ZALESSKIY, S.K., nauchnyy sotrudnik.

Use of X rays in laboratory research. Sel'khozmashina no.10:14-16 O '57. (MLRA 10:9)

1. Severo-Zapadnyy nauchno-issledovatel'skiy institut sel'skogo khozyaystva.
(X rays--Industrial application) (Soil mechanics)

ZALESSKIY, S.K., inzh.

The flow of seeds during the sowing of grain crops. Mekh. i elek. sots. sel'khoz. 21 no.5:25-28 '63. (MIRA 17:1)

1. Nauchno-issledovatel'skiy institut mekhanizatsii i elektrifikatsii sel'skogo khozyaystva Severo-Zapada.

ZALESSKIY, S.K.

Using gamma rays for investigating the performance of agricultural machinery. Trakt. i sel'khozmash. no.3:33-35 Mr '59. (MIRA 12:4)

(Agricultural machinery) (Gamma rays--Industrial application)

GLOBUS, L.M.; ZALESSKIY, V.A.; ISAYEV, K.N.; KOLGANOV, D.I.; VARFOLOMEYEV, F.G., spetsial'nyy red.; BEL'KOVICH, A.V., red.; BRODSKIY, M.P., tekhn. red.

[Hunting and fishing appliances; a handbook] Okhotnich'i i rybolovnye tovary; spravochnik. [By] L.M. Globus i dr. Moskva, Gostorgizdat, 1963. 135 p. (MIRA 16:6)
(Fishing--Equipment and supplies)
(Hunting--Equipment and supplied)

ZALESSKIY, V.I., professor; TSIBANOVA, M.S., kandidat tekhnicheskikh nauk.

Study of deep drawing processes. Sbor.Inst.stali no.31:140-176 '53.
(MLRA 9:9)

1.Kafedra kovki i shtampovki.
(Deep drawing (Metalwork)) (Strains and stresses)

USSR/Engineering - Metallurgy FD-1384

ZALESSKIY, V.I.

Card 1/1 : Pub. 41-11/18

Author : Sokolov, L. N., Yelyutin, V. P., and Zalesskiy, V. I.

Title : Investigation of the plastic properties of commercial titanium

Periodical : Izv. AN SSSR. Otd. tekh. nauk 3, 110-115, 1954

Abstract : Studies behavior of titanium specimens in upsetting test and in testing for tension, torsion, and impact at various temperatures, from 20 to 1,000°C. Diagrams, tables, micrographs.

Institution :

Submitted : by Academician M. A. Pavlov, April 3, 1954

ZALESSKIY, V.I., professor; KORNEYEV, D.M., dotsent, kandidat tekhnicheskikh nauk.

Surface cracking during cycle heatings and coolings of steel. Sbor. Inst.stali no.32:267-313 '54. (MLRA 10:5)

1.Kafedra kovki i shtampovki.
(Steel--Heat treatment)
(Metals, effect of temperature on)

ZALESSKIY, V.I., professor.

Graphs of permissible strain on bending machine carriers. Sbor.Inst. stali no.32:375-391 '54. (MLRA 10:5)

1.Kafedra kovki i shtampovki.
(Power presses)
(Strains and stresses)

ZALESSKIY, V.I.; VASIL'YEV, D.I., kand.tekhn.nauk

Stamping pressing dies. TSvet.met. 28 no.3:58-61 My-Je '55
(MIRA 10:11)

1. Moskovskiy institut stali im. I.V.Stalina.
(Dies (Metalworking))

SOKOLOV, L.N., kandidat tekhnicheskikh nauk; ZALESSKIY, V.I., professor; YULYUTIN, V.P., professor, doktor.

Resistance to deformation of industrial titanium. Sbor.Inst.stali no.33:142-153 '55. (MLRA 9:6)

1.Kafedra kovki i shtampovki i Kafedra metallurgii redkikh metallov. (Titanium--Testing)

ZALESSKIY, V.I., professor; MIKHALENKO, F.P., kandidat tekhnicheskikh nauk.

Intermediate heating of semifinished products by high frequency currents for deep drawing. Sbor.Inst.stali no.33:193-219 '55.
(MLRA 9:6)

1.Kafedra kovki i shtampovki.
(Deep drawing) (Induction heating)

ZALESSKIY, V.I., professor; VASIL'YEV, D.I., kandidat tekhnicheskikh nauk.

Investigating the relative strength increase of pressing tools.
Sbor.Inst.stali no.33:358-408 '55. (MLRA 9:6)

1.Kafedra kovki i shtampovki.
(Power presses) (Strains and stresses)

ZALESSKIY, V.I., professor; GUBAREV, V.V., kandidat tekhnicheskikh nauk.

The mechanism of deformation in stamp cutting of sheet metal.
Shor.Inst.stali no.33:409-452 '55. (MLRA 9:6)

1.Kafedra kovki i shtampovki.
(Strains and stresses) (Sheet-metal work)

ZALESSKIY, V.I., professor, MIKHALENKO, F.P., kandidat tekhnicheskikh nauk.

Determining the efficiency of lubricants for deep drawing. Vest. mash. 35 no.11:53-54 N '55. (MLRA 9:2)
(Deep drawing (Metal work)) (Lubrication and lubricants)

BYALKOVSKAYA, Vera Sergeyevna; RUSANOV, Fedor Fomich; ZALESSKIY, V.I., professor, retsenzent; LAPSHIN, V.A., inzhener, retsenzent; MYKHEYVAL'D, A.V., kandidat ekonomicheskikh nauk, redaktor; BOGOLIUBOVA, I.Yu., redaktor izdatel'stva; MODEL', B.O., tekhnicheskiy redaktor; MATVEYEVA, Ye.N., tekhnicheskiy redaktor

[The economics of a new-type forge shop] Ekonomika kuznitsy novogo tipa. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956. 145 p. (MLRA 9:12)
(Forging)

ZALESSKIY, V.I., prof; TYURIN, N.I., inzh.

Speed of metal filling of cylindrical cavities in closed die stamps. Izv. vys. ucheb. zav.; chern. met. no.12:69-72 D '58. (MIRA 12:3)

1.Moskovskiy institut stali.
(Forging) (Dies (Metalworking))

3 (7)

AUTHORS: Zalesskiy, V. I., Tyurin, N. I. SOV/163-59-2-28/48

TITLE: The Experimental Determination of Contact Stresses Along the Height of the Press Die in Finless Pressing (Eksperimental'noye opredeleniye kontaktnykh napryazheniy po vysote shtampa pri bezobloynoy shtampovke)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1959, Nr 2, pp 158-164 (USSR)

ABSTRACT: For determining the normal stresses, a measuring ring 5 mm high was placed into a hydraulic 50-ton press; the tangential stress of the ring caused by linear expansion was transmitted to a pressure cell, and recorded over an electron amplifier by a loop oscillograph. The measuring ring was placed around the pressing room at different heights so that the change of the normal stress along the course of the press die could be recorded. Lead was used as pressing material the structure of which was homogenized by a special treatment. Figure 1 shows the experimental arrangement. Figure 2 shows the dimensions of two stampings. Figure 3 shows the course of the pressure curve in gradual filling of the die mold with the metal. Figure 4 shows the points of measurement and the

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distribution of normal stresses along the height of the press die. It shows that the maximum stress is shifted slightly downward to the fixed counterpunch. Therefore it is recommended: 1) If there is a compensator in the form of a transverse fissure of constant height, it should be attached to the bottom of the lower hollow of the press die. 2) The height of the lower hollow should be as low as possible. Figure 5 shows the stress distribution along the press die in a three-dimensional diagram (coordinates: stress, degree of deformation, measuring point along the course of the press die). There are 5 figures and 6 Soviet references.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: October 22, 1958

ACCESSION NR: AP4038895 S/0182/64/000/005/0001/0003

AUTHORS: Zalesskiy, V. I.; Tsibanova, M. S.; Kozlov, Yu. I.

TITLE: On the profile of hammer blocks for forging on hydraulic presses of low plasticity alloys

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 5, 1964, 1-3

TOPIC TAGS: forging, steel alloy, hammer block, hydraulic press, metal deformation

ABSTRACT: The authors conducted comparison tests on the forging of final parts of steel bars on cut hammer blocks with a 7-mm radius of edge curvature (see Fig. 1 on the Enclosure) and on similar blocks with an angle of inclination (α) of 15°. Samples for test use were prepared from low plasticity steel of 40-mm diameter and 200-mm length with a cast structure. The samples were heated and placed on a 200-ton press. The hammer blocks were heated to 300-350C and sample temperatures of 800, 900, 1000, 1100, and 1200C were used for testing. The allowed degree of deformation was given by the formula

$$\varepsilon = \frac{D_0 - h_1}{D_0} \cdot 100\%$$

where D_0 is the sample diameter before deformation and h_1 is the height in

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ACCESSION NR: AP4038895

millimeters of the transverse section after deformation; the same degree of deformation allowed was also calculated by

$$\varepsilon = \frac{F_0 - F_1}{F_0} \cdot 100\%$$

where F_0 and F_1 are the area of the transverse section before and after deformation respectively. The resulting degrees of deformation are tabulated, as are the results of varying the inclination angle of the blocks. The optimal inclination angle for one pass was found to be 20°; the absence of cracks during deformation was noted even for 29.8% deformation. Similar testing using a 3000-ton press in production conditions gave good results. Orig. art. has: 3 figures, 2 tables, and 2 equations.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 01

SUB CODE: MM NO REF SOV: 000 OTHER: 000

Card 2/3

ACCESSION NR: AP4039273 S/0148/64/000/005/0090/0093

AUTHOR: Zalesskiy, V. I.; Tsibanova, M. S.; Kozlov, Yu. I.

