nauk, redaktor; PETERSON, M.M., tekhnicheskiy redaktor

[Inductors for induction heating of machine construction parts; planning and mamufacture] Induktory dlia induktsionnogo nagreva mashinostroitel'nykh detalei; proektirovanie i izgotovlenie. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. i sudostroit. lit-ry, 1954. 319 p. (MLRA 7:11)

(Induction heating) (Machinery industry)

SHEPELYAKOVSKIY, K. Z.

RABIN, M.O.; SHEPELYAKOVSKIY, K.Z.

Surface hardening of malleable ferrite cast iron with high-frequency heating. Lit.proizv. no.9:10-12 D'54. (MLRA 8:2)
(Cast iron--Hardening)

SHEPELYAKOVSKIY, K.Z.

Examining high-frequency surface hardening with self-annealing. (MLRA 8:2)
[Izd.] LONITOMASH no.33:135-153 '54.
(Cementation (Metallurgy))

SHEPELYAKOVSKIY, K.Z.

USSR/ Engineering - Metallurgy

Card : 1/1

Authors : Assonov, A. D., Laurate of the Stalin Prize, Cand. Tech. Sc.; Shepelyakovskiy, K. Z, Cand. Tech. Sc.; Lankin, P. A., Cand. Tech. Sc.

Title : Rapid cementation during heating with high-frequency current

Periodical : Vest. Mash., 34, Ed. 6, 56 - 60, June 1954

Abstract : A comparison is made between cementation method of articles in a furnace without muffles, using vaporized liquid carburizers, and a new method which uses a gas for treating the surface, the article being placed in a muffle and the heat produced by high-frequency current. A complete analysis is given of results obtained with various temperatures and the method is found to be adaptable to high-speed automatic production. Graphs; drawings; tables; illustrations.

Institution : ...

Submitted : ...

SHEPELYAKOVSKIY, Konstantin Zakharovich, kandidat tekhnicheskikh nauk; KHASIUK, B.A., professor, doktor tekhnicheskikh nauk, redaktor; KONTSEVAYA, E.M., redaktor; KRYNOCHKINA, K.V., tekhnicheskiy redaktor

[High frequency surface hardening of steel in machine building] Vysokochastotnaia poverkhnostnaia zakalka stali v mashinostroenii. Moskva, Vses. uchebno-pedagog. izd-vo Trudrezervizdat, 1955. 52 p. (MLRA 8:7)
(Steel--Hardening)

SHEPELYAKOVSKIY, K.Z., kandidat tekhnicheskikh nauk; BOGATYREV, Yu.M., kandidat tekhnicheskikh nauk, retsenzent; KUNYAVSKIY, M.N., kandidat tekhnicheskikh nauk, redaktor; POPOVA, S.M., tekhnicheskiy redaktor

[Self-hardening of steel in high frequency tempering] Samootpusk stali pri vysokochastotnoi zakalke. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1955. 106 p. (MLRA 8:7)
(Steel--Heat treatment)

ASSONOV, A.D., kandidat tekhnicheskikh nauk; SHEPELYAKOVSKIY, K.Z., kandidat tekhnicheskikh nauk; LANKIN, P.A., kandidat tekhnicheskikh nauk.

Accelerated carburization using high-frequency heating. Metalloved.i obr.met. no.3:39-50 S '55. (MLRA 9:3)

1. Avtozavod imeni Stalina.
(Induction heating) (Cementation (Metallurgy))

ASSONOV,A.D., kandidat tekhnicheskikh nauk, laureat Stalinskoy premii; SHEPELYAKOVSKIY,K.Z., kandidat tekhnicheskikh nauk; LANKIN,P.A., kandidat tekhnicheskikh nauk.

Rapid cementation by means of high frequency heating. Avt. trakt. prom. no.5:(insert) My '55. (MLRA 8:8)

1. Moskovskiy avtozavod imeni Stalina.
(Cementation (Metallurgy)

AID P - 4256

Subject : USSR/Engineering

Card 1/1 Pub. 128 - 14/33

Authors : Shepelyakovskiy, K. Z., Kand. Tech. Sci., and I. N. Shklyarov, Engineer

Title : Automatic heating-forging unit

Periodical : Vest. mash., #1, p. 45-49, Ja 1956

Abstract : Description and design of a unit combining the operation of high-frequency induction heating with stamping or forging of a valve tappet. Diagrams, photos.

Institution : None

Submitted : No date

SHEPELYAKOVSKIY, K.Z., kandidat tekhnicheskikh nauk.

Prospective use of high-frequency heating in automobile and tractor construction. Avt. i trakt. prom. no.3:28-32 Mr '56. (MLRA 9:7)

1.Moskovskiy avtozavod imeni Stalina.
(Metals--Heat treatment) (Electric heating)

SHEPELYAKOVSKIY, G.Z., kandidat tekhnicheskikh nauk.

High-speed cementation. Nauka i zhizn' 23 no.3:47 Mr '56.
(Cementation (Metallurgy)) (MLRA 9:7)

Shepelyakovskiy, K. Z.

USSR/ Engineering - Heating and forging units

Card 1/1 Pub. 128 - 14/33

Authors : Shepelyakovskiy, K. Z., and Shklyarov, I. N.

Title : Automatic heating and forging units

Periodical : Vest. mash. 36/1, 45-49, Jan 1956

Abstract : The Automobile Plant im. Stalin, designed and constructed several devices for induction heating, automatic charging and heading of blanks and small components for automobile engines. Illustrations and drawings of the above mentioned units are given, with a description of their construction, methods of installation and operation. One USSR reference (1955). Diagram; drawings; illustrations.

Institution : .....

Submitted : .....

129 - 2 - 8/10

AUTHOR: Assonov, A.D., Candidate of Technical Sciences, Shepelyakovskiy, K.Z. and Lanikn, P.A. (Moscow)

TITLE: Mechanical Properties of Steel Subjected to High Speed Cementation During High Frequency Heating. (Mekhanicheskiye svoystva stali, Podvergnutoy skorostnoy tsementatsii pri nagreve TB.Ch.).

PERIODICAL: Metallovedenie i obrabotka metallov, 1957, No. 2, pp 46-48 (U.S.S.R.)

ABSTRACT: The influence of high cementation temperatures on the mechanical properties of steel were investigated between 1938 and 1943 by S.S. Stroev who carried out cementation of components in a solid carburizing agent at 1100-1140°C for a period of ten hours. Some of the results obtained by Stroev are reviewed (Tables 1 and 2, p. 46). The authors cite data obtained experimentally as a result of high temperature gas cementation, using high frequency heating, for specimens and gears made from 18XFT steel (composition: 0.16-0.24% C, 0.17-0.37% Si, 0.80-1.10% Mn, 1.00-1.30% Cr, 0.40% Ni, 0.08-0.15% Ti) after hardening from 870°C and tempering at 200°C; depending on the quality of the melt the values varying

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SHEPELYAKOVSKIY, K.Z

25(1) PHASE I BOOK EXPLOITATION SOV/1368

Assonov, Aleksandr Danilovich, Konstantin Zakharovich Shepelyakovskiy, and Petr Aleksandrovich Lankin

Gazovaya tsementatsiya s induktsionnym nagrevom (Gas Carburizing With Induction Heating) Moscow, Mashgiz, 1958. 87 p. 6,000 copies printed.

Reviewer: Lozinskiy, M.G., Doctor of Technical Sciences; Ed.: Shmykov, A.A., Doctor of Technical Sciences; Tech. Ed.: Model', B.I.; Managing Ed. for Literature on Metalworking and Machine-Tool Manufacture (Mashgiz): Beyzel'man, R.D., Engineer.

PURPOSE: This book is intended for engineers and technicians.

COVERAGE: The book deals with the practical aspects of a new method of rapid gas carburizing with immediate quenching, specifically as carried out with high-frequency induction heating. The immediate-quenching aspect required the development of new types of steel, since older methods involved heating after carburization. One such type of steel is that bearing the designation 18KhGT, developed by the Moscow Motor Vehicle Plant in collaboration with

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Gas Carburizing With Induction Heating

NAMI (Scientific Institute for Automobile Engines). In 1947 the same plant developed the method of gas carburizing with the aid of induction heating. Industrial application of the method was begun in 1953. The principal significance of the new method lies in the fact that practical use is made of elevated temperatures (1150-1200°C) for carburizing. The effect of these high temperatures on the properties of the cemented layer has to be studied further. The book contains material not previously published, describing methods, tested in practice, of gas-carburizing gear wheels on a mass scale. Techniques and equipment are described in detail. Recommendations are made for the adoption of the new process in industry. The following are mentioned as having taken part in developing the new carburizing method: S.A. Yaitskov, Engineer; I.N. Shklyarov, Engineer; M.O. Rabin, N.V. Senyushkin; A.N. Zhivotovskiy; N.I. Borisov. There are 21 references, all Soviet.

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SHEPELYAKOVSKIY, K. Z.

PHASE I BOOK EXPLOITATION SOV/1558

Moscow. Dom nauchno-tekhnicheskoy propagandy im. F.E. Dzerzhinskogo

Sovremennyye splavy i ikh termicheskaya obrabotka (Contemporary Alloys and Their Heat Treatment) Moscow, Mashgiz, 1958. 329 p. 12,000 copies printed.

Additional Sponsoring Agency: Obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy RSFSR.

Ed. (Title page): Yu. A. Geller, Doctor of Technical Sciences; Ed. (Inside book): V.V. Zuhavinskiy, Engineer; Tech. Ed.: B.I. Model'; Managing Ed. for Literature on Metal Working and Tool Making: R.D. Beyzel'man, Engineer.

PURPOSE: The book is intended for engineering and technical personnel of heat-treatment shops and test laboratories of machine-building plants.

COVERAGE: This collection of 28 articles, compiled by 33 authors, aims to acquaint the reader with modern practice in the heat treatment of steels. The authors are primarily concerned with the development of various types of structural, tool, and heat-resistant steels and with the use of their alloying elements. Materials-handling equipment is described at some length. The treatment of alloys, particularly those of titanium, also comes within the scope of the collection. The book is thoroughly diagrammed, and a good deal of the material is shown in graphical form. Among the problems dealt with are the minimization of deformations, the introduction of the automatic control of heat-treating equipment, together with fully mechanized tool manufacture, and the optimum proportions of different alloying elements. There are numerous tables and drawings. Bibliographic listings placed at the end of chapters are predominantly Soviet. The articles comprising this collection are reports delivered at a conference held in the Scientific and Technical Propaganda House imeni F.E. Dzerzhinskiy in Moscow.

Contemporary Alloys and Their Heat Treatment SOV/1558

AVAILABLE: Library of Congress

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Card 6/5

SOV/137-59-1-1824

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 1, p 241 (USSR)

AUTHOR: Shepelyakovskiy, K. Z.

TITLE: Heat Treatment of Machine Parts by High-frequency Currents (Termoobrabotka detaley s nagrevom tokami vysokoy chastoty)

PERIODICAL: V sb.: Materialy Soveshchaniya glavn. metallurgov z-dov i in-tov avtomob. prom-sti. Nr 3. Moscow, 1958, pp 81-84

ABSTRACT: The author recommends conversion to high-frequency-current (HFC) surface hardening of certain heavy-duty machine parts, such as axles; naturally, for that purpose it is necessary to know which grade of steel should be selected. At the present time the plant uses St-40Kh steel for ZIL-150 automobile axles which upon surface hardening are characterized by a torque moment of 1840 kgm and 614,000 cycles prior to fatigue failure. The author points out the expediency of a more extensive study of the carburization process using HFC heating. To achieve this a suitable technology and composition of the gas carburizer should be developed. At the im. Likhachev plant work is carried out on the surface hardening of gears by HFC heating.

A. B.

Card 1/1

Shepelyakovskiy, K.Z.

AUTHOR: Rustem, S.L. 129-4-12/12

TITLE: All-Union Conference on industrial use of high frequency currents held in Leningrad. (Vsesoyuznoye soveshchaniye po promyshlennomu primeneniyu t.v.ch. v g. Leningrade).

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1958, No.4, pp. 61-64 (USSR).

ABSTRACT: The conference held in November, 1957 was convened by the Leningrad Scientific and Technical Society of the Engineering and Power Generation Industry (Leningradskoye Nauchno-Tekhnicheskoye Obshchestvo Mashinostroitel'noy i Energeticheskoy Promyshlennosti). The task of the conference was to report on advanced experience, to discuss achievements in this field outside the Soviet Union and to evolve recommendations for expanding the use of high frequency in industry and introduction of progressive technology and also evolving organisational measures for improving the quality of high frequency equipment and apparatus. The conference included sections for induction heating technology, metals technology, non-conducting materials and equipment.
Candidate of Technical Sciences, M.A. Spitsyn (NII TVCh imeni V. P. Vologdin) read the paper "New developments in the field of industrial application of high frequency

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All-Union Conference on industrial use of high frequency currents held in Leningrad.

chemical-heat treatment and is used successfully in the automobile industry.
3. Hardening of the drilling bits for use in the oil industry.
4. "Bright" annealing of steel strip.
5. Two-frequency heating of steel blanks for heating by applying pressure, particularly for rolling.
6. Heating and hardening of leaf springs on automatic machines.
7. High speed tempering of hardened components using high frequency heating etc. For automating technological processes, the following are at present manufactured: An automatic machine for heating and hardening of leaf springs; manipulator for horizontal forging machines; automatic machines for hardening of small components. Of the new apparatus used in induction heating, the author mentioned a stabiliser of the temperature of components being heated, a photo-electric pyrometer with a direct reading off of the temperature, relay for dosing the energy, etc. Of particular interest were the data he gave on the two-frequency heating of gears. The entire process

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takes only a few seconds and can be used in mass production for heat treatment of gears with average moduli. Heating of blanks which are to be shaped by applying pressure is also effected by two-frequency induction heating using 50 c.p.s. current for heating to 700-750°C followed by heating with high frequencies to 1100-1150°C. The two-frequency induction heating reduces the consumption of electricity in the case of heating right through of blanks. For tempering and annealing of weld joints, induction heating with 50 c.p.s. and with higher frequencies is used. The paper of M. G. Lozinskiy, Doctor of Technical Sciences, Institute of Engineering Technology, Ac.Sc. USSR (Institut Mashinovedeniya AN SSSR) dealt with the problems of strength of surface hardened components and the features of high frequency heating. The deformation detected by the author in engineering magnetic steels "45" and "40X" forms in the surface layer as a result of magnetostriction caused by the a.c. electromagnetic field of the inductor. On a smooth surface of blanks consisting of magnetic steels which were subjected to repeated cycles of heating and cooling, "mounds" and