TITLE: Determination of Plasticity in Ingot and Billet Forging

SOURCE: IVUZ. Chernaya metallurgiya, no. 5, 1964, 90-93

TOPIC TAGS: plasticity, deformation, hot drawing, reduction, forging ingot, billet

ABSTRACT: The authors investigated plasticity for the purpose of determining the proper degree of deformation during hot drawing. Reduction was carried out in rhombic dies. Cast and forged 250 mm long specimens with a 40 mm diameter were cut from a low-plasticity steel ingot. Heating to 1150 C was followed by cooling to 30 C above test temperatures and 15 min holding. A 200 ton hydraulic press was applied. Rupture and upsetting tests showed the optimal temperature range for the deformation of the specimens to be 950 to 1170 C. Under industrial conditions the degree of deformation was calculated from the press stroke according to the equation

$$\varepsilon = D_o - h_1/D_o \times 100\%$$

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ACCESSION NR: AP4039273

where D_0 = initial diameter of the specimen; h_1 = final permitted height in drawing during one operation. The cross-sectional area was measured with a planimeter from a templet indentation. Thus, a method simulating the process of a given forging operation is suitable for the determination of the degree of deformation. Orig. art. has: 2 figures, 2 equations and 2 tables.

ASSOCIATION: Moskovskiy institut stali i splavov (Moscow Institute of Steel and Alloys)

SUBMITTED: 08Oct63 DATE ACQ: 12Jun64 ENCL: 00

SUB CODE: MM NO REF SOV: 000 OTHER: 000

Card 2/2

ZALESSKIY, Vladimir Iosifovich, prof.; ZIMIN, A.I., doktor tekhn. nauk, prof., retsenzent; KLIMOV, I.V., doktor tekhn. nauk, prof., retsenzent

[Equipment of forging power-press shops] Oborudovanie kuznechno-pressovykh tsekhov. Moskva, Vysshaia shkola, 1964. 598 p. (MIRA 18:1)

1. Kafedra mashin i tekhnologii obrabotki metallov davleniem Moskovskogo vysshego tekhnicheskogo uchilishcha (for Zimin).

L 20777-66 EWT(d)/EWT(m)/EWP(w)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EWP(l) JD/HW
ACC NR: AP6004680 SOURCE CODE: UR/0182/65/000/010/0009/0010

AUTHOR: Zalesskiy, V. I.; Kozlov, Yu. I.; Tsibanova, M. S.

ORG: none

TITLE: Effect of the shape of tool on the pattern of deformation of low-plasticity steel during upsetting

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 10, 1965, 9-10

TOPIC TAGS: hot upsetting, material deformation, plasticity, die shape, punch shape

ABSTRACT: Considering that many low-plasticity alloys are forged by upsetting and that initially concave and convex spherical upset dies and punches are used for this operation while flat upset dies and punches are used for final upsetting, the effect of the configuration of upset tools on plasticity as well as on the nonuniformity of deformation over height of specimen was investigated under laboratory conditions (specimens with initial diameter D_0 = 30 mm and initial height H_0 = 40 mm, of cast low-plasticity metal. The upsetting was performed at 800-1200°C with deformation ϵ_{total} = 40% over the height of the specimen. It was found (Fig. 1) that over the range of upsetting temperatures from 950 to 1170°C the greatest plasticity is displayed by specimens subjected to preliminary upsetting (10% deformation over height)

Card 1/3 UDC: 621.733.4

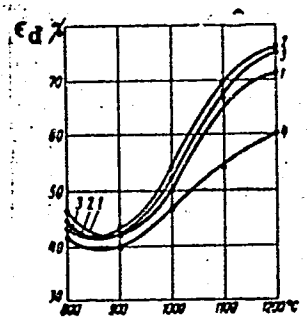

Fig. 1. Plasticity of steel upset by means of upset punches and dies of various configuration:

1 - flat; 2 - convex with $\alpha = 30°$; 3 - convex with $\alpha = 20°$; spherically concave

L 20777-66

ACC NR: AP6004680

by means of a punch with a projecting part 4.3 mm high shaped like a truncated cone. Over the entire range of upsetting temperatures employed the lowest plasticity was displayed by specimens upset by means of spherically concave tools (especially at 1100-1200°C, when the deformation is ~15-17%); The plasticity of specimens upset by means of flat punches is of an intermediate value. Upset punches with a projection shaped like a truncated cone reduce the nonuniformity of deformation, since then, during the preliminary upsetting, the projecting tip of the punch penetrates the central area of the specimen in such a way as to cause flowage of the specimen's metal; subsequent upsetting with flat upset punch causes flowage of metal in the surrounding annular zone of the specimen with its small surface area of friction; this displaces the metal of that zone both in the outward direction and in the direction of the cavity previously formed by the tip of the cone-shaped upset punch. All this leads to a sharp decrease in the zone of difficult deformation. By contrast, preliminary upsetting by means of spherically concave upset tool, with a deformation of ~15% over height, is highly disadvantageous, since it causes a decline in plastic properties and an increase in the nonuniformity of deformation. Orig. art. has: 5 figures, 1 formula, 1 table.

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 000/ OTH REF: 000

Card 3/3 vmb

L 44358-66 EWT(m)/EWP(k)/T/EWP(w)/EWP(t)/ETI IJP(c) JD/HW (N) SOURCE CODE: UR/0182/65/000/012/0018/0019

ACC NR: AP6013481

41
39
B

AUTHOR: Zalesskiy, V. I.; Kozlov, Yu. I; Lin, S. T.

ORG: none

TITLE: Study of the deformation of brass bottoms during cold burnishing 14

18

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 12, 1965, 18-19

TOPIC TAGS: brass, shell deformation, strain, surface finishing, compressive stress / / L-62 brass

ABSTRACT: The cold burnishing of large-diameter bottoms for the boilermaking, petroleum, chemical and oxygen equipment industry, is a relatively uninvestigated manufacturing process. In this connection, the authors discuss the cold roller burnishing of bottoms measuring 1300-4000 mm in diameter and up to 25 mm in thickness, as performed by a machine of the type illustrated in Fig. 1. Machines of this kind also flange the edges of the bottom, which is spherically shaped by prior stamping in a hydraulic press. The quality of the bottoms thus produced is greatly affected by strain produced by stress in the course of their forming. Accordingly the authors investigated the stress-strain relationships by plotting a coordinate grid in the

UDC: 539.371

Card 1/3

L 44358-66

ACC NR: AP6013481

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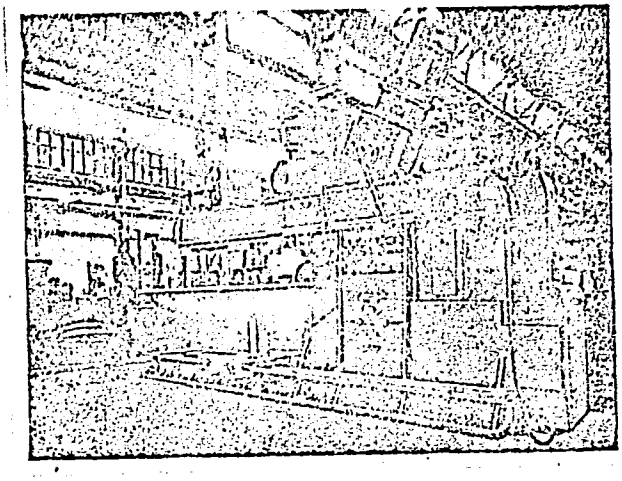

Fig. 1. Machine for cold burnishing of bottoms measuring 1300-4000 mm in diameter and up to 25 mm in thickness

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ACC NR: AP6013481

form of circles with the diameter of 20 mm on a flat blank of L-62 brass with original diameter of 1800 mm and thickness of 5 mm, used to fabricate a bottom with a diameter of 1500 mm. Following the stamping and burnishing of the bottom the plotted circles were found to have an elliptical shape. The permissible strain rate was calculated by the method described by A. D. Tomlenov (Mekhanika protsessov obrabotki metallov davleniyem. Mashgiz, 1963). These calculations show that stretching with compression ($-1 < m_2 < 0$) occurs in the region pertaining to the cylindrical part of the bottom, while nonuniform stretching ($1 > m_2 > 0$) takes place in the region corresponding to the radius of transition from the cylindrical to the spherical part. There is no ironing in the region where stretching with compression occurs. In this case the occurrence of compressive stresses produces folds which must be eliminated and smoothed out by annealing and extra burnishing. The most dangerous area where fracture of the metal may occur is the region located closer to the end of the cylindrical part of the bottom and corresponding to the radius of transition from the cylindrical to the spherical part. Orig. art. has: 3 figures, 1 table.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 001/

Card 3/3 hs

L 10215-67 EWT(m)/EWP(w)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6028390 SOURCE CODE: UR/0182/66/000/006/0015/0019

AUTHOR: Zalesskiy, V. I.; Kozlov, Yu. I.; Tsibanova, M. S. 27

ORG: none

TITLE: Experimental simulation of the closing of defects during hot upsetting and drawing of low-plasticity steel 14 14