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"valleys" form at spacings equalling the half-wave of the supersonic oscillations generated by the high frequency. In non-magnetic steels no such phenomenon was observed. It was also observed that with increasing number of cycles, heating-cooling, the diameter of the cylindrical specimens in the heating zone increases, whilst the height of the specimens decreases. Furthermore, the author reported on the method of G. V. Uzhik which enables increasing the static strength up to 300%; this is achieved by using h.f. heating of a thin layer in the zone of stress concentrations at the surface of steel components. Thus, for instance, cylindrical specimens made of hardened 40X steels with a stress concentrator in the form of a notch will be 2.5 times stronger if the notch zone is tempered by using h.f. heating. M. G. Lozinskiy considers that use of the method of strengthening applying h.f. tempering of the stress concentration zones will permit evolving specifications which would justify more rational designs than those used hitherto.

K. Z. Shepelyakovskiy (ZIL) read the paper "On reducing the hardenability as a means of achieving contour (surface)

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surface hardening of gears by induction heating with two frequencies. The method ensures heating along the contour of gears with moduli of 3.5 to 5. During heating with a lower frequency (1000 to 2000 c.p.s.), the bottom of the tooth gap is heated intensively, whilst at radio frequency (300 000 c.p.s.) the tip of the tooth is heated. The same inductor is used for both frequencies. The heating with the lower frequency lasts 2.5 to 4 secs; thereby, the specific power consumption is 1.5 to 1.7 kW/cm^2. Heating with the higher frequency is effected for 0.5 to 0.7 sec using a specific power of 1.1 to 1.2 kW/cm^2. The 1000 c.p.s. current is generated by a 500 kW rotary generator, whilst the 300 kc/sec current is generated with an oscillator circuit of 400 kW rating. During hardening of gears made of steel "45" cracks occur and, therefore, the carbon content was reduced and alloy steels 36ГС, 35СГ etc. are being used. For fracturing a tool of a surface hardened gear a force of 9.5 to 17 tons is required, whilst the force required for fracturing case hardened gears after hardening, made of the steel 18ХГТ, did not exceed 10 tons per tooth. Gears produced by using

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Staleprokatniy Zavod). The optimum frequency depends on the thickness and the width of the strip. For a thickness of 0.2 to 0.6 mm and a width of 100 mm it is recommended to use a current of 8000 c.p.s.; for strip of 200 mm a current of 2500 c.p.s. and for a width of 400 mm a current of 1000 c.p.s. On heating strip to 700-900°C, the uniformity of the temperature along the breadth of the strip is ± 25°C. For heating, a two-turn inductor was used, whereby the conductors of the current and of the magnetic flux were water cooled. This method was applied in the case of bright annealing of cold rolled strip. For a speed of movement of the strip of 25 m/min the required power was 200 kW (for a frequency of 2500 c.p.s.). The productivity of the equipment equalled 1 ton/hr. The specific power consumption during induction heating is 180-190 kWh/ton. Compared with annealing in chamber furnaces, this method has a number of advantages since thereby the productivity per m^2 of production space is increased two to threefold, the annealing time is reduced by several hundred times, uniform mechanical properties are ensured along the entire length of the

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transformation temperature does not depend on the speed of heating and the magnitude of the volume effects depends on the composition of the alloy and the preceding heat treatment. When heating annealed iron-carbon alloys, the transformation temperature is determined by the speed of heating and by the initial structure. On heating hardened low alloy carbon-free alloys, the transformation temperature compared to that in the alloys in the annealed state does not change at all in some cases (Fe-Si; Fe-Ti), whilst in other cases it decreases by 30 to 40°C (Fe-Cr and Fe-W). On heating hardened steels, the dilatometric recordings show clearly the volume changes caused by the martensite decomposition and by the phase transformation; the decomposition cannot be suppressed not even at heating speeds of 60 000°C/sec. At high heating speeds of hardened steels, the phase transformation takes place in the range of 700°C, i.e. at lower temperatures than the transformation during slow heating. Investigations of the influence of the heating speed on the structure and properties of hardened, carbon and alloy steels in the case of electric tempering showed that at elevated

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heating speeds a favourable combination can be obtained of the strength and ductility and also an increased resistance to wear which is of practical interest. In their paper I. N. Kidin, Doctor of Technical Sciences, and Yu. A. Bashnin, Moscow Institute of Steel (Moskovskiy Institut Stali) expressed the view that the higher the heating speed the larger will be the temperature range in which phase transformations will take place. Experimental data show that pearlite-austenite transformations proceed in the range of higher temperatures. In the case of high frequency hardening, higher temperatures are required than in the case of heating in an ordinary furnace. This is attributed to the fact that the phase transformations proceed with a higher speed due to the more rapid rise in the temperature and due to the sharp acceleration of the dissociation of carbides and the diffusion of carbon in the ferrite. The authors showed that it is justified to introduce a new thermal parameter, namely, the speed of induction heating in the range of phase transformations. This would enable the plotting of diagrams of preferential and permissible

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equal conditions of heating and cooling. Cooling in a 30 to 35% solution of glycerine and a 5% solution of potassium permanganate brings about a reduction in the deformation and in the crack formation, particularly in the case of alloy steels (40X, 40XH). Tempering at 140 to 200°C reduces the dimensions as compared to the hardened state and thereby the changes in the dimensions of the height and the internal diameter are compensated but the changes of the external diameter are amplified. Increase of the tempering temperature brings about an increase of the deformation.
Representatives from Roumania and East Germany participated in the Conference. The German delegate, E. Trippmacher, reported on the designs of compact h.f. transformers with built-in magnetic paths produced in East Germany.
NOTE: This is a complete translation and not an abstract.

AVAILABLE: Library of Congress.

Card 14/14

113-58-7-15/25

AUTHOR: Shepelyakovskiy, K.Z., Candidate of Technical Sciences, and Shklyarov, P.N.

TITLE: High-Speed Induction Heating of Rods in Automatic Upsetting Presses (Skorostnoy induktsionnyy nagrev shtang v avtomaticheskikh vysadochnykh pressakh)

PERIODICAL: Avtomobil'naya promyshlennost', 1958, Nr 7, pp 30-33 (USSR)

ABSTRACT: The author compares the advantages of contact and induction heating of rods in automatic upsetting presses, and favors the latter. The large sizes of rods required for automobile parts makes difficult the pre-heating processes by contact heating up to 1,000°C (Table 1). By way of comparison, the same data are presented for the induction heating process (Table 2). But here also the number of inductors (17 to 37), through which the upsetting machine is pushing the rod (Fig. 2), is high and the setup requires large dimensions. This was noticed in the Moscow Autcmobile Plant imeni Likhachev, while the Pervyy gosudarstvennyy podshipnikovyy zavod (First State Ball-Bearing Plant) has successfully tried a setup of smaller dimensions. The author sets forth general principles on

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High-Speed Induction Heating of Rods in Automatic Upsetting Presses

smaller setups.
There are 4 tables, 3 diagrams, 2 graphs and 5 Soviet references.