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 6, 1966, 15-19

TOPIC TAGS: hot upsetting, metal drawing, metallurgic research, metallurgic process

ABSTRACT: These experiments were performed with specimens of low-plasticity steel having a high content of Cr (~22%), whose ingots display such characteristic defects as various transverse and longitudinal casting and shrinkage cracks. The problem was to determine the forging conditions in which these internal ingot defects could be more or less closed up. To this end, the pattern of distribution of deformations during upsetting was simulated by using composite models -- specimens of the investigated steel (Fig. 1) represented by a pressed-in set of solid washers alternating with perforated washers (single axial perforation). The artificial "defects," (holes in the washers) like defects of shrinkage origin, were disposed along the axis of the

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blank. These composite models with "defects" were then upset in a 200-ton hydraulic press at 1000 and 1150°C, with degree of deformation ϵ amounting to 30 and 50 as well as 50 and 70%,

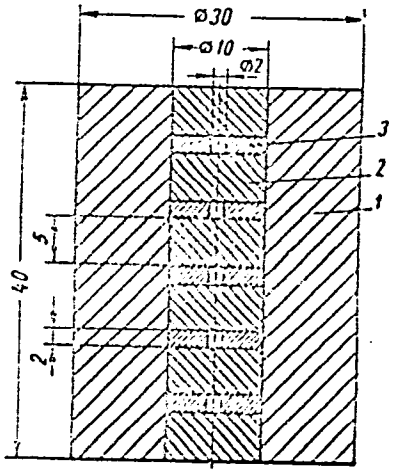

Fig. 1. Specimen with artificial defects:

1 - die; 2 - solid washer; 3 - washer with "defect"

respectively, on using various shapes of upsetting punches. It was thus found that upsetting to ϵ = 50 and 70%, at 1150°C, with punches of various shapes, produces the best results in closing the "defects" (i.e. reducing to zero the height of the "defects") and that preliminary upsetting with a concave spherical punch is

highly adverse, since it causes the metal to initially flow into the spherical cavity of the punch, thus increasing the height of the defects. This was followed by studies of the effect of drawing on the closing of defects, performed on specimens measuring 40x250 mm in diameter, in which artificial "defects" were produced by drilling apertures of 2 mm in diameter in the axial, transverse-horizontal and transverse-vertical directions (Fig. 2), simulating internal discontinuities in the metal. The drawing was performed in a 200-ton hydraulic press,

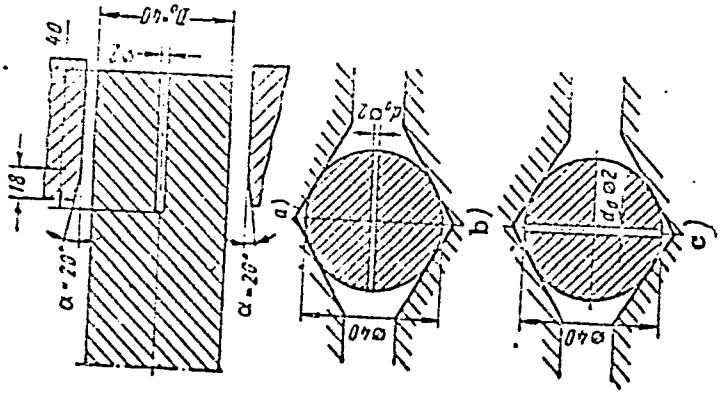

Fig. 2. Location of axial and diametral channels ("defects") during deformation:
a - axial; b - diametral horizontal; c - diametral vertical

Card 3/4

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ACC NR: AP6028390

with ϵ = 10, 15, 20 and 30%. It is thus found that axial defects most fully closed when ϵ = 30 for a single reduction in area and transverse defects, when ϵ = 20%. The transverse defects running in the direction of action of the deforming force failed to close completely and instead merely curved in the direction of flow of the metal. Orig. art. has: 7 figures, 1 table.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 003

Card 4/4 mst

L 08836-67 EWT(d)/EWT(m)/EWP(t)/ETI/EWP(k)/EWP(h)/EWP(l) IJP(c) JD/HW/JH

ACC NR: AP6028097 SOURCE CODE: UR/0314/66/000/006/0037/0038

AUTHOR: Zalesskiy, V. I. (Doctor of technical sciences); Kozlov, Yu. I. (Candidate of technical sciences); Lin, S. T. (Engineer)

ORG: none

TITLE: Analysis of the technological and economic indices of the process of fabricating thin walled bottoms by pressing with subsequent rolling

SOURCE: Khimicheskoye i neftyanoye mashinostroyeniye, no. 6, 1966, 37-38

TOPIC TAGS: cost estimate, metal rolling, metal pressing

ABSTRACT: The introduction of pressing with subsequent rolling has permitted fabrication of bottoms from carbon and stainless steels, brass and aluminum alloys, with a ratio $D_b/s = 350$ (here, D_s is the diameter of the billet, s is the thickness of the bottom). A previous method of pressing and drawing achieved a ratio D_b/s of only 230, and presented difficulties due to a loss of strength of the billet. A table shows a comparison of the economic factors in the fabrication of bottoms by the two methods; the bottoms in both cases had a diameter of 1800 mm and a thickness of 16 mm, and were made of Steel 3. The comparison shows a cost ratio of 100:140 in favor of the method of pressing with subsequent rolling. Equipment of this type makes it possible to fabricate bottoms of any desired type, except elliptical, with diameters

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ACC NR: AP6028097

from 500 to 4000 mm, and a thickness from 4 to 30 mm. Orig. art. has: 1 figure and 2 tables.

SUB CODE: 11/ SUBM DATE: none

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L 32936-66 EWT(d)/EWT(m)/EWP(k)/EWP(h)/T/EWP(w)/EWP(v)/EWP(t)/ETI/EWP(l) IJP(c)

ACC NR: AP6019931 SOURCE CODE: UR/0122/66/000/006/0061/0063

EM/WW/JD/HW

AUTHOR: Zalesskiy, V. I. (Doctor of technical sciences; Professor); Kozlov, Yu. I. (Candidate of technical sciences); Belen'kiy, V. A. (Engineer)

ORG: none

TITLE: The effect of elastic deformation of spinning machine and tools on the accuracy of closure size produced by roller spinning

SOURCE: Vestnik mashinostroyeniya, no. 6, 1966, 61-63

TOPIC TAGS: carbon steel, spinning, alloy steel, copper alloy, aluminum alloy, St. 3, steel 20, Kh18N9T steel, Kh14G14N3T steel, L62 alloy, AMg5 alloy

ABSTRACT: The effect of elastic deformation of spinning machine and tools on the accuracy of the container closure size produced from carbon steel (St.3, 20), high-alloyed steel (Kh18N9T, Kh14G14N3T), non-ferrous metals (L62, AMg5) and others by means of cold roller spinning has been investigated. Container closures 4—25 mm thick in diameters ranging from 1300 to 4000 mm were manufactured on a spinning machine (see Fig. 1) consisting of support 1, moving device 2, shaped spinning roller 3, pressure roller 4, and a 70-kw, 1460-rpm drive motor (5). It was found that the maximum axial roller displacement at a pressure of 60 kg/mm^2 was 0.45 mm, or 3.7—11.1% of the total tolerance for closure diameter prescribed by machine

Card 1/3 UDC: 621.983.44.07:621.753.1

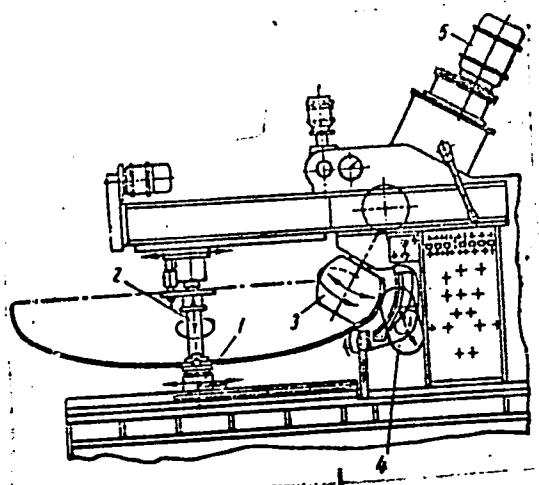

Fig. 1. Spinning machine

building standard MN 72-62. Inaccuracy as a result of radial displacement of the shaped roller, according to MN 72-62, amounted to 66, 40, and 33.2% for closures 1400—1600, 1800—2400, and 2600—3400 mm in diameter, respectively. With simultaneous action forces on the spinning roller and blank clamping, the axial displacement increased by 0.05 mm and the radial displacement increased less than 10%. A nomogram

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ACC NR: AP6019931

for determining the inaccuracy of the closure inside diameter, depending on blank thickness, working pressure, and rigidity of machine and tool, is plotted. Orig. art. has: 4 figures.

[AZ]

SUB CODE: 13/ SUBM DATE: none/ ATD PRESS: 5128

Filament-wound structures 24

Card 3/3

ACC NR: AP7006949 SOURCE CODE: UR/0129/67/000/001/0065/0067

AUTHOR: Zalesskiy, V. I.; Kozlov, Yu. I.; Lin, S. T.

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov)

TITLE: Strengthening of Kh14G14N3T steel during manufacture of end plates by cold burnishing

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 1, 1967, 65-67

TOPIC TAGS: stainless steel, tensile strength, yield strength, hardness, cold working /Kh14G14N3T steel

ABSTRACT: The change in the mechanical properties of stainless-steel end plates in the process of their manufacture by cold burnishing has been investigated. Butt-welded round blanks, 16 mm thick, were first spherically formed and heat treated, then cold burnished into end plates 3000 mm in diameter and given final heat treated. It was found that during end plate manufacture, the tensile strength, yield strength and hardness significantly increased, while the reduction of area and, particularly, elongation and notch toughness sharply decreased. The respective mechanical properties of the parent and burnished metal were: tensile strength 75 and 98—102 kg/mm^2; yield strength 42 and 93—101 kg/mm^2; hardness 201 and 348 HB; reduction of area 65 and 44—59%; elongation 45 and 13%; and notch toughness 23 and 4—7 kgm/cm^2. To

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ACC NR: AP7006949

obtain end plate without rupture, it must be heat-treated after preforming and during burnishing. Orig. art. has: 2 tables. [AZ]

SUB CODE: 11, 13/ SUBM DATE: none

Card 2/2

ZALESSKIY, V.I.; VOLKOV, I.P.

Investigating metal deformation in upsetting under conditions of vibration loading. Izv. vys. ucheb. zav.; chern. met. 3 no.9:98-102 '65. (MIRA 18:9)

1. Moskovskiy institut stali i splavov.

ZALESSKIY, V.I.; TSIBANOVA, M.S.; KOZLOV, Yu.I.

Effect of the purity of the initial charge materials on the plasticity of chromium-nickel steel. Izv. vys. ucheb. zav.; chern. met. 8 no.7:113-115 '65. (MIRA 18:7)

1. Moskovskiy institut stali i splavov.

L 56018-65 EWT(m)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b)/EWA(c) MJW/JD

ACCESSION NR: AP5013322 UR/0148/65/000/005/0070/0075
669.15-194 : 539.214 : 548.33

22
21
B

AUTHOR: Okhrimenko, Ya. M.; Zalesskiy, V. I.; Smirnov, O. M.

TITLE: Temperature and rate conditions of deformation in ShKh15 steel during polymorphic transformation

SOURCE: IVUZ. Chernaya metallurgiya, no. 5, 1965, 70-75

TOPIC TAGS: steel, polymorphism, phase transformation, metal deformation

ABSTRACT: The authors aim was to verify and follow up some previous work on the kinetics of the superplastic phenomenon and their effect on resulting strength and plasticity properties. Three stages of the investigation involved clarifying the following three relationships: the character of the anomoly of mechanical properties (tensile strength) in the region of the transformation temperature; the effect of $\alpha \rightarrow \gamma$ and $\gamma \rightarrow \alpha$ transformation speed under uniaxial tensile stress (change in transformation rate was effected by varying the heating and cooling rates through the transformation range); and the effect of deformation rate during $\alpha \rightarrow \gamma$ and $\gamma \rightarrow \alpha$ transformations. Transformation was detected by magnetic measurement using a coil

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L 56018-65

ACCESSION NR: AP5013322

surrounding the furnace heating coil in which a current would be induced at transformation in the specimen (core). With constant transformation and strain rate, plasticity properties were noticeably lower and strength higher for a specimen cooled rather than heated through the transformation range. This effect is related to the formation of a cementite network for the cooled specimen. An experiment was also conducted attempting to duplicate common practice conditions. These results confirmed the property changes of the laboratory experiments. Orig. art. has: 5 figures.

ASSOCIATION: Moskovskiy institut stali i splavov. (Moscow Institute of Steel and Alloys)

SUBMITTED: 30Jun64 ENCL: 00 SUB CODE: MM, SS

NO REF SOV: 006 OTHER: 004

Card 2/2

L 55200-65 EWG(1)/EWT(m)/EWP(e)/EWP(t)/EPF(c)/EPF(n)-2/EWA(d)/EPR/T/EWP(t)/
EWP(k)/EWP(b)/EWP(z)/EWA(c) Pf-4/Pr-4/Pu-4/Ps-4 IJP(c) HJW/JD/WW/HW/JG/DJ/WH

ACCESSION NR: AP5015825 UR/0182/65/000/006/0001/0004
621.892

62
8

AUTHOR: Zalesskiy, V. I.; Okhrimenko, Ya. M.; Smirnov, O. M.; Vasil'yeva, R. S.

TITLE: A lubricant based on lithium salts for semi-hot gauging

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 6, 1965, 1-4

TOPIC TAGS: hot working, lithium, pressing, precision finishing, lubricant

ABSTRACT: Lithium coatings were studied as a method for lubrication during semi-hot gauging of ring blanks at the IGPZ factory. The lubricant now used at the factory is a mixture of graphite and chalk in a soap solution. This is a fairly good lubricant but it clogs up the press and pollutes the air in the shop. Lithium coating produces a dense layer of lubricant on the surface of the blank which does not peel off during transportation and gauging. The samples used in the study were rings made of ShKhl5 steel. The rings were coated in a hot lithium atmosphere; they were then cooled and held for several days at room temperature. After this they were again heated in an electric furnace to 700-750°C and gauged on a hot crankpress with a force of 750 tons. The deformation forces were measured during

Card 1/2

L 55200-65

ACCESSION NR: AP5015825

guaging on a bar type strain gauge. Vaporization of a mixture of 60% AlI_2CO_3 + 40% LiCl gives the best quality coatings. The optimum temperature range in the vaporizer is 1100-1150°C. Gauging should be done immediately after coating. Orig. art. has: 2 figures, 2 tables.

ASSOCIATION: none

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

NO REF SOV: 000 OTHER: 003

Card 2/2

L 60978-65 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b) JD

ACCESSION NR: AP5018177 UR/0148/65/000/007/0113/0115
669.15-194:669.26.24:669.187.25:539.214

AUTHOR: Zalesskiy, V.I.; Tsibanova, M.S.; Kozlov, Yu. I.

TITLE: The influence of the purity of original charging material on the plasticity of chrome-nickel steel

SOURCE: IVUZ. Chernaya metallurgiya, no. 7, 1965, 113-115

TOPIC TAGS: steel plasticity, steel casting, charge purity, chrome steel, nickel steel, stainless steel

ABSTRACT: The influence of the purity of original charging material on the deformability of low-plasticity steels was studied on 3-kg casts smelted in a 25-kg capacity laboratory induction furnace. The test sample composition was as follows: I - 50% fresh charge added to scrap steel, nickel N-1 and ferrochrome 0000; II - 100% scrap steel smelt; III - fresh charge with N-1 nickel and 0000 ferrochrome, IV - fresh charge with N-2 nickel and 0000 ferrochrome, V - fresh charge with N-2 nickel and 00 ferrochrome, and VI fresh charge with N-1 nickel and 00 ferrochrome. The basic results are summarized in Fig. 1 of the Enclosure. The permissible degree of deformation at 800, 900, 1000, 1100 and 1200C is also given for each steel. Orig. art. has: 1 formula, 2 figures, and 2 tables.

Card 1/3

L 60973-65

ACCESSION NR: AP5018177

ASSOCIATION: Moskovskiy institut stali i splavov (Moscow Institute of Steel and Ailoys)

SUBMITTED: 12Oct64 ENCL: 01 SUB CODE: MM

NO REF SOV: 001 OTHER: 000

Card 2/3

L 60178-65

ACCESSION NR: AP5018177

ENCL: 01

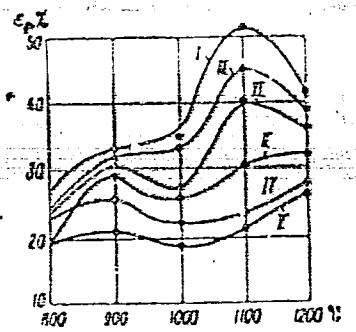

Fig. 1. Plasticity during settling of casts of various composition. Numbers labeling the curves = type of sample composition.

Card 3/3

OKHRIMENKO, Ya.M.; ZALESSKIY, V.I.; SMIRNOV, O.M.

Temperature-speed conditions for the deformation of ShKh15 steel in the polymorphic transformation period. Izv. vys. ucheb. zav.; chern. met. 8 no.5:70-75 '65. (MIRA 18:5)

1. Moskovskiy institut stali i splavov.

ZALESSKIY, V. I.; TSIBANOVA, M. S.; KOZLOV, Yu. I.

Determining plasticity during the forging of ingots and blanks. Izv. vys.ucheb.zav.; chern.met.7 no. 5:90-93 '64. (MIRA 17:5)

1. Moskovskiy institut stali i splavov.

ZALESSKIY, V.I.; TSVENTARNYY, A.M.

Analyzing the performance of a stream race for cleaning billets from scale. Kuz.-shtam.proizv. 6 no.1:25-28 Ja '64. (MIRA 17:3)

ACCESSION NR: AP4019026 S/0182/64/000/002/0035/0038

AUTHOR: Zalesskiy, V.I.; Tsibanova, M.S.; Kozlov, Yu. I.