ASSOCIATION: Moskovskiy avtozavod imeni Likhacheva (The Moscow Automobile Plant imeni Likhachev)

1. Induction heating--Applications 2. Induction heating--Effectiveness

SOV/122-58-12-20/32

AUTHORS: Shepelyakovskiy K.Z., Candidate of Technical Sciences, Entin, R.I., Doctor of Technical Sciences

TITLE: A New Method of Surface Contour Hardening Medium Module Gears (Novyy metod poverkhnostnoy konturnoy zakalki shesteren srednego modulya)

PERIODICAL: Vestnik Mashinostroyeniya, 1958,Nr 12, pp 53-58 (USSR)

ABSTRACT: Surface hardening of medium module gears made from medium carbon steel carried out by induction heating usually leads to the comparitively small teeth being hardened right through, unless induction heating is performed by the "two-frequency" method. With module 4 to 6 mm, the tooth chord is 6 to 10 mm and normal induction heating hardens the teeth right through - this method is satisfactory for gears which work without shock. For auto or tractor gears, through hardening is not satisfactory, and the hardness of the core of the teeth should not exceed 46-48 Rockwell C. With "two-frequency" heating, preliminary heating to 680° C is carried out at 1000 to 10000 c.p.s. and this is followed by final heating to hardening temperature at 150,000 to 400,000 c.p.s. for 0.6 to 1 second. This method gives an evenly distributed

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A New Method of Surface Contour Hardening Medium Module Gears

hardened zone around the periphery of the teeth, and a relatively soft but tough core, the hardness of which is controlled by preliminary heat treatment. "Two-frequency" heating demands high power and is expensive (800-1100 Kw). The authors have worked out a method of through heating gears to the hardening temperature and then quenching the surface at or about the critical rate. Since gear teeth require surface hardness of 56-62 Rockwell C, medium carbon steels could not be used if the core hardness was kept down to 45 R_C by a slow quench. Special steels were developed with low hardenability which could be quenched at a high rate with water and gave limited depth of hardness. These steels require fine Austenitic grain, limitation of the elements which encourage grain growth i.e. Mn, Cr, and Ni, and preferably addition of elements such as Ti or V which form barely soluable carbides and encourage the growth of Pearlite. The composition of three alloys with low hardenability is shown in Table 2.

Card 2/4 Figs 2,3 and 4 show hardness distribution through 12.5 mm diameter specimens for these steels, respectively, hardened

A New Method of Surface Contour Hardening Medium Module Gears

after heating to 850°C, curves a) and to 900°C, curves b). Full lines are for samples without addition of Ti, and dotted lines with Ti added in the proportions given in Table 2. Comparison of these curves shows that reduction of Mn from 0.45 to 0.13% sharply reduces depth of hardening. Addition of Ti makes up for the effects which low Mn content would normally produce on the foregoing capabilities of the material. Table 3 gives further data on hardness at tooth surface and at its core, also the depths hardened above 55 R_C and above 45 R_C, for the three alloys given above. Table 1 shows similar measurements on specimens from normal medium carbon steel hardened under the same conditions. Gears with 4.23 module (tooth chord 6.5 mm) induction heated to 850°-900°C from special steel with 0.5 - 0.6 C, 0.1 - 0.3 Ti, and less than 0.2 Mn, less than .15 Cr, and less than 0.25 Ni, gave surface hardness 60 - 64 R_C, with depth below surface above 55 R_C from 1 to 2 mm and with core hardness 33 - 38 R_C. With normal 0.45 medium carbon steel, the surface hardness following similar treatment was 60 - 62 R_C, and the core

A New Method of Surface Contour Hardening Medium Module Gears

hardness 55 - 58 Rc. Loads (kg) to break these teeth are given in Table 4; here the top group of figures is for normal carbon steel and the lower group for experimental steel. To enable the quenching rate to be controlled water must be sprayed at a set pressure. The induction heating and quenching rig shown in Fig 5 was constructed. The quench is controlled by relay operated magnetic valves at fixed pressure and temperature. Normal heating time to 850°C is 20 to 30 seconds. The hardened gears are tempered at 150°C for one and a half hours. Fig 7 shows a plot of the hardness over the area of a 4.23 module tooth so hardened. Fig 8 depicts the microstructure of the hardened layer at the surface, of the core, and of the material before hardening. There are 8 figures, 4 tables and 10 references (7 Soviet, 2 English and 1 German).

SHEPELYAKOVSKIY, K.Z.

25(1)

PHASE I BOOK EXPLOITATION SOV/1586

Tekhnologicheskiy spravochnik po kovke i ob"yemnoy shtampovke (Handbook on Open and Closed Die Forging) Moscow, Mashgiz, 1959. 966 p. 15,000 copies printed.

Ed. (Title page): M.V. Storozhev; Ed. (Inside book): S.B. Kirsanova, Engineer; Ed. of Publishing House: B.M. Gliner, Engineer; Tech. Ed.: T. F. Sokolova; Managing Ed. for Information Literature (Mashgiz): V.I. Krylov, Engineer.

PURPOSE: The handbook is intended for engineers and technicans working in forging and die forming shops and in engineering design bureaus. It may also be used by teachers and students of technical schools.

COVERAGE: The handbook contains information on processes of forging and hot closed die forming as carried out on various kinds of forging and pressing machinery. Information is given on initial stock, making blanks, quality inspection of forgings and their heat treatment, and on engineering characteristics of basic machinery and mechanization equipment, on die making and on technical-economic indexes and engineering standardization. The authors state that problems of manufacture by forging and press forming which have only been discussed up to now in periodicals and special-ized literature are given in this handbook. No personalities are mentioned. There are 254 references, all Soviet.

Handbook on Open and Closed Die Forging SOV/1586

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PHASE I BOOK EXPLOITATION SOV/5457

Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Sektsiya metallovedeniya i termicheskoy obrabotki metallov.

Metallovedeniye i termicheskaya obrabotka metallov; trudy Sektsii metallovedeniya i termicheskoy obrabotki m...llov (Physical Metallurgy and Heat Treatment of Metals; ...ansactions of the Section of Physical Metallurgy and Heat Treatment of Metals) no. 2. Moscow, Mashgiz, 1960. 242 p. 6,000 copies printed.

Sponsoring Agency: Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Tsentral'noye pravleniye.

Editorial Board: G. I. Pogodin-Alekseyev, Yu. A. Geller, A. G. Rakhshtadt, and G. K. Shreyber; Ed. of Publishing House: I. I. Lesnichenko; Tech. Ed.: B. I. Model'; Managing Ed. for Literature on Metalworking and Machine-Tool Making: V. I. Mitin.

PURPOSE: This collection of articles is intended for metallurgists, mechanical engineers, and scientific research workers.

COVERAGE: The collection contains articles describing results of research conducted by members of NTO (Scientific Technical Society) of the machine-building industry in the field of physical metallurgy, and in the heat treatment of steel, cast iron, and nonferrous metals and alloys. No personalities are mentioned. Most of articles are accompanied by Soviet and non-Soviet references and contain conclusions drawn from investigations.