TITLE: Technique for heating heat-resistant steel ingots

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 2, 1964, 35-38

TOPIC TAGS: steel production, ingot heating, steel, heat resistant steel, austenitic steel, carbide steel, heat resistance

ABSTRACT: Ingots of grade 48AN-1 heat-resistant steels of the austenite-carbide group were investigated. Thermocouples were used to measure the temperature. The results showed that steel ingots had previously been heated for too long a time and that the duration may be reduced by 6 hours. The temperature gradients in the steel were also measured. The author recommends rapid heating of the steel by placing the cold ingots into an oven already heated to 600 C. The temperature is then immediately raised to 800 C (for 1 to 1.5 hours) and the ingots are held at this temperature for 5 hours. The temperature is then forced to 1170-1200 C over 5 hours and maintained at this level for 3 to 4.5 hours. The total duration of heating for an ingot weighing 3.7 metric tons was about 16 hours. This forced method produced results which were in no way inferior to those of the usual heating method. "K. Ye. Sharapov, A. I. Senyakin, K. V. Ignat'yev and Ye. A.

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ACCESSION NR: AP4019026

Petrova also took part in this work." Orig. art. has: 8 figures.

ASSOCIATION: TsZL zavod

SUBMITTED: 00	DATE ACQ: 27Mar64	ENCL: 00
SUB CODE: ML	NO REF SOV: 000	OTHER: 000

2/2

Card

IGNATOV, A.A.; VLASOV, V.I.; ZALESSKIY, V.I., prof., red.; SIMOTIN, A.I., red.izd-va; MODEL', B.I., tekhn.red.

[Clutches, brakes, and control mechanisms for crank press forging machines] Mufty, tormoza i mekhanizmy upravleniia krivoshipnykh kuznechno-pressovykh mashin. Moskva, Mashgiz, 1963. 446 p. (MIRA 16:11)
(Forging machinery--Design and construction)

ZALESSKIY, V.I.; TSVENTARNYY, A.M.; KORNEYEV, D.M.; ZHUKOV, A.A.

Developing and investigating equipment for the hydraulic removal of scale from hot ingots. Kuz.-shtam. proizv. 5 no.1:21-24 Ja '63. (MIRA 16:2)

(Metal cleaning) (Steel ingots)

ZALESSKIY, V.I.; TSVENTARNYY, A.M.; KORNEYEV, D.M.; ZHUKOV, A.A.

Scale removal by hydraulic methods. Izv. vys. uchsb. zav.; chern. met. 6 no.3:135-140 '63. (MIRA 16:5)

1. Moskovskiy institut stali i splavov.
(Metals—Cleaning)

S/182/63/000/001/006/012
A004/A126

AUTHORS: Zalesskiy, V. I., Tsventarnyy, A. M., Korneyev, D. M., Zhukov, A. A.

TITLE: Developing and studying an installation for hydraulically removing scale from heated blanks

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no. 1, 1963, 21 - 24

TEXT: The authors point out that, to improve the surface finish of die-forged parts, the hydraulic method of removing scale from the heated blanks is the most advanced one, and is used, apart from plants in the USA, England, Poland and other countries, also by machine-building and metallurgical plants of the Soviet Union, e.g. "Zaporozhstal'", "Krasnyy Oktyabr'", "Serp i molot" and other plants. This method consists in pointing a thin high-pressure water jet of some 100 - 180 atm at the blank heated up to forging temperature. Under the effect of the kinetic energy of the water and, simultaneously, of local cooling, the scale bursts and can be removed from the surface without the blank itself being cooled down. The two types of jet-forming devices, viz. spray nozzles and jet rings, are mentioned and functioning and operation of the latter is described

Card 1/2

Developing and studying an installation for... S/182/63/000/001/006/012
A004/A126

in detail. The authors comment on the mechanized installation for hydraulic scale removal that was developed at the Nevskiy mashinostroitel'nyy zavod (Nevskiy Machine-Building Plant) and give a brief description of the main units. There are 6 figures.

Card 2/2

ZALESSKIY, V.I.; KORNEYEV, D.M.; OKHRIMENKO, Ya.M.

Chromium-silicon-manganese 6Kh3GS steel for forging dies. Izv. vys.ucheb.zav.; chern.met. 4 no.9:104-113 '61. (MIRA 14:10)

1. Moskovskiy institut stali.
(Chromium-manganese steel) (Dies (Metalworking))

S/148/61/000/009/006/012
E193/E383

AUTHORS: Zalesskiy, V.I., Korneyev, D.M. and Okhrimenko, Ya.M.

TITLE: Chromium-silicon-manganese steel 5ХЗГС (5Kh3GS) for hot-forging dies

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, no. 9, 1961, 104-113

TEXT: The object of the present investigation was to assess the suitability of the following three steels (composition, %):

	C	Mn	Si	Cr	S	P
5ХЗГС (5Kh3GS)	0.48	0.96	1.27	3.08	≤0.04	≤0.045
5Х4ГС (5Kh4GS)	0.46	1.06	1.27	4.27	≤0.04	≤0.045
6ХЗГС (6Kh3GS)	0.65	0.98	1.19	3.24	≤0.04	≤0.045

as materials for hot-forging dies. The comparative study of those steels included testing their impact strength and resistance-to-spalling due to thermal shock, measuring hot hardness and thermal stability, and evaluating the tendency to distort during heat-treatment. The spalling resistance was studied on hardened and tempered cylindrical test pieces, 30 mm in diameter, 45 mm long. These were superficially heated

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(to a depth of 1-2 mm) to various temperatures with the aid of high-frequency induction surface-hardening equipment of the "Tocco" type and cooled rapidly by water from a sprayer incorporated in the inductor, this treatment being repeated many times. Although it was difficult to determine the onset of spalling, the formation of deep cracks was clearly indicated by an increase in the power consumption. The number of cycles N required to cause the formation of these deep cracks was taken as a comparative measure of spalling-resistance of a given material. The results are reproduced in Fig. 3, where each block represents N for the steel shown, histograms I and II relating to test temperatures of 700 and 600 °C respectively. The steel 5Kh3GS was found to have the highest spalling-resistance and this result was confirmed by the results of tests in which the test pieces were repeatedly immersed for 30 seconds in a lead bath (to attain a surface temperature of 650 °C) and quenched in water to cool the surface to 60 °C. The first cracks in

Chromium-silicon-manganese steel ...

steel 7X3 (7Kh3) were observed after 300 cycles and in steel 5Kh3GS after 500 cycles. In the next series of experiments it was established that when hardened steel 5Kh3GS was tempered for 1.5 hours at temperatures ranging from 400 - 650 °C, the decrease in its hardness with rising tempering temperature was less pronounced (from 52 HRC after tempering at 450 °C to 34 HRC after tempering at 650 °C) than that in steel 5XH (5KhN) or 5XT (5KhT). Hot-hardness tests were carried out by the Brinell method on hardened and tempered specimens and the results are reproduced in Table 4. Two series of impact tests were carried out. In the first the test pieces of steel 5Kh3GS were hardened, tempered at various temperatures and cooled after tempering at various rates, after which their impact strength a_k was determined at room temperature. The results are reproduced in Fig. 5 where a_k (kgm/cm^2) is plotted against the tempering temperature. Curves 1, 2 and 3 relating, respectively, to specimens which after tempering, were oil-quenched, cooled in air, and furnace

cooled. In the second series of tests a_k of hardened and tempered specimens was determined at various temperatures. The results are shown in Fig. 6 where a_k is plotted against the test temperature (°C), the type of steel being indicated by each curve. The resistance of steel to distortion during hardening was studied on eccentrically-bored ring specimens split longitudinally on the thin side. These were hardened (quenched from 850 °C), tempered for 1.5 hours at 550 °C and cooled in air. After this treatment the initial 6 mm gap in split rings of steel 5Kh3GS 5ХНМ (5KhNM) and 7Х3 (7Kh3) increased, respectively, by 0.08, 0.11 and 0.21 mm. Tests are respectively. The final tests were carried out under industrial conditions. Piercing punches, such as used in the third stage forging of flanges on a horizontal 1 000-ton press, were prepared from the steels 5Kh4GS and 5Kh3GS. They were 416 mm long, with the working part 180 mm and 55 mm in diameter. Whereas the average working life of steel 7Kh3 punches used to be 820 forging operations, the average life of the experimental steels was 1 650. On the basis of the results of the [illegible] investigation

S/148/61/000/009/006/012
E193/E383

Chromium-silicon-manganese steel...

steel 5Kh3GS has been recommended as the material for hot-forging dies. Its composition should be within the following limits: 0.45 - 0.55% C, 3.0 - 4.0% Cr, 0.9 - 1.1% Mn, 1.2 - 1.4% Si, $\leqslant$ 0.03% S and $\leqslant$ 0.03% P. The optimum heat-treatment consists of pre-heating to 880 - 900 °C, holding for 1 hour, oil-quenching, tempering for 3 hours at 575 °C and oil-quenching. Acknowledgments are expressed to A.D. Bogdan and B.A. Borisov. There are 8 figures, 5 tables and 4 Soviet references.

Card 5/5

ZALESSKIY, V.I.; MIKHALENKO, V.P.; GUBAREV, V.V.

Use of a new steel for punching dies intended to increase their durability. Kuz.-shtam. proizv. 3 no.3:9-16 Mr '61. (MIRA 14:6)
(Dies (Metalworking—Testing))

26534
S/182/61/000/003/003/009
A161/A133

18.1111

AUTHORS: Zalesskiy, V. I., Mikhalenko, F. P., Gubarev, V. V.

TITLE: Utilization of a new steel grade for blanking dies to increase their service life

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no. 3, 1961, 9 - 16

TEXT: Results are presented of tests of blanking dies made from the new 5ХГС (5KhGS) die steel grade, developed by Moskovskiy institut stali (Moscow Steel Institute) and being produced now by the "Krasnyy Oktyabr'" Plant in Stalingrad and by other plants. The tests were carried out at the Podol'skiy Ordena Trudovogo Krasnogo Znameni mekhanicheskiy zavod im. M. I. Kalinina (Podol'sk "Order of the Red Banner of Labor" Mechanical Plant im. M. I. Kalinin). Dies of У10А (U10A) steel, used at the plant for blanking dies, were tested for comparison. The chemical composition of 5KhGS steel determined by chemical analysis of chip was: (%) 0.53 C, 0.98 Mn, 1.34 Si, 2.02 Cr, 0.015 P and 0.015 S. The three different die shapes chosen for the tests are shown in photographs and were intended for blanking three different parts - a lever and two sewing machine parts. The tests consisted in checking the wear during the normal working process in the shop, in an

Card 1/2

Utilization of a new steel grade for blanking dies to...

automatic press with maximum 50 ton pressure and 120 strokes per minute, and a crank press. The article includes details of dies manufacture and heat treatment. It is mentioned that dies made from forged steel proved twice as durable as those made from rolled metal. The die set no. 1 (blanking levers) withstood 465,000 strokes after six regrindings, which is 5.8 times more than dies of U10A steel; the tests with the die set no. 2 could not be completed since the production program was ended, but the dies were still good for further work after 349,800 strokes and 8 regrindings. The authors conclude that the forging technology of dies with reduced walls should be changed to obtain a thorough peening of the blank with the fibers being directed along the weakened crosspieces, and that regrinding of the dies is necessary when the burr has reached a height of 0.15 mm. One very important property of dies made of 5KhGS steel is the negligeable deformation during the heat treatment. There are 6 figures and 8 tables.

S/122/60/000/004/009/014
A161/A130

AUTHORS: Zalesskiy, V.I., Professor; Korneyev, D.M.; Okhrimenko, Ya.M.: - Docents; Laguntsov, I.N., Senior Scientific Worker

TITLE: 5ХГС (5KhGS) die steel

PERIODICAL: Vestnik mashinostroyeniya, no. 4, 1960, 50 - 54

TEXT: The subject low-alloy steel for hot dies has been developed at the Moskovskiy institut stali (Moscow Steel Institute) and is by now produced by several plants. The process is standardized by TU 3657-53 (TU3657-53) specifications of Ministerstvo metallurgicheskoy promyshlennosti (Ministry of Metallurgical Industry). The chemical composition (in %) is: 0.45-0.55 C; 1.6-2.0 Cr; 0.9-1.1 Mn; 1.2-1.4 Si; up to 0.04 S, up to 0.04 P. The point in development was to eliminate the crack networks forming from alternating heat stresses in hot dies. Steels were compared not by their mechanical characteristics alone (σ_s, σ_b, ψ, α_k) but also by the resistance to hot cracking. The method of heat effect tests was a novelty, and its authors V.I. Zalesskiy, D.M. Korneyev and Ya.M. Okhrimenko obtained Author's Certificate no. 75287, with priority from January 21, 1948. The new steel is modified chromansil. It is melted in a basic open-hearth

Card 1/3

5 ХГС (5KhGS) die steel

furnace. The following production process data are given: Forging in 1,150-850°C range; cooling in air; annealing in 850-870°C; quenching temperature 860-880°C, quenching in oil; tempering in 560-590°C. Hardness after tempering is HRC 38-42. The upper limit of quenching and tempering temperature relates to dies of larger dimensions (above 150 mm in diameter). The structure of this steel in the 860-880°C range is martensite. The variations of 5KhGS steel hardness with the diameter of specimens are illustrated in Figure 2. Its impact resistance at room temperature is lower than in the 5ХНМ (5KhNM), 5ХНВ (5KhNV) and 5ХНТ (5KhNT) die steels, but in high temperature it is equal with the other grades. In drop forging tests inserts of 5KhGS steel proved more durable than inserts of 5KhNV steel (in forging 14 parts out of 18 selected for test). The information includes test data tables and figures from an ENIIPP report of 1959 on practical application of 5KhGS steel. In the average, the durability of 5KhGS steel was 10% higher. It is recommended for use after shop tests at Moskovskiy zavod malolitrazhnykh avtomobiley, or MZMA (Moscow Low-Displacement Car Plant), 1 GPZ, GAZ and Chebarkul'skiy Plant. Its dies do not contain scarce component elements, and it is twice cheaper than 5KhNB and 30% cheaper than 5KhNT. There are 3 figures, 8 tables and 2 Soviet-bloc references.

ZALESSKIY, V.I.

PHASE I BOOK EXPLOITATION SOV/4782

Moscow. Institut stali

Proizvodstvo i obrabotka stali i splavov (Production and Treatment of Steel and Alloys) Moscow, Metallurgizdat, 1960. 462 p. (Series: Its: Sbornik, 39) 2,100 copies printed.

Ed.: Ye. A. Borko; Ed. of Publishing House: S. L. Zinger; Tech. Ed.: M. R. Kleyman; Editorial Council of the Institute: M. A. Glinkov, Professor, Doctor of Technical Sciences; R. N. Grigorash, Docent, Candidate of Technical Sciences; V. P. Yelyutin, Professor, Doctor of Technical Sciences; A. A. Zhukhovitskiy, Professor, Doctor of Chemical Sciences; I. N. Kidin, Professor, Doctor of Technical Sciences; B. G. Livshits, Professor, Doctor of Technical Sciences; A. P. Lyubimov, Professor, Doctor of Technical Sciences; I. M. Pavlov, Corresponding Member, Academy of Sciences USSR; and A. N. Pokhvisnev, Professor, Doctor of Technical Sciences.

PURPOSE: This book is intended for technical personnel in industry, scientific institutions and schools of higher education, dealing with open-hearth and electric-furnace steelmaking, metal rolling, physical metallurgy, metallography, and heat-treatment. It may

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also be used by students specializing in these fields.

COVERAGE: The book contains results of theoretical and experimental investigations of metallurgical and heat-engineering processes in open-hearth and electric furnaces. Data are included on the following: desulfurizing of pig iron outside the blast furnace, interaction of oxides of the carbide-forming metals with solid carbon, the change of content of gases in the bath of the open-hearth furnace in various periods of melting, intensification of the electric melting of steel, etc. Other articles deal with the nonuniformity of deformation in rolling, the study of the continuous rolling process, the dependence of the friction—slippage coefficients in rolling on a number of factors, and other problems in the pressworking of metals. Articles on physical metallurgy and the theoretical principles and techniques of the heat treatment of steel are also included. No personalities are mentioned. References accompany most of the articles. There are 207 references, both Soviet and non-Soviet.

Card 2/10

Card 6/10

ZALESSKIY, V.I., prof.; MIKHALENKO, F.P., kand.tekhn.nauk

Dependence of the total coefficient of sheet material drawing on that of the initial operation without annealing between passes. Sbor.Inst.stali no.39:206-218 '60. (MIRA 13:7)

1. Kafedra kuznechno-shtampovochnogo proizvodstva Moskovskogo ordena Trudovogo Krasnogo Znameni instituta stali im. I.V. Stalina.

(Deep drawing(Metalwork))
(Annealing of metals)

ZALESSKIY, V.I., prof.; KRESHCHISHIN, T.T., inzh.

Dependence of 1Kh18N9T steel properties on forging conditions.
Sbor.Inst.stali no.39:226-249 '60. (MIRA 13:7)

1. Kafedra kuznechno-shtampovochnogo proizvodstva Moskovskogo ordena Trudovogo Krasnogo Znameni instituta stali im. I.V. Stalina.
(Steel forgings) (Mechanical wear)

ZALESSKIY, V.I., prof.; KORNEYEV, D.M., dots.; OKHRIMENKO, Ya.M., dots.; LAGUNTSOV, I.N., starshiy nauchnyy sotrudnik

The 5KhGS steel for dies. Vest.mash. 40 no.4:50-54 Ap '60. (MIRA 13:6)

(Tool steel)

ZALESSKIY, V.I.; VASIL'YEV, D.I.; GUBAREV, V.V.

Rotating heads for hydraulic presses. Kuz.-shtam.proizv. 1 no.12:34-35 D '59. (MIRA 13:4)
(Hydraulic presses) (Extrusion process)

ZALESSKIY, V.I.; TYURIN, N.I.

Investigating the closed-die forging process. Kuz.-shtam.proizv. 1 no.1:4-8 Ja '59. (MIRA 12:10)
(Forging) (Dies (Metalworking))

ZALESSKIY, V.I.; MAKSIMOV, A.I.

Attainable size accuracy of parts made by flat coining. Kuz. shtam. proizv. I no.10:14-19 O '59. (MIRA 13:2)
(Sheet-metal work)

L 12169-66 EWT(m)/T/EWP(t)/EWP(k)/EWP(b)/EWA(h)/EWA(c) JD/HW/DJ

ACC NR: AP6000174 UR/0148/65/000/009/0098/0102

AUTHOR: Zalesskiy, V. I.; Volkov, I. P.