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17'

AVAILABLE: Library of Congress (TN672.N34)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549220010-7"

23964

S/113/60/000/002/006/009
D207/D306

1.1710 also 1416, 1454, 1413

AUTHOR: Shepelyakovskiy, K. Z., Candidate of Technical Sciences

TITLE: A study of parts from steel with reduced hardenability subjected to case hardening

PERIODICAL: Avtomobil'naya promyshlennost', no. 2, 1960, 33-36

TEXT: Together with R. I. Entin (Ref. 4: Vestnik mashinostroyeniya, no. 12, 1958) the author developed a steel of reduced hardenability suitable for gear-wheels of medium module (3-8 mm) to be subjected to induction case hardening. The chemical structure of this steel, termed ЭИ-937 (EI-937), is: 0.5-0.6% C; maximum 0.2% Mn; maximum 0.2% Si; maximum 0.15% Cr; maximum 0.25% Ni; maximum 0.04% S and P; 0.1-0.2% Ti. The sub-standard hardenability of this steel enabled a method of induction-coil hardening to be developed for medium module gear-wheels (Fig. 4). The gear-wheel (3) is heated in a ring inductor (1) powered by sound- or radio-frequency current at a low specific power (0.1-0.5 kwt/cm^2) for 20-50 seconds. At the end of this heating period the wheel is lowered to the auto-

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A study of parts...

matic quenching spray (2). The water for the spray enters from the pipe (5) via the pressure equalizer (4) to ensure even quenching of the gear-wheel. Compared with cementation, the new hardening method is quicker and reduces steel costs and deformation. The rated generator power required is also 8-10 times less than would be needed for two-frequency hardening. The method ensures a high degree of tooth case hardness, strengthens the core (hardness RC 35) and requires no preliminary heat treatment. The hardness distribution throughcut a tooth section can be seen from Fig. 2. Comparative tests of wheels for the 2nd and 3rd gears of the ЗИЛ-164 (ZIL-164) car prepared from 30ХГТ (30KhGT)

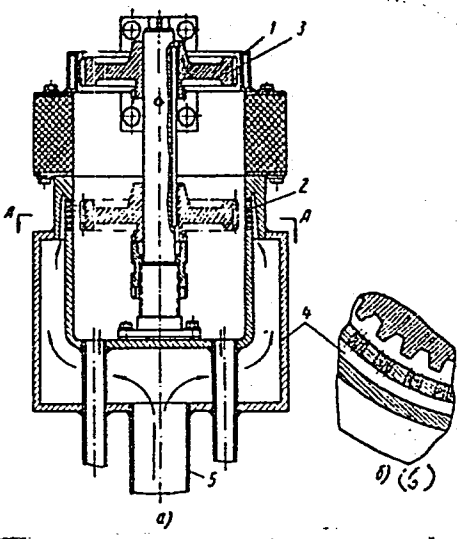

Рис. 4. Продольный (а) и поперечный (б) разрезы устройства для закалки шестерен среднего модуля из стали с пониженной прокаливаемостью.

Fig. 4.

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A study of parts...

Fig. 4. Legend: Longitudinal (a) and transverse (b) sections of the device for hardening medium module gear-wheels from steel of reduced hardenability.

(cementation and direct hardening) and from EI-937 (induction hardening) steels showed that the static strength of the teeth on wheels manufactured from the former was around 30% higher than on those from the latter steel. Hammer testing showed that the impact strength of gear-wheels from EI-937 steel was also much higher than those from 30KhGT steel. Further tests showed that the former are as durable as the latter. Piston pins manufactured from EI-937 steel were hardened in a water spray after through heating to 840-860°C followed by low-temperature tempering. The case had a hardness of RC 62-65 (martensite) and the core RC 30-32 (hardening sorbite). Comparative destruction tests showed that these piston pins had high endurance properties. The author also recommends the new hardening method for other branches of mechanical engineering. There are 6 figures, 4 tables and 5 Soviet-bloc references.

ASSOCIATION: Moskovskiy avtozavod im. Likhacheva (Moscow Automobile Plant im. Likhachev)

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S/129/60/000/012/002/013
E193/E283

AUTHOR: Shepelyakovskiy, K. Z., Candidate of Technical Sciences

TITLE: Constructional Steels of Reduced Hardenability

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, 1960, No. 12, pp. 8-15

TEXT: The disadvantages of case-hardening consist in that relatively expensive alloy steels have to be used and that the process itself does not lend itself easily to automation. The H.F. induction surface-hardening process is free from these disadvantages, but it cannot be applied to small components unless they are made of steel of relatively low hardenability. The object of the investigation, described in the present paper, was to acquire more experimental data on the preparation and properties of such steels. The results of the first series of experiments showed that the carbon content is not a limiting factor and that low-hardenability steels, containing 0.4-1.2% C, can be manufactured. The low hardenability is achieved by reducing to minimum the manganese, silicon, chromium, and nickel content in the steel, and by the introduction of modifying elements such as aluminium and titanium

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Constructional Steels of Reduced Hardenability

or vanadium, niobium, tellurium, or zirconium, and by observing certain precautions during the smelting operation. One possible set of recommendations for smelting low-hardenability steels includes the following: 1 - electric arc, induction, or open-hearth furnace can be used for making this type of steel, but in every case, basic lining should be employed. 2 - when scrap is used in smelting, silicon-free charge must be used. When oxygen is introduced during smelting, the nature of the charge is immaterial, but it should contain lowest possible content of elements which do not oxidize during smelting (nickel, copper). 3 - neither silicon nor chromium should be used as the oxidizing additions. 4 - since both titanium and aluminium serve as modifying elements, they should be added to the melt in quantities larger than those required for de-oxidizing the molten metal. The composition of several steels of low hardenability is given in the table reproduced below.

S/129/60/000/012/002/013
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Constructional Steels of Reduced Hardenability

Table 3

	Chemical Composition in %							
	C	Si	Mn	Cr	Ni	Ti	P	S
Experimental Steels	0.59	0.06	0.02	0.03	0.26	0.12	0.008	0.010
	0.52	0.06	0.02	0.04	0.28	0.11	0.006	0.010
Electric Arc Furnace Steels	0.57	0.18	0.05	0.05	0.13	0.11	0.015	0.015
	0.52	0.18	0.08	0.03	0.23	0.11	0.013	0.009
	0.75	0.22	0.08	0.05	0.08	0.15	0.008	0.008
Open Hearth Furnace Steels								
65 mm (65PP)	0.65	0.11	0.15	0.05	0.03	0.32	0.017	0.024
55 mm (55PP)	0.54	0.03	0.15	0.03	0.06	0.11	0.016	0.030

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S/129/60/000/012/002/013
E193/E283

Constructional Steels of Reduced Hardenability

Depending on the composition and method of smelting, the hardenability of this type of steel is greatly affected by the quenching temperature. The critical temperature, above which hardenability rapidly increases, may vary from 800°C for an electric-arc furnace smelted (0.75% C, 0.08% Mn) steel to 1000°C for an induction furnace smelted steel containing 0.53% C and 0.02% Mn. A characteristic feature of this type of steel is a very high critical rate of cooling, which amounts to 1000-2000°C/sec as compared with 150-400°C/sec for Steel 45. The results of transverse bending tests, carried out on both case-hardened alloy steels and surface-hardened low-hardenability steels, showed that in this respect the latter equal, or even excel the former. There are 5 tables, 4 figures and 9 Soviet references.