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov)

TITLE: Study of the deformation of metal during upsetting under conditions of vibration loading

SOURCE: IVUZ. Chernaya metallurgiya, no. 9, 1965, 98-102

TOPIC TAGS: vibration stress, cyclic load, metal, plastic deformation, cold forging

ABSTRACT: This investigation was based on the use of a hydraulic vibrator with generation of hydraulic pulsations by means of a screw pump, mounted in a vertical hydraulic press with a 200-ton squeeze (Fig. 1). The vibrator's cylinder is mounted on the press bolster. Attached to the mobile press cross-bar is a platen with a dynamometer for measuring the deformation stress. For hot upsetting a heated upset punch is attached below the dynamometer. A water-cooled fitting to protect the dynamometer from overheating is installed between the punch and the dynamometer. Mounted on the vibrator piston is the upset die. In the tests, cylindrical specimens of lead with various diameter-to-height ratios (D_o/H_o = 0.65, 1.54, 3) were cold-upset, at various vibration frequencies. The vibration-loading stress as a function of degree of deformation during upsetting is presented in Fig. 2. Similar experiments were

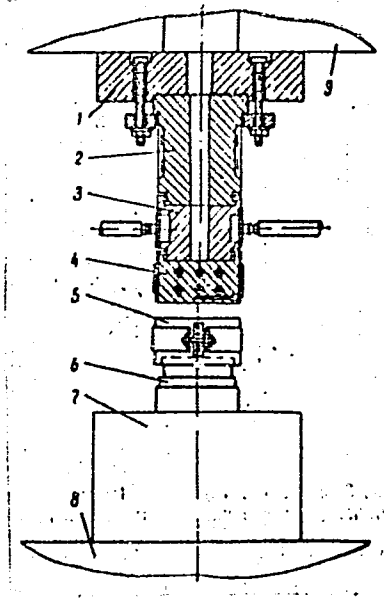
Card 1/4 UDC: 621.735:539.374

L 12169-66

ACC NR: AP6000174

Fig. 1. Mounting diagram of vibrator:

1 - supporting collar; 2 - dynamometer 3 - water-cooled fitting; 4 - upset punch; 5 - upset die; 6 - vibrator piston; 7 - vibrator; 8 - press bolster; 9 - mobile cross-arm



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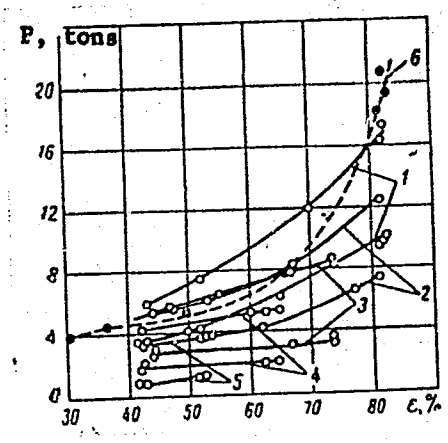

Fig. 2. Stress (upper and lower) as a function of degree of deformation during the upsetting of lead specimens with $D_0/H_0 = 0.65$ at various vibration frequencies:

1 - 110 cps; 2 - 93.3 cps; 3 - 66.7 cps; 4 - 50 cps; 5 - 33.3 cps;
6 - static loading

L 12169-66

ACC NR: AP6000174

carried out with specimens of St. 3 steel subjected to hot upsetting. It was found that vibration loading leads to a decrease in the friction between the deforming tool and the specimen, since there is no constant stressed relationship between the contact surfaces; this results in a more uniform distribution of plastic deformation and stresses in the specimen. As a result, the upsetting of specimens with the aid of vibration loading to a high degree of deformation assures a considerable decrease in loading stress (by 20-30%) compared with static loading. The work expended directly on deformation of the specimens by means of the vibrator is, in the 33-110 cps range, 10-65% smaller than in the case of static loading. Moreover, the uniformity of deformation is then 10-12% greater. Orig. art. has: 5 figures, 1 table.

SUB CODE: 11, 13/ SUBM DATE: 15Mar65/ ORIG REF: 002/ OTH REF: 000

HW

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N L 13067-66 EWT(d)/EWT(m)/EWP(c)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EWP(b)/EWP(l)/

ACC NR: AP5028574 EWA(c)/EWC(m) JD/HW SOURCE CODE: UR/0148/65/000/011/0088/0092

AUTHOR: Zalesskiy, V. I.; Mendybayev, O. S.

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov)

TITLE: Vibration pressing with the aid of a hydraulic-screw vibrator

SOURCE: IVUZ. Chernaya metallurgiya, no. 11, 1965, 88-92

TOPIC TAGS: metal pressing, mechanical vibration, cyclic loading, metal friction, die, material deformation, static load test

ABSTRACT: The authors present the results of an investigation of the process of the deformation of metal by means of vibration loading at approximately 100 cps. The experimental vibration device (Fig. 1) was mounted on hydraulic press 1 (model P457, rated ram force 200 tons). DC motor 2 drives the triple-screw oil pump 3 with the pump's housing being connected by a tube to oil reservoir 4. When the pump is in operation the lumen of the tube is periodically closed by the helix of one of the screws, thus creating a pulsating jet of high-pressure oil. Along tube 6 the oil flows to cylinder 7 attached to the press bolster. Piston 8 in cylinder 7 periodically rises and falls with the pulsating pressure and, via the punch or ram mounted on it, deforms the investigated metal specimen. A die is attached to fitting 9 (which at the same time serves as a dynamometer) and the latter is attached to the mobile cross-head

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ACC NR: AP5028574

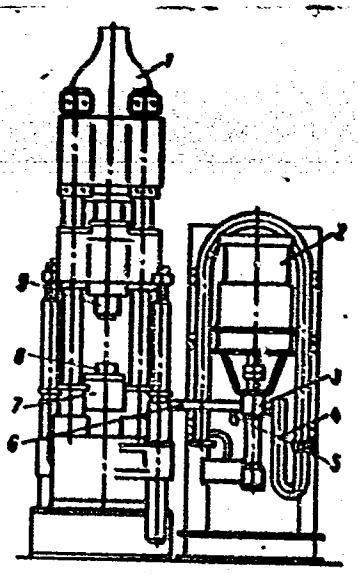

Fig. 1. General view of experimental vibration setup

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ACC NR: AP5028574

of the press. Starter 5 controls the operation of the vibrator. The vibrator can develop a force of up to 20 tons with an oscillation amplitude of up to 4.5 tons; vibration frequency, up to 112 cps. This installation was used to investigate the deformation of metal under conditions of incomplete withdrawal of cyclic loading as well as under static loading. It was found that vibration (cyclic) loading reduces the friction forces compared with static loading. When the cone-shaped dies are employed in inverse extrusion of this kind the flowage pressure in the case of vibration loading may either be greater or smaller than the flowage pressure in the case of static loading, depending on which factor predominates: increase in deformation resistance owing to the dynamicity of vibration loading, or decrease in flowage pressure owing to the decrease in contact friction. The decrease in contact friction during vibration loading occurs when dies with an angle of taper 45° are used. This contributes to reducing the nonuniformity of pressing in the case of vibration loading. Orig. art. has: 5 figures.

SUB CODE: 11, 13/ SUBM DATE: 21May65/ ORIG REF: 008/ OTH REF: 001

Card 3/3

ZALESSKIY, V.K.

Two-dimensional zero-torque problem for a helicoid shell. Trudy Lab. gidr.mash.AN USSR no.11:85-89 '64. (MIRA 17:10)

ZALESSKIY, V.K. (Khar'kov)

One-dimensional problem in lines of curvature for a helicoid shell. Prikl. mekh. 1 no.6:116-119 '65. (MIRA 18:7)

1. Khar'kovskiy filial Instituta mekhaniki AN UkrSSR.

TALESSKIY, V.K. (Khar'kov)

Solution in quadratures of the single-dimensional problem of helicoidal shells. Izv. AN SSSR. Mekh. no.5:111-113 S-O '65. (MIRA 18:10)

L 16951-63 EWP(k)/EWT(1)/BDS/T-2 AFFTC/ASD/ESD-3/APGC Pf-4/
Pi-4 RB S/0058/63/000/007/H058/H058
ACCESSION NR: AR3006338

69

SOURCE: RZh. Fizika, Abs. 7Zh396

AUTHOR: Zalesskiy, V. V.

TITLE: Ultrasonic siren

CITED SOURCE: Sb. Ul'trazvuk. i elektroimpul'sn. metody* obrabotki met. Rostov-na-Donu, 1961, 210-229

TOPIC TAGS: siren , ultrasonic, fog precipitation

TRANSLATION: A method is described for precipitating fogs and highly-dispersed haze in an agglomeration tower with an ultrasonic siren. It is indicated that for coagulation in an ultrasonic field the sounding time is approximately 10 sec at an intensity of 0.1--1 W/cm^2, and a dust content not less than 5--10 g/m^3. The operating principle and the main structural features of ultrasonic sounds with

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ACCESSION NR: AR3006338

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rotating discs are described. The limiting linear speeds are given for rotors made of steel, aluminum, and its alloys, and organic glass. A method is described for designing the siren and the horn, and some considerations are advanced with respect to the choice of the horn dimension with allowance for its matching to the medium and the distortion of the form of a wave of finite amplitude. Formulas are presented for the calculation of the air flow necessary for the siren and also the power of the compressor drive. The construction of the "Rostov" siren with exponential horn and a procedure for its investigation are described. The field in the output section of the horn was measured with the aid of a spherical receiver made of barium titanate ceramic, with the signal from the receiver fed to a voltmeter, frequency meter, and oscillograph. The siren electric motor power is 480 watts at 14,000 rpm. The siren is outfitted with three types of stators and rotors with 30, 60, and 120 holes for frequencies 7, 14, and 28 kcs, respectively, and two horns with critical frequencies 1 and 0.5 kcs. The holes in the stator are rectan-

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ACCESSION NR: AR3006338

gular while those in the rotor are square with a pitch of 0.5. A differential screw device is described for regulating the gap between the rotor and the stator, which should be 0.03--0.07 mm long. At 5 kcs, the acoustic power of the siren at the output of the horn is 1.5 kw at an air pressure of 0.5 atm, the maximum intensity is 170 dB, the weight of the siren is 25 kg, and the dimensions are 35 x x 40 x 60 cm. Bibliography, 9 titles. I. Kanevskiy.

DATE ACQ: 15Aug63 SUB CODE: PH, SD ENCL: 00

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L 8957-66 EWT(d)/EWP(e)/EWP(v)/T/EWP(k)/EWP(l)/ETC(m) WW

ACC NR: AP5026549 SOURCE CODE: UR/0286/65/000/019/0096/0096

AUTHORS: Zalesskiy, V. V.; Potapchenko, V. A.; Titkov, B. P.; Kazanin, V. S.; Orlov, A. M.; Rugayev, E. I. 44,55 44,55 44,55 44,55 44,55 44,55

ORG: none

TITLE: An ultrasonic defectoscope. Class 42, No. 175301 [announced by Scientific Research Institute of Machine Construction (Nauchno-issledovatel'skiy institut tekhnologii mashinostroyeniya)] 44,55

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 19, 1965, 96

TOPIC TAGS: defectoscope, defect indicator, error minimization, ultrasonic equipment, ultrasonic inspection, ultrasonic sensor

ABSTRACT: This Author Certificate presents an ultrasonic defectoscope for inspecting items by the shadow method. The defectoscope contains an ultrasonic oscillator and also an oscillation transmitter and receiver, both mounted on the item being inspected. The device is designed to eliminate the error caused by fluctuations of the signal amplitude of the receiver under the influence of changing dimensions of the item made of material with a large ultrasonic absorption coefficient. A modulator is included in the receiver circuit, and the output voltage of this modulator is used for feeding the feedback voltage to the oscillator. The modulator output voltage possesses a fairly high inertia for preventing a change of the oscillator signal level under the action of sharp, brief signal changes caused by the defects. An auxiliary receiver which is used for the voltage control of the oscillator may be mounted on the surface of the

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UDC: 620.179.16

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ACC NR: AP5026549

item adjacent to the base.

SUB CODE: 09, 13/ SUBM DATE: 03Feb64

BVK

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ZALESSKIY, V.Yu.

Calculating selective excitation when using secondary X-ray spectra. Opt. i spektr. 17 no.4:576-582 O '64.
(MIRA 17:12)

S/081/61/000/024/024/086
B138/B102

AUTHORS: Yakubovich, A. L., Zalesskiy, V. Yu.

TITLE: The X-ray radiometric method and apparatus used for the rapid analysis of chemical compositions

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 24, 1961, 144, abstract 24D20 (Sb. "Radioakt. izotopy i yadern. izlucheniya v nar. kh-ve SSSR, v. 4", M., Gostoptekhizdat, 1961, 187 - 197)

TEXT: A rapid method of analysis is suggested, which is based on the γ irradiation of the specimen by a radioactive isotope with recording of the characteristic radiation from the elements of the specimen by a scintillation or proportional counter. The radiation of the element in question is distinguished by means of a single-channel pulse discriminator. Ross differential filters are used to increase the resolving power of the method. They consist of two plates made from elements with similar Z. The thickness of the plates is chosen so that the difference between the intensities of the radiation suppressed by the filter plates will be proportional to that in the range of the spectrum between the K-absorption

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edges of the plate elements. The method requires no cumbersome apparatus and can be used in field conditions. The authors designed the apparatus ВИМС-58 (VIMS-58) supplied with 10w from a 12v battery. Elements with $Z > 35$-40 can be analysed with it. When the total rare-earth elements were determined in ores without filter the deviation from chemical analysis data was not more than 0.2 - 0.3%for a total oxide content of up to 5%, and 0.4 - 0.6% for up to 10%. In the determination of 1 - 3% ZrO_2 with Ross filters, the deviations from chemical analysis were not more than 10 - 15%, and at higher ZrO_2 concentrations, 5 - 10%. The accuracy of analysis is not dependant on the amount of the associated element Nb in the sample. Tu^{170} is used as the γ-radiation source (activity 2 - 8 curies). [Abstracter's note: Complete translation.]

ZAYTSEV, Ye.I.; ZALESSKIY, V. Yu.

Determination of lithium in samples by the neutron activation method. Zav.lab. 27 no.5:553-557 '61. (MIRA 14:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'nogo syr'ya.

(Lithium--Analysis)
(Lithium--Isotopes)

S/032/61/027/005/002/017
B119/B215

5.5500

AUTHORS: A. Zaytsev, Ye. I. and Zalesskiy, V. Yu.

TITLE: Determination of lithium in samples by a nuclear physical method

PERIODICAL: Zavodskaya laboratoriya, v. 27, no. 5, 1961, 553-557

TEXT: The authors developed a method of determining small amounts of lithium in powdery samples, which is based upon the reaction of the lithium isotope Li^6 with slow neutrons: $Li^6(n,\alpha)\ H^3$. This method is intended for general use in all fields of economy. Natural lithium isotope mixture contain 7.5% of Li^6. The apparatus necessary for determination consists of a polonium-beryllium neutron generator (the polonium neutron generator used in the above experiments had an activity of 0.15 to 0.36 Cu ($3 \cdot 10^5$ to $1.2 \cdot 10^5$ neutrons/sec), water as a moderator, and a scintillation counter. In the latter, ZnS used as luminophore was applied in a thin layer (15 to

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Determination of lithium ...

20 mg/cm^2) onto a glass plate of 80 mm diameter. Furthermore, an ФЭУ-29 (FEU-29) photomultiplier and a recording amplifier of type "ЛАС" ("LAS") were used. The sample, a thin layer of which is applied to a 80 mm plate of Duralumin, is placed below the counter; it is bombarded with neutrons from below, and the pulses from the above nuclear reaction are counted. The energy of this reaction is 4.78 Mev, 2.05 Mev of which fall to the share of the forming α-particles, and 2.73 Mev to the tritium nuclei. The distance traveled by the former in air is 1.1 cm, and that by the latter is 5.7 cm. The presence of boron in the sample affects the determination of Li (reaction with slow neutrons in which 1.85 Mev α-particles are split off). Its effect, however, can be largely eliminated by filtering (Al foil, thickness: 1.5 mg/cm^2) or amplitude discrimination of the pulses. Hydrogen-containing compounds in the sample also have a disturbing effect. With a neutron source emitting $1.2 \cdot 10^5$ neutrons/sec, the sensitivity of recording is 18.5 pulses/min/ % of Li_2O with a background of 16 pulses/min. The lithium content after the measurement is calculated from the formula

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Determination of lithium ...

$q_{pr} = C(N_{pr} - N_F - N_\alpha)$, where q_{pr} is the Li content in the sample, C the coefficient of the device (determined by a calibration sample of known Li content), N_{pr} the number of pulses emitted by the sample per unit time, N_F the number of pulses of a blank sample, and N_α the amount of natural α-activity of the sample concerned (sample measured outside the vessel containing the moderator and the neutron source). The method was checked with samples of amphibolite and pegmatite (whose Li content had been determined simultaneously by chemical analysis). These samples had been supplied by N. I. Ginzburg and S. G. Solomkina. With an Li_2O content of 0 to 0.5%, the relative error is 50-60%; with more than 0.5% Li_2O in the sample, it is only 5-10%. G. I. Brylyakov, Yu. N. Nartov, and A. L. Yakubovich assisted in the work. There are 3 figures, 2 tables, and 2 Soviet-bloc references.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'nogo syr'ya (All-Union Scientific Research Institute of Mineral Raw Materials)

Card 3/3

36236
S/169/62/000/003/034/098
D228/D301

3.9200

AUTHORS: Yakubovich, A. L. and Zalesskiy, V. Yu.

TITLE: The roentgeno-radiometric method and equipment for accelerating the analysis of the chemical composition of matter

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 3, 1962, 28, abstract 3A229 (V sb. Radioakt. izotopy i yadern. izlucheniya v nar. kh-ve SSSR, v. 4, M., Gostoptekhizdat, 1961, 187-191)

TEXT: A roentgeno-radiometric method of analyzing the elemental composition of matter has been developed. It is based on excitation of the deep-orbital electrons of atoms by means of the gamma-radiation of radioactive isotopes and on measurement of the characteristic roentgen radiation of atoms, using a scintillation spectrometer in conjunction, as a rule, with Ross differential filters or an ionization spectrometer with a proportional counter. Some merits of the roentgeno-radiometric method as compared with the technique

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