ASSOCIATION: Moskovskiy avtomobil'nyy zavod
(Moscow Car Factory)

Card 4/4

SHEPELYAKOVSKIY, K.Z., kand.tekhn.nauk

Review of "Industrial application of induction heating" by M.G.Lozinskii. Vest.mash. 40 no.4:86-87 Ap '60. (MIRA 13:6)

(Induction heating) (Lozinskii, M.G.)

SHEPELYAKOVSKIY, K.Z., kand.tekhn.nauk

Effect of induction hardening on the properties of steel. Metalloved. i term.obr.met. no.2:15-18 F '62. (MIRA 15:3)

1. Moskovskiy avtomobil'nyy zavod imeni Likhacheva.
(Induction hardening) (Steel--Testing)

SHEPELYAKOVSKIY, K.Z., kand.tekhn.nauk

Surface hardening of rear-axle gears made of 55PP low-hardenability steel. Avt.prom. 28 no.10:39-41 O '62. (MIRA 15:9)

1. Moskovskiy avtozavod im. Likhacheva.
(Steel--Hardening)

SHEPELYAKOVSKIY, K.Z., kand.tekhn.nauk; ZELENOVA, V.D., kand.tekhn.nauk; OSTROVSKIY, G.A., inzh.

Structure and properties of an induction-hardened layer of steel. Metalloved. i term. obr. met. no.9:24-29 S '62. (MIRA 16:5)

1. Moskovskiy avtomobil'nyy zavod (ZIL) i Gosudarstvennyy soyuznyy ordena Trudovogo Krasnogo Znameni nauchno-issledovatel'skiy avtomobil'nyy i avtomotornyy institut.
(Steel—Metallography) (Induction hardening)

S/276/63/000/002/010/052
A052/A126

AUTHOR: Shepelyakovskiy, K.Z.

TITLE: Case hardening of rear axle gears made of 55ПП(55PP) of low hardenablility

PERIODICAL: Referativnyy zhurnal, Tekhnologiya mashinostroyeniya, no. 2, 1963, 54-55, abstract 2B228 (Avtomob. prom-st', no. 10, 1962, 39-41)

TEXT: At the Moscow automobile plant imeni Likhachev a new technological process was introduced for case hardening of rear axle cylinder-driven gears made of 55PP steel of low hardenability. The process is realized through induction heating. The elements to be hardened are heated to the hardening temperature by control or valve generators of standard 60-100kw. The hardening is done by means of appliances securing intensive and regular water cooling of the hardened surface. The surface of the element is hardened to the depth of 1-2mm to RC 58-62 hardness. The hardness of the core is RC 30-40. An automatic installation for the outline hardening of cylindric rear axle gears is described. The installation can

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Case hardening of rear axle...

be used for gears 200-450mm in diameter. The technical and economic effectivness of this process consists essentially in cutting the steel costs, the consumption of alloying elements, the heat treatment costs (approx. by 2/3, in the possibility to automate the process of heat treatment, in reducing deformations during heat treatment and, as a result, in increasing the precision of gearing. There are 4 figures and 9 references.

T. Kislyakova

(Abstracter's note: Complete translation.)

L 10690-63 EWP(q)/EWT(m)/BDS--AFFTC/ASD--JD
ACCESSION NR: AP3001653 S/0129/63/000/006/0030/0035

54

AUTHOR: Zelenova, V. D.; Ostrovskiy, G. A.; Shepelyakovskiy, K.Z.

TITLE: Growth of austenitic grain in steel during induction heating

18

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 6, 1963, 30-35

TOPIC TAGS: austenitic grain, steel, induction heating, martensite steel, austenite steel

ABSTRACT: The initial austenitic grain, whose size depends on the dispersibility of the original structure, determines the grain size of steel made by induction heating. The rate of heating, from 8 to 1000 degrees per second does not affect size of the original grain; but further austenite growth depends on heating rate, slow rate and high temperature causing grain growth. Decreasing austenite grain size from No. 8 to 12 decreases roasting and increases strength of martensite steel. Use of inherently fine grained steel permits an extension of the temperature interval and induction heating rate in which fine austenitic grain can still be obtained. Use of fine grained

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L 10690-63
ACCESSION NR: AP3001653

steel and of optimal inductive heating rates are the essential means for increasing the strength of machine parts. Orig. art. has: 3 tables and 6 figures.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 09Jul63 ENCL: 00

SUB CODE: 00 NO REF SOV: 010 OTHER: 003

ja/

Card 2/2

SHEPELYAKOVSKIY, K.Z.;

Effect of the rate and temperature of induction heating on the properties of hardened steel. Metalloved. i term. obr. met. no.8: 48-52 Ag '65. (MIRA 18:9)

1. Moskovskiy avtomobil'nyy zavod.

L 36090-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD

ACC NR: AP6016592 (A,N) SOURCE CODE: UR/0129/66/000/005/0033/0037

AUTHORS: Shepelyakovskiy, K. Z.; Shklyarov, I. N.; Kal'ner, V. D.

ORG: Moscow Automobile Works (Moskovskiy avtomobil'nyy zavod)

TITLE: Case hardening with deep induction heating--a promising method for heat treatment of steels

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 5, 1966, 33-37

TOPIC TAGS: case hardening, fatigue strength, tempering, steel, induction hardening, carbon steel/ 45RP steel, 47GT steel, 45G steel, 40KhGRT steel, 55PP carbon steel

ABSTRACT: A new method of case hardening with deep induction heating is described. This method was developed at the Central Scientific Research Institute of Ferrous Metallurgy (TsNIIChERMET). The specific power is 0.05--0.2 kW/cm^2; the heating rate in the area of phase transitions is 2--10 deg/sec; and the heating time is 20--100 sec. Steel 55PP of reduced hardenability and steel 45RP of regulated hardenability are used. It was found that the strengthened core increases the strength of the part, the thinner the hardened layer. Case-hardened 45RP steel was used for the differential axles of ZIL-130 automobiles (see Fig. 1). The hardening temperature was about 900C for 70 sec. The axles were then tempered at 250C for 1.5 hrs. The method has substantial advantages over straight-through heat treatment and conventional case

Card 1/2 UDC: 621.78.5

L 36090-66

ACC NR: AP6016592

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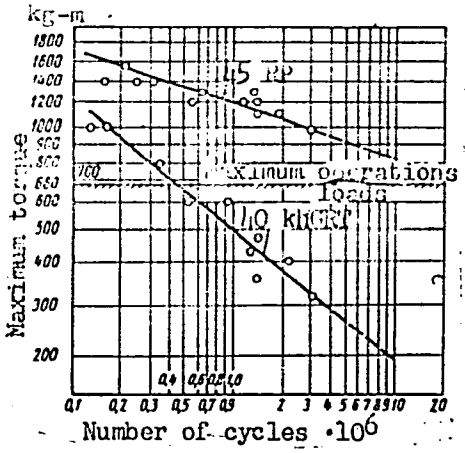

Fig. 1. Fatigue strength of differential axles of ZIL-130 of 40KhGRT steel (after hardening from 870C and tempering at 220C) and 45RP steel (case hardening with deep heating and tempering at 250C)

hardening. Orig. art. has: 4 tables, 1 diagram, 1 graph, and 1 photograph.

SUB CODE: 11/3/ SUBM DATE: none/ ORIG REF: 009

LS

Card 2/2

SHEPELYUK, S., raskryazhevshchik

Bucker works without a marker. Mast.lesa no.5:1-3 My '57.
(MIRA 10:10)

1.Nagorskiy lesopromkhoz.
(Lumbering)

S/194/62/000/001/055/066
D201/D305

9,2510

AUTHORS: Kossov, O. A. and Shepenina, R. F.

TITLE: Phase-controlled switching transistor power amplifiers

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 1, 1962, abstract 1-7-185s (Vestn. elektropromisti, 1961, 32 no. 7, 52-58)

TEXT: Phase-controlled power amplifiers using switching transistors are considered. These a.c. supply amplifiers permit the design of either balanced or unbalanced output d.c. or a.c. circuits, operating as switches and which produce a wide range of smooth load voltage variations. The requirements for an arrangement controlling the angle switching-in are considered, together with possible variants of the amplifiers and the comparative analysis of their characteristics. The working of the possible amplifier circuits into different loads is analyzed. It is shown that the considered amplifier circuits consist actually of 3 stages (PA - multivibrator - output stage); each stage has a considerable gain, but only the PA intro-

Card 1/2

Phase-controlled switching ...

duces a delay. This is why for a large overall power gain $K = 10^5 - 10^7$, a fast response over 1-3 half-periods of the supply source is possible. 4 references. [Abstracter's note: Complete translation.] VB

Card 2/2

SHEPER, M., inzh.-mayor

Flight testing of an airplane. Av. i kosm. 46 no.12:71-73 D '63. (MIRA 17:1)

USSR/Cultivated Plants - Grains. M-2

Abs Jour : Ref Zhur - Biol., No 7, 1958, 29746

Author : Nevskiy, S.P., Sheperin, G.P.

Inst : Stavropol Scientific Research Institute for Agriculture.

Title : The Hydromodulus of Constantly Flooded Rice in Stavropol'skiy Kray.

Orig Pub : Byul. nauchno-tekhn. inform. Stabrop. n.-i. in-ta s.kh., 1956, No 1-2, 61-63.

Abstract : In order to determine the hydromodulus and actual irrigation rate of constantly flooded rice the Stavropol Experimental Melioration Station set up a fixed series of observations on steppe and bottom land soils. Their hydrophysical properties are characterized. Both during the flooding period and at the time of the supporting water layer the irrigation rates are higher on steppe soils

Card 1/2

USSR/Cultivated Plants - Grains. M-2

Abs Jour : Ref Zhur - Biol., No 7, 1958, 29746

than on bottom land. It is recommended that constantly flooded rice plantings in Stavropol'skiy Kray be primarily situated on bottom land and higher flood land terraces having heavy, weakly filterable soils.

Card 2/2

SHEPERKOV, Mito Kostov, monter vodoprovodnoy sluzhby (g.Vratsa)

New design of flanges for fitting in branch water-pipes. Suggested by Mito Kostov Sheperkov. Rats.i izobr.predl.v stroi. no.11:91-92 '59. (MIRA 13:3)
(Bulgaria--Pipe flanges)

L 28527-66

ACC NR: AP6012333 (A) SOURCE CODE: UR/0317/65/000/006/0058/0063

AUTHOR: Volgin, M. (Major general in technical engineering service, Candidate of technical sciences); Shepet, P. (Engineer, Colonel)

ORG: None

TITLE: A company training target complex

SOURCE: Tekhnika i vooruzheniye, no. 6, 1965, 58-63

TOPIC TAGS: ground force training, gunnery training, fire control equipment

ABSTRACT: A new fire control target system used by the Army Ground Forces at their various firing ranges is described. The target system was designed for military units of a company size undergoing training in firing practice. The system consisted of 86 automatic targets controlled by radio. The radio electric equipment included a control desk, four distribution panels, three signal imitators, 17 storage batteries, and insulated cables. The total weight of the equipment was about 4.5 tons. It was transported by two motor vehicles. A platoon can install the system in 6 to 8 hours and remove it in about 3 hours. The system (in four areas) is controlled by one transmitting and four receiving

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L 28527-66

ACC NR: AP6012333

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radio stations. The control desk regulating the radio transmission is fed from a 12-v battery while 12, 24, and 48 volts are needed for distribution panels controlling the receiving stations. The target device of AML-T48 type was described and illustrated. The dropping, lifting, and releasing of targets hit during the exercises was explained by means of three circuit diagrams. The first diagram showed the electric circuit of the AML-T48 target, the second one depicted the electronic circuit of the control desk and the third diagram represented the receiving circuit of the distribution panel. The use of radio remote control was explained and a graph showing the variation of voltages and frequencies (carrier and operating) in time was presented. A light signal imitator was designed for "cannon" and "rifle" operations.

SUB CODE:19, 09/ SUBM DATE: None

Card 2/2 CC

LAZEBNAYA, G.V.; SHEPETA, N.G.; KUSTAS, V.L.

Flame photometric determining of potassium, cesium and rubidium when present together. Prom.khim.reak. i osobo chist.veshch. no.2:70-74 '63. (MIRA 17:2)

Metal-Cutting

Attachment for grinding the cutting edges of small end-mill cutters., Stan. i inst., 23, no. 1, 1952.

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

SHEPETINA, F. A., Candidate Agric Sci (diss) -- "The effect of phosphorobacterin and azotobacterin on the growth, development, and yield of sunflower and clover". Voronezh, 1959. 20 pp (Min Agric USSR, Voronezh Agric Inst), 150 copies (KL, No 23, 1959, 170)

SHEPETINA, F.A., kand.sel'skokhoz.nauk; ZATUCHNYY, V.L.; LOVYANNIKOV, P.T.

Prospective methods for cultivating oil-bearing roses. Masl.-zhir. prom. 27 no.2:35-36 '61. (MIRA 14:2)

1. Moldavskaya zonal'naya opytno-selektsionnaya stantsiya Vsesoyuznogo nauchno-issledovatel'skogo instituta maslichnykh i efiromaslichnykh kul'tur;

(Roses)

SHAPABARIN, V., SHEPTYNA, YE.

Efficiency, Industrial

How we achieve over-fulfillment of the norm by every worker, V pom. profaktivu, 13, no. 14, 1952.

Monthly List of Russian Accessions, Library of Congress, October 1952.

UNCLASSIFIED.

ORECHKIN, D.B.; POPOVA, N.V.; RYKOVA, I.S.; SHEPET'KO, O.F.; Prinimali uchastiye: BURKOVA, A.P.; MIKHAYLOVA, N.V.

Preparation of alkylaryl sulfonates from straight-run oil fraction. Khim.i tekh.topl.i masel 8 no.1:27-30 Ja '63. (MIRA 16:2)

(Petroleum--Refining) (Sulfonic acids)

1. [illegible], P. Ya.

2. USSR (600)

4. Creameries

7. Defects in the construction part of the plan, Moloch. prom. 14 No. 4, 1953.

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

SHEPETKOV, B.V., ROKITYANSKAYA, D.A., TROITSKAYA, V.A., ROKITYANSKY, I.I., and ZYBIN, K.YU.,

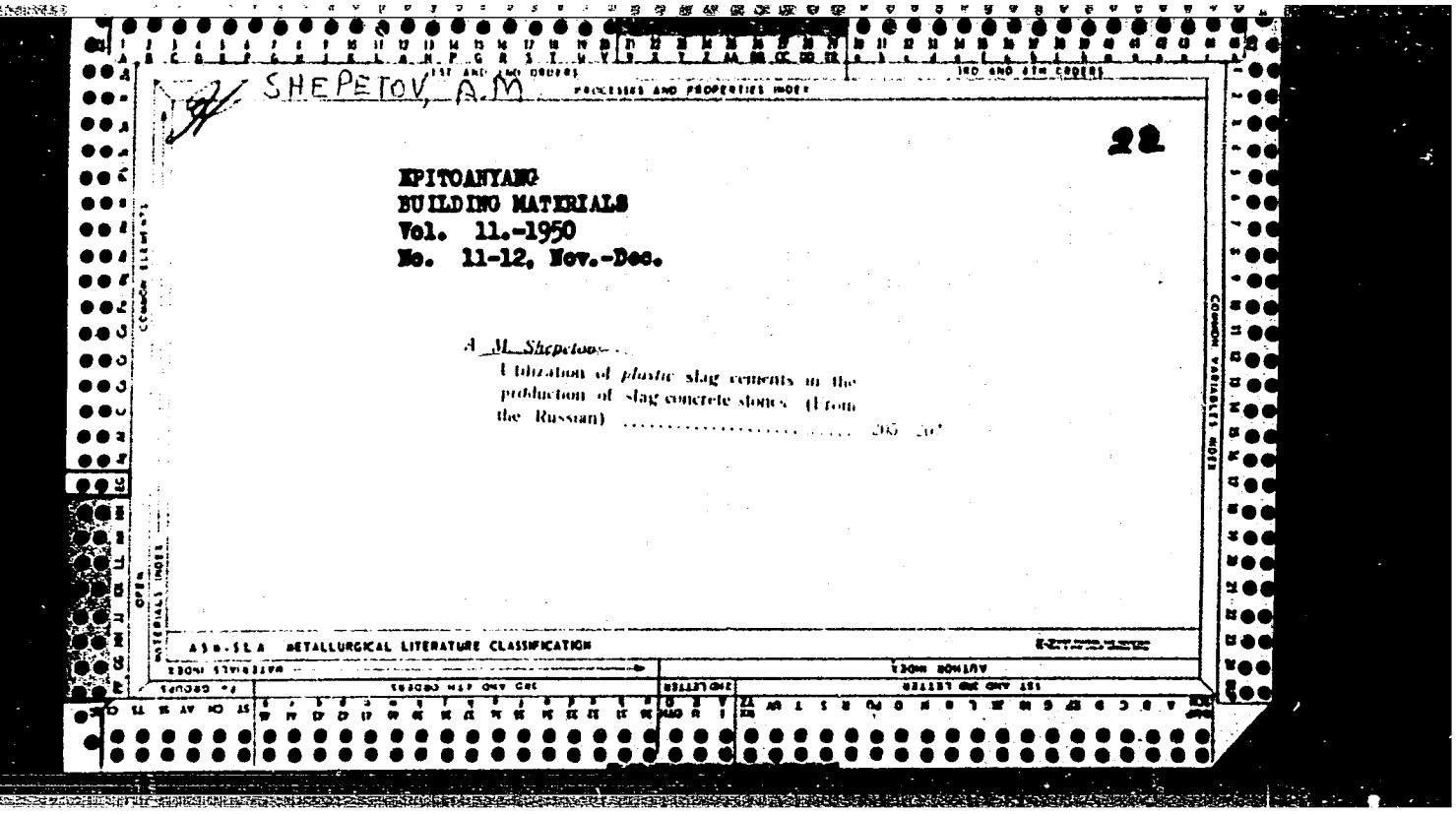
"The Fine Structure of Magnetic Storms with Respect to Pulsations with Periods less than 15 sec,"

report presented at the Intl. Conference on Cosmic Rays and Earth Storms, Kyoto, Japan, 4-15 Sept 1961.

SHEPETNOV, R.V., ROKITYANSKAYA, D.A., TROITSKAYA, V.A., ROKITYANSKY, I.I., and ZYBIN, K.YU.,

"The Connection of Pc and Pt Pulsations with Magnetic Storms,"

report presented at the Intl. Conference on Cosmic Rays and Earth Storms, Kyoto, Japan, 4-15 Sept 1961.



SHEPETOV, A.M

22

KRITOANYANG
BUILDING MATERIALS
Vol. 11.-1950
No. 11-12, Nov.-Dec.

A. M. Shepetov
Utilization of *plastic* slag cements in the production of slag concrete stones (From the Russian) 205 20

SHIMANOV, A.N.

"Ispol'zovaniye Pylevidnoy Zoly Dlya Betonov i Stroitel'nykh Rastvorov. V Kontse Tret'ego Razdela Dan Obzor Dokladov Po Voprosu Shlakozoloispol'zovaniya, Proceedings of a Conference on Problems of Ash Removal, ash and slag removal and ash and slag utilization, Trudy Konferentsiya Po Voprosam Zoloulavlivaniay Shlakozoloulavlivaniya i Shlarozoloi spol'zovaniya. U.S.S.R. Gozenergoizdat (Moscow: Gosenergoizdat, 1955, 160pp.; abstr. in Teploenergetika (heat Pwr Engng, Moscow), June 1956, 64). Theree are ten papers on atmospheric pollution, flue gas cleaning; cyclones, instrumentation, pneumatic removal ash, ash handling, and the use of ash for heat insulation and construction.

SHEPETOV, A.S.; BOBORYKO, I.I.

Conducting practical courses in machine-shop practice and electricity. Fiz. v shkole 16 no.2:59-69 Mr-Ap '56. (MLRA 9:6)

1.1-ya srednyaya shkola, g. Noginsk Moskovskoy oblasti.
(Machine-shop practice) (Electricity--Study and teaching)

BOBORYKO, I.I.; SHEPETOV, A.S.

Organizing an electric engineering study center. Politekh. obuch. no.2:71-76 F '58. (MIRA 11:1)

1.Srednyaya shkola No.1 g. Noginska.
(Electric engineering--Study and teaching)

SHEPETOV, A.S.; RASIN, M.A. (Noginsk)

Experience in the use of a mathematics laboratory. Mat. v shkole no.5:48-52 S-O '59. (MIRA 13:2)
(Mathematics--Study and teaching)

SHEPETOV, M. F.

7879. Andreyev, YE. N. I SHEPETOV, M. F. Vliyaniye zhilishchnykh I bytorykh usloviy na zabolevayemost' tuberkulezom. Pod Red. D. M. Krylova. yakutsk, yakutknigoizdat, 1954. 20 S.; 4 otd. L. chert. 20 sm. (dom san. prosveshcheniya M-Va zdravookhraneniya yassr). 4.000 EKZ. Bespl.--NA Yakut. Yaz.--(55-630) P

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SO: Knizhuaya Letopis', Vol. 7, 1